URBiNAT

On the Establishment of URBiNAT's Community of Practice (CoP)

Lead partner	IKED
Type	Deliverable / Report
Dissemination level	PU - Public
Work package	WP2
Deliverable	D2.3
Due date	month 26 - July 2020
Version	1.0

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Purpose of Deliverable

The present document presents the context for URBiNAT's Community of Practice (CoP), its objectives, how it is framed also outlines its further development and potential outcome and benefits for various actors. The report is directed to the widest defined circle audiences that are interested in the URBINAT project and its contribution. It builds on and gives extensive reference to URBiNAT's concept and its working methods, however, and thus refrains from attempting to achieve easy readability for the general public.

Roles and Objectives in Relation to other WPs

Examining the issues and opportunities of preparing and operating a fruitful and effective CoP the present document relates to all Working Packages of URBiNAT. It demonstrates how each of them contribute to the CoP and the value it generates, while also considering the role of various external actors engaging with or touched by the project. The document further presents the context for URBiNAT's CoP, its objectives, how it is framed and, additionally, outlines its further development and potential outcome and benefits for various actors. The report is directed to the widest defined circle audiences that are interested in the URBINAT project and its contribution. It builds on and gives extensive reference to URBiNAT's concept and its working methods, however, and thus refrains from attempting to achieve easy readability for the general public.

Executive Summary

The present report takes stock of URBiNAT's CoP. It examines the principles, driving forces and mechanisms at play in underpinning a functional CoP while also elaborating on what has been achieved "on the ground", in URBiNAT's cities and beyond. Reviewing the nature of CoPs, it takes note of an ongoing trend towards more complex and diversified networks with increasingly extensive use of digital communication, while also emphasising the importance of purpose and content, along with culture, leadership and organisational features. It further analyses the structure of URBiNAT's CoP, identifying four levels/circles: i) the project consortium itself; ii) the in-cities level; iii) the between cities level, and; iv) the wider world. Ways and means through which the CoP is activated via URBiNAT activities are touched upon, e.g. participatory processes and co-creation, Community of Interest (CoI), urban planning strategies, observatory platforms, monitoring and evaluation mechanisms, as well as communication and dissemination. Some developments in the project structure, such as changing interface between Living labs and CoP under the influence of the ongoing pandemic and increased reliance on digital enablers, is outlined. The last part explores the special features of the CoP extending beyond Europe, particularly through the engagement of five non-EU actors taking active part, discussing their varying features, agendas, and contributions. Finally, the report presents conclusions and outlines the steps ahead, while also outlining recommendations by way of providing main take-aways for key actor categories.

1. Introduction

A Community of Practice (CoP) serves as an active network and as an instrument for sharing and learning between its members. In this document we present the CoP established to help underpin URBiNAT's agenda and objectives. Three fundamental aspects of this work should be noted.

The first has to do with the principles and processes applied in building, shaping and running a CoP. This aspect has to do with strategy as well as methodologies, tools and activities in support of participatory processes. The role of facilitators, champions, mentoring processes and other means for promoting exchange of information and joint learning, merit attention here. In our case, we further highlight the importance of fostering an organic and flexible CoP which is able to identify and respond to issues that are unique to the local context, while yet allowing for structured comparisons and learning, notably around citizen participation and the co-creation of Nature-Based Solutions (NBS) and Healthy corridors. This merits paying strong attention to factors such as culture, mindset and behavioural change, generically important but manifesting themselves differently in the specific case.

The second aspect has to do with what is achieved "on the ground", within and around the URBiNAT project itself, and also what is planned for going ahead. This is about the consortium members and others actually exchanging experience, learning and putting lessons into practice. As part of this, various networks and communities are becoming active, within the URBiNAT front runner and follower cities, but also in the two observer cities, Khorramabad and Shenyang. Meanwhile, links are taking shape with various other actors in the EU, including URBiNAT's Horizon 2020 sister projects[1], as well as in the wider world. Ultimately, the question is what URBiNAT's legacy will be, in terms of genuine participation by people on the ground in disadvantaged city areas, among citizens at large, stakeholders, businesses, urban planners and policymakers and, also, how relevant researchers, academics and other experts will engage. With the CoP, an instrument is in place and is set to evolve as a mechanism to support favourable outcomes on these various fronts. That said, various relevant issues need to be considered, such as: how to define the boundaries of the CoP; how to link what is inside and outside of it; how to prioritize; how to define constructive Key Performance Indicators (KPIs), and how to deliver on them. Documenting and measuring success must not be bogged down with what is easy to measure but not important, like how many emails were sent, websites visited, or meetings held. The CoP is critically about quality achieved in sharing, learning, and acting together. That, in turn, eventually boils down to value-creation, i.e. the usefulness, results and impact of what has unfolded within the URBiNAT CoP, and beyond.

As a manifestation of the two aspects above, there is a third, in the shape of the present report. Here we attempt to describe and analyse our strategy, document and verify the CoP put in place, and outline the way forward. Yet, it should be underlined that the present report is NOT the CoP. The people and their actions are. Also, it should be stressed that, although the URBiNAT CoP is now in place and up and running, it does not imply that it is seamless or perfect. It will have to keep growing, be adjusted and fine-tuned, and it will have to prove itself as a meaningful framework and process by way of learning and acting, in the days, months, and years ahead.

While the CoP is formally held together by Task 2.3 (T2.3), it is closely interwoven with work undertaken in the other work packages and specific tasks. Here we particularly note the connection to: the basic gathering of facts and analytical work carried out in Work Package 1 (WP1) on the URBiNAT handbook

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[1] These are closely related projects, also undertaken under the umbrella of Horizon 2020, the EU research and Innovation programme running 2014 to 2020.

(T1.2); the inclusion of clustering activities with sister-projects and other EU-funded projects (T1.5); the local diagnostic in T2.1; the mapping of key networks and communities of interest (arts, health & safety, household activities, socioeconomic, business) in T2.2; the research on participatory culture in T3.1; the design of community-driven processes in T3.2, including the role of key networks, facilitators, champions and so forth; the advancement of a portfolio of digital enablers T3.3, and how to frame methodology, content and digital tools in support of participatory processes; work under way in T3.4 to experiment and test the ground for specific digital enablers; preparation in T3.5 for workshops and other activities effectively training champions and mentors to embody key communication channels; work on realizing NBS and Healthy corridors in WP4; data management and the observatory in WP5; communication and dissemination in WP6 and; work to establish the factors and processes that can realize innovation and value-creation in WP7.

The remainder of this report, following this introduction, is structured as follows:

Chapter 2 reviews the definition of a CoP including the wider context and its purpose. We further consider how the concept is applied in the case of URBiNAT, noting factors that shape its nature and functionality. Further, we reflect on elements requiring special consideration in the continued development of the URBiNAT CoP, including differences and complementarities between frontrunner, follower and observer cities.

The role of people is elaborated in Chapter 3, including the importance of mindset, social relations, openness and diversity. It is noted that Communities of Interest (CoI) can help shape powerful building blocks for CoP. Leadership, organisation and communication tools are examined in the context of influencers and processes of change. Following observations on the overriding significance of culture and how to overcome cultural barriers, the chapter ends with observations on the long-term benefits.

Chapter 4 reviews the structure of the CoP in URBiNAT, including four prime circles of participation, or "levels" to the CoP. While each level merits its specific considerations, they are also interrelated. The participatory processes applied are then laid out, along with an introduction to the activities undertaken. Subsequently, the way the CoP links with the various stages of co-creation is explored.

Chapter 5 addresses the engagement of non-EU partners and observers, taking into account their varying roles and conditions for participation, e.g., with or without access to project funding. Prominent dimensions include how the CoP supports diffusing, adapting and implementing lessons and insights of URBiNAT in the wider world, as well as enables sourcing of information and knowledge feeding back into and enriching the project.

Chapter 6, finally, looks ahead, outlines the steps yet to be taken to further develop and grow the CoP. Here we reason around the next steps to strengthen enablers and overcome remaining challenges and key take-aways recommended for various relevant actors and stakeholders. Finally, we comment on qualitative as well as quantitative measures for taking stock of, validating and further strengthening the CoP over time.

2. Definitions and Application of CoP in URBiNAT

2.1 Definitions and Background

A key element of URBiNAT is the establishment of an effective Community of Practice (CoP). A CoP represents a framework for collaboration that serves to promote constructive sharing of experience and joint learning. Conceived of in a broad sense, a CoP is not a new phenomenon: this type of learning framework has existed for as long as people have been sharing experience through storytelling and the build-up of various mechanisms to support bonding and aligned interests through mutual learning (Harari, 2014).

As initially coined, the CoP concept referred to groups made up of members who engaged in mutual learning exercising the same craft or profession (Lave and Wenger, 1991). Gradually, that limited notion gave way to consideration of wider aspects, such as communities organised around certain skills. Today, serious attention is paid to organisational aspects, including how to enable members of diverse networks to share experience and learn on a continuous basis.[2] CoPs generally exist in physical settings, but members do not have to be co-located. With the advance of Information and Communications Technology (ICT) and particularly social media, CoPs increasingly utilise digital means. A term now sometimes applied is that of "virtual communities of practice" (VCoPs), when collaboration takes place predominantly online (Dubé et al., 2003).

Much of what CoPs are about has been the subject of an extensive literature which goes beyond the limits of interpersonal exchange or organisational theory, and which has evolved around various core themes. These include groups of companies, the dynamic relationship between a wider set of more or less diverse organisations, within regions, at the level of nation states, or within wider geographical areas. The origin has to do with observations of benefits, or synergies, from close collaboration between similar companies, or organisations (Marshall, 1890). Marshall invented the term "industrial districts", which was later picked up on in Italy, where intensive inter-firm networking had emerged spontaneously since many years and could be seen to result in highly competitive industries and skilful workers (Piore and Sabel, 1984; Brusco and Righi, 1989; Becattini, 1990). Based on observations of similar groupings of collaborating and learning organisations all over the world, Porter (1990) advocated specialisation according to industrial "clusters", a population of co-located, interconnected firms in a specific sector.

Along a separate track, using the term "development blocks", Dahmén (1988) emphasised the favourable interplay between complementary interrelated actors, including large and small firms. Stressing experimentation and learning in exchanges, Eliasson (1998) referred to "Competence blocs". In parallel, it was observed that innovation, i.e. the introduction of value-enhancing "new" solutions, does not occur in isolation, but requires a "system" in which private firms, public institutions and other actors combine in shaping favourable conditions, blending competition and collaboration. This has been extensively studied at national (Freeman, 1987; Lundvall, 1992; Nelson, 1993; Edquist, 1997), regional (Cooke, 1992), sectoral (Carlsson and Stankiewicz, 1991) and firm level (Kline and Rosenberg, 1986). Somewhat related, the "Triple Helix" literature, purported by Etzkowitz and Leydesdorff (2002),

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[2] A CoP is defined within knowledge management literature as a mechanism for facilitating the sharing of ideas and knowledge, in support of improved organisational performance.

put the emphasis on interactions between business, universities and public actors and their resulting mutual learning process. The Triple Helix is non-linear and stresses organisational overlapping and flexible actor roles. The "Mode 3 Innovation Ecosystem" or "Quadruple Helix" (Carayannis and Campbell, 2009), examined relationships between a further widened set of actors and technologies, including civil society.

In their different ways, such strands of literature highlight actor relations and learning processes. More recently, new processes have evolved for practical experimentation and applications in how to link between participatory practices, institutions and technologies, especially at the urban level, where they have become more elaborated and diverse. Some of this has evolved under the label of the "smart city", key ingredients of which include:[3]

- A new organisation targeted to smart city principles and objectives;
- Productive districts fuelled by hyper-connected elements, including smart sensors, apps, IoT platforms, etc.;
- Legal framework for inter-actor relations to flourish;
- Smart city planning for accessibility, all within reach, 20min "neighbourhoods";
- Experience-based industry, nurturing cultural heritage and creativity;
- Feeding the urban innovation ecosystem;
- Living lab, development of a community of citizens, developers;
- Facilities for SMEs' experimentation;
- Opening new opportunities for citizens to be more active and participative;
- Strong international linkages.

The rapid advancement of digital communication as an instrument to collect, process and distribute information has led to a rapid diffusion of practices and efforts to upgrade the functionality. A survey published in 2013 showed that, already then, over 90 percent of European cities with more than half a million citizens had adopted what may be defined as a strategy for introducing the "smart city" (Manville et al., 2013). This has further become intertwined with the effort of cities to tackle outstanding economic, social and environmental challenges and enhance well-being, where strategies have been solidified under the heading of "green cities", "eco-cities" or "sustainable cities". The concept of the Circular economy is gaining renewed attention as well, with an increasing number of cities searching for practical solutions to decouple urban economic development from resource and environmental degradation, including through NBS (Wijkman et al., 2020). A multitude of regional and international events have evolved to highlight progress made and enable comparison, joint learning and advancement. Examples include the innovative cities' projects of the EU, the World Urban Forum of the UN Habitat, the World Smart Cities Forum, and others.

These developments are fed by continued pressing challenges on the ground, where people live their lives and enterprises pursue their business on a day-to-day basis, subjected to countless influences. Much of the inherent dynamic boils down to human relations, perceptions and expectations. A "negative" dominance in this respect causes a gradual worsening while, on the other end, "positive" ones bring more of the same. The negatives may stem from poor infrastructure and housing, low incomes and low education, social problems, high crime, violence, lack of security, and so forth. The bright side, meanwhile, is fed by good infrastructure, people with the resources and freedom to choose where they live and work, self-confidence, a high level of security, and so forth. The former attributes thus tend to give rise to vicious circles, while virtuous ones flow from the latter.

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[3] A wealth of studies documents the smart city evolution. For definitions, see Albino (2015), United Nations (2016) and OECD (2020*a*).

This naturally does not mean that all is bad in some cases, and all good in others. Some people may always thrive, and others always suffer, irrespective of their surroundings. Meanwhile, opportunities may always be at hand to instil a change, a source of inspiration, so that which has become stagnated can be brought to life anew. This is obvious from ample examples of turnarounds in city evolution (e.g., Bogota, Durban, Melbourne, Nairobi and New York). Experience shows that various schemes can serve to successfully inject impetus for change, but the key for positive change to happen is *people* – whether they assume a constructive attitude and decide to become active, participate, take initiative, in support of an improved local environment. Helping to initiate such dynamics requires a cross-sectoral and cross-disciplinary approach, where citizens, practitioners, experts and planners work together, taking into account the insight of sociology, psychology, economics, engineering, architecture, and urban planning. This takes us back to the notion of a CoP as a functional learning framework in the present context.

2.2 On the Shapers of a CoP

While a CoP may be driven by varying objectives including, naturally, personal ambitions, feelings and ideas of each and every participant, the key unifying notion is the prospect of shared value for all, materialising through knowledge exchange and learning. In a basic sense, a functional CoP presumes that those who take part share an interest, concern or passion for something, and engage in an interactive process with collective elements. It can be created deliberately with the aim of gaining some particular strand of knowledge or arise spontaneously based on the common interest of members in a specific domain. Three characteristics can be said to apply, meaning that success requires propelling a common interest covering at least three aspects:

I.   The domain: An identity defined by a shared domain of relevance, and membership implies a commitment to the domain;

II. The community: Members engage in activities, share information and build relationships in support of mutual learning;

III. The practice: Members of a CoP are practitioners who develop a shared practice or a shared repertoire of resources, including stories, experiences, tools and methods.

As for URBiNAT, i) may be said to refer to the project and its objectives. Although, in this case, partners naturally vary in terms of core interests; there must be sufficient overlap. ii) refers to the partner network and the organisation of work, as formalised by way of work packages and tasks while informal links and collaborative work arise and evolve spontaneously as well. iii) is about the activities themselves, their undertaking and results.

Having listed these aspects, it should be underlined, what is referred to as "common interest" here must go beyond what is associated with URBiNAT as a Horizon 2020 project, or as an academic or professional exercise. The formalities clearly matter and not all will be devised with a view to enabling and underpinning the rise of the CoP, as a process of active sharing and learning. To the extent that individual partners or others involved are mainly driven by the formalities, in most cases their inputs will be minimal. A successful CoP presumes sufficiently extensive engagement beyond that. With URBiNAT consisting of and linking such a diverse community of actors, sufficient focus and demonstrated success in regard to iii) is of high importance for the CoP to keep developing favourably.

The coordinating function plays a key role when it comes to keeping divergent interests aligned. Success will hinge on making sound decisions when usefully engaging with resistance, smoothing problems over, or putting conflicts in the open for broad consultation where the consortium as a whole can demonstrate and solidify the value of collaboration. The analysis and understanding of specific CoPs

consequently require consideration to organisation, including leadership and organisation (Fontaine, 2001).

Procedural obligations, such as those mandated by the European Commission, or deriving from partners, are in many cases a necessity for the project to run and must hence be communicated and respected. Yet, for the CoP to work out, administrative considerations should be explained and upheld as a vehicle, approached neither as a hindrance nor as the prime objective in itself. What ultimately matters is continued advancement in addressing the issues at hand and how that is reflected in the fulfilment of concrete (real-world) objectives, failing which the CoP is bound to lose momentum.

Today, professionals increasingly learn informally, based on social interactions (Macia and García, 2016), the nature of which matters greatly for whether the interactivity is meaningful (Conrad and Poole, 1998; and Dainton and Zelley, 2005). With social interactions inherently diverse in nature, it is obvious that any CoP is far from uniform. Turner (1988) examined what determines the role played by different influences. For instance, whether the behaviours of specific actors exert an influence on others depends on their position in the network as well as the prevailing logic with which it operates.

Such considerations are partly reflected in the concept of "network centrality, which examines how the position of an actor in a network matters for its influence (Badar et al., 2015). A related concept is that of "closeness centrality", which indicates the shortest paths from one community member to another, and thereby for the degree of independence (lack of control) as well as efficiency (the shortest number of steps required for an actor to reach all others). The internal structure of the CoP, and where one is placed in it, thus matters. A central community member can use fewer intermediary positions than peripheral ones, suggesting stronger influence (Sonnenbichler, 2010). While those in the periphery are more on the receiving end for ideas and initiatives bred within the CoP (Sun et al., 2014), however, the fact that they are less embedded means they may absorb more divergent ideas entering through external relationships (Dahlander and Frederiksen, 2012). By bridging gaps between sub-communities, or between different communities, they may importantly transmit new ideas and solutions (Jeppesen et al., 2010). Categories in terms of network positions may thus distinguish between: i) centrally placed; ii) bridging, and; leading. Naturally, these roles are not exclusive but may overlap, with actors playing more or less of a role in different respects.

As for the wider framework for network communication, one may distinguish between the following approaches to exerting an influence: i) diffusion approach (spontaneous adoption); ii) directive approach (means of enforcement applied top-down); iii) interactive approach (dialogue, eventually all decide for themselves), and; iv) development approach (focus on increasing competences so that members and the network become more capable of navigating and agreeing constructively in the process).

In the modern era, a CoP typically makes intensive use of digital tools with much of the exchange occurring on-line, applying within as well as between organisations. The implications have been far-reaching at individual, organisational, national and international levels (Kitchen and Dodge, 2011; Fenwick and Edwards, 2016). In private as well as personal life, serious challenges arise to transfer and manage digital data, on terms that are secure, reliable and effective (Halford, 2015; Jaradat et al., 2013). As in the case of professional and administrative practices, the viability of a CoP is dependent on such technologies assuming a supportive role, and that it is not reduced to dependence on them. A common need, vision, and shared purpose, among its members, remains key. As a CoP evolves, new ideas should be at the core of the process, along with behavioural change, rather than having the use of either existing or new technologies determine the frames.

Having said that, it is important to make use of new opportunities, technological and other. Online communication is evolving rapidly and events such as the CORONA-19 epidemic have made them even more indispensable. This inevitably impacts on a CoP, including who gets connected and also the relations between participants. Yet, the interlinkages between on-line and off-line interactions are complex and retaining sound exchanges may require various rectifying measures (McCully et al., 2011). Reliance on technology must not supersede considerations to the role of people, however. While complex technologies may still be required for particular purposes, the selection of tools and communication channels should be based on awareness of pros and cons, receptiveness to the risks and effort not to impose particular tools on those that are uncomfortable with them. While online communication brings great advantages in terms of speed and reach, personal relationships and trust are harder to build that way. Maintaining those already established is markedly more manageable. Physical meetings along the way continue to matter and should, where feasible, be used to counter the downsides of online communication.

Online communication is typically more effective and sustainable the greater the number of individuals who already know each other from past physical meetings and, preferably, have concrete experience of working together. Related to this, the online environment opens for cyber-crime and misuse of information, a threat that has become more malicious in the recent period when more people have converted to digital communication from home, with less support of protective services and software. Having said that, the possibility of anonymous communication on-line in some cases brings benefits as well, e.g., groups that are otherwise discriminated against may take part in professional exchanges on the same terms as those experienced by others. All in all, the usefulness, reliability and outcome of digital communication will inevitably be influenced by the skills and intentions of the users. Its applicability is also aided by suitable rules, services and organisation. We'll return to this subject below.

In preparing activities aimed at strengthening awareness, it is essential to initiate a dialogue with citizens on terms they can relate to, i.e., to demonstrate interest in and concern for what they view as being of key importance for shaping their well-being. In the ongoing process, it is important to keep relating to those factors. Results, from citizens' perspective, count when visible – even if small – tangible improvements occur in every-day life. Such improvement of likely relevance may pertain to mobility, security, accessibility, affordability, and so forth. Not only what applies to the individual, but also to other members of the local community with whom the individual is in contact, will matter.

A key set of actors in the interface between a CoP and its outer fringes, or even the world external to it, are those that may be labelled "ambassadors" (Young, 2013). Those are individuals that for some reason have the stature and credibility, as one moves away from the centre, to represent and convince others of its virtues. A related term is that of "champions", who stand up for the CoP, or its main tenets, as when promoting the diffusion of its values and ideas. A third is that of "facilitators", a term which reflects a more low-key supportive role in making the CoP or its outputs understandable and acceptable. The ambassadors and the facilitators may assume their role based on formal responsibilities or informal arrangements, including those that are entirely spontaneous (a facilitator may also have a broader meaning, not just that of a person, see Chapter 3). By champions we refer to persons who have no formal standing but act with great persuasion and success in spreading the practice. For any of these terms/categories, effectiveness will at any rate be dependent on personal traits, engagement, even dedication, and talent in communication to specific relevant groups of actors and competencies. For instance, they may be part of "another" community of some sort but take it on to introduce the CoP in that context. In various ways, the actor groups that may be referred to under any of these labels matter greatly for the CoP, whether by stimulating its growth, new participants, or impetus.

2.3 On CoP in URBiNAT

From early on, the URBiNAT team has prepared for the establishment of a pioneering CoP, that is able to support collaboration among divergent peers through the exchange of experiences and a jointly structured, efficient and inclusive learning process, suited to fit the objectives of the project. Administratively, work on the CoP features as Task 2.3 as set out in the Grant Agreement (Box 1) and with fundamental building blocks elaborated in the URBiNAT Handbook (D1.2). By way of workflow and standard quality procedures, the following apply to the various activities relating to the CoP:

- The promotion of participatory and cooperative processes, where inter- and intradisciplinary knowledge and expertise come together, taking advantage of the networking and coworking potentialities that engage all different actors, civil society organizations and inhabitants;
- Diversity and differences noted as positive features and factors to work on intercultural dialogues that will enrich the project, its products and outcomes instead of being viewed as problems to solve;
- A true commitment to the progress and deadlines of activities will be pursued, without setting aside the enthusiasm and energy for the involvement in partnerships and focus on citizens' empowerment;
- Co-creation and flexibility to adapt to challenges in order to achieve common goals and strengthen the partnership, which will also guide possible practical updates in procedures methods and tools.

A fundamental aspect of the URBiNAT organisation has to do with its internal division of labour between frontrunner cities, followers and observers. The frontrunners have their specific rich experience of working with NBS since the past and the project allows them to further these agendas with pioneering work with participatory processes, enabling co-creation and also synthesis into health corridors. The follower cities also have their experience and the project set-up provides them with the opportunity to advance their planning for future work, enriched by the URBiNAT experience. The observers take part in learning and, while not bestowed with a budget for implementation, they are in the position to develop new initiatives benefiting from the joint learning processes. A basic prerequisite of the URBiNAT CoP is to support effective exchanges and learning between all the partners within this context, taking into account the varying roles, features and complementary role of the frontrunner, follower and observer cities.

At the same time, the ambitions of the CoP go wider, namely, to enable constructive collaboration and joint learning among the full circle of partners, observers and other key actors involved in or intensively connected with the project. Importantly, it has adopted an inclusive approach, for the purpose of identifying and reaching out to the various actors that display a serious interest in and capacity to further the agenda. In this context, the CoP defines four interrelated circles of interactions, as presented in Chapter 4. The breadth of the challenge is signified by URBiNAT's core purpose, to work out the avenues not just for citizen engagement in general sense, but genuinely purposeful participation and co-creation on the ground. This in turn is rooted in the realisation that such engagement is essential for devising and implementing solutions to outstanding critical social and environmental issues which are both relevant and accepted by those that are the most concerned.

The URBiNAT CoP clearly goes way beyond a single institution or any particular group specificity. It differs from the learning processes of industrial districts, or clusters, as it is far more heterogeneous. In some sense, it may be viewed as closer to an extended innovation system, or a "Quadruple Helix", where citizens and diverse stakeholders attain strong attention (Carayannis and Campbell, 2009). It has to manage exchanges between organisations and actors with highly diverse competencies and objectives, and so ensure the relevance of sharing and learning in multiple ways. Its progress and achievements will

hinge on its ability to induce positive synergy in their joint development of new practice and understanding of the way participatory processes can help underpin urban regeneration through the implementation of NBS and Healthy corridors.

In terms of activities pursued with a direct aim to develop the URBiNAT CoP, we may stress the following broad categories:
- Identification and testing of strategic guidelines in support of participatory processes
- Identification of relevant tools and methods applied to promote sharing of experience and collaboration in learning;
- Identification of key actors – target groups as well as those who stand to play a role in building the CoP, along with an examination of the environment they operate in and the nature of their interactions;
- Embedding CoP in the various co-creation activities of URBiNAT such as co-diagnostic, co-design, co-implementation and co-monitoring.

While work on the CoP was formally initiated in M18, the consortium paid strong attention to the concept from the start and has undertaken a series of measures to pave the way for its fruition. Following additional intensive collaborative efforts over the past 6 months, as of the present time, M24, the CoP is in place and has started to operate as a process integrating a range of elements, all of which contribute in their various ways to its functionality and results. Having said that, it should be underlined, the CoP is not cast in stone or yet complete. Some important elements, such as the mapping of participatory culture in URBiNAT cities, links between local diagnostic and participation, the preparations of Living labs and their links to the CoP which have become subject to inevitable adjustment under the influence of the ongoing pandemic and growing reliance on digital enablers, the co-creation at the stage of implementing NBS, and the up-start and application of the observatory by way of data collection as a basis for indicator development and fine-tuning, are still in progress. These various strands of work along with the associated maturing of the CoP are set to enter a new phase as the implementation of NBS gets under way in the lead cities, and as the follower cities proceed with local diagnostic and their planning of NBS in the next stage of URBiNAT, as further outlined in Chapter 6. The CoP has nevertheless, by now, attained clear-cut structures and mechanisms in support of its key functions and as a basis for its further development. As long as the URBiNAT project remains in operation, the CoP will continue to evolve.

Coaching and Sharing to Create the CoP (Task 2.3. M18-M54)

The task will consist of Integrating URBiNAT cities and observers (EU and non-EU) in order to establish a Community of Practices, CoP. This CoP will represent the "window" for cooperation between cities implementing NBS and cities in need of experience and expertise to replicate in their own context. The overall objective is to feed international networks for cross-pollination. The CoP will be based on a coaching, mentoring and sharing approach. The main activities in this task will be: (1) Definition of the coaching/mentoring methodology, with specific attention to the challenges given by socio-cultural and territorial differences and peculiarities; (2) Experiencing the methodology through specific one-to-one activities among frontrunners and followers; (3) Experiencing a common, open platform of practices sharing, taking advantage of the Living labs experiences; (4) Experiencing the methodology with Non-EU partners.

Participants: IKED, Frontrunner cities: Porto (CMP), Nantes (NMCU) [and TLP Ville de Nantes], Sofia (Sofia Municipality), Domus; ICETA-CIBIO; CNRS, UASG, IAAC, FGF, Follower Cities: Nova Gorica, Høje-Taastrup, Siena, Bruxelles, UNG, DTI, IULM, UA, ITEMS, IKED, Non-European partners: ICC, NSCJL, Observers.

Box 1: Coaching and Sharing to create the CoP (European Commission, 2018)

The key steps in regard to the CoP naturally relate to the main ongoing substantive activities in URBiNAT, where the frontrunner cities engage in preparing for implementation of specific activities, the follower cities and observers advance their engagement although presently with more emphasis on observation and taking part in evaluating of the initiatives started by others, rather than jumping into own action, as far as the project is concerned.

Worth stressing is the **local diagnostics**, i.e. the work thus far undertaken among the frontrunner cities to collect basic data and characterise the conditions considered in the disadvantaged areas at the core of city activities. Based on their work in the early stages, the collected experience is currently transformed into guidance for how to undertake more effective and higher quality such data collection in the follower cities. Meanwhile, ongoing networking activities aim to shape communication channels involving inter-linked targeted groups.

Meanwhile, the **participatory culture** in areas of relevance has been initially characterized and **Communities of Interest (CoI),** that can help create links within as well between specific subsets of actors sharing unifying characteristics. The development of **Living labs** is under way, as dynamic hotspots for joint experimentation by citizens and stakeholders in each city, although their features and link to the CoP are adjusted with a view to the changing environment. **Task forces** have been set up by each city to guide the process. Cities are in the process of identifying actors such as "facilitators", "champions", "ambassadors" and/or "mentors" for training and engagement in the ensuing work. **Digital enablers** are under consideration with a view to purposes, methodology, content and tools, for devising and tailoring to match specific situations.

A catalogue of **Nature-Based Solutions (NBS)** has been developed, communicated and evaluated for the purpose of initiating their co-creation, and eventual build-up of **Healthy corridors**. An **observatory** is under development for creating an open system for the collection, processing and accessibility of data on terms that facilitate comparability and help feed various strands of research and analysis, to clarify the critical issues confronting the city areas and evaluate the results and impetus of the project activities, ultimately on welfare. This includes the creation or leverage of **public space** in ways that engage and benefit citizens. Finally, there is the need to improve understanding of and analyse social as well as financial benefits and how to spur value-enhancing processes, through **solidarity economy** initiatives relating to disadvantaged areas and groups, as well as **innovation** and the establishment of sustainable commercial activities.

With what intensity and orientation the CoP can be devised and operated in regard to these elements, will inevitably depend on several factors. In regard to the frontrunner cities, URBiNAT incorporates substantive resources and a mandate for ambitious implementation. The follower cities meet with less expectation to develop new initiatives, although their ability to take active part and develop plans for future action stands at the heart of the project mandate. Similar to the observers, they meet with their own issues and needs of action, and their ability to spearhead innovative solutions is of key importance. Equally important is the inspiration and learning among wider audiences and communities on the border of, or outside, of the CoP itself. In this way the CoP has different parts to it, with varying purposes and meeting with varying issues. What success is ultimately achieved will be determined not just by resource availability and formal organisation, but be bred by motivation, responsiveness and the ability to demonstrate relevance and real results in different respects and for a range of players along the way.

3. Living the CoP

The CoP does not just consist of instruments and elements for sharing and learning. In a sense, the CoP *is* the exchange itself, a living thing – the sharing, the learning. It has to do with a flow of real-world activities that unfolds in between organisations, and between people, on the ground, as well as on-line.

In the following, we initially take note of mindset as an aspect of the complexity we encounter in coming to grips with quality in CoPs. We proceed by considering the influence of social relations, and of trust. We then consider approaches to diversity, aspects of change and taking account of culture. The chapter ends with reflections on the long-term benefits of CoPs.

3.1 Mindset and Determinants of Knowledge Exchange

How do you actually share knowledge with others, and learn together? In this context, the quality of the process requires high attention, as does human behaviour, psychology and culture. An important aspect, albeit often neglected, is what we may sum up as the key role played by "mindset". See Table 1 for a stylised illustration, in this case the way a "reactive", "receptive" or "constructive" mindset have a bearing on attitudes and other aspects of high importance for innovation.

In a general sense, the CoP may be said to strive for reinforcement of a constructive, rather than reactive or receptive, mindset, among its members. Achieving a sense of win-win among citizens, stakeholders, institutions, associations, private companies, and so on, will depend much on their openness to new initiatives and readiness to embrace diversity. Perspectives among individuals inevitably vary, however, based on gender, age, professions, level of education, income level, citizenship/ethnic factors, and so on. Participatory activities and co-creation nevertheless need to work out for a broad range of actors and in support of common objectives. To sustain such processes requires addressing and reconciling opposing interests, whether imaginary or representing actual conflicts and trade-offs.

	Reactive	Receptive	Constructive
Attitude	We follow the rules	We do what we have to in smartest way	We look for competitive advantages
Position	Defensive	Acceptance	Conscious decision
Perceived impact	Threat	Competition neutral	Opportunities
Typical solution	Filter on pipe	Process change	Product development
Collaboration partners	Technical specialists	Responsible within the industry	Customers, suppliers, competitors

Table 1: Stylized illustration of mindset categories (IKED)

In this, it may not be necessary, or recommendable, to push for inclusion of all actors, in all instances. In any society, demarcation lines have been drawn, marking out the "territory", or turf, of certain interests. Who is in and who is out is then likely to be very important. To what degree the presence and perspective of "others" is accepted has implications for the perceived value of new knowledge and information, as well as for organisational learning and innovation (Cohen and Levinthal, 1990). In order to navigate such landscapes, again, considerations to relevance and quality are key. Which cases, instances and avenues underpin "can-do", timeliness, sharing and learning "with whom", when, and are most relevant? On the other hand, ultimate care must be paid not to fall into the trap of "picking the winners" at the expense of inclusion. The trick is to take initiative and proceed where progress is possible, without others unduly locked out.

While breeding a favourable mindset is far from trivial, changes are possible, in part because of blurred boundary lines between perception and reality, opening for the accumulation of experience and learning to make a difference. A complicating factor though, is that mindset partly reflects more stable underlying cognitive systems, mental maps and thought patterns, that are shared between individuals with a common background, what we typically associate with culture and associated value systems. Yet, even in this regard, change is possible, as is returned to below. The subject of how to induce favourable mindset and attitudes is thus not a hopeless one, and it needs to be high on the agenda of establishing a functioning and inclusive CoP. The same applies when it comes to framing conditions conducive to innovation, i.e., solutions that are genuinely new to a particular set-up, and as such much dependent on attitudes promoting openness and acceptance.

While this is of high importance within the EU, it is even more crucial in non-EU settings. This is partly because a greater variation in cultural, institutional, political and economic conditions can be anticipated, but also because there is generally less experience and familiarity among non-EU institutions of exchanging experience and working towards achieving commonly identified objectives through dialogue within this kind of project. Having said that, this opens for greater opportunity of learning for all parties in the project, and for achieving significant results.

Encoding, storing, and retrieving information matters in any knowledge-based network (Oshri et al., 2008). Yet, knowledge exchange is just not about transferring codified information back and forth but the sharing of tacit knowledge, what is rooted in experience and difficult to put in words, is crucial (Polanyi, 1966). For an individual to acquire know-how, *ability* is a must (Bigné et al., 2015), referring to competence in doing, skills and proficiency already acquired. It is generally the case that acquirers of knowledge are helped by having a diversity of prior knowledge (Cohen and Levinthal, 1990). Even when skills and proficiencies are conducive to sharing knowledge, there is the question of the sender's ability to be relevant (Abdul-Jalala, 2013). Additionally, both parties may struggle to gauge what makes sense to transfer and to acquire (Reinholt et al., 2011).

While various abilities, along with motivation and opportunities, play their part in influencing knowledge transfers, what matters in the specific case may vary systematically. According to Siemsen et al., (2008), observed results will depend on what aspect constitutes the limiting factor in the specific case. There is also the question of abilities to learn and evolve, among individuals as well as in a network (Plaskoff, 2003; Rajagopal et al., 2012). In this regard, a CoP and its members should not be static, but capacity-building is intrinsic to development. This in turn draws on confidence to consider what is new, to experiment. In many situations, learning hinges on the ability to unlearn what had been imprinted before. This relates to the notion of self-efficacy, i.e., belief in one's own capabilities and to exercise a sense of control (Wood and Bandura, 2016). There is also the need of willingness to collaborate (Bettiga et al., 2018).

As for different kinds of knowledge, a CoP benefits from the capacity of its members to interact with and learn from both well-known and less well-known capabilities. While competence development may take various shapes, often the focus is mistakenly placed on technical skills, such as managing computer science and digital tools. Halford (2015) observes the critical importance of enhanced collaboration between coders and professionals to realise the opportunities as well as limitations of technological innovation. More generally, the knowledge emanating from various individuals need to connect with the knowledge system of organisations, as expounded in the literature on organisational knowledge creation (Nonaka et al., 2006). While organisational dynamics bear upon various factors, including the interface between codified and tacit knowledge and formats of work organisation and information systems, socialisation, relational factors and social accomplishment reconstituted in everyday practice exert a fundamental influence (Orlikowski, 2002; Marchand, 2010). This leads back to the case for promoting "soft skills", applying to both educational systems and professional organisations (Andersson et al., 2009):

- Awareness: Recognising your own strengths and weaknesses;
- Imagination: Identifying new patterns in complexity and opportunities in uncertainty;
- Curiosity: Challenging and thinking out of the box;
- Regulation: Keeping emotions under control;
- Motivation: Developing optimism and personal drive;
- Empathy: Reading emotions and motivation in other people;
- Ability to build and manage relationships.

As in the case of mindset, it is hard to dispute the critical role played by such soft skills, although they diffuse. It may be hard to define, for a particular individual or group, whether such skills are present or if they are set to mature or not. In some instances, required abilities will be intrinsically held and mastered. In other cases, they can be acquired, or earned. Yet, their adoption cannot be ensured – whether they flourish or crumble has critically to do with social relations, people, and the particular context at hand.

3.2 Diversity and Change Processes

Relations within the CoP and those with the outer world are interrelated, with both influenced by the degree to which there is appreciation for diversity. Research on the dynamics of human networks demonstrates a tendency for initial heterogeneity and openness to "other" perspectives to gradually decline over time. Those who find themselves no longer ranked among the believers, may sense a loss of trust and reduced scope for questioning (Alvesson and Spicer, 2012). At the point when contradicting an existing standard becomes seen as a waste of time, although differences in view are still around, tensions will grow along with search for forming a new network, or platform.[4]

On a related note, an element of struggle often appears between those who are builders of commonality, and those who, at the end of the day, lean towards self-interest. While achieving a sustainable CoP is partly about the former overcoming the latter, it cannot be done through forceful suppression. In a healthy development-oriented CoP, divergent views are still heard. The key is for dialogue and exchange to remain constructive, to generate value.

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[4] Cf. with the theory of "scientific revolutions" developed by Kuhn (1962), how a prevailing "paradigm" puts up resistance to other ways of explaining the world until anomalies grow so strong that a revolt takes shape, a new school arises and takes over.

People's sense of communality most fundamentally has to do with the social context (Gilchrist, 2000). "Thinking together' is a metaphor for fruitful partnerships in learning (Pyrko et al., 2017), which have little to do with technology but with shared interest, having something in common. This is why a CoP should not be imposed but hook on to a commonality that can grow organically as people discover the value of working together. The result is a Community of Interest (CoI), which may well in turn breed a CoP as a vehicle enabling the participants to advance their (shared) interests together.

Civil society activism and adhering to (social) causes may tie in with concepts such as social and solidarity economy, and also social entrepreneurship, highlighting the social mission of groups or organisations, with a view to benefitting a larger community (Giovannini, 2018). Similarly, grass root entrepreneurial activities with a social aim take varying forms, yet often with a focus on unsatisfied needs that for-profit and public enterprises are unwilling or unable to address (ibid). The concern typically covers both internal processes of participation and democracy, and those of external activism, with urban, public space often taking centre stage in framing purposes of solidarity, justice, democracy and cooperativism (Hulgård, 2018).

A related aspect has to do with *trust* in relations. Beyond a sense of common goals, there is a need of loyalty, commitment and effectiveness translating into a sense of predictability (Nias et al., 1989). Others refer to authenticity, open sharing, like-mindedness and mutual respect (Bista et al., 2012). Examining inter-personal trust, Chen and Hung (2010) underlines the importance of "good intentions", benevolence, competence, and reliability" of those with whom knowledge is shared.

In the absence of trust, members of the CoP will be uncomfortable sharing opinions, while at the same time adopting an attitude of questioning others. Trust is naturally at risk in the event of real - as well as imagined – conflict. Having said that, individuals who have developed an understanding and appreciation of each other, may well withstand the strains of such situations, compromise and negotiate a mutually acceptable agreement, or resolve the misunderstanding. Whether CoPs function and endure in practice thus depends less on whether conflicting interests arise than if those involved are able to pursue constructive organisational responses and communication channels.

Relevant organisational aspects include: i) leadership; ii) teambuilding, and; iii) language:

i) Leadership is of high importance for the way organisations learn and manage knowledge (Fontaine, 2001; Argote et al., 2003). Multiple aspects come into play, including efficiency in day-to-day operations, the ability to pursue strategic decisions, responsibility and accountability, including facing up to problems and changing direction when required. Both efficiency and equity considerations, however, underline the importance of mechanisms to ensure shared decision-making. Having a "web of mutual influencers" is key for arranging with viable working groups and other means for specialised work, without which a CoP will be hampered (Johnson et al., 2015). A steering committee or general assembly matters for broad-based buy-in and sense of responsibility, while specialist advisory committees may handle, e.g., ethical and niche-oriented substantive considerations. In VCoPs, leadership is no less important but meets with particular challenges to exercise authority as well as maintaining an active network (Bourhis et al., 2005).

ii) Teamwork is known to benefit from "group" identity, a mutual cognitive state, shared goals, and also moral and emotional associations that serve to enhance trust (Kimmerle et al., 2013). Practical aspects with a bearing on the effectiveness of teamwork include both the breadth and the quality of member contributions. Success hinges on moving away from any excessive dominance of a few, but welcoming and building on genuine contributions from a broader set of actors (Sun, 2014).

iii) Shared language does not refer to mother tongue (although that may be an issue too, when participants lack sufficient skill in a shared language), but common vocabulary in terms of explicit knowledge (meaning of words and terms) as well as tacit (uncodified) knowledge. For this reason, particular challenges arise in CoPs that cross boundaries, i.e. that are multicultural, cross-disciplinary and cross-sectoral. Special efforts are called upon in this case to overcome the challenges that arise from discrepancies in language.

When dialogue has been initiated and target areas for improvement identified, ways should be worked out to spread awareness and support the adoption of new ideas. Here it is worth recalling core results of the extensive literature outlining how new ideas, and specifically innovations, diffuse, which includes the presence of natural barriers to their uptake. The stylized process, going back to the principles laid out by Rogers (1962), is marked by varying features of adoption along different stages of the diffusion process. The main features are illustrated in Figure 1, with only a few early adopters embracing new ideas at the start. Those may be close to the origin, prone to risk-taking, or open-minded for other reasons. In order for the idea to keep diffusing, those who require more evidence and/or have something to lose, perhaps as they are invested in competing ideas and will therefore put up outright resistance, will have to be convinced as well.

Extensive research undertaken over the years has verified the importance, for diffusion processes, of engagement by internal "sponsors", in the form of influential members of a CoP, whether formal leaders or informally respected opinion leaders or champions. At the same time, competition may arise between different kinds of influence, as between formal and informal, or between competencies, e.g., between health and safety specialists and those responsible for financial results, or between economists and sociologists. Thus, transdisciplinary skills and, ultimately, soft skills and a constructive mindset are key to overcoming suspicion and realizing synergies. If mediation is unsuccessful, resulting conflicts will hinder information exchanges and distort the outcome (Bradley et al., 2004).

When a concept or solution is transferred to a new context, an interest may arise in modification, or customization to fit the specific circumstances. While this may result in higher uptake, it may also dilute the meaning. Generally, adding supplemental components is less likely to dilute effectiveness than modification, which may involve alteration or the total loss of core components (Blakely et al., 1987). It has been observed that success in process adaptation is likely to depend on the presence of explicit codified information rather than tacit knowledge (Edmonson et al., 2003). Resources for training, time to learn and apply a new solution, may help overcome the issues.
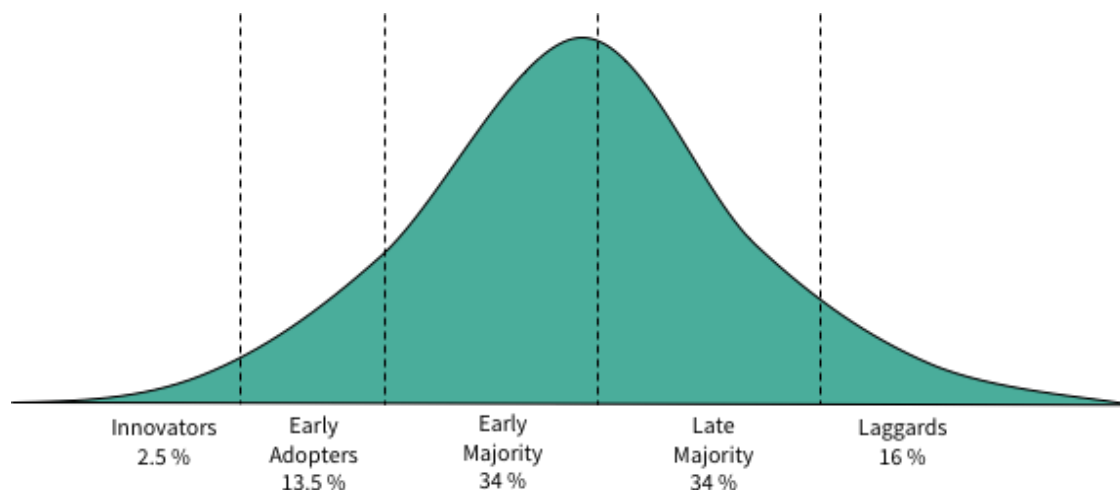
Figure 1: Main adoption categories based on innovativeness (Rogers, 1962)

List of core facilitator competencies
● Listen actively
● Handle disruptive individuals whose behaviour is detrimental to the group
● Observe and attend to body language and non-verbal communication among group members
● Use questions skilfully
● Help group clarify purpose of meeting and establish ground rules
● Create a climate that supports interaction and discussion
● Encourage group involvement in, and ownership of, issues and tasks

Table 2: List of core facilitator competencies (Kolb et al., 2008)

Successful implementation processes typically require that several complementary elements are in sync, such as packaging of messages, enacting an organisation suited for practical results, and competence development. Adding to those, where multiple actors and interests are involved, there is the need of identifying and mobilising facilitators. The term may refer to a person but also a place, an institution, a practice or an "app" – somebody or something that facilitates taking the agenda forward. A practical example could be a small playground strategically located next to a deprived area, serving as a catalyst for parents to meet, or a canoeing club which brings people together to use a waterway.

A facilitator, when referring to a person, typically has a good understanding of group processes and problem solving (cf. Table 2, for typical facilitator competencies). In order to create the optimal climate for facilitation and positive group dynamics, most facilitators will benefit from developing certain skill sets. Schwarz (2002) identified five facilitation roles to characterise the competencies that are key to successful group facilitation, namely facilitator, facilitative consultant, facilitative coach, facilitative trainer, and facilitative leader, to promote soft skills. [5]

Facilitators may lend support to the CoP in multiple ways, e.g., as organisers, guides, documenters and/or historians. Such roles may also be performed by so-called ambassadors and champions (cf. Chapter 2), backed by their "standing" and the trust others put in them. The term "champion" indicates, however, more of a "bottom-up" initiative, i.e. spontaneous action, possibly citizen-driven. Yet, for either category, training and practical arrangements matter. In practice, impetus for change is likely to stem from several influences, with the precise mechanisms for citizen engagement reflecting institutional fabric as well as culture (Jabareen, 2013).

The advance of digital "enablers" (going beyond the concept of digital "tools") is a potential game-changer. Many have viewed ICT as a big boon for civil society activation and expected it to consolidate and deepen democracy (Romero, 2013). By contrast, however, the rise of populist leaders interwoven with manipulation of social media and big data has come to put civil rights under pressure in an increasing number of countries (European Parliament, 2019), with the ultimate outcome yet to be seen. In judging where these trends lead, it should be stressed that digitalisation is not just about technology, but about the purpose of usage and people's response.

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[5] A concept referred to in this context, the "Seven Norms of Collaboration", refers to pause, paraphrase, probe, presume positive intentions, put ideas on and off the table, pay attention to self and others, and pursue a spirit of inquiry (Garmston and Wellman, 1999).

Figure 2 illustrates how digital enablers may serve as instruments to instil a model based on top-down information to citizens or, alternatively, a governance model framed for active participation. To the left, digital tools are used merely for the provision of information, in effect handled by governments and then transferred to citizens. It has been observed by years that the digital revolution, not least as framed through the "smart city concept and with big data, brings risks of centralised data-led governance (Marcus and Davis, 2014, Kitchin, 2014).

Other options are at hand, however. Moving right in the figure, digital tools are devised to help spur citizens to take initiatives, communicate the issues confronting them and propose solutions. In this way, their role is altered, as they become part of, or even the critical source of, solutions. An example is offered by "FallingFruit.org", through which fruits and other food are collected from various local sources, drawing on organically developed relations with the help of location-based digital enablers (Møller and Olafsson, 2018). In a similar vein, public authorities apply new means to consult citizens in urban planning, from early in the process through the implementation process.

Further, digital enablers are well suited to targeting, i.e., communicating a particular message so that it fits a particular audience. Equally, they open for enhanced interactivity, in principle allowing "anyone" in a network to be heard. Traditional methods have their advantages, but more (disadvantaged) groups may neither be reached nor heard. What difference digital enablers and ICT make, however, depends on a range of factors, including demographics, culture, social relations, skills, etc. Despite the issues and challenges prevalent in the city-context, it typically features less of a gap between decision-makers and citizens than, say, the national level, opening for digital enablers to make their potentially strongest advance in support of constructive engagement (Andersson et al., 2020).

Enhanced access to affordable smart cell phones and broadband networks enables unprecedented levels of connectivity throughout society, creating simpler and better ways to achieve co-creation. Examples of projects that have arisen in this context are hazard mapping, crowdsourcing and citizen complaint apps. Improved access to information further has a bearing on the creation or overcoming of conflicting interests. There is variation with regard to the diffusion of information, as well as the provision of "voice" to disadvantaged groups. The following are examples of digital enablers that offer means of remediation:
1. Urban mapping through specifically targeted working groups (children, families, elderly citizens, etc.);
2. Engaging stakeholder groups; associations, interest groups, sub-communities, etc.;
3. Citizen engagement through social media, a wide array of communication channels, so neighbours are in the position to easily convey their needs and proposals.
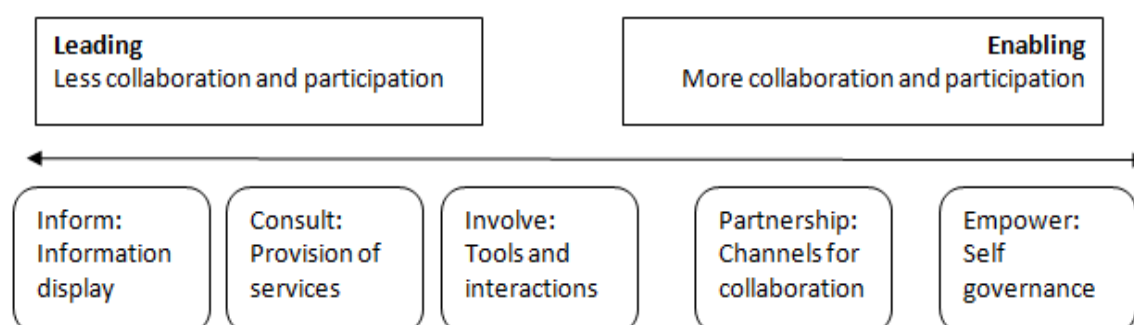
Figure 2: The continuum between top-down and participation (adapted from Møller and Olafsson, 2018)

3.3 Culture

Culture is increasingly recognized as a prominent cross-cutting theme in local/urban sustainable development, ensuring that the paradigm of sustainability is meaningful to local people, incorporating local histories and knowledge, resonating with local identities, and truly building from the aspirations of local communities. Often referred to as the fourth pillar or dimension of sustainability, culture is also perceived as a mediator, a lens through which we can weigh options and make decisions, and a dimension to balance economic, social, and ecological pressures with human needs and aspirations (Duxbury, 2018).

Cultural aspects are of great importance for ensuring a functional CoP, but they may also present impediments. Language, for instance, obviously a key to communication, is inevitably influenced by culture. In no case would all community members possess an identical "language" – neither is it desirable, since differences in language (and culture) reflect diversity in knowledge and experience which opens for complementary, synergy and hence value-creation. One should be aware of the presence of a trade-off, in the sense that homogeneity in language in a broad sense (spanning mother tongues as well as dialects, definitions of technical terms, etc.), facilitates common understanding and can allow for more precise knowledge exchange.[6]

In practice, individuals as well as organisations derive increased options from an ability to draw both on the insight of precise, in-depth modes of communication, as in the case of scientific disciplines or other forms of specialist expertise, and on broad-based exchanges inherent to much operational work. This implies an opportunity from working out ways of blending communication "vertically" (specialised) and "horizontally" (with those specialised in other fields/terminology). In support thereof, complementary tools can be of great use, e.g., visuals (icons, photos, videos, etc.)[7], arts, and also activation of common strands of activity (such as food or experiencing amenities) that can help establish joint understanding, as elaborated in the case of CoIs.

Separately, the predicaments of culture have a bearing on the extent to which organisations and networks practice inclusivity and promote dialogue, create rewards and motivations, visualise and concretise small steps, and create a sense of urgency. As indicated above, culture has to do with ways of looking at the world which tend to be carved out over long periods of time, entailing groups of people, what we associate with shared values, norms, beliefs, and customs. On this basis, culture has a bearing on the "mindset" of individuals, considered above, or behaviours, which reflect concrete observable "acts" and "practices".

While culture in this way may be described in apparently neutral or scientific terms, it also has a strong streak of subjectivity. How institutions, organisations, and groups of people get along and perform depends not just on actual circumstances, but on shared ideas, habits, and myths (Turner, 1980; Harare, 2014). As elaborated by Martin (2002), organisational culture similarly draws on such patterns of interpretation. What goals organisations or networks put up and how members enforce them may take numerous shapes. Many groups or organisations do not promote openness and they may not just lack readiness for change but resent it. The rationale of their organisation may rest on an interest in defending a particular position, a privilege, and to separate them as "insiders" from outsiders. Any

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[6] For this reason, a particular scientific discipline has to adopt very particular terms and definitions shared by those who devote their lives to master it in-depth.

[7] Images are becoming increasingly important as carriers of information and messages also in science, including cross-disciplinary work (Dewan, 2015).

gathering, collection and evaluation of experience and learning does not occur in a vacuum but takes shape through the lens of social relations and mindset (again, influenced by culture).

Although referring to what is generally shaped over the long term, culture is not static, and now different kinds of culture relate or get along is not a given. Moreover, some networks and structures are more flexible and prone to adjust and evolve than others. While the most applicable method may thus vary, there are ways of inducing a previously closed CoP to hear outsiders' point of view and proceed from there to test out collaborative sharing practices. Figure 3 displays eight steps, based on Kotter (1996), which may stimulate cultural change in an existing organisation, in the direction of achieving widely enhanced commitment among its members to common visions and objectives, as well as to integrate change mechanisms. As can be seen, such evolution implies proceeding through a sequence of structured stages, entailing the creation of awareness, building motivation, identifying joint interests, and setting directions.

Cities represent a kind of organisation, requiring strategic and administrative decisions and dealing with multiple stakeholder groups. In some respects, however, the governance of cities differs from that of conventional organisations. In a sense, cities belong to everyone and, at the same time, no one. Citizens are bound to be different, have different objectives, and are certain to respond in varying ways to a certain impetus. Consequently, enacting cultural change in the city context is likely to be more complex and challenging than set up by Kotter's 8 steps. A viable process in this regard, will have to rely less on top-down directives, but leave genuine room for initiative by citizens and stakeholders, and thus with less reliance on a fixed order of things.

Figure 3: 8-Step Change Model (Kotter, 1996)

As must also be addressed by URBiNAT's CoP, the role of culture within cities, as well as how it plays out for relations between them, may be that of a door-opener or that of a barrier, depending on context. An agenda of cultural change must be pursued less with reference to its general applicability and more with a view to its scope for flexibility of use and adaptation to specifics.

There can be little doubt that consideration to culture is of high importance in the development of urban areas. In the frame of urban co-creation processes specifically, its role has been stressed in regard to ethics, human experience and relations, the way people act within a creative environment, codes and symbols, behavioural patterns, language and customs (Mateus et al., 2018). Various scholars have

examined its role as well in city rejuvenation, including of deprived areas (Bassett, 1993; Ashton, 2017). Others have identified insufficient attention to culture as a common source of failure in achieving favourable results, including in "smart" cities (Helal, 2011). Demands for more holistic governance have been made with reference to the importance of cultural assets, public space, a living environment and "metabolism" as a synthesis and organic system (Restrepo and Morales-Pinzón, 2018; Allam and Newman, 2018).

How to navigate cultural diversity requires more consideration the more far-reaching and geographically dispersed a CoP becomes. Again, URBiNAT spans a wider spectrum of countries and cultural conditions than what applies within Europe only. While a challenge in some respects, it is also a source of strength and an opportunity. The issues addressed and the approach adopted resonate with major issues confronting most parts of the world and the active engagement of non-EU organisations in the CoP broadens the basis for learning. A number of lessons already stand out for how to capture the opportunities while managing the risks. There is a need for preparedness to modify specific methods and activities, as well as acts of facilitation, mentorship and also the use of on-line communication, so as to fit contexts that are, perhaps, more dependent on physical meetings and personal trust, or unfamiliar with bottom-up processes and cultivating horizontal relations. Special considerations are required as well in order to ensure that respect of local culture and tradition can be reconciled with respect for fundamental values and human rights. These various aspects are returned to in Chapter 4 (and, for non-EU, in Chapter 5).

3.4 Benefits of a CoP

There is no silver bullet for measuring the benefits of CoPs. Their success and impact must be judged in relation to the task at hand and the context in which they operate. Instituting a CoP to promote incremental learning in a single organisation or profession may meet with fewer obstacles but the scope for learning and value-creation will be limited to a particular realm, and connections with the outer world may be pretty one-sided. In this vein, URBiNAT's CoP is up against significant challenges but the upside is also so much greater, and it will have to be evaluated with this in mind.

The complexity of the URBiNAT project further implies that the CoP includes several distinct tasks and missions. These range from, for instance, preparing and pursuing concrete activities with specific local communities, to the diffusion and upscaling of solutions on terms that display a high degree of generality. In some respects, the URBiNAT agenda features commonalities with other projects, in Horizon 2020 and elsewhere, promoting smart city solutions and NBS, or combinations of the two. "Expansion" refers to pilot applications being deployed with new partners or users, or when the geographical coverage is enlarged. "Replication" rather refers to the reproduction of activities in a new environment (OECD, 2020a). At the same time, URBiNAT features specific aspects, e.g., the development of Healthy corridors, in which different NBS (territorial, technological, participatory and social), are combined and linked so as to overcome issues of fragmentation and realize urban regeneration in a particular context.

Inherent to this mission, moreover, is the notion of inclusion and the active engagement and participation of disadvantaged groups, by way of gender, youth, education, ethnicity, and so forth; the benefits are not closed in, or reserved for just a few. The CoP aims to distil new insight as well as lessons to bring home; how genuine engagement can be made possible across a wide spectrum of such actors and situations. Here, relevance as well as quality is key. If the sharing and learning lack depth and precision, and are not connected with real people, the CoP will not work, and it will not last. Thus indirectly, the sustainability of the CoP itself constitutes an important measure of its success.

There is also the task of overcoming entrenched positions, vested interests and one-sided technocracy, opening up for divserse, complementary competences to play their part. The structure and learning processes devised through the CoP are framed with a view to help realizing these prospects. The expectation and ambition is for URBiNAT's CoP to go beyond traditional process and governance approaches. Success of the CoP will require that the core mission of each circle/level is able to work out while, at the same time, connecting with the others, so as to underpin integrated exchange and learning.

In one sense, the above speaks for the CoP forming a number of strong and durable links, which are able to root themselves in fruitful long-term relations notably between the participating cities, frontrunners as well as followers and observers. In practice, that will not be possible, because the cities taking part of the project, like all cities, are subject to changes which may sometimes be abrupt, as in the case of elections that bring new political leadership to the helm. Additionally, external factors may enter the scene, such as the pandemic of the spring 2020, forcing a rethink of strategies in important respect. Having said that, a strong and vibrant CoP can act as a catalyst for further development, serve as a cradle for innovations, formulate new milestones for itself, and also create spin-offs which are able to address and focus on newly emerging topics. CoPs should, in fact, not be static but their ability to adapt and regenerate is critical. For this reason, the URBiNAT CoP should not be expected to keep living on as it looks today. We must importantly observe and follow how it evolves and what other structures, networks, processes and also unexpected outcomes it may give rise to. That will, after all, determine its long-term benefits.

4. CoP with URBiNAT Cities at the Core

As we have seen, multiple elements influence the operation of CoPs, including its objectives, diversity, structure, governance, and so forth. Its impact can be understood and measured only in relation to the fundamental issues and activities it relates to. Its purpose is building joint capacity and collaboration for the long term, but it must also not be rigid, and so it may transform itself and take different shapes in the long term.

In the case of URBiNAT, which deals with a complex and multifaceted set of issues, and includes highly diverse members, the CoP is far from uniform but takes on varying features in different areas. While viewing the URBiNAT CoP as a single mechanism for sharing and learning, its organisation has been devised with a view to four main levels, or "circles of interaction". The chapter introduces these aspects and elaborates on the associated activities undertaken to establish the CoP to date.

4.1 Objectives and Characteristics of URBiNAT's CoP

URBiNAT's geographically diverse and multifaceted consortium, consisting of 28 member organisations taking part in official capacity, is shown in Figure 4. Its CoP is a jointly developed framework aimed to support the realization of URBiNAT's core objectives. Initially the CoP was conceived of as mainly enabling a transversal learning process among all URBiNAT cities, partners and observers. Gradually it has evolved based on a natural proliferation of key participatory processes, leading us to categorise it around four main circles of interaction (see further below). The CoP is further underpinned by specific activities, including Task Forces and webinars.

In a nutshell, URBiNAT centres on participatory processes and inclusion around the development of disadvantaged city districts, in support of value-enhancing processes weaved around the planning, implementation and usage of NBS and Healthy corridors. The CoP is essentially about instigating constructive information exchange and learning around this subject. Varying issues and challenges arise depending on the context. Viable solutions are inclusive in nature and capable of enabling co-creation, spanning a range of stages, including co-diagnostic, co-design, co-implementation and co-monitoring. On this basis, the objective is to gain new and shared understanding to realize value in public space, through social interactions and collaboration, along with innovation and the development of sustainable business.

An overview of URBiNAT's CoP is provided by Table 3, which presents the main elements in terms of: i) rationale (why a CoP?); ii) key steps in building the CoP; iii) activities that contribute; iv) tools and methods, and; v) target groups.
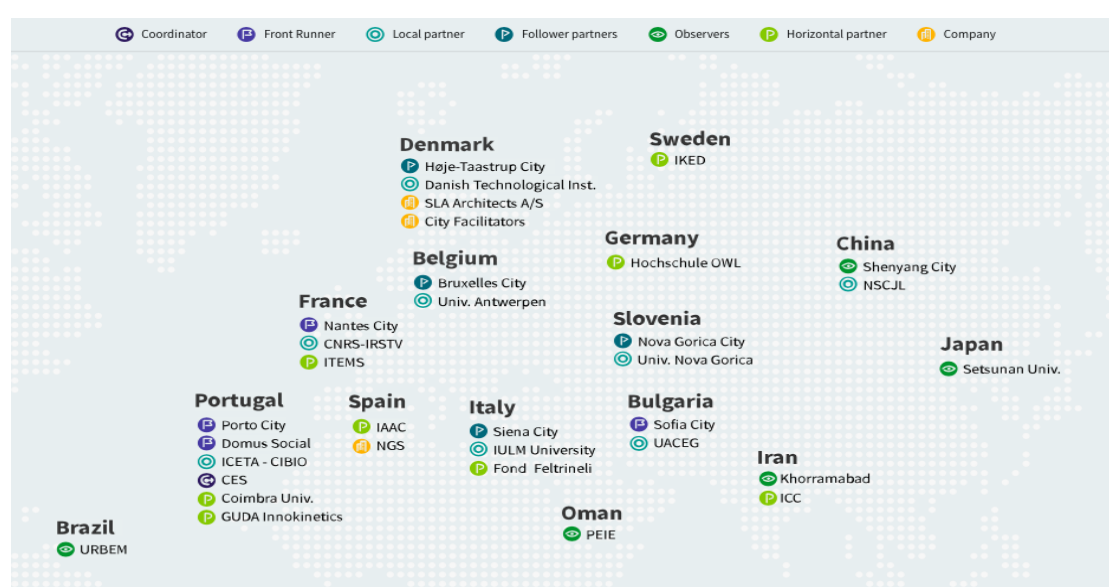
Figure 4: URBiNAT forms a diverse CoP (URBiNAT, 2019)

Why Community of Practice?	Key steps in building the CoP	Activities that contribute	Tools and methods	Actors and target groups
Create a framework and organic process for sustainable collaboration with sharing and learning, with URBiNAT cities and feeding international contexts for cross-pollination.	Structuring levels. Mapping networks and identifying joint interest, creating an open, common platform for data and practices, sharing and fostering its use.	Participatory processes, co-creation processes, coaching and mentoring, co-design/urban planning, co-monitoring, broadening the CoP.	Basecamp; URBiNAT website; Webinars, Zoom meetings; Workshops; Seminars; Physical meetings and events; "Ambassadors" and "change agents"; Digital enablers.	Actor categories, internal (consortium) vs. external. Local task forces, communities of interest, relevant stakeholders, vs. the wider world.

Table 3: Overview of elements in URBiNAT CoP (IKED, 2020)

From the outset, the CoP has been prepared and built with consideration to key actors and target groups, as well as in which context and for what purpose they take part. Gradually, distinct circles of interaction have manifested themselves, arising as natural building blocks of the CoP. These are briefly

introduced in the following, along with the main actor categories and a stylized illustration of the interlinkages these circles represent.

4.2 Main Circles of Interaction

The partners and other main actors engaged in URBiNAT represent a diverse set of organisations. Their participation was devised from the start with a view to their varying competencies and suitability for different contributions. A key set of entities is obviously that of the URBiNAT cities, marked as red (frontrunner), brown (follower) and yellow (observer) rounds in Figure 5. In the wider category of EU-projects that URBiNAT represents, lead cities are allocated greater resources and engage more actively in implementation, based on their experience and competencies already in place since before project-start. For this reason, the interactivity and learning processes entangling those cities were predestined to be the most intensive, especially in early stages of the project. URBiNAT, however, has made a point of arranging for interactivity both ways entailing follower (and observer) cities as well, aiming to achieve a more broad-based mutual learning process between all those taking part.

Residing in the middle of each round node/URBiNAT city district, are local project/URBiNAT partners. Meanwhile, certain city districts, notably deprived areas, along with systems of more or less broken interlinkages, have been identified and selected for targeting, applying to all the cities, irrespective of their status in the project. Urban planners, companies, residents and varying change agents have been consulted in the process, and invited to take active part. Then, outside the cities, horizontally engaged URBiNAT partners contribute based on specific skills and responsibilities. These various actors are all directly involved in URBiNAT activities, although only some of them are formally engaged. On that basis, they continuously exchange information with each other in connection with ongoing activities. Additionally, external actors are viewed as part of the URBiNAT CoP, although some of them act in the fringes. Examples include interested representatives of the wider public, the media, civil society networks, academia, companies and, last but not least, the Commission.

4.2.1 Four main circles
On this basis, and extending from Andersson and Bjorner (2018), we identify four main circles of interaction/participatory processes, as depicted by the stylized illustrations in Figure 5, which has been arranged in three steps. Figure 5a depicts level/circle 1, 5b adds levels/circles 2-3, and 5c adds level/circle 4. To be clear, the figure illustrates the actors that take part of the URBiNAT CoP, along with 4 circles/levels of interaction:
- *Level/Circle* 1: Consists of the consortium, the project team, with partners and observers, engaging in both physical and virtual aspects;
- *Level/Circle* 2: Inside URBiNAT cities, those actors that are directly engaged or implicated, including stakeholders in cities, municipality officials, urban planners, technical experts, community leaders, citizens, local business;
- *Level/Circle* 3: Between the cities, cross-pollination, initially with emphasis on links between the forerunner cities, then increasingly between them and the follower and observer cities, and;
- *Level/Circle* 4: The wider world, sister projects, academic society, other cities, international organisations, and so forth.

It should be stressed that the four levels depicted in Figure 5 are far from independent but, rather, closely connected. In the following, we nevertheless present these levels and key aspects one-by-one, after which we come back to their interlinkages. Here and there through the report we will take note of

the way in which various factors and developments affect the activities and functionality of the different levels, and also how they relate to each other.
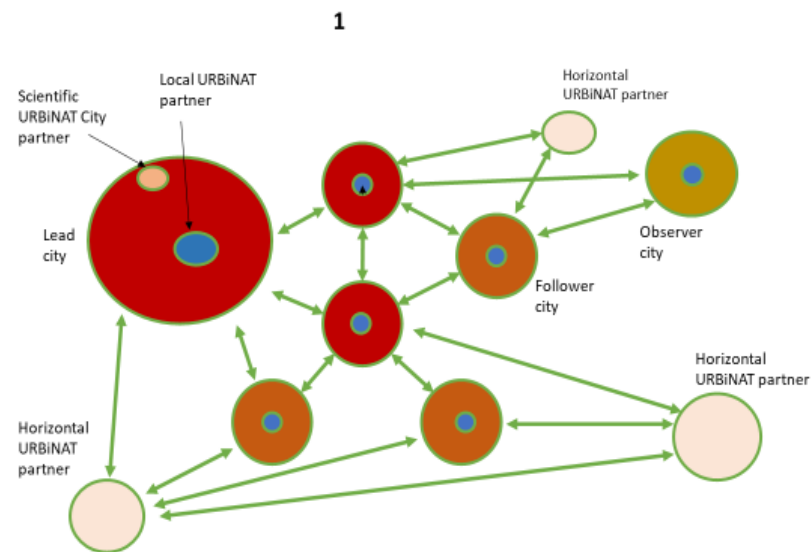
Figure 5a: Main actors and CoP levels (Circle 1) (IKED, 2020)
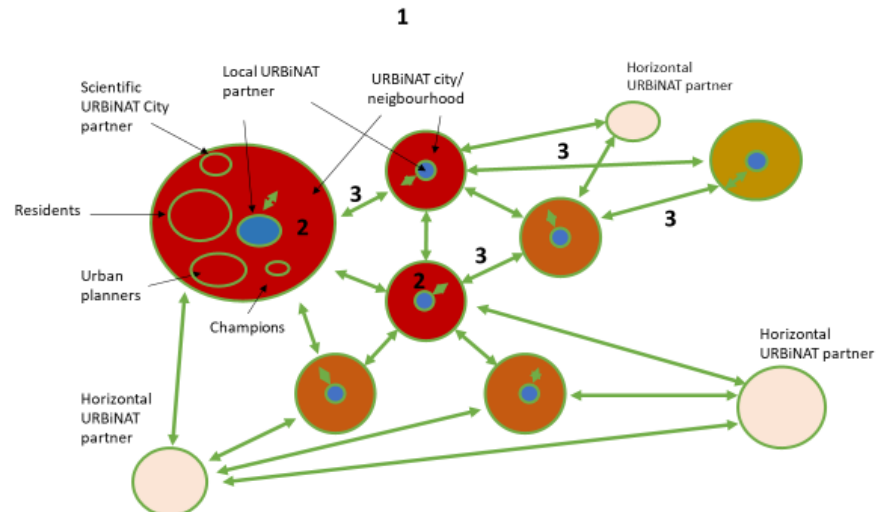
Figure 5b: Main actors and CoP level (Circles 2-3) (IKED, 2020)
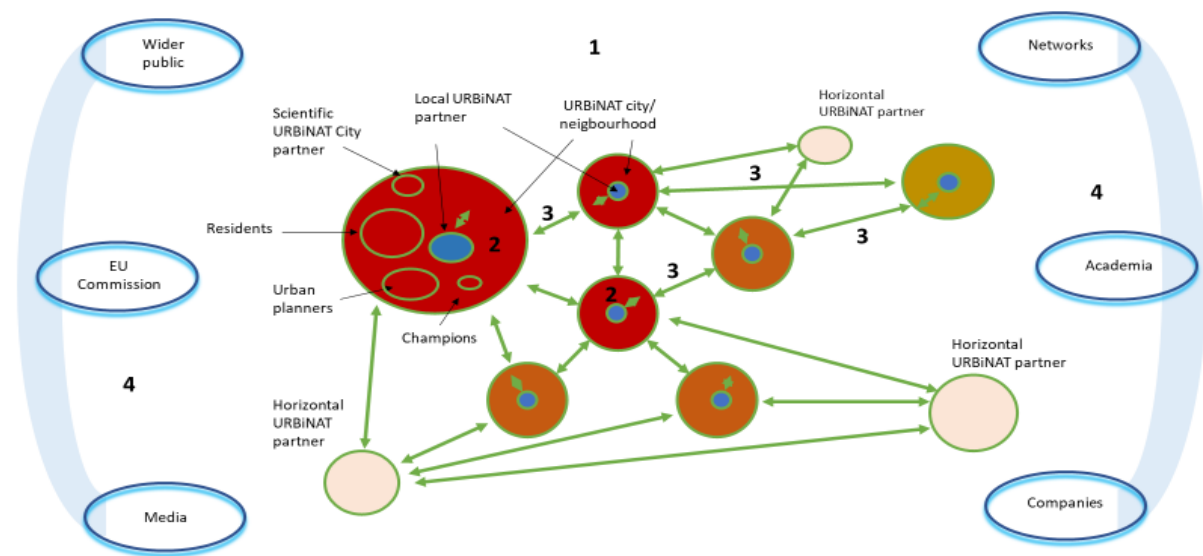
Figure 5c: Main actors and CoP level (Circle 4) (IKED, 2020)

4.2.2 Consortium circle

The first main level, or circle of interaction, is the URBiNAT consortium. The 28 organisations that take part joined the consortium based on varying functions and competences. Nine of them are cities, three frontrunners, four followers and two (non-EU) observers, in the terminology of the project. Other partners serve as scientific partners connected with a certain city, yet others as competence centres contributing horizontally with responsibilities. Each assumes specific roles, assigned from the outset and laid down in the working plan, although adjustments naturally have taken place since, also with new assignments appearing continuously and then allocated among them. Examples of roles that imply leadership functions, include, e.g., coordinator, work package leader, task leader, those responsible for sub-areas, and so on.

These actors represent the mainstay of the first circle of interaction/level of the CoP. In this context, they not only take on individual roles, but form the collective of consortium *members*. As such, they are invited to project meetings and feature on the receiver list of all general internal circulation. As fully embraced by this level of the CoP, they are free to raise issues, pose questions, vote on the General Assembly (except observers), and so forth.

Apart from those featuring as members of URBiNAT, others are formally part of the consortium too, including individual experts that have been invited and accepted to serve on special committees, such as the advisory committee, the scientific committee, and the ethics committee.

The formal organisation of the first CoP level is reflected in URBiNAT's work plan. See Table 4 for an overview of work packages and activities hitherto carried out, as well as their link to the CoP. Although the first circle is defined by the consortium in formal capacity, however, informal social linking, trust-building and exchanges of tacit as well as codified knowledge-exchange is ongoing too. Having said that, the CoP activities framing the consortium level importantly need to balance formality and informality, on terms that keep the partners focused on achieving the project objectives.

Work package	Activities and knowledge development	Stakeholders involved	Link to CoP
WP2	Local diagnostics, Networking, Local urban plans, Coaching and sharing, Linking Living labs and CoP	CIBIO - UNG, IULM, CES, IKED	Circle 1, 2, 3 and 4
WP3	Research on participatory culture, Design of community-driven processes, Participatory workshops, Digital communication; Participation among partners on participatory culture, citizen engagement and digital enablers; Active participation in Open Living Lab Days 2019 and Digital Living Lab Days 2020	DTI, CES, IKED, GUDA	Circle 2 and 3
WP4	Review of NBS Catalogue, NBS co-design, Healthy corridor urban co-planning	CES, IAAC, DTI	Circle 2 and 3
WP5	Data management, monitoring and evaluation; Action-research and systematization of EU-wide reference framework for NBS, Responsible for URBiNAT Observatory	IULM, CES, OWL, UA	Circle 1, 2, 3 and 4
WP6	Dissemination and communication plan, Website and newsletter, Networking and participation in events and conferences, Dissemination of publications and NBS catalogue, Development of materials and tools.	ITEMS, CES	Circle 1, 4
WP7	Selection of best-practice NBS projects, Interviews with local stakeholders	CF, IKED	Circle 2, 3 and 4

Table 4: Overview of URBiNAT work packages with links to the CoP (IKED, 2020)

4.2.3 Inside cities and neighbourhoods circle

URBiNAT city neighbourhoods represent living ecosystems. Various associations and other institutions have been formed for the purpose of representing citizens or other key actor categories, as depicted in Figure 6. Depending on the institutional framework within which they operate, but also under influence of their internal organisation and governance, such bodies may erect hierarchical structures, portending a planned and corporatist society where the chokehold of vested interests plays a strong part Andersson et al., 2009) In other cases, they may retain a grassroot mentality, and rather evolve into functional CoPs.

In preparing the URBiNAT CoP, each city identified such internal stakeholder groups of high relevance for the project. Having said that, in URBiNAT, high importance is placed on establishing a direct connection with citizens. Rather than viewed as faceless, or "average", citizens are approached as subjects, with varying attributes. Highly relevant categories include residents in local neighbourhoods, youth, mothers and fathers (parents), the unemployed, those with or without formal education, and so forth. Meanwhile, some individuals may act as problem solvers, as entrepreneurs or innovators, some may resist change. Then we have the institutions, local schools, kindergartens and universities; cultural and sports associations, housing associations, associations of disabled people; family planning units; companies, tech parks and local NGOs, botanical gardens, etc.
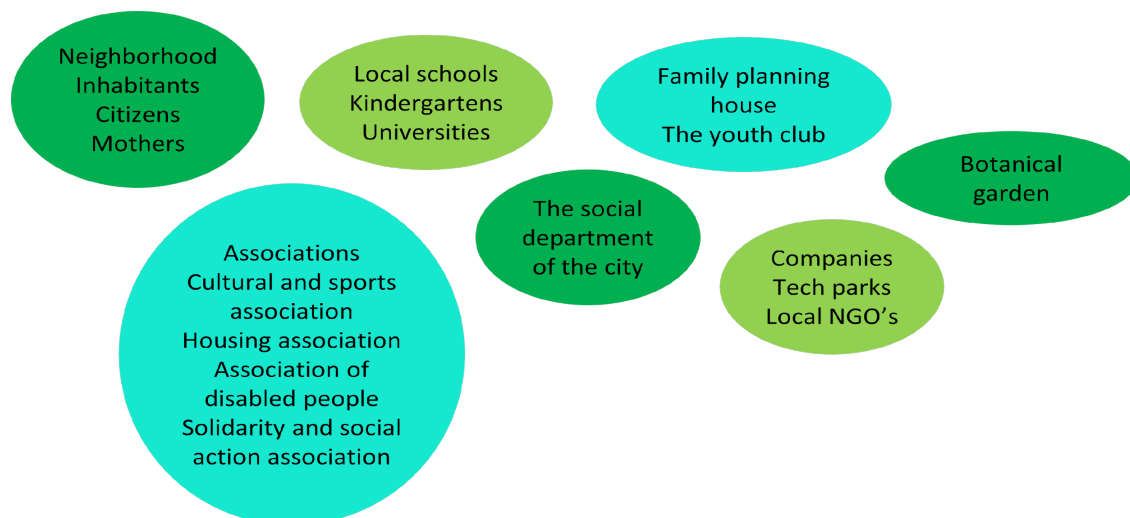
Figure 6: Example of internal stakeholder groups in URBiNAT cities (Andersson and Bjorner, 2018)

Multiple kinds of collaboration and participatory processes are already in place within each city. These structures and networks are important building blocks for the URBiNAT CoP. On the other hand, the existing set-up is bound to embody barriers and distortions. Many will view themselves as the legitimate representatives of others, and they will not readily accept to give that up, or embrace just any kind of change. Capacity building is likely to entail not just new skills development but also mindset change, the scope of which in turn needs to be framed with a view to cultural features and processes, as elaborated in the previous chapter.

The frontrunner cities have initiated and followed a similar process. Each of them had undertaken local activities already before project-start, to a varying extent, engaging with the municipality decision making level, urban planners and architects, local business owners, stakeholders in schools as well as the citizens living in the targeted neighbourhoods. That experience was built upon when URBiNAT entered the picture, opening for a process of co-creation through a step-by-step process, experimental but coordinated between them. A series of meetings and workshops organised in each city have served to build awareness while also collecting feedback and enabling mapping of participatory culture in the prioritised neighbourhoods. This includes gaining an understanding of which actors play the role of facilitators, champions and other agents of change. It has further been examined how to advance with co-creation of NBS in a way that can pave the way for underpinning the Healthy corridor concept, applying to the study area while also allowing other neighbourhoods to be informed and draw inspiration from the experience of implementing selected NBS. These steps have been carried out in a gradual manner, allowing for cross-fertilisation and results that are comparable among the frontrunner cities, in support of systematic learning on how to achieve buy-in among relevant stakeholders in each of them.

The follower and observer cities have taken part in sharing the lessons of the above. In some cases, they have undertaken their own initiatives to advance a similar process. In Bruxelles, the Neder-Over-Heembeek associative platform, which brings together 37 associations active on the ground in the selected neighbourhood, was engaged for this purpose. Additionally, use was made of "Bruxelles Participation", a digital platform created in support of exchange and cooperation, dedicated to spur the participation of citizens. In Høje Taastrup another online platform, Innosite, was developed facilitating and promoting feedback by residents on the development of a park and urban space in the district. In

Khorramabad, an ambitious and highly interactive workshop, in turn including a series of activities involving different stakeholder categories, was arranged (see further Chapter 5).

The outcomes and contributions of these and other activities will be further tracked and evaluated over time, feeding an enhanced understanding of productive ways of building the in-city, in-neighbourhood level/circle of the CoP.

Living labs have further been prepared with the aim of achieving an area that allows citizens and other stakeholders to collaborate on experimental activity related to NBS and Healthy corridors, involving information sharing, knowledge creation and creative thinking. Living labs are populated by people as participatory stakeholders (WP3), who develop Healthy corridors with various NBS (WP4) that are measured and evaluated with the help of the Observatory (WP5), leading to the dissemination of results (WP6) and marketing (WP7).

While the building blocks of the Living labs were partly in existence before URBiNAT started, and have been further strengthened with URBiNAT, the full-fledged set of linter-inked such facilities is still in formation. With the arrival of the pandemic, a partial rethink has taken hold, with consideration of how to place more of the activity on-line, without losing engagement and momentum. Parallel "Task forces" have been set-up by the municipalities, however, advancing some of the agenda feeding the 2nd circle of the CoP in the process. An important aspect of these task forces relates to the Healthy corridors, as representatives of various relevant departments of the municipality are on board, constituting important stakeholders. The purpose is to achieve common, ongoing understanding of the goals, priorities for the project and especially to coordinate the process of citizen engagement, from the initial stage of co-diagnostic via co-design to co-implementation and co-monitoring. For the Healthy corridor, several sub-projects may be warranted, with each benefitting from an agile but effective task force to ensure that relevant stakeholders are engaged. The varying knowledge, skills and political influence requirements are brought to bear on who to recruit and involve in each task force. In Nantes, the participatory activities are looked after by a centralised strategy team, or task force, that liaison with several territorial/district task forces working with stakeholders at the local level.

Developments beyond the control of the project, but part of the reality in any city, can arise due to the upheavals to politics and governance. In Sofia, following the changes brought about by municipal elections, continuity to the project activities has nevertheless been secured mainly by the local scientific partner. In Nantes, another election and subsequent change of leadership proved less disruptive, as key municipal officials remained in their posts. At any rate, such changes inevitably impact on the 2nd – inside-cities circle of the CoP, and also on its interlinkages with the other levels of the CoP, although the nature of the impact may lead in varying directions.

4.2.4 Between-cities circle

Main objectives here are to establish communication and ideas sharing protocol, as well as identify transversal principles and methods used during the process of co-creation, co-development, co-implementation and co-assessment related to NBS and Healthy corridors. Other objectives include comparable analysis of the impact of the NBS on deprived districts and pulling together insights from all the cities for drawing conclusions on methodologies for replication and up-scaling of participatory approaches to support NBS and Healthy corridors in implementation and in urban plans.

Each of the consortium meetings organised by Porto (June 2018), Sofia (January 2019) and Nantes (July 2019), combined bringing together the international consortium with visits to the deprived areas, where highly engaging activities were arranged with residents. Stakeholders were brought on board as well. The agenda included workshop meetings led by partners engaged in the CoP and citizen engagement

activities, which put the citizens at the centre of the process to define critical issues and how to devise participatory processes. These sessions were important for building bridges between the consortium (CoP level 1) and the in-city circles of interaction (level 2) as well as lay the basis for developing inter-city exchange and collaboration (level 3).

An important aspect of the between-cities circle interaction is the organisation of data and adoption of joint indicators, to allow for measurable comparability. Accordingly, consultative meetings were undertaken to achieve consistency in the local diagnostics, by agreeing on joint methodology, data collection and indicators. At the end of the day, what data was made available deviated in important respects and there were also differences in the local issues prioritised as well as the means of measurement, that led the partners to present their data separately. Meanwhile, IULM, the consortium partner coordinating this task, worked out a joint umbrella and introduction.

For comparability to be possible, activities undertaken in each city need to be sufficiently similar. The planning of the Living labs, for instance, has followed the Vortex conceptual model providing guidance for certain joint principles to be applied in each case. The objective is to shape a series of inter-connected platforms, or ecosystems, enabling all URBiNAT WPs to make comparisons and draw lessons. Based on the intention of the CoP to draw on the Living labs of each URBiNAT city, the best way of framing the link between the two has been carefully examined and discussed, with ample inputs from citizens as well as from expert networks.

The Living labs of the frontrunner cities are poised to take active part in parallel co-creation processes around NBS and Healthy corridors, involving co-diagnostic, co-design, co-implementation and co-monitoring. In the follower cities, the maturing of Living labs is intended to follow a similar process, replicating core co-creation activities while adapting NBS and their formation into Healthy corridors to their specific context. While the frontrunner cities are moving one step ahead, the CoP is thus framed for all URBiNAT cities to share and learn from each other through a coordinated co-creation and learning process, as illustrated in Figure 7. This set-up may be viewed as a compromise where each Living lab is stimulated to experiment for the purpose of achieving the best results for the local situation, while monitoring, measurement and analysis are shared.

The preliminary results of mapping the local participatory culture available for both front-runner and follower cities, as presented in Deliverable 3.2 (D3.2), offer a basis for sharing and learning from differences, specificities and commonalities. The resulting proposed strategy for a municipal roadmap is also aimed at promoting exchanges around the introduction of elements to improve the quality of participation as a means and as an end, adjusted to local needs, cultures and the ambitions of each city.

Despite such efforts, persistent differences have gradually come in the open, particularly between the forerunner cities, in respect to both issues and preferences in work with data and methodology. In effect, this means that the Inter-cities coordination work has been more time-consuming and taken longer than initially planned. Renewed efforts have had to be made, for instance, to identify common challenges ripe for fruitful coordinated addressing by NBS, with each city at times stressing its uniqueness.

While deprived neighbourhoods display certain similarities, the lead cities of URBiNAT are nevertheless quite diverse in terms of culture, language and governance. It is thus important to work out mechanisms in support of genuine exchange. It is hard to point to a single optimal way, or routine, for enabling sharing and learning between cities, especially involving deprived areas.

The initial step to set off active sharing between the cities consisted of grouping them in clusters. In an experimental process, the creation of clusters was based on finding similarities and establishing closer links between those cities that could be expected to have the most in common with their peers. The results of this clustering were weak, however. An insight grew that pre-defined interlinkages are counter-productive and unnecessary. This approach was thus abandoned and replaced by a process whereby the cities have flexibility to link with each other for intensive exchange and learning on a case-by-case basis.

Apart from the on-site visits and events, organised back-to-back with consortium meetings (allowing all partners to develop a deeper understanding of local conditions), webinars/online meetings have been structured for joint reflection on strategies for citizen engagement, the importance of physical space for participatory activities, and the relevance of sharing project preconditions to allow a transparent and successful process. Their reach, however, has generally been limited to the URBiNAT partners, involving only a few selected city officials. The involvement of a larger number of officials, representing more diverse departments, as well as of citizens from the neighbourhoods themselves, has basically been limited to the physical "inside-the-cities" meetings, arranged on the ground.

The reason that the on-line meetings have failed to encapsulate a broader representation in each city, has less to do with a lack of enabling digital infrastructure, including the availability of tools on the ground, and more with practical, organisational and psychological matters. Maintaining broad-based interest in primarily on-line communication, among those that may not feel obliged to take part continuously, is very challenging. The tentative lessons point to the need of working out very concrete agendas and deliverables for each party concerned, as a prerequisite for succeeding in ensuring effective digital communication in this context.

Against this backdrop, work is undertaken under T3.3. to examine the properties and opportunities brought by digital enablers, going beyond technical aspects to analyse the matching of purposes, methods, content and tools, in support of co-creation of NBS and Healthy corridors. This work will be further built on as part of T3.4 which entails the realization of co-creation using digital enablers to leverage and link CoIs in URBiNAT cities.

A prominent role of the CoI is to identify and mobilise what may be referred to as a "glue", a linking or bridging mechanism between sub-groups in the URBiNAT CoP. By advancing the concept of CoI, URBiNAT seeks to operationalise the potential value of shared interests coupled with dialogue (as in public space), to leverage change mechanisms (art of leadership to be deployed here – cf., Kotter's steps for implementing change, using mechanisms such as emotional marketing).

Applied in the between-cities context, CoIs may draw on similar challenges facing communities in each city, serving as a platform for proposing and advancing solutions. Such challenges in the neighbourhoods often have to do with security and logistical issues, others with socio-economic challenges. They may also draw on shared sources of strength, susceptible to leverage, for instance, gardening or growing their own food, pursuing sports activities, music, dance, arts, etc. The task is to identify parallel tracks where potential strong motivations are at hand, for one reason or the other, and explore how to link them while retaining or further strengthening bottom-up lead, along with multi-stakeholder exchange and learning. [8]

In this way, CoIs can serve as a base for exchange and learning not only between citizens, but also management and other key actors, in different cities, in support of a common cause. By nurturing CoIs,

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[8] Each city has thus undertaken work to prepare and potentially mobilise the most effective such new communities. Here, naturally, there is a strong interface with the 2nd interactive circle, i.e. the cross-city interaction.

it is similarly possible to reshape the identity of a particular neighbourhood. Deprived areas typically struggle with negative associations, such as high crime rates, unemployment, poverty, etc. By starting unifying actions for reinforcing a latent positive identity, with citizens taking the lead, a new narrative can be created with positive impetus on the wellbeing of citizens.

All in all, the development of the between-cities circle of interaction has demonstrated the challenges met by conventional approaches to coordination, representation and alignment of statistical measurement, indicator work and agreement on priorities for analysis. A strengthening of this level of the CoP requires that the already initiated shift in coordination mechanisms and governance is allowed to run its course. This implies moving away from reliance on formal and merely theoretical exchanges but, rather, connect and leverage processes of genuine engagement in each city. The signs are that a coordinated effort to identify groups, citizens and stakeholders, genuinely motivated by either addressing joint challenges or enhancing perceived strengths, can serve to build trust, demonstrate relevance, and place between-cities collaboration on course for co-creation in establishing NBS and Healthy corridors.

4.2.5 The wider circle

The wider circle of stakeholders and interested parties that make up the URBiNAT CoP includes the growing number of national and international networks with a focus on urban transformation using NBS, along with relevant services of the European Commission, the media, academia, the private sector and the public at large. URBiNAT has developed a diversified strategy to underpin fruitful communication and relations, shred learning and mutual trust with these different target audiences.

The starting point for the resulting *Communication and Dissemination Plan* (D6.1) was a recognition that the project's theoretical and methodological frameworks and associated approach to Nature-Based Solutions and "Healthy corridors" would likely resonate with multiple audiences featuring a broad range of motivations to find out more and/or get involved (Mackenzie, 2018).

From young mothers hoping for a more secure and prosperous environment for their children to grow up in, to community organisers working with employment seekers, the elderly, newly arrived refugees or children of immigrants who arrived decades ago but still struggle to bridge between divergent cultures, neighbourhood associations with an interest in improving the quality of the built or natural environment, local farmers, local entrepreneurs, urban planners, city planners and, eventually, regional, national and international policy makers at the EU level, it was evident from the start that URBiNAT CoP in the widest sense is made up of citizens and professionals from an eclectic array of backgrounds. In many sections of society there is tremendous buy-in to the goal of sustainable urban transformation, and enthusiasm for innovative modes of participation and co-creation that are championed by projects like URBiNAT. The challenge at this relatively early stage in the creation of a fully-fledged CoP is how to harness the creative, intellectual and entrepreneurial energy and turn it into a groundswell movement.

The URBiNAT project was launched with a bold vision to prototype, test and eventually to reveal the long-term transformational power of NBS notably when pursued through co-creation and placed within the context of Healthy corridors. Given the interconnections between micro and macro levels, which combine to shape the way cities and city parts evolve, it is vital that the aims, methods, principles and opportunities are communicated in ways that can be understood and inspire a broad range of stakeholders. Without buy-in from the wider circle of actors the project would end up having limited meaning; its chances of having a durable, positive and replicable impact would be modest at best.

But communicating effectively to a wider circle of stakeholders has its challenges. It requires a good understanding of the diversity of stakeholders, and their different needs and hopes in connection with the project. It also assumes a certain empathy and being able to communicate in a language - technical, scientific or layman; printed, spoken or filmed - that is appropriate in each target audience or situation. It may also, depending on the situation, benefit from communicating the messages of the project in different national languages or dialects by means of interpreters, local champions or community leaders.

For this reason, with respect to the wider circle of the URBiNAT CoP, the project's Communication and Dissemination plan (Mackenzie, 2018) focuses extensively on the format of communication materials (flyers, posters, illustrated brochures, academic papers, articles) and the situations or venues (outdoor meetings, neighbourhood walkthroughs, co-creation workshops, academic conferences etc.) that are seen as propitious for the transmission of information and engaging in dialogue.

As a multilingual, multidisciplinary and international consortium of partners, spread across Europe and around the world, URBiNAT is uniquely well disposed to conduct outreach and engagement activities with the multiple audiences in the wider-circle COP. Horizontal partners with expertise in promoting co-creation by citizens, co-design workshops and the running of Living labs have successfully engaged with city administrations and neighbourhood associations, and involved scores of citizens in the early stages of co-selection and design of NBS and plans for the Healthy corridor. At the same time other partners including researchers and urban planners have been working in coordination with local scientific partners in the cities covered, providing guidance regarding the collection and analysis of data as part of the co-diagnostic phase of the project. Yet other partners, with expertise in digital enablers, economic development, entrepreneurship and policymaking, have been working with local counterparts to develop context-specific narratives.

URBiNAT cities and partners are interconnected with various "external" stakeholders and interested parties. A first identification and mapping of the networks that the URBiNAT cities belong to was conducted in the early phase of URBiNAT. Some of those identified are: Euro Cities, Plante et Cité (centre for landscape and urban horticulture), UN-Habitat, European Federation of Public Cooperative and Social Housing, International, International society of City and Regional Planners, ICLEI: Local Governments for Sustainability, Green Digital Charter, and Covenant of Mayors for Climate & Energy. Central issues to raise here is whether these networks can be used by other cities; and how networks from the non-EU members can be engaged and utilized.

URBiNAT's CoP has further profited from the opportunity to contribute to the initiative supported by UNESCO entitled OE4BW, Open Education for a Better World, led by the UNESCO Centre (former UNESCO Chair) for Knowledge Transfer in Information Technology (https://ct3.ijs.si/), at the Jozef Stefan Institute in Ljubljana, Slovenia. The OE4BW is an initiative launched 3 years ago that aims to develop a community of experts in knowledge transferring through information technology, namely producing and preparing open courses on topics that directly address the Millennium Development Goals of UN. URBiNAT proposed, being accepted, to establish an open education platform entitled "NBS and urban regeneration – Creating Healthy corridors in deprived neighbourhoods" which is targeting the main contents of the project, as well as different MDG, mostly n.11 the "Sustainable Cities and Communities".

As an H2020 project, initiated in 2018 at the same time as four other projects with a similar focus on NBS and urban renewal, URBiNAT benefits from extended de-facto CoP, composed of the partners and stakeholders of these and also other related EU-funded projects. From the outset the URBiNAT has sought to engage with the representatives of its sister projects during conferences (e.g. the NBS Paris

Forum, the launch of the ProGlReg project) and online meetings. The representatives of these projects are URBiNAT's natural peers and valued partners when it comes to validating the concepts, theoretical and methodological frameworks that form the basis of these projects. What is an NBS? What is a Healthy corridor? What are the metrics for measuring their performances? These are questions that are as yet without precise answers as they relate to an emerging field. They are the reason why this section of the CoP is critical. Coordination with sister H2020 projects is partially facilitated with the mechanism of EU task forces set up by the European Commission.

Related to the "Sister Projects" in Horizon 2020, special networks were further established to address joint subject areas. These include a framework proposed for clustering actions for NBS in response to social challenges (University of Coruna, 2018). In particular, specific "Task Forces" (TF) have been set up, on the initiative of the European Commission, to increase the scope for such benefits. The following exchanges and associated work undertaken in this context over the past year is of high relevance to URBiNAT's CoP:

A first Task Force, (TF1), on "Data Management and EU NBS Knowledge Repository", aims to establish an open access knowledge base in support of innovation around NBS and sustainable and resilient societies.[9] An **"EU NBS Knowledge Repository" provides evidence on NBS along with guidelines, tools and methodologies for co-creation, implementation and monitoring. Part of the objective is to facilitate sharing, search and reuse of NBS independently of the project where they have been implemented. The expected outcomes include:
- The EU knowledge repository for NBS, hosted by OPPLA (https://oppla.eu/);
- A data management plan to ensure interoperable data, open access and comparability.

A second, (TF2), on "NBS Impact Evaluation Framework", draws on the high diversity of competences and experiences among the sister projects. Noting the large amount of knowledge generated by each, it aims to facilitate linking and combining their expertise in response to upcoming needs. It coordinates joint processing of indicators, partly coming from experts' review, while others are the result of co-creation processes with cities. Further, it opens for additional development work to allow for NBS impact assessment to reach beyond the catchment area, linking to a broader network of cities.

Task Force (TF3) promotes active exchange of knowledge and experience between sister projects in Horizon 2020 on "Governance, Business Models and Financial Mechanisms of NBS.[10] It includes a review of the current state-of-play in public procurement practices of NBS in European cities, including recommendations for reforms and critical elements of business cases for NBS. Possibly the most active of the task forces, the TF3 operation resembles a CoP in its own right, warranting some particular attention in this context.

Since September 2019, TF3 has been structured around a rotating responsibility among the sister projects for the preparation, chairing and minute taking of monthly on-line meetings. Through this process, a set of activities is agreed upon to further the cause of the task force, with working groups established and additional responsibilities assigned among the members along the way. Some of the topics addressed thus far include:

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[9] Task force 1 includes nominated members of every relevant Horizon 2020 NBS project, DG RTD, EASME. 17 projects from various H2020 calls on NBS are currently members of task force 1 and new projects resulting from relevant calls may join as well.

[10] Projects and partners in TF3 include: ThinkNature, PHUSICOS, NAIAD, UNaLaB, GrowGreen, Connecting Nature, NATURVATION, Urban Green Up, Nature4Cities, ProGIreg, CleverCities, ReGREEN, OPERANDUM, RECONECT, Clearing House, WeValueNature, EDICITNET, EKLIPSE, and URBiNAT.

- Critical elements of NBS business cases;
- Economic opportunities of green jobs;
- Best-practice financial mechanisms for the implementation of NBS;
- Best-practice business models of green start-ups;
- Ongoing business and innovation activities for scaling-up opportunities.

Recent considerations have focused heavily on the influence of COVID-19 on implemented NBS and how to assess and take into account its further impact. The TF3 meetings are also being used to advertise upcoming events and meetings relevant for the areas under consideration, including those arranged with the partner as well as external ones. In this way, TF3 operates as a quite focused but broad-based network, and CoP, of its own, that serves to effectively complement and leverage that of URBiNAT's own CoP, and also those of the sister projects.

As a result of the clustering and networking catalysed by these and other task force activities, individual URBiNAT partners established a close connection also with individual partners in sister projects, resulting in fruitful exchanges and a stronger linking between URBiNAT's CoP and those of other individual sister projects, centring on those with natural joint interests and/or facing similar concerns. Areas include, for example, specific aspects of indicator development, e.g., in regard to economic and well-being aspects. Other links were established in connections with events, conferences or other special initiatives.

The knowledge resulting from the CoP wider network interactions will benefit each city in a dynamic loop of feedback, constitute highly relevant references for the EU-wide Framework agenda for NBS, and its extension in Healthy corridors, and continue beyond the project's lifetime as impacts will be replicated and disseminated through observatory actions.

4.3 Participatory Processes

Participatory processes represent a core theme of URBiNAT, where they play out in multiple ways. Most concretely, the project is devised for breaking new ground how the adoption of participatory processes and citizen engagement can serve as a vital instrument supporting the process of preparing and implementing NBS and Healthy corridors. While that is essentially about the functionality of level/circle 2 of the CoP, however, participation is strongly present at all its levels, and also how they connect. In this section, we reflect on the topic of participation as a multi-faceted phenomenon that appears in diverse shapes.

In the following, we set out to investigate the approach taken to participatory processes, in establishing the CoP. Initially, we review the mapping of relevant factors (see Table 5 for a list of participatory NBS, of relevance to advancing the CoP). Subsequently, we consider methodologies and tools. Taking stock of URBiNAT's work on our strategic guidelines, we also reflect on the set-up for addressing the risks and complications arising from issues of interculturality. We further review the context for activities undertaken, separating between stages of co-creation. Finally, we review the latest situation in regard to digital enablers, including new work under way on handling the situation that has arisen with the pandemic.

Participatory NBS	
• Motivational Interviewing • Learn for Life (LfL) • Forum Theatre • Cultural Mapping • Photovoice • World Café • Multichannel Democratic Innovations • Games and Gamification • Focus Groups *in Situ*	• Community Workshops • Participatory Budgeting • Municipal Regulations for Inclusive Participation • Community Based Monitoring • Most Significant Change Technique • Deliberative Democratic Evaluation • Public Libraries/Community Centres • Design Thinking

Table 5: Participatory NBS (Bjorner and Andersson, 2018)

4.3.1 Mapping

In order to obtain required information and knowledge of the issues and processes most fundamental to the CoP, the URBiNAT project set out from early on to arrange with in-depth mapping of situations on the ground, in areas deemed a priority. On this basis, mapping was undertaken of the following:

i) Networks and relevant city stakeholders that bring businesses on board to assess the economic situation and potential for economic growth of the intervention cities. By collecting data on how many green and social businesses, start-ups and initiatives exist, one arrives at an overview of enabling factors for green business growth and, at the same time, helps identify the challenges and burdens for NBS initiatives to be realised and to prosper.

ii) Relevant private sector actors and the roles they may assume in regard to the co-creation of NBS and Healthy corridors in the intervention areas. Large organisations as well as small-scale companies and entrepreneurs may engage with cities as consultants, experts, financial donors, or incubators for innovative ideas. By observing the long-term collaborations cities have with different kinds of private sector organisations, a stakeholder matrix can be created showing how cities engage and benefit from these relations.

iii) Local participatory culture to inform the tailoring of participatory methods and tools to city cultures at various stages of co-creation processes; to identify residents as potential participants and; to assess challenges and, especially, opportunities concerning the mobilization of participatory culture.

iv) Cultural mapping approaches combined with motivational interviewing and participatory design approaches, result in activities of "mapping, dreaming, feeling, gaming". These, in turn, can be used in stock-taking community assets and urban capital, including positive externalities, and to identify needs and expectations as expressed by inhabitants and stakeholders.

v) Behavioural mapping (BM), as a specific technique to register, analyse and present data about the behaviour of people in direct relation with their physical environment. Empirical data gathered inform about concentration and flows of social groups, preferences and avoiding of urban spaces, child development and school environment, use of leisure areas in and around public and residential buildings. BM is contributing to spatial planning, place design and decision-making on changes and evaluation of interventions in the urban environment. As all direct observation techniques, BM is useful when relevant research information cannot be collected through participants' verbal or non-verbal self-reports.

vi) CoIs to help identify specific connecting mechanisms of importance for understanding the strengths of each community and neighbourhood. By grasping the essence of the CoI, the process of stakeholder engagement and citizen participation will be facilitated. The mobilisation of CoI can greatly enhance the contributions of NBS to regeneration and wellbeing in deprived areas.

vii) Mechanisms in place to recognize and promote rights by public/political authorities and considering URBiNAT's approach to human rights and gender as cross-cutting dimensions.

viii) Analysis using the Observatory, to determine a baseline of local social, environmental and economic challenges, with a focus on possible spatial planning responses (i.e. public space, housing, social inclusion).

Contributing to the mapping of the above categories, a series of webinars were arranged to generate insight how to take account of local participatory culture in citizen engagement. An important building block in this respect was the workshop organised at the Open Living Lab Days conference in Thessaloniki in September 2019, where a broad community of practitioners working on Living labs underlined the importance of the following aspects:
1. *Plunge* (have guts) – risk as a means to the cutting edge;
2. *Life* - How can we inspire a new meaning of life? – How do we create togetherness being authentic, transparent, inclusive, working on a shared agenda and common vision?;
3. *Local to scale-up* – We need to go local to be able to scale up. But how can we do it sustainably? (Key words: seeding/obvious change).

Subsequent workshops arranged on-line further examined means of achieving ownership, trust and inclusion, identifying success factors in strategies pursued by different organisations and cities/neighbourhoods.

4.3.2 Methods and tools

In developing the CoP, various methods and tools have been used, as elaborated in D3.1. The focus here is on the means to establish organisational structures and processes to achieve active stakeholder engagement and participation by citizens in co-creation processes. Participatory methods and tools take on particular aspects when applied within a complex multi-stakeholder framework. Managing participation across a range of different situations, there is a need to sharpen the tool-box as well as the methods deployed, and also improve the match between them. The methods referred to here, labelled participatory methods, vary between different kinds of context, including between cities. Recently, many methods have been experimented with so as to achieve a desired improved result when it comes to the "level", or "reach" of citizens' participation. In this process, the advance of digital tools has been given much attention.

Basecamp serves as the basic instrument applied by project members to notify each other of activities under way, results achieved, and preparations of next steps. Basecamp enables broad-based sharing of digital communication among the project partners, smooth progression of joint documents, etc. The disadvantage of relying on a connection to a proprietary vendor, through google.doc, was in this case viewed as relatively minor, since Basecamp is for internal use only, and thus as acceptable given the advantages offered by ease-of-use and practicality.

Participation may be supported and enabled by, e.g., workshops; webinars; task force meetings; cultural activities; virtual and physical World Cafés, etc. These and other facilities offer opportunities for social bonding and building of mutual understanding, in-depth consideration of issues and solutions, and also for venturing into aspects that give rise to uncertainty and concerns. Given the impossibility of

bringing 29 partners together for physical meetings with high frequency, webinars and Telco's were undertaken from the start in-between, on a continuous basis. Physical meetings and get-togethers have been organised on strategic occasions with emphasis on an interactive format, and combined with special occasions offering interaction with and learning from citizens in the host location. More recently, during the period of COVID-19 lockdown, the reliance on on-line communication has grown, necessitating special effort to secure continued effectiveness in CoP on this basis (Andersson et al., 2020).

Adding to the events, physical meetings and webinars, other mechanisms contribute to a rich array of learning opportunities. For instance, via Basecamp and other channels, partners share useful documents, links and information on applications which have worked out successfully, especially in deprived neighbourhoods. Exchange of data and joint research are pursued continuously, to be further underpinned by the URBiNAT Observatory when fully functional (see further below). Further, individuals who worked with certain NBS solutions in URBiNAT may be "borrowed" by another city, to help disseminate and implement its lessons in a new situation. Meanwhile, a number of other cities, research institutions and other organisations addressing related issues, in the countries already part of URBiNAT as well as elsewhere, are regularly in contact with URBiNAT partners to be updated on the latest developments and gain new insight of mechanisms to support their agendas, leaning on URBiNAT experience and methodology.

The notion of CoI represents a potent instrument to build motivation among diverse communities for engaging in exchanges and collaboration, within their neighbourhood and also externally. Digital enablers nowadays greatly facilitate linking CoIs "cross-border", as is of great importance especially for level/circle 3 of URBiNAT's CoP. Typically building on already existing joint interest, CoIs further carry great promise to establish lasting "glue" between geographically dispersed groups.

Which interests are most effective in this regard is bound to vary, but shared interests such as art, culture, sports, food, environmental issues and/or entrepreneurial activities, can all be very powerful when conditions are right. Both informal and formal networks can be built upon in this context, and they may also combine. As for the former category, women living in Nantes Nord initiated local collaboration to grow vegetables, leading to informal connections with farmers outside the city for whom they have been able to undertake volunteering work in exchange for bringing home fresh fruits and vegetables. On the other hand, local authorities responding to people's demand for a place to gather and be able to engage in handicraft work, la Cube, exemplifies a formal initiative, nevertheless arranged so as to create a strong sense of ownership by citizens.

Coordinated work has started with citizens in the URBiNAT cities, and notably in the selected neighbourhoods, to identify prioritized interests to serve as candidates for CoI to be actively developed and inter-connected between them. Considerations are further ongoing what mechanisms to apply in support of their connections such as facilities, mentors, places, public space, etc. Specific digital enablers will be applied as well, as a basis for engagement by targeted categories of citizens. To be delivered in T3.4, they will further be devised to help overcome specific obstacles at hand, such as weaknesses in infrastructure, low digital literacy and the lack of motivations and incentives for active involvement.

To establish and run URBiNAT's CoP, mentoring processes and mechanisms for promoting exchange will be partly integrated with these digital enablers, and partly be supported through complementary actions, as in the case of activities undertaken by facilitators and champions on the ground. In each case, the local context needs to be taken into account. This is not least since contemporary issues often bear upon historical conditions, including ingrained failure to resolve vested and conflicting interests.

As a consequence, lack of trust is often embedded in local structures, the resolution of which requires an understanding of the problems at hand and how to reconcile entrenched positions.

Part of the potential benefits of NBS and healthy corridors arise due to the framing of inclusive public space, as an environment that can help drive favourable change in mindset and behaviours. This goes back to the potential of public space to enable meetings and interactions between people across physical and mental boundaries. Which public space is most important in this respect is bound to vary. The church, temple or other institutions devised for religious or spiritual activity represent important meeting places but may also exclude "outsiders". Playgrounds, open markets or parks may perform important linking functions, but they may also attain limited use. At the centre of URBiNAT stands the mission to work out what makes NBS help shape "quality" public space, and to enable those who are typically excluded to assume part of the responsibility for making it happen. While underpinning enhanced mutual understanding and learning in such dimensions, the CoP needs to be able to bridge between the diversity of conditions that craft public space.

In URBiNAT, participatory NBS are experimented with as tools explicitly devised to facilitate co-creation in shaping public space. Physical as well as digital signage/communication is similarly applied to mobilise the CoP around concrete initiatives (e.g., flying kites to signal a kite workshop on a plain in the city). Here, the trick is partly to create something attractive for the eyes, ears, noses and mouths of specific target audiences, projecting a possible future that will stimulate the "hearts" and "creativity" of CoP members more broadly. Such aspects match with URBiNAT's proposition of learning from real action, not just abstract discussion. Fulfilling the project objectives is in part about allowing for a collective experience, cutting across sectoral, disciplinary and geographical barriers.

Coaching cafés may be referred to as an example, or special case, of public space. The Coaching cafés can be themed, centring on various aspects and challenges faced in URBiNAT, and include practical coaching exercises and hands-on takeaways. They may be arranged in physical settings or online. Applying either format, a central element will be the relaxed and congenial environment, encouraging sharing, communication and learning. The notion of Coaching cafés can be applied at each level of the CoP, although the purpose and emphasis on different actors will vary. If applied at level 1, special linkages within URBiNAT's project team would naturally be targeted. At level 2, key stakeholders in URBiNAT cities could be targeted, while also incorporating ways of granting facilitators and mentors an additional platform to operate on. If addressing level 3 or level 4 the cafés would target special cross-cutting actor categories, for instance in backing defined CoIs respective mechanisms for dissemination.

Some NBS take the form of methods in support of participation. One example is Motivational Interviewing (MI), a behavioural change methodology used to initiate a dialogue for the purpose of building understanding regarding outstanding needs (Rubak et al., 2005). Another is Learn for Life (LfL), applied to inspire adjustments in behaviour using natural interests and triggers. Furthermore, SuperBarrio is an augmented reality application designed to award users the opportunity to co-select and co-design solutions for their own neighbourhood.

Cultural mapping, as a participatory NBS, is also strategically used to bring a diverse range of stakeholders into conversation about the cultural dimensions and potential of place. Special institutions, such as public libraries and community centres, may serve as neutral space for urban encounters and as creative space for bringing together diverse actors and competencies in participatory activities and co-creation. More broadly, however, URBiNAT builds on the power inherent to culture and the arts, linked with local practices, in shaping important channels aligned with the people-centred approach, in underpinning widening circles of the CoP. This can be seen from recommendations of URBiNAT's work to identify viable channels to exchange experiences and knowledge between citizens

and other actors, in the context of the Living labs and within the CoP. The following proposed instruments serve as examples:

- creating a network to share initiatives and knowledge from different neighbourhoods;
- investing in the cultural capital offers a diversity of opportunities, covering both tangible and intangible assets, including for example food ("saveurs et savoirs" / "sabores e saberes" / "tastes and knowledges");
- thinking of a URBiNAT biennale where having in dialogue local representations and interpretations and paving the way to common ones;
- considering networks and common initiatives around culture as roots spreading throughout URBiNAT cities and CoP, and;
- Managing interculturality, see further below.

4.3.3 Strategic guidelines and managing interculturality

A set of guidelines have been developed for citizens' engagement under the handbook on the theoretical and methodological foundations of the project (chapter 1 of deliverable D1.2). They have been framed, reviewed and structured in a process involving citizens as well as key stakeholders. The initial purpose is to support URBiNAT cities in the various stages of participatory processes. While still under development, the following twenty categories care currently covered:

Communication and interaction	Regulation	Citizenship rights	Integration of participatory processes
Behavioural changes	Governance	Cultural mapping	Private sector
Trust	Innovation cycle	Facilitation	Where
Co-production	Transparency	Quality of deliberation	When
Inclusion	Intensity and levels of participation	Supportive methodologies and techniques	Monitoring and evaluation

Actors external to the project, as in the Thessaloniki workshop[11] and subsequent webinars, as well as stakeholders and residents in URBiNAT cities, have taken an active part in prioritizing what is of high importance. Governance, transparency, trust, behavioural change, and interactivity are some of the parameters broadly emphasised as of highest importance.

The guidelines will gradually be communicated more broadly. The plan is for them to be made public and accessible to wider audiences through URBiNAT reports and shared through blog posts on the project website.

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[11] Open Living Lab Days organised by ENoLL, the European Network of Open Living Labs, Sept. 3, 2019, Thessaloniki.

As discussed, participatory processes are strongly influenced by culture. Although personal contact is generally important for establishing trust and also for co-fertilisation of ideas backed by social interface, for instance, this is particularly disruptive in some cultures. When such contact is not possible, because on-line communication has taken over, the severity of the resulting challenges thus varies. Such differences are observable also within cities. Not least in deprived areas, lower digital literacy combines with challenges in self-confidence and general distrust in authorities, in diminishing the readiness of residents to convey meaningful information on-line.

Related to this, managing interculturality merits serious attention in the CoP. This reflects the importance of promoting and leveraging the exchange and interaction of diverse experiences, embedded in and drawing upon contrasting places and cultures, countries and institutions. While signatory cultural diversity is a strong feature of European history and identity, the combination of the globalising economy, structural change and strong attention devoted to migration and refugee flows, have placed interculturality at the centre of the media light and the political discourse. Much of the international and national policy debate has come to focus on the scope for tension and opportunism in turning foreigners into scapegoats. While the local, including city level, is where the practical issues are most prevalent, a wealth of citizen engagement and social innovation, has developed to build bridges and facilitate collaboration and integration (Halpaapt et al., 2020).

How these developments are communicated and interpreted is much influenced by what is measured and highlighted. This underlines the importance of databases and indicators suited for a broadened discourse, feeding participatory approaches that turn cultural differences from a source of potential conflict and risk to a well of benefits and value creation. While such considerations were introduced in the Grant Agreement, the ethical principles adopted by URBiNAT have further set out directions to be followed. This is of high relevance as well for managing cross-cutting dimensions such as human rights and gender, whose inclusion in a culturally and ethnically diverse set-up is likely to meet with particular challenges.[12] Extra precaution has been taken to identify and communicate joint interests and motivations to bridge divergent perspectives. While professing respect for local traditions, traditional knowledge and local social issues, URBiNAT recognizes the importance of upholding fundamental values and human rights, and not inferring discrimination, abuse or similar acts.

Beyond the context of inclusive urban regeneration and sustainable urban development, participatory processes venture into deep-rooted aspects of ethics, human experience and relations, the way people act within a creative environment, codes and symbols, behavioural patterns, language and customs (Mateus, Martins and Leonor, 2018). This directly resonates with URBiNAT's CoP and the fundamental task of advancing a culture of co-creation capable of linking actors marked by the most diverse sets of values, visions, environments, beliefs and habits. In this vein, culture and the arts may link with local practices in shaping important channels aligned with the people-centred approach, underpinning widening circles of the CoP. This is reflected in recommendations from URBiNAT's work to identify viable channels to exchange experiences and knowledge between citizens and other actors, in the context of the Living labs and within the CoP.

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[12] URBiNAT's ethical guidelines, as specified in the code of ethics and conduct, are to be consulted to the extent such issues arise. As defined in the grant proposal, URBiNAT's approach to sustainability includes culture as a fourth dimension, which represents for each city a channel and tool to inform, engage, promote dialogue and raise awareness of different stakeholders from different backgrounds, to be mobilized in order to build collective motivations and nurture a sense of identity and cohesion (URBiNAT Grant Agreement, part B, annex 1, p. 19). See D1.5 on the related approach to human rights and gender issues.

4.4 Activities

The URBiNAT co-creation process for advancing NBS and the establishment of Healthy corridors entails a number of cross-cutting activities. Each of these have contributed to the CoP, linking cities and also providing valuable information flow frontrunner cities to follower cities and also observers.

From the outset, extensive work has gone into joint work between the project partners in identifying and developing relevant knowledge, to identify suitable ways of working, methods, networks, champions, routines, etc. In parallel, we have carried out a series of activities. Work on developing knowledge and in carrying out activities are interrelated. It is not necessarily possible to differentiate sharply between the two, and various combinations appear. The following exemplify the two categories:

i) **Developing knowledge:** Mapping participatory culture in URBiNAT cities (WP3), including identifying champions, understanding facilitators and catalysts, identifying communities of interest; mapping digital enablers including their advantages and challenges, and identifying how, where and in relation to what target groups the digital enablers best can be applied.

ii) **Carrying out activities:** Participatory activities with citizens in URBiNAT neighbourhoods have been and will continue to be carried out. While the Living lab set-up is still in progress, citizens have been involved in a series of undertakings delivering data, framing the local diagnostic, evaluating NBS and also co-design. In the context of Task 3.4, consultations with citizens are in preparation, to arrange with their direct engagement in selecting the digital enablers to be carried out.
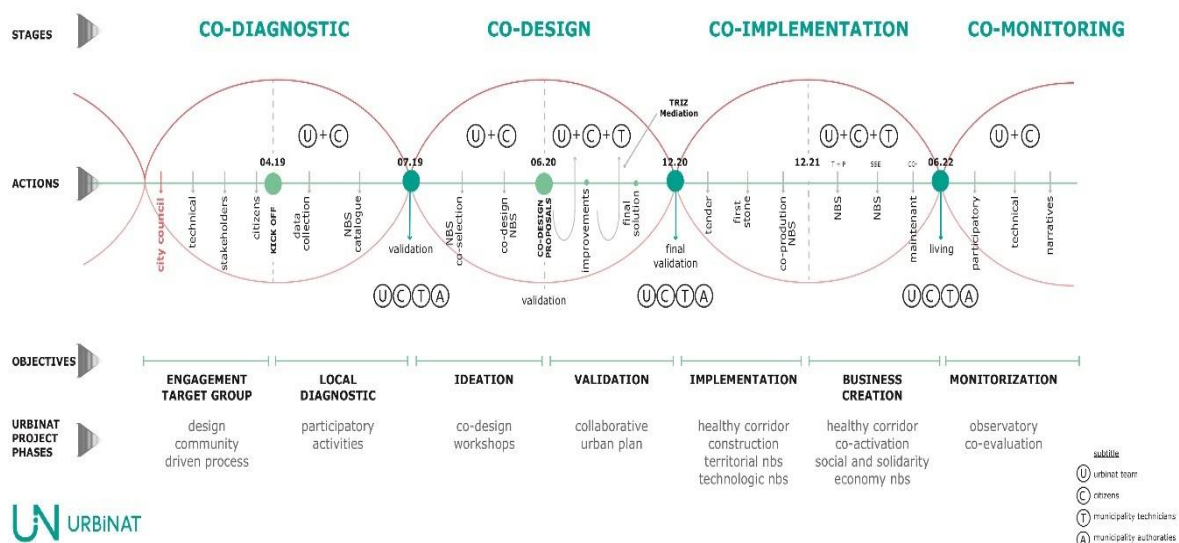
Figure 7a: Co-creation process (GUDA and CES, 2020)

Figure 7a illustrates the co-creation process, spanning the sequence of key interrelated stages. The basic concept which transverses the URBiNAT project, alongside that of the Healthy corridor, is co-creation. In order to carry through this process, a number of activities will be undertaken, varying through the stages of co-creation, as labelled in the figure. In each activity, practical conditions for effectuating participation need to be ensured. The CoP allows for sharing observations and learning regarding what is adequate along the way. It also strives to embed methodologies for participation in each of the four main stages; co-diagnostic, co-design, co-implementation and co-monitoring.

With regard to NBS, URBiNAT is presently in the process of passing from the stage of co-diagnostic, co-selection and co-design, while the subsequent stages are yet to enter an implementation and monitoring stage. While bearing this in mind, in the following we review briefly the current standing of CoP with respect to each of these stages.

4.4.1 Co-diagnostic

An important element in the URBiNAT project involves data collection and systemisation of data. The term "Local Diagnostic 1" has been framed as a label for the initial activities in this process. The task was divided in two stages, the first aimed for the collection of existing data, and the second one was based on data produced specifically for URBiNAT. The well-being survey represents one of such methods. The survey was thoroughly discussed among the cities and various stakeholders in the cities could provide input. Another data collection method that were co-created and shared among the cities are the behavioural mapping, participatory activities, laboratorial analysis and territorial mappings. The Local Diagnostic 1 has been completed by the Lead Cities and the Follower Cities have participated in several webinars to learn from the Lead cities which difficulties the former encountered while collecting data by the different methods.

Webinars and related exchange of information involving the front runner cities and followers have been of high importance for framing the Local Diagnostics. The process has been divided into two main stages; 1) on statistical data, and; 2) in which needs/conditions on the ground have taken centre stage. As for the latter, building an understanding of the critical issues confronting the selected neighbourhood requires properly:

- Defining the boundaries of the selected area (as anticipated by Ostrom (1990) in her Common Pool Resources management principles);
- Making effective use of the available statistical data from the LD list, without devoting excessive energy on the collection of new data;
- Having a good interpretation of data in relationship to the principles of co-designing and co-implementing the Healthy corridor;
- Making effective use of existing active spots for the creation of the initial group of the Living lab for the local data collection in stage 2, and;
- Selecting the appropriate tools for local data collection in stage 2 (from the tools proposed by URBiNAT). Additional tools are clearly allowed if propaedeutic to a complete and faster diagnosis of the selected area.

From February 2019 to May 2020, a series of webinars, regularly held every two weeks with the lead cities, aimed to enhance the coordination of indicator work and achieve adequate comparability in the local diagnostic, notably at the level of neighbourhoods. The follower cities were invited as well and participated from time to time. The deliberations were usually intensive, with sharing the information about what had been obtained as well as what obstacles appeared to collect various data. On this basis, there was a continuous process fostering a common perspective on which data were most important and for what reason. Again, the issues were most pertinent regarding the neighbourhood, where measurement was most difficult to achieve but also of the highest direct relevance. A regularly recurring issue concerned what blend of qualitative information, e.g., using interviews and thus opinion-based, and quantifiable hard data would be required. There was also the question of direct links between data collection and the development of the CoP, in the sense that collecting perceptions/opinions from particular groups of citizens could help galvanise a community of facilitators. How best to structure and organise with the active participation of citizens thus arose as a hot subject. Some of the areas for data collection discussed in detail included wellbeing and territorial analysis of water, ground traffic, pollution, control quality of air (e.g., how many cabins to use for this activity, with implications for the rate of precision in the spatial analysis).

The URBiNAT Neighbourhood Survey was devised by horizontal partners backed by scientific expertise as an additional co-diagnostic instrument, for the purpose of obtaining inputs directly from residents about their well-being, health, physical and social activity as well as degree of satisfaction with their neighbourhood. The frontrunner cities added local knowledge that was taken into account in guiding relevant protocols and handouts. Following application in the frontrunner cities, lessons were shared with follower cities on the one hand and with local stakeholders on the other hand. This thus tied in with both the second and the third circles of the CoP, with the objective of streamlining the learning process and facilitating buy-in on the part of local decision-makers with the importance of hearing residents out.

The second conduction of the URBiNAT Neighbourhood Survey will take place after the implementation of Healthy corridors has begun and will serve as a learning experience for the entire spectrum of target audiences, from local stakeholders to the wider circles, including academia, to validate in which respects the implementation of clustered NBS in these neighbourhoods actually succeed in boosting wellbeing and social cohesion.

4.4.2 Co-design and co-implementation

As the project evolves further, URBiNAT cities will advance into the phases of co-design and co-implementation of urban plans. Data collected during the Local Diagnostics serves as the starting point, including needs and expectations as identified together with the community. Meanwhile, an exploratory process has been initiated to guide this development with a view to the Healthy corridor concept, spanning a more extensive intervention area composed of inter-linked public spaces/plots with the potential for combined high social impact and territorial continuity. The participatory activities are designed so as to include means of detailing and prioritizing each solution for that wider context, while leaving room for other interventions/needs that require further development by the municipality or stakeholders.

Also, in this activity, a number of joint actions of learning and sharing are being put in place. A specific online tool "The Miro Board" has been arranged whereby the frontrunner cities have the possibility to add activities and selected NBS so as to establish and nurture the Healthy corridor. The online whiteboard allows for cities to meet on-line and discuss the selection of NBS and how they envisage the engagement of citizens and the implementation of different NBSs.

The NBS catalogue was proposed in the Grant Agreement stage to establish the URBiNAT contribution for the NBS concept and typologies, according to the partners expertise and experience. The main contribution is the proposal of four types/categories of NBS that combine the environmental approach - Territorial NBS and Technological NBS - with the social approach - Participatory NBS and Social and Solidarity Economy NBS. This common platform is inspiring dialogue with citizens and stakeholders in each city, clarifying the aim and impact of the Healthy corridor, as a cluster of NBS. The URBiNAT NBS catalogue facilitates the interaction between the partners, the scientific community and the citizens, feeding the CoP and CoIs are underway.
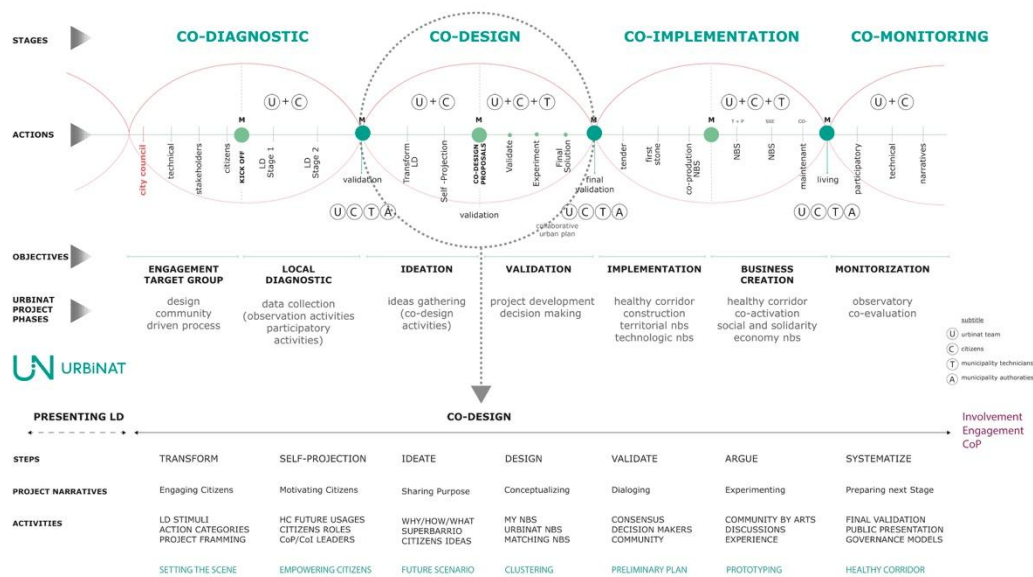
Figure 7b: Co-Design scheme highlighted (GUDA and CES, 2020)

The co-design phase started in December 2019 for the front-runner cities and faced several challenges during the process, due to the elections in Nantes and Sofia and the COVID-19 pandemic. As illustrated in Figure 7b, the methodology established for this phase features 7 steps:
1. Transform the Local Diagnostic into action categories
2. Self-projection of the citizens in the co-creation process
3. Ideation of the citizens ideas (NBS) by sharing a purpose
4. Conceptualize the ideas and development of clusters towards the Healthy corridor
5. Validation of the NBS clusters through consensus between the community and decision makers
6. Prototyping the NBS clusters to promote the discussions and arguments towards the urban plan
7. Systematization of the urban plan process and activation of the legal procedures

The WP4 partners, along with local task forces, made up of representatives of the municipalities and other central stakeholders in the neighbourhood, set up in each of the frontrunner cities, arranged several webinars on the ZOOM platform to develop a common understanding of the co-design methodology that should be adapted in each city according to the local urban planning culture.

The MIRO software was further applied to provide a digital platform to facilitate co-creation of NBS integrated in the urban plan, addressed in D4.3. On this basis, partners can experiment around different scenarios and share their experience and proposals. In preparing their urban plan structure, cities were asked to upload the tentative planning timeline with their activities, along with an existing urban plan as a reference.

For the co-design of NBS, including co-selection, URBiNAT has made use of SuperBarrio, a mobile application game. Players of SuperBarrio can visualise different NBS and explore their possible use in their neighbourhoods. SuperBarrio was first applied in Nantes Nord, February 2020, at the public library "Médiathèque Luce-Courville" with the participation of approximately 40 citizens. Selected NBS were the bike and pedestrian path, followed by food production and leisure pavilion, and also the urban vegetable garden. Aside from the solutions from the NBS catalogue, a feature named 'My NBS' opened

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for participants to propose new solutions. Some of the solutions raised and discussed addressed public sport areas, playgrounds, and benches.

Due to COVID-19, these along with most participatory activities were suspended around March, 2020. In May, with the reopening of the cities, the local task forces were asked to reboot their co-design activities. Although the digital approach became the obvious option for reactivating the dialogue with citizens, stakeholders and municipalities, the teams were concerned with the limited access of some citizens to computers, tablets or smartphones, as well as with the internet infrastructure. Risks of excluding the ones with more difficulties, thereby increasing inequalities, were apparent.

The frontrunner cities discussed and agreed to adopt a new action plan, retaining a combination of digital and physical activities, although the former attained greater weight than had been the case in the past. In Porto, 7 activities took place in June and July, 5 webinars and 2 workshops. The webinars used the ZOOM platform, sharing PPT presentations and working online in MIRO in a collaborative way to develop new ideas and receive feedback from the local elected people and municipal staff. The webinars had an average of 50 participants and the physical workshops had 40 participants making the local CoP today more active and engaged with URBiNAT.

4.4.3 Observatory and co-monitoring

As an innovative action, URBiNAT goes beyond the state of the art and demonstrates the advantages of an inclusive multi-stakeholder approach to urban renewal, leading to an inclusive public space that is open to all and with which residents can identify. As a member of the NBS project family, URBiNAT also aims to generate evidence-based knowledge about the co-creation of NBS, promoting greening of our cities and the development of associated amenities with and for the citizens. The Observatory is particularly important for underpinning and linking circles/levels 2 and 3 of the CoP, including the structured learning among the frontrunners and between them and the follower cities.

While the evaluation of participatory processes is related to and draws on continuous input from citizens, the impact analysis is a targeted pre- and post-assessment of the impact of the Healthy corridors in the study areas and beyond. The former applies qualitative methods as a basis for continuous monitoring, in effect tracking the implementation process as well as the performance of chosen methods and actions in the local context. The latter involves learning how to work with quantitative data for the specific purpose of answering cause-and-effect questions to support evidence-based policymaking. It compares specific moments in time and uses control groups to identify changes following from the enactment of the Healthy corridor, as set out by previously defined Key Performance Indicators (KPIs).[13]

For effective sharing of experience and commonality in the collection of information, processing of data and use of indicators is of high importance. Beyond the collection of relevant data, the degree to which available information is communicated and used as actual inputs to policy decisions, urban planning and public service development, is critical. Within URBiNAT, WP5 is in the process of developing a common framework for storing and structuring data, as well as providing user-friendly tools for accessing and using them. The result is the common Observatory, set to play a central role in facilitating the sharing of experiences and knowledge within and beyond URBiNAT.

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[13] The European Commission launched task force II on Impact Assessment Strategies particularly to promote the cooperation on this indicator development to foster comparability between the Horizon 2020 projects working on NBS.

The observatory is intended to serve the entire CoP of URBiNAT, spanning all project stages from the collection of data from multiple sources, including regular statistical databases, remote sensors and interactive apps operated via smartphones. The purpose is to help fulfil the tasks of the project by creating an environment apt to collecting, processing and making data available for all, where also experts and practitioners can work together on the same, or related, databases. It is capable of uploading all kinds of files, open access files, excel, etc, which can be combined, managed, and visualised as needed.

Where possible, open systems are applied, and active facilitation of collaborative work pursued with programs that are modifiable, while also able to create and alter content without being constrained by particular tools and/or proprietary vendors. Open source software is likewise preferred in order to avoid lock-in with specific software and vendors, and support sustainability. For scientific analysis, on the other hand, specialised software of commercially well-known brands can be applied. In this vein, the platform aims to serve the CoP in terms of both efficiency and sustainable maintenance.

As outlined in Figure 8, a blend of data is uploaded by authorized users (partners and cities), here in the left part of the figure. The sources span everything from statistical databases to remote sensors and interactive apps by different network infrastructures. The observatory platform consists of a main component and a dissemination component. Storage, processing and analysis apply a state-of-the-art toolbox fed by, e.g., Artificial Intelligence Analysis, Statistical Analysis, Qualitative Analysis, and Data Visualisation which are provided within the main component by bringing together mature and stable open-source software projects.

By applying FAIR Data Principles, the Observatory serves as a fast and scalable data processor, to both search and dissemination. Security and authorization can be managed using a preferred choice of access rights along with conditions for sharing, based on a menu offering suitable access levels on demand. Other services include geographical representation, timelines with structuring according to calendar, content combined with web-site arrangements and structured interface with the outside world. The Open Archive Initiative Protocol for Metadata Handling (OAI-PMH) is a standard increasingly used to exchange structured metadata (Devarakonda, 2010).
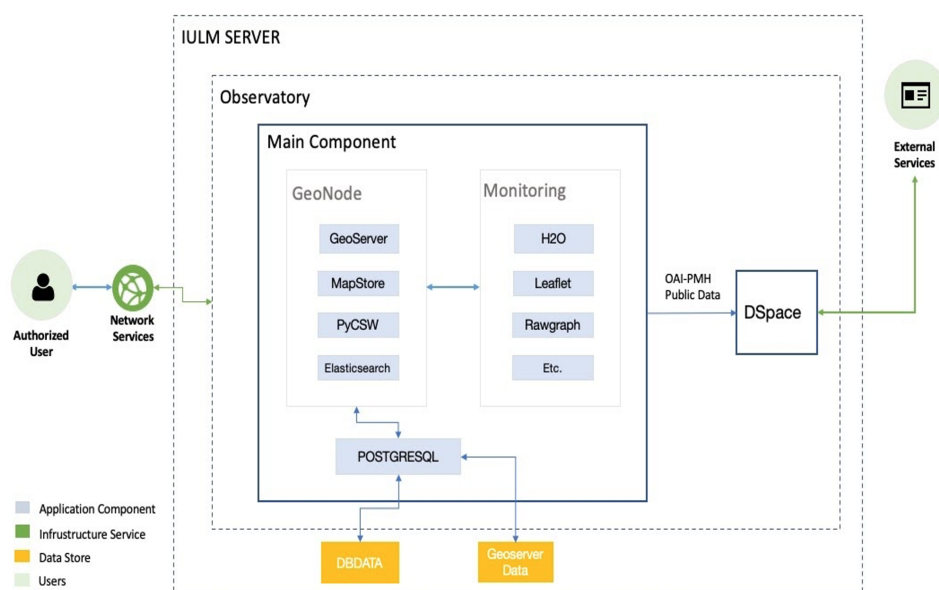
Figure 8: URBiNAT Observatory (IULM, 2020)
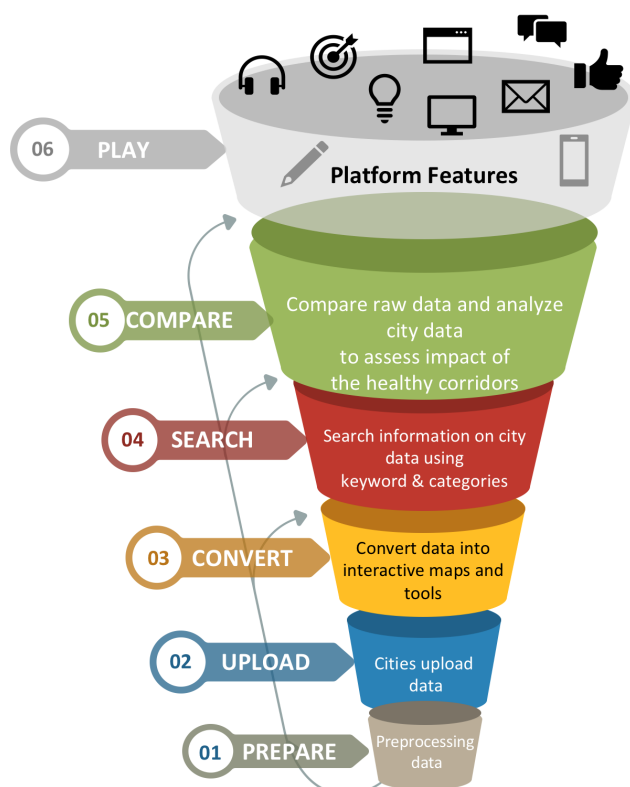
Figure 9: The Observatory Platform concept (IULM, 2020)

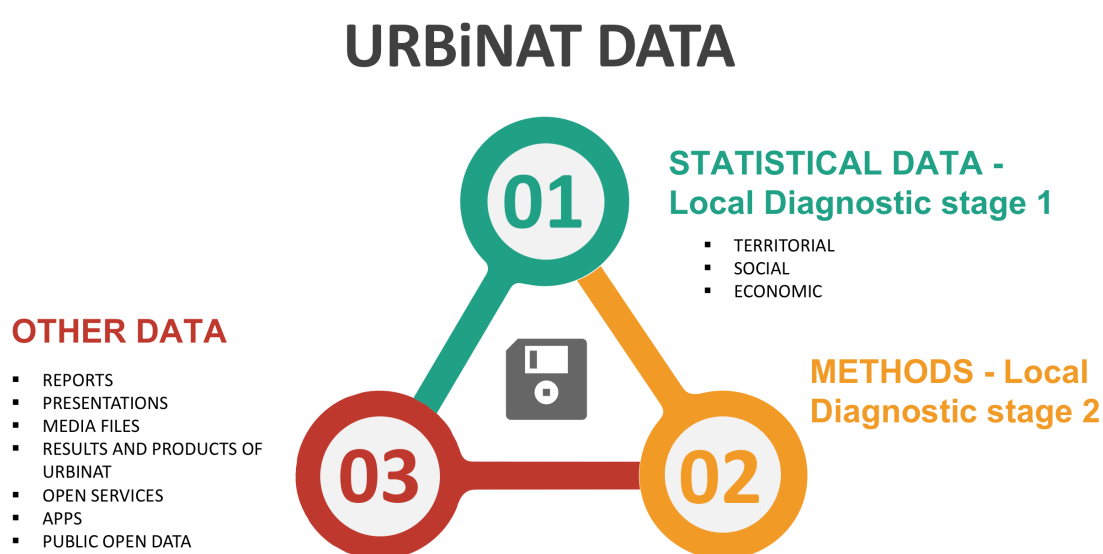The concept of the Observatory Platform is illustrated in Figure 9. In a first step, the material to be uploaded needs to be pre-processed, requiring converting different datasets into standard shapes and formats such as tabular files (.CSV or .xlxs) where column of a table represents a particular variable, and each row corresponds to a given record of the data set in question. Afterwards, these files can be uploaded into the Observatory Platform (http://urbinatobservatory.eu/) through various routes. Interactive maps can be created using information uploaded on the Healthy corridors. On this basis, it will be possible to showcase how the intervention areas developed through the course of the project and how the implementation of NBS changed the areas.

Work-in-progress is in the process of determining "filters" to be applied within the Observatory Platform, to facilitate locating suitable data with ease and speed. Here, "keywords" are applied as entry points for determining indicators applied for measuring of performances, whereas "categories" help frame KPIs, i.e., objectives and milestones to be achieved. The keywords are connotations of the qualitative and quantitative data collected during the local diagnostic, draw on the applications of special methods (Cultural Mapping, Behavioural Mapping, Walkthrough, Photovoice, Focus Group, Face-to-Face Interview, Neighbourhood Survey, Laboratory Analysis, and Territorial Mapping) and statistical data. Other important sources set to keep generating inputs include, among others, reports (deliverables), presentations, media files (interview transcripts, audios, notes), results and products of the project, open services, apps, and public open data for enriching the source of information available. Figure 10 illustrates the kinds of datasets (see further D5.1. and D5.2).

The Healthy corridor routes can be depicted so as to illustrate the connection between the deprived area with the rest of the city. Keywords and categories describing the nine URBiNAT methods, the NBS, and the Local Diagnostic Data serve as filters in the Platform to make it easier to find particular

information on specific data. The search function enables users to access information on city data in a fast and easy way by offering the possibility to search for words associated with the requested information. The Platform will also be used to compare raw city data and in a further step for analysation purposes in order to conduct an in-depth assessment of the impact of Healthy corridors in the study cities. Additionally, the Platform enables users to apply various kinds of features and to play with different tools, such as direct messaging, giving feedback to data that was shared, sharing ideas for all platform users, creating new target and focus areas, and establishing task forces. These features contribute to the CoP by enabling and encouraging knowledge-sharing and offers a different dimension of interpersonal collaboration through the possibility to connect internationally over a digital platform that is focussed on city data sharing. Everywhere in the world urban planners, environmentalists, residents, social and green entrepreneurs, as well as municipalities and other city stakeholders can connect on the common interest of designing more sustainable and green cities, given the prerequisite that these actors received some kind of a level of permission to access and view data.

URBiNAT DATA

STATISTICAL DATA -
Local Diagnostic stage 1
- TERRITORIAL
- SOCIAL
- ECONOMIC

OTHER DATA
- REPORTS
- PRESENTATIONS
- MEDIA FILES
- RESULTS AND PRODUCTS OF URBINAT
- OPEN SERVICES
- APPS
- PUBLIC OPEN DATA

METHODS - Local Diagnostic stage 2

Figure 10: Sources of data sets linked by the Observatory Platform (IULM, 2020)

In the digital environment offered by the Observatory, users can comment, rank, share files and contents between the members of the platform, aiming to address specific contents to the needs of the tasks of the project. It also provides contents and accessibility of the data to external users that range from the members of the scientific commission of URBINAT to the sister projects and representatives of institutions that are involved in projects with similar or complementary activities and aims. For the purpose of disseminating the data created by the project activities, the Observatory feeds selected data and results on a specific page on the URBiNAT website for user-friendly processing.

The latter implies active facilitation of collaborative work with programs that are modifiable while also able to create and alter content without being constrained by particular tools and/or proprietary vendors.

4.5 Digital Enablers and Responding to COVID-19

For reasons already noted, the use of digital tools has become increasingly important for CoPs, reflecting their inherent strengths pertaining to speed, ease of use, reach, precision/tailoring,

adjustment in real time, and data processing. By varying their properties, digital enablers offer cities a portfolio of mechanisms to inspire increased and more creative engagement by citizens on a range of issues, and in support of NBS and Healthy corridors specifically. Digital enablers further allow for better evaluation and for lessons from experimentation to feed back more effectively into new initiatives and programmes, creating the potential for a more favourable learning loop.

Despite their many advantages, digital enablers are associated with downsides as well. Reliance on digital communication is not necessarily conducive to sound social relations and trust, especially not where people know each other through previous physical contact, although anonymity can be an advantage at times. Further, not all people feel comfortable connecting digitally, or have the equipment and/or skills to do so, and may thus be left out. Issues further arise in regard to privacy, misuse of data, and when there is dependency on proprietary vendors. With COVID-19, reliance on digital communication has suddenly increased dramatically. While the resulting impact will take years to evaluate, and to manage, we end this chapter by briefly reflecting on the resulting expanded reliance on digitalisation, and its implications for the CoP.

4.5.1 Digital enablers in CoP

URBiNAT's CoP makes effective use of digital enablers at several levels, ranging from Basecamp as a user-friendly instrument for inclusive immediate communication within the consortium, to the arrangement of focused well-structured webinars and other means of on-line communication between its members, within cities, between cities and with the wider world (all four levels of the CoP). Further, URBiNAT has undertaken a review and examination of the best usage of digital enablers to promote quality engagement by citizens and stakeholders, throughout the process of developing NBS and Healthy corridors. The focus here is on the best means to help engineer constructive co-creation.

From the stage of local diagnosis undertaken in WP2, however, indications were at hand on obstacles and challenges hampering the potential contribution of digital enablers, particularly in deprived areas, that need to be overcome in order for such ambitions to be realized. Further insight in this respect has been derived in T3.3., where the following have been taken note of (Andersson et al., 2020):

i) Digital infrastructure is generally in good shape at city level, but deprived areas are often covered less well. Additionally, fundamental support services are weakly present, resulting in common issues with the speed and reliability of network access, along with inflated relative costs for digital services;
ii) Penetration rates are modest in regard to smart-phones and PCs. Meanwhile, online communication is dominated by proprietary vendors such as Facebook, resulting in usage display lock-in and dependency on information flows sipped through these media, and;
iii) Digital literacy levels are fairly low, especially for targeted disadvantaged groups and, again, dominated by suppliers that manipulate and control user data.

In contrast to the common focus on digital "tools", our approach puts the focus on digital "enablers". Beyond the technology per se, we open up their "black box" by structuring and screening their composition and functionality by way of four main building blocks: i) purpose; ii) methodology; iii) content, and; iv) tools. Through appropriate combinations of these four elements, digital enablers can be framed so as to take account of different situations, a rich array of user attributes, and adapted to the stages of co-creating NBSs and Healthy corridors.

T3.3 includes a review of relevant experience from around the world as well, relating that to the special context of URBiNAT cities, and, in particular, the deprived neighbourhoods. In mainstream efforts of cities to address the digital divide, the focus has often been on improved access to digital tools and infrastructure. Ample experience shows such strategies have generally had little impact. The analysis

and learning process initiated through URBiNAT has underlined the importance of breaking the prevalent user formats, which tend to be routine based and dominated by proprietary vendors. Various opportunities are at hand. For instance, cities can initiate new or use existing platforms, applying open systems for inclusive and informal inspiration in support of co-creation around NBS and Healthy corridors.

In preparing for the next stage, work is ongoing with the URBiNAT cities to identify and mobilise parallel CoIs, to be interlinked in the CoP with the help of digital enablers. Co-creation in this context utilises two basic approaches, one being challenges/solutions driven and the second identity/strengths driven. In T3.4, for each neighbourhood, candidates for parallel CoI are bred through consultation with citizens. Thus far, two specific challenges/opportunities associated with socio-economic considerations have been identified as of high priority to the citizens of several neighbourhoods; i) unemployment combined with the lack of undeveloped local markets for service provision, and; ii) unsatisfied demand for locally produced eco-friendly food products available at reasonable prices. Digital enablers, including smart apps capable of realising such CoIs interlinked across the URBiNAT cities, are under consideration. The objective here is to scale piloted models aimed for several cities; enabling replicable systems to be implemented in sync with necessary local adaptation.

While a full-fledged operationalisation of digital enablers for the purpose of targeting and engaging citizens in URBiNAT cities remains to be undertaken, the processes required for moving to that phase are basically in place. Hence, the operationalisation face is in preparation. In the meantime, various events, dialogue and training sessions involving citizens through digital means are already pursued on a continuous basis and have attained greater intensity and importance during the recent pandemic. In this period, digital communication has in effect replaced much physical contact and real-world events. This is not viewed as a preferred situation, as engagement achieved through non-digital and digital means are complementary. Many citizens, especially in disadvantaged areas, have low digital literacy and lack knowledge of digital enablers. Other methods thus remain in operation (including person to person contacts). Having said this, work is ongoing to work out the best means for strengthening the capacity of digital enablers to lead the way for engagement also under the pressing conditions of the current situation.

Digital enablers are associated with specific risks requiring special consideration. Some have to do with hacking, identity theft, violation of privacy, cyber security and misuse of data. It is of high importance to address such risks when deploying digital enablers. State-of-the-art protection of privacy and data security thus merit high attention. Likewise, the dependency on proprietary vendors such as Facebook in effect creates a situation of passive reliance by many vulnerable citizens of certain limited digital functions, requiring countermeasures if their use of digital means is to be extended to other spheres.

An approach using a blend where physical practices and digital enablers can co-exist and evolve side-by-side is thus generally required. Physical activities often attract a certain crowd, at times framed as the "usual suspects". Digital enablers, if appropriately devised, may be able to cast the net more widely, engage new interest groups, younger generations and can also help motivate "other" groups that do not frequently show up at physical meetings.

Other risks have to do with when, and how, digital tools are put to use. There is a clear-cut risk of fatigue, and that citizens are alienated by increased reliance on digital communication while, at the same time, real-world interface with human beings is being drastically reduced. Traditional means, such as "knocking doors", thus need to be retained, even if repackaged into new formats, especially when it comes to building trust and forming new relationships.

4.5.2 Responding to the Pandemic

The pandemic that hit the world in the spring of 2020 has had major repercussions not just for human health and wellbeing, but for social and economic activities broadly. The impact is genuinely global. Countries and societies around the world have recorded a varying number of infected patients and also fatalities, but basically all health systems have been subjected to heavy burdens. Additionally, societies and communities in most countries have taken far-reaching remedial and precautionary actions, including a shutdown of many social and economic functions as well as practices of social distancing (OECD, 2020*b*; Ferguson et al., 2020). Mobility by way of passenger transport, especially public transport both internationally and domestically, has been drastically reduced. International trade and investment flows have dropped. Work organisation and daily routines have been uprooted for hundreds of millions of people in large parts of the world.

Where possible, organisations and individuals have tried to adapt and change working habits, many by shifting to working remotely, from home. In the process, shifting from physical meetings to digital communication has moved from being a convenience to becoming a prerequisite for exchange of information and coordination. A much greater chunk of work-related activities, social exchange, care-giving, etc., has moved onto digital platforms and tools that offer connectivity, such as on-line conferencing, messaging apps, educational platforms, and so forth.

As a result, some old-fashioned and bureaucratic processes have been replaced by more efficient online procedures. Flexibility has increased, costs of transport and logistics have been cut, and time has been saved. In some strands of activity, palpable productivity gains have resulted.[14] Telecom companies have benefited and e-commerce platforms have boosted sales. On the other hand, demand has stalled in the aggregate, and the economy has been subjected to a severe contraction. Sectors, activities and professions unable to shift on-line have suffered severely. Those with low tele-workability, along with younger workers with fewer years of education, self-employed or engaged in the informal sector, part-time workers, those with lower earnings and women, are at high risk (Brussevich, 2020). These groups further tend to have access to health care and formal insurance to help them weather the crisis. All in all, a massive increase in income differences is in the cards, with the ultimate impact dependent on the severity and duration of containment measures and the depth and breadth of economic contractions. Evidence from past crises suggests lasting, negative effects on income distribution and job security.

These patterns of economic impact of COVID-19 imply that deprived areas, given a strong concentration of vulnerable groups, tend to be hit the worst. Further, living conditions are relatively cramped, sanitation weaker, air pollution worse, and the population suffer from a higher prevalence of pre-existing health issues while also being less informed on the importance of precautionary measures. These factors have been shown to play a part in explaining the variation in death rates from the pandemic.

As has already been pointed out and discussed under various headings in this report, the arrival of COVID-19 with associated lockdowns drastically impacted URBiNAT's activities in the deprived areas, along with most other city and community services. For instance, the build-up and leveraging of activities related to the Living labs, for which each city had put in place special work forces, were temporarily discontinued. The same applied to the co-creation processes under way for NBS in the lead cities. Taken together, this translates into a stalling of the 2nd circle of the CoP: Once the lockdowns were lifted and efforts began to regain momentum, the lingering threat of resumed contagion enforcing continued social distancing in the context of a depressed economy, meant that the participatory activities have had to shift to much higher reliance on activities on-line. As already made clear, the

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[14] https://www.brookings.edu/blog/up-front/2020/04/06/telecommuting-will-likely-continue- long-after-the-pandemic/

deprived areas, while already hit hard by the crisis, have also suffered from several obstacles to effective use of digital enablers, causing a double whammy.

In this situation, on the other hand, the participating cities have looked to URBiNAT and the CoP as a source of solutions to the deep predicament in which they have found themselves. In particular, the challenge of achieving timely digital enablers to deal with the issues raised by COVID-19 for deprived areas, present them all with previously unknown challenges. As a consequence, a new momentum appeared in the 3rd circle of the CoP, inducing the URBiNAT cities to compare their situations and share experience of what works. They also agreed to pursue some joint initiatives, in part to experiment new means of enabling relief and support for citizens, as a basis for building capacity and improving crisis management. Digital enablers advanced in this context include smartphone apps engaging volunteers in food delivery to fellow residents in the respective neighbourhoods, and others facilitating access to useful information locally, in the event of various emergencies during the pandemic.

There are other aspects to the rapidly enhanced reliance on digital communication tools caused by COVID-19, requiring responses at international and national level, as well as locally. These include problems with security, privacy and integrity, which give rise to risks and outright damage for large numbers of users associated with the digital communication itself. Although the issues at hand are not new, but have been strongly prevalent since many years, the situation has worsened significantly due to increased homework, including for large numbers of office workers who are not bestowed with appropriate protective equipment or software and also lacking the awareness and skills to protect themselves from cyber-attacks. Meanwhile, the call for usage of contact tracing apps and other technologies to control the transmission of the virus, risks permanently shifting protection of privacy and personal data. The rise of new surveillance tools needs to be matched by updated legal protection and other safeguards. Meanwhile, cybercrime is adapting to take advantage of the new situation. Those with least education, who have had to shift to work from home using personal devices that lack standard security features, belong to the vulnerable targets. Exploitation of the suffering associated with isolation and anxiety has evolved as well. New websites have been constructed, featuring conspicuous COVID-19 related messages, for the purpose of tricking unsuspected victims to download malware and phishing their identities.

Again, there is a silver lining. Tools and measures to assess risks and arrange protection have arisen and diffused rapidly. The CoP has a role to play in this context too, this time by encouraging digital "counselling" and collaboration in the neighbourhoods to promote circulation and sharing, of such defences, in support of safe and trusted online communication.

Additionally, COVID-19 has brought other impetus, relating to the role of public space, with significant implications for URBiNAT activities and the scope for their long-term legacy. One aspect has to do with the role of urban greenbelts in backing public health. Where lockdown restrictions were not as strict and where it was possible to go for walks and enjoy nature, the public spaces visited most frequently were parks, forests, and beaches. As a result, there has been a shift in people's perception towards the appreciation of public space (Gehl, 2020).

Related to this, as a common theme reportedly emerging from many of the discussions around the world, a 'new normal' is expected to emerge in the wake of the pandemic, different from that of the past. The disconcerting experience of the public along with governments and stakeholders will lead to search for a different reality. In looking for ways to avoid future pandemic disasters, changing priorities can already be seen to reflect a new concern with the urban environment.

Hence, many examples are at hand, of local governments acting to institute lasting changes to the city environment. Among the URBiNAT cities, this has so far been most visible in Brussels, kick-starting a drastic turn from a car-centric to a citizen-centric approach. This further includes investing in cycling infrastructure and making changes to the hierarchy of street life more generally, picking up an order of street priority as follows: 1. Pedestrians, 2. Cyclists, 3. Motor vehicles. Thereby, repurposing lanes formerly used by cars to pedestrians and cyclists.[15]

Among the other URBiNAT cities, Nantes and Høje Taastrup have taken measures to reduce air pollution in part through better measurement as a basis for increased awareness and engagement by citizens and stakeholders, as is reflected in Appendix 1. Porto is also closing streets for pedestrians during weekends to promote cultural, sports and social activities.[16] In Siena, a web page called "Siena restart together" was launched as a response to COVID-19, outlining problems and solutions in times of the global pandemic.

The CoP has naturally been activated to map, structure and assess these developments, as well as helping to disseminate the results and support their replication, or adaptation to fit the local environment in new application areas. These tasks have been pursued notably in T3.3 where the analysis of how to apply digital enablers have come to include consideration to the challenges raised by the pandemic. Responses in this respect have been addressed also in the 4th circle, for example through academic submissions and presentations at conferences, such as "Green Shaping Cities", an international research symposium with strong coverage of NBS.

Initiatives have been pursued also with the non-EU partners and observers in URBiNAT. For instance, on Earth Day on April 22, 2020, URBiNAT co-organised a webinar focusing on the impacts of human inactivity, both for individuals and for the surrounding environment. The nature and implications of the natural recovery and what it means for people, were analysed and discussed. As a result, an online idea bank is under construction, to collect core ideas for future projects that take into consideration COVID-19 related changes in the world. The ideas put forward to date, what individuals and communities can do, include the creation and usage of new digital enablers for virtual planting and moving green activities online. This event, which had a global orientation, went beyond the wider circle of URBiNAT's CoP to include a number of other organisations in the Middle East, Asia, and Africa (see further Section 5.2).

5. Beyond Europe

Non-EU organisations feature strongly in the URBiNAT project, opening for substantive contributions from around the world, as well as for impetus of the project results on a much greater scale than if the project had been limited to the EU. This is as non-EU organisations have vast historical and practical experience to draw upon, while also faced with massive challenges of the kind addressed by URBiNAT.

The CoP is of high importance for fulfilling the potential of such contributions. The administrative task of managing the organisation meets with special issues, however. For this reason, the central project coordination of URBiNAT, under the CES, is aided by IKED as a sub-coordinator, engaging in close interaction with the non-EU actors and the associated strategy development related to the CoP.

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[15] https://www.brusselstimes.com/brussels/111044/brussels-pours-half-a-million-into-new-cycling-infrastructure/
[16] http://www.porto.pt/noticias/zonas-pedonais-temporarias-vao-ter-mais-animacao-e-desporto-

In this chapter, we go on to review the rationale for inclusion of each non-EU actor country and the features and roles of the participating organisations (partners and observers). We then examine the development of strategic partnerships, taking into account the contours of two main categories, i.e. universities and research centres vs. organisations with national reach. In this, we consider their respective contributions in amplifying URBiNAT's CoP, along with associated practices and impact.

5.1 Non-EU Countries

The non-EU countries directly involved in URBiNAT are Brazil, Japan, China, Iran and Oman. All possess a rich traditional heritage of developing and applying NBS in city and community development. Table 6 outlines some relevant features pertaining to these countries. The upper part indicates potential strengths, while untapped opportunities and challenges are listed further down. All in all, this flags the presence of complex patterns of partly contradictory conditions within - as well as across - the different countries involved.

While the historic legacy may be less present compared to the other four non-EU countries included, **Brazil** presents distinct issues as well as approaches to NBS, public space and participation, drawing on its exceptional forest resources coupled with culture. Early initiatives to bring about citizen engagement include Arbor Day (Dia da Arvore), celebrated on September 21st and devoted to planting trees, which goes back to 1902. Deeper cultural imprints on politics and in the relationship with urban space have developed weakly, however. At the same time, Brazil possesses a wealth of traditional approaches to well-being as represented by its universe of culturally diverse communities, including forest peoples such as the indigenous "ribeirinhos" and "quilombola". These add to the dimension of citizenship a basis for "well-being\bem-viver" which emanates from balance with nature alongside deep relations of solidarity, reciprocity and harmony. Over time, however, the ecosystems and traditional cultures of Brazil have become subjected to relentless pressures. In recent years, public investment and spending on environmental policy have collapsed, while protection policies have been eroded under the label of "changing the rules and simplifying the norms".

Participatory processes have been applied in work with socially deprived Urban areas at least since the 1970s. However, widening inequalities, a growing informal economy and deteriorating amenities and public space, encapsulate a spiral of worsening fragmentation and deepening social issues. For Brazil, attention to NBS in city development now represents a precious opportunity to usher in a renewed concern for quality and life and overcoming social and cultural fragmentation.

To an even greater extent than Brazil, **Japan** is marked by a unique, almost mystical, man-nature relationship, which has accounted for a strong presence of NBS in urban development stretching back more than a thousand years. Japanese gardens are exceptional in terms of cultural connection and natural elements carry symbolic functions that are strongly embedded with local culture. Further, NBS carry very significant public functions. For instance, while Japanese citizens generally have tiny gardens of their own, they display an exceptional engagement with public parks, placing this as the number one leisure time activity for Japanese citizens on average. Authorities have further inspired public awareness and consumer preferences in support of sustainable and locally produced food supplies. However, the severe space constraints of the modern Japanese city bring high land value and puts public space under strong pressure, making it critical to assume solutions to add new value and usage of NBS.

	Brazil	Japan	China	Iran	Oman
Rich heritage	X	X	X	X	X
Tradition of NBS	X	X	X	X	X
Man-nature relationship	X	X			
Engagement with public parks		X			
Traditional garden culture		X			
Strong local engagement	X	X			X
Vibrant social innovation	X	X			
Untapped potential for NBS	X		X	X	X
Rapid urbanisation and industrialisation	X		X	X	
Loss of traditional knowledge				X	
Income disparities	X		X	X	
Downgraded urban environment	X		X	X	

Table 6: Illustration of stylized cross-country differences, non-EU countries in URBiNAT (Andersson, 2018)

The garden culture of **China** is even older, stretching at least two thousand years back to the Shang Dynasty. Its landscape architecture belongs to the oldest continuous models in the world, with important functionality as a source of wisdom, ethical commitment, recreation and social bonding embedded from the start. Chinese gardens thus represent transformed, humanised natural landscapes with deep symbolism. Always reflective of the Taoist totality of yin and yang, centrist structures strictly subordinated to human order are generally surrounded by natural, untamed vegetation. This tradition has been part of traditional city development, but their status and societal role has diminished during the last half-century. As China has gone through a relentless urbanisation and industrialisation process,

its sprawling mega-cities have become heavily congested, polluted and socially fragmented, while the cultural and environmental heritage has degraded. From around the turn of the millennium, however, China shifted its stance towards developing a knowledge-based society drawing on science and technology for value-creation. Urban planners are encouraged to apply "smart city" tools to resolve outstanding issues. Thus far, however, the emphasis has been predominantly on technology, and less on participatory processes and citizen engagement. A renewed serious consideration of NBS stands to bring a shift in mindset towards putting the needs of citizens and the overall linkages and harmony of cities back in focus.

With even older traditions, **Iran** may have the oldest and most sophisticated traditional garden culture found anywhere, stretching back more than four millennia. The Persian Garden, based on the right angle and geometrical proportions, combined innovative engineering and water-management solutions with human fulfilment, giving root to the term Paradise ("Pardis" in Persian). This notion has impacted on NBS as well as the design of public space and private residences, across much of Eurasia. While some precious traditional Iranian NBS have remained intact to this day, the urbanisation and industrialisation process of the 20th century led to intensive pollution, uncontrolled land development and an erosion of traditional amenities along with the quality of life for ordinary people in Iranian cities. Although many citizens remain aware of the value brought by NBS, their weight in city planning has been waning. Only in recent years has an awakening started to take hold, with renewed consideration to the importance of NBS in tackling societal and environmental issues in Iranian cities. Still, access to knowledge about the building blocks of NBS and how they relate is weakly present, and largely inaccessible to those responsible to city planning.

Oman, finally, has less experience of city development than the other non-EU countries taking part in the project. On the other hand, NBS have developed strongly across villages and the countryside since millennia, encapsulated in the *falaj*, a special Omani variant of *qanat* (canal) system for water management still operational in Yemen, and with remnants across much of North Africa, the Middle East and South Asia. The falaj represented not only sustainable irrigation solutions but applied sophisticated methods for how to divide the rights and usage of water in an equitable and efficient manner during cycles of varying availability. While key to the organisation and survival of local communities, these NBS cultivated the capability of people and institutions to compromise and achieve consensus, which has benefitted Oman to this day. In recent years though, local knowledge of this fabric has dwindled fast, contributing to depletion of water resources, desertification, erosion and also a sense of alienation A revival of NBS is seen as countering ethnic and tribal divisions and as a vehicle for revived community building and securing fulfilling local neighbourhoods.

5.2 Non-EU Organisations

In the following we present the main organisations that form part of URBiNAT's CoP in the five non-EU countries that are formally part of the project. They are presented country-by-country.

5.2.1 Brazil

The main partner of URBiNAT in Brazil is URBEM, the Institute of Urbanism and Studies for the Metropolis. URBEM is a research centre focused on urban studies which aim "to conceive and implement large-scale urban development projects in the city of São Paulo and other global cities". It will enrol cities as observers of the URBiNAT processes and results, in order to further the development of urban plans according to the Healthy corridor concept and methodology. URBEM will look for funding in the municipalities budget or in the private Brazilian foundations to back this agenda.

On July 10-11, 2018, the European Commission's Directorate-General for Research and Innovation (DG RTD) invited URBiNAT and other H2020 projects to the 2nd International Seminar for NBS, held in Brasília and organised by the Centre for Strategic Studies and Management (CGEE), the Brazilian Ministry of Science, Technology, Innovation and Communication (MCTIC), ICLEI - Local Governments for Sustainability, Sustainable City Innovation Observatory (SCIO) and the Connecting Nature project. The event brought together Brazilian and European cities, researchers, NGOs, businesses and practitioners to share experiences, learn from one another and have a lively conversation about how the planning, co-implementation and maintenance of NBS can make a difference in achieving sustainable urban development.

Following the 2nd International Seminar for Nature-Based Solutions, Campinas (São Paulo state), Belo Horizonte (Minas Gerais state) and Fortaleza (Rio Grande do Norte state) entered discussions with URBiNAT on possible Observership. Coordinating with URBEM, the Brazil partner, avenues were examined as well to attain private sector support for their engagement in countering social and environmental issues. Collaboration was established as well with the Sustainable City Innovation Observatory (SCIO) for the purpose of reviewing the NBS form for matching NBS cases with the needs of Brazilian territory. Separately, a newly developed academic institution - PUC/PR, Catholic Pontifical University of Paraná – examined possibilities to join as an observer as well, with the objective to enable increased local engagement in neighbourhood development. Also, resulting from the local articulation efforts of URBiNAT, in May 2019, a workshop on participation and co-creation was coordinated by the regional government in Curitiba, resulting in a lasting sharing environment.

In the spring of 2020, a new observer arrangement in URBiNAT was formalised as a partnership with the Commission for Ecology, Environment and Animal Protection, Paraná Assembly of Deputies (ALEP). Two tracks of activities form the backbone: i) in the short-term, the arrangement of local events to disseminate URBiNAT's concepts and methodological approach, and; ii) in a long-term, providing support to municipalities by way of inputs to workshops and seminars. Thus far, the technical team of ALEP has taken part in URBiNAT webinars on "urban plan" and "citizens engagement and digital enablers", with the objective of operationalising URBiNAT's concepts and methodologies in Paraná.

In September 2019, a workshop was conducted in Natal, hosted by the university and Partido Verde (Green Party). Stakeholders and citizens from the "Praia do Meio/Rocas" neighbourhood took part, focusing on a concrete project, i.e., the demolition of degraded housing areas to be replaced by seafront towers along with amenities to form the backbone of a new touristic area. The seminar advanced participatory local diagnostic and a joint vision for urban regeneration, in contrast with the city plans for verticalization. Natal has proceeded to develop the program in parallel with plans to attain Observer City status within URBiNAT.

Additionally, in Brazil, URBiNAT has become a member of Connecting Nature's Academy on Nature-Based Solutions, promoted by ICLEI. In a programme initiated in 2018 and lasting to 2021, the Academy is exploring the role of NBS in addressing water and climate-related issues. Contacts have been established as well with the so-called Observatory of sustainable cities.[17]

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[17](https://www.cgee.org.br/projetos/-/asset_publisher/W0hI4ElAHtL5/content/observatorio-de-inovacoes-para-cidades-sustentaveis)

5.2.2 China

China's participation is coordinated by the National Smart City Joint Lab (NSCJL**)**, founded by the Chinese Society for Urban Studies (CSUS) in order to create a strongly networked body focused on supporting a development-oriented smart cities agenda across China. NSCJL, in effect, serves as the leading think-tank and de facto promoter of revamping traditional urban planning procedures across China with the help of science, research and innovation with a focus on smart city development and NBS. On this basis, it underpins the development of participatory tools to engage citizens in identifying and addressing those issues that are central to the local context, in support of social well-being. Challenges acted on by the NSCJL include uncontrolled urbanisation, inefficient transportation, congestion and pollution, management of water resources, shifting to sustainable energy and food supplies, and addressing social fragmentation and exclusion in search of social harmony.

It is of high importance for NSCJL to work out ways of supporting and furthering efforts by Chinese cities to enhance their overall standard and the quality of their environment for citizens, by seizing on opportunities for green development linked to a completer and more competitive smart ecosystem. NSCJL base their work on cutting-edge research and the development of international standards (e.g. ISO). NSCJL further gathers international innovation resources, attracts world-class experts and scholars, and cultivates domestic talent. In this, NSCJL strives for realizing three-dimensional support for scientific research, talent development and discipline development. At the same time, NSCJL promotes transformation and applicability of research in universities and industrial institutes through the integration of "industry-university-research" and the establishment of "smart" Living lab". NSCJL cooperates closely with numerous cities in China, such as Shenyang, Nanhai (Foshan) and Hefei, which this way is connected with and takes inspiration from URBiNAT's notions of NBS and promoting Healthy corridors.

Since 2012, China has selected more than 300 cities or towns to serve as national pilot smart cities, located in more than 30 provinces around China. This extraordinary network, which includes mega-cities such as Shenzhen, Shanghai, Guangzhou and Nanjing, but also somewhat smaller cities, often with a unique historical and cultural heritage, such as Hefei, Guiling, Hangzhou, Jinan, and Chengdu. In principle, the 300-strong Chinese smart-city network coordinated by the NSCJL, illustrated in Figure 11, provides a potential exceptional extension of the URBiNAT CoP, which already promotes a range of smart city and Nature-Based Solution projects. Some aim to create more inclusive public space using green areas and corridors. Others strive for more congenial, accessible and user-friendly mobility and public transport, as well as smart infrastructure, smart tourism, and smart communities.

Of high importance in the agenda of NSCJL's is the promotion of innovations which can help engineer solutions tailored to local conditions. When acquainted with a particular new set of instruments, the NSCJL consults with its network and then selects the cities that are the most motivated and relevant for experimenting with and examining the solution at hand. With their focus generally directed towards technical issues and smart city aspects, the NSCJL teams up with city authorities, enterprises, universities, academic research centres, NGOs and other correlative organisations to establish a long-term cooperation mechanism.

For URBiNAT, following consultations with its city-network, NSCJL chose Shenyang to act as prime sounding board, the "lead" follower/observer city, examining and testing ideas and insight flowing out of URBiNAT, through inclusion in its city plans. The capital and largest city of the northeast Liaoning Province, Shenyang's exceptional historical heritage includes the Mukden Palace (Shenyang Imperial Palace), a blend of Manchurian and Tibetan architectural styles. Mausoleums of Qing dynasty emperors
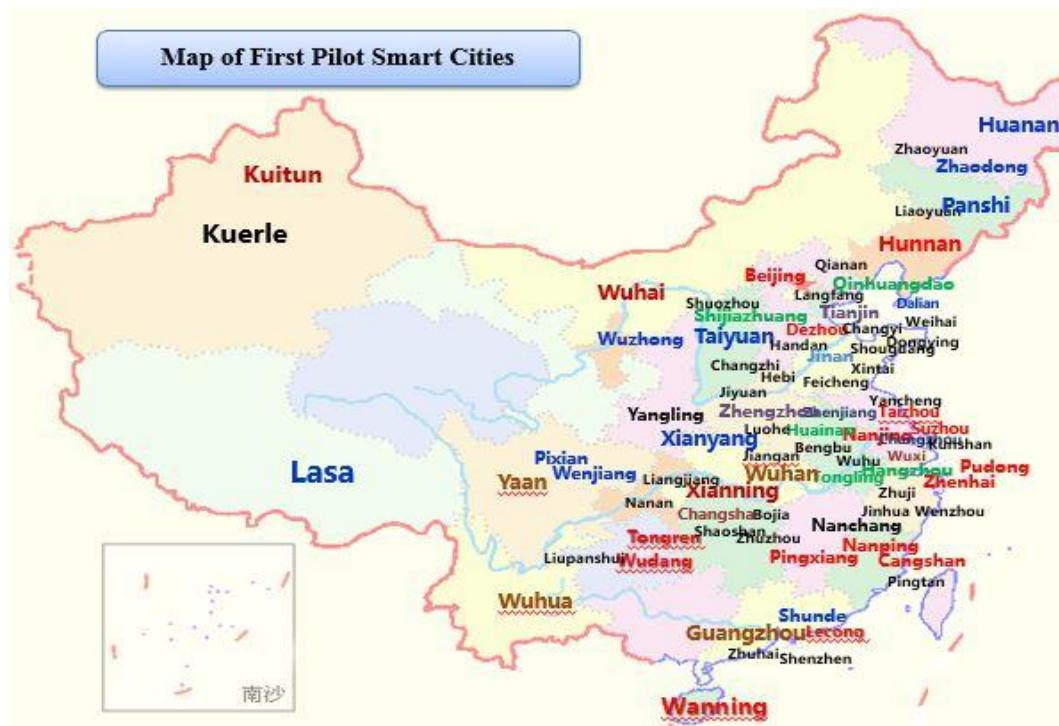
Figure 11: The Chinese national network of smart cities (NSCJL, 2013)

can be found at Zhaoling Tomb amid the pine forests and lakes of Beijing Park, and at Fuling Tomb in the city's east. While, over the past decade, the wider region and Shenyang as a whole experienced a shift towards more high-value-added industries and higher income, large neighbourhoods remain underdeveloped, marked by poverty and an unattractive environment. Different parts of the city are insufficiently connected, resulting in congestion, long travel times and social fragmentation, as is typical for many of China's cities.

As a partial response, Shenyang municipal finance recently established a special poverty alleviation fund of CNY 25 million (approx. EUR 3 million), to ensure the timely, high-quality and efficient implementation of the poverty alleviation project. In preparing for URBiNAT, the city of Shenyang has opted to examine and learn from how to work with citizen engagement around NBS, including development plans in support of poor areas. Here, the focus on how to generate increased usage and value from the "two-bank-waterfront city" agenda, by expanding and leveraging the use of its existing green space system (the city's relevant planning map is depicted in Figure 12). Further, input from URBiNAT to realize a connected mutually strengthening greenbelt system linking the main parts of the parts.

At the end of June 2018, Shenyang received a plaque saying: "Shenyang – Observer City of URBiNAT H2020 Project". At this time, in talks with Shenyang representative Mrs. Ying Li, first steps were identified, namely, to join URBiNAT meetings in order to coach and share experiences, concepts and methodologies related to urban regeneration, NBS, urban projects, participatory process, etc.; and to identify in Shenyang an urban area to develop URBiNAT, where we underline the relevance of integrating social housing neighbourhoods. Shenyang proposed the urban area of Hunnan New District.

During the course of URBiNAT, however, the regional government in Shenyang has gone through changes, leading to delays in the enactment of activities. As the project funding has held up too, the Chinese participation has lost some momentum. The National Smart City Joint Lab (NSCJL)

nevertheless remains committed and is seeking ways to resolve the issues. NSCJL is continuing the dialogue with Shenyang in order to consolidate its role as observer in URBiNAT, while also initiating dialogues with other cities. The Nanhai district (in Foshan, Guangdong), is under consideration as another observer. Furthermore, NSCJL has invited various URBiNAT partners to take part in events promoting the project in China. Ample presentation material has been produced for such purposes, including PPTs and printed leaflets. This way a large number of experts and senior city officials in China have become aware of the project and the topic. There is great potential to build on these connections through virtual communication.

Other cities and districts in China of high relevance for the CoP include Luyang in Hefei, Anhui, Hengqin in Zhuhai, Guangdong, Fuzhou in Fujian, Chengdu in Sichuan, Hechuan in Chongqing, Xuhui in Shanghai, and Jiaxing in Zhejiang. In Hefei (Anhui) authorities, the Big Data Department of Hefei Government, and the University of Hefei have shown interest in being part of URBiNAT and integrating the urban area of Luyang District (an area where the municipality want to do urban regeneration) into the project.

Figure 12: Planning Map for Shenyang (NSCJL, 2018)

There is also an interest in involving Chinese companies in the project. Furthermore, Macau University has shown interest in becoming an Observer, to promote Healthy corridors in Macau City. Various possibilities for intervention are on the table, with an opening for guiding the choices made and the mode of implementation through URBiNAT. These cities and districts offer interesting and relevant experiences that can be of value for URBiNAT cities; and are also interested in learning about the experiences and knowledge developed in URBiNAT cities.

5.2.3 Iran

The project partner in Iran is the Iran Chamber of Commerce, Industries, Mines and Agriculture (ICCIMA), which spans all industrial activity in the country including manufacturing, services, mines and agriculture. It is a non-profit institution devised for bottom-up engagement. All Iran's 31 provinces are

represented in ICCIMA as the national body, each having its own local chamber with broad local stakeholder representation. It promotes collaboration to spur competence development and building more attractive and successful conditions for economic and social progress on the ground. More inspiring, amenable and bonding conditions are seen as key to innovation and value-generation.

Having established an internal commission for "Water, Environment and Green Economy" in 2015, ICCIMA aims to promote usage of NBS as a means to increase quality of life as well as promoting innovation and commercialisation. Through URBiNAT, ICCIMA plans to gain new experience of how to address specific local needs and opportunities, for the purpose of achieving greater liveability, higher productivity and social cohesion.

In order to support the diffusion of results, ICCIMA has invited the Department of Urban Planning and Architecture at the Ministry of Roads and Urban Development (MRUD), as a coordinating national institutional partner. MRUD is the policy-making authority responsible for housing and urban planning/development, as well as the overall transport sector of Iran. MRUD is the main policy-making body within urban planning and management of urban space and is responsible for administrative plans in land, housing, urban planning, government buildings and urban development. It supervises the provision of Master and Detailed Plans for cities across the country, in close collaboration with city councils and municipalities. In recent years, MRUD has started to pay attention to cultural and social conditions. Its agenda now includes active promotion of Iranian, traditional and national architecture.

The Chamber, in consultation with MRUD, selected Khorramabad to be at the forefront of information exchange and pioneering new solutions introduced through URBiNAT. Its physical structure is strongly influenced by the natural elements including mountains and rivers. The tall citadel Falak-ol-Aflak (*The Heaven of Heavens*) forms the historical core. The administrative-commercial centres are located on the northern part and residential districts formed along the Khorram and Kargan Rivers (with more than 100 historical bridges). Kiu Lake is situated in Kiu Park and green areas surround this recreational district. Uncontrolled urbanisation has led to severe problems, however, with deprived and undeveloped areas stretching from the centre to the south of the city. Lack of accessibility, mobility (traffic nodes), and concentration of resources to the northern part has led to friction and lack of trust among citizens in the south, where many residents suffer from a sense of discrimination. As a result, the structure of the city as it stands is inherently polarized. These difficulties have contributed to worsening an already bad economic situation, which has brought deep poverty for the population, coupled with a sense of despair and helplessness.

Before URBiNAT was introduced, there was no plan for how to amend either the land use pattern or the lack of confidence among citizens. Meanwhile, minimal attention was paid to the natural and historical heritage sites. Some NGOs had tried to call attention to these issues but lacked the clout to exert any palpable influence.

Through URBiNAT, the situation has changed markedly. Starting with the preparatory meetings, and followed up by a series of workshops engaging all key stakeholders, a firm plan has been developed, to work with citizens on the establishment of several interrelated NBS within a wider framework of Healthy corridors, leveraging Khorramabad's historical assets, legacy and existing city fabric, through inclusive practises.

From the outset, the city of Khorramabad received the proposition to take part in URBiNAT with interest and pride. Given the nature of the project, it soon became evident that effective implementation required the local organisation to be given priority relative to the national set-up of ICCIMA. Already in the fall of 2018, an adjustment was prepared, whereby the Lorestan regional Chamber of Commerce

(LCC) was granted the lead. This was felt to be particularly important in order to strengthen local buy-in and enable a genuine boost to community-driven processes. One year later, in the fall 2019, the formal project coordination shifted to LCC and the bulk of the Iranian project team was located on the ground, in Khorramabad.

At the core of the project stands the Poshtbazar neighbourhood, a historical centre. Although currently dormant, early consultations between the Iranian team and local representatives raised the prospect of its potential revitalization, as a means to leverage self-confidence and create a source of innovation and development. The introduction of NBS was proposed as a new mechanism for bringing citizens together around this agenda. Part of the plan is to create a functioning inner circle where people can move around by foot. Of key importance is the establishment of a route leading car traffic outside the city centre, as illustrated in Figure 13. On the inside will be a system of walkways coupled with effective public space. Eventually, the plan is to form an interlinked circle of new attractive 'development centres', capable of connecting with all main neighbourhoods. Illustrated in Figure 14, the planning and implementation of these centres is set to propel genuinely experimental activities, stimulating citizen engagement and co-creation. Such work has since been initiated, entailing citizens along and relevant stakeholders in inclusive practice. Apart from enabling bottom-up lead, the purpose is to restore trust between residents in different parts of the city, especially deprived areas, and also between people and city officials, and the other way around.

The continued co-creation process is to be accompanied by systematic evaluation using the URBiNAT observatory, allowing for comparable studies and mutual learning from parallel exercises pursued by other URBiNAT partners within the CoP.

Figure 13: Plan for restructured car traffic coupled with path-ways within the historical core (ICCIMA, 2018)

Figure 14: Plan for revitalization through interconnected city centres (ICCIMA, 2018)

The Khorramabad workshops (Box 3), organised with strong engagement by a broad range of URBiNAT partners represented an instrumental building block in this respect. The application of a creative format allowed for different groups to take stock of the issues confronting the urban environment, as well as reflect what could be achieved by coming together around the implementation of NBS and a Healthy corridor. They greatly contributed to broad-based understanding of the project and what it aims for, paving the way for co-diagnostic and the commitment of all main actors to the ensuing agenda in Khorramabad.[18]

Under the URBiNAT umbrella, the continued activities need to maintain a well-connected team, with the workshop architects and instructors remaining on board and active. It is imperative in this to keep linking the different URBiNAT CoP circles of interaction: i) The consortium itself provides legitimacy for cross-border collaboration and the engagement of international experts; ii) The in-city linkages realize unique scope by way of representation by all relevant local actors; iii) The between-city exchange and comparisons signal a powerful message that city authorities and residents in Khorramabad are not alone in their task, and; iv) the wider context, in Iran itself and internationally, critically underpins the message that the lessons learned are of generic interest and value, as well as locally relevant. Next, these interactions need to play out through the ensuing steps of co-creation in the implementation of the proposed Healthy corridors.

To support communication, the Iranian team put up a website in Farsi as www.urbinat.ir, to produce project contents in Persian language for the local citizens who are rarely able to read and speak in English. All project information and news are published on this locally tailored website, to account for a continued close connection with all interested parties, not only in Khorramabad but throughout Iran. Moreover, an URBiNAT booklet was translated into Persian language, expanded for increased relevance in Iran, and distribute large numbers to interested people and related authorities of the city and elsewhere.

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[18] https://urbinat.eu/articles/urbinat-workshop-held-in-khorram-abad-iran/

Khorramabad workshops (October, 2019)

Following the URBiNAT project initial steps in Khorramabad, Iran chamber of commerce, alongside with Lorestan Chamber of Commerce, alongside with Lorestan chamber of commerce and the local municipality hosted a four-day workshop from October 21 to October 24 by collecting different disciplines together through participation of EU URBiNAT members in addition to interdisciplinary experts from Iran.

After an official opening ceremony on Oct 21 with the presence of all stakeholders of the city including the mayor, local authorities and citizens, the workshop continued with some training sessions about Local Diagnostic, Co-creation process and NBS catalogues in Lorestan Chamber of Commerce. Then participants visited the old neighbourhood of the city which has been selected as the pilot neighbourhood for the project.

Visiting one primary school for girls and another secondary school for boys were other activities of the workshop. European and Iranian participants took part in an interview-game with pupils about Nature-Based Solutions such as imagination games, photo voice, as well as co-drawing to extract the indicators of an ideal city and neighbourhood from local pupils. Students received gifts at the end such as T-shirts, notebooks and colourful pens with URBiNAT logos to share the story of their practiced games with their friends and families as the URBiNAT ambassadors.

Workshop participants then continued to map the neighbourhood and its challenges through a collaborative process, by visiting different districts of the old Khorramabad neighbourhood and interviewing with the different groups of local citizens in the Poshtbazar neighbourhood, including minorities. Interviewers asked people about something they like, dislike or prefer to change in their living area. This collected data were complemented by photos taken by each participant from the visited place to share and discuss with others. Also, local city guides assisted the visiting groups for making a deep diagnosis of the natural aspects of the neighbourhood.

After collecting feedback from local residents, in addition to the students, the participatory process continued by making use of post-it notes fastened on a map, to further examine and prioritize the essential needs expressed by local people. Then participants initialised Co-Selection and Co-Creation of Healthy Corridors in the neighbourhood for one more day, making use of the URBiNAT NBS catalogue. This resulted in tentative design by workshop participants of 2 proposals for a Healthy Corridor in the Old Khorramabad neighbourhood.

Box 2: Khorramabad workshops (LLC, 2020)

Due to the high penetration rate of Instagram among Iranian youth, andlocal citizens of the pilot neighbourhood in Khorramabad, an Instagram page has been launched as urbinat.ir to share the information, news, pictures and videos of the project implementations steps in Khorramabad, and to connect with other related projects and institutes, nationally and internationally.

Several measures have been under consideration in support of collaboration and the participatory process in Khorramabad. For selecting the best means, first, it was essential to identify key target groups. That analysis was carried out in a transparent and inclusive manner which, in itself, represented a highly unusual approach in this environment. This brought a common realisation that political clout and existing privilege are not the relevant criteria, rather the opposite. Here are some of the means used for engaging specific target groups:

1. Urban facilitating offices or centres;
2. Local NGOs which are active in different fields like supporting addicted people, children, women, protecting environment, etc.;
3. NGOs that play a significant, or potentially important, role in enhancing participations in the neighbourhood;
4. Schools and kindergartens;
5. Well-known local individuals and influencers such as athletes, actors, and religious leaders, who are willing to step forward and champion the agenda at hand.

As for holding participatory events in the neighbourhood, the project team picked up on the notion of facilitators, introduced by the project. The establishment of an inclusive work space, an open office, located in the target neighbourhood, was further identified as a necessary element. This office has since been prepared and started to pursue the participatory essence of the regeneration process, activating 6 facilitators along with residents. The facilitator team includes an urban planner, an economist, a sociologist, a social worker, an office manager and a legal expert. A new opportunity has thus opened up for residents to work with each other and with the facilitators on a continuous basis, as well as in pre-arranged brainstorming meetings or specific exercises.

Since its inception 6 months ago, a number of events and conventions have been held in this place, with broad representation by local people, authorities and officials. This has further advanced a spirit of mutual trust among citizens and enhanced their engagement.

5.2.4 Japan

Setsunan University in Osaka participates in URBiNAT as an observer. Covering both the humanities and science. Setsunan University applies a cross-disciplinary approach with high ambitions to profess a holistic perspective. Classes are small and students commonly undertake parts of their training at partner universities overseas.

The focal area for Japan's engagement is the Yodo river system, which flows from the Biwa Lake to Osaka bay. Biwa is Japan's biggest lake and the Yodo river waterside embraces the richest biodiversity in Japan. The wider region used to serve as an important distribution route and is also a cradle of rich culture. Today, especially the areas northeast of Osaka, where Setsunan University is located, are marked by post-industrial issues and an aging society.

Connected with URBiNAT, Setsunan University has stepped up their engagement in the development of this area, engaging with the local authorities, the urban planners and other stakeholders. In that undertaking they have brought together research expertise across science, the humanities and economics. Since the start of the project, they have solidified joint work examining the potential contribution of NBS solutions, with consideration to ways of engaging citizens in promoting and helping to devise a combination of biological and cultural diversity in this geographical area.

This work has gained further inspiration through the considerations how NBS can help create new communication routes and thereby help bridge the gap that presently runs across the watershed, experimenting with ways of having that re-contextualized within the framework of a "post-industrial city". Through sharing of information and experience with the activities under way in other URBiNAT cities, a process has been put in place for developing analysis and proposals on how to shape Healthy corridors resulting in value-generation for local communities. The project will further collaborate with and diffuse findings of the project across a network of cities located in the wider Osaka region.

A joint conference planned for May 2020, aimed to advance ecological engineering around the historical geography of the Yodo River, has had to be postponed to November. In the meantime, architects and academics have continued work on the Yodo River for the purpose of gaining new insight on the appearance and traits of the historical cultural assets, especially on the eastern shore of the river. It is envisaged that this work will contribute to an improved understanding of the region and lay the basis for new ideas on how to work with people to appreciate and realise the value of culture. Through the collaboration with URBiNAT, complementary efforts have been made to identify facilitators in this respect. A practical example could be a small playground strategically located next to a deprived area, which could potentially serve as a catalyst for families/parents to meet and be inspired to engage in creative dialogue on the subject. An alternative is a canoeing club which brings people together to use a related waterway.

Other relevant initiatives taken in the meantime includes the organisation of a tourism network along the Yodo River by the Osaka prefecture government. Consultations were undertaken with NPO, the local government and the university. The continued progression of the project work is considering ways of influencing the tourism network while linking with civic movements to inspire co-creation around the historical and cultural assets.

5.2.5 The Sultanate of Oman

The Omani engagement in the project is undertaken through PEIE (Public Establishment for Industrial Estates), subsequently renamed Madayn[19], an autonomous organisation established by Royal Decree in 1993. Responsible for developing and managing all industrial parks across the Sultanate, as of 2018 Madayn operated a total area of more than 100 million sq.m., 2'000 tenant firms, and 57'000 employees in its tenant companies. Sustainable development and quality of life for all are the guiding principles in building such business communities. On this basis, Madayn has adopted concrete action plans to reduce the carbon footprint of its estate, enhance renewable energy use, enhance green areas and provide rainwater harvesting services for all its industrial parks. It also aims to protect natural habitats within its estates. New master plans have been considered to protect mountains and other natural habitats.

Despite these ambitions, Madayn is faced with difficulties to implement its objectives, in part due to lack of competencies, a tendency of reliance on top-down decisions coupled with the absence of corresponding engagement by its tenant companies as well as by individual employees and other stakeholders. PEIE has decided to join URBiNAT as an observer, for the purpose of taking in experience and lessons of other project partners, but also with an explicit interest in initiating an experiment where new NBS are channelled into the master plan of a new industrial park presently in preparation. The identified, and tentatively chosen, location is next to Sur, the 4th largest city in the country and a key traditional centre for maritime industry in Oman.

Spanning 30 million square meters and a coastline of 8 kilometres, the area to be developed incorporates precious natural landscapes. Through dialogue with URBiNAT, Madayn has opted to experimentally test water-saving plantation technology, which was initiated in May 2020 by a pilot comprising 50 native trees, planted along an attractive, seasonal riverbed without any use of conventional irrigation. Extending from there, preparations are ongoing for establishing botanical gardens in a green corridor comprising 40 hectares. The project is set to inspire a new approach to the framing of master plans in other industrial sites in Oman as well, with consideration to NBS and smart sensors to support their usage and further development backed by the active engagement of residents and tenants. The objective includes achieving improved health and wellness alongside a more productive working environment. A favourable linking in the form of shaded walkways and bicycle

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[19] https://madayn.om/

lanes, between the industrial parts of the park and residential areas, is part of the picture, as well as a sense of increased community belonging and shared identity.

Building on Oman's neutral standing in the Middle East, URBiNAT co-organised the international conference "The Future of Water and Humanity" along with workshops for youth in November 2019. The focus was on water as a key NBS whose management is critically dependent on human organisation and technology. An innovative youth workshop, targeted school children, was held in the Learning Centre at the National Museum of Oman, providing an engaging environment for inspiration and exploration of linkages between ancient practices and future challenges (see further below).

5.3 Consideration of Strategy for CoP in Non-EU

As a basis for framing the non-EU strategy, we underline the importance of balancing considerations to effective resource use and capturing synergies with an approach that embraces flexibility and an active learning mode. Coordination with non-EU organisations risk becoming time-consuming and administratively burdensome, since typically there will be greater cultural and institutional diversity than what is present in the EU, and probably additional hurdles and also practical constraints in communication and logistics. URBiNAT for these reasons arranges with one partner, IKED, in this case supporting the overall project coordination of CES by staying particularly close to the non-EU, observing their issues, actions and development, and engaging particularly deeply in shaping a strategy that is suitable for advancing URBiNAT's collaboration with these countries and organisations. In this, IKED engages closely with the various work package leaders, when their realms come into focus. It is also helping to engage other partners with suitable competencies and agendas, for special engagement on occasions when such needs arise.

Having considered, in the sections above, the rationale for inclusion of each non-EU country in URBiNAT, and examining the nature and features of each specific organisation (partners and observers) involved, in the following we consider the formation of strategic partnerships based on the varying features of two main categories, i.e., universities and research centres vs. organisations with national reach. These two categories should not be interpreted as an absolute dichotomy. We rather outline our guide to what we view as most promising by way of serving as inspiration for working with those that belong primarily by one category of the other. Attention is paid to their varying activities and roles in contributing to the CoP.

5.3.1 Non-EU universities/research Institutes

For the non-EU universities in the observer category, which are located in Brazil and Japan respectively, the lack of designated budget implies that other mechanisms than their regular participation in project meetings and other work package activities need to be applied to build a strong connection, along with orderly mechanisms for communication and shared learning. The following instruments, which are in line with the established ways of working for these organisations, have been advanced through experimental steps to frame strategic cooperation with them around URBiNAT's core processes:

- Tools/mechanisms:
    - Use of URBiNAT's contents/materials with students in academic courses: in the framework of institutional protocols, research outreach and dissemination activities,
    - Members of the URBiNAT project as external evaluators of the resulting academic products (reports, prototypes, projects, etc.),

- o Development of community-based initiatives, where links to universities are natural, including citizens' co-creation principles,
  - o Engaging real communities as case studies,
  - o NBS implementation in local communities,
  - o Seminars about URBINAT concepts, co-production, relationship between university and community.
- ● Means for articulation with academic disciplines:
  - o Scientific and technical knowledge to answer societal challenges,
  - o Learning by practice,
  - o Production of reports, projects, videos, prototypes, local and practical action in community,
  - o Production and co-creation of results to be prepared for other outlets and published as other kinds of reports or "output".
- ● Utilising varied approaches and practices:
  - o Social innovation,
  - o To extend the active participation of undergraduate students,
  - o Interdisciplinary approach,
  - o Strengthening relationship – University and social organisations (SE).
- ● Formal partnership:
  - o Responsibilities of each party to be clearly defined and reciprocated with a view how to strengthen an academic strategic partnership,
  - o Format of formalisation/celebration.

While all the above carry good potential in their own right, various kinds of limitations make it important to prioritize as well as apply realism in expectations of what it takes to achieve progress in the different areas. The experience thus far demonstrates, however, that strong results can be achieved, using limited resources, although the avenues for success differ.

In the case of Brazil, the local university and other engaged local bodies form part of a vast and complex institutional landscape. The interface brought about between URBiNAT and the local institutions opens for a wealth of contacts with highly engaged and capable local organisations as well as individuals. At the same time, these co-exist with a state of utter institutional confusion and outright mismanagement, in the face of serious outstanding challenges doing tremendous damage to both natural assets and local communities. Here, there is no shortage of local readiness to engage in intensive collaboration and concrete application of URBiNAT activities. The impediments are practical, economic and organisational. It is of high importance for URBiNAT to nail down and pursue the tracks that have the chance to support real results.

In Japan, URBiNAT's local interface is much more focused. It is also well organised and access to financial resources is not a major issue, although constraints still appear by way of organisational readiness and time. In this case, it is important for URBiNAT to keep following, engaging and promoting innovative and fruitful application of its methods and tools in the specific case at hand, and then consider the potential of diffusion from there.

In both cases, a key factor for success appears to be the ability to coordinate well with non-EU URBiNAT members to select and focus on activities that are well organised and display a readiness to be leveraged by the additions of URBiNAT's key contributions, typically in regard to the approach to participation and the evolution of NBS into vibrant and value-enhancing Healthy corridors.

5.3.2 Strategy for organisations with nation-wide reach

In contrast to the situation with universities, which take part in URBiNAT as observers, two of the organisations (NSCJL and ICC) with national reach are proper partners, with a budget and a well-structured plan for how to engage in the different work packages and also specific tasks. The third, (PEIE, or Madayn) is yet engaged as an observer without an ear-marked budget.

Both NSCJL and ICC entered the project with high ambitions. Both have an individual city taking part as a follower, while also relating to a wider network of national cities which, in many cases, meet with enormous needs and challenges. NSCJL counts approx. 300 "smart cities" under its umbrella and has, in addition to Shenyang city, advanced relations with Nanhai as well as Hefei and Zhuhai, three other cities in China with strong interest in implementing NBS through citizen participation. Challenges facing the Chinese cities include heavy traffic, recycling, pollution, water scarcity, underground pipeline corridors, etc.

In the case of Iran, the ICC has a national network of 33 regional chambers, linking to all major urban areas in the country. The organisation has an earlier experience of collaborating with a national urban facilitation project, set up by the Iranian Ministry of the Interior throughout the country, whose organisation included Khorramabad. On this basis, it has been possible to benefit from cooperation with the local urban facilitation office of Khorramabad, when introducing URBiNAT. More importantly, the existing nation-wide network of such facilitation offices In Iranian cities provides an instrument for diffusion and coordination, which can be used to spread new ideas and initiate dialogue, at regional and local level. Through URBiNAT, enriched perspectives and new approaches to sharing and exchanging experience on urban regeneration activities have entered this communication. In this way, the objectives and concepts professed by URBiNAT have already become known in many other cities, besides Khorramabad, feeding a wider interest in experimenting with new initiatives to instigate inclusive participatory processes. While this agenda naturally is driven by the Iranian partner along with Champions in Iran, the continued engagement by the URBiNAT consortium and team will matter greatly for the continued diffusion and dissemination activities.

ICC and LCC have also made use of special occasions, where the nature of URBiNAT's approach to cross-border collaboration, has been fitting. For Kishinvex Oct. 22, 2018, an annual international exhibition, the ICC arranged for all Iran's regional chambers to be invited to two URBiNAT panels, as well as display their own presentation material, for dialogue and diffusion of new ideas among all members. In addition, also on Kish Island, back-to-back with Kishinvex, URBiNAT took part in the Middle East – Europe Forum on "Collaboration in Translational Research for a Sustainable Future", with ICC and also the MRUD active and collaborating in organising sessions highlighting URBiNAT.

Both NSCJL and ICC have attempted to achieve success in the engagement of the particular cities they selected for immediate engagement in URBiNAT, partly to provide proof that active participation in URBiNAT brings concrete action and benefits. In addition, both wish to use the results developed in URBiNAT across a much broader network of cities and districts, in principle all over China and Iran. In China, inclusiveness, equality and liveability are seen as challenges. The notion, brought by URBiNAT to achieve constructive results in these areas based on citizen participation, is met with high interest. In Iran, nation-wide challenges include intensified population concentration in provincial centres, unequal distribution of resources and amenities, imbalanced regional development, deprived areas, increased immigration rate to the big cities, and unsustainable use of natural resources, including water. Here, a central ambition is to improve public-private dialogue and facilitate better ways of communication and instil more fruitful collaboration and synergy between diverse development efforts.

The situation at hand should also be viewed against the backdrop of outstanding institutional challenges in each of these countries, creating a need for new openings for engaging in genuine approaches to revitalising local communities. Again, URBiNAT's approach of linking and leveraging historical assets through citizen engagement in shaping NBS and Healthy corridors is proving a viable way forward, to be further examined and documented through the CoP.

In Oman, where Madayn similarly has national reach, active participation in the URBiNAT CoP was less important for its engagement. With no budget allocated from URBiNAT, the Omani partner thus far connected weakly with the rest of the network. Having said that, Madayn demonstrated a very serious intention from the start to embrace a new strategy for regeneration of its industrial districts, using NBS and Healthy corridors based on inspiration by URBiNAT. Tangible progress has been achieved accordingly.

This leads us to identify the following building blocks for collaboration with this category of non-EU actors:
- Tools/mechanisms:
    - Use of URBiNAT's contents/materials across different regions and a spectrum of cities for diverse dissemination activities,
    - Development of community-based initiatives, whenever possible, including citizens (co-production and co-creation principles),
    - NBS implementation in special locations with the engagement of local communities,
    - The arrangement of diverse meetings/workshops about URBINAT concepts, co-production, relationships in the community.
- Means for articulation of knowledge:
    - Practical and technical knowledge to answer societal challenges,
    - Production of reports, projects, videos, prototypes,
    - Production and co-creation of results to be prepared.
- Utilising varied approaches and practices:
    - Social innovation,
    - Making use of digital enablers to engage citizens and stakeholders for broadened interactive interfaces,
    - Potentially create digital platforms which can catalyse co-creation,
    - Extend the active participation of citizens,
    - Involvement of various government departments and societal actors,
    - Strengthening relationship between actors in the city.
- Formal partnership:
    - Responsibilities of each party to a strategic partnership, clearly defined and reciprocal,
    - Format of formalisation/celebration.

Work with the major non-EU organisations that have national reach has proven potentially very impactful. The experience thus far demonstrates their high responsiveness and commitment to the URBiNAT CoP, including their active role in the consortium but, even more, their own-initiative at city and community level and also in diffusing its key concepts and work methods within their spheres of influences. Practical constraints mean that, at least so far, exchanges at the between-city level have been less developed. The limitation in resources that the non-EU partners experience does appear as a factor as well, notably in Oman, but the scope of activity nevertheless remains respectable. Once familiar with the URBiNAT concept, there are strong indications they are ready to integrate key aspects of URBiNAT's approach in their mainstream activities. Modest investment by the EU through the URBiNAT budget thus carries the potential to generate much enhanced impact through synergy with the resources and networks of the non-EU organisations involved.

Relevance - Specifics	Mechanisms/tools
· High universal relevance · Critical importance of tailoring · Pulling in experience - dissemination	· Relating to issues/projects (all) · Engaging communities and stakeholders (B) · Training local and regional authorities · Connecting to events (China, Brazil, Iran)
Adaptation	**Means/utilising models/approaches**
· Partners with/without resources · Institutions as actors – academics · Nationwide - regional/local	· Scientific articles, academic reports · Exchanges/learning by practice · Innovation

Box 3: Overview arena for non-EU engagement in CoP (IKED, 2020)

When it comes to the advancement of concrete activities on the ground, the same message applies in the case of Iran, where the local branch of the ICC, the LCC (now managing the URBiNAT coordination), through its initiatives not only in Khorramabad, but also in terms of its national networking and impetus, has contributed strongly to the URBiNAT CoP. For NSCJL, a combination of political events, COVID-19 and set-backs on organisational matters has delayed concrete activities on the ground. However, NSCJL's networking has demonstrated great potential when it comes to diffusion and uptake of URBiNAT concepts and models by Chinese cities. Oman has similarly taken modest steps in terms of implementation, yet, concrete, novel work has begun with NBS within a framework that opens for fast diffusion and the introduction of new approaches to local engagement around Healthy corridors.

Additional learning and synergies in implementation can be achieved with non-EU partners in wider network activities. Members of Iran's URBiNAT team have, for instance, taken active part in regional and international events for furthering dissemination. An example is "The Future of Water and Humanity" in Muscat, Oman on November 12-13, 2019, at which the outcomes of the Khorramabad workshop were discussed along with other contributions from URBiNAT as well as other projects, from the region and the EU.

On that occasion, youth workshops on "valuing water" were pioneered at the National Museum of the Sultanate of Oman. Facilitated by the URBiNAT network, that particular method for engagement has since been disseminated to several other countries, with follow-up workshops arranged thus far in Iran, Germany and Italy, as summed up in Table 7. These sessions, undertaken in a similar format, have drawn on water as a resource of universal importance, with the ability to serve as a unifying source of interest and concern, in this case among children, irrespective of culture and nation states. The exercise has further illustrated the potential for innovative forms of co-creation in schools around NBS involving teachers and children. Discussions for further developing and applying this model internationally are ongoing with the World Youth Parliament for Water as well as local organisations in Africa, Asia and the Middle East.

Another example, arranged in coordination with the non-EU actors in URBiNAT, is an Online work kick-started in connection with the 50th Anniversary of Earth Day, April 22nd, 2020. On the occasion, observations were made of the environmental improvements that have followed with the pandemic crisis. While recognizing the enormous duress people are subjected to, all around the world, the deliberations considered what initiatives can be taken by individuals to explore beneficial adjustments to lifestyle and other behaviours in preparation of post COVID-19 lockdowns. Arranged with Oman as

the base, this platform reached widely in Asia, Africa and the Middle East, and will remain connected to URBiNAT through concrete follow-up activities.[20]

Country/city	Date	Years old	Moderator	No. of children
Oman/Muscat	13/11/19	7-8	Prof. Abdullah Al Gafri	25
Iran/Kerman	24/12/19	3-6	Dr. Azimeh + Imam	16
	15/1/20	7-11	Dr. Azimeh + Imam	26
Germany/ Hamburg	10/01/20	10-11	MBA Ohler	25
	10/01/20	15-16	MBA Ohler	15
Italy/Bologna	15/01/20	4	Prof. Ferili	21
	15/01/20	5	Prof. Ferili	19

Table 7: Water and Humanity (2020)

Not only have the non-EU partners/observers proven receptive to the ideas and methods propelled through URBiNAT's CoP, but they have also actively contributed to the development and deepening of the agenda, resulting in high benefits for the CoP as a whole. Summing up the main points, all in all, their participation thus far played out particularly strongly in the in-cities circle, i.e. the 2nd level of the CoP, and also in regard to the wider circle, i.e., and 4th level. On the other hand, only a few contributed actively to level 1, the consortium activity itself, whereas level 3 was not much developed. This may change as URBiNAT continues to evolve, however, especially if different cities decide to shape stronger linkages on a bilateral basis.

To further conclude, it is imperative that URBiNAT's organisation exercises flexibility in the way it links up with the non-EU organisations, accommodating their differences in maturity, size, reach, resources and wider framework conditions. This includes demonstrating openness to various opportunities for engagement. Throughout, receptiveness to learning and serious consideration of different kinds of lessons, flowing from the activities of the non-EU organisations, is of high importance for URBiNAT's own development as well as for its credibility to the wider world. The potential for diffusion and impact is very high in non-EU countries and regions, where the issues addressed are strongly present but generally given scant attention. URBiNAT's approach has, nevertheless met with high receptiveness, both in terms of concepts and concrete action. There is high value in continued strategy development and capacity building for the CoP to meet with this opportunity. It should do so while seriously examining and learning which activities are most suitable for engaging in beyond the EU, as well as which tools and mechanisms to apply in different kinds of contexts.

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[20] https://urbinat.eu/articles/online-forum-urbinat-holds-webinar-as-part-of-50th-edition-of-earth-day/

6. Going Forward

Having reflected in the preceding chapters on the pre-conditions for establishing a viable Community of Practice (CoP), especially for the URBiNAT project, and also what has been achieved thus far in this respect, this final chapter presents observations on the way forward, along with some summarising conclusions.

As a prime observation, we would like to underline the importance of the CoP for fulfilling the objectives of URBiNAT. Extending from the rich, existing literature on smart cities, eco-cities, applications of the circular economy, Living labs and Nature-Based Solutions to achieve urban regeneration, URBiNAT advances novel methodologies in support of participatory processes, co-creation and the establishment of Healthy corridors. It does so by involving and disseminating the results to broader, yet highly relevant and strongly committed, audiences.

At the core of URBiNAT's mission stands the emphasis on addressing the fundamental problems driving urban fragmentation and polarisation. URBiNAT does this with a strong focus on disadvantaged groups and deprived city areas, while, at the same time, setting out to establish "Healthy corridors", combining different kinds of NBS, and linking disparate city parts.

Furthermore, strong emphasis is placed on genuine participation, how to reach beyond the usual suspects and achieve an inclusive process centred on co-creation by citizens and relevant stakeholders. Success in these respects hinges on complex, multi-faceted processes where evaluation and determining critical success factors meet with considerable challenges. This opens for great potential benefits from the advancement of coordinated and interlinked experimentation within the URBiNAT Community, backed by structured exchange of experiences and mutual learning between the different cities and actors involved.

The present document has:
- Taken stock of what is key to a viable CoP;
- Structured and analysed the different circles/levels and components of the CoP;
- Reviewed the progress thus far in building the CoP, e.g. mapping of participatory culture and its relevance though the various stages of the co-creation of NBS, Living labs, Urban plans and Healthy corridors;
- Given special consideration to the setup and developments across different diverse communities, within Europe as well as among non-EU partners and observers;
- Taken stock of the development of digital enablers, presenting cities with a structured framework and principles for combining digital tools, methods and content in support of participation around the process associated with NBS and Healthy corridors, further developed in D3.3.
- Elaborated on Communities of Interest (CoI), how it can be used in the cities and how it relates to the CoP.
- Drawn on the ongoing work to establish the URBiNAT Observatory, including the collection, analysis and the sharing process of qualitative and quantitative data.

6.1 Key Take-aways

In the following, we address some key take-aways from this report and the URBiNAT CoP that can be valuable for the various relevant actors/stakeholders at hand.

I. *Key actors in URBiNAT's city districts such as individuals working directly with citizens in the municipalities, community centres, schools, local health centres and NGOs:*
Lessons learnt in regard to participation and co-creation: How can a culture of sharing and learning be induced, and which are the best ways in diffusing our experiences to other neighbourhoods in our city as well as to other cities.

II. *Policy makers and elected representatives in URBiNAT's city districts:*
Insights on what kind of policies are required in order to support the establishment and the nurturing of a CoP. Possibilities to underpin Communities of Interest by providing the basis for collaboration on entrepreneurial activities.

III. *Field experts such as urban planners, energy consultants, health professionals, water experts, botanists, arborists, and sustainability experts:*
Field experts can share and gain in-depth knowledge and practical know-how by being part of the URBiNAT CoP. The CoP moreover offers relevant insights on participatory processes involving multiple actors/stakeholders.

IV. *Researchers in the area of NBS, urban regeneration, urban planning, city management, public health, socio-economic disciplines, etc.:*
URBiNAT's CoP offers an interesting empirical example of a CoP in a city setting, as opposed to an organisational context where CoPs to date primarily have been studied. The CoP moreover offers an interesting conceptualisation of "circles of interaction".

V. *National and international policy makers:*
Know-how on collaboration with non-EU actors and organisations. Insights on the formation of policy recommendations with the CoP as an important building block.

VI. *Green Businesses connecting with NBS and the Healthy corridor concept:*
Possibilities to connect entrepreneurial activities and sustainable business practices to CoIs as well as challenges and opportunities experienced in city neighbourhoods.

VII. *Non-EU organisations:*
The high relevance of the issues addressed coupled with the inclusive and flexible approach of the CoP have resulted in strong receptiveness and engagement by non-EU partners and organisations, benefitting the consortium as a whole while also increasing URBiNAT's relevance and impact worldwide. In order to fulfil this potential, it is imperative that the organisation cherishes flexibility and builds a continuously improved understanding of how best to adapt and tailor strategies to the specific context. Due to the wealth of opportunities around, it is important to work out ways to leverage already existing networks and competencies, while also keeping open to new initiatives, and judge where the provision of manageable inputs can generate great results.

6.2 Next Steps and Activities

While, as demonstrated, the URBiNAT CoP can be seen to be thoroughly established in a number of respects and at the same time the CoP is set to evolve further in parallel with the continued advancement of URBiNAT's project activities. In a way, it represents a window for cooperation that has sprung open and offers a way forward by way of feeding international and cross-sectoral networks for cross-pollination. Exchange and joint learning require that a sense of trust, transparency, and inclusion are established and maintained over time. In order to remain meaningful, the CoP must be able to continuously feed analysis and demonstrate similarities in the challenges addressed across cities, yet, be able to communicate how responses can be tailored to handle their specificities.

We note that the activities under way in regard to local diagnostic will next take place in the follower cities. As coordinating and performing that task proved demanding and complex among the frontrunner

cities, the upcoming round of work is expected to build on and benefit from the lessons that arose in that early exercise. This and additional activities, in progress and yet to be developed, are listed below. It is expected that exchange and learning is integrated and structured with regard to all.

- Front-runner cities proceed with the implementation of NBS.
- Local diagnostic and participatory processes have been established in the frontrunner cities, next to be furthered in the follower cities. Non-EU actors are also involved (WP2 and WP3).
- Urban plans are under development in the frontrunner cities, coordinated for mutual learning (T2.4 and T4.3).
- Living labs keep evolving, guided by task forces set-up by the cities and will intensify experimental use of digital enablers, including for synergies with the CoP (WP2).
- Further development of and learning through the coaching, mentoring and sharing approach with networking activities (T2.2).
- Facilitators, champions and mentors are mediating the interaction on the ground, in direct contact with citizens and stakeholders, in support of active and inclusive participation.
- Digital enablers offer a portfolio of mechanisms to support NBS and Healthy corridors and inspire increased and creative engagement of citizens (T3.3 and T3.4).
- Co-creation of digital enablers offer two approaches: common challenges and common strengths, and ties into Community of Interest (CoI).
- Market assessment, development of business cases and policy recommendations will be implemented in the frontrunners cities focused on green and social business (WP7).
- Replication with lessons: what practices and methods are available to be applied in response to various kinds of outstanding issues, coupled with insights on how to match and tailor the approach with specific local conditions.
- Communication and networking in events and conferences, as well as dissemination through publications, business cases, interface and collaboration with policy makers, and local platforms (WP6).

In regard to the non-EU partners and observers, we have underlined the value of enhanced diversity. The organisations involved differ also among them, from the standing of NBS and participatory processes in the different countries to the role of particular organisations, and how they operate within URBiNAT and the CoP. At the same time, they all display high commitment to the project, its concepts and concrete activities, reflecting the strong presence in each of the Non-EU countries of the outstanding issues that URBiNAT has set out to address. From an administrative viewpoint, the project has been helped by the administrative arrangement of having one partner with a special sub-coordinating responsibility in regard to the non-EU actors. A high level of inclusion and openness to non-EU engagement, coupled with flexibility, enabling tailored support vis-a-vis each of them, is balanced with high efficiency in resource use.

By way of developments impacting the CoP along the way, municipal elections led to the disruption and discontinuation of some activities, including in Nantes and Sofia. Further, different levels of the CoP were affected in diverse ways. For instance, the pandemic thwarted initiatives on level/circle 2 (inside URBiNAT cities), and also led to delays on level 1 (consortium and project team), while giving a boost to aspects of level 3 (between the cities), the latter seen, e.g., in a joint survey, and in the sharing of insights on challenges and solutions responding to COVID-19. The Non-EU participation has proved ambitious and constructive at level 2 and level 4 (the wider world), while only a few of the non-EU actors were active at level 1 and their role at level 3 is still weakly developed.

References

Abdul-Jalala, H., Toulsonb, P., and Tweed, D. (2013). "Knowledge Sharing Success for Sustaining Organizational Competitive Advantage", International Conference on Economics and Business Research (ICEBR 2013), Elsevier.

Albino, V., Berardi, U., and Dangelico, R.M. (2015). "Smart cities: Definitions, dimensions, performance, and initiatives", *J. Urban Technol.*, 22, pp. 3–21.

Allam, Z. and Newman, P. (2018). "Redefining the Smart City: Culture, Metabolism and Governance", *Smart Cities*, 1(1), pp. 4-25

Alvesson, M. and Spicer, A. (2012). "A stupidity-based theory of organizations", *Journal of Management Studies,* 49(7), pp. 1194-220.

Andersson I. and Bjorner, E. (2018). "URBiNAT's Community of Practice", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 255-8.

Andersson, I., Andersson, T. Bjorner, E., and Hilding-Hamann, K.E. (2020). Deliverable 3.3 - *Portfolio of Methods, Tools and Content: Forming Digital Enablers of NBS*, URBiNAT.

Andersson, T., (2018). "Strategic Partnerships for Innovation in Urban Regeneration", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 259-71.

Andersson, T., Formica, P., and Curley, M. G. (2009). *Knowledge-driven entrepreneurship: the key to social and economic transformation*, Springer Science & Business Media, New York.

Argote L., McEvily B., and Reagans R. (2003). Managing knowledge in organizations: an integrative framework and review of emerging themes. *Manag. Sci.,* (49), 571–82.

Ashton, D. (2017). "Railway arches, entrepreneurs, and culture-led urban regeneration", *Cult. Ind. Res.*, 17, pp. 244–52.

Badar, K., Julie, M., Hite, and Ashraf, N. (2015). "Knowledge network centrality, formal rank and research performance: evidence for curvilinear and interaction effects", *Scientometrics*, 105(3), pp. 1-24.

Bassett, K. (1993). "Urban cultural strategies and urban regeneration: A case study and critique", *Environ. Plan.,* 25, pp. 1773–88.

Becattini, G. (1990), "The Re-emergence of Small Enterprises in Italy", in Sengenberger et al. (eds.), *The Re-emergence of Small Enterprises: Industrial Restructuring in Industrialised Countries*, ILO, Geneva.

Bettiga, D., Lamberti, L., and Noci, G. (2018). "Investigating social motivations, opportunity and ability to participate in communities of virtual co-creation", *International Journal of Consumer Studies,* 42(1), pp. 155–63.

Bigné, E., Ruiz, C., Andreu, L., and Hernandez, B. (2015). "The role of social motivations, ability, and opportunity in online know-how exchanges: evidence from the airline services industry", *Service Business,* 9(2), pp. 209–32.

Bista, S. K., Nepal, S., and Paris, C. (2012). "Engagement and Cooperation in Social Networks: Do Benefits and Rewards Help?", in: *Proceedings of the 11th International Conference on Trust, Security and Privacy in Computing and Communications Engagement,* pp. 1405-10.

Bjorner, E. and Andersson, I. (2018), "How to Establish and Run URBiNAT's CoP?", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project,* pp. 272-6.

Blakely, C.H., Mayer, J.P., Gottschalk, R.G., Schmitt, N., Davidson, W.S., Roitman. D.B., et al. (1987). "The fidelity-adaptation debate: Implications for the implementation of public sector social programs", *American Journal of Community Psychology,* 15, pp. 253–68.

Bourhis, A., Dubé, L., and Jacob, R. (2005). "The Success of Virtual Communities of Practice: The Leadership Factor", *Electronic Journal of Knowledge Management,* 3(1), pp. 23–34.

Bradley, E.H., Webster, T.R., Baker, D., Schlesinger, M., Inouye, S.K., Barth M.C., et al. (2004). Translating research into practice: Speeding the adoption of innovative health care programs, Issue brief, The Commonwealth Fund, Washington, DC.

Brusco, S. and Righi, E. (1989). "Local Government, Industrial Policy and Social Consensus: the Case of Modena (Italy)", *Economy and Society* 18(4), pp. 405-24.

Brussevich, M., Dabla-Norris, E., and Khalid, S. (2020). "Evidence from Tele-workability Measures Across Countries by Mariya ", IMF Working Paper/20/88, International Monetary Fund.

Carayannis, G. E. and Campbell, D. F. J. (2009). "'Mode 3' and 'Quadruple Helix': toward a 21st Century Fractal Innovation Ecosystem", *International Journal of Technology Management* 46, pp. 201-34.

Carlsson, B. and Stankiewicz, R. (1991). "On the Nature, Functions and Composition of Technological Systems", *Journal of Evolutionary Economics*, 1, pp. 93-118.

Chen, C.-J. and Hung, S.W. (2010). *Managerial Strategies and Solutions for Business Success in Asia*, Springer, New York.

Cohen, W. M. and Levinthal, D. A. (1990). "Absorptive Capacity: A New Perspective on Learning and Innovation", *Administrative Science Quarterly,* 35(1), pp. 128-52.

Conrad, C. and Poole, M. S. (1998). *Strategic organizational communication into the twenty-first century* (4th ed.), Harcourt Brace College, New York.

Cooke, P. (1992). "Regional Innovation Systems: Competitive Regulation in the New Europe", *Geoforum,* 23, pp. 365-82.

Dahlander, L., and Frederiksen, L. (2012). "The Core and Cosmopolitans: A Relational View of Innovation in User Communities", *Organization Science,* 23(4), pp. 988–1007.

Dahmén, E. (1988). "Development Blocks in Industrial Economics", *Scandinavian Economic History Review,* 36, pp. 3-14.

Dainton, M. and Zelley, E. D. (2005). *Applying communication theory for professional life: A practical introduction,* Thousand Oaks: Sage publications.

Devarakonda, R., Palanisamy, G., Green, J.M., and Wilson, B.E. (2010). "Data sharing and retrieval using OAI-PMH", *Earth Science Informatics* DOI: 10.1007/s12145-010-0073-0.

Dewan, P. (2015). "Words Versus Pictures: Leveraging the Research on Visual Communication", *Partnership: The Canadian Journal of Library and Information Practice and Research,* 10(1).

Dubé, L., Bourhis, A., and Jacob, R. (2003). "The impact of structuring characteristics on the launching of virtual communities of practice", *Journal of Organizational Change Management,* 18(2), pp. 145-66.

Duxbury, N. (2018). "Integrating culture, beginning with cultural mapping", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 55-64.

Edmondson, A.C., Winslow, A.B., Bohmer, R.M., and Pisano G.P. (2003). "Learning how and learning what: Effects of tacit and codified knowledge on performance improvement following technology adoption", *Decision Sciences,* 34, pp. 197–223.

Edquist, C. (1997). *Systems of Innovation: Technologies, Institutions and Organisations* (ed.), Pinter Publishers, London.

Eliasson, G. (1998). "Competence Blocs and Industrial Policy in the Knowledge-Based Economy", *STI Review* 22, pp. 209-42.

Etzkowitz, H. and Leydesdorff, L. (2002). *Universities in the Global Knowledge Economy: A triple helix of university-industry-government relations* (eds.), Cassell, London.

Fenwick, T. and Edwards, R. (2016). "Exploring the impact of digital technologies on professional responsibilities and education*", European Educational Research Journal*, 15(1), pp. 117-31.

Fergusson, N. M., et al. (2020). Impact of Non-Pharmaceutical Interventions (NPI) to Reduce COVID-19 Mortality and Health Demand, Imperial College COVID-19 Response Team, Imperial College, London.

Fontaine, M. (2001). "Keeping communities of practice afloat", *Knowledge Management Review*, 4(4), pp. 16-21.

Freeman, C. (1987). *Technology Policy and Economic Performance: Lessons from Japan*, Pinter, London.

Gehl (2020). "Public space plays vital role in pandemic", https://gehlpeople.com/blog/public-space-plays-vital-role-in-pandemic/.

Gilchrist, A. (2000). "The well-connected community: networking to the edge of chaos", *Community Development Journal,* 35(3), pp. 264–75.

Giovannini, M. (2018). "2.1 Solidarity economy, social economy, social enterprise: concepts and contexts", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 152-6.

Halpaapt, B. M., et al., (2020). "Social Innovation in Global Health: Sparking Location Action", *Lancet* 8, May, pp. 633-4. Harari, Y. (2014). *Sapiens: A Brief History of Humankind*, Harper, New York.

Halford, S. (2015). Decoding code: A critical politics of the semantic web as an opportunity for inter-professional learning. Presentation to Code Acts in Education ESRC seminar series, University of Stirling, February.

Helal, S. (2011). "It footprinting-groundwork for future smart cities", *Computer,* 44, pp. 30–1.

Hulgård, L. (2018). "1.3 Solidarity economy and collective action in the urban space", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 147-50.

Jabareen, Y. (2013). "Planning the resilient city: concepts and strategies for coping with climate change and environmental risk", *Cities* (31), pp. 220-9.

Jaradat, S., Whyte, J., and Luck, R. (2013). Professionalism in digitally mediated project work. *Building Research and Information* 41(1), pp. 51–9.

Jeppesen, L. B. and Lakhani, K. R. (2010). "Marginality and problem-solving effectiveness in broadcast search", *Organization science,* 21(5), pp. 1016-33.

Johnson, S. L., Safadi, H., and Faraj, S. (2015). The emergence of online community Leadership. *Information and Organization,* (July), pp. 35–68.

Kimmerle, J., Thiel, A., Gerbing, K. K., Bientzle, M., Halatchliyski, I., and Cress, U. (2013). "Knowledge construction in an outsider community: Extending the communities of practice concept", *Computers in Human Behavior,* 29(3), pp. 1078–90.

Kitchin, R. (2014). "Making sense of smart cities: Addressing present shortcomings", *Camb. J. Reg. Econ. Soc.*, 8, pp. 131–36.

Kline, S.J. and Rosenberg, N. (1986), "An Overview of Innovation", in R. Landau and N. Rosenberg (eds.), *The Positive Sum Strategy: Harnessing Technology for Economic Growth,* National Academy Press, Washington DC, 275-304.

Kolb, J. A. et al. (2008). *Developing a Framework of Facilitator Competencies,* files.eric.ed.gov/fulltext/ED501657.pdf.

Kotter, J. P. (1996). *Leading Change,* Harvard Business School Press, Boston.

Kuhn, T. S. (1962). *The structure of scientific revolutions*, University of Chicago Press, Chicago.

Lave, J. and Wenger, E. (1991). *Situated learning: Legitimate peripheral participation,* Cambridge university press, Cambridge.

Lundvall, B.-Å. (1992). *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning* (ed.), Pinter, London.

Mackenzie, T. (2018). Deliverable D6.1 - *Communication and Dissemination Plan*, URBiNAT.

Macia, M., and García, I. (2016). "Informal online communities and networks as a source of teacher professional development: A review", *Teaching and Teacher Education Journal, 55,* pp. 291–307.

Manovich, L. (2013). *Software Takes Command: Extending the Language of New Media*, Bloomsbury Academic, London.

Manville, C., et al. (2013). *Mapping Smart Cities in the EU*, Directorate General for Internal Policies, Policy Department A: Economic and Scientific Policy, Brussels.

Marchand, F., Mey, K. De, Debruyne, L., Haene, K. D., and Meul, M. (2010). "From individual behaviour to social learning: start of a participatory process towards sustainable agriculture", in: *Proceedings of the 9th European IFSA Symposium,* pp. 670–82.

Marcus, G. and Davis, E. (2014). Eight (no, nine!) problems with big data. New York Times, 7 April, A23. Available at: http://www.nytimes.com/2014/04/07/opinion/eight-no-nine-problems-with-big-data.html?_r=2.

Marshall, A. (1890). *Principles of Economics*, Macmillan, London

Martin, J. (2002). *Organizational culture: Mapping the terrain*, Sage, Thousand Oak, CA.

Mateus, A., Martins, S., and Leonor, S. (2018). "Creativity, purpose and inspiration in co-creation process", Deliverable 1.2 - *Handbook on the Theoretical and Methodological Foundations of the Project*, pp. 65-71.

McCully, W. et al. (2011). "Online and Offline Interactions in Online Communities", in: *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, October, pp. 39–48.

Møller, M. and Olafsson, A. (2018). "The Use of E-Tools to Engage Citizens in Urban Green Infrastructure Governance: Where Do We Stand and Where Are We Going?", *Sustainability* 10(10).

Nam, T. and Pardo, T.A. (2011). Conceptualizing smart city with dimensions of technology, people, and institutions. In Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times, College Park, MD, 12–15 June, pp. 282–91.

Nelson, R. (1993). *National Innovation Systems: A Comparative Analysis* (ed.), Oxford University Press, Oxford.

Nias, J., Southworth, G., and Yeomans, R. (1989). *Staff relationships in the primary school: A study of organizational cultures.* Continuum International Publishing Group Ltd.

NSCJL (2013), The Chinese national network of smart cities, National Smart City Pilot Projects and Standardization Building, the Ministry of Housing and Urban-Rural Development of China Digital City Council of Chinese Society for Urban Studies.

NSCJL (2018), Planning Map for Shenyang, Kick-off meeting, Coimbra and Porto, 18-20 June 2018.

Nonaka I., Von Krogh G., and Voelpel S. (2006). Organizational knowledge creation theory: evolutionary paths and future advances. *Organization Studies,* 27(8), 1179–208.

OECD (2020*a*). Smart Cities and Inclusive Growth, Paris.

OECD (2020*b*). *Policy Responses to Corona*, Paris.

Orlikowski, W. J. (2002). "Knowing in practice: Enacting a collective capability in distributed organizing", Organization Science, 13(3), pp. 249-73.

Oshri, I., Fenema, P., and Kotlarsky, J. (2008). "Knowledge transfer in globally distributed teams: the role of transactive memory". *Information Systems Journal, 18(4)*, pp. 593–616.

Ostrom E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press.

Plaskoff, J. (2003). *Intersubjectivity and community-building: Learning to learn organizationall*y. In W. Easterby-Smith, M. A.

Polanyi, M. (1966). *The Tacit Dimension*, Routledge & Kegan Paul Ltd, London.

Porter, M. E. (1990). *The Competitive Advantage of Nations,* The Free Press, New York.

Pyrko, I., Dörfler, V., and Eden, C. (2017). "Thinking together: What makes Communities of Practice work?" *Human Relations,* 70(4), pp. 389–409.

Rajagopal, K., Joosten-Ten Brinke, D., Van Bruggen, J., and Sloep, P. B. (2012). "Understanding personal learning networks: Their structure, content and the networking skills needed to optimally use them", *First Monday, 17*(1), pp. 1–12.

Reinholt, M., Pedersen, T., and Foss, N. J. (2011). "Why a central network position isn't enough: The role of motivation and ability for knowledge sharing in employee networks," *Academy of Management Journal, 54*(6), pp. 1277–97.

Restrepo, C. and Morales-Pinzón, T. (2018). Urban metabolism and sustainability: precedents, genesis and research perspectives. *Resour. Conserv. Recycl*. 131, pp. 216–24.

Rogers, E. M. (1962). *Diffusion of innovations*, Free Press, New York.

Romero, L.D. (2013). "Enhancing Civic Engagement in the Digital Age: Global Activism, New Media and the Virtual Public Sphere" UNIR. Logroño, 2013.

Rubak, S., et al. (2005). "Motivational interviewing: a systematic review and meta-analysis" *British journal of general practice: The journal of the Royal College of General Practitioners,* 55(513), pp. 305-12.

Schwarz, R. M. (2002). *The skilled facilitator: A comprehensive resource for consultants, facilitators, managers, and coaches* (Rev. ed.). San Francisco: Jossey-Bass.

Siemsen, E., Roth, A., and Balasubramanian, S. (2008). "How motivation, opportunity, and ability drive knowledge sharing: The constraining-factor model," *Journal of Operations Management,* 26(3), pp. 426–45.

Sonnenbichler, A. C. (2010), "A Community Membership Life Cycle Model", ArXiv, 1006(4271), pp. 1–9.

Sun, N., Rau, P. L., and Ma, L. (2014). "Understanding lurkers in online communities: A literature review", *Computers in Human Behavior,* 38, pp. 110–7.

Turner, J. H. (1988). *A theory of social interaction,* Stanford University Press.

Turner, F. (1980). *Beyond Geography - the Western Spirit Against the Wilderness*, Viking, New York.

United Nations (2016). *UN-Habitat &*

Urban Agenda, http://nua.unhabitat.org/pillars.asp?PillarId=7&ln=1.

University of Coruna (2018), Towards a Reference Framework for Sustainable Urban Regeneration and Well-being with Nature-Based Solutions, Horizon 2020, Cluster Action, 18-20 May, Coruna.

URBACT (2019). "Citizen Participation & Citizen Engagement, the construction of a dialogue in the Urban Environment".
https://urbact.eu/citizen-participation-citizen-engagement-construction-dialogue-urban-environment (Accessed: Jan 8, 2020).

Water and Humanity (2020), "Workshops Valuing Water: Engaging Children and Youth", Working Paper Series, I(2), Muscat.

Wijkman, A., Osdoba, T., an Heineman, S. (2020). *Circular Economy in Cities Requires a Systems Approach*, OECD, Paris.

Wood, R. and Bandura, A. (1989). "Social Cognitive Theory of Organizational Management", *The Academy of Management Review,* 14(3), pp. 361–84.

Young, C. (2013). "Community management that works: How to build and sustain a thriving online health community", *Journal of Medical Internet Research,* 15(6), p. e115.