CLEVER Cities

Co-design of Nature-Based Solutions with Citizens: Learnings from a sector literature review

Social Finance
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Contents

Introduction

Purpose

Collaborative approaches to the design of nature-based solutions (NBS) are an emerging trend. Examples have appeared from across the globe, often with roots in urban regeneration and wider citizen participation projects. While co-design for NBS is still not mainstream, there are increasing reports and publications offering guidance for how to co-design NBS successfully. The purpose of this document is to review and collect these recommendations, and illustrate their guidance through real case studies, sharing examples from projects which have applied these co-design techniques to their own NBS.

We have reviewed over 50 articles and reports on co-design, co-design for NBS, and urban regeneration, and performed interviews with 8 experts on co-design. For the case studies, we have paid special attention to NBS developed in or profiled in reports from Horizon2020-funded and similar projects, specifically CLEVER Cities, proGIreg, Resilient Europe, and Naturvation.

This report contributes to a wider collaborative research effort between Social Finance (author) and the Young Foundation, as part of the CLEVER Cities project. CLEVER Cities is a consortium project running from 2018-2023 which will implement nature-based solutions in a number of global cities, to pilot the suitability of NBS to address urban challenges. Social Finance and Young Foundation are working with the London CLEVER Cities team to understand:

- The success factors and challenges for co-design for nature-based solutions.
    - This report focuses on this topic. Young Foundation has also written a parallel document on this topic with a focus on Thamesmead, London - a focus city of CLEVER Cities. See “Going Further” section for more information.
- The types of benefits and costs of co-design for nature-based solutions and how to effectively measure these
    - While this report does not focus on this topic, Social Finance has written a parallel document to provide an evaluation framework and guidance for this. See “Going Further” section for more information.

Scope

In this document, we focus on co-design for Nature-based solutions (NBS), which are nature-based features used to address environmental, social and economic challenges, often by connecting these three dimensions. Some examples of this are urban parks promoting public wellbeing and urban biodiversity, green catchment areas in cities reducing flooding, and wetland-based water filtration improving water quality.

In this report will use the following definition of **co-design**: the involvement of stakeholders in designing or rethinking an output (in our case: a nature-based solution), through direct collaboration with the design team during the development process[1]. Co-design is the first element of “co-creation” – the latter also encompasses “co-monitoring” and “co-evaluation” as following steps.

In many cities such as the CLEVER cities, the stakeholders involved in the co-design are very diverse, and may include: landscape, architecture and construction experts; municipal technical officers; universities and other educational and training institutions; businesses and their representatives; media networks; local schools, youth and elderly centres, property owners (both residential and commercial), artist and neighbourhood associations, citizens and local community organisations.

We have focused this report on **co-design with citizens**, also referred to as “residents”. Our research has confirmed that, in co-design processes, engaging with representatives of community groups (e.g. cultural groups, youth associations, sports clubs, etc.) can be a useful and efficient way of capturing citizens’ voices, especially when these groups are representatives of the diversity of the local community. Community

groups may be at various degrees of formality (from informal social groups to organised committees)[i] and in some instances NBS co-design can contribute to making these groups more established. In this context, this report covers how to engage with citizens both directly and indirectly, through direct engagement, or engagement with representatives of community groups/ organisations.

[i] To understand the level of formality of a group, you may look at characteristics such as: if the group has a representative or leader, has social media presence, has legal status (Source: Interviewee for report)

Findings

1. How are cities using co-design for NBS?

Where and how is co-design being used for NBS in cities?

The examples we found of NBS that have been co-designed with citizens present the following broad characteristics:

1. They are global

Case studies for the co-design of NBS have appeared worldwide. We have found examples across Europe, North America, South America, Asia and Australia. In particular, European cluster-projects are emerging as leaders in co-design for NBS (additional information about these is below).

2. Most are relatively recent

We have found examples of co-design of NBS going back to the 1990's, with the majority of examples in the past decade. The heavy weighting towards recent examples may be due in part to the language around these concepts: both "co-design" and "nature-based solutions" are terms being increasingly adopted. Although nature has historically always been delivering social, environmental and economic benefits, and the concept of co-design has been around for decades, the increased use of these two terms might be influencing how they appear in the literature, with increased incidence of these terms in the last decade.

3. They represent a varied level of co-design

The examples we have found span the spectrum of public participation. Some of the NBS projects that call their enagement with citizens "co-design" are closer to the "Inform" and "Consult" territory (see "Image 1" below), where citizens are asked to give their views and preferences to influence a design such as, for example, a river restoration or a park redesign – this may appear as surveys, workshops and citizen interviews. There is some debate as to whether engagement at this level truly constitutes "co-design." Other examples have more firmly entered the "Collaborate" and "Empower" territory. In these cases, citizen groups may create NBS designs themselves, for example for a playground or greenway, and may be involved in the long-term decision-making processes through formalisation of their groups into an NGO. These examples represent a more tangible shift in power from a project team to the community members the NBS is created for.

Image 1: Spectrum of Public Participation

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Source: International Association for Public Participation (2004) IAP2 Public Participation Spectrum.

4. Closely linked to urban regeneration NBS

NBS being co-designed with citizens has unsurprisingly been linked closely with the urban regeneration context. NBS projects that have engaged local residents are often those that are integrating nature into human-focused areas, such as parks, green corridors, urban farms and playgrounds. These NBS tend to have a social benefit focus alongside an environmental component, and so are more clear use cases for citizen co-design. Our literature review revealed fewer examples of citizen co-design being used for non community-facing NBS use cases, like urban drainage and flood prevention, or reductions of urban heat islands.

Co-design in NBS cities – progress through the consortium approach

There are many examples of co-design being implemented from NBS across the globe, and especially in Europe. In particular, consortium projects associated with Horizon2020 have been active piloting sites for co-design in NBS. Horizon2020 is an €80 billion EU research programme with a significant focus on public sector innovation and inclusive growth, for which co-design can be seen as a key pathway to reaching objectives. Because these consortium projects focus on inter-city learning exchanges, and are rich in examples and learnings of NBS co-design, an emerging practice, we have introduced three of them below as key resources for learning: CLEVER Cities, Naturvation and proGIreg.

CLEVER Cities

CLEVER Cities, running from 2018-2023, is a consortium project to test nature-based solutions for urban transformation. Hamburg, London and Milan lead the consortium, with Belgrade, Larissa, Madrid, Malmo, Sfantu Gheorghe and Quito sharing in its learnings. Co-creation is core to the CLEVER Cities approach to developing NBS; the cities are using a four-step co-creation process which includes co-design, co-implementation, co-monitoring and co-development. In each partner city, local sub-projects called “CLEVER Action Labs” (CALs) will serve as experiments, which will facilitate participation of citizens. Each city in CLEVER will take a locally tailored approach to co-design, informed by prior research.

Co-design activities in CLEVER cities include workshops (technical, participatory, cultural), face-to-face meetings, and street consultation. Before and alongside those, community engagement activities are organised such as street barbecues or tree painting, in order to raise the interest in NBS, and to build relationship and trust.

The leader of the co-design process depends on the city. In Hamburg, it is the public authority (city)’s role; in London it is a shared responsibility between the public authority, the social housing agency (Peabody) and the co-creation facilitators (Groundwork). In Milan, it is project-dependent.

CLEVER Cities fostered innovative approaches to co-design, including:

- The use of the Theory of Change model to better understand a project’s ambitions in CLEVER Cities
- Creating the CLEVERmobil, used for "Pop-Up-Participation" on the spot in a dynamic ways (Hamburg), which was re-designed with the help of students and young people from the neighbourhood
- Creating new models of governance to include community members as ‘co-clients’ in the design process (London)
- Creating an Engagement Strategy that sets out the approach and Principles to Community Participation (London) – this was to address consultation fatigue in a community where 22 public participations have been held between 2012 and 2017
- Use of interactive web platforms to engage and share knowledge with citizens (Milan)

Naturvation

Naturvation (NATure-based URban innoVATION) is a 4-year project funded by the European Commission, seeking to understand what NBS can achieve in cities. Citizen engagement is a focus in their NBS design. The six partner cities involved in Naturvation are Barcelona, Utrecht, Leipzig, Malmo, Gyor and Newcastle.

These cities have reported on their use of co-design and wider co-creation processes. Co-design has been used for a number of NBS in these cities including parks (Newcastle, Utretcht) and green passageways (Barcelona). It has taken may forms including visioning workshops, polls, and recruiting local citizens to design plans.

Naturvation also has 12 partner cities in which many have used co-design for local NBS: Athens, Boston, Cape Town, Dublin, Edinburgh, Melbourne, Mexico City, Montpellier, Munich, Sofia, Tianjin and Winnipeg. These examples demonstrate NBS co-design taking place globally. For example, in Melbourne's Urban Forest Strategy project they have used a *Precinct Plan* to develop streetscape design and tree placements alongside citizens, and in Tianjin's Eco-Valley, ideas collected from 70,000 residents informed the plans for public spaces and recreation.

ProGIreg

The proGIreg project is a Horizon2020 project running from 2018-2023. It is led by Zagreb, Turin and Dortmund, with follower cities Ningbo, Cascais, Cluj-Napoca, Piraeus and Zenica. It focuses on using urban regeneration with and for citizens, and so both nature-based solutions and co-design with citizens are key features of the project: "Co-design within proGIreg is about the systematic involvement of all relevant stakeholders from the very start of the project. The aim of co-design is to achieve mutually valued outcomes and joint ownership of the nature-based solutions"[1]. Co-design in proGIreg is one of three steps in their co-creation process which also includes co-implementation and co-maintenance/evaluation.

ProGIreg has had a structured approach to co-design in the cities – beginning with a spatial and SWOT analysis, and then following unified guidance from the project team which can be tailored to each city.

Prior to the co-design phase in proGIreg, a spatial analysis was performed in each of the leading cities to generate a baseline input for further activities and to highlight local issues. Next, a SWOT (strengths, weaknesses, opportunities, threats) analysis was performed to help the project teams identify where to focus; the domains in the analysis spanned from socio-cultural inclusivity to health and wellbeing. The spatial mapping (in particular, the stakeholder mapping) and the SWOT analysis (in particular, the identification of vulnerable groups and how to create value for them) formed the starting point for the co-design[2].

The co-design process itself followed a unified guidance published by proGIreg which listed 6 key principles: inclusivity, sharing goals, transparency, long-term thinking, being experimental, and flexibility.

Co-design has been tested a number of times by ProGIreg cities, including through: a citizen science session for monitoring pollinators with mental health patients (Turin), the co-design of vegetable gardens (Turin), the co-design of a therapy garden (Zagreb), and the co-design of a food forest (Dortmund).

Examples: How are cities using co-design for NBS

Below are a few examples of where co-design has been used for NBS: a park, river restoration project and urban playground. The following three examples have been selected to show where significant citizen input has been successful in influencing the design outcomes of a project.

> **Roerplein Pocket Park – Utrecht, Netherlands** [2015-Ongoing]
> *Turned public square into a green space "pocket park" with goals of reducing urban heat, social cohesion, and community engagement*

©AM Landskab, retrieved 08/17/2018 from Anne-Mette van Lieshout-Andersen [naturvation.eu]

Co-design

Project was part of the Utrecht Neighbourhood Green Plan, a greening initiative to support citizen-led ideas to promote social cohesion through green projects. "The idea was developed through a participatory process orchestrated by a social entrepreneur, given the relatively negative attitude towards green spaces within the neighbourhood." An environmental NGO funding pilots to reduce urban heat island supported this project alongside the municipality. Citizens currently maintain the pocket park.[3]

Impact

Final design was created by a local social entrepreneur, who recruited local citizens to develop plan for the park. The citizen-led process transferred power to the citizens, and the final design was directly created by locals.

Isar River – Munich, Germany [1995-Ongoing]

Restoration of the Isar River - with key goals to improve flood protection, water quality, biodiversity

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Co-design

The plan to restore the Isar River included significant citizen involvement, which flowed into decisions about how the river was renovated: "The pathways of engagement ranged from contributing to the interdisciplinary Isar Plan working group (citizen groups, NGOs, Isar Alliance, Munich Forum), through information provision (internet platforms, brochures, media, lectures, info points) to a long public consultation process throughout the project. The process also included site visits, round-table discussions and workshops. Citizens were also interviewed on their preferences."[4]

Impact

As a result of the co-design process, the river restoration reflected direct input from citizens, for example on aspects like materials used and dimensions. More detailed information about this project is available in the case study section.

West End Common Playground – Vejle, Denmark [c. 2018]

Park with nature-based playground

West End Common, https://urbact.eu/sites/default/files/integrated_action_plan_for_west_end_-_final_version.pdf

Co-design

The NBS was designed by local residents who set out to create an urban green common space and nature-based playground. The West End area has approximately 8,500 residents and is a lower income area of Vejle. They had participated in a local working group on urban resilience. In partnership with the municipality, who initiated the development and contributed land and soil for the project, the citizen group designed the green space and developed a garden. The local community group stewarded the space.[5]

Impact

The handover of decision making power to the local community in the West End project in Vejle led to a real interest in leadership and a strong influence in the design outcomes: “Participation in the project came naturally, as West End citizens had a strong desire for a green space and were allowed to design it themselves.”[6]

2. What are the main challenges?

Despite a growing level of interest in NBS co-design, many NBS initiators face substantial hurdles, either impeding co-design, or making co-design less ambitious, less successful, or more costly than initially imagined. We present below a list of common challenges from our literature review and interviews, organised in four categories (a full list of sources is available in the Going Further section):

1. Obstacles to public acceptance of NBS generally
2. Obstacles to local authority acceptance of co-design
3. Obstacles to public participation
4. Challenges related to the co-design process

The relevance and relative importance of each challenge depends on each NBS. It is also influenced by the political context of the place, the social demographics, and the economic situation of each community.

There are also national cultural differences that make co-designing different in each country. The following example from one interview we performed, illustrates these potential cultural differences – contrasting the cases of Rotterdam and Paris. Differences in co-design could include:

- Local political systems (e.g. mayors are not elected in Rotterdam which tends to result in better continuity of urban policy and less influence of the political agenda on decisions around NBS)
- political cultures: some countries are traditionally more horizontal or participatory than others, for example, “in France, artists are usually appointed to work with citizens to co-design, as an “expert”. Citizens on their own are given less legitimacy to express their voices, compared to the Netherlands.” (Interviewee)
- Financial interest: “The pressure on space in Paris makes every meter square highly valued, as well in financial terms. This gives less scope for co-design that can be considered as “risky” and less profitable than traditional urban development projects.” (Interviewee)

It is important to note that co-design is not always the right form of public engagement for a givenproject, in particular when the challenges described below are present and difficult to overcome. Alternative forms of public engagement – which can be used alongside or instead of co-design, include:

- Lower level of public participation (see “Image 1: Spectrum of public participation”);
- Citizen engagement at other stages of the co-creation process (co-maintenance in particular)

However, we believe that projects who enter a co-design process with an informed list of potential hurdles may have a better chance of overcoming these obstacles. This list of challenges is below.

Obstacles to public acceptance	
	a. Underappreciation of environmental benefits: the value attached to public green and blue spaces or NBS might depend on socio-economic or cultural background / some people mentioned this as an “education” challenge (cf. Extract below).
	b. **Fear of heightened costs:** for the implementation and maintenance of green spaces and distrust in the publicly announced costs and benefits
	c. **Fear of “green gentrification”:** for example, rising housing prices as a result of a new NBS being implemented, or a natural feature being improved / restored
	d. **Lack of trust in political institutions:** Distrust that co-creation will serve the needs of citizens *" Co-creation can be seen as a way of ‘conspicuous production’ and a way of sense-making ‘myth’ or ‘ceremony’ in order to achieve political legitimacy and thus stress the importance of citizen participation as a relevant process that can be used as a strategy to be applied to address issues that are defined in the literature as the perceived existence of a possible democratic deficit or performance. Both concepts deal with the*

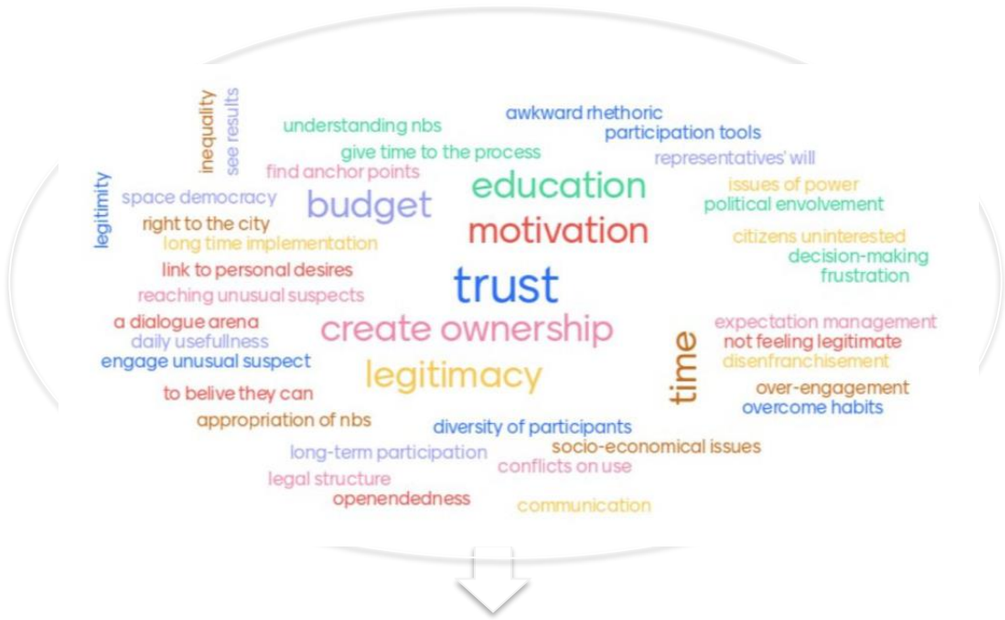
	issue that legitimacy of government is under pressure, due to the fact that the production of public services does not really address the needs of citizens." [7]
Obstacles to local authority acceptance	e. **Time**, **budget, and level of difficulty:** Co-design can be costly and increase project timelines. This may require either securing extra funding outside of the project budget for co-design, or using part of the project budget for codesign management. Co-designing can also be a difficult process to manage – requiring not only time, but also motivation and skills to manage and balance the interests of diverse stakeholders.
	f. **Fear of losing control:** Also including the fear of uncertainty or lack of "strategic permission" to take the required risks to co-design. A high level of transparency is required in co-design, which may not be compatible with local authority agendas
	g. **Lack of participatory culture:** in public administration, requiring reciprocal recognition and empathy/ability to change perspective, as well as the lack of consensus on the added value and efficiency of participatory processes
	h. **Culture of working in silos:** Co-design relies on coworking of many stakeholders, which breaks with the culture of silo-ed working that some governments experience
	i. **Low level of evidence:** It can be difficult to advocate for co-design due to the low level of evidence of its added value and the difficulty of measuring benefits and costs of co-creation; it is difficult to align co-design with the culture of creating a "business case" and "evidence" requirements in public administration
Obstacles to public participation	All obstacles to public acceptance mentioned above (a, b, c, d)
	j. **Perception of tokenism:** Linked with lack of trust, people may not be willing to participate as they perceive the co-design process to be tokenistic or not genuine, and don't believe that their voice will be heard or can have any impact on the final decisions.
	k**. Not feeling legitimate, interested or confident:** Some citizens may not feel they have a role to play in co-designing their neighbourhood. Being really engaged in co-design work requires a high level of abstract thinking and prior knowledge that not everyone has or is interested in having.
	l. **Personal time - and mental space – required:** Co-design requires time from participants which is often uncompensated. When co-design takes place with communities that are experiencing deprivation, potential participants may be suffering from "time poverty," where they are already struggling with time constraints to meet economic goals or provide caring activities. In these settings, co-design participants may not be representative of the community as they will be only a sub-set of citizens that had the time availability to participate. *"The constraints and determining factors are specific to each CAL [in Clever Cities], although timing and financial resources are repeatedly mentioned in many of them."*[8] *"You're asking another level of involvement and that's quite a big ask to give up your time to get into a project to the extent that you can then really shape it. It's quite hard to find people who are willing to do that and also, as I said, it's quite a big ask. It's not something you can do, I think, on mass. Mass co-design isn't theoretically something that I think would work well"* [9]
Challenges related to the co-design process	m. **Enhance local democracy:** Being able to create a "dialogue arena"
	n. **Manage citizens' expectations:** This is linked with "trust" as mentioned above, ensuring that citizens' expectations are realistic and can be met by the co-design process
	o. **Reaching representative groups:** including the *"unusual suspects" and* vulnerable groups, to ensure a diversity of participants. As a result of the challenges to public participation mentioned above (requires knowledge, skills, time and mental space),

people involved in co-design tend to be from specific groups (for example: highly educated, white individuals in one example from the Netherlands we researched) and often not representative of their communities.
p. **Articulate territorial** or community needs **with individual needs:** Balance both types of needs through the co-design project
q. **Deal with power asymmetries:** between stakeholders and between citizens
r. **Find the right balance between professional expertise and citizens participation:** Both of these are critical – taking the "we are all experts" approach, and adapting communication and language (accessible vs. technical) is important
s. **Find the right participation tools:** These should be relevant, accessible and fit to the type of co-design participant involved
t. **Deal with legislative constraints:** and construction standards, which may limit local creativity in co-designing the NBS
u. **Find the right balance between planning and flexibility:** ensuring progress is made but "still leave room for the inevitable changes that come with co-design", and manage continuous back and forth in a process that is never linear
v. Find the right timing for engaging with citizens: This should be early enough in the process to allow citizens to influence decision making, but also targeted to make the best use of citizen time at key touchpoints
w. **Find the right legal structure:** and or governance for co-design

Extract

Nantes Innovation Forum, Co-creating solutions with local citizens and stakeholders within European projects, Oct 8th 2020, Question asked to the participants through the tool Mentimeter "What are the main challenges to citizen and stakeholder engagement?"

Image 2: What are the main challenges to citizen and stakeholder engagement?



Trust, motivation, sense of ownership, legitimacy and education were identified as the main challenges by participants.

Examples: Challenges faced

The following examples are those where challenges to good co-design of NBS have surfaced. They demonstrate that even with materials and resources on how to do co-design well, the process can and does go wrong or perform poorly in specific aspects, as compared to plan.

Newcastle – Newcastle, UK [2017- Ongoing]
Set up of Newcastle Parks Trust as business model to sustain the green spaces in Newcastle

Co-design: Two strands of citizen consultation performed (online and offline) totalling 4,300 participants – to try to understand the views on shifting to a charitable trust business model and to gain opinions on direction


Country Park, Newcastle, UK
Credit: Jonny Rothwell via Unsplash

Challenges faced

Reaching a representative group (o)… and potentially other related challenges: Not feeling legitimate, interested or confident (k) / Personal time - and mental space – required (l)
Uneven representation in participation: "We did a series of engagement events across the city, they were very well attended in the more affluent areas, not so well attended in the more deprived areas, which is a real shame" (Team Member)

Perception of tokenism (k)
Project struggled with "getting people to believe that [the consultation] was not tokenistic," and that the citizen voice was valued and could have impact[10]

Passeig de Sant Joan – Barcelona, Spain [2017-Ongoing]
Renovation of 1.2km passage to create a green corridor between two green spaces; including permeable sidewalks, trees/plants and enlarged sidewalks; targeting benefits of shade, reduced traffic noise, reduced heat, increased biodiversity.

Co-design: Direct participatory meetings were held with merchant groups and representatives of organised neighbours in the surrounding area of the passage


Passeig de Sant Joan, Credit: TxllxtTxllxT via Wikimedia Commons.

Challenges faced

Find the right timing for engaging with citizens (v)
Citizen engagement was performed too late to impact the design (citizens were excluded from design phase, and rather, were presented with a plan): as a result the final design was criticized for advantaging businesses more than citizens

Reaching a representative group (o)… and potentially other related challenges: Not feeling legitimate, interested or confident (k) / Personal time - and mental space – required (l)
Poor circulation of information prior to events led to low community engagement and awareness[11]

BiodiverCity – Malmo, Sweden [2017 - Ongoing]
Greening spaces with green roofs, green walls, mobile plant-systems, three-dimensional greenery and urban biotopes

Co-design: No co-design was performed as this NBS was in a new built area, although the project team did consider co-design – this is an interesting challenge for an NBS project without a clear citizen group to input

Challenges faced

Finding the right participation tools (s)
In a new build area, Malmo struggled to identify a group to feed into the co-design process and to gain input from[12]. They were unable to identify a group to contribute to the co-design in an area without full time residents.

3. What are the conditions for successful NBS co-design?

We have gathered 21 good practices from our literature review and interviews that are likely to facilitate the success of NBS co-design, grouped in 4 themes (a full list of sources is available in the Going Further section):

1. Culture and values;
2. Communication;
3. Skills, knowledge and education;
4. Process.

When considering conditions for success, it is important to note that not all NBS can or should be co-designed with citizens. Successful co-design requires a set of conditions in place, including time and budget, that may not be available. The nature or type of the NBS can also make co-design more or less relevant. If the project is too technical, it may be unsuitable for co-design with citizens as the concepts may not be easily sharable. Some evidence also suggest that individuals are more likely to engage if the project has a direct social impact for them, although other literature mentions that NBS focusing on the protection of ecosystems and wildlife have been particularly successful in attracting public engagement.

Co-design is not, furthermore, a guarantee of good urban planning. Co-design alone is not sufficient to make a successful project – it must be paired with other successful efforts.

Finally, we recognise that co-design is challenging, it is a constant learning process. This report does not pretend to offer straight-forward solutions to all challenges mentioned above, but rather aims to highlight the most common challenges shared by NBS co-design initiators and to share some good practices from the (limited) existing literature, and from the experience of stakeholders interviewed. Some authors consider there is a need for further strategy and coordination on how to tackle these challenges[ii][13].

With these caveats in mind, below we share good practice examples for co-design that may be considered in NBS projects:

Overview of good practices for co-design

Culture and values

1. **Being open and inclusive**: *"[L]ook to inclusive and early-on engagement of all relevant stakeholders in decision-making processes and equal consideration of their needs and preferences. These are prerequisites for building trust, legitimacy and ownership for solutions".*[14]
2. **Setting out your own engagement values or principles:** Co-design is a form of commitment to a genuinely collaborative process which everyone involved signs up to. These principles set out the values and ways of working to which stakeholders will adhere during the process. (See "Case study 2 – Thamesmead" for example). Part of co-designing is the capacity to listen to others and to compromise, as all individuals and stakeholder groups need to accept that sometimes things don't go in the direction they prefer. As co-design facilitators, it is important to play that role of guardian of values and respect.
3. **Being experimental and reflective:** Actively fostering trial and error and learning process. Learning environments allow stakeholders to test ideas in real-life environments, using the feedback cycle to improve "acceptance of unfinished products and states is crucial." Being flexible is important to allow space for change

[ii] *"Since NBS implementation involves a multiplicity of stakeholders with their individual objectives, specific risk perception and problem understanding, suitable tools need to be used to support investigating the potential impacts, to facilitate a dialogue, aligning divergences and promoting the social acceptance (Santoro et al., 2019).Although these issues are relatively well understood, there is still a lack of targeted strategies to overcome them beyond generic suggestions (e.g. promoting education, awareness raising, and stakeholders' engagement)."* Alessandro Pagano, et al., *Engaging stakeholders in the assessment of NBS effectiveness in flood risk reduction: A participatory System Dynamics Model for benefits and co-benefits evaluation,* 2019. See here

in strategies and respond iteratively to stakeholder needs. Fostering a culture that acknowledges the right to fail is useful.

4. **Collaborating with organisations:** that are already working with specific groups to involve hard-to-reach population (e.g. collaborating with organisations working with older people or migrants, or that are going to job centres to involve people that are unemployed).
5. **Building on existing citizen-led initiatives:** whenever possible, to access existing networks and citizen capital, especially where citizens have organised or are looking for opportunities to play a role.

Communication

6. **Being transparent on "the rules of the game":** Organisers should be clear on the process and how decisions are made – they should ensure citizens know which decisions are in the remit of the co-design process, and which will be made separately from the co-design process, to set expectations. Organisers should also be transparent on time that is expected from individuals, and should invite them to be transparent on the time they are able to commit to this project.
7. **Sharing goals and visions:** Finding common ground between differing perspectives, to build common vision and goal.
8. **Giving people a stage to speak**: As a project team, it is important to be in listening mode, and make a bridge between citizen needs and your agenda.
9. **Targeting approaches and communication:** to different groups (after having identified stakeholder groups – see "process").
10. **Identifying potential local advocates of the NBS:** For example, specific generations, new parents, etc.
11. **Communicating results:** to citizens/the community throughout the process, for transparency and to offer a feedback loop where citizens can see how decisions have been affected by co-design.

Skills, knowledge and education

12. **Providing the right knowledge to citizens:** to empower them. Involved citizens must have knowledge on specific subjects to enable them to make informed decisions. The process might encourage citizens to take up training and education opportunities, especially when the co-design is a paid opportunity for the citizen to upskill and have work experience.
13. **Bringing expertise in collective intelligence and facilitation:** Hiring an expert or upskilling a project team member in this area can be valuable.
14. **Considering awareness raising on environment:** *"environmental education and capacity building linked to the project can serve to inform the public about the benefits of NBS while offering opportunities [to] actively involve children and the youth on the project site can also increase community support"*[15]*.*

Process

15. **Mapping stakeholders and their influence, interest and knowledge**[16]: It helps to understand the power relationship between stakeholders and their specific interests in the project. Some stakeholder typologies exist. It is very important to integrate powerful veto players early enough – players who have the "final say" in decisions such as municipal governors or construction regulators. According to the literature, another good practice is to formalise the participatory processes with each of them17.
16. **Allowing lower level of engagement as well:** Not all citizens will be interested in co-designing, which requires a high level of participation. It is likely that the group of active co-designers are not fully representative. Hence, it is key to ensure that other voices are heard, via lower level of engagement (e.g. organising open, fun community events or planning interviews with specific groups).
17. **Engage citizens in a timely manner:** and early enough in the process, enabling them both to learn on the way and to make a real difference in design. However, finding the "right" time also requires considering citizens' expectations and participation fatigue, so it doesn't mean necessarily involving everyone throughout the whole process.

18. **Considering co-maintenance:** alongside co-design, as this phase of the "co-creation process" can be more inclusive. It requires more varied skills, sometimes less conceptual, and everyone can have a different role (e.g. cooking skills, gardening skills…). It allows the participation of groups that wouldn't necessarily be interested in co-designing, while enhancing the sense of ownership of the NBS and the community feeling.
19. **Involving volunteers:** whom can be invited to help in the implementation and monitoring processes or in maintenance activities (e.g. through formal contracts between the city and NGOs)
20. **Considering in-depth studies on the main risks:** and engaging key stakeholders on how these risks can be mitigated: *"Regarding gentrification fears specifically, expected impacts on property values can be estimated during the conceptualization and planning process, and the local population can be actively involved to support processes which can achieve neighbourhood stabilization.. Social policy experts and economists should therefore be included in the planning of NBS."*[18]
21. **Considering dividing the NBS into several projects:** *"Many small projects will make one big NBS solution" and it is useful to "start with small, concrete steps that demonstrate the value of change"*[19]

Examples: success factors

The following are examples of where co-design of NBS has demonstrated some of the success factors above – these success factors may be relevant for or replicable in other projects.

Pocket Park – Katowice, Poland [2015-2018]
Courtyard regeneration to restore sense of place in Katowice historical buildings

Co-design: Architects initiated the greening of these courtyards and residents participated in the planning and realization phase of the project in a series of workshops in which residents openly discussed and communicated their needs and actions in contributing to the regeneration

Success Factors

Giving people a stage (8)
This project was unique in allowing citizens to participate in the co-design of the actual architectural elements, an element of the design that might otherwise be left to technical experts. This step revealed what citizens wanted – in this case, good aesthetics were the priority for the citizens

Identifying potential local advocates (10)
The local community initiative on sustainability education for youth was the central actor in organizing and networking with citizens and the city for the food festival (part of co-design process), and played an important role in mediating with the community but also mediating in terms of localizing the meaning of nature-based solutions[20]

Roerplein Pocket Park – Utrecht, Netherlands [2017-Ongoing]
Turned public square into a green space "pocket park"

Co-design: Municipality funded idea by group of local citizens, led by a local social entrepreneur. This citizen-led process helped to counteract the negative attitude towards green spaces in the neighbourhood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Success factors

Identifying potential local advocates (10)
Resident led the effort to create the NBS and engaged other citizens; was funded by the municipality and an environmental NGO

Consider co-maintenance (18)
This project had a clear path to co-maintenance / co-governance. The co-design being citizen initiated and controlled led to a clear path to citizen management of the project. The city believes this leads to lower vandalism, lower maintenance costs and higher use (although there have been some concerns around continuity)[21]

Sint Andries Corridor – Antwerp, Belgium [2015-2018]
A linear park to connect different nature-based solutions for water retention in the district of Sint Andries was envisioned by a co-creation process in the city of Antwerp

Co-design: In 2017 a number of participatory processes took place, for example 60 people from the area participated in identifying and starting up green actions like 'green spots for playing', bioswales, and other "pocket green spaces"

Success factors

Being open and inclusive (1)
Accessibility for different backgrounds was ensured by "bringing citizens, designers, planners together in a 'future walk' workshop, where pictures, narratives, sketches were put together as a collage to create the future green corridor... This allowed people with different backgrounds and knowledges to be included, since visual and verbal entries of ideas were allowed"

Providing the right knowledge to citizens (12)
A key step of this co-design process was to engage citizens early in the design process, which allowed project leaders to establish a common ground[22]. This was a key step in enabling citizens to take part.

How these good practices can help address the challenges?

In the table below, we map aforementioned challenges with good practices.

Challenges →	**Good practices** that can contribute to addressing these challenges
Obstacles to public acceptance	
a. Underappreciation of environmental benefits	10. Identifying potential local advocates 14. Considering environmental awareness raising activities 12. Providing the right knowledge to citizens
b. Fear of heightened costs	18. Considering co-maintenance
c. Fear of "green gentrification"	20. Considering studies on the main risks
d. Lack of trust in political institutions	1. Being open and inclusive 9. Targeting approaches and communication 8. Giving citizens a stage 11. Communicating results
Obstacles to local authority acceptance	
e. Time, budget and difficulty	5. Building on existing citizen-led initiatives
f. Fear of losing control	6. Being transparent on "the rules of the game"

g. Lack of participatory culture in public administration	13. Bringing expertise in collective intelligence and facilitation
h. Culture of working in silos	13. Bringing expertise in collective intelligence and facilitation
i. Low level of evidence	No literature available / further research needed
Obstacles to public participation	
j. Perception of tokenism	7. Sharing goals and visions
k. Not feeling legitimate, interested or confident	16. Allow lower level of engagement as well 21. Considering dividing the NBS into several projects and starting with small, concrete steps 12. Providing the right knowledge to citizens 13. Bringing expertise in collective intelligence & facilitation 19. Involving volunteers
l. Personal time - and mental space - required	21. Considering dividing the NBS into several projects 6. Being transparent on “the rules of the game”
Challenges related to the co-design process	
m. Enhance local democracy	1. Being open and inclusive
n. Manage citizens’ expectations	6. Being transparent on “the rules of the game”
o. Reaching representative groups, including the *“unusual suspects”*	4. Collaborating with organisations
p. Articulate territorial with individual needs	6. Being transparent on “the rules of the game” 15. Mapping stakeholders and their influence, interest and knowledge
q. Deal with power asymmetries	13. Bringing expertise in collective intelligence and facilitation
r. Find the right balance between professional expertise and citizens’ participation	13. Bringing expertise in collective intelligence and facilitation 15. Mapping stakeholders and their influence, interest and knowledge
s. Find the right participation tools	13. Bringing expertise in collective intelligence and facilitation
t. Deal with legislative constraints	No literature available / further research needed
u. Find the right timing for engaging with citizens	17. Engage citizens in a timely manner
u. Find the right balance between planning and flexibility	3. Being experimental and reflective
v. Find the right legal structure	No literature available / further research needed

4. What can make a co-design process sustainable?

Sustainability is an important goal for a co-design process. Ideally, the co-design process will lead to long term change in the community where it has been performed. Our research observed three paths to create lasting changes for citizens of a place.

1. Co-design leads to long-term transfer of power to community

One channel by which co-design can have a long-term impact on a community is by leading to a natural transfer of power to the citizens. This generally means co-design creates a culture, governance structures or relationships where citizens have more direct access to decision making.

The most formal channel which can be implemented during co-design is the creation of a governance process that embeds citizens to work alongside government, NGOs or community groups to stay involved post-design of the NBS, and to influence ongoing decision making in the NBS. The co-design process can set the stage for this in a number of ways: it can connect groups of citizens around the NBS/process, it can build a leadership board of advisors, or it can have the co-governance process designed in part by citizens.

Co-design may also lead to the formalisation of groups that represent the interests of community members. Community organisation can lead to planned efforts for representation and public participation, which can enhance the voice of the citizen over time, and transfer power back into the community.

2. Changing sense of place

Another way that co-design can have a long-term impact is by changing and influencing citizens' sense of place. In particular, there are reported benefits of the co-design process for citizens in increasing the sense of trust with local government, increasing community involvement and engagement and creating inter-community relationships which continue beyond the co-design period.[23]

NBS projects may expect this changed sense of place to contribute to further benefits, such as reduced vandalism for the NBS, reduced friction between development activities and local community, and increased participation of citizens in maintenance and governance activities of the NBS. This is a change which can continue sustainably if nurtured.

3. Influencing design processes in place

Finally, co-design can influence the processes for designing NBS – namely, by embedding co-design in the local culture. We have understood anecdotally that co-design, when carried out well, can inspire other projects in the locality to use co-design too. In this way the project has a multiplier effect: increasing connections and transferring power to the local community, while opening the door for future projects to do the same, building on the trust and citizen empowerment of the previous co-design.

Co-design processes may also influence design and planning of NBS outside the locality, as was the case of the Isar River Restoration (see case study section). In this case, the impact of the co-design done well has influence beyond the community and a bigger potential to create change.

Examples: Sustainable impact

The following are examples of where co-design has had sustainable impacts. Primely, in these examples a transfer of "power" to communities, a key objective of co-design, was made sustainable by inducing long-term changes in governance and sense of neighbourhood.

Rail to Trail Greenway – Boston, USA [Ongoing]
Renovation of an abandoned railway to create pedestrian/bike path of 5.3km and over 4.8 hectares of green open space: enables connections to the waterfront/ transport, and provides child play area.

Co-design: Residents advocated for the greenway, and collaborated with city agencies and non-profits to bring it to life

East Boston Greenway
© Arnold Reinhold via Wikimedia Commons

Sustainability factors

Co-maintenance
There is no agency "in charge" of the green pathway, which gives power to citizens to own and maintain it. "The Friends of East Boston Greenway" community group contributes to the maintenance of the pathway by the following activities: organizes tree planting, trash clean-up, and advocates for more resources." They also monitor the city's work on the greenway.[xi]

Montreale Park, Potenza, Italy [2015-2018]
Restoration of urban park Montreale Park

Co-design: The park restoration was a multi-actor project; city engaged with citizens and other actors in dialogues about urban resilience to develop city, regeneration, and establish trust

Sustainability factors

Changing sense of trust and place in the neighbourhood
Through openness and transparency in the process, Potenza was able to establish “trust in the experimentation itself” and a change of sense of place. This “triggered also other actors such as the Rotary Club to open to experimental ways such as the design competition for experiments on recovering the urban park’s identity and value next to the monuments’ appreciation.” “Local communities altered their views, perceptions and experiences in these places, captured by changes in use and changes in local narratives” - this is marked by an example that during a period where municipality couldn’t provide upkeep to the park, the citizens stepped in.[24]

Pollinator Diversity Meadows, Dortmund, Germany [2018-Ongoing]
Renewing green spaces in Dortmund as meadows for biodiversity and pollinators

Co-design: The process for the pollinator diversity meadows is to create a voluntary group that will plan and implement a series of meadows in Dortmund. The project team is running a media campaign to get people on board in a voluntary capacity: the volunteers do not need to be experts in a technical sense, rather they should be “local experts” knowing the local geography and neighbourhood and where it would be best to install the flower meadows

Sustainability factors

Creating an entity to install NBS at scale
The project team of the pollinator diversity meadows made a decision that instead of designing and planting a meadow themselves, they wanted to create a citizen-mobilised entity that could do this at scale across the whole city of Dortmund. While this effort is still in progress, their aim is to create NBS which can scale independently of the proGIreg project (Horizon2020 project) under which this project has been initiated

Case Studies In-Depth

01

Isar River Restoration

Munich, Germany

1995-Ongoing

Nature-based solution

The Isar River runs through Munich, the third largest city in Germany. The river plays a key role for the community in the Munich region on both an economic and community level – it has been important to the mills, electricity and timber sectors, and provided recreational and environmental benefits.

Increasingly frequent flooding in the 1980's led the Bavarian Water Management Office and City of Munich to embark on a partnership, beginning in 1995, to restore the Isar River. The goals of the restoration were to reduce flood risk and to increase the opportunities for the community to use the river for recreation. The restoration of the river involved rewilding to increase ecological value and recreational use, increases in water quality, and redesign to enhance flood protection.

Co-design process

A number of stakeholders were invited to take part in the design process, including landscape architects, community groups, water engineers, citizens, and NGOs. A working group was created as part of the Isar Plan, including citizens, the Isar Alliance - an environmental NGO focused on water quality, the Munich Forum and other local NGOs. The project estimates to have involved several hundred people in the co-design process.

The process involved engagement through internet platforms, brochures, media, lectures, flyers to households and information points, and events like site visits, roundtables and workshops. Interviews of citizens about their preferences regarding aspects like flood control, materials (e.g. gravel banks vs. flood meadows), vegetation options and recreational activities were collected. These preferences directly informed decisions such as the amount the river was widened and the percentage of riverside maintained as a meadow. Other examples of where co-design directly informed the final nature-based solution include the examples below.

Co-designing together: Creating fish pathways

One example of where co-design directly influence the NBS design was in the building of fish pathways. Co-design with local fishermen group revealed issues: before the restoration, the river had concrete steps in the river that were not passable for fish. The restoration needed to maintain the flow of the riverbed and prevent it from eroding, but also make it more conducive for the movement of wildlife. The fishermen's group offered various solutions, and input into the final design: stone ramps were constructed with small ponds where fish could more easily pass.

Co-designing together: Preserving tree growth

Another example of this was the preservation of trees during the restoration with environmental NGOs. One of the goals of the river restoration was to decrease flood risk. Flood dikes, natural or artificial walls running parallel to a river and usually made of earth, were the team's plan for preventing floods. Trees present a risk to dikes: during a flood even trees can topple, and break the dikes. However, tree removal saw resistance from the local NGOs who saw the trees as high value for biodiversity. The project team collaborated with the NGO to find a solution, in this case, putting concrete walls within the dikes to prevent breakage by waterside trees.

Key learnings

Continuity of citizen participation

The Isar River restoration project struggled with continuity of citizen participation. The project wanted to provide opportunities for participation for all citizens, however, they found a lack of interest on the part of the citizens. Their engagement strategy included public information events and public announcements distributed to all households, to give people in the local zone the option to take part. The project found continuity to be an issue, with many citizens participating in one event only, or bringing ideas but not following up by continuing to be part of the design process. The project also found some citizens had a preference for being informed rather than participating in design.

Continuity was really important for this project – there were no events to "make citizens experts" – so citizens would not necessarily be familiar with the project or its concepts without attending a number of events. In the end, the project relied more heavily on organisations that represented the needs of local citizen groups such as NGOs and fishermen's groups, establishing longer term relationships with representatives.

Success factors

Define the "rules" up front

In interviews with the co-design project team, a key learning from the co-design of the Isar River restoration was to define the "rules" of the process. How a decision is made and who will make it must be clear from the outset. For example, will an advisory board be created for a project, with decisions made by a majority vote? Do proposals need to pass thresholds before they can be considered?

Having a clear process can help co-design participants to understand where they can input, and what the process is from input to decision. Transparency creates realism and increases trust with project teams leading co-design.

In the Isar River project, the decisions had to go through the water management administration, with the elected council in Munich's local government giving final approval. In this case study, the project team did not have full discretion over the decisions as there was a level of accountability to local elected officials.

Working with local organisations to create continuity

As highlighted above, a key challenge for this project's co-design was engaging citizens. Due to lack of continuity, interest, and local knowledge, individual citizens were not actively engaged in the co-design. The project did however find success in working closely with local organised groups. They built long-term relationships groups like the Munich Forum, a group representing citizen interests, the local fishermen's association, which represented locals with fishing licenses in that area and nature conservation NGO's who were focused on biodiversity and conservation of the region. This allowed for continuity in the decision making process.

Upfront planning of co-design tools and process

It is important to plan the co-design processes and tools, while keeping room for learning and pivoting. The tools should also be tested beforehand, and explained in a simple way to participants. It is important that they are easy to use, especially if they integrate a technology / digital component.

Sustainability factors

Co-design on the river continues

The restoration of the Isar River remains ongoing though the present (2020). Currently under development is a process to restore a new section of the river. The aim is to create an area with "flair" with some cafes at the river or open air theatres / stairways where groups can sit. The redesign of this area has been run by an architecture firm, which is running an open process and collecting ideas from local citizens.

Co-design in this process has influenced co-design use in the region

The water management department and city of Munich gained a lot of experience in this project in the area of urban planning and co-design. The participation process inspired two river restorations in Augsburg, another Bavarian city, who were able to build on the learnings from the Isar River restoration experience.

This case study has been prepared through written reports and an interview with Christian Leeb, Munich Water Management Authority

02

Urban regeneration initiatives in Thamesmead (London)

London, United Kingdom

Ongoing

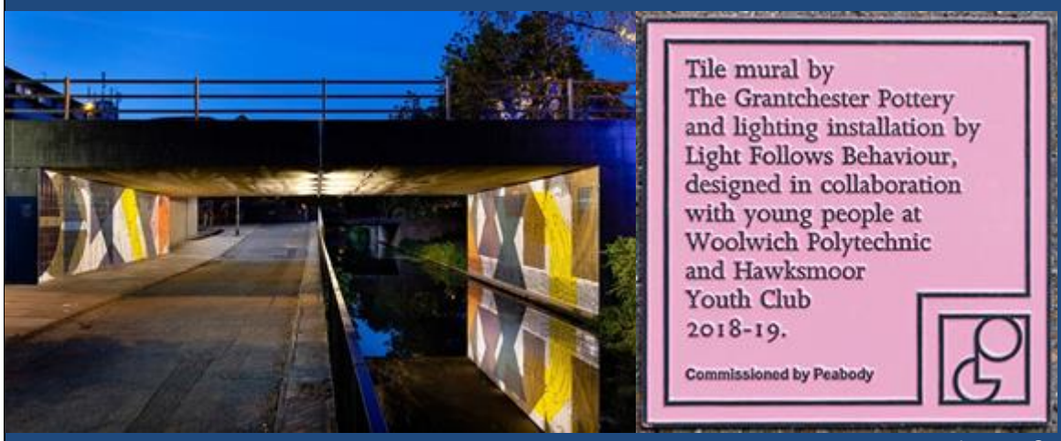

Image Source: Sam Skinner

Nature-based solution

This report contributes to a wider collaborative research effort with Young Foundation to understand success factors and challenges for co-design for nature-based solutions. In this context, the following case study is a compilation of extracts from a complementary report prepared by Young Foundation (YF): “CLEVER Cities: Valuing co-design, Learning from co-design experiences in Thamesmead”, December 2020. We have pulled out key-learnings from their work; the report is included in the “Going Further” section.

Thamesmead is a housing estate built in the 1960’s, which has seen significant demographic change over the past decades. It has a majority black and non-white ethnic group population in comparison to its initial years as a mainly white middle class estate, and is undergoing significant regeneration work. In the CLEVER Cities project, Peabody Housing Association will be implementing various nature-based solutions including creation of sustainable drainage, greened walls, tree planting and the greening of unusual spaces, like courtyards and walkways.

Young Foundation’s report explores past experiences of co-design in Thamesmead, as a backdrop to the co-design of nature-based solutions in progress at the time of this report (Jan 2020). It details seven case studies of projects co-designed with residents in Thamesmead, across regeneration and development, community programming and arts and culture. For each of these, it looks at the following: context, co-design process, outcome, stakeholder reflections, benefits and challenges of using co-design, as well as local attitudes towards co-design.

For more information on these case studies, please refer to the “case studies” section of their report.

Co-design process

The YF report mainly builds on examples of co-design in small, specific, urban regeneration projects:

- In one case study, an underpass was a key problem in the area as it was dark and dangerous at night. Students from the local university were engaged through workshops, to create a solution. The final design included the development of a mural and lighting system.

- In another case-study involving the co-design of a path linking the neighbourhood centre with the local schools, co-design was used to inform the plan. Conversations with residents and neighbourhood forum meetings were held, while activities like virtual reality-design and gardening workshops brought new voices into the design process.

Young Foundation’s research has revealed the following as key aspects of the co-design culture in Thamesmead:

- **Perception of what "co-design is":** "Familiarity with and definitions of the term 'co-design' vary across Thamesmead. Stakeholders who have come across and used co-design approaches in their work, often have spent considerable amounts of time reflecting on and discussing its definitions and best practices. On the other end of the spectrum, residents who have been directly involved in co-design activities, may not be explicitly aware that they were such."

  "I think it can be, and I think it can be used quite flippantly. It can often just replace traditional engagement, you say co-design, but it doesn't actually mean co-design. For me, co-design really is the ultimate transfer of power to people and communities, in a nutshell, I'd say that's what it is. I think it's really important to remember that as an ambition." (KB) – [Quote from user interview in report]

- **Use of co-design in practice: "**It is clear that co-design occurs at different levels and scales – from co-design activities within projects to fully co-designed programmes – and that achieving it in its most comprehensive form is extremely challenging."

Key learnings

Across the case studies of co-design in the Thamesmead estate, there were a set of key learnings drawn from the experiences of stakeholders in urban regeneration, local government, neighbourhood groups, and the housing association. These have been excerpted from the report as below:

- **Co-design is not suitable for every project:** "Stakeholders acknowledged that at times, other forms of engagement may be more suited to a project. Co-design is not the North Star of every project involving residents, but rather a process to be implemented when suitable to the situation. For example, where quick wins are needed to establish trust, quick delivery might be preferable. This could in turn pave the way for more involved engagement down the line – where this is appropriate and benefits outweigh costs."

- **Co-design's key benefit in Thamesmead may be community impact**: "The most named benefit of co-design is that of increased ownership and pride in the Thamesmead area. There is a strong sense that residents who have been actively involved in the design process are much more likely to feel a sense of pride in the outcome"

- **The financial benefits of co-design are still emerging in Thamesmead, but appear promising**: "Tied to this is the perception that increased pride and ownership will cause people to take care of the area more and thus result in a **decrease of maintenance costs**. Although this forecasted financial benefit has not been concretely measured in Thamesmead yet, anecdotal evidence from Peabody's Regeneration team is promising."

- **Co-design can be very complicated:** "All stakeholders in Thamesmead agreed that co-design is extremely resource intensive. The time needed to plan and run co-design activities and to then incorporate insights into project delivery is considerable. The co-design process is lengthy, often times messy and all but linear. Plans are constantly under review and scrutiny, and the resulting need to remain responsive and adaptable is costly in terms of resource."

- **Evidencing impact is a challenge:** "There is little to no evidence of any formal evaluation taking place across Thamesmead to assess the benefits/costs of co-design over more traditional engagement methods. However, informal evaluation in the form of conversations, anecdotes and direct feedback from residents, partners and other stakeholders are plentiful."

- **Engaging citizens may be a matter of priorities:** "People's lives are complex and busy, with competing priorities. Shaping a piece of public infrastructure – or other components of community life – is not always high up on that list. Thamesmead is a largely deprived area and financial worries are an added stress for many residents, one that may be particularly amplified since Covid-19."

Success factors

The research from Young Foundation also highlighted a few success factors that have defined what "good looks like" in Thamesmead for co-design.

- **Transparency: "**Co-designed approaches must be transparent. Residents should be allowed insights into areas of activity and work that they may not typically see – *e.g. budgets, internal politics, decision-making procedures."*
- **Transferral of power:** "Through co-design there must be a transferral of power, from the commissioning body or 'experts' on a subject, to residents or people with 'lived experience' of the subject. A fully co-designed project takes residents on a journey from initial inception to implementation and delivery."
- **Building trust: "**A challenge that may be universal to all projects involving co-design, but one that is particularly pertinent in Thamesmead is that of establishing trust between residents and the commissioning body. Due to the local history and the fact that the area has practically been under constant redevelopment for the past decades, consultation fatigue is widely spread phenomenon. Historically the area has been neglected, past organisations have come in and made promises that do not materialize and so trust has been eroded."
- **Proximity:** "residents are most likely to be interested in developments in their local area and thus will be more likely to attend co-design activities impacting their immediate surroundings. It is much harder – but not impossible – to engage residents in co-design activities that aim to shape the wider Thamesmead area"
- **Incentives:** "not necessarily in the monetary sense, but what does the resident get out of taking part in this activity. A new experience? The opportunity to influence real change? The chance to connect with others in the area? Incentives for participation may vary for different audiences and communicating these clearly may help with engagement."

Sustainability factors

Co-design is an ongoing process in Thamesmead, where various projects look to build long term trust and relationships with the community through regeneration efforts. The CLEVER Cities project will continue to build on the learnings and experiences of co-design in the community. Young Foundation's report highlights a key perceived benefit to creating sustainable community relationships:

"Another important benefit that came up [in the research] was around active citizenship and the sustainability of outcomes, specifically where these require staff or volunteer resource to be maintained. Several stakeholders suggested that increased ownership due to co-design will increase the sustainability of projects, as residents will be more willing to keep successful initiatives going, even in the absence of funding bodies. This is also linked to the above reduction of maintenance costs, but goes further (e.g. keeping an area nice by not littering, maintaining area outside your house vs. actively investing time to volunteer at local community centre)."

> *"That sense of community leadership.. having people locally, who are trained and learn skills through these projects to then build that social capital. Thamesmead is an incredibly deprived area. What I found is just the passion and the dedication that people have to the local area. That's where the success comes. Because even organisations like Peabody* [Social Housing organisation leading on the co-design] *can't be there all the time… I think active citizenship is what makes a place successful" [Quote from user interview in report]*

While Thamesmead is continuing to try to achieve the sense of place and community leadership mentioned in the quote from the report, the process is ongoing and will continue in CLEVER with a new focus on nature-based solutions.

03

Green citizen-led initiatives in Rotterdam

Rotterdam, Netherlands

Date: Multiple (project dependent) starting 2010

Source: http://www.degroeneconnectie.nl/

Nature-based solutions

The Green Connection (“De Groene Connectie” in Dutch)

More than a co-designed NBS, The Green Connection is rather a coalition of local green initiatives. In the aftermath of the 2008 financial crisis, many sites were left empty in the city, and informal citizen-led temporary gardens popped up all over the city, and particularly in Rotterdam West. The Green Connection connects these gardens, both spatially and socially, by organizing activities such as planting, cleaning, and exploring alongside this 8km long promenade. The project aims to bring visibility to these local initiatives at a city level, as well as facilitating the sharing of experience.

Essenburg Park

Part of Green Connection, this park is an interesting example of how a group of citizens organised and fought to transform private land into a park. The Dutch Railways company owned the land and had construction plans for this space – a project which was contested by citizens as it was an abandoned green area in a densely populated part of the city. Three local green initiatives built a coalition together with the water board, stating that the site was ideal for water retention in combination with urban nature and social (maintenance) practices. This coalition was successful, as the City decided to make the land a park and joined the coalition.

Park 1943

The Municipality had a desire to revitalise this park by turning it into a citizen-led park. They asked Delfshaven Cooperative to facilitate the process in which local citizens and initiatives (like Creatief Beheer) were actively involved in the cultural programming of the park, creating more biodiversity, and small and specific interventions. The coalition – the Park Council – had a small monthly budget of 500€ for cultural and environmental programming. For example, as this park has been bombarded during WW2, an anniversary of that event was organised, attracting people from other parts of the country.

Co-design process

In the above examples of the Green Connection and Essenbug Park, citizens played a crucial role as they took ownership of empty spaces in the city to transform them into green spaces accessible to the community.

Citizens were also supported by other key stakeholders, including the City. The Green Connection was adopted as a pilot project after a multi-stakeholder conference was held in 2015 around healthcare and green spaces. Since then, the municipal health organisation as well as a growing group of health care organisations took part in the project. In the case of the Essenburg Park, a coalition was formed – gathering the water board, citizens and the municipality – to co-design the park with its 5000m^3 water retention. The coalition has devised a longterm working agreement to manage the park with the three parties. Monitoring of the ecological development is also participative.

In the Green Connection, Essenbug Park and Park 1943, the cultural agenda was part of the co-creation process. Cultural and social activities led by the community contributed to an enhanced sense of community.

Key learnings

- **Nature-based solutions present a unique opportunity for co-design:** there are many opportunities for people to be involved in natural projects, compared with other urban projects, as:
    - It is positive, not focused on solving problems - everyone can find value and interest in nature;
    - It has high aesthetic and affective value;
    - A low level of engagement is possible, that is often quick in result;
    - There may be more space for community participation in NBS compared with other urban planning projects that have been dominated in the last 10/15 years by private-public partnership in which citizens' voice is not central.
- **Co-design is not for everyone – it requires skills, time, mental space**. Co-design is less inclusive than co-maintenance as it requires a capacity to project, sense of abstraction, capacity to develop concepts and ideas that don't exist yet. There is a risk that the most active individuals in the co-design are not necessarily representative of the local community. When there is a pre-existing sense of ownership, co-design is more successful as there is more embedded knowledge. Multi-skilled mixed groups work best: you need different personalities to act on the playing field of spatial planning.
- **Technical experts do not always have the holistic view that co-designing requires:** Landscape designers are not trained for co-design, as they tend to be very projective, with a strong planning vision. They tend to underestimate the emotional attachment to local history and to existing features such as trees, grounds, old railways that are part of the magic of the place.

Success factors

- **Knowing the place you are in:** Being rooted in a community is important. Ideally, the co-design creator can organise meta initiatives and connect local initiatives on different topics that they share, such as The Green Connection. This has great value when it is possible to identify the ambitions that local projects have in common and how they can work together.
- **Start with strengths:** Start from the strengths of existing organisations on the territory, seek to build on what they are good at.
- **Allow for different levels of engagement**, so that everyone feels that they can contribute in some ways.
- **Make more prototypes**. Try things. Start with 5m^2 gardens. Test and learn.
- **Communicate well**, including by building on:
    - Existing community channels (example of a community media mainly on social media – see here)
    - Community representatives, especially for hard-to-reach groups (cultural, linguistic barriers or lack of trust) - these trusted key figures can communicate your message in a relevant way, it is much more efficient than leaflets in mail boxes.
- **Consider co-maintenance** alongside co-design; Co-maintenance, including via citizen's involvement in cultural activities, contributes to a sustained sense of belonging.
- **Focus on compromise:** Co-design and co-maintenance requires a culture of respect and value of other people's opinions. It is about learning to compromise and to discuss.
    - *"I am personally against the use of pesticides, but some of my co-gardeners use some. They go for the cheap and most colourful tulips. But am I entitled to say anything? If you ventilate this high morale attitude from the start, the danger is that that they feel less entitled to have a green dream than you do. You have to allow for things to go in a way that is different from what you personally want. If you want to change anything – you have to discuss, while being careful not to position yourself as the one that has all the knowledge". (Interviewee)*
- **Dream big!**

Sustainability factors
• **Find ways to mitigate engagement fatigue:** In citizen's initiatives, there is engagement fatigue after 3/4 years. You need to prepare for you own succession, but it can be difficult to find someone interested to take over your role and level of engagement. *This case study is based on interviews with Robbert de Vrieze and Catherine Visser, both architects by profession and very involved as citizens in various community initiatives in Rotterdam. Robbert is member of the Delfshaven corporation that was involved in the design of the Park Council, and Catherine is member of the Essenburg Park team* and of *the informal group of citizens organising and advocating the Green Connection.*

Going further: resources on NBS co-design

Suggested reading

Resource	Who is this for?	Link *(click)*
GUIDES ON HOW TO CO-DESIGN NBS		
Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes, Bettina Wilk (proGIreg), June 2020.	Guidance on how to initiate and steer NBS co-design and co-implementation – including tools and detailed case studies from the proGIreg project (leading cities: Turin, Zagreb, Dortmund), for which it was created.	
Guidance on Co-creating NBS: Defining the Co-creation framework and running CLEVER Action Labs in 16 steps, CLEVER Cities, undated.	A website to guide a user on how to co-create NBS, with reports, tools and templates to use.	
Stakeholder Mapping to Co-create Nature-Based Solutions: Who is on Board?, Aude Zingra-Hamed et. al, October 2020.	Guidance on how to identify and manage stakeholders for co-creating NBS projects. It is based on the analysis of 15 NBS projects involving 359 stakeholders.	
Step-by-step guide for co-production and co-creation of Nature-based Solutions, Nature4Cities, 2017.	Guidance for implementer of NBS looking to co-design. The guide has a user centric approach and explains NBS step by step.	
LEARNING FROM THE EXPERTS: TOPICAL READS		
Clever Cities: Valuing Co-Design: Learning from co-design experiences in Thamesmead, Young Foundation, 2020.	Shares in-depth learnings from co-design in the Thamesmead area of London – including direct quotes from experts on what can go right and what can go wrong.	Not available via web, Request from Young Foundation
Seven lessons for planning nature-based solutions in cities, Niki Frantzeskaki, Journal of Environmental Science & Policy Vol. 93, March 2019.	A more academic-stye read, this journal article compares 15 NBS experiments across 11 cities to draw conclusions, including learnings on co-creation.	
Evaluation Guide: Evaluating the impact of co-design for Nature-Based Solutions, Social Finance (for CLEVER Cities), 2020.	Guide on evaluation the impact of co-design for nature-based solutions, with a cost-benefit focus.	Not available via web, Request from Social Finance

All sources for report

All sources above listed under Suggested Reading and the following:

1. *A Systematic Review of Co-Creation and Co-Production: Embarking on the Social Innovation Journey*, Voorberg, et al, 2014.
2. *Barriers and success factors for effectively co-creating nature-based solutions for urban regeneration*, Andreas Schmalzbauer for CLEVER Cities, 2018.

3. *Benefits of Co-design in Service Design Projects*, Marc Steen, Menno Manschot and Nicole De Koning, 2011. See here.
4. *Co-creating nature-based solutions* (webpage), Naturvation, undated. See here.
5. *Co-Creation Pathway as a catalyst for implementing Nature-based Solution in Urban Regeneration Strategies Learning from CLEVER Cities framework and Milano as test-bed*, Israa Mahmoud, 2018. See here.
6. *Co-Creation Plan and Co-Design of Solutions in CALs (D2.2),* Technalia (for CLEVER Cities), 2019. See here.
7. *Evidencing genuine co-production in the third sector*, TSRF [Scotland]. See here.
8. *Implementing and evaluating co-design: A step-by-step toolkit,* NPC, 2019. See here.
9. *Planning and implementing nature-based solutions*, undated, proGIreg. See here.

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[1] "Planning and implementing nature-based solutions," undated, proGIreg. See here.

[2] *Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes*, Bettina Wilk, ICLEI (ProGIreg), Deliverable 2.10, May 2020. See here

[3] "Snapshot - Utrecht: Roerplein Pocket Park," Naturvation,"Roerplein Pocket Garden," Naturvation. See here.

[4] "Snapshot - Munich: The restoration of the Isar River," Naturvation. See here.

[5] "Seven lessons for planning nature-based solutions in cities," Niki Frantzeskaki, *Journal of Environmental Science & Policy Vol. 93*, March 2019.

[6] "Integrated Action Plan for West End in Vejle," Resilient Europe, undated. See here

[7] *A Systematic Review of Co-Creation and Co-Production: Embarking on the Social Innovation Journey*, Voorberg, et al, 2014.

[8] Presentation *"Co-creation of Nature-based Solutions: between technical challenges and reality check bottlenecks. The Clever Cities experience!",* Israa H. Mahmoud (CLEVER CITIES), *2020.*

[9] Extract from: *Clever Cities: Valuing Co-Design, Learning from co-design experiences in Thamesmead,* The Young Foundation (CLEVER CITIES), Dec 2020.

[10] "Snapshots – Innovative Governance of Newcastle Parks," Naturvation. See here.

[11] "Snapshot – Barcelona: PG. De Sant Joan Green Corridor" Naturvation. See here.

[12] "Snapshot - Malmö: Biodivercity," Naturvation, See here.

[13] *Engaging stakeholders in the assessment of NBS effectiveness in flood risk reduction: A participatory System Dynamics Model for benefits and co-benefits evaluation*, Alessandro Pagano, et al., 2019. See here.

[14] *Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes*, Bettina Wilk, ICLEI (ProGIreg), Deliverable 2.10, May 2020. See here

[15] *Barriers and success factors for effectively co-creating naturebased solutions for urban regeneration*, Andreas Schmalzbauer, Hamburg Institute of International Economics (CLEVER CITIES), Deliverable 1.1.1, Nov. 2018, See here.

[16] *Stakeholder Mapping to Co-Create Nature-Based Solutions: Who Is on Board?",* Aude Zingra-Hamed et al., October 2020. See here.

[17] *Stakeholder Mapping to Co-Create Nature-Based Solutions: Who Is on Board?",* Aude Zingra-Hamed et al., October 2020. See here.

[18] *Barriers and success factors for effectively co-creating naturebased solutions for urban regeneration*, Andreas Schmalzbauer, Hamburg Institute of International Economics (CLEVER CITIES), Deliverable 1.1.1, Nov. 2018, See here.

[19] Nantes Innovation Forum, Co-creating solutions with local citizens and stakeholders within European projects, Oct 8th 2020, Question asked to the participants through Mentimeter.

[20] "Seven lessons for planning nature-based solutions in cities," Niki Frantzeskaki, *Journal of Environmental Science & Policy Vol. 93*, March 2019.

[21] "Snapshot - Utrecht: Roerplein Pocket Park," Naturvation,"Roerplein Pocket Garden," Naturvation. See here.

[22] “Seven lessons for planning nature-based solutions in cities,” Niki Frantzeskaki, *Journal of Environmental Science & Policy Vol. 93*, March 2019.

[23] “Seven lessons for planning nature-based solutions in cities,” Niki Frantzeskaki, *Journal of Environmental Science & Policy Vol. 93*, March 2019.

[24] “Seven lessons for planning nature-based solutions in cities,” Niki Frantzeskaki, *Journal of Environmental Science & Policy Vol. 93*, March 2019.