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Co-creating Biodiversity in Urban Areas

Practical guide on how to co-create a project to support urban biodiversity

Funded by the European Union

Erasmus+

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1. Introduction

The Co-Bio project

As global populations grow and economies develop, increasing demands on land-use systems have led to significant biodiversity declines, with 80% of European habitats in poor condition, necessitating a collective effort across all sectors of society to reverse the damage, restore ecosystems, and adopt climate- and biodiversity-friendly practices. The Co-Bio project aims to support the EU Biodiversity Strategy 2030, with a concrete focus on urban biodiversity. The project aims to enhance the capacity of professional and volunteer adults within the public, private, and civil society sectors to co-create shared solutions for urban biodiversity.

The Partners

Green Forum is organised under the Technical and Environment Department of Vejle Municipality as a network for citizens and civil society organisations with an interest in climate, ecology, nature and the environment.

Greenformation Ltd. is a small enterprise based in Budapest aiming to trigger green and social transition and transformation through catalysing biodiversity conservation, the enhancement of society, sustainable and just energy use, as well as behaviour change.

The Center for Citizen Dialogue is a consultancy and knowledge center with expertise and competences in citizen involvement in municipal work. We are based in Copenhagen, Denmark, and advise Danish and Scandinavian municipalities on how to involve citizens and stakeholders and how to lead and facilitate co – creation processes.

Gartenpolylog promotes the development of community gardens and care of communities for green spaces since 2007. It supports the network of community gardens in Austria, offers workshops for grown-ups and children in environmental education as well as group organisation.

The Rightchallenge Association is a NGO which aims to promote education and training as a means of social inclusion and sustainable development. Education must focus on the holistic development of all people in order to prepare them to intervene and participate in all dimensions of society.

CESIE is a European Centre for Studies and Initiatives based in Palermo, Sicily. It is a non-profit, apolitical, and non-governmental organisation, implementing projects in more than 80 countries. Established in 2001 and inspired by the work and theories of the Italian sociologist Danilo Dolci (1924-1997).

The Athens Lifelong Learning Institute is a research and education institute based in Athens, Greece. Its mission is to foster and enhance innovation processes mainly in the areas of education and lifelong learning, human capital development, knowledge society and social inclusion.

Since 2021, Öko Campus Wien has been working on biodiversity at the University of Vienna campus. The transdisciplinary team is committed to improving habitats and raising awareness of urban biodiversity—on campus and beyond.

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About the guide

This guide provides theoretical and practical information for municipalities, NGOs, public institutions and active residents involved in protecting and enhancing biodiversity in urban environments. We also recommend reading the following document developed under the project: *Six keys to co-creating biodiversity – a methodology* which also aims to support the facilitation of the co-creation process.

Biodiversity, or the diversity of species, is essential for maintaining healthy ecosystems. Without diverse habitats, nature cannot provide its benefits, on which human life also depends. Thus, preserving biodiversity is crucial for our future as well. Biodiversity faces many challenges, especially in urbanised environments. Despite these challenges, urban areas also present opportunities. Well-designed cities can support large populations within limited spaces, improving living standards and optimising resource use while protecting extensive natural areas. (Secretariat of the Convention on Biological Diversity, 2012 (CBD, 2012)). Protecting and enhancing urban biodiversity is achievable with concerted efforts at various levels.

Governments and municipalities play a pivotal role in preserving, maintaining and even increasing biodiversity in cities, and significant contributions can also be made at the civil and individual levels. Cross-sectoral cooperation and stakeholder involvement are vital for urban biodiversity initiatives. Engaging NGOs, citizens, and experts can enhance the quality of these initiatives, making them more effective and sustainable. Co-creation involves multiple stakeholders in a project or initiative, from the planning stage through implementation to maintenance and monitoring (Morello et al., 2018). Establishing a connection to and sense of ownership over a green space or project can lead to more effective, sustainable outcomes.

This guidebook aims to highlight the importance of urban biodiversity and co-creation, offering a comprehensive manual for co-creating projects that support urban wildlife. Involving multiple stakeholders in a project can be challenging, but the rewards are significant. This guidebook provides interested stakeholders with information on biodiversity, explaining definitions, outlining challenges, and offering examples and suggestions for how we can help urban wildlife. The guidebook also provides a step-by-step approach for urban biodiversity initiatives, covering the entire project lifecycle from the initial phase through maintenance and evaluation. Various parties, including municipalities, professionals, NGOs, and citizens, can participate in urban biodiversity projects. This guide supports all of them by offering crucial information, hints, and tips on effective collaboration and co-creation for urban biodiversity. In the Co-Bio project, the partners have developed six case studies (one in each partner country) to test different approaches that support urban biodiversity. This guidebook also incorporates the challenges we faced and the lessons learned during the implementation.

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Glossary

Co-creation: Co-creation is a collaborative approach that involves stakeholders in designing and building inclusive and sustainable solutions.

Ecosystem services: Ecosystem services are the benefits human populations derive, directly or indirectly, from ecosystem functions (Costanza et al., 1997).

Ecosystem disservices: Ecosystem disservices are functions of ecosystems that are perceived as negative for human well-being (Lyytimäki and Sipilä,2009).

Invasive alien species: Invasive alien species (IAS) are animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment. They are a major threat to native plants and animals in Europe and are one of the five major causes of biodiversity loss (European Commission, 2025).

Nature-based solutions (NBS): Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions (European Commission, 2025).

Urban biodiversity: **“**The variety of species richness and abundance of living organisms (including genetic variations) and habitats found in and on the edge of human settlements” (Müller et al., 2013).

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2. Importance of urban biodiversity

Biodiversity has been declining rapidly in recent years, mainly due to human activities such as the expansion of built-up areas, pollution, invasive alien species and climate change (European Parliament, 2020). The rate of urbanisation is increasing constantly. By 2050, the area of urban settlement is expected to triple, and the urban population will double (CBD, 2012; World Bank, 2023), posing a significant challenge to urban biodiversity. Biodiversity plays a crucial role in maintaining healthy ecosystems and the benefits they provide.

2.1 Understanding urban biodiversity

Urban biodiversity has been defined as "the variety of species richness and abundance of living organisms (including genetic variations) and habitats found in and on the edge of human settlements" (Müller et al., 2013).

Despite the challenges, many cities host significant numbers of native or even endemic species, as many larger towns are located within or near global biodiversity hotspots. On average, 50% of regional or national species can be found in urban areas (CBD, 2012). Urban nature extends beyond parks and forests. Wetlands, roadside verges, vacant and former industrial sites, allotment gardens, cemeteries, private yards and balconies, botanic gardens, and other managed or abandoned spaces can all provide habitats for urban wildlife (Panwar, 2021). Urban biodiversity is closely linked to a city's social and ecological systems. Urbanisation usually reduces a settlement's biodiversity, but the extent of the loss and the variety of species in urban areas vary by region, landscape, biome, and the city's history. The loss of biodiversity can weaken a city's resilience to extreme events (such as heat waves, heavy precipitation, and floods), which can be mitigated or even reversed by careful urban design and planning (Elmqvist et al., 2013). Reconnecting people with nature, leveraging existing knowledge in urban planning, and integrating nature into urban design can support biodiversity and strengthen urban resilience.

2.2 Biodiversity's contribution to human well-being, benefits of urban biodiversity for society

Ecosystems, including natural and urban green-blue areas, provide many benefits (ecosystem services) for human life, such as food, clean water, and fresh air. They also mitigate the effects of climate change, maintain key nutrient and water cycles, and contribute to human health by providing recreational and aesthetic benefits (Langemeyer & Gómez-Baggethun, 2018). In urban areas, certain types of

*"**Ecosystem services*** are the benefits human populations derive, directly or indirectly, from ecosystem functions" (Costanza et al., 1997).

ecosystem services may be more important to residents than in rural settings. Mitigating the effects of climate change, such as reducing the heat island effect, may be more important in densely built cities than in rural areas. Not all urban green-blue spaces deliver the same services, and their quality can be different. A city forest or park with diverse, low-maintenance vegetation can support a wide range of urban wildlife and provide many valuable ecosystem services. In contrast, a park with mowed lawns and monoculture plantings, while still a green space, offers significantly less diversity. This can lead to fewer or poorer benefits (Guerry et al., 2021). The following ecosystem services are the most important ones in urban areas:

Provisioning services	Regulating services	Cultural services	Supporting services
Food	Urban temperature regulation	Recreation	Habitat for wildlife
Fresh water	Noise reduction	Aesthetic benefits	
	Air, water, soil purification	Cognitive development	
	Mitigation of climate change	Place values and social cohesion	
	Runoff mitigation	Education and research	
	Waste treatment		
	Pollination, pest regulation and seed dispersal		
	Global climate regulation		

Table 1. The most important ecosystem services in urban areas

Preserving and increasing urban biodiversity could significantly contribute to the good condition of ecosystem services and, through this, to human well-being. Pollinators, such as bees and butterflies, are essential for **food and natural medicine production**. Urban green and blue spaces can **enhance air quality, reduce air pollution, and regulate local climates** by providing shade and cooling the surrounding areas (Gionfra et al., 2023). In addition, green and blue areas offer unique **educational opportunities**, foster **environmental awareness**, provide space for **recreation**, **relaxation**, and different **physical activities** and help **connect people to nature**. Regular contact with nature can also **improve the immune system** (Rook, 2013). Therefore, accessing urban green-blue spaces and connecting to nature can improve citizens' physical and mental health and overall **well-being** (Gionfra et al., 2023). Diverse urban ecosystems have more ecological resilience, meaning they are better equipped to withstand environmental changes, such as extreme weather events or climate change impacts, and they also provide more benefits for residents (Gionfra et al., 2023).

Urban ecosystems can also have adverse effects (known as **ecosystem disservices**). These disservices are "functions of ecosystems that are perceived as negative for human well-being" (Lyytimäki and Sipilä, 2009). Examples include **damage to infrastructure by roots and animals**, **allergies**, **diseases** transmitted by animals, and **pests** such as rats, wasps, and mosquitoes. Dark green areas are often perceived as **unsafe** and considered a disservice (Elmqvist et al., 2013). Considering these disservices and how to minimise them during urban planning could enhance citizens' acceptance of such habitats or green-blue areas.

2.3 Threatening factors of urban biodiversity

Urban biodiversity is influenced by various factors, both natural and anthropogenic. The planning, design, and management of urban environments, influenced by economic, social, and cultural elements, play a crucial role in shaping urban biodiversity. Urbanisation introduces numerous challenges and threats to biodiversity; therefore, it is essential to identify, address, and mitigate the factors that threaten urban biodiversity (Elmqvist et al., 2013).

One of the major challenges urban biodiversity faces is **land cover change.** Changing natural areas into agricultural and built-up areas results in **habitat loss and fragmentation**. This fragmentation destroys natural habitats and isolates populations, reducing biodiversity and disrupting ecological processes (Elmqvist et al., 2013).

Climate change further exacerbates these issues, with cities experiencing higher temperatures due to the urban heat island effect and altered precipitation patterns, as well as extreme weather events that affect the distribution and behaviour of urban species (Elmqvist et al., 2013).

Pollution (air, water, noise and light) significantly threatens urban biodiversity. Emissions from traffic and industries contribute to poor air quality, negatively impacting plant and animal health. Urban runoff, containing pollutants from sewage, vehicle effluent, and fertilisers, contaminates waterways, leading to eutrophication and pollution of both surface and groundwater. Additionally, high noise levels and artificial lighting disrupt wildlife's natural behaviours and breeding patterns (Panwar, 2021; Elmqvist et al., 2013).

Urban areas are also prone to the introduction of **invasive alien species**, which outcompete or prey upon native species, altering ecosystem dynamics (Elmqvist et al., 2013).

Urbanisation **modifies natural water flow patterns**, affecting aquatic ecosystems and the species that rely on them (CBD, 2012).

Poorly planned urban development, lacking green spaces and adequate zoning regulations, exacerbates biodiversity loss (Elmqvist et al., 2013).

Human activities, such as recreation and development, disrupt wildlife, causing stress and habitat displacement. Urbanisation facilitates the spread of diseases among wildlife, domestic animals, and humans, with cascading effects on biodiversity. Overexploitation of plants and animals for ornamental or medicinal purposes leads to declines in targeted species (Elmqvist et al., 2013).

2.4 How can urban biodiversity be improved?

Improving urban biodiversity involves a combination of conservation strategies, ecological planning, sustainable practices, and community engagement. The EU has created a variety of **policies and initiatives** to enhance urban biodiversity (see Annexe 1).

Mitigating threats, such as pollution, can reduce negative impacts on ecosystems. Implementing stricter pollution controls and enhancing waste management practices are essential steps. Encouraging sustainable urban development practices, like using native plants and water-efficient landscaping, can further mitigate biodiversity loss.

Ecological planning plays a crucial role in urban design. It integrates nature into urban planning, guides smart urbanisation, with minimal impact on biodiversity while meeting development goals (Guerry et al., 2021). Policymakers and practitioners increasingly recognise **nature-based solutions (NBS)** as a cost-effective approach to climate change adaptation. NBS protect and restore nature to achieve societal goals and enhance socio-ecological resilience, providing multiple benefits for both nature and society (European Commission, 2025). Integrating **green infrastructure**, such as parks and green roofs, supports biodiversity and helps restore degraded habitats within urban areas. **Sustainable water management practices** protect aquatic ecosystems, including preserving natural watercourses and creating wetlands. **Enhancing connectivity** by creating wildlife corridors reduces habitat fragmentation and maintains biodiversity.

Education and community engagement are vital for improving urban biodiversity. Engaging citizens in monitoring and collecting data on urban biodiversity through citizen science initiatives provides valuable information for conservation efforts. Raising awareness through educational programs, workshops, and community events fosters a supportive community for conservation. Collaboration among government agencies, non-profit organisations, businesses, and communities is essential to implement and sustain biodiversity-friendly initiatives.

2.5 State of play at the EU level and in project countries

Europe's ecosystems, including croplands, forests, pastures, and urban areas, support a rich diversity of species. However, human activities have severely threatened this biodiversity, resulting in many species and habitats being in an unfavourable conservation status. Habitat fragmentation, intensive agriculture, pollution, overexploitation, and climate change are the primary drivers of biodiversity loss. Despite efforts such as the EU Biodiversity Strategy for 2030, which aims to halt biodiversity loss and restore ecosystems, many ecosystems remain degraded, impacting their ability to provide essential services. The EU must accelerate its efforts to enhance the value of its natural capital in decision-making processes and intensify conservation and restoration efforts to protect and sustain biodiversity (CBD, European Union - Country Profile, 2024). Within the framework of the Co-Bio project, we analysed the condition of biodiversity and collected best practices in each partner country. The “State-of-the-art and local mapping analysis” summary report can be found here.

Want to know more?

Further literature on biodiversity, ecosystem services and the benefits they provide:

Elmqvist T. et al. (eds.) (2013). Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities: A Global Assessment, DOI 10.1007/978-94-007-7088-1_3

IUCN (2023). Embracing biodiversity: Paving the way for nature-inclusive cities. Retrieved from https://iucn.org/story/202305/embracing-biodiversity-paving-way-nature-inclusive-cities

IPBES (2019). Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Brondízio, E. S., Settele, J., Díaz, S., Ngo, H. T. (eds). IPBES secretariat, Bonn, Germany. 1144 pages. ISBN: 978-3-947851-20-1

European Commission (2024). Nature needs you Retrieved from https://ec.europa.eu/environment/stories/nature-needs-you/

European Commission (2024). Knowledge Centre for Biodiversity. Retrieved from https://knowledge4policy.ec.europa.eu/biodiversity_en

3. Importance of co-creation

Preserving and enhancing urban biodiversity must occur at all levels. It requires strong government support through regulations, strategies, and plans, while individuals can also do much to help urban biodiversity. However, the most significant gains could come from cross-sectoral initiatives involving multiple stakeholders. Municipalities and NGOs often lead such initiatives, but implementing an action alone could mean less support and even resistance from residents. Informing citizens and even involving them in the planning phase is more and more common in urban planning processes; however, involving several stakeholders throughout the entire process could yield even better results. The concept of co-creation is not common everywhere; therefore, in this section, we briefly introduce the approach and its benefits in urban biodiversity preservation.

3.1 What is co-creation?

Also known as co-production, social innovation, and network governance, co-creation encourages collaboration across societal sectors to address complex problems such as climate change. It involves public organisations, citizens, civil society, and private companies working together to boost innovation that benefits both people and the planet, as well as to achieve better outcomes (Center for Citizen Dialogue, 2022). The concept emphasises the importance of mutual understanding and creative problem-solving among all stakeholders to tackle sustainability and green transition challenges (Morello et al., 2018; Center for Citizen Dialogue, 2022).

3.2 Why are co-creation and co-stewardship important in enhancing urban biodiversity?

The institutional framework, policies, and strategies at both the EU and national levels are essential for defining the current state and goals for supporting biodiversity. These strategies provide guidance, set objectives, and regulate urban development. Local strategies and plans at the regional or municipal level can further support biodiversity conservation by identifying and addressing local challenges. However, involving stakeholders and communities is crucial in urban planning and can occur at various levels. While coordinating multiple stakeholders requires more resources, the advantages of co-creation are numerous:

1. **More acceptance:** Citizens are more likely to accept the changes if they can be part of the process.
2. **Ownership**: Feeling ownership strengthens the connection with a project and keeps motivation and engagement long-term.
3. **Awareness raising**: Raising awareness is one crucial element of biodiversity preservation. However, only informing citizens does not always yield the desired results. Small-scale projects that involve citizens in hands-on experiences can effectively change attitudes.
4. **Better cooperation with other stakeholders**: Municipalities, citizens, communities, and NGOs sometimes have different goals or the means to achieve the goals. The co-creation process helps understand others' perspectives.
5. **Creative solutions**: Thinking together in a group usually increases creativity and could lead to innovative solutions.
6. **Easier maintenance**: Involving several stakeholders (e.g., citizens and community groups) in all project phases could help maintain the implemented solutions and require fewer human resources from the municipality. On the contrary, in some cases, successful community initiatives can be taken over by the municipality, which has more financial resources to continue or even replicate the project. It all depends on the initiative or project, but co-creative solutions can enhance the long-term viability of the initiative by sharing tasks and responsibilities.

4. Review of policies and initiatives

The European Union adopted several policies, strategies, laws, and guidelines to support biodiversity and promote sustainable urban planning. Members of the EU also adopt strategies and approaches to biodiversity conservation, influenced by local conditions and challenges. Additionally, numerous initiatives aim to enhance urban nature and wildlife and mitigate the threats to biodiversity. In Annexe 1, we collected key regulations and initiatives, though the list is not exhaustive.

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5. Challenges and opportunities at the local level

Urban biodiversity faces distinct challenges shaped by social, economic, and environmental factors that differ across and within cities. Opportunities to preserve and support biodiversity in our cities or neighbourhoods can vary widely; therefore, we have compiled practical ideas that can generally enhance urban biodiversity. Our focus is on actions that can involve a co-creation approach. Some of the ideas were tested through our local case studies. While challenges vary depending on the project's scale, the stakeholders involved, financial resources, and support from institutions and citizens, we identify common obstacles that emerged during our case studies and provide solutions to address them.

5.1 What are the local challenges/obstacles, and what can we do to overcome them?

Addressing urban biodiversity challenges involves several critical aspects. Water scarcity, drought, and extreme weather events, such as floods, are becoming more frequent across Europe. **Effective water management** is essential for supporting ecosystems. Rehabilitation of wetland habitats and the integration of natural water retention measures are pivotal and require a shift away from drainage practices.

- One of the challenges our Italian project partner, CESIE, faced is drought and irrigation. In addition to using Mediterranean and aromatic plants that can withstand extreme heat, they installed a rainwater-harvesting system with storage tanks and experimented with terracotta ollas for natural irrigation.

Combating the impact of invasive species and **promoting native species** are crucial for maintaining healthy urban ecosystems.

- Our Austrian partner, Öko Campus Wien, organised an action day to collaboratively fight against the invasive tree of heaven (*Ailanthus altissima*). They also planted native shrubs and bushes on the campus.

- Planting native species was also an important factor in the Portugal case study, where our partner, RighChallenge, together with several stakeholders, carefully selected native trees, shrubs, sub-shrubs and herbaceous species for their tiny forest.

Urban designs often prioritise human needs and short-term financial gains over biodiversity, contributing to habitat loss from urban sprawl. Additionally, **inefficient recycling, pollution, and chaotic urban planning** are major issues compounded by bureaucratic inefficiency, competition for space, lack of knowledge, and the need for long-term stakeholder involvement.

In addition to environmental challenges, **social** and **project management challenges** can occur during the planning or implementation of a biodiversity project. Our partners overcame common challenges during the year in which the case studies were implemented. You can read more about the challenges and lessons learned, as well as key recommendations for overcoming common obstacles and for co-creation processes, here.

5.2 What can a professional, citizen, municipality, or volunteer do to increase urban biodiversity? Opportunities for co-creating urban biodiversity

Supporting urban biodiversity can be achieved on various scales. We can participate in tree-planting or invasive plant removal to help restore a nature reserve, or we can plant wildflowers in our garden or on our balcony. Different solutions suit different conditions; what works in one place may not be applicable in another. Reducing threats such as pesticides and pollutants also helps preserve biodiversity. Actions to support urban biodiversity range from simple and inexpensive to complex and costly. We have compiled ideas that could aid in preserving urban biodiversity, focusing on solutions that can be implemented on a broader scale through a co-creation process. However, some can be undertaken individually at a smaller scale. While these ideas can generally aid urban biodiversity, the success of such initiatives depends on several factors, including the quality of implementation, proximity to natural areas, resident acceptance, and other social and environmental factors. Before implementing any initiatives, we advise having background research on the conditions and factors that can affect the project (see Chapter 6.1). The table in Annexe 2 summarises the potential actions and initiatives that could directly or indirectly aid urban biodiversity.

Tools and literature to explore further nature-based solutions

GREEN SURGE Project (2024): A typology of urban green spaces, ecosystem provisioning services and demands
https://www.e-pages.dk/ku/1334/html5/

Catalogue of Nature-Based Solutions Measures (2024):
https://clevercitiesguidance.wordpress.com/wp-content/uploads/2018/11/nbs-catalogue.pdf

NBS Benefits Explorer (2024):
https://nbsbenefitsexplorer.net/tool

Nature-based Solutions Evidence Platform (2024):
https://www.naturebasedsolutionsevidence.info/evidence-tool/

Nature-based Solution Initiative (2024):
https://www.naturebasedsolutionsinitiative.org/

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5.3 Already existing well-working cases in the project countries and their lessons learned, and how they can be upscaled and applicable to other localities

One of the aims of the Co-Bio project was to develop best practices through a local case study. Each project country implemented an idea to support urban biodiversity. The ideas were developed and implemented by involving different stakeholders, demonstrating the value and effectiveness of co-creation. The partners implemented diverse, hands-on biodiversity actions to restore or create biodiverse urban spaces, including schoolyards, gardens, campuses, and housing areas. The projects engaged a broad range of stakeholders, including municipalities, NGOs, schools, universities, and volunteers. The stakeholders provided valuable insights, creativity, local knowledge, and connections to citizens. Despite different contexts and practices, commonalities emerged: participatory inclusion, with visible results that foster ownership; capacity building through mutual learning; and long-term stewardship by local actors. Taken together, these cases illustrate that biodiversity co-creation flourishes when action is informed across sectors and rooted in local realities, empowering citizens to become everyday stewards of urban nature in their own communities. Learn more about each case and about keys on how to facilitate co-creation processes here.

HOW to enhance urban biodiversity through co-creation?

6. How to co-create a project? Crucial steps of co-creating urban biodiversity

This section provides a step-by-step approach how to co-create an urban biodiversity project. We will provide the key factors to consider, guiding questions and the tools to support the implementation of each step. Though not all steps are essential for success, the non-crucial steps can also enhance the process and better tailor it to local conditions.

Co-creation can occur at various scales, from city-wide initiatives, such as developing city parks involving multiple stakeholders, to smaller scales with only a handful of stakeholders, such as creating pocket parks within neighbourhoods. Projects can span several years or be short-term initiatives. While the steps outlined in this section are applicable across all scales, their importance may vary depending on the project. While we would like to provide a comprehensive guide to co-create urban biodiversity, we also would like to highlight that co-creation is usually not a linear but more of an iterative process that requires flexibility and adaptability to changing conditions. In this section, a "project" refers to any initiative supporting urban biodiversity through a co-creation process.

The following colour code can help identify the essential and recommended steps:

⇒Essential step during the project

⇒Recommended step to enable deeper understanding and more tailored solutions to local conditions

We cover in detail the following steps in this section:

Step 1 Understand local conditions and identify problems

Step 2 Explore potential solutions

Step 3 Select the most suitable solution

Step 4 Identify stakeholders

Step 5 Motivate, activate and engage stakeholders

Step 6 Explore similar cases

Step 7 Risk assessment

Step 8 Prepare an action plan

- **Step 8.1 Plan the implementation**
- **Step 8.2 Plan the maintenance**
- **Step 8.3 Plan the evaluation**
- **Step 8.4 Plan the monitoring**
- **Step 8.5 Plan the awareness-raising actions/communication**

Step 9 Baseline assessment

Step 10 Implement the actions defined in the action plan

Step 11 Maintenance and monitoring

Step 12 Evaluation

6.1 How to start a project? Defining goals, objectives, and scale

Sometimes, you already have an idea or goal to enhance urban biodiversity or increase green areas in your district or neighbourhood. While the first few steps (1 and 2) are not always necessary (or you may have already completed them), we recommend performing them to gain a deeper understanding of local conditions and ensure the initial idea is suitable and feasible for the area. Defining your goals and objectives would help with the planning and especially the evaluation phase of the project. However, please note that the goal does not need to be set in stone; several circumstances can affect the final project outcome (e.g., feedback from stakeholders or any unforeseen changes in local conditions); therefore, flexibility is desired to adapt to those changes easily.

Step 1 Understand local conditions and identify problems

Before starting a co-creation process, it is recommended that you familiarise yourself with the local environment, biodiversity challenges, affected species, and urgent needs. For instance, if

habitat fragmentation is a significant issue, creating connections between green spaces to facilitate animal movement may be advisable. Alternatively, if drought and climate change effects are prevalent, implementing blue infrastructure such as ponds or rain gardens could be an effective adaptation strategy. Understanding the local system and context can help ensure the project's success and long-term viability. This step can also involve co-creation through group discussions, albeit typically with a limited number of stakeholders present during the initial stages of the project development. The following actions can help familiarise yourself with the local conditions.

- Consultation with local NGOs, experts (e.g., ecologists, landscape architects), the municipality and communities can help analyse the local geographical, environmental, social and economic conditions and challenges.
- Local strategies, plans, and historical data can help pinpoint local challenges and areas that require urgent interventions. While increasing green and blue infrastructure generally supports biodiversity, tailored solutions to specific problems are more sustainable and impactful.
- Involving local communities in expressing their opinions on local challenges could enhance their acceptance and support, and applying their knowledge could help tailor the solution to their specific needs.

Guiding questions and suggestions

- What are the main threatening factors to urban biodiversity on the local level?
- What are the hot spots where urban biodiversity is the most endangered?
- What are the main local environmental conditions? Consider soil type, temperature, precipitation, etc.
- What are the socio-economic conditions of the area? How might they influence or be influenced by biodiversity projects?
- What does nature need?
- What are the main needs of citizens?

Tools

- Local environmental or biodiversity strategies, plans
- Ecosystem services assessment
- Maps: green areas, biodiversity index, heat, noise, pollution maps, flood risk areas
- Local species and habitat inventory
- Community surveys or group discussions to gather their input and observations
- Consultation with municipality, NGOs, experts

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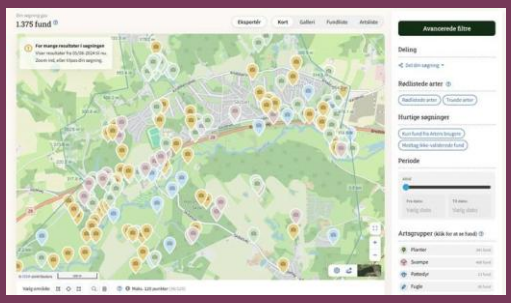
- In Palermo, the Italian team (coordinated by CESIE) began by assessing the ecological and social context of the Euromadonie Roccella area. Through environmental mapping and consultations with local botanists, they identified the loss of native plant species and limited public green spaces as key challenges to be addressed.

- A multidisciplinary team (landscape architects, social action technicians, and senior managers), working closely with the Portuguese partner, RightChallenge, analysed several social housing estates to select suitable sites for local case implementation and understand local contexts. They identified three sites with the following challenges: urban heat islands, poor air quality, low biodiversity, and social challenges (including low education levels and limited social inclusion and integration).

- The Danish partner started their project by mapping the green areas (including protected and community and private green spaces) and species found in Skibet, the site of the local case implementation, using GIS maps and citizen science platforms.



Step 2 Explore potential solutions

After identifying the problem you want to address, you can find possible solutions and explore their suitability in your area. Supporting urban biodiversity does not necessarily mean creating new green-blue spaces. We can help urban wildlife by eradicating invasive alien species, providing shelters for animals, and raising awareness and sensitising the public through campaigns or a combination of interventions. Consider the following actions during the process:

- Involve different types of stakeholders or a representative of these stakeholders to ensure different perspectives and ideas are heard and to increase acceptance of the intervention. Combining expert and local knowledge could improve the quality of the initiative.
- Consider conserving and restoring already existing places before creating any new infrastructure.
- Explore previous or already running projects, initiatives, and actions in your area to find synergies, common grounds and goals. Consider continuing or supplementing ideas that have already been tested and proven to work.

- Explore different types of interventions or kinds of NBS that would serve as solutions to the identified problems and could benefit biodiversity (see Annexe 2).
- Review already existing similar cases. Select two or three possible solutions, explore their benefits and risks, and the time, cost and resources (both human and technical) needed for implementation and maintenance.
- Explore not just the environmental but also the social impacts (both benefits and risks) of the possible solutions. For this, involving a smaller group of stakeholders is strongly desired to find the most suitable solution that could also address social challenges.
- Explore the possible sites that could be suitable for each solution. Problems related to land ownership sometimes hinder the process; therefore, consultation with landowners and providing the information in such cases is essential.

Guiding questions and suggestions

- Which types of interventions (or their combination) would be the best solutions for the problem?
- Which type of NBS can be a solution?
- Where can the possible solutions be implemented? Identify suitable sites and land ownership, and whether the land can be secured for your project.
- Are the solutions applicable in your area? Consider local conditions.
- What kind of benefits do the solutions have? Consider ecological, social, and economic benefits.
- Do they have risks? Consider ecosystem disservices and trade-offs and how they can be mitigated.
- How will the solutions impact stakeholders?
- What resources are needed for the implementation and the maintenance?
- How much time is needed for the solution?

Tools

- NBS list and case studies

  (see Annexe 3)
- Cost-benefit analysis (CBA)
  A preliminary cost-benefit analysis could support the decision-making process.
- Multi-Criteria Analysis (MCA)
  Identifying and comparing different options could support the decision-making process.
- SWOT analysis

- In the Hungarian local case, Wekerle, naturally, the partners explored several ways to enhance urban biodiversity in the historic garden suburb of Wekerletelep.
  1. Initially, an underused grass-covered area was considered for improvement. However, discussions with the local municipality regarding its use did not progress, prompting the partners to look for alternative options.
  2. As residents highlighted mosquitoes as one of the most pressing local problems, the team considered actions supporting bats as natural regulators. Because the partners also wished to include more hands-on and community-based elements, this idea became part of the final project—bat walks were organised, and bat houses were distributed to residents.
  3. The local community centre, one of the key partners, had already implemented several biodiversity-friendly practices in its garden and was open to further improvement. During site visits, however, the group realised that planting was limited by available space.
  4. The final concept, therefore, combined awareness-raising activities with small-scale greening actions: pollinator-friendly planting in the community centre's garden, the creation of raised beds at a local school, and support for two private gardens to model practical, neighbourhood-level biodiversity improvements.

- The Italian team gathered insights from community members and experts, and several ideas for promoting biodiversity were explored. The concept of creating a Biodiversity Garden emerged as the most suitable, as it combined environmental conservation, education, and community engagement in one initiative.

In Annexe 4, we provide a theoretical example for exploring potential solutions to the defined problem.

Step 3 Select the most suitable solution

In some cases, this may serve as the initial step. If you are already familiar with the local conditions and the possible solutions, or you have a specific idea, selecting the most suitable solution is the first step in your project. It could be initiated by a single stakeholder or by a committee (e.g., a municipality or NGO) focused on relevant topics. It can also result from the first two steps completed through a co-creation process involving a smaller stakeholder group. While this step could engage a group of stakeholders, additional involvement is likely necessary after defining the exact intervention and location. In some cases, nature must be isolated and left alone to regenerate. Consider what is needed for nature and biodiversity preservation, and involve experts and local knowledge gainers in decision-making.

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Guiding questions and suggestions

- Exclude solutions for which you do not have the necessary financial, human, or technical resources.
- Consider choosing a combination of solutions.

Tools

- Democratic discussion
- Results of CBA MCA and SWOT (see step 2)

- After the Portuguese team identified the local problems, it was considered that the challenges could be positively addressed through the implementation of Tiny Forests in the selected locations.

- Working collaboratively with residents, schools, and environmental specialists, CESIE designed and tested the layout of the Biodiversity Garden. Pilot plantings and feedback sessions allowed the team to refine the garden's design and educational components before full implementation.

In some cases, a great idea could not be realised because of hindering factors. Institutional processes can be lengthy, sometimes involving multiple approval steps. Securing a permit for land or a public space can be a significant challenge, potentially prolonging the entire process and jeopardising the implementation (see more in *Six keys to co-creating biodiversity - a methodology)*. In the meantime, stakeholders can lose motivation or become engaged in other projects. Sometimes these hindering factors only occur during the implementation, and even unexpectedly; therefore, we advise starting the planning process early and considering the following critical elements (as a checklist) before starting the initiative.

Securing space

- ✓ **Do you have a space for your project?**
- ✓ **Do you know who the owner/user of the space is?**
- ✓ **Does this place require securing any approval or permit?**
- ✓ **Do you know whom to contact regarding the approval and permit?**

- ✓ **Do you know the time it takes to secure the approvals/permits (days/weeks/months)?**
- ✓ **If there is a delay in the permit process, does your project allow for delaying the implementation?**
- ✓ **Have you identified alternative sites in case the primary location becomes unavailable?**
- ✓ **Is the space accessible to all your target stakeholders (mobility, safety, public transport)?**

Roles and shared understanding

- ✓ **If you co-created a solution, do the involved stakeholders have the same goal, values, and priorities?**
- ✓ **Do you know who will be responsible for maintaining the area or the infrastructure?**

Funding

- ✓ **Do you have the budget (or know how to secure) for the planned initiative?**
- ✓ **Do you have the budget for unexpected events?**
- ✓ **Do you (or the responsible stakeholder) have the budget or the plan for the maintenance of the initiative?**

Financing a project, especially in the long term, could be challenging. Sometimes you have a dedicated budget for such projects, but in other cases, you need to secure funding to initiate implementation. There are several options, including exploring grants and subsidies from governmental bodies, such as local municipalities, national environmental agencies, or international programs focused on urban sustainability. Additionally, private-sector partnerships can be pursued, particularly with companies interested in corporate social responsibility (CSR) initiatives. Community fundraising and crowdfunding campaigns can also effectively engage residents and stakeholders in supporting the project financially. Lastly, consider long-term financing strategies, such as establishing an endowment fund or securing recurring donations from local businesses and philanthropists.

Literature on financing options to enhance urban biodiversity

Funding for cities
https://commission.europa.eu/eu-regional-and-urban-development/topics/cities-and-urban-development/funding-cities_en

Biodiversity and finance
https://knowledge4policy.ec.europa.eu/biodiversity/topic/biodiversity-finance_en

Approaches to financing nature-based solutions in cities
https://growgreenproject.eu/wp-content/uploads/2019/03/Working-Document_Financing-NBS-in-cities.pdf

Investing in nature-based solutions
https://op.europa.eu/en/publication-detail/-/publication/e7eefad4-08dc-11ee-b12e-01aa75ed71a1

6.2 How to involve stakeholders? Activate, engage, and motivate stakeholders

This step is pivotal and integral to the co-creation process, serving as a continuous, vital component throughout the entire project. We highly recommend appointing a facilitator at the project's outset to guide and oversee the co-creation process. Intense collaborative planning among various public and private actors, stakeholders, and citizens is crucial from the initial stages to address complex problems and create innovative designs efficiently. Studies highlight the importance of a co-creation approach for successfully implementing such projects, as they help manage potential conflicts, issues, and constraints.

As mentioned before, identifying and involving citizens can begin at the very start of the project, so completing the initial steps could also involve co-creation. Therefore, Steps 4 and 5 can be concluded before Step 1 if you do not have a specific idea of enhancing urban biodiversity and would like to develop ideas and potential solutions co-creatively. However, after the solution and the locality have been identified, broader stakeholder involvement may be necessary; therefore, we discuss this part of the process here as the fourth and fifth steps.

Given the significance of this role and the importance of engaging, motivating, and uniting individuals from diverse sectors and backgrounds, a separate document (*Six keys to co-creating biodiversity - a methodology*) has been developed within the framework of the Co-Bio project to support the facilitation of the co-creation process. In this section, we outline the necessary steps for stakeholder involvement in a project. The accompanying document provides more comprehensive insights into the facilitation process.

Step 4 Identify stakeholders

Stakeholders for urban biodiversity projects include individuals, communities, organisations, and government entities working together to design, build, and manage projects. This collaboration leverages shared skills, resources, and knowledge to develop inclusive and sustainable solutions. Co-creation with diverse stakeholders generally leads to better, more appropriate solutions and helps overcome implementation challenges. The following actions can help identify the stakeholders.

- Define the group of stakeholders by identifying 1) the stakeholders most impacted by the project's outcome, 2) the stakeholders who have the most impact on the project, and 3) what kind of experts are needed for the implementation.
- Involving residents or community organisations with local knowledge could significantly increase the success and impact of a project.
- Pay special attention to involving vulnerable groups—such as people with physical disabilities, mental health issues, the socially disadvantaged, and asylum seekers—also children, and the elderly, to enhance the project's impact and align with the European Green Deal's objective of a 'just transition' and 'leaving no one behind.'
- Besides the skills and knowledge the stakeholders have, explore their interests as well. Involving them in activities that align with their areas of interest might help sustain their interest in the long term.
- Consider also responsibilities and roles among the stakeholders. You may want to involve a broader stakeholder group in the implementation phase and a smaller core stakeholder group in decision-making.

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Guiding questions and suggestions

- Who are the most impacted stakeholders by the project's outcome?
- Which stakeholders have the most impact on the project?
- What kind of experts are needed for implementation?
- Explore the skills that are needed for your project.
- Explore the stakeholders' main interests.
- Consider involving officers from public bodies, business owners from the private sector, citizens, communities, NGOs, decision-makers, experts and professionals.

Tools

- Stakeholder Mapping

  (see Annexe 5)

- Visualisation of stakeholders' level of influence, interest, and expertise

- The Austrian partner, Öko Campus Wien, analysed past campus projects first and then mapped potentially affected stakeholder mapping with the new campus projects and potential partners at the new site in St.Marx. In an iterative process involving members of Öko Campus Wien and local partners, they developed the case design for "Biodiversify UBB". Within the project design, the aim was to form a resilient "Alliance of the Active" to create impact and improve biodiversity, and include new people, students, locals and experts, as well as landowners. Based on the stakeholder mapping, they have consistently tried to involve groups and people throughout the process and to stay flexible and adaptive to their needs.

- CESIE mapped and engaged key stakeholders, including schools, municipal departments, NGOs, and research institutions. Their active involvement ensured access to expertise and resources, and a long-term commitment to maintaining the garden.

- At the start of Co-Bio, RightChallenge reviewed its partner network to identify collaborators. Its existing tie with Gaiurb was decisive in securing a site. After agreeing on the partnership, RightChallenge and Gaiurb formed a multidisciplinary team—senior managers, landscape architects, social action technicians, and residents of the selected locations—to implement the project.

Step 5 Motivate, activate and engage stakeholders

Motivating and engaging stakeholders is crucial throughout the project, not just in the beginning. Actively engaging a diverse group of stakeholders ensures transparency, fairness, and effectiveness, promoting trust and mutually beneficial outcomes. One of the challenges we identified in the co-creation process is motivating the stakeholders and keeping them engaged in the long term. Feeling ownership of an initiative or a green-blue space could significantly contribute to the project and maintain high motivation levels. We recommend scheduling regular meetings and discussions with stakeholders and providing a platform for their interactions. The following activities could increase engagement and motivation in the beginning and throughout the project.

- Visualisation can improve understanding and engagement. If you present your plan to other stakeholders (and to the public), consider using visualisations and examples to enhance the quality, clarity, and understanding of your presentation.
- Using a clear, common language and terminology. Discussing biodiversity, ecosystem services, and using academic language could overwhelm the audience and lead to disengagement. Prepare brief educational materials in clear language to bridge the knowledge gap and align stakeholders on the project's ecological goal (see Key 3 in *Six keys to co-creating biodiversity - a methodology)*.
- Define values, shared interests and goals. In addition to using a common language, agree on common goals and priorities as well.
- Find common interest and ground. Find ways to connect with stakeholders and find a common interest or goal. Connect with them through topics that matter to them and explore how this connects to your project.
- Be patient and flexible. Building trust, ownership, and stewardship does not happen overnight. Co-creation with different stakeholders takes time, and a flexible approach is needed to accommodate unexpected events (e.g. weather or a stakeholder dropping out) see Key 6 in *Six keys to co-creating biodiversity - a methodology)*.
- Scheduling meetings and activities could be challenging with different stakeholders involved in a project. Always start early with the planning, even if the following activities seem far away.
- Appreciate and respect volunteers' time. They could greatly contribute to every step of the project, mainly helping in their own free time. Respect this, and if their priorities shift over time.
- Celebrate small successes. Include small steps with visible results in the plan to keep motivation and engagement, and also to celebrate achievements.
- If you face a problem, focus on showing opportunities and hope to overcome the challenge together.

Please read our Six keys to co-creating biodiversity – a methodology document for further recommendations and more details on stakeholder engagement.

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Guiding questions and suggestions

- How can we foster a sense of ownership among stakeholders?
- How can we keep stakeholders engaged long-term?
- What motivates each stakeholder group, and how can we leverage those motivations?

Tools

- Regular meetings and workshops
- Online platform
- Project management tools

❖ The success of the implementation of the Portuguese local case is mainly due to the coordination of a multidisciplinary team that was able to motivate, activate and engage different stakeholders. In particular, the fundamental role of social action technicians, who work daily in each social housing neighbourhood, served as a trusted bridge to residents, enabling their effective involvement in the project's implementation. In terms of specific actions to promote motivation and involvement, the following can be highlighted:

- Initial resident briefings to gather input and adapt the project to each location.
- 3D models of the Tiny Forests to visualise plans and boost interest.
- Participatory and environmental education workshops to sustain engagement despite bureaucratic delays.
- Children's activities (drawing/painting, Tiny Forest–themed crosswords, interactive games).
- Resident planting sessions of native vegetation during implementation.



❖ The Hungarian team engaged children with a drawing competition. The competition received many imaginative entries from participants aged 5 to 18, inspired by a wide variety of animal species. The submitted artworks offered unique and heartfelt perspectives on the presence of wildlife in the city. The jury faced a difficult task, as many of the entries stood out for their creativity and charm.


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6.3 How to plan the project? Defining timeline, risk assessment, implementation, maintenance, monitoring, evaluation and communication plan

Step 6 Explore similar cases

While this step is not critical in the process, it is highly recommended to explore existing cases similar to your chosen solution to identify success factors and possible lessons learned. Reviewing similar cases can provide valuable insights and help avoid common mistakes.

Guiding questions and suggestions

- Why was the case study a success?
- Are there any lessons learnt during the process?
- What impact did it have on biodiversity and society?
- What were the local conditions of the case study, and can the solution be applicable in your case?
- How were the stakeholders involved in the case study?
- How was the project monitored and evaluated over time?

Tools

- NBS case study finder

  (see Annexe 3)
- Explore similar initiatives in the area or the city

❖ In the Skibet case, the local co-creation group explored similar biodiversity initiatives within Vejle Municipality to gather inspiration and identify success factors. They looked at projects such as microforests at local schools, community gardens, and urban green corridors to understand what worked well in engaging citizens and sustaining action.
This comparison helped the group shape their own approach, focusing on simple, hands-on solutions like the “Wild Start” biodiversity boxes. By learning from existing local experiences, the group could avoid repeating challenges and adapt proven ideas to their own context.

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Step 7 Risk assessment

In this step, we aim to identify potential risks associated with the project and develop strategies to mitigate or address them. If you completed Step 2, this phase can offer a deeper understanding and a more detailed analysis of the possible risks. It's important to recognise the possible trade-offs of the proposed solution, such as ecosystem disservices and to devise strategies to tackle them. Social, economic, and environmental aspects should also be considered when assessing risks. To ensure sustainability and mitigate risks considered common in these types of interventions, consider the following suggestions.

- Mitigate plant loss and damage. Select suitable and possibly native species. Do not use invasive species! Consider the environment (soil type, climate, sun exposure, etc.), the suitability of the combination of plants and how much maintenance they need and if this fits in your plan.
- Mitigate resistance by residents by choosing less allergenic species, prepare for possible pests (e.g. appearance of mosquitoes) or even installing a small information board (e.g. “Wild, not messy – this space is for bees and butterflies”). Think about inclusivity and whether the place will be accessible to all.
- Mitigate stakeholder/people drop out. Celebrate small successes and appreciate stakeholders’ opinions and work.
- Be prepared for possible delays in permit, approval or other processes. Prepare a Plan B if delaying would jeopardise the whole process.

Guiding questions and suggestions

- What kind of ecosystem disservices can be associated with the project?
- Did other case studies identify associated risks or negative impacts?
- What are the social, economic, and environmental risks associated with the project?
- How can we minimise or mitigate identified risks?

Tools

- Literature about ecosystem disservices
- Group discussion
- Lessons learned from case studies
- SWOT analysis used in Step 2

❖ In Skibet, the main risk was balancing time and expectations. The group wanted both to develop a long-term Green Masterplan and to test concrete actions within the short pilot phase. This created a risk of losing momentum or participants along the way. By choosing to focus on a tangible activity — the “Wild Start” biodiversity boxes — the group kept engagement high and still supported the broader masterplan process. In the end, the risk turned into a strength.

Step 8 Prepare an action plan

Define the necessary actions, the involved stakeholders, the timeline, and the related costs and resources. The following are the actions to be delivered under this step.

- Define the actions needed for the process, considering all phases of the project, including implementation, maintenance, monitoring, and evaluation.
- Prepare an internal and external communication plan and awareness-raising actions. Schedule regular meetings with stakeholders and plan in advance!
- Define the involved stakeholders in each action. In some cases, not all stakeholders participate in all actions. For example, experts may assist only with the planning and/or implementation phase, or one dedicated member may handle the communication actions, but may not be involved in all actions.
- Set up a timeline for each action, considering factors such as the vegetation period, migration period of animals, and winter (resting) period.
- If you completed Step 2, you have preliminary knowledge about what resources are needed and their related costs. In this step, the costs and resources could be further detailed. Consider human resources, such as how many people are needed during the implementation, maintenance, and monitoring phases. Also, consider the non-human resources needed, like machines, devices, and materials.
- Prepare a financial plan and estimate the financial resources required, including labour costs, material costs, equipment rentals, and any other expenses (e.g. land purchase). Reserve 15-20% of the amount for unexpected events.
- Be flexible! Co-creation is an iterative process, with continuous learning opportunities, adaptation and improvement.

Co-creation should prioritise equity and justice, appreciating the diverse knowledge, skills, time availability, and resource constraints of participants when scheduling meetings and designing activities. This approach ensures that the results reflect participants' interests, values and foster a sense of shared ownership, encouraging continued involvement and advocacy for the concepts created, even after the planning process ends.

Step 8.1 Plan the implementation

Define the specific activities required to execute the project.

- Identify the stakeholders who will participate in the implementation phase. This may include contractors, engineers, landscape architects, volunteers, community members, and other relevant parties.
- Develop a detailed timeline outlining when each activity will occur. Consider the sequence of tasks, dependencies, and milestones to ensure smooth progress throughout the implementation phase.
- Estimate the financial resources required for the implementation phase. Ensure that the budget aligns with the project's overall financial plan.

- Determine the logistical requirements for the implementation phase, such as procurement of materials, equipment, and supplies. Develop a procurement plan to ensure the timely acquisition and delivery of necessary resources.
- Remember to include small, easily achievable actions that can be celebrated during the process.

Step 8.2 Plan the maintenance

Co-creating biodiversity does not end with implementing and executing the actions. It usually requires ongoing maintenance and aftercare, particularly for long-term success, thus:

- Define the resources needed for the maintenance and the frequency of the needed actions.
- Consider ad-hoc and unforeseen circumstances and prepare for them as well.
- Agree early on who will be responsible for the maintenance.

Guiding questions and suggestions

- What specific actions are required to implement and maintain the project effectively?
- Who are the key stakeholders involved in the concerned Steps, and what are their roles and responsibilities?
- Think about regular discussions with the stakeholders
- What is the timeline for each activity, and how do they align with the overall project schedule?
- What are the estimated costs and resources needed for these Steps, and how will they be allocated?
- How will logistics and procurement be managed to ensure timely access to materials and equipment?

Tools

- Project management app or tools
- Online platform for internal (stakeholder) and external communication
- Cost estimation and budgeting tools
- Action plan Template (see Annexe 7)

❖ In Italy, before the implementation, clear roles were established: botanists managed species selection, CESIE coordinated the educational programme, and volunteers oversaw ongoing maintenance. This cooperative approach fostered ownership and ensured project sustainability.

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Step 8.3 Plan the evaluation

Evaluating the impacts of the implemented actions on biodiversity is recommended to assess success and determine whether you achieved your goals. Through monitoring actions, we can collect data for future evaluation and assess whether the implemented project needs adjustments. While evaluation usually occurs at the end of the project, planning what we want to evaluate and identifying the necessary indicators can also help define the monitoring actions. Therefore, we recommend planning the evaluation before planning the monitoring action; however, during the project, we will do the evaluation after, based on the monitoring results. While assessing biodiversity and ecosystem services can be challenging in small-scale, short-term projects, some tools help evaluate the impact of such projects on biodiversity. We would also recommend evaluating the project's social impacts by sending surveys or questionnaires or conducting focus group sessions with affected stakeholders.

Changes in biodiversity can be evaluated in several ways, e.g., by measuring species richness and abundance, assessing soil and habitat quality, and taking photos or organising bioblitzes. Assessing the resources of your project and the skills of the involved stakeholders can help define **the most suitable indicators** and actions. Based on the indicators, the monitoring actions can also be outlined. You can find some examples with different scales and resources in Annexe 6 that could help with the evaluation of the project.

Guiding questions and suggestions

- What indicators are most appropriate for monitoring changes in biodiversity and evaluating impact?
- What kind of skills and resources do we have to evaluate biodiversity changes?
- Consult with the suggested measurement methods (see Chapter 6.6) or other resources and define what kind of tools can be used.
- Considering vegetation change, what is the expected time within biodiversity changes can be measurable?

Tools

- Project management app
- Action plan Template (see Annexe 7)
- Indicators and actions measuring biodiversity changes (See Annexe 6)

Step 8.4 Plan the monitoring

Monitoring is important to reflect on the implemented actions and to change maintenance actions if needed. It is also an essential requirement of the evaluation phase. Based on the defined indicators and needed actions to evaluate biodiversity changes, the following monitoring actions can be set up.

- Implement regular monitoring schedules (e.g., monthly, quarterly) to track changes in biodiversity.
- Consider the defined actions and timeline for the maintenance activities and harmonise the monitoring actions with them. Ensure consistency in the methods used for each monitoring action.
- Bear in mind that some implementations take time to have an impact or to be successful (e.g. installing bat-houses does not mean that they will immediately host bats; it can take even years before they occupy them).

If the project does not have the capacity to define indicators and regularly monitor each of them, we still recommend monitoring some crucial elements (e.g. plants surviving winter or summer, appearance of pests, which types of plants are thriving, which are declining, etc).

Guiding questions and suggestions

- How frequently should monitoring activities be conducted?
- Considering vegetation change, what is the expected time within biodiversity changes can be measurable?

Tools

- Project management app or tools
- Action plan Template (see Annexe 7)
- Indicators and actions measuring biodiversity changes (See Annexe 6)

Step 8.5 Plan the awareness-raising actions/communication

We recommend regularly communicating the actions taken during the project and inviting others to participate in any actions they find themselves interested in. A platform (e.g., social media or the website of a participating NGO or municipality) should be found where you can regularly create short posts and inform the citizens and other potential stakeholders about the project, and share information about urban biodiversity. We recommend summarising the actions and findings in a short report after the implementation and after each monitoring action. These reports can be disseminated to professionals and municipalities and can be shared at events. We also recommend installing an information board on-site, where the initiative is implemented (e.g., with a QR code), to inform citizens about the project and its activities.

We recommend collecting feedback from stakeholders on each action to ensure potential alignment and for future cases. Reflecting on the positive impacts and areas for improvement could help enhance the current project and similar future ones.

Internal communication is also crucial with the involved stakeholders. Always communicate clearly which actions should be taken and who is responsible for them. There are several apps and platforms for project management (e.g. Monday, Trello, Asana) and channels for quick communications (e.g. WhatsApp group).

Guiding questions and suggestions	Tools
• Who are the target groups for awareness raising/communication? • Consider planning a communication action (e.g., an event) in each phase of the project and regularly post short posts • Post short additional and background information about the importance of urban biodiversity for knowledge improvement	• Use online channels and platforms • Organise events • Collect stakeholder feedback

6.4 How to implement a project?

Step 9 Baseline assessment

This step is optional; however, we strongly recommend compiling a baseline assessment of the area's biodiversity and socio-economic status to understand the pre-project state. Use the same tools you choose to evaluate the changes, either counting the species or taking photos, as it is useful to have baseline data that can be compared with the data collected during the monitoring phase.

Guiding questions and suggestions	Tools
• What is the current state of biodiversity in the project area? • What species are present in the area? • What are the key characteristics of the habitats? • Use the chosen method for biodiversity evaluation	• Methods chosen in planning the evaluation substep (step 8.3)

Step 10 Implement the actions defined in the action plan

Implementation is a crucial phase where planned actions are executed to achieve the project's objectives. Involving experts in this process is essential for a fruitful and sustainable project. Furthermore, proper coordination and facilitation of the planned actions are also crucial for successful implementation.

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Guiding questions and suggestions

- Ask experts' support during the implementation.
- Consider the stakeholders' interests and involve them in the actions in which they have an interest.
- Check whether you have the needed resources.
- Use native and endemic plant species when restoring/creating green areas.
- Be prepared and flexible for unexpected events.
- Reflect on achievements and shortcomings and adjust your plan if needed.

Tools

- Project management app or tools

6.5 How to maintain and monitor a project?

Step 11 Maintenance and monitoring

Co-creating biodiversity often does not end with the implementation and execution of the actions. Supporting a co-creation project usually requires ongoing maintenance and aftercare, particularly for long-term success. Monitoring actions can be combined with maintenance actions.

Maintenance activities are essential to sustain the improvements made during the implementation phase. Regular upkeep, such as invasive species control, cleaning the project site and proper water management, ensures that the project area remains conducive to biodiversity enhancement. Vegetation management, like regular pruning, weeding, and planting, is essential to maintain the desired vegetation structure and composition. Maintaining and caring for the implemented intervention could strengthen the connection between people and nature.

Monitoring actions are crucial for assessing the effectiveness of the implemented actions and making informed decisions for ongoing management. As defined earlier in the evaluation planning phase, the chosen indicators should be monitored using the chosen methods.

Guiding questions and suggestions

- Consider if anything needs to be improved during the maintenance and monitoring. Lessons learned during aftercare.
- Can the chosen indicators be monitored, or do the chosen method and indicators need adjustment?
- Did the motivation of the involved stakeholders change over time? If yes, why?
- Communicate the results, share them with the community/other municipalities/experts, etc.

Tools

- The chosen method for monitoring the indicators.
- Reflecting together with stakeholders on what went well and what needs to be improved.

❖ Once the Biodiversity Garden was established in Palermo, local botanists and community groups monitored plant growth and pollinator populations. The site continues to serve as a biodiversity observatory and educational hub, maintaining long-term environmental and social impact.

6.6 How to measure success? Evaluating the changes

Step 12 Evaluation

Evaluating the success and changes in biodiversity within urban areas involves a range of indicators and measurement methods. These can vary in complexity from scientific assessments requiring specialised knowledge and tools to simpler observational and participatory methods that community members can conduct. In Annexe 6, there are some suggestions to evaluate the changes in biodiversity from complex methods through medium tools with complexity to alternative, easy-to-apply methods. Consider how much time is needed for proper evaluation. Changes in biodiversity take time; often, a few years are needed for visible or sensible results.

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In Annexe 8, you can find a template for the project evaluation, including the impact on biodiversity, stakeholders, society, environment, and others

Guiding questions and suggestions

- Consider the time needed for visible results.
- Have you achieved your goals or adjustments needed during maintenance?
- Have you noticed some trade-offs because of the implementation? If yes, can they be mitigated?

Tools

- Template for evaluation See Annexe 8)
- Reflecting together with stakeholders on what went well and what needs to be improved.

Do you want to enhance urban biodiversity?
↓

Yes
↓

Are you familiar with the local challenges and conditions?
↓ ↓

Yes No→ Start with Step 1 to understand the local system.
↓

Do you have a specific idea or a solution to a local problem?
↓ ↓

Yes No→ Start with Step 2 to explore possible solutions.
↓

Have you identified the stakeholders?
↓ ↓

Yes No→ Start with Step 4 and 5 to identify the stakeholders.
↓

Do you know the potential impacts and risks of your idea?
↓ ↓

Yes No→ Start with Steps 6 and 7 to explore similar cases and to identify potential risks.
↓

Have you identified the indicators and the methodology for evaluation?
↓ ↓

Yes No→ Define clear goals and find the most suitable indicators (check 6.6)
↓ ↓

Do you have an action plan for the implementation, maintenance, monitoring, evaluation and communication?

↓ ↓

Yes No→ Start with Step 8 to prepare an action plan.

↓

Congratulations! You can start implementing the project! To make the evaluation easier, we recommend performing a baseline assessment.

Table 2: Guidance on steps to be performed

6.7 How can an initiative be sustainable/applicable/scalable? How can it be a long-term solution?

To ensure an urban biodiversity initiative is sustainable, it is essential to have civil support and continuity. Shared interest and ownership among stakeholders, along with institutional support, are crucial for long-term success. Involving the community, especially young people, and raising awareness are vital, with activities like school gardens and reusing green spaces playing a significant role. It is important to establish systems that require minimal care, have secured funding, and foster cooperation and networking. Education and communication are key to success. Utilising citizen science projects, social campaigns, and democratic structures to engage people and reduce fear of nature ultimately create a sense of personal connection to the initiative. Feeling ownership over a place or a project can help keep the engagement on a high level and in the long term. A coordinating body could also enhance the sustainability of such projects. See more in *Six keys to co-creating biodiversity - a methodology*.

Annexes

Annexe 1: Key policies, strategies and initiatives supporting (urban) biodiversity

Convention on Biological Diversity

At the 1992 Earth Summit in Rio de Janeiro, world leaders adopted the Convention on Biological Diversity, a global pact aimed at sustainable development by preserving biological diversity, using its components sustainably, and sharing the benefits of genetic resources fairly.

EU Biodiversity Strategy for 2030

The EU's Biodiversity Strategy for 2030 is an ambitious, long-term plan to protect nature and reverse ecosystem degradation. It aims to set Europe's biodiversity on a path to recovery by 2030. One of the aims of the policy is to green urban and peri-urban areas and promote the integration of nature-based solutions into urban planning.

Nature Restoration Law

The Nature Restoration Law is a comprehensive EU legislation that aims to restore degraded ecosystems, particularly those critical for carbon capture and disaster mitigation. One of the specific targets of the law is to achieve "no net loss of green urban space and tree cover by 2030, and a steady increase in their total area from 2030".

The European Green Deal

The European Green Deal aims to transform the EU into a modern, resource-efficient, and competitive economy by ensuring no net emissions of greenhouse gases by 2050, decoupling economic growth from resource use, and leaving no person or place behind.

Other policies directly or indirectly supporting biodiversity conservation

The *Regulation on Deforestation-free products* ensures that products consumed by EU citizens do not contribute to global deforestation or forest degradation. The new *Soil Monitoring Law* protects, restores, and ensures the sustainable use of soils. The *Marine Strategy Framework*

Directive is the EU's primary tool for protecting marine health, aiming to achieve good environmental status for marine waters and ensure sustainable protection of marine resources. SDG11 of the *United Nations Sustainable Development Goals* aims to "make cities and human settlements inclusive, safe, resilient, and sustainable". EU strategy on adaptation to climate change (*EU Adaptation Strategy*) outlines how the EU can adapt to climate change impacts and achieve climate resilience by 2050, with four main objectives: smarter, swifter, and more systemic adaptation, as well as increased international action.

Initiatives supporting urban nature and biodiversity

BiodiverCity: Community-based approaches to foster urban biodiversity

Nature-Positive Cities: Creating cities that live in harmony with nature.

BiodiverCities: BiodiverCities aimed to enhance civil society participation in local and urban decision-making, leading to building a joint vision of the green city of tomorrow shared among citizens, scientists and policy-makers.

Urban Nature Platform: Supporting towns and cities in restoring nature and biodiversity.

Initiatives tackling the drivers behind (urban) biodiversity loss

GDP, material consumption, and energy consumption are very much intertwined. Therefore, if we want to preserve biodiversity, we need to tackle its root causes: changing our consumption-driven economic paradigm to one that enhances well-being and supports all life on Earth. There are plenty of initiatives out there supporting this aim:

Beyond Growth Conference, 2023: The conference allowed society, and especially EU decision-makers, to find ways of turning today's geopolitical and geophysical crisis into an opportunity to disengage from the socially and ecologically damaging race for growth and embark on a new path.

Post-growth Theories: A post-growth society calls for a democratically planned and equitable downscaling of production and consumption to avoid trespassing planetary boundaries while providing basic services for all.

Degrowth stresses that wealthy countries can create prosperity while using fewer materials and energy if they abandon economic growth as an objective.

Caring or gift economies put care at the heart of our societies to achieve social justice and prevent ecological breakdown.

Lean Economy, based on community and its culture, provides the sequel to today's capitalism and thus does not imply either growth or degrowth of the market economy, but wide-ranging expansion of the 'informal', non-monetary economy and 'core economy'.

Doughnut Economics is based on the Doughnut visualisation of ecological boundaries and social foundations.

Degrowth Donut is a visualisation tool for assessing the current environmental and social capacity of a concerned region for ecologically and socially sustainable transformation.

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Annexe 2- Examples of actions to support urban biodiversity

Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
Providing shelter and food for animals					
Nest boxes	Low	Low	Low	Provide habitat, easy to install.	In the Hungarian local case, partners provided bird boxes to residents. The Danish partner also provided residents with bird boxes, as part of their Biodiversity Boxes. The Italian partners also installed bird boxes in their local case, the Biodiversity Garden. In Austria, replacement roosts for swifts were installed on university buildings.
Bird feeders, water for birds and insects	Medium	Low	Medium	Provide food and water, it can attract more species.	In the Hungarian local case, partners provided a few bird feeders and a bird bath to residents. Öko Campus Vienna has integrated small clay water bodies into project areas in Vienna.
Bug hotels	Medium	Low	Medium	Provide nesting areas for solitary bees, hibernation spots for various insects, and food sources for decomposer insects like woodlice, which feed on decaying vegetation.	In the Hungarian case, one of the project partners received a small bug hotel, and another began building a larger one. Italian partners also provided shelters for insects. In the Austrian project, many near-natural nesting opportunities were created with bundles of stems.

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Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
Hedgehog houses	Low	Medium	Medium	Hedgehogs help gardeners by eating slugs, so providing hedgehog houses in urban spaces is crucial for their protection and survival, especially for females raising their young in the spring.	
Bat boxes	Medium	Medium	Medium	Bat boxes offer bats a spot to rest, sleep during the day, and raise their young.	In the Hungarian local case, partners provided bat boxes to residents. The Austrian partners already had previous experience with bat house installations on the campus of Vienna University.
Log piles, dead branches	High	Low	Low	Provide home and food for amphibians, insects, mosses, lichens and fungi.	In the Hungarian local case, one of the project partners used log piles, branches, and deadwood in their garden to provide shelter for various species.
Restoring/transforming existing green-blue areas					
Tree planting	Medium-High	High	Medium-High	Cooling effect, providing shade, carbon sequestration, and reducing the heat island effect.	The Portuguese partners created tiny forests (Miyawaki forest) using native species. The Biodiversity Boxes in the Danish local case included seeds of different species of native trees, selected for the specific type of garden.
Hedge plantings	Medium to high	Low - Medium	Low-Medium	Cooling effect, microclimate, carbon sequestration and	In the Austrian case, native mixed hedges were planted.

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Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
				reduction of the heat island effect, habitat for animals and other species.	
Eradicating invasive species	Medium-High	Medium-High	Medium-High	Providing space for native and endemic species.	The Austrian partners organised activities to eradicate the tree of heaven (*Ailanthus altissima*) at one of the campus sites.
Planting a wildflower meadow	Medium-High	Low	Low	Provide habitat for insects, and shelter for small animals such as hedgehogs.	The Danish and the Hungarian project partners provided wildflower seeds to residents, encouraging them to create at least small patches of wildflowers. Wildflower meadows and near-natural Pannonian areas have also been created in Austria.
Leaving unmanaged "No-mow" sites in a green area	Medium-High	Low	Low	Provide shelter for insects.	The Austrian partners have created areas that are not mowed.
Creating green-blue areas					
Community gardens	Medium-High	Low-High	High	Provide food security, build community	The Greek and the Italian partners collaborated with several stakeholders, including schools, to create biodiverse green areas where kids, students, teachers and other community members can learn about and care for local species and wildlife. The Austrian partners have created raised beds on the campus

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Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
					grounds, which are cultivated jointly and contain herbs, etc.
Creating ponds	High	High	Low	Cooling effect, visual effect.	One of the Hungarian local case partners created a tiny pond in their garden, which immediately attracted wildlife and sparked interest from neighbours.
Rain gardens	Medium-High	Medium	Low	Reducing the heat island effect, water purification.	
Pocket parks	Low	Medium	High	Cooling effect, visual effect.	The Greek partner had prior experience creating pocket parks in Athens. These small, shady areas within cities could provide some relief from the heat in hot Greek summers, where residents can sit and relax in a green environment.
Bioswale	Low	High	Low	Reducing surface runoff.	
Pollinator nest sites	High	Low	Medium-High	Providing food and habitat for pollinator species, mitigating local heat island effects, enhancing air quality.	Several partners in the Co-Bio project used pollinator-friendly plants and seeds during their implementation. In Austria, various stem structures were also used as nesting sites on campus, and a dry-stone-wall and a sand habitat for insects were created.
Street trees	Low	High	Medium-High	Improve air quality, reduce heat island effect, provide habitats.	The Portuguese tiny forest will provide numerous benefits for residents, such as

Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
					providing shade and reducing urban heat islands, improving air and water quality, restoring local biodiversity, creating habitats for wildlife, acting as noise barriers, and absorbing CO_2. In addition to environmental impacts, the tiny forest, implemented in a social dwelling context, would contribute to a more livable future and offer other social benefits.
Transforming buildings					
Living walls	Medium-High	Medium-High	Medium	Reducing energy consumptions, improving building insulation and air quality	
Green roofs	Medium-High	Medium	Low	Rainwater retention, reduce energy consumption, reduce noise and air pollution, reduce heat island effect.	
Vertical and roof gardens	Low	Medium	Medium	Reducing urban heat-island effect, storm water Runoff mitigation, pest control, and energy savings.	
Awareness-raising and citizen engagement					

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Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
Informative events, workshops and other activities	Low	Low	Low	Public talks, hands-on workshops for biodiversity-friendly practices, and school programs help residents learn how daily choices and behaviours affect urban species.	In the Hungarian local case, partners organised presentations on various urban wildlife-related topics and thematic walks. The Danish partners created innovative Biodiversity boxes to support residents in ecological gardening. The boxes will equip residents with the knowledge and tools to acquire biodiversity-friendly practices. Walks and workshops were organised as part of the Austrian project.
Bioblitzes and citizen science	Low	Medium	Low	Bioblitzes and citizen science initiatives, where locals help record and observe urban species, foster direct connection and increased understanding of the local context.	The Danish team used Bioblitz to map the species in the Skibet area. In Austria, a bioblitz was organised as part of the City Nature Challenge.
Arts, installations, informative boards	Low	Low-medium	Low	Using arts (e.g. drawing competition for children) or even a small information board next to a pollinator-friendly meadow would increase sensitisation and awareness.	As part of the Austrian project, nesting structures were designed in collaborative workshops and an information board was installed on campus.
Adopting a small green space	Low-Medium	Low	Medium-High	Stewardship over a small green corner could improve our connection with nature,	Öko Campus Wien was redesigning a small green space (70 m^2), adopting it with students and other stakeholders in

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Type of actions	Impact on biodiversity	Cost	Maintenance effort	Benefits	Tested by the CO-Bio project
				enhance our well-being and increase citizen engagement in municipal decisions.	Austria.
Ambassador schemes or local challenges	Low-Medium	Low-Medium	Low-Medium	Municipalities could encourage citizens to support urban wildlife in their own gardens or community spaces with small awards and ambassador schemes (e.g. the most biodiverse garden or the most biodiversity-friendly action implemented in a community space)	
Taking part in/ organising participatory events for decision-making processes	Medium	Low	Low	Involving citizens in the planning process could increase the acceptance of the planned interventions, and citizens could greatly contribute with their perspectives.	Öko Campus Wien was co-creating the whole process with students. The measures have been designed in a workshop together in winter 2024.

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Annexe 3- List of NBS and case study platforms

List and types of NBS

Green Surge NBS catalogue

Clever Cities NBS catalogue

Urban GreenUP NBS catalogue

Case study platforms

Network Nature case study finder

Urban Nature Atlas

NBS Benefit explorer

Oppla

NBS Initiative platform

Annexe 4- Example for exploring potential solutions to the defined problem

Example for exploring different solutions				
Problem	The **Urban Heat Island** (UHI) effect is a phenomenon where urban areas experience higher temperatures than their rural surroundings due to human activities, concrete buildings, asphalt, and a lack of vegetation. This leads to increased energy consumption through higher level of air conditioning use, elevated emissions of air pollutants and greenhouse gases due to the lack of absorption capacities, and adverse health effects.			
Possible solution 1	**Green Roofs** Planting vegetation on the rooftops of buildings reduces heat, absorbs greenhouse gases and air pollutants, and enhances urban biodiversity.			
Impact on biodiversity	**Impact on society**	**Further benefits**	**Risks**	**Cost and other resources**
Provides habitats for insects, birds, and small animals, increasing urban	Lowers building cooling costs, reduces noise pollution, and	Absorbs rainwater, mitigating runoff and reducing the risk of flooding, enhances	Structural challenges and added weight on buildings, higher	Low cost and requires low maintenance.

biodiversity.	improves air quality.	the aesthetic appeal of buildings, and sequesters carbon dioxide, aiding in climate change mitigation.	upfront costs, and maintenance requirements.	
Possible solution 2	**Urban Tree Planting** Planting trees along streets, in parks, and other public spaces to provide shade and reduce urban temperatures and air pollution.			
Impact on biodiversity	**Impact on society**	**Further benefits**	**Risks**	**Cost and other resources**
Enhances habitats for birds, insects, and other wildlife, promoting greater biodiversity in urban areas.	Provides shade, reduces energy costs, improves air quality, and enhances mental well-being.	Increases property values, supports local communities, and sequesters carbon dioxide, aiding in climate change mitigation.	Potential for root damage to infrastructure, ongoing maintenance and watering needs, and risk of introducing non-native species.	Medium to high cost and requires regular maintenance.
Possible solution 3	**Urban Ponds** Creating small ponds in urban areas to help cool the environment and provide a habitat for various species.			
Impact on biodiversity	**Impact on society**	**Further benefits**	**Risks**	**Cost and other resources**
Supports aquatic plants and animals, increasing urban biodiversity and creating micro-habitats.	Offers recreational and educational opportunities, improves mental well-being, and enhances the beauty of urban spaces.	Helps manage stormwater runoff, reduces flooding risks, and improves water quality through natural filtration processes.	Space competition in densely populated areas, potential for attracting unwanted pests like mosquitoes or invasive species, and ongoing maintenance requirements.	Medium to high cost, requires low or medium maintenance.

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Annexe 5- Stakeholder analysis template

Please find it as an attachment to this document.

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Annexe 6- Indicators and methods for evaluating the changes in biodiversity

Indicator	Complex method	Medium complexity	Easy
Number of Species (Species richness)	**Systematic sampling** Conduct comprehensive biodiversity surveys using methods like quadrat sampling for plants and transect walks for animals. **Resources needed**: Trained personnel, sampling equipment, and statistical analysis tools.	**Bioblitz events** Organise bio blitz events where community members and experts collaborate to record as many species as possible in a specific area and timeframe. **Resources needed**: Volunteer coordination, identification guides, and data recording tools.	**Photographic documentation** Encourage community members to take and share photos of different species they encounter. **Resources needed**: Cameras or smartphones, an online platform for photo sharing and identification.
Species Abundance	**Population surveys** Conduct systematic population surveys using methods like mark-recapture for animals and plant density estimates. **Resources needed**: Expertise in population sampling, statistical software, and field equipment.	**Regular counts and observations** Conduct regular counts of key species, such as bird counts or pollinator observations along set transects. **Resources needed**: Volunteer training, observation tools (binoculars, data sheets).	**Citizen science apps** Use citizen science apps where community members can record sightings of species. **Resources needed**: Smartphones, access to apps like iNaturalist or eBird.
Habitat quality	**Detailed vegetation and soil surveys** Monitor changes in plant cover, composition, and health, and measure soil quality indicators like organic matter content and nutrient availability. **Resources needed**: Soil testing kits, plant identification guides, and expertise in ecological surveys/analysis.	**Visual habitat assessments** Conduct visual assessments of vegetation cover and habitat features like water sources and nesting sites. **Resources needed**: Volunteer training, standardised assessment forms.	**Simple observational logs** Encourage community members to keep logs of changes they observe in plant growth, habitat features, and the presence of invasive species. **Resources needed**: Notebooks or digital logs, basic identification guides.

Indicator	**Complex method**	**Medium complexity**	**Easy**
Wildlife activity and behaviour	**Automated monitoring systems** Use camera traps and acoustic monitors to document wildlife presence and behaviour over time. **Resources needed**: Camera traps, acoustic monitoring equipment, and data analysis tools.	**Scheduled wildlife surveys** Conduct scheduled surveys for birds and bats using visual and acoustic methods. **Resources needed**: Binoculars, bat detectors, volunteer training.	**Community observation and reporting** Involve community members in reporting wildlife sightings and behaviours through observation logs or apps. **Resources needed**: Smartphones, community training sessions.
Pollinator activity	**Detailed transect walks and timed observations** Perform transect walks to count pollinators and conduct timed observations of flower visits. **Resources needed**: Transect setup, stopwatches, identification guides, expertise.	**Pollinator gardens and regular counts** Establish pollinator gardens and have regular community-driven counts and observations. **Resources needed**: Garden space, planting materials, volunteer coordination.	**Snapshot surveys** Encourage residents to take snapshot surveys of pollinators visiting flowers in their gardens or local parks. **Resources needed**: Cameras or smartphones, online survey platform.

Annexe 7- Template for Action Plan

Project Title: **Project Duration:** **Project Objective(s):** **Project Location:** **Project Coordinator:**						
Actions	**Start**	**End**	**Involved stakeholders**	**Resources needed**	**Costs**	**Feedback and reflection on the**

						actions
Implementation						
Action 1						
Action 2						
Communication						
Maintenance						
Action 1						
Action 2						
Communication						
Monitoring						
Action 1						
Action 2						
Communication						
Evaluation						
Action 1						
Action 2						
Communication						

Annexe 8- Template for evaluation

Project Title: **Project Duration:** **Project Objective(s):** **Project Location:** **Project Coordinator:**					
Evaluating Biodiversity					
Applied methodologies:					
Indicators	**Baseline conditions**	**1st Monitoring**	**2nd Monitoring**	**3rd Monitoring**	**One year reflection**
Indicator 1					

Indicator 2					
Indicator 3					
Overall impact on biodiversity					
Evaluating the social impacts of the project					
Stakeholder group 1					
Stakeholder group 2					
Stakeholder group 3					
Evaluating other impacts of the project					
Environmental impacts					
Economic impacts					
Other impacts					
Evaluating communication actions					
Number of involved people in the project					
Number of events					
Number of posts					
Number of people reached					

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