



Sesvete © City of Zagreb

Co-designing Nature-based Solutions in Living Labs

Deliverable 2.4 on Workshop round 2 in Frontrunner Cities (Dortmund, Turin, and Zagreb)

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Authors: Serene Hanania and Barbara Anton

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Author(s)	Serene Hanania, Barbara Anton (ICLEI)
Co-Author(s)	Vasileios Latinos, Bettina Wilk (ICLEI)
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CONTACT:

Email: progireg@la.rwth-aachen.de
Website: www.proGlgreg.eu

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Partner organisations

No.	Name	Short name	Country
1	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	RWTH	Germany
2	COMUNE DI TORINO	COTO	Italy
3	FONDAZIONE DELLA COMUNITA DI MIRAFIORI ONLUS	MIRAFIORI	Italy
4	PARCO SCIENTIFICO E TECNOLOGICO PER L'AMBIENTE - ENVIRONMENT PARK SPA	ENVIPARK	Italy
5	UNIVERSITA DEGLI STUDI DI TORINO	UNITO	Italy
6	POLITECNICO DI TORINO	POLITO	Italy
7	ASSOCIAZIONE ORTIALTI	OA	Italy
8	DUAL SRL	DUAL	Italy
9	STADT DORTMUND	DORTMUND	Germany
10	DIE URBANISTEN EV	URBA	Germany
11	HEI-TRO GMBH	HEITRO	Germany
12	LOHRBERG STADTLANDSCHAFTSARCHITEKTUR PARTNERSCHAFT FREIER LANDSCHAFTSARCHITEKTEN MBH	LOHRBERG	Germany
13	FACHHOCHSCHULE SUDWESTFALEN	SWUAS	Germany
14	AQUAPONIK MANUFAKTUR GMBH	APM	Germany
15	GRAD ZAGREB	ZAGREB	Croatia

16	SVEUCILISTE U ZAGREBU ARHITEKTONSKI FAKULTET	AF ZAGREB	Croatia
17	ZAVOD ZA PROSTORNO UREDENJE GRADA ZAGREBA	ZZPUGZ	Croatia
18	KOMFOR KLIMA GRUPA DOO ZA PROIZVODNJU TRGOVINU I USLUGE	KKG	Croatia
19	UDRUGA ZELENE I PLAVE SESVETE	ZIPS	Croatia

Abbreviations

FRC: Frontrunner Cities - Dortmund (DE), Turin (IT), Zagreb (HR), Ningbo (CN)

LL: Living Lab

NBS: nature-based solutions

proGlgreg: productive Green Infrastructure for post-industrial urban regeneration

WP: Work Package

ToC: Theory of Change

Executive Summary

Co-design of nature-based solutions (NBS) lies at the core of the proGlgreg project. It means systematically involving all relevant stakeholders from the very start of the project and engaging them as equal co-creators. The aim of co-design is to achieve mutually valued outcomes, a joint ownership of the NBS implemented as well as a good fit between the NBS and the local context. To establish and steer the co-design process in the Frontrunner Cities (FRC), ICLEI is organising three rounds of workshops that bring together locally relevant project partners and stakeholders and engage them in the local co-design process of the selected NBS. The target audience is the core group in each FRC, composed of the different local project partners involved in the design and implementation of the selected NBS and further key stakeholders, considered relevant for the successful implementation of the respective NBS.

This report summarizes and highlights key outcomes of the second round of co-design workshops, held in Dortmund, Turin and Zagreb mid of 2019. This second round of workshops focused on the theme of “innovation and transformation” and had the goal of clarifying the links between innovation and transformation as well as exploring in more detail the key technical and social innovations in the FRCs. The question it set out to answer was: *how do we employ technical and social innovations and design the experimentation process to bring about the desired transformation?*

During the preparation of this round of workshops and the co-creation of the agendas with the FRCs, it became clear just how diverse and unique the local contexts are concerning their starting points and progress. Dortmund was interested in defining options for the implementation of the Living Lab (LL), Turin had a particular interest in addressing risks and mitigation measures as well as identifying roles and responsibilities, whereas Zagreb wanted to explore the LL’s transformation potential and transformation pathways.

Nonetheless, the following building blocks formed the core of all three workshops with varying focus and intensity: *management structure and definition of roles and responsibilities, review of the co-design principles, risks and implications, transformation potential, work and time plan for 2019.*

The **review of the co-design principles** revealed a commonality that arose in all three cities pertaining to the principles of *openness and inclusion* as well as *transparency*, with the following key questions arising: At what point and to what extent can inclusion be realised? When and how do we know if everyone is reached?

Regarding the realization of the **transformative potential** of the LLs, the participants in all three cities noted the need to link the goals of the individual LL’s to broader district/city visions and strategies, integrating the experimentation process into district urban planning, and scaling up through public administration tools, plans and procurement activities to ensure long-term sustainability.

The cities overwhelmingly identified **societal** risks. Proposed mitigation measures included: improved communication measures, systematic stakeholder involvement, the creation of an overarching LL narrative, and the cultivation of a sense of ownership and a local identity within the LL.

All three cities agree that achieving a broad involvement of the local communities – including groups that may be marginalised – is a critical open issue to be addressed in the next workshop. One of the key requirements would be a consolidated long-term vision from the side of the core teams in order to enable coherent communication to the public.

1. Introduction

1.1. Introduction to the project

Productive Green Infrastructure for post-industrial urban regeneration (proGlgreg) is developing and testing nature-based solutions (NBS) co-creatively with public authorities, civil society, researchers and businesses. Eight nature-based solutions, which will support the regeneration of urban areas affected by deindustrialisation, will be deployed in Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China). The cities of Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) will receive support in developing their strategies for embedding nature-based solutions at local level through co-design processes.

1.2. Introduction to the report

Part of Work Package (WP) 2, Task 2.2 of the proGlgreg project, namely “Co-design in Frontrunner Cities”, entails the development and application of a co-design methodology in the FRCs. This is done through organizing three rounds of so-called co-design workshops in each FRC that bring together relevant stakeholders and engage them in the local co-design process (proGlgreg Grant Agreement).

The co-design workshops are designed, organized and moderated by ICLEI in three consecutive rounds in the period between November 2018 and December 2019. In each round, the municipal project partner in the FRC hosts a workshop at a location of their choice. The overall purpose of the co-design workshops is to establish and steer the co-design process in the three European FRCs. The aim is to initiate, facilitate and maintain feasible collaboration among the project partners and additional key stakeholders identified by the latter with the goal of easing the transition to the next phase of implementation. The fourth FRC Ningbo (China) has been a partner since the proposal stage and officially joined the project in early 2019. Ningbo is currently focusing on WP2 tasks, i.e. the Spatial Analysis (Deliverable 2.2) scheduled to be finalized by the end of October 2019. Following the end of the spatial analysis, URBASOFIA and ICLEI will organize a visit to Ningbo (ideally still within 2019) to visit the Ningbo Living Lab and kick-off the co-design and co-implementation process in the Chinese city. The rationale for a combined visit is to discuss with Ningbo the potential for the development of an urban regeneration plan for other post-industrial sites, aside from the LL area.

This report summarizes and highlights the most important results of the second round of co-design workshops, held in Dortmund, Turin and Zagreb mid-2019 with the thematic focus of “innovation and transformation”. Proposed objectives were to clarify the link between innovation and transformation, reach a consensus in the core group on what kind of technical, social and economic innovation should be achieved, and define the roles of actors in related processes.

It goes into the implementation of the workshops giving an overview of participants and the updates in the LLs, a review of the co-design principles, the LL's technological and social innovations as well as their risks and mitigation measures with a special section dedicated for the implementation options in the Dortmund LL. The final section of the report gives city reflections and an outlook for each of the FRCs.

1.3. Summary of report on first round of co-design workshops

The first round of co-design workshops in the FRCs in April/May 2019 had the goal of establishing “mutual understanding” between all concerned by bringing key local stakeholders onto the same page and building a common perception of the characteristics of the LL and its overall purpose and direction towards the desired transformation.

This first round was founded on three building blocks: (1) co-design principles, (2) alignment of long-term expectations for the LL, and (3) identification of stakeholders, and their roles and responsibilities. In preparation, ICLEI had drafted six co-design principles along with a self-assessment checklist and presented them at the workshops in order to give participants orientation and a framework for the co-design process as well as a means for assessing progress. The addition of a seventh co-design principle, ‘be transparent’, was the result of the workshop discussions (Refer to Annex 2 for the co-design principles).

Furthermore, the project partners in the FRCs developed short mission statements for their respective LL's, and conducted a mapping exercise in each of the cities to identify the key stakeholders that need to be engaged using the impact and influence template, in order to assess their interest and influence for each LL, as well as a plan for their engagement. Details are recorded in Deliverable 2.3 (D2.3).

1.4. Contextualising the second co-design workshop in proGlgreg

The second round, with its theme of “innovation and transformation”, set out to answer the practical question of how do we employ technical and social innovations and design the experimentation process to bring about the desired transformation.

The concepts of transformation and innovation are embedded in modern transition theory and in literature related to urban sustainability. Here, transformation is seen as long-term and large-scale societal and environmental change that is intended as an outcome of a LL. Transformation is born within a LL and is then – ideally – further spread by members of civil society and other stakeholders (e.g. local administration) beyond the LL (Frantzeskaki & Kabisch, 2016; Schaepeke et al., 2018).

A cornerstone of LL's and key to transformation is the process of real-world experimentation. Experimentation is the search for novel and deviant solutions to tackle a given problem or issue and bring about a transformation (Bulkeley and Broto, 2012; Sabel and Zeitlin, 2011). These experiments allow for trial, learning and flexibility while aiming at improvement with the

ultimate goal of developing solutions to persistent problems (Neuens et al., 2013). This bridges the gap between theory and practice and makes the vision and agenda of transformation reality (Loorbach, 2007).

Within proGlgreg, the LLs are the means employed to co-design, implement and test various NBS to evaluate their possible contribution to nature-based urban regeneration. The NBS developed and deployed by the LL's are the experiments that aim to answer the question of "how do we get there?" (Rotmans, 2005). Figure 1 below presents proGlgreg's operational framework for producing the desired long-term urban sustainability transitions as well as societal change within the LLs.

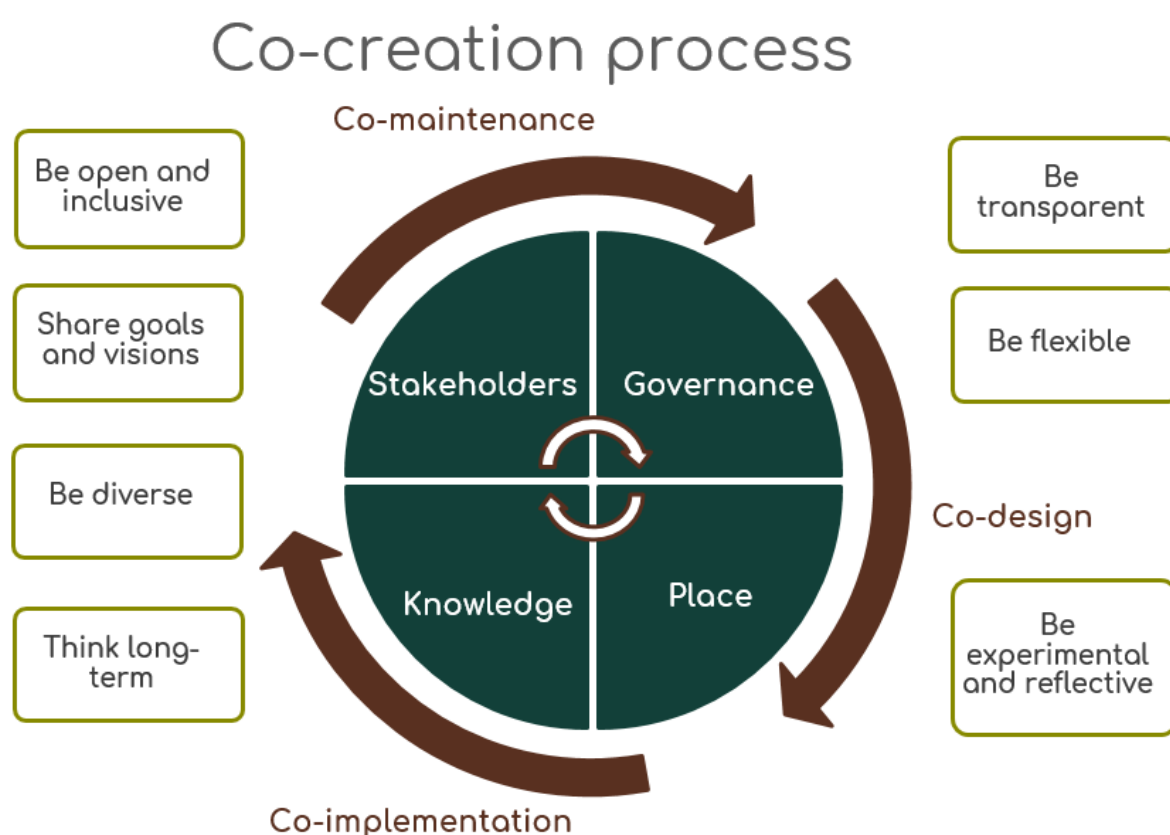


Figure 1 proGlgreg operational framework for LL transformation and innovation, ICLEI

The diagram above shows the seven co-design¹ principles which govern the entire co-creation process from co-design, to co-implementation, and co-maintenance. The application of these principles throughout the process and across the different elements of place, knowledge, stakeholders and governance would ideally lead to the desired long-term urban transformation and innovation in the LL. This transformation in turn impacts the four elements by:

1. Creating and enhancing **place**-making and local identity;
2. Producing **knowledge** both in the real world as well as for the real world thereby triggering societal, technical and procedural as well as economic transformation (Evans and Karvonen 2014);
3. Influencing **governance** by facilitating a radical break with conservative, top-down and risk-averse urban planning and policy approaches;
4. Transforming the character of **stakeholder** engagement by pursuing LLs that are citizen-owned and that involve user communities as a source of creation (Breuer et al., 2017).

1.5. Preparation and aim of the second co-design workshop round

It was proGlgreg's ambition to also design the workshop program in a co-creative manner, considering and integrating the particular needs and requirements of the different FRCs. The ICLEI team therefore had multiple preparatory calls with the city partners in order to develop a joint agenda. Starting from a thematic focus and a set of building blocks, this evolved to include exercises and concrete sessions. The building blocks were as follows:

1. Innovation concepts and innovation policy
2. Management structure, definition of roles and responsibilities
3. Co-design Methodology: Review of the co-design principles
4. Risks and their implications
5. Transformation potential
6. Work and time plan for 2019
7. Non-technological barriers

In the spirit of a real 'living' lab and an active co-creation process, the building blocks were sent out to each FRC for review and comments prior to defining the agenda. This resulted in slight variations of the workshop agendas in each FRC because of the uniqueness of the

¹ From now on co-creation principles. Co-design is the first step in the whole co-creation process and is followed by co-implementation, co-management and co-maintenance. The principles are applicable to all these stages (Refer to D2.3).

local context, and the different starting points as well as progress of each of the cities (see Annex for agendas). The building block on *“Innovation concepts and innovation policy”* was considered too theoretical and was left out in all three cities, however concrete social and technical innovations as a means of bringing about transformation were an integral part of the building block *“Transformation potential”*. *“Management structure, definition of roles and responsibilities”* was only considered in Dortmund and as part of *“Work and time plan 2019”*. *“Non-technological barriers”* introduced what the cities could expect within the framework of WP5 on “market readiness, barriers and upscaling”, and is left out in the following discussion since the task was officially launched at the cities’ workshop in Cluj in May 2019.

The next chapter is structured according to these building blocks and gives a summary of the discussions.

2. Implementing the co-design workshops in Dortmund, Turin, Zagreb

Dortmund was the first city to host its second co-design workshop (3rd April 2019), followed by Turin (16th April 2019) and Zagreb (7-8th May 2019). The workshops varied in length from one day in Dortmund and Turin, to 1.5 days in Zagreb.

Especially in Dortmund, the course of the workshop took a different bend with the agenda being reset at the beginning of the event at the request of the participants. This was driven by the fact that – until the time of the workshop – the location for some of the central NBS (the aquaponics and the urban gardens) to be implemented had not been identified due to the absence of feasible options. Progress had therefore not been mature enough to already develop a transformation pathway or discuss further stakeholder engagement. This issue was addressed and resolved during the workshop as will be later seen in Section 2.6.

2.1. Target audience and participants

The target audience for the workshops was the core group in each FRC which is composed of the different local project partners involved in the design and implementation of the selected NBS, and additional key stakeholders based on the quadruple helix approach elaborated on in the first workshop report (D 2.3). ICLEI works together with the core teams in these workshops who are then tasked to organize the engagement with the wider group of local stakeholders.

Apart from the core group consisting of the local project partners, the number and type of additional participants differed in each FRC. With the exception of Dortmund, the second round of workshops included representatives from other municipal departments involved in local urban regeneration projects, multipliers, such as civil society organisations active in the area, district council representatives, local associations, schools or museums.

In Dortmund, the second workshop round constituted solely of the local project partners given the fact that the location for some of the NBS was still not identified. These were: the Urbanisten (URBA), the Department for Urban Renewal of the City of Dortmund (DORTMUND), the University of Applied Sciences South-Rhine-Westphalia (SWUAS), Lohrberg Stadtlandschaftsarchitektur (LOHRBERG), HEITRO and the Aquaponik Manufaktur (APM).

A large number of stakeholders were invited in Turin, with up to nineteen participants representing a number of organizations attending the workshop. The local proGlgreg partners present were: the Municipality of Turin (COTO), the Politecnico di Torino (POLITO), the University of Turin (UNITO), the NGOs Mirafiori Foundation (MIRAFIORI) and OrtiAlti (OA). It should be emphasised that the Municipality was represented by staff from various departments within the municipality, including the ones for urbanisation, environment, public buildings, information services, innovation, European funds and the smart city, which may reflect the high interest within the institution that has already been triggered through the LL activities. A couple of participants also attended from the Links Foundation that is a Linked Third Party in proGlgreg.

Also in Zagreb, there was a large number of participants representing different organizations, with 21 participants attending on the first day and seventeen on the second. Next to the project partners, namely the City of Zagreb (ZAGREB), the Bureau for Physical Planning of the City of Zagreb (ZZPUGZ), the SME Komfor Klima Group (KKG), the NGO Green and Blue Sesvete (ZIPS) and the University of Zagreb (AF ZAGREB), participants included the NGO ISKRA which represents vulnerable groups and has a valid interest in the therapeutic garden which will be implemented as part of the extension of urban farming activities in the district of Sesvete. Also amongst the participants were representatives from Sesvete's High School, the director of a local music school and the director of the Sesvete Museum. Further participants were representatives of the Sesvete District Council, and a representative of the ethnic minorities association of Sesvete (Bosnian Roma are the overarching group among the various minorities) Bosnian Roma.

2.2. Update on the state of play

Common to all workshops was a mutual update on the state of play. **Turin** had established working clusters for the different NBS that are at different stages of collaboration and development. These are five and are as follows: *social gardening and schools*, *green roofs and walls (green buildings)*, *green corridors*, *ICT tools*² and *new soil*. An ICT tool as well as a website are being developed by COTO and partners which are expected to help alleviate challenges pertaining to communication and stakeholder involvement. The ICT tool cluster is working to match the mapping resources, initiatives and platforms as well as the information

² ICT tools NBS/cluster: 'Information and Communication Technology' that will be utilised to help identify data and indicators for environmental compensation. The goal of the cluster activity (ICT tools - NBS 7) is to quantify (valorise) the benefits of NBS in order to help the administrators use them in urban planning procedures.

(data, indicators, methodologies) already available within the City with proGlgreg activities (ex. the spatial analysis in WP2, and the monitoring indicators being developed in WP4). The goal is to develop ICT tools like InviTo (see a demo version:

<http://www.urbantoolbox.it/project/progireg/>) to display the outcomes of the NBS employed within proGlgreg, as well as for others communication purposes. COTO additionally plans to develop a local communication strategy as well as an engagement strategy in order to address some critical challenges concerning the improvement of communication and collaboration with stakeholders, and increasing their level of engagement through tailored co-design activities (especially citizens). A critical “middleman” here is Fondazione who has wide reach and connections with the local communities.

The Strategy and Development Department of the City of Zagreb was undergoing negotiations with the Urban Planning Department and other relevant municipal departments in order to determine the location of the therapeutic garden and engage citizens through information days. The challenges identified by the LL participants pertained to the definition of roles and responsibilities as well as managing conflict. The City sees potential for therapeutic gardens to actively involve and engage children and adults with physical and mental disabilities in society. Given that the gardeners will be productive and active, they will be acquiring and applying new skills and gaining knowledge that they can then share with others; these activities are a better match for people’s individuality, agency and abilities than traditional charity activities. Project target groups are mainly the disadvantaged and socially excluded, and the therapeutic garden has potential to promote their social equality within the community and reduce discrimination and prejudice based on social status, ethnicity, disabilities and other characteristics. Gardening experts and professional therapists are planned to work together to provide thematic workshops and training for socially sensitive groups and gardening activities will be available year-round in Sesvete’s first therapeutic garden. Nature education for toddlers and children will be developed in collaboration with schools and kindergartens.

In **Dortmund**, the focus leading up to the workshop has been to identify a location for implementing the NBS. This also became the central theme of the workshop and thus a separate section (2.6) is dedicated to the Dortmund workshop.

2.3. Co-design Methodology: Review of the co-design principles

Once the update on the state of play had taken place, the next step involved reviewing the progress of the local application of the co-design principles (refer to Annex 2). The main questions were to what extent the principles had already been implemented in the LL, which ones received most attention and where further improvement would be required.

This was done in groups divided according to the NBS clusters and through a self-assessment exercise based on the checklist developed by ICLEI that matches each principle with a set of questions. Results were then shared with the entire group and options discussed on how the utilisation of the ‘weaker’ principles can be boosted.

The principles are as follows: (1) be open & inclusive, (2) be diverse, (3) share goals and vision, (4) think long term, (5) be experimental and reflective, (6) be flexible and (7) be transparent.

In **Turin**, all clusters scored particularly well on *diversity, flexibility and openness* and *inclusion*. More difficult were the principles of *transparency* (for all clusters), *sharing goals and vision*, and *long-term thinking* (with the exclusion of the green buildings cluster).

The situation looked similar in **Zagreb** with the NBS clusters³ scoring high on *openness and inclusion, diversity and flexibility* as well as on *long-term thinking, shared vision and goals* and *transparency*. The participants noted a need to develop a structured methodology for stakeholder involvement, as well as better information flow between the different internal and external stakeholders.

Dortmund also touched on the co-design principles with the discussion revolving mainly around the principles of *inclusion* and *transparency* and how best to incorporate them. The participants emphasized that inclusion, especially of marginalized communities, is essential to the project. Whereas this has not been done at this initial stage, a summer event organised by the Urbanisten particularly targeted immigrants. The issue of improving physical accessibility also came up to promote further inclusion. The successful example of the “Quartiersmanagement” in Nordstadt which was organized in direct collaboration with the citizens was given, and lessons learned will be drawn and applied to proGlgreg.

A common point that arose during the discussions in all three cities pertained to *openness and inclusion* and *transparency*, with the following key questions arising: At what point and to what extent can inclusion be realised? When and how do we know if everyone is reached? Participants in all three workshops agreed that, while it is important to inform everyone and to be transparent, not everyone necessarily needs to get involved. Instead, it is essential that everybody has, in principle, the opportunity to be included and nobody who has an interest in being part of the process will be turned down. Because of its central importance to the co-creation process, inclusion will be addressed again in the final round of workshops with a focus on marginalized groups together with practical options of how it can be most effectively achieved.

2.4. Risks and their implications

After having identified their respective pathways towards the intended transformation, the participants of the LL's in Turin and Zagreb proceeded to identify the risks which could potentially stand in the way of the innovations and prevent change from happening. Once the risks had been identified, the participants went on to brainstorm about potential mitigation measures.

³ For the purposes of the workshop, the different NBS in Zagreb clustered as follows: *green roofs and aquaponics* (NBS 4&5), and *green corridors and the therapy garden* (NBS 3&6).

The risk categorization followed the approach that COTO developed in WP3 and reflects societal, technological, procedural, as well as economic resources and other risks. The LL's in Turin and Zagreb almost exclusively named societal risks with one exception in Zagreb. The Zagreb LL identified a technological and procedural risk, namely, *"the commercial 'attack' on the river/stream which limits accessibility"* which refers to the possibility that, following the development of the green bicycle path along the river, new business and small shops may be there, making use of the open space. The Zagreb LL suggested the following solutions to this challenge: a) changing the course of the path and/or, b) experimenting with green roofs /walls, and aquaponics along the riverside.

Table 1 and Figure 2 below show the societal risks and mitigation measures identified in both LLs. Moreover, the participants in both LL's noted that they perceive working in silos and without contact with the other FRCs as a risk. This risk can be mitigated within the framework of WP3 where COTO plays an active role in bringing cities together to allow an exchange on risks and mitigation measures.

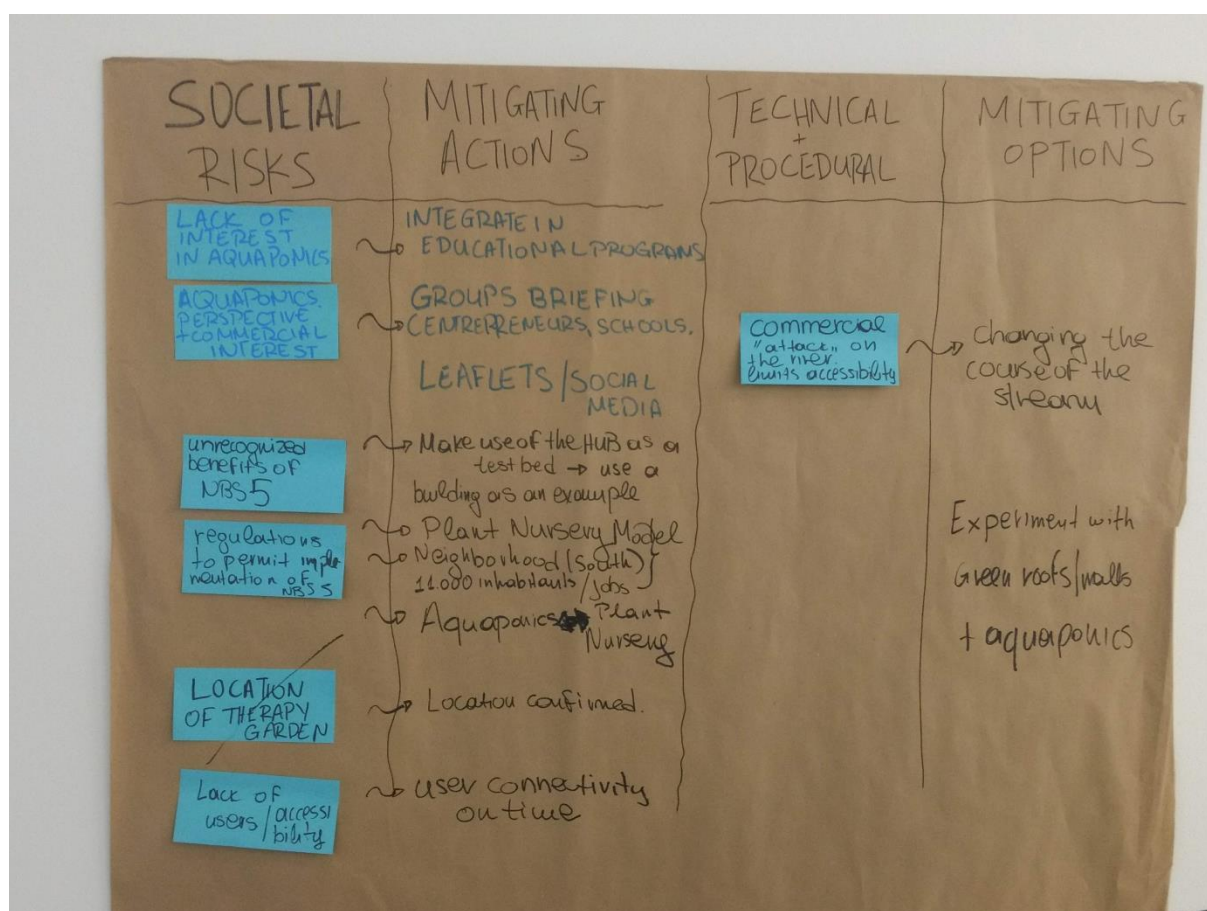


Figure 2 Identified risks and mitigation measures for the Zagreb LL

Table 1 Identified risks and mitigation measures for the Turin LL

Risk	Identified mitigation measures
Lack of interest in NBS	<ul style="list-style-type: none"> ➤ Incentives (or a hook) to get the residents to care for the NBS (ex. Exchange service in the neighbourhood, discounts, recognize the willingness to engage, can be symbolic etc.); ➤ An open day to present the different NBS to the citizens (ex. the upcoming festival); ➤ Clearly define and communicate the benefits that actors can have from NBS; ➤ Common communication on all NBS so as to build a common identity; ➤ Encourage and support schools to take responsibility/ownership of NBS; ➤ Involvement of other actors/mediators that have recognition among citizens (existing 3rd sector institutions or champions that are locally active and present).
Vandalism	<p>Question to address: <i>what kind of vandalism can occur for the different NBS solutions?</i></p> <p><u>Actions:</u></p> <ul style="list-style-type: none"> ➤ Design the NBS in such a way to avoid vandalism (think in the design stage of how the NBS solution may be misused). Example: considering two different designs for the box gardens; ➤ Provide positive and good communication about the value of NBS so that people can learn to respect and appreciate them. This can include storytelling and branding; ➤ “Increase number of people to use NBS” - every NBS has a different focus; ➤ Include the ‘usual suspects’ so they develop a sense of ownership. <p><i>There is a need to specify the type of vandalism that can occur for each NBS intervention and address it accordingly. It is also important to consider the most likely suspects and what urges them to vandalise:</i></p> <p><i>Example:</i> Vandalism is a big issue with the box gardens and the produce is stolen</p> <p><i>Recommended solution:</i> put up a sign that the produce can be taken, but that the trees and plants should not be plucked out.</p>
Excessive demand for citizen involvement	<ul style="list-style-type: none"> ➤ All partners to define a common programme/strategy for citizen engagement to avoid repetition (this to also include other projects working in the same district and with the same stakeholders); ➤ Bring together stakeholders/citizens towards the end of the year to share the results and the common vision; ➤ Identify champions (rotating system); ➤ Mapping exercise of participatory activities.
Unrecognized benefits	<ul style="list-style-type: none"> ➤ Organise some info points where the goals and benefits/outcomes of the project can be discussed and presented; ➤ Give the ‘local leaders or champions’ an active role in talking about the project or giving a testimony in their communities; ➤ Create real-life ‘hands-on’ experiences of the benefits. Example: a ‘follow the path’ experience (green corridor, cycling pathways, to bring people to the river and to discover the disconnected and abandoned areas of the district); ➤ Find ways to connect the students who study in the area to their surroundings, so they can form a bond and a connection to the district;

- Create a legacy for the district as a post-industrial cultural heritage site, create a story for the inhabitants and make it *their* story, *their* identity, and *their* history.

2.5. Transformation potential

The previous round of workshops included an exercise on the desired long-term transformation beyond proGlgreg. The exercise elicited the different perceptions and expectations of the participants towards the LL, as well as aligned them towards a common vision for the LL in each of the FRCs.

Building on this, this round of workshops sought to guide participants on how to outline concrete pathways towards the intended transformation or impacts. This was done by introducing them to the theoretical underpinnings of the Theory of Change (ToC) and conducting a practical exercise of it as seen in Figure 3 below.



Figure 3 Theory of Change interactive exercise (CLEVER Cities, 2019)

ToC, as displayed in the figure above, is essentially a back-casting exercise. The first step involves identifying the **impact**/intended transformation (what difference do we want to achieve?), then stating the existing **reality** (what is the existing situation?). Next comes stating the outcomes (not quantifiable change) and outputs (quantifiable change) to be achieved, and finally the **activities and resources** that will be needed to reach these outcomes and outputs and eventually bring about the desired transformation. The whole process is subject to a set of assumptions that are unique to the local situation (ex. secured political commitment).

The participants in **Turin's** workshop (Figure 4) pinned down their desired transformation in the LL, and the expected/planned technological and social innovations that will lead to it. These are displayed in Tables 2 and 3 below. A point that was consistently stressed in the discussions at the Turin workshop was the need to have an overall narrative that connects the dots between the different NBS.



Figure 4 Brainstorming about the innovations in the Turin LL

In **Zagreb** (Figure 5), the City's vision that was developed in the first workshop was revisited and the concept of ToC was re-introduced in a presentation. This was then followed by the ToC exercise to reflect on how the innovations can lead to concrete change that realizes the vision. The outcomes are recorded in Table 4 below.



Figure 5 LL discussions in Zagreb

The back-casting exercise formed the bulk of the workshop in **Dortmund** and is therefore elaborated on in a separate section (2.6).

Critical points that arose in all three workshops were the need to link the goals of the individual LL's to a bigger city vision or to longer term district goals and strategies, integrating the experimentation process into district urban planning, and scaling up through public administration tools, plans and procurement activities to ensure long-term sustainability.

Furthermore, it was noted that there seems to be a general need for clarification of the difference between the concepts of 'outputs' and 'outcomes' as well as 'risks' and 'barriers' for the participants to be able to complete the exercise more effectively.

Table 2 Desired transformation and actions for the Turin LL

Desired transformation			Actions
Unemployment	→	New and green job opportunities	<ul style="list-style-type: none"> - Trainings in connection to new soil; - Aquaponics (co-management).
Young people moving away	→	An attractive place for young people	<ul style="list-style-type: none"> - Aquaponics hub; - Co-management.
Isolation	→	An inviting place to meet and connect	<ul style="list-style-type: none"> - Integration of homeless people; - Legalising community gardens.
Car-dominated traffic	→	Sustainable mobility and cycling paths	Green corridors linked to cycling paths.
'Grey' outside image	→	Fresh identity	<ul style="list-style-type: none"> - Aquaponics; - New soil; - Gardening; - Involving homeless people; - Legalising community gardens. <p><i>The district can acquire the image of being the frontier district for NBS, and a regeneration model around the NBS can be developed to transform the district and integrate the homeless people.</i></p>

Table 3 Planned technical and social innovations in the Turin LL

Top social innovations	Top technological innovations
<ul style="list-style-type: none"> ➤ Taking care of/involving the most vulnerable population (homeless); ➤ Enabling marginal groups to become protagonists of NBS-related activities or use NBS to find new ways for them to participate actively in society; ➤ Regenerating peri-urban food systems creating new “social value chains”; ➤ Making everyone conscious of/get everyone involved in the expected effects/impacts of NBS; ➤ Integration of stakeholders for co-management; ➤ Regulating community gardens by public law and transforming the illegal gardens along the river into legal ones; turning them into inviting places through community collaboration. 	<ul style="list-style-type: none"> ➤ Use nature as the most innovative technology; ➤ New soil as a new marketable product (incl. skills development and creation of green jobs); ➤ Aquaponics; ➤ Innovative agricultural techniques; ➤ Hub at “VOV”; ➤ Monitoring technologies to assess impact and quality of life; ➤ Monitoring parameters to assess NBS impact on ecosystem services (maybe).

Table 4 Results of Theory of Change exercise in the Zagreb LL

Reality	Inputs	Outputs	Outcomes	Impacts
Lack of North-South communication	Activities for minority groups around music	<ul style="list-style-type: none"> ➤ Under railroad construction (bike, pedestrian, car); ➤ Bike lane and green corridor (Road 6) connected with the future under passage 	Better and sustainable mobility	Connectivity North-South
Lack of heritage awareness	Participatory street art activities	Development of pedestrian-cycling infrastructure	Change of the urban context	Social inclusion of all the citizens
Significant gravitation towards Zagreb, and need to travel	Exhibitions of student work	Contemporary public space design	Greater protection of current green areas	Impetus for green policy planning
Not integrated social minority groups	Use of existing urban garden and green spaces	Development of urban agriculture	Self-reliance of Sesvete in terms of basic public services	New cultural identity
Youth unemployment	Make use of volunteers	Green jobs and entrepreneurial hub	Sesvete's self sufficiency	
Lack of cultural heritage awareness	Cultural heritage workshops	Themed maps of local cultural heritage	Lower unemployment rates among youth compared to other age groups in Zagreb	

	Wine roads and connectivity	Development of lacking services and better connections to existing	Simplification of participation in various activities and/or fulfilling everyday needs	
	Street/outdoors workout parks			

2.6. Options for LL implementation in Dortmund

Similarly to Turin and Zagreb, the intended impacts and envisioned transformation were re-stated and measured against the existing reality in Dortmund. This was followed by a discussion on possible solutions to realize the transformation, while at the same time accommodating the existing reality (see Figure 6).

The impact/transformation envisioned by the LL participants was formulated as follows:

Integrated and central transformation – through systemic city development and integrated projects based on the different NBS implemented within the LL;

Long-term perspective – towards economic and financial sustainability;

New identity – for and by the population.

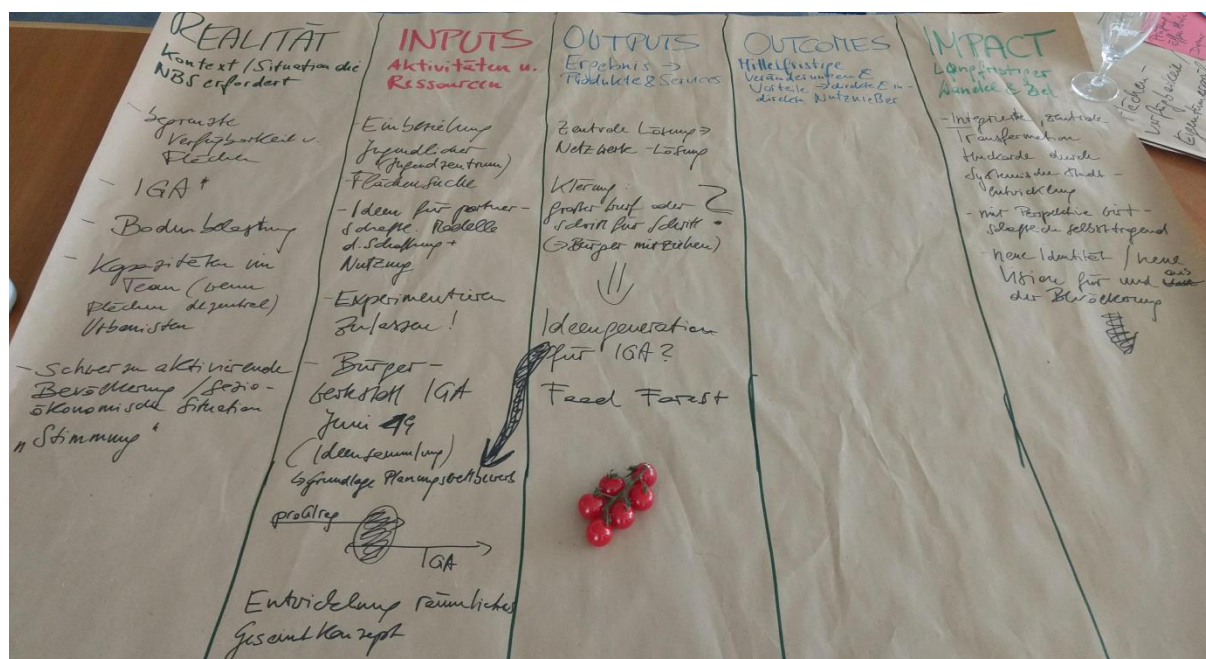


Figure 6 Back-casting exercise for the Dortmund LL

The main issue in Dortmund has been the inability to find a location for the NBS. This was due to a number of issues ranging from spatial limitations because of the IGA project, to land ownership issues, and limitations on what the City of Dortmund can actually do to secure the required land. It became clear during the discussions that the idea of a centralized approach to realize the envisaged NBS had to be abandoned, and that the LL participants would need to agree on a decentralized alternative and plan. In a constructive and co-creative process, the participants developed the plan shown in Figures 7 & 8 below:



Figure 7 Dortmund's core group co-creatively developing a solution for the decentralized application of NBS

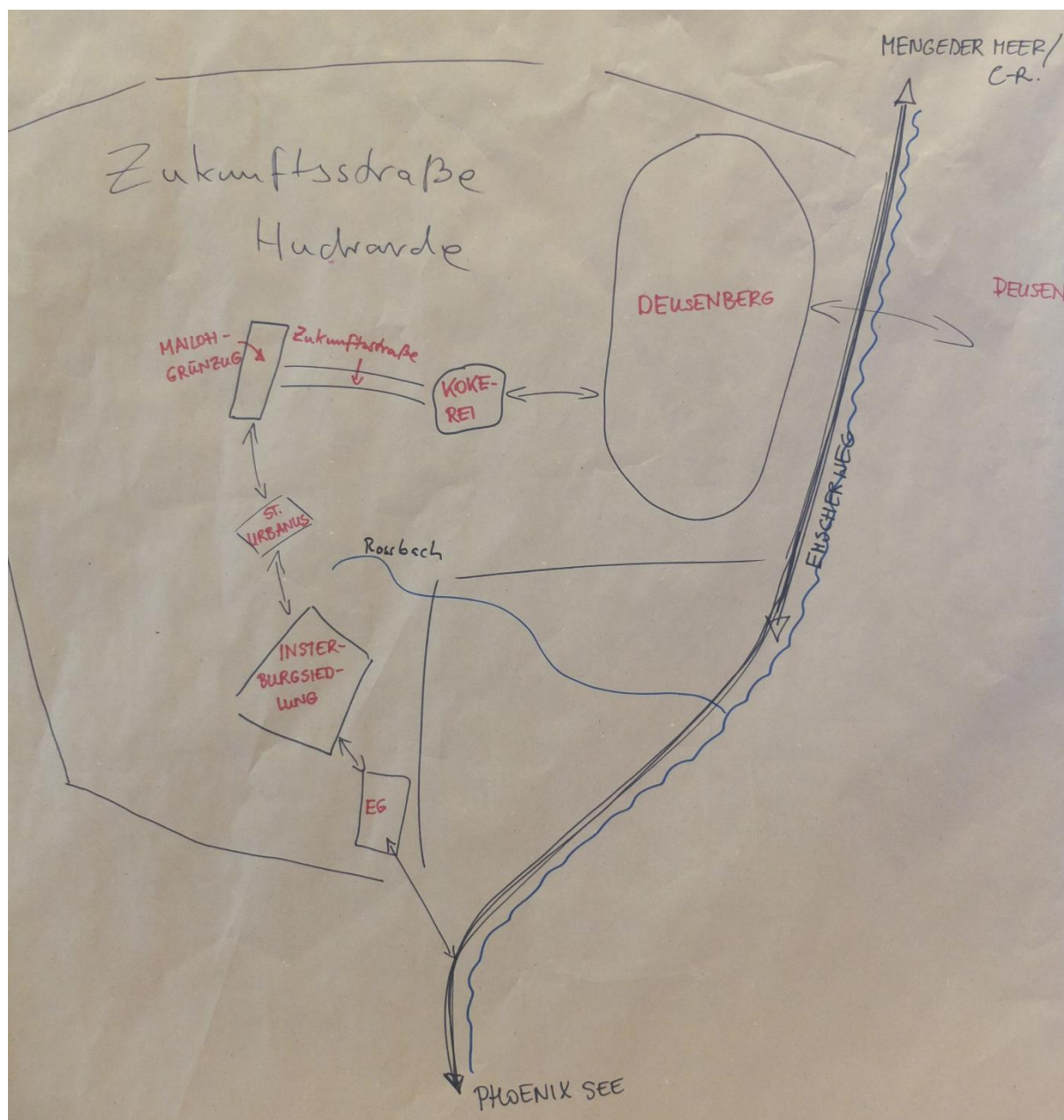


Figure 8 Proposed solution for the decentralized application of NBS in the Dortmund LL

Based on this, it was agreed that the Hansa Coking Plant could act as a central hub from which the other NBS branch out to create an 'exploration path' with signposts leading from one NBS area to the next. This would involve connecting the areas, the NBS and the citizens and developing a network of individual sites with a common vision. A crucial aspect would be creating memories/emotional bonds for the people, emphasizing what is being done, and linking it to the inhabitants' local identity to awaken their interest and connect them.

It was additionally agreed to work towards having the proGlgreg LL in Dortmund serve as a demonstration model for the tested NBS, which can then be taken up by the IGA⁴. The LL would also seek further connections such as linking up with the Nordwärts project⁵ where the Urbanisten are collaborating with schools and conducting workshops and info sessions for the students and teachers.

With this plan in place, the LL participants developed an action plan and will proceed with implementation. Two challenges that will need to be actively and consistently addressed are: 1) the issue of manpower and team capacity (a decentralized solution requires more capacity), and 2) preventing fragmentation of the NBS implemented in the LL since a decentralized approach could lead to losing the collective dynamic that is more likely to occur if the NBS can be realized in just one single place.

3. City reflections and conclusions

The participants were actively engaged throughout the workshops and agreed that a good level of interaction had been achieved as well as sufficient momentum to help them move forward. They also viewed the workshops as a neutral platform where they were able to discuss their differences and resolve arising conflicts with ICLEI playing the mediator.

This round of workshops highlighted the different starting points and stages of progress in planning, stakeholder involvement and implementation of the different FRCs. The LLs are gradually developing different dynamics and approaches and have distinct approaches to communication that reflect their local circumstances and aspirations. The next paragraphs give a summary and outlook for each of the three FRCs.

In Turin, the desired outcome was a shared understanding of the overall transformation to be achieved by the LL and how the envisaged social and technological innovations are expected to contribute to it. Since the overall, long-term goal/vision in terms of the desired transformation is not yet consolidated, this could only partially be achieved. The issue will have to be picked up again within the context of finding a final version of the vision that should also be shared by those who will locally benefit from the implemented NBS. The issue will be discussed further bilaterally with COTO as well as with the core team, for example - but not exclusively - in the last workshop in Turin.

Additional issues that arose include the lack of an overall narrative that pulls all the NBS together, as well as the scattered communication and lack of systematic reporting and mutual exchange on proGlgreg activities at different levels (between local partners, stakeholders and

⁴ IGA Metropole Ruhr 2027: International garden exhibition, which will take place in 2027 with an investment of 200 million Euro and 2.6 million visitors, expected (Krispin, 2018).

⁵ Nordwärts is a ten-year- umbrella project with up to 200 initiatives in the Northern districts of Dortmund fostering sustainable urban development (economy, ecology, social issues and civil society). The overall focus of all sub-projects is to improve quality of life in these districts by means of citizen dialogue and engagement. For more info look at: https://www.dortmund.de/de/leben_in_dortmund/nordwaerts/nordwaerts_im_ueberblick/daten_fakten/index.html

citizens). The former will be addressed through ICLEI's support (WP6), whereas the latter will be resolved through the application of the WP3 methodology for implementation and monitoring which is expected to result in more continuous updates and exchange on progress and failure.

COTO had already started a rather systematic approach prior to the first workshop (through so-called 'activity sheets' for each NBS). The activity sheets have been continued and are now integrated into the methodology for implementation. The NBS have been clustered and a contact person identified for each cluster.

The two main topics for the final workshop in Turin will be the ways and means to ensure the long-term commitment of stakeholders – key for maintaining the NBS in the long run – and how to involve marginalized communities. The consolidation of a (realistic) long-term vision and overall narrative is still not fully settled and the process for achieving it will have to be discussed again, in particular in the context of moving co-creation beyond the local group of project partners and triggering the communication with the broader public in the LL district. Participants of the second workshop were also missing a better roadmap for implementation, including milestones and moments of reflection; this will however mainly be addressed through the implementation plan and the implementation itself that both belong to WP3.

In Dortmund, assuming responsibilities and commitment to the process as well as the timely fulfilment of tasks on behalf of some of the project partners were perceived as major challenges in the co-design process leading up to the second workshop. Thus, in the preparatory talks, the City requested ICLEI to focus on very practical, outcome-oriented issues that could help them introduce and visually pin down a structured planning and management process with clear, laid down tasks, commitments to when they will be fulfilled and the person responsible for it.

The most critical issue for Dortmund did not emerge during the workshop but was already known before. In Dortmund, the ownership of NBS is clearly divided between the project partners, with NBS⁶ 1 and 6 lead by the municipality of Dortmund and NBS3, 4 and 8 lead by the Urbanisten, in strong support of SWUAS. That has hindered the integration of the different NBS in a joint vision and objective for the LL. Furthermore, the search for suitable spaces for NBS 3, 4 and 8 was still ongoing by the time of the second workshop, which delayed the NBS planning process as well as the planned local engagement activities (laid down in a public engagement plan, issued by the Urbanisten).

At the start of the second workshop, a conflict resolution intervention between the different project partners was requested instead of proceeding with the proposed workshop program. During the workshop, a breakthrough was achieved with ICLEI identifying the root of the problem. Based on a guided back casting exercise, that requested the participants to look at

6

NBS 1: integrating solar energy production and sport activities on 2 ha of the renatured Duesenberg landfill;
NBS 3: creating 10 000 m² of food forests and permaculture orchard together with the residents of Huckarde;
NBS 4: establishing a community managed aquaponics system of 200 m² for local food production;
NBS 6: connecting the isolated Huckarde borough with the renatured Emscher river and Deussenberg sites;
NBS 8: improving and monitoring pollinator biodiversity in conjunction with NBS 3, 10 000 m²

and work with the conditions at hand, new perspectives could emerge and a new, decentralized concept could be formulated that thematically integrates the different NBS in a joint vision.

Despite initial differences and delay, the Urbanisten/SWUAS/HEITRO, with the help of the City of Dortmund, could identify and negotiate the spaces for NBS 3, 4, and 8 and will now start the public engagement process. For the City of Dortmund, and the NBS 1 and 6, the engagement processes and formats are more formalized – a public participation workshop to collect ideas from citizens for the implementation of the IGA and the “future garden” was held in summer 2019 and results are currently being analysed. Especially for NBS 6, creating an accessible corridor, options for co-design (with citizens) are limited due to the nature of the NBS.

Ever since the first round of workshops, a monthly *jour fixe* with accompanying detailed protocols outlining progress of the project partners concerning the different NBS and general proGlgreg issues has been established. These *jour fixe* help keep project partners up to date and keep track of the progress by offering a joint, feasible working structure that accommodates differences in working modes between the different project partners.

Given that the spaces for NBS 3, 4, and 8 have now been identified, the logical follow-up for Dortmund during the final round of workshops would be defining the participation process and planning it. This would include identifying who has to be involved in what way and to what intensity. Here it would be useful to use a participation planner, as well as to go back to the Stakeholder Mapping conducted in the first workshop round to see whether anything has changed: which stakeholders were actually influential and which ones were not and for what reasons.

During the second co-design workshop, **Zagreb** benefited from outlining its LL transformation pathway and looking at the broader picture for the transformation of the whole district in the future, combining the work done within proGlgreg with other planned projects and activities in the area. Central to the discussions in Zagreb is the therapeutic garden that is set to be implemented at the start of 2020. The City plans to involve a much broader range of organizations and groups in the future in addition to the day care for children with disabilities that was invited to the second workshop. To make maximum use of the garden, the core team sees the need to include all sorts of institutions relevant to people with disabilities as well as people of all ages. Looking into the future, another therapeutic garden is planned in Zagreb: a large space in the southern part of the city has already been set aside as a larger therapeutic garden and the first garden in Sesvete will act as a pilot for learning and experimentation.

The second co-design workshop was beneficial in catalysing discussions on the means for maximizing and ensuring transparency, while at the same time being honest and realistic about the desired outcomes of the project within the local context, its scope of action and the limits of the work and involvement of each partner (within the project) and stakeholder (outside the project). This will help to manage expectations, maintain commitment and promote the uptake of solutions. In the third round of workshops, it would be necessary to

focus on two main topics: 1) how to ensure the long-term commitment of stakeholders, something that will be the key for maintaining the NBS throughout the project and following its end ideally, and 2) how to involve and integrate marginalized communities in the LL activities. When moving from co-design to co-implementation, it is important to ensure that the processes and implemented activities in each LL allow for flexibility and adaptability in response to possibly changing needs of partners and stakeholders. The City is planning to keep having regular meetings with all proGlgreg partners and invited stakeholders, following the end of the co-design process, in the form of a jour fixe, similar to Dortmund's case; these meetings have proven to be beneficial in terms of conflict resolution and openness among partners.

All three cities agree that achieving a broad involvement of the local communities – including groups which may be marginalized – is a critical open issue to be addressed in the next workshop. One of the key requirements would be a consolidated long-term vision from the side of the core teams in order to enable coherent communication to the public.

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Annex 1: Workshop agendas

Agenda for the Dortmund LL workshop (in German)

03. April 2019

Dortmund

	Aktivität / Ziel	Kurzbeschreibung
08.30 – 08.40	Begrüßung Susanne Linnebach / Dagmar Knappe (Stadt Dortmund) Einführung Agenda Bettina Wilk (ICLEI)	
08.40 – 10.00	Realisierung des Transformationspotentials des LL Anknüpfung der Aktivitäten innerhalb des LL an das langfristige Ziel der Transformation („Impact“)	INTERAKTIVER TEIL Anhand der Schritte der „Theory of Change“ werden wir ein Schaubild erarbeiten, wie die gewünschte Transformation des LL Gebiets („Impact“) langfristig über relevante Zwischenschritte erreicht werden kann (über „Outputs“, „Outcomes“). / diese Übung wurde dahingehend abgeändert, dass wir bewußt auf den Kontext/Realität geschaut haben, um von dem ausgehend, das bisherige Konzept zu überdenken.
10.00 – 12.15	Erarbeitung eines neuen, dezentralisierten Konzepts für NBS3, 4, und 8	Auf der vorherigen Übung basierend, konnte eine realistische Konzeptualisierung von NBS3, 4, und 8 erarbeitet werden.
12.15 – 13.30	Mittagessen	
13.30 – 15.00	Zeitplanung für 2019 Definieren und zeitliches Strukturieren der nächsten Schritte in 2019 und Festlegung von Verantwortlichkeiten	INTERAKTIVER TEIL Ein Planungs-Roadmap wird für 2019 erarbeitet, in der konkrete Arbeitsschritte, deren Zielsetzung, Verantwortlichkeiten definiert und zeitlich festgelegt werden. Diese kann in weiterer Folge als Ausgangspunkt für die Detailplanung verwendet werden.
15.00 – 15.15	Pause	
15.15 – 16.15	Co-design Prinzipien	DISKUSSION

	Derzeitige und zukünftige Planungsprozesse auf Berücksichtigung der Co-design Prinzipien prüfen	Auf Basis der Co-design Checkliste werden Planungsschritte und –prozesse auf die Integration der 7 Co-design Prinzipien analysiert und Barrieren und Verbesserungsmöglichkeiten identifiziert.
16.15 – 16.30	Einführung Konzept nicht-technologische Barrieren Einführung in die Methodologie zur geplanten Sammlung und Auswertung nicht-technologischer Barrieren bei Design und Implementierung der NBS	PRÄSENTATION ICLEI Präsentation der Methodologie durch ICLEI (Task 5.2), Fragen und Antworten
16.30 – 17.00	Feedbackrunde und Ausblick	

Agenda for the Turin LL workshop

Commune di Torino (COTO)/ICLEI European Secretariat (ICLEI)

Final version, 16 April 2019

Time	Duration	Objectives Agenda items
09:00	10'	<i>Elena Deambrogio, COTO</i> Welcome <i>Barbara Anton, ICLEI</i> Introduction of agenda
09:10	20'	<i>Obj.: Bring each other up-to speed on latest developments</i> <i>'Tour de table' with core team members sharing most relevant news in their specific domains of work within the Mirafiori Living Lab</i>
09:30	30'	<i>Obj.: Review implementation of agreements and action points of first workshop</i>
10:00	60'	<i>Obj.: Refresh the Living Lab concept and the co-design principles in proGlgreg</i> <i>Bettina Wilk, ICLEI:</i> > Recap of proGlgreg concept of Living Lab, incl. aspects of innovation and transformation > Update on co-design principles > ICLEI's plans for D2.10 ('Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes') Feedback by core team to above Review of application of co-design principles: > Interim 'self-assessment': Is the Mirafiori Living Lab on track with regard to the co-design principles?
11:00	15'	Coffee break
11:15	60'	<i>Obj. Examine the planned technological and social innovations in Mirafiori for their potential to trigger the desired larger transformation in the district</i> Discussion: > What are the 'top innovations' – both in technological and social terms - that the core team intends to put into the centre of attention in the Mirafiori Living Lab and why? > What is necessary to make these innovations an effective lever for 're-inventing' Mirafiori and fostering a new local identity?
12:15	60'	<i>Obj.: Get prepared for mitigating the societal risks that have been identified for Mirafiori</i>

Time	Duration	Objectives Agenda items
		<ul style="list-style-type: none"> > Francesca La Greca, COTO: short recap on societal risks identified (based on earlier risk assessment) > Linking risks to relevant strengths and opportunities as outlined in the SWOT analysis > Compiling ideas for mitigating the societal risks
13:15	60'	Lunch break
14:15	60'	<p><i>Obj.: Revisit the current management structure with a focus on the engagement of stakeholders</i></p> <ul style="list-style-type: none"> > Laura Ribotta/Riccardo Saraco. COTO: short presentation on the currently agreed arrangements for managing the Living Lab (incl. allocation of responsibilities) > Discussion: <ul style="list-style-type: none"> - How will local stakeholders and citizens be mobilised and engaged in the NBS implementation? - Which social groups will most likely be difficult to get on board? What can be done to overcome the difficulties? - Who is in charge of stakeholder engagement? - How will developments be documented?
15:15	15'	<p><i>Obj.: Review the methodology for the compilation of non-technological barriers and solutions</i></p> <ul style="list-style-type: none"> > Serene Hanania, ICLEI: presentation of latest version of methodology for developing D5.3 and D5.4 > Feedback, brief discussion
15:30	15'	Coffee break
15:45	30'	<p><i>Obj.: Plan for the main steps concerning stakeholder engagement at Living Lab level until the 3rd co-design workshop</i></p> <p><i>Moderated by Riccardo Saraco, COTO</i> (Including expectations for 3rd workshop and introduction to bi-monthly progress updates to be provided to ICLEI)</p>
16:15	15'	<i>Obj.: Agree on key results of the workshop to be reflected in report</i>
16:30		Wrapping up and closing 2 nd workshop

Agenda for the Zagreb LL workshop

Co-design workshop No. 2

07-08.May 2019

Zagreb, Croatia

	Activity
09.00 – 09.20	Welcome Matija Vuger, Iva Bedenko (City of Zagreb) Overview of the agenda Vasileios Latinos (ICLEI)
9.20 - 9.45	Innovation and NBS Vasileios Latinos (ICLEI)
9.45 – 10.45	Co-design Methodology and principles Facilitation: Vasileios Latinos, Bettina Wilk Note taking: Serene Hanania
10.45 – 11.00 BREAK	

11.00 – 12.45	Management Structure and Co-Design Roadmap Facilitation: Vasileios Latinos, Bettina Wilk Note taking: Serene Hanania
12.45 – 14.00 LUNCH	
14.00 – 15.20	EXERCISE: Risks, societal challenges and mitigating options Facilitation: Vasileios Latinos, Bettina Wilk Note taking: Serene Hanania
15.20 – 15.30	Closing of DAY 1
DAY 2	
09.00 – 09.30	Welcome/ Overview of DAY 1 and feedback round
09.30 – 11.15	EXERCISE: Transformation Potential Facilitation: Vasileios Latinos, Bettina Wilk Note taking: Serene Hanania

11.15 – 11.30	Non-technological barriers Serene Hanania (ICLEI)
11.30 – 13.00	Management of Living Lab, with focus on stakeholder engagement Vasileios Latinos (ICLEI)
13.00 – 13.30	Wrapping up and closing 2nd workshop

Annex 2: Co-design principles

1 BE OPEN & INCLUSIVE

Active & inclusive involvement of all relevant stakeholders in decision-making processes from the early stages of the Living Labs (LL), and equal consideration of their interests to build trust, legitimacy and ownership for solutions. Nature-based solutions have a higher chance of being used and/or maintained when they match with citizens' needs, expectations and preferences.

2 BE DIVERSE

Jointly producing innovative solutions to real-world problems applicable for society, policy and practice requires the collaboration of researchers, businesses, (public) service providers, civil society organizations and citizens, as well as a mix of scientific and experience-based, tacit knowledge of local communities.

3 BE TRANSPARENT

Be transparent, honest and realistic about the desired outcome of the LL, scope of action and limits of citizen participation regarding their influence on design, planning & implementation at all times. This will help manage expectations, maintain commitment and promote the uptake of solutions.

Co-creation

- 4 SHARE GOALS & VISION**
Develop a jointly agreed, common vision and goals to foster effective, mutually valued outcomes with high acceptance among different stakeholders.

- towards**
- 5 THINK LONG-TERM**
Look to a long-term planning horizon for all services and solutions to be produced. This implies developing a clear vision of what should be achieved by the end of the LL and beyond. From there, derive actions that promote the uptake of the solutions in the long run.

urban transformation

- 6 BE EXPERIMENTAL & REFLECTIVE**
Actively foster learning and innovation. Learning environments should allow stakeholders to create and test new technologies, services and products in safe, real-life environments. A continuous feedback cycle of evaluating results and adjusting actions helps get to the best results. Acceptance of unfinished products and states is crucial

- 7 BE FLEXIBLE**
Allow for flexibility in processes and plans. Give room for adjusting strategies in response to changing actors' needs, insights and circumstances, and for changing the ways and rules of collaboration.

Figure 9 Co-design principles