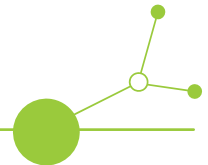


D1.3.1

Procedures for Creating Biodiversity Centered Urban Mindset



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FINAL VERSION





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List of Abbreviations and Acronyms

The following abbreviations are used throughout this deliverable. Full forms are repeated on first occurrence in each chapter to support readers who consult sections selectively.

Abbreviation	Full form
BIOCENTUM	Biodiversity-Centred Urban Mindset (URBIO BAUHAUS local node)
CE	Central Europe
CSR	Corporate Social Responsibility
EC	European Commission
EEA	European Environment Agency
EGD	European Green Deal
EU	European Union
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
ISD	Institute for Sustainable Development (Slovenia)
JRC	Joint Research Centre
KPI	Key Performance Indicator
NbS	Nature-based Solutions
NEB	New European Bauhaus
NEB+	New European Bauhaus extended assessment criteria, with explicit biodiversity and feasibility dimensions
NGO	Non-Governmental Organisation
PB	Participatory Budget / Participatory Budgeting
SECAP	Sustainable Energy and Climate Action Plan



Abbreviation	Full form
SDG	Sustainable Development Goal (United Nations 2030 Agenda)
UGP / UNP	Urban Greening Plan / Urban Nature Plan (EU Biodiversity Strategy for 2030)
WHO	World Health Organization
WP	Work Package



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Executive Summary

URBIO BAUHAUS addresses the rapid loss of biodiversity in urban and peri-urban areas of Central Europe by connecting urban biodiversity solutions with the values of the New European Bauhaus (NEB) initiative - sustainability, inclusion and aesthetics. The project explicitly adds biodiversity as a fourth, equally weighted dimension and tests this extended NEB+ framework through local platforms called BIOCENTUM nodes (Biodiversity-Centred Urban Mindset). Each BIOCENTUM node is a place-based co-creation arrangement that brings together municipal authorities, scientific experts, environmental and cultural NGOs, businesses, designers and citizens to identify, design, deliver and steward biodiversity-positive interventions in the public realm.

This deliverable, translates the URBIO BAUHAUS approach into a transferable handbook of procedures, as well as operating an AI-based tool / digital coach named “The Path” which will automate the process of creating Biodiversity centred Urban mindset. It is intended for municipalities that recognise the urgency of nature-based and bio-based investments - in line with the EU Biodiversity Strategy for 2030 and the requirement for cities of at least 20 000 inhabitants to develop ambitious Urban Greening Plans - but that need a clear, tested pathway for combining ecological ambition with citizen engagement, aesthetic quality and participatory finance. The Path online tool is available at: <https://urbiobauhaus.vercel.app/>.

The revised document follows the five questions: how to embed NEB criteria in municipal decision-making; how to set up and run participative processes; how to motivate citizens to become active partners; how to combine aesthetics with biodiversity goals; and how to align participatory municipal budgets with NEB principles. Each of the five resulting procedures is grounded in a theoretical introduction, supported by step-by-step guidance, accompanied by minimum outputs and key performance indicators (KPIs), and validated against partner-workshop inputs.

This deliverable explains how to set up a BIOCENTUM node and operate it through the Living Lab cycle, distils what was learned during that operation into transferable procedures and reuses the seven working templates as the operational backbone of those procedures. The five questions answered here are the same five questions the four pilot cities discussed at their City-Level Peer-Review Workshops, so the document is anchored in evidence rather than in general principles.

The procedures are built on three intersecting theoretical traditions. First, urban ecological theory and recent meta-analyses on the people-biodiversity interface (notably Hoyle et al., 2017; Liang et al., 2023; Aronson et al., 2014) demonstrate that biodiversity-positive design must reconcile ecological function with public perception, often resolving an aesthetic-biodiversity paradox in which the most species-rich plantings are perceived as least cared-for. Joan Iverson Nassauer’s seminal concept of ‘cues to care’ (Nassauer, 1995) and her argument that messy ecosystems require orderly frames are integrated into Procedure 4. Second, participatory governance theory - from Arnstein’s ladder (1969) to contemporary work on quintuple-helix innovation (Carayannis & Campbell, 2010; Suvinen et al., 2010) and Living Labs in nature-based solutions (UNaLab, 2020; Mahmoud et al., 2025) - underpins Procedures 1, 2 and 5. Third, ecological aesthetics and biophilic urbanism (Beatley, 2011; Kowarik, 2018) provide design principles that link landscape language with biodiversity outcomes.

The latest partner-workshop inputs confirm that the procedures must be operationally embedded in real municipal practice: spatial plans, Sustainable Energy and Climate Action Plans (SECAPs), environmental and climate strategies, public procurement, local committees, municipal assemblies, communication channels,



participatory budgeting and partnerships with schools, businesses and creative actors. Without this embedding, NEB risks remaining a slogan; with it, NEB becomes the language through which municipalities normalise wilder, more biodiverse and more equitable cities.

Core message: A biodiversity-centred urban mindset emerges when biodiversity is no longer treated as a technical add-on but is recognised as a shared municipal value - visible in decisions, budgets, public spaces, citizen roles and everyday aesthetics. The shift is cultural and institutional, not only ecological.

The five procedures and their headline outputs are summarised below:

Procedure	Main municipal question	Expected practical result
1	How can NEB criteria be used in municipal decisions on biodiversity-based investments?	A municipal NEB+ decision workflow and screening checklist for investments, strategies and procurement.
2	How can a participative process be set up and run?	A stakeholder-based participation process with clear recruitment, facilitation, follow-up and feedback loops.
3	How can citizens become active partners?	A motivation package combining schools, local competitions, adoption schemes, incentives and visible recognition.
4	How can aesthetics support biodiversity goals?	A design approach where biodiverse spaces are beautiful, functional, culturally meaningful and accepted by residents.
5	How can participatory budgeting support NEB principles?	A participatory budget model with NEB criteria, public calls, technical support, voting and complementary funding.

Read together, the procedures form a sequence: NEB+ criteria reshape what counts as a good municipal investment (Procedure 1); participative processes ensure that those investments emerge from collective intelligence and accountability (Procedure 2); citizen motivation transforms passive acceptance into active stewardship (Procedure 3); aesthetic design ensures that biodiversity is legible and loved by residents (Procedure 4); and participatory budgeting institutionalises the financial flows that make all of this durable (Procedure 5). The four pilot cities apply this sequence to different ecological and governance contexts, and Chapter 5 provides detailed transferability guidance for cities of varying capacity, awareness and conflict-intensity.



1. Background and Rationale

This chapter establishes the empirical, conceptual and policy rationale for the URBIO BAUHAUS approach. It first presents the evidence on biodiversity loss in urban and peri-urban Europe, before situating the approach within the New European Bauhaus initiative, the European Green Deal and the EU Biodiversity Strategy for 2030. It introduces the BIOCENTUM concept as a place-based mechanism for converting policy ambition into local mindset change, and closes with a precise statement of the deliverable's purpose.

1.1 Urban biodiversity as a defining municipal challenge

Europe's urbanisation rate exceeds 75 %, and projections from the European Environment Agency indicate that more than 80 % of Europeans will live in cities by 2050. This concentration of population, infrastructure and economic activity has accelerated three interlinked pressures on local biodiversity: habitat loss and fragmentation through soil sealing and built expansion; homogenisation of green space through species-poor lawns, ornamental beds and intensive maintenance; and the proliferation of stressors such as artificial light at night, traffic noise, chemical inputs and the urban heat-island effect.

The IPBES Global Assessment (IPBES, 2019) identified urbanisation among the principal drivers of global biodiversity loss, while the European Environment Agency's State of Nature in the EU report (EEA, 2020) documents that fewer than 30 % of habitats and species of Community interest are in favourable conservation status. Within Central European cities, urban grasslands, hedgerow networks, open soils, mature trees, and freshwater corridors carry disproportionate ecological value, yet they are also the most exposed to densification, redevelopment and a maintenance regime calibrated to a mid-twentieth-century aesthetic of 'tidiness'.

A meta-analysis of 133 studies on urbanisation and pollinators (Liang et al., 2023) confirms that pollinator richness and abundance decline systematically along urbanisation gradients, with Lepidoptera and ground-nesting bees most affected; crucially, however, the negative impact is significantly mitigated where local floral richness is high. This finding underpins one of the core URBIO BAUHAUS hypotheses: targeted, well-designed and well-communicated interventions - even at small spatial scales - can re-open ecological functions in dense urban fabric, particularly when they form connected networks rather than isolated pockets.

Beyond ecology, urban biodiversity loss has measurable consequences for human well-being. The WHO Europe review of urban green-space interventions (WHO, 2017) documents reductions in cardiovascular and mental health risks, improved cognitive functioning in children, and significant heat-mitigation benefits where green space is well distributed. These benefits are unequally enjoyed: socio-economic and demographic inequalities in access to green space remain pronounced across Central European cities, making biodiversity policy simultaneously an environmental, public-health and social-justice agenda.

URBIO BAUHAUS therefore frames urban biodiversity loss not only as an environmental topic but as a multi-dimensional governance, design and participation challenge. Cities are not passive recipients of biodiversity decline; they can become active spaces for biodiversity recovery. Small-scale interventions - biodiverse islands, insect habitats, flower strips, bird-friendly built infrastructure, edible-plant areas, biodiversity-tolerant lighting and species-rich biodiversity lawns - are visible entry points for wider urban transformation,



provided that they are embedded in formal planning instruments, supported by adequate maintenance, and explained to the public.

1.2 The biodiversity-aesthetics paradox

A persistent obstacle to biodiversity-positive design in cities is what scholars have termed the ‘people-biodiversity paradox’. Empirical work shows that, although citizens generally express positive attitudes towards ‘nature’ in the abstract, they often direct negative reactions towards real-world high-biodiversity plantings, and positive reactions towards low-biodiversity ornamental landscapes. In a study of 31 sites and 1 411 site users in England, Hoyle et al. (2017) found that perceived biodiversity, restorative effect and aesthetic preference correlated strongly with each other, but that none of these reliably tracked actual species richness. Tidy lawns and clipped shrubs were systematically rated as more attractive than species-rich woodland edges, even though the latter delivered substantially greater ecosystem services.

Joan Iversen Nassauer’s seminal essay *Messy Ecosystems, Orderly Frames* (Nassauer, 1995) anticipated this dynamic. Nassauer argued that ecological function is not readily legible to non-specialists; it must be ‘placed inside familiar, attractive frames’ - such as mown edges, clear paths, low fences, signage and other ‘cues to care’ - if it is to be perceived as deliberate rather than neglected. The cues-to-care concept is a foundation of contemporary ecological aesthetics and informs Procedure 4 of this deliverable.

This paradox carries direct implications for municipal practice. Designers and planners cannot assume that ecological quality will be self-evident; communicating biodiversity is itself a planning task. Conversely, public perception is not fixed: longitudinal studies show that, with explanation, signage and time, residents progressively re-evaluate ‘wilder’ spaces as both beautiful and meaningful (Hoyle, 2019; Kowarik, 2018). URBIO BAUHAUS treats this re-evaluation as a central pedagogical and design challenge.

1.3 The New European Bauhaus and its policy ecosystem

The New European Bauhaus is a creative and trans-disciplinary initiative launched by the European Commission in January 2021, formalised in the September 2021 Communication and consolidated in the New European Bauhaus Concept Paper. NEB connects the European Green Deal with the lived quality of places by asking: how can we make the green transition beautiful, sustainable and inclusive at the same time? Its three core values - sustainability, aesthetics and inclusion - are framed as inseparable and mutually reinforcing.

Since 2021, the NEB has built up a wide policy ecosystem. The European Urban Initiative, the New European Bauhaus Lab, dedicated calls under Horizon Europe, LIFE, Creative Europe and Cohesion Policy funds, and a growing network of NEB partners and prizes have created a structured space in which sustainable, inclusive and aesthetic transformation can be experimented with at scale. The 2024-2027 NEB Facility under Horizon Europe expands this further by funding place-based demonstration projects.

URBIO BAUHAUS contributes to this ecosystem in two distinctive ways. First, it explicitly adds biodiversity as a fourth, equally weighted dimension, on the grounds that biodiversity is a precondition rather than a consequence of long-term sustainability and that current NEB practice has been more strongly anchored in built environment retrofitting than in living systems. Second, it operates in a Central European context where municipal capacity, budgetary instruments and civic traditions vary substantially, demonstrating how NEB can be adapted across governance contexts rather than being confined to flagship cities.



1.4 EU Biodiversity Strategy 2030 and Urban Greening Plans

The EU Biodiversity Strategy for 2030 (European Commission, 2020), embedded in the European Green Deal, sets out an ambitious framework for halting and reversing biodiversity loss by 2030. Among its operational targets, the Strategy calls on European cities of at least 20 000 inhabitants to develop ambitious Urban Greening Plans (now also referred to as Urban Nature Plans), comprising biodiverse and accessible urban forests, parks and gardens; urban farms; green roofs and walls; tree-lined streets; urban meadows; and urban hedges. These plans are expected to improve ecological connectivity between green spaces, eliminate or strongly reduce the use of pesticides, and limit excessive mowing of urban green spaces.

The EU Forest Strategy for 2030 sets a complementary target of three billion additional trees planted in the EU by 2030, with cities identified as priority planting sites. The Nature Restoration Law (European Union, 2024) introduces, for the first time, binding restoration obligations including a no-net-loss target for urban green space and tree canopy cover from 2030 onwards. Together these instruments create a converging legal and political case for cities to invest in measurable biodiversity outcomes.

Recent benchmarking of urban nature plans across ten European cities (Pineda-Pinto et al., 2024) found that, where plans succeed, three governance ingredients are usually present: (i) cross-departmental coordination linking environment, planning, health and finance; (ii) structured citizen participation rather than one-off consultation; and (iii) explicit targets and indicators rather than purely narrative goals. The procedures in this deliverable address all three.

1.5 The URBIO BAUHAUS contribution and the BIOCENTUM concept

URBIO BAUHAUS responds to the EU framework with a distinctively place-based, governance-oriented approach. Its central operational mechanism is the BIOCENTUM - the Biodiversity Centred Urban Mindset local node - a Living Lab arrangement that connects municipal governance with citizens, scientific expertise, business, environmental NGOs and the creative sector. Unlike one-off workshops or campaigns, a BIOCENTUM is a durable platform that supports decision-making and mindset change over time, and that is replicable across cities.

BIOCENTUM function	Operational role
Advisory body	Supports municipal decision-makers in selecting, designing, implementing and monitoring urban biodiversity investments.
Challenge selector	Identifies and prioritises local biodiversity challenges through participative methods such as World Café, design-thinking and co-design formats.



BIOCENTUM function	Operational role
Co-design platform	Brings together local government, business, academia, citizens, environmental NGOs and aesthetic / creative stakeholders within a structured Living Lab cycle.
Mindset changer	Supports citizens in moving from passive acceptance or ambivalence to active ownership and stewardship of urban biodiversity solutions.
Learning structure	Documents lessons, tests transferability and connects local actions to transnational peer-learning across the four URBIO BAUHAUS pilot cities and beyond.
Aesthetic translator	Mediates between ecological function and public perception by mobilising designers, artists, schools and signage to make biodiversity legible and attractive.
Financial enabler	Connects municipal budgets, participatory budget calls, sponsorship, CSR, crowdfunding and EU funds to selected NEB+ interventions.

The BIOCENTUM concept is informed by Living Lab theory (Leminen et al., 2012; UNaLab, 2020) and by the quintuple-helix innovation framework (Carayannis & Campbell, 2010), which extends earlier triple-helix models of university-industry-government interaction to include civil society and the natural environment. Section 2.1 explains how these traditions are integrated into the URBIO BAUHAUS methodology.

1.6 Purpose and scope of this deliverable

This revised deliverable has six explicit purposes:

1. Convert the original draft into a cleaner, more actionable municipal procedure with stronger theoretical and policy grounding.
2. Align the content with the approved URBIO BAUHAUS project description, the requirements of Activity 1.3 and the conditions of the Subsidy Contract.
3. Integrate the latest partner-workshop answers from the D3.1.1 meeting note into each of the five procedures.
4. Replace generic statements with operational steps, decision rubrics, KPIs, common pitfalls and templates, so that the document can be used as a hands-on handbook.
5. Ground every procedure in peer-reviewed and EU-policy evidence, with full references and a usable index.
6. Create a document that is immediately usable in the four URBIO BAUHAUS pilot cities and that can be transferred to replication cities of varying size and capacity.



The scope is deliberately operational: the deliverable is not a research monograph or a comprehensive review, but a procedure handbook supported by enough theory to enable adaptation. Where deeper exploration is warranted - for example, on ecological aesthetics, deliberative democracy or biodiversity monitoring - references are provided in Chapter 6.



2. Framework and Methodology

This chapter sets out the theoretical and methodological foundations that hold the five procedures together. It introduces three intersecting traditions - Living Labs, multiple- and quintuple-helix governance, and ecological aesthetics - and shows how they are operationalised through the NEB+ assessment framework.

2.1 Theoretical foundations

The methodology of this deliverable rests on four complementary theoretical strands. They are presented separately for clarity, but in practice they are mutually reinforcing: every step in the procedures activates more than one strand.

2.1.1 Living Labs as user-centred co-creation infrastructures

Living Labs (LLs) are user-centred, place-based research and innovation arrangements in which real users, public-sector actors, businesses and researchers co-create solutions in real-world contexts. The European Network of Living Labs (ENoLL) defines them by four constitutive elements: real-life setting, multi-stakeholder participation, active user engagement and a structured methodology of iterative co-creation, exploration, experimentation and evaluation.

The UNaLab Living Lab Handbook for Urban Nature-Based Solutions (UNaLab, 2020) demonstrates that LLs can be effective in delivering biodiversity-positive urban interventions when they combine four phases: co-creation planning, co-design with stakeholders, co-implementation and co-evaluation. Recent empirical research (Mahmoud et al., 2025; Falanga et al., 2025) confirms that NbS Living Labs in Europe and Latin America generate transformative learning when they explicitly include citizens beyond meetings (in monitoring, maintenance and storytelling roles), and when their outputs feed back into formal planning instruments. The BIOCENTUM nodes of URBIO BAUHAUS are designed as Living Labs of this kind.

2.1.2 Multiple- and quintuple-helix governance

The triple-helix model (Etzkowitz & Leydesdorff, 2000) describes innovation as a dynamic interaction among universities, industry and government. The quadruple helix adds civil society as an essential fourth actor; the quintuple helix (Carayannis & Campbell, 2010) further introduces the natural environment as a knowledge actor in its own right. In urban biodiversity contexts, the quintuple helix is particularly apt: ecological systems set boundary conditions that no negotiation among the other helices can override.

Recent applications of the quintuple-helix model to climate adaptation (Suvinen et al., 2010) and to NEB-aligned urban innovation (Bökel et al., 2024) show that successful biodiversity-positive transitions involve all five helices working in deliberate alignment. URBIO BAUHAUS BIOCENTUM nodes are constructed to instantiate this quintuple-helix logic by combining municipal authorities (state), academic experts (education), local businesses (economy), citizens and NGOs (civil society) and explicit ecological representation (the environment), with creative actors integrated as the aesthetic-cultural sub-helix.

2.1.3 Ecological aesthetics and biophilic urbanism

Ecological aesthetics is a body of theory at the interface of landscape architecture, environmental psychology and urban ecology. It argues that the visual and experiential qualities of landscapes are not



separable from their ecological function, and that aesthetic preferences can be re-shaped through design, communication and time. Foundational contributions include Nassauer (1995) on cues to care, Ingold (2000) on landscape as embodied process, and more recently Hoyle et al. (2017) on the empirical relationship between aesthetic preference, perceived biodiversity and restorative effect.

Biophilic urbanism (Beatley, 2011; Kowarik, 2018) extends this tradition by arguing that cities should be designed as fully integrated habitats for human and non-human life. It emphasises multi-sensory engagement (sight, sound, smell, touch), seasonality, ecological succession and species-richness as design qualities. Procedure 4 translates these principles into operational design steps and procurement criteria.

2.1.4 Deliberative democracy and the ladder of citizen participation

Sherry Arnstein's Ladder of Citizen Participation (Arnstein, 1969) remains a touchstone for distinguishing genuine citizen power from tokenism and manipulation. Subsequent work (Lauria & Schively Slotterback, 2020; Fung, 2006) has refined Arnstein's typology, showing that effective participation is multi-dimensional: it depends on selection of participants, mode of communication, authority of decisions and follow-up commitments.

URBIO BAUHAUS adopts a partnership-and-delegation orientation: participants must have substantive influence over the selection and design of biodiversity interventions and over the allocation of participatory-budget resources. Procedures 2 and 5 are structured to operate at the upper rungs of the ladder rather than at the consultation rung. Where full delegation is not yet possible, the procedures require the municipality to be transparent about which decisions are open and which are not, so that participants can calibrate their expectations.

2.2 The NEB+ assessment framework

The NEB+ framework is the URBIO BAUHAUS extension of the official NEB Compass to integrate biodiversity as an equally weighted dimension and feasibility / maintenance as a fifth municipal safeguard. It is used in three places: as a screening tool for proposals (Procedure 1, Annex 2); as a qualitative reflection device in workshops (Procedure 2, Procedure 4); and as an evaluation grid for participatory-budget proposals (Procedure 5).

The five NEB+ criteria, with their guiding questions and minimum evidence requirements, are summarised below. Section 2.4 of this chapter and Annex 2 of this deliverable provide the corresponding rubric.

Criterion	Guiding question	Minimum evidence
Biodiversity	Does the action protect, restore or create conditions for species, habitats or ecological processes?	Target species / habitat logic, location map, maintenance regime, ecological monitoring indicator.
Sustainability	Does the action contribute to climate adaptation, low-impact materials and long-term resource efficiency?	Materials, water / soil / energy impacts, life-cycle or maintenance approach, alignment with SECAP / climate strategy.



Criterion	Guiding question	Minimum evidence
Inclusion	Who participates, who benefits and who may be excluded?	Stakeholder map, accessibility measures, outreach plan, record of inputs received and responses given.
Aesthetics	Does the action create a positive sensory, cultural and spatial experience?	Design concept, seasonal appearance, interpretation plan, stakeholder feedback on visual acceptance.
Feasibility & maintenance	Can the municipality implement and maintain it under existing rules and budgets?	Budget, responsible unit, permits, maintenance plan, procurement route, indicative timeline.

Important safeguard. The NEB+ scoring is intended to support better decisions, not to replace professional judgement. Scores must be accompanied by a short written justification and, where the proposal carries irreversible ecological or social effects, by independent expert review. Aggregating scores into a single number can hide trade-offs that need to be debated openly.

2.3 From participation to municipal action

Participation only generates impact when it is connected to decisions, resources and visible implementation. The recurring failure mode in EU-funded participation processes is that workshops generate ideas that do not reach the budget cycle. To prevent this, every procedure in this document follows the same six-step logic, summarised in the figure below as a circular pathway:

- Prepare the municipal and stakeholder basis (mandate, coordinator, stakeholder map).
- Open the process to relevant participants, including critical voices and under-represented groups.
- Co-define the biodiversity challenge and possible solutions through structured deliberation.
- Assess ideas through NEB+ criteria, ecological feasibility checks and maintenance reality.
- Secure budget, ownership and clear implementation responsibilities, with a named accountable unit.
- Report back to participants, document outcomes and keep the engagement cycle alive over time.

Each of the five procedures specialises this generic logic for a different municipal lever (decision-making; participation; citizen motivation; aesthetics; budget).



2.4 Integration of partner-workshop inputs

The partner-workshop organized during the PGM in Erd (11-12.11.2025) responded to the same five questions that structure this deliverable. Each input was assessed against three filters - alignment with the approved project description, evidence of replicability across pilot cities, and operational feasibility - before being integrated into the relevant procedure. The matrix below summarises the integration; the full mapping is provided in Annex 9.

Workshop input area	Integrated into the revised D1.3.1
Municipal decision-making	AI-supported screening, good-practice examples, decision-maker education, NEB criteria in spatial plans, SECAPs, environmental and climate strategies, public procurement and socio-economic benefit arguments.
Participative process	Stakeholder mapping, municipal-assembly involvement, personal outreach, inclusion of supportive and critical target groups, follow-up minutes, articles and momentum-building communication.
Citizen motivation	Local competitions, small gifts, school involvement, adoption of nature-based solutions, social-media feedback, food and beverages, appreciation, health / economic / inter-generational messaging and citizen roles beyond meetings.
Aesthetic component	Dialogue between conservation experts and architects / designers, aesthetic criteria in procurement and building rules, interpretation signs, planet-centric thinking, art schools, and the idea of normalising imperfect nature as beautiful.
Participatory budget	NEB criteria in budget proposals and public calls, involvement of local committees, sponsorships, public-private cooperation, corporate social responsibility, crowdfunding, citizen science and volunteer work.

2.5 Limitations and conditions of validity

Three limitations should be stated openly. First, the procedures assume a minimum level of municipal capacity (a coordinator, a budget line and a willingness to engage with civil society). Cities below this threshold should begin with a single neighbourhood and a small advisory group before formalising a BIOCENTUM. Second, the NEB+ assessment is qualitative; it is designed to make trade-offs visible, not to deliver a single optimum. Where high-stakes ecological decisions are involved, additional ecological assessments under national legislation (e.g. Natura 2000 appropriate assessment) remain mandatory. Third, the deliverable is calibrated to a Central European urban context; its transferability to peripheral, rural or non-EU contexts requires adaptation, particularly in relation to legal instruments (Procedure 1) and participatory-budget institutions (Procedure 5).



3. The Five Procedures for Creating a Biodiversity-Centred Urban Mindset

Each procedure can be applied independently, but they work best as a sequence. Together they form a municipal pathway from decision criteria to participation, from citizen motivation to aesthetics, and from aesthetics to budgetary anchoring. For each procedure this chapter follows a consistent structure: theoretical introduction; objective and use-cases; operational step-by-step guide; integration of partner-workshop inputs; common pitfalls; minimum outputs; and a concise set of key performance indicators.

Procedure 1 - Embedding NEB criteria in municipal decision-making

3.1.1 Theoretical introduction

Municipal decisions on biodiversity-related investments are typically distributed across several procedural points: spatial-plan adoption, sectoral strategies (SECAP, environmental, climate, mobility), capital-investment programmes, public-procurement specifications, and ad-hoc council resolutions. Embedding NEB criteria in each of these points is a classic problem of policy mainstreaming (Lafferty & Hovden, 2003): without explicit institutional anchoring, environmental considerations are systematically displaced by short-term economic and operational pressures.

The literature on environmental policy integration identifies three preconditions for successful mainstreaming: (i) high-level political commitment; (ii) procedural anchoring in formal decision tools; and (iii) capacity-building for the staff who actually use those tools (Jordan & Lenschow, 2010). Procedure 1 addresses all three. It also draws on the recent benchmarking of urban nature plans across European cities (Pineda-Pinto et al., 2024), which identifies cross-departmental coordination as the single strongest predictor of successful biodiversity policy uptake.

3.1.2 Objective and when to use

Objective: Ensure that municipal investments, strategies and procurement decisions consider biodiversity, sustainability, inclusion and aesthetics from the very beginning of decision-making, rather than retrofitting them as cosmetic additions.

When to use: This procedure should be applied whenever a city is preparing a biodiversity-related investment, a green-infrastructure project, a public-space redesign, a sectoral strategy, a local plan, a SECAP update, an investment fiche or a public-procurement specification likely to affect green or open space.



3.1.3 Step-by-step procedure

Step	Action
1	Secure a municipal NEB+ decision mandate. The mayor, relevant department head or municipal assembly should formally confirm that NEB+ criteria will be applied to biodiversity-related decisions, ideally in a council resolution that names the responsible department and sets an annual reporting requirement.
2	Activate the BIOCENTUM advisory group. Include planning, environment, finance, procurement and communication departments; local NGOs; biodiversity and design experts; the local committee for the affected area; and aesthetic / creative stakeholders. Agree terms of reference (purpose, frequency, decision-influence).
3	Build shared capacity on NEB+. Run a short briefing for elected officials, senior staff and advisory-group members covering NEB principles, the biodiversity-aesthetics paradox, ecosystem services, socio-economic benefits and EU Biodiversity Strategy 2030 obligations – the aim is shared vocabulary, not technical mastery. Maintain a local good-practice library as the shared evidence base: structured case studies of biodiverse public spaces, flower strips, insect hotels, smart lighting, edible-plant areas and citizen-led maintenance models, with photographs, costs and lessons, updated annually.
4	Embed NEB+ criteria in formal municipal instruments. Update spatial-plan templates, SECAPs, local environmental plans, climate strategies, urban-development strategies and investment fiches to require an explicit NEB+ section.
5	Embed NEB+ criteria in public procurement. Require design teams, contractors and concessionaires to demonstrate how biodiversity, inclusion, aesthetics and sustainability are addressed in their offers. Use weighted award criteria, not pass / fail, and include a maintenance-quality clause.
6	Assess proposals with the NEB+ rubric. Score each criterion 0-3, add a narrative justification, identify missing information and request improvements before approval. Where useful, use AI-assisted screening (Annex 8 contains a default prompt) to summarise good practices, check whether proposals address all NEB+ dimensions and flag inconsistencies; the final decision must remain human, transparent and accountable.
7	Communicate decisions publicly. Explain why a project was selected, how citizen input was used, what biodiversity outcomes are expected and how progress will be reported. Use plain language alongside technical documents.
8	Monitor outcomes and feed lessons forward. After implementation, review ecological, social and aesthetic outcomes against the indicators agreed during assessment, and feed lessons into the next investment cycle. Schedule a public review at 12 and 24 months.



Procedure 2 - Setting up and running a participative process

3.2.1 Theoretical introduction

Participation is not an end in itself: it is a means to better decisions, stronger legitimacy and more durable implementation (Fung, 2006; Innes & Booher, 2010). Empirical reviews of participatory urban planning identify three failure modes that this procedure is designed to prevent: tokenistic engagement (Arnstein, 1969), self-selection bias (where only the already-engaged participate) and follow-up failure (where workshops generate ideas that never re-enter the formal decision cycle).

Recent work on biodiversity-inclusive urban planning (Pineda-Pinto et al., 2024) and on participation in NbS Living Labs (Mahmoud et al., 2025) shows that effective participation has four operational signatures: (i) careful stakeholder mapping that includes critical and vulnerable voices; (ii) personal outreach that complements broadcast invitations; (iii) explicit decision rules that clarify what is and is not open for influence; and (iv) tangible feedback loops that demonstrate consequences. Procedure 2 builds these signatures into the steps below.

3.2.2 Objective and when to use

Objective: Create a structured, inclusive and credible process in which stakeholders and citizens can influence the definition of biodiversity challenges, the generation of ideas, and the implementation of solutions.

When to use: Apply this procedure before selecting interventions, opening calls for ideas, preparing design plans or deciding on participatory-budget priorities. It is also appropriate when an existing project encounters resistance and needs a structured re-opening of the conversation.

3.2.3 Step-by-step procedure

Step	Action
1	Define the participation purpose and the decision link. Be explicit about whether participants are mapping problems, proposing ideas, co-designing solutions, voting or supporting implementation; about which decisions are open for influence and which are not; and about how inputs will reach the municipal assembly or relevant committee at a named decision moment in the political calendar.
2	Map stakeholders inclusively. Identify municipal departments, local committees, residents, schools, NGOs, businesses, experts, vulnerable groups, landowners and potential opponents using the template in Annex 3. Deliberately include supportive and critical voices, and use targeted outreach for groups that are typically under-represented - not only the already-engaged environmental actors.



Step	Action
3	Use personal outreach. Combine invitation emails with phone calls, targeted meetings and local networks. The empirical signal is unambiguous: personal calls increase attendance among under-represented groups by a factor of three to five (Innes & Booher, 2010).
4	Run safe and active workshop formats. Use World Café, small-group mapping, design-thinking exercises and visual materials so that every participant can speak. Provide refreshments, accessible venues and child-care where possible.
5	Document inputs promptly. Prepare minutes, photos of outputs, key conclusions and a list of open issues within seven working days of the workshop.
6	Report back and show how voices are heard. Within two weeks – the practical threshold for sustaining momentum – send minutes, publish an article or web update, and publicly state which suggestions were accepted, adapted or not possible, and why. This input-response transparency is the single most important trust-building act.
7	Move from discussion to roles. Invite participants to join working groups, citizen-science monitoring, maintenance, school actions or communication activities, so that participation continues beyond the workshop.

Procedure 3 - Motivating citizens to become active partners

-3.3.1 Theoretical introduction

Citizen motivation in the context of urban biodiversity has been studied through three converging literatures: pro-environmental behaviour (Steg & Vlek, 2009), place attachment (Scannell & Gifford, 2010) and stewardship theory (Bennett et al., 2018). The central finding is that citizens move from awareness to action when three conditions are simultaneously met: a sense of ownership of the place; a perceived match between their values and the proposed action; and a low-threshold pathway through which their involvement is visible and consequential.

Recent empirical work on urban biodiversity engagement (Aronson et al., 2017; Goddard et al., 2010) confirms that small, localised, visible actions - a flower strip on a street corner, a school adoption of an insect hotel, a neighbourhood seed exchange - are disproportionately effective in shifting mindset, because they collapse the abstract concept of 'biodiversity' into a specific place that residents can see, touch and be proud of. Procedure 3 builds these insights into operational steps, with strong emphasis on schools, adoption schemes and visible recognition.



3.3.2 Objective and when to use

Objective: Move citizens from awareness to active ownership, stewardship and long-term participation in biodiversity solutions, generating durable cultural change in how residents relate to urban nature.

When to use: Apply this procedure during and after participation, especially when a project depends on citizen acceptance, volunteer work, school engagement or maintenance - in other words, in nearly every biodiversity-positive intervention.

3.3.3 Step-by-step procedure

Step	Action
1	Start from citizens' real concerns. Ask what residents value, fear or need in the specific place before presenting a ready-made ecological solution. Use short street-level conversations and online surveys complementarily.
2	Frame biodiversity through positive, concrete messages. Connect biodiversity to health, shade, beauty, cooling, children, local pride, costs, food, well-being and inter-generational responsibility – not only to species lists. Use simple scenarios that contrast a future without urban nature with a biodiverse, climate-resilient one, so residents can see what is at stake.
3	Create low-threshold entry points. Offer short events, local walks, planting days, social-media feedback, school actions and small competitions. Aim for 'nobody is excluded by the first step'.
4	Give visible appreciation. Provide certificates, public thanks, small gifts, refreshments, social-media visibility and recognition by municipal representatives. Recognition is not optional – it is a structural feature.
5	Offer adoption models with light agreements. Let residents, schools, associations or businesses adopt a part of a park, flower strip, insect hotel, tree group, edible bed or biodiversity lawn. Codify the adoption in a short, friendly agreement.
6	Give participants real roles, with the means to act. Invite citizens to monitor species, host events, water plants, report problems, act as ambassadors or mentor others. Back this up with simple guidance for biodiverse gardens, balconies and courtyards – native-plant lists, maintenance advice – and small materials grants where budget permits. People want to do, not only to talk.
7	Build supporting networks and win-win cooperation. Connect schools, local producers, NGOs, companies and municipal services around shared benefits, so that motivation is held up by a web of relationships rather than a single coordinator.
8	Maintain visible feedback loops. Use photos, signs, newsletters and short reports to show that citizen action is changing the city. Make the change visible at least quarterly.



Procedure 4 - Combining aesthetics with biodiversity goals

3.4.1 Theoretical introduction

Procedure 4 directly addresses the biodiversity-aesthetics paradox introduced in Section 1.2. Drawing on the body of work that runs from Nassauer (1995) through Hoyle et al. (2017) to recent reviews of aesthetic perception of urban biodiversity (Brüggemann et al., 2025), the procedure assumes three working principles: ecological function is not legible without help; aesthetic preference is plastic and can be re-shaped; and design quality is a precondition rather than an afterthought of biodiversity-positive urbanism.

In operational terms, the procedure mobilises four design moves derived from ecological aesthetics: (i) cues to care - mown edges, low fences, signage, clear paths - that frame biodiverse interiors; (ii) seasonality and multi-sensory richness - flowering sequences, scent, structure, sound - that make biodiversity desirable; (iii) interpretation - signs, art, stories - that translate ecological function into cultural meaning; and (iv) safety and use - visibility, paths, seating - that ensure biodiverse spaces remain socially inhabited.

3.4.2 Objective and when to use

Objective: Make biodiversity visible, attractive and culturally meaningful while protecting ecological function, so that residents experience biodiverse spaces as beautiful, safe and cared-for rather than as neglected or alien.

When to use: Apply this procedure when designing or redesigning green spaces, small urban interventions, public calls, procurement specifications, interpretation signs, educational elements or maintenance regimes.

3.4.3 Step-by-step procedure

Step	Action
1	Start the design dialogue early – and bring creative actors in from the start. At the brief stage, before any concept is chosen, bring together biodiversity experts, municipal planners, architects, landscape architects, art schools, artists, designers, schools and residents. Creative actors are not decoration: they transform ecological infrastructure into cultural infrastructure through signs, insect hotels, seating, educational objects and storytelling.
2	Define what beauty means locally. Ask stakeholders what they find attractive, natural, safe, cared-for or meaningful in the specific urban context, using image-elicitation, photo-voice or guided walks.
3	Design for both humans and non-humans. Balance human preferences with habitat value, species needs, soil, water, light, seasonal cycles and maintenance – make non-human users explicit in the brief. Translate this into native flowering sequences, varied structure, texture, shade, sound, smell, edible plants and habitat features that make ecological function sensorial.



Step	Action
4	Design for safety and use alongside biodiversity. Combine biodiverse areas with paths, edges, seating, visibility and clear maintenance so residents feel invited rather than uneasy. Safety is a design quality, not an afterthought.
5	Make ecological function understandable on site. Add explanations at park entrances, crossings, forest tracks and other visible points so residents understand why spaces may look wilder. Use plain language and visual storytelling.
6	Embed aesthetic requirements in procurement and building rules. Ask designers and contractors to demonstrate how biodiversity and beauty are combined; use weighted criteria; include a maintenance-quality clause.
7	Normalise imperfect nature as beautiful. Communicate that seasonal change, dead wood, unmown areas and diverse vegetation can be intentional and valuable. Use seasonal storytelling rather than one-off statements.
8	Collect feedback after implementation. Ask residents whether the space is understood, used and perceived as beautiful, and adapt where needed; institutionalise this as a 6-month and 24-month review.

Procedure 5 - Aligning participatory budgets with NEB principles

3.5.1 Theoretical introduction

Participatory budgeting (PB), originating in Porto Alegre in 1989 and now practised in over 11 000 municipalities worldwide (Cabannes & Lipietz, 2018), is a democratic process in which residents directly decide how to allocate part of a public budget. PB has been shown to increase trust in local government, redistribute resources towards under-served areas and create demonstration sites for innovative practice (Sintomer et al., 2016).

Recent research on environmental applications of PB (Brzezińska-Rawa & Rawa, 2024; Allegretti & García-Leblán, 2024) shows that, when explicit environmental criteria are added to PB calls, the share of funded projects with measurable ecological outcomes rises from approximately 15 % to over 40 %. Polish, Spanish and Portuguese cities have demonstrated the feasibility of ‘green PB’ lines that combine citizen choice with technical feasibility checks. Procedure 5 codifies these lessons for biodiversity and NEB-aligned interventions.



3.5.2 Objective and when to use

Objective: Use participatory budgets and complementary funding mechanisms to support NEB-aligned urban biodiversity solutions, so that the financial flows of the city become a structural lever for biodiversity-centred mindset change.

When to use: Apply this procedure when a municipality has an existing participatory budget that can be steered towards biodiversity, or when it wants to create a focused biodiversity / NEB budget line. The procedure is also relevant for non-PB cities considering small public-grant calls or sponsorship-driven micro-grant schemes.

3.5.3 Step-by-step procedure

Step	Action
1	Define the budget scope. Decide whether the budget supports small works, micro-interventions, school projects, citizen initiatives, design ideas or maintenance actions; and whether the call is open or thematic.
2	Brief local committees on NEB principles. Local city committees should understand how minor utility works can become NEB-aligned biodiversity actions; provide a short briefing and a one-page guide.
3	Anchor NEB criteria in the proposal form. Ask applicants to explain biodiversity, inclusion, sustainability, aesthetics, feasibility and maintenance, using the form in Annex 7.
4	Offer idea-development support to applicants. Provide workshops, examples, expert consultations and simple templates so citizens can prepare feasible proposals; this step is the single most effective predictor of high-quality proposals.
5	Open the public call. Use accessible language and communicate through municipal media, schools, NGOs, local committees and social media; allow at least six weeks for proposal preparation.
6	Evaluate proposals transparently. Combine public voting with a technical and NEB+ feasibility check, and explain the balance between citizen preference and ecological quality. Publish criteria in advance.
7	Top up funding and support implementation. Invite sponsors, large investors, small local manufacturers, CSR programmes, public-private cooperation, crowdfunding, citizen science and volunteer work to top up successful proposals. Assign municipal staff or BIOCENTUM mentors to help selected citizen ideas move through permits, procurement and delivery – this is where most PB schemes fail without support.
8	Report back and renew the cycle. Publish a dedicated end-of-cycle report showing budget use, implementation photos, biodiversity outcomes and citizen contributions, and set explicit



Step	Action
	year-on-year improvement targets so participatory budgeting becomes a recurring entry point for biodiversity mindset change.

A.5. Transferability Recommendations

5.1 Which municipalities can use these procedures?

The procedures are suitable for European municipalities that wish to improve urban biodiversity and that need a practical pathway combining participation, aesthetic quality and decision-making. They can be applied by larger cities, smaller municipalities, peri-urban areas and neighbourhood-level initiatives. The scope should be calibrated to capacity rather than abandoned where capacity is limited.

Three context families have proved particularly suitable: cities with an existing participatory-budget tradition; cities preparing or revising an Urban Greening Plan in line with the EU Biodiversity Strategy 2030; and cities that face pressure to demonstrate concrete deliverables under SECAP, climate-adaptation or environmental strategies. In each of these families, URBIO BAUHAUS procedures provide a structured route from policy commitment to operational practice.

City condition	Recommended adaptation
Strong municipal capacity	Create a formal BIOCENTUM node with multiple working groups, integrate NEB+ criteria into all major strategies and procurement, and run a full participatory-budget cycle with thematic biodiversity track.
Limited staff capacity	Start with one neighbourhood, one biodiversity challenge and a small advisory group supported by NGOs or universities; defer formal BIOCENTUM until visible quick wins create political support.
Low public awareness	Begin with schools, walks, small competitions and visible demonstration sites before asking citizens to co-design complex investments; emphasise health, beauty and food messages.
Conflict over green-space use	Invest more time in stakeholder mapping, personal meetings, critical voices and compromise solutions that combine ecological and social use; document the input-response relationship transparently.
No participatory budget	Use a small public call, sponsorship, CSR, crowdfunding or volunteer-supported pilot as a first step; build legitimacy for a future thematic budget line.
Strong tourism economy	Tie biodiversity interpretation to heritage and identity narratives; involve tourism operators in CSR sponsorship and visible-recognition schemes.
Strong agricultural / gardening tradition	Mobilise existing civic networks (allotments, community gardens, agricultural extension); foreground edible-plant and food-system narratives.



5.2 Adaptation questions for replication

Before initiating a replication cycle, cities should answer the questions below. They are designed to surface the institutional, ecological, social and aesthetic specificities that determine which procedures need most adaptation.

Adaptation area	Questions to answer before replication
Ecology	Which species, habitats, ecological corridors or ecosystem services are most relevant? Are there existing plans, protected areas or Natura 2000 sites? What is the baseline of urban green-space connectivity?
Governance	Which municipal department owns the topic? Which strategies, plans, procurement rules or budgets can include NEB+ criteria? What is the political appetite, and what is the next decision moment?
Participation	Who is affected, who is missing, who may oppose the intervention and which groups need personal outreach? What are the existing civic networks?
Aesthetics	What does the community perceive as beautiful, safe and cared-for? Which natural features may need explanation? Are there local design traditions that can carry biodiversity narratives?
Resources	What can be funded by the municipality, participatory budget, sponsors, CSR, crowdfunding, citizen science or volunteer work? What is the realistic horizon for each source?
Capacity	Who will coordinate? Who will document? Who will maintain? Without honest answers to these three, the procedures will under-perform.

5.3 Recommended implementation timeline

The following timeline is indicative; actual durations depend on political cycles, procurement rules and local capacity. The phases overlap rather than sequencing strictly: by the time Implementation begins (Phase 5), Preparation activities for the next cycle have already started.



Phase	Indicative timing	Main actions
1. Preparation	Months 1-3	Political mandate; coordinator appointment; baseline mapping; stakeholder map; NEB+ briefing; first good-practice collection.
2. BIOCENTUM activation	Months 4-6	Node formation; first meetings; participation plan; communication launch; local-committee engagement; first input from creative partners.
3. Challenge definition	Months 7-9	World Café or similar workshop; site selection; problem mapping; citizen concerns and opportunities; first NEB+ screening of preliminary ideas.
4. Co-design and selection	Months 10-14	Idea call; design workshops; NEB+ assessment; public feedback; voting or municipal selection; full procurement preparation.
5. Implementation	Months 15-24	Procurement; permits; works; citizen adoption; signage; school and communication actions; mid-implementation review.
6. Monitoring and mainstreaming	Months 24+	Biodiversity and perception monitoring; public report-back; integration into next budget and strategy cycle; preparation of next BIOCENTUM cycle.

5.4 Key success factors

Across the literature reviewed and the partner-workshop inputs, eight conditions consistently distinguish successful biodiversity-centred mindset interventions from unsuccessful ones.

Visible political commitment and a clear mandate for municipal staff. Without it, the procedures will be silently downgraded.

A coordinator who keeps the process moving between meetings. Even one part-time coordinator outperforms a pure committee structure.

Stakeholder mapping completed before public events, not after. Mapping after the event signals improvisation and erodes trust.

A combination of expert knowledge and citizen experience, neither dominant; the BIOCENTUM is a meeting place, not a translation device.

Early attention to aesthetics and maintenance. These shape public acceptance more than ecological arguments alone.



Transparent criteria for ideas, budgets and procurement. The NEB+ rubric provides a defensible vocabulary.

Fast feedback after meetings and visible implementation of at least one quick win within 12 months.

Long-term stewardship through adoption schemes, schools, citizen science or community-garden networks.

5.5 Indicators for monitoring mindset change

Mindset change is harder to measure than tree counts, but it can be tracked through a set of complementary indicators that combine perception data, behavioural data, biodiversity data and policy-uptake data. The table below presents the recommended indicator family.

Indicator type	Examples
Participation	Number and diversity of participants; repeated participation; school involvement; volunteer hours; share of participants from under-represented groups.
Perception	Resident understanding of biodiverse maintenance; acceptance of wilder aesthetics; perceived safety, beauty and care; perceived legitimacy of the process.
Behaviour	Adoption of green elements at home; citizen reports of species or problems; participation in maintenance; biodiverse gardens or balconies; voluntary stewardship hours.
Municipal uptake	NEB+ criteria included in plans, procurement, budget calls or investment fiches; number of departments routinely applying NEB+; replication across districts.
Biodiversity	Target species / habitat indicators; flowering diversity; pollinator observations; reduced light disturbance; improved habitat connectivity; canopy cover.
Communication	Reach of communication channels; number of stories / articles; share of positive vs. negative coverage; feedback latency from event to public minutes.



5.6 Risks and mitigation

Five recurring risks deserve explicit mitigation planning.

Risk	Likelihood	Mitigation
Loss of political support after elections	Medium	Embed NEB+ in formal instruments (spatial plan, SECAP) so it survives political change; build a multi-partisan recognition narrative.
Citizen fatigue	Medium	Limit workshop frequency; rotate formats; visible quick wins; recognition events; ensure participation translates into observable change.
Maintenance failure	High	Plan maintenance at design stage; codify in procurement; use adoption schemes for low-intensity tasks; protect professional resources for high-intensity tasks.
Aesthetic backlash	High	Use cues to care; plan interpretation; explain seasonal change; involve creative actors; survey acceptance at 6 and 24 months.
Token participation	Medium	Define decision rules in advance; document input-response transparently; refuse to run workshops where decisions are already fixed.
Vandalism	Medium	Apply safety measures: cameras, safety lighting, sensor solutions, active safeguarding, vandal-resistant flora (dense, thorny vegetation).



6. Annexes - Templates and Tools

Section A – Operational templates carried forward from D1.1.1

Annex A.1 – Report on Establishment of BIOCENTUM Node

This template is filled in by the BIOCENTUM coordinator immediately after the kick-off workshop and updated at least annually. It is the principal source document for Procedures 1 and 2 of this deliverable.

1. Mission and key goals of the city node

Short overview description of the main mission and identified goals (up to 2,000 characters).

1.1 Mission:

[...]

1.2 Key goals:

[...]

2. Key stakeholders

Describe stakeholders and their roles in the city node. Add rows as needed.

Name of organisation	Stakeholder field	Potential role	Motivation / Benefits

3. Action plan

Identification of key activities that will contribute to the mission and goals.

Title & description of activity	Participating stakeholders	Next steps



Title & description of activity	Participating stakeholders	Next steps

4. Synergies with other local / regional / national / EU initiatives

Name of the initiative	Potential contribution (activities, events, capacity, network...)

5. Most relevant communication channels

Communication channel	Purpose

Annex A.2 – World Café Working Sheet (D1.1.1 Annex 2)

Main discussion question for work in groups: “What would it mean for our city to thrive in the field of biodiversity?”

Key challenge 1

Prompt	Description
City snapshot – current state of challenge	
How nature does it – which solutions in nature already exist?	



Prompt	Description
City target – what we would like to change in the long term	
To work like nature – can we apply biomimicry / nature-inspired innovation?	

Key challenge 2

Prompt	Description
City snapshot – current state of challenge	
How nature does it – which solutions in nature already exist?	
City target – what we would like to change in the long term	
To work like nature – can we apply biomimicry / nature-inspired innovation?	

Key challenge 3

Prompt	Description
City snapshot – current state of challenge	
How nature does it – which solutions in nature already exist?	
City target – what we would like to change in the long term	
To work like nature – can we apply biomimicry / nature-inspired innovation?	



Annex A.3 – Project in a Day Working Sheet (D1.1.1 Annex 3)

Method element	Content
Short description	Design Thinking centred on understanding people, building empathy and developing impactful, tangible solutions to complex challenges. Non-linear approach (jumping between stages is allowed and expected).
Five stages	1. Empathise – understand the problem from the user’s perspective. 2. Define – frame the problem clearly and identify the unmet need. 3. Ideate – generate as many solution options as possible. 4. Prototype – build a quick, low-cost representation of the most promising idea. 5. Test – gather feedback from real users and iterate.
Objective of the method	Stimulate forms of value not visible at first glance; combine creativity, real user needs and feasibility.
Benefits of the method	Highly suitable for participatory work because complexity is broken down into actionable elements; it gives non-experts a structured way to contribute.
Target stakeholders	Researchers, academia, industry, NGOs, citizens (quintuple helix).
Geographical scope	Local, national, European.
Online / offline	Offline (in-person workshop preferred).

Working sheet for the co-creation workshop

Stage	Question / Output	Notes
1. Empathise	Who is affected by the biodiversity challenge? What do they think, feel, see, do?	
2. Define	Frame the problem in one sentence: “[user] needs [need] because [insight].”	
3. Ideate	List at least ten possible solutions; cluster and prioritise.	
4. Prototype	Sketch / mock up the chosen solution (drawing, model, role-play).	



Stage	Question / Output	Notes
5. Test	Show prototype to citizens / experts; record reactions and improvements.	

Annex A.4 – Open Call for BAUHAUS Ideas + Pitch Event Report (D1.1.1 Annex 4)

Template used by the BIOCENTUM node and the municipality to publish the open call, document the pitch event and record the ranking and selection of project ideas. It is the operational instrument of Procedure 5 (participatory budgeting aligned with NEB).

1. Open call text

Insert the text of the city Open Call for BAUHAUS Ideas (English version). Include scope, eligibility, NEB criteria, deadlines, evaluation method and contact information.

[...]

2. Evaluation and ranking of applications

Summary evaluation of applications received during the pitch event.

Title of project idea	Addressed city challenge	Score (NEB+ values)

3. Selected projects (presentation)

For each of the top-ranked ideas, complete a short presentation card.

Project idea 1

Field	Applicant response
Project owner (organisation)	



Field	Applicant response
Contact person (name & email)	
Short description	
Challenge / issue addressed	
Proposed solution (including NEB principles applied)	
Implementation steps and partners	
Estimated budget and possible co-funding	

Project idea 2

Field	Applicant response
Project owner (organisation)	
Contact person (name & email)	
Short description	
Challenge / issue addressed	
Proposed solution (including NEB principles applied)	
Implementation steps and partners	
Estimated budget and possible co-funding	

Project idea 3

Field	Applicant response
Project owner (organisation)	
Contact person (name & email)	



Field	Applicant response
Short description	
Challenge / issue addressed	
Proposed solution (including NEB principles applied)	
Implementation steps and partners	
Estimated budget and possible co-funding	

Annex A.5 – City-Level Peer-Review Workshop Report (D1.1.1 Annex 5)

Field	Content
Event title	City-Level Peer-Review Workshop on Lessons Learned
Date & place of event	
Partner(s) involved	
Discussion questions	Question 1: How to include New European Bauhaus criteria into municipal decision-making about bio-based investments? Question 2: How to set up and run a participative process? Question 3: How to motivate citizens to become active partners in urban biodiversity management? Question 4: Where to include the “aesthetic” component and how to combine it with biodiversity goals? Question 5: How to set up a participative municipal budget and connect it with NEB principles?
Feedback & lessons learned	Summary feedback Question 1: ... Summary feedback Question 2: ... Summary feedback Question 3: ... Summary feedback Question 4: ... Summary feedback Question 5: ...
Expected effects and follow-up – findings / conclusions contributing to further project results	
Type of audience reached (project target groups) and number reached	



Field	Content
Annexes (participant list, photos, media coverage, web links)	

Annex A.6 – Communication Event Report (D1.1.1 Annex 6)

Field	Content
Event title	
Date & place of event	
Partner(s) involved	
Topics tackled and links to project activities	
Expected effects and follow-up – findings / conclusions contributing to further project results	
Type of audience reached (project target groups) and number reached	
Annexes (participant list, photos, media coverage, web links)	

Annex A.7 – Behaviour Change Questionnaire (D1.1.1 Annex 7)

Two-round (pre/post) questionnaire administered to a minimum of fifteen participants per city who are actively or passively involved in the project pilots. The instrument captures socio-demographics, environmental attributes and willingness to act, and is repeated at the end of the project to measure change. It is the principal measurement tool for Section 5.5 (Indicators for monitoring mindset change) and for Procedure 3 of this deliverable.

Participants

Select at least 15 participants (citizens, NGOs and other representatives of society) who are actively or passively involved in the project pilots. The questionnaire is anonymous and may be digital or printed.

Section 1 – Socio-demographic variables

Age (10-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 or more)



Gender (male / female / other)

Education (primary / secondary / vocational / Bachelor / Master / Doctorate / other)

Section 2 – Environmental attributes

Are you currently a member of an environmental, conservation or wildlife protection group? (yes / no)

Have you contributed money or time to such an organisation in the past year? (yes / no)

Have you actively participated in a project related to nature or the local environment in the past year? If yes, briefly describe.

How often do you watch TV programmes, films or internet videos on environmental issues? (never / rarely / sometimes / often / all the time)

How often do you talk to others about your environmental thoughts, feelings or actions? (never / rarely / sometimes / often / all the time)

Section 3 – Likert items (1-5 scale)

How high would you rate your interest in environmental topics? (1 non-existent → 5 “I think it’s urgent”)

If you had the opportunity, how willing would you be to participate in activities to improve the natural environment? (1 not interested → 5 urgent)

Do you believe that individual actions can have a positive impact on the environment? If so, how much? (1 non-existent → 5 urgent)

How important do you think ecological issues are in your daily life? (1 non-existent → 5 urgent)

How much do you agree with the sentence: “I want to live as ecologically as possible”? (1 strongly disagree → 5 strongly agree)

How much do you agree with the sentence: “I am very concerned about environmental issues”? (1 completely disagree → 5 completely agree)

Section 4 – Place attachment

Is there a place in your local environment that is special to you? Please describe.

Why is this place important? (scenery / local history / opportunity to learn about nature / spiritual aspects / inspiring qualities / plant and animal diversity / native species and habitats / meeting friends and family / outdoor recreation / not relevant)

Would you commit yourself to make a change in this place if you had the chance to make a difference? (1 not available → 5 very high)

Section 5 – Post-project additional items (second round only)

How did your attitude towards ecological issues change after you took part in this activity? (much less positive / slightly less positive / no change / slightly more positive / much more positive)

How likely is it that you will take part in similar ecological activities in the future? (very unlikely → very likely)

Would you recommend similar ecological activities to others? (definitely not → definitely)

What actions, if any, will you take to contribute to the local environment? (open question)



Behaviour change report (analysis)

Summarise the assessment of behaviour change among participants. For each item, analyse whether there is a difference in answers between the pre- and post-rounds and describe the observed trend. Conclude with the main changes observed before and after the project activities. Aggregate findings feed Section 5.5 of this deliverable.

Section B – Supplementary templates developed for D1.3.1

Annex B.1 - BIOCENTUM node establishment self-assessment checklist

This checklist guides cities through the establishment of a BIOCENTUM node. The aim is not bureaucratic completeness but a shared starting point that protects the node from common early-stage failures.

	Set-up action
☐	Municipal mandate confirmed by mayor, department head or municipal assembly, including an annual reporting requirement.
☐	Coordinator appointed with at least 0.3 FTE and time allocated for the first 12 months.
☐	Core members identified across planning, environment, finance, procurement, communication, NGOs, academia, business, artists / designers and citizen representatives.
☐	Terms of reference agreed: purpose, meeting frequency, decision role, documentation, conflict handling and chairmanship rotation.
☐	First-year work plan prepared, covering challenge definition, participation, idea selection, implementation and monitoring.
☐	Communication channels defined: website, social media, local media, newsletters, schools and local committees.
☐	Risk and ethics protocol agreed: conflict-of-interest declaration, data protection, child-safeguarding for school activities.
☐	Connection to formal municipal instruments mapped (spatial plan, SECAP, budget cycle, procurement rules).



Annex B.2 - NEB+ rapid assessment rubric

The rubric is used at three points: as a screening filter at the proposal stage; as a reflection device during co-design workshops; and as a component of the participatory-budget evaluation. Use the four-point scale below; aggregate scores cautiously and always alongside narrative justification.

Score	Meaning	Use in assessment
0	Not addressed	The proposal does not mention the criterion or may cause negative effects.
1	Basic	The criterion is mentioned, but evidence is weak or generic.
2	Good	The criterion is clearly addressed with practical measures.
3	Strong	The criterion is central to the proposal and supported by evidence, monitoring or long-term ownership.

Criterion	Score 0-3	Justification	Improvement needed
Biodiversity			
Sustainability			
Inclusion			
Aesthetics			
Feasibility and maintenance			

Annex B.3 - Stakeholder mapping template

The stakeholder map is the foundation of Procedures 2 and 5. It should be prepared before any public event and updated annually. Use the template below as a starting point and add city-specific stakeholder categories as needed.



Stakeholder	Interest concern /	Influence	Engagement method	Responsible person
Municipal department		High / Medium / Low	Meeting / workshop / review	
Local committee		High / Medium / Low	Presentation / phone follow-up	
Residents		High / Medium / Low	Workshop / walk / online feedback	
Schools or youth		High / Medium / Low	Class activity / competition / adoption	
NGO / expert		High / Medium / Low	Co-design / expert review	
Business / sponsor		High / Medium / Low	CSR meeting / sponsorship discussion	
Vulnerable group representative		High / Medium / Low	Personal meeting / accessible workshop	
Potential opponent		High / Medium / Low	Personal meeting / conflict dialogue	

Annex B.4 - Participatory workshop agenda

The three-hour agenda below is suitable for a typical co-design workshop. It can be lengthened for more complex challenges or shortened for follow-up sessions; in either case, the sequence ‘welcome → challenge → generate → NEB+ reflect → prioritise → next steps’ should be preserved.

Time	Session	Purpose
00:00-00:15	Welcome and purpose	Explain what is open for influence and how inputs will be used; agree ground rules.
00:15-00:35	Biodiversity challenge story	Present the local challenge with maps, photos and plain language; surface emotional and place-based dimensions.



Time	Session	Purpose
00:35-01:10	World Café round 1	Collect problems, concerns and local knowledge across small groups; rotate facilitators.
01:10-01:45	World Café round 2	Generate ideas and identify potential conflicts; explicitly invite critical voices to test ideas.
01:45-02:15	NEB+ reflection	Discuss biodiversity, sustainability, inclusion and aesthetics dimensions; identify trade-offs to be resolved.
02:15-02:35	Prioritisation	Vote or rank ideas with transparent criteria; explain weighting and tie-break rules.
02:35-02:50	Roles and next steps	Invite participants into working groups, adoption, citizen science or communication; collect contact details.
02:50-03:00	Closing	Explain minutes, publication date, next decision moment and how feedback will be received.

Annex B.5 - Citizen motivation toolbox

Procedure 3 is operationalised through a toolbox of low-cost, repeatable instruments. The table below summarises the most effective tools and their expected mindset effects.

Tool	How to use it	Mindset effect
Small local competition	Reward gardens, balconies, school ideas, photos or local biodiversity stories with public recognition.	Creates pride and positive peer examples; activates social proof.
Adoption scheme	Residents, schools or businesses adopt a park section, insect hotel, flower strip or edible bed under a short agreement.	Builds ownership and care; transforms one-off interest into durable stewardship.
Scenario contrast	Show a future without urban nature next to a biodiverse future, using simple visuals.	Makes benefits concrete and emotionally clear; counters abstract framing.



Tool	How to use it	Mindset effect
Social-media feedback	Ask simple questions, publish before/after photos, respond to concerns within 48 hours.	Keeps momentum beyond meetings; reaches non-attending citizens.
Public recognition	Thank participants publicly, provide certificates, small gifts or municipal acknowledgement.	Validates citizen effort; creates a virtuous cycle of engagement.
Guidance for private spaces	Offer native-plant lists and simple instructions for biodiverse gardens, balconies and courtyards.	Extends the project into everyday life and accelerates network effects.
Citizen-science protocol	Provide simple monitoring sheets and a digital map for pollinators, birds or plants.	Builds ecological literacy and peer-to-peer learning.
Storytelling campaign	Co-create photo essays, short videos or oral histories of local nature.	Embeds biodiversity in cultural memory and identity.

Annex B.6 - Aesthetic-biodiversity design checklist

This checklist supports Procedure 4. It should be completed at the design-brief stage and re-checked before procurement and at handover.

	Design check
☐	Biodiversity experts and designers were involved before the concept was finalised.
☐	Local residents were asked what they perceive as beautiful, safe and cared-for, using image-elicitation or guided walks.
☐	The design includes seasonal interest, flowering sequence, structure, texture or sensory qualities.
☐	Ecological features such as dead wood, unmown areas or insect habitats are explained through signs or communication.
☐	The design includes clear edges, paths or signals of care where needed for public acceptance (cues to care).



	Design check
☐	Procurement or implementation documents include explicit aesthetic and biodiversity criteria.
☐	The project communicates that biodiverse spaces can be beautiful and functional at the same time.
☐	Feedback collection is planned at 6 months and 24 months after implementation.
☐	Maintenance regime is documented, costed and assigned to a specific unit before delivery.
☐	An interpretation element (sign, art, story, soundscape) is provided at the most-visited point of the intervention.

Annex B.7 - Participatory-budget proposal form

This template supports Procedure 5. It is intentionally short to lower the barrier for non-expert applicants while still surfacing the information needed for a meaningful NEB+ assessment.

Field	Applicant response
Project title	
Location	
Problem or opportunity	
Proposed biodiversity solution	
Who will benefit and who was consulted?	
How does the idea support sustainability?	
How does the idea support inclusion?	
How does the idea support aesthetics?	
Estimated budget and possible co-funding	



Field	Applicant response
Maintenance or adoption plan	
Possible risks or conflicts	
Applicant contact details	

Annex B.8 - Partner-workshop input integration matrix

D3.1.1 workshop question	Main inputs retained in D1.3.1
How to include NEB criteria in municipal decision-making?	AI support, good practices, aesthetic criteria, education of decision-makers, integration into spatial plans / SECAP / environmental and climate strategies, public procurement, participatory and bottom-up initiatives, socio-economic benefits.
How to set up and run a participative process?	Stakeholder mapping, municipal decision-making and assembly, personal meetings, inclusion of different and critical target groups, invitation by email and phone, minutes, articles, active expression, proof that people are heard, creative framing, motivated stakeholders and compromise.
How to motivate citizens?	Competitions, small gifts, schools, adoption of nature-based solutions, listening to real problems, social-media feedback, biodiversity-focused thinking, refreshments, appreciation, health / economic / inter-generational benefits, future scenarios, roles beyond meetings, networks and biodiverse gardens.
Where to include aesthetics?	Design and implementation of green spaces, sustainable design products, dialogue between experts and architects, procurement and building regulations, urban strategies, interpretation in parks / crossings / forest tracks, planet-centric approach, changing aesthetic mindset, art schools and normalising imperfection.
How to set up a participatory budget?	Introduce NEB to local committees, include NEB criteria in proposal forms and public calls, involve sponsors and manufacturers, use public-private cooperation, CSR, URBACT promotion, citizens' initiatives, crowdfunding, citizen science and volunteer work.



Annex B.9 - Short action plan template

The action plan template captures the operational decisions emerging from the procedures. It can be used at city, district or BIOCENTUM level.

Action	Responsible	Deadline	Resources	NEB+ criterion	Status

Annex B.10 - Resident perception survey (sample items)

The sample items below can be used in pre/post resident surveys to track perception change over time. The recommended scale is a 5-point Likert scale (strongly disagree - strongly agree). The survey should be administered at baseline, at 6 months and at 24 months.

This space is beautiful.

This space looks well cared for.

I feel safe in this space.

I see and hear more wildlife in this space than I used to.

I understand why the management of this space has changed.

I would recommend this space to a friend or family member.

This space reflects what I value in my neighbourhood.

I am willing to help maintain or monitor this space.



7. A digital companion for replication, “The Path” online tool

7.1 Rationale

Replication of EU-funded urban methodologies is constrained by three recurring obstacles:

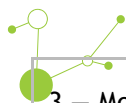
- coordinators rarely have time to absorb a sixty-page handbook;
- the operational templates require contextual judgement that cities encounter for the first time when they attempt to fill them in;
- and the linkage between procedures, templates and formal municipal instruments (spatial plans, SECAPs, procurement specifications, participatory-budget calls) is conceptually clear in the deliverable but operationally diffuse.

“The Path” addresses these directly by restructuring Chapter 3 as five sequential but independently usable waypoints. Within each waypoint, the coordinator answers a short series of context-specific questions; the answers auto-populate the relevant templates and compose a city-specific Starter Kit document that can be downloaded as a PDF. The tool thereby converts the deliverable from a reading task into a working task, while preserving the full content and references of the underlying handbook. “The Path” online tool is available at: <https://urbio Bauhaus.vercel.app/>.

7.2 How the tool works

The tool is organised around three interaction surfaces: a landing map, five waypoints, and a continuously available AI guide. The user journey is deliberately non-linear, a coordinator may walk the waypoints in order, jump to whichever procedure is most urgent, or return to a partially completed waypoint at any time. All state is persisted locally in the coordinator’s browser, with no user account or backend storage required. At each waypoint the procedure is presented as a readable document on the left, reproduced verbatim from Chapter 3; a wizard panel on the right presents between five and ten short questions whose answers auto-populate the relevant annexes in a ‘fill in’ mode where the coordinator can refine each template before exporting. The mapping between procedures and tool surfaces is summarised below.

D1.3.1 procedure	Tool surface	Templates auto-populated
1 – NEB criteria in municipal decision-making	Waypoint 1 – guided wizard on mandate, governance, instruments	A.1, A.5, B.1, B.2, B.9, Annex 8
2 – Setting up and running a participative process	Waypoint 2 – stakeholder mapping, workshop planning	A.2, A.3, B.3, B.4



3 – Motivating citizens to become active partners	Waypoint 3 – communication events, mindset measurement	A.6, A.7, B.5
4 – Combining aesthetics with biodiversity goals	Waypoint 4 – design checklist, perception tracking	B.6, B.10
5 – Aligning participatory budgets with NEB principles	Waypoint 5 – open call, proposal evaluation	A.4, B.7

The final output of the journey is the BIOCENTUM Starter Kit: an A4 PDF assembled from the coordinator's inputs, containing a cover, an executive summary suitable for any reader, a per-procedure cover and step list, the filled annex templates, and a list of procedures still to complete. It can be tabled at a council meeting, attached to a funding application, or used as a working document at a BIOCENTUM advisory-group session. Where not all waypoints have been completed, the Starter Kit prints the completed portion as a coherent partial document.

7.3 Integration of artificial intelligence

The tool integrates a large-language-model assistant, referred to as the Guide, available on every page through a persistent panel. It performs three operational functions: answering contextual questions with citations to the relevant procedure and annex; drafting working text on demand (council resolutions, workshop invitations, procurement clauses, public-call texts) for local adaptation; and supporting the wizard through an 'ask the Guide' link at each step. The AI integration operationalises the partner-workshop input on AI-supported screening recorded in Section 2.4; Annex 8 provides the default screening prompt, and the safeguard stated in Section 2.2 applies in full, the final decision must remain human, transparent and accountable.

7.4 Benefits for partners and replication cities

- **Reduced threshold for replication.** A coordinator can produce a city-specific working document in a few hours, against the multi-day effort the deliverable alone would require, materially increasing the number of cities that move from interest to implementation.
- **Consistency between procedures and templates.** Content is drawn from a single source, updates propagate automatically to wizard questions, template structures and Starter Kit output. Drift between handbook and application is prevented by design.
- **A demonstration asset for the consortium.** Well suited to live demonstration at consortium meetings, peer-learning events, NEB Festival sessions and Joint Secretariat reviews.
- **A foundation for further development.** Delivered as an open codebase with a documented extension pattern, positioning the consortium for a structured v2 (translations into pilot-city languages, accessibility refinements, additional procedures).



7.5 Limitations and conditions of use

Three limitations apply (cf. Section 2.5). The v1 release is in English only; translation into the local city languages is foreseen for v2. The AI Guide redirects questions on local legislation, site-specific ecology or detailed financial modelling to municipal expertise. The tool assumes baseline digital literacy in line with general European municipal practice. Within these limitations, “The Path” is an instrument that increases the probability that the procedures will be applied, by their intended audience, in the time available.



8. References

References are presented in author-date (Harvard) format, in line with the EU Interinstitutional Style Guide as commonly applied in EU research and policy publications. Where multiple works by the same author appear, they are ordered chronologically. URLs are provided for openly accessible online resources; persistent identifiers (DOI) are given where available. The list combines peer-reviewed scientific literature, EU policy documents and selected grey literature.

- Aronson, M. F. J., La Sorte, F. A., Nilon, C. H., Katti, M., Goddard, M. A., Lepczyk, C. A. et al. (2014) 'A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers', *Proceedings of the Royal Society B*, 281(1780), 20133330. DOI: 10.1098/rspb.2013.3330.
- Aronson, M. F. J., Lepczyk, C. A., Evans, K. L., Goddard, M. A., Lerman, S. B., MacIvor, J. S., Nilon, C. H. and Vargo, T. (2017) 'Biodiversity in the city: key challenges for urban green space management', *Frontiers in Ecology and the Environment*, 15(4), pp. 189-196.
- Arnstein, S. R. (1969) 'A ladder of citizen participation', *Journal of the American Institute of Planners*, 35(4), pp. 216-224.
- Bennett, N. J., Whitty, T. S., Finkbeiner, E., Pittman, J., Bassett, H., Gelcich, S. and Allison, E. H. (2018) 'Environmental stewardship: a conceptual review and analytical framework', *Environmental Management*, 61(4), pp. 597-614.
- Brüggemann, K., Wagner, M. and Riedel, J. (2025) 'Aesthetic perception of urban biodiversity: a review of methodologies and statistical approaches', *Cogent Arts & Humanities*, 12(1), 2484629.
- Brzezińska-Rawa, A. and Rawa, T. (2024) 'Environmental aspects of participatory budgeting in selected cities in Europe', *Journal of Environmental Management and Tourism*, 15(3), pp. 612-626.
- Cabannes, Y. and Lipietz, B. (2018) 'Revisiting the democratic promise of participatory budgeting in light of competing political, good governance and technocratic logics', *Environment and Urbanization*, 30(1), pp. 67-84.
- Carayannis, E. G. and Campbell, D. F. J. (2010) 'Triple Helix, Quadruple Helix and Quintuple Helix and how do knowledge, innovation and the environment relate to each other?', *International Journal of Social Ecology and Sustainable Development*, 1(1), pp. 41-69.
- Etzkowitz, H. and Leydesdorff, L. (2000) 'The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university-industry-government relations', *Research Policy*, 29(2), pp. 109-123.
- Falanga, R., Verheij, J. and Bina, O. (2025) 'Beyond experimentation: how are urban nature-based solutions Living Labs in Europe and Latin America designed and implemented for transformative change?', *Sustainability: Science, Practice and Policy*, 21(1), 2545644.
- Fung, A. (2006) 'Varieties of participation in complex governance', *Public Administration Review*, 66(s1), pp. 66-75.
- Gaston, K. J., Bennie, J., Davies, T. W. and Hopkins, J. (2013) 'The ecological impacts of nighttime light pollution: a mechanistic appraisal', *Biological Reviews*, 88(4), pp. 912-927.
- Goddard, M. A., Dougill, A. J. and Benton, T. G. (2010) 'Scaling up from gardens: biodiversity conservation in urban environments', *Trends in Ecology & Evolution*, 25(2), pp. 90-98.



- Hölker, F., Wolter, C., Perkin, E. K. and Tockner, K. (2010) 'Light pollution as a biodiversity threat', *Trends in Ecology & Evolution*, 25(12), pp. 681-682.
- Hoyle, H., Hitchmough, J. and Jorgensen, A. (2017) 'All about the 'wow factor'? The relationships between aesthetics, restorative effect and perceived biodiversity in designed urban planting', *Landscape and Urban Planning*, 164, pp. 109-123.
- Hoyle, H., Jorgensen, A. and Hitchmough, J. D. (2019) 'What determines how we see nature? Perceptions of naturalness in designed urban green spaces', *People and Nature*, 1(2), pp. 167-180.
- Ingold, T. (2000) *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- Innes, J. E. and Booher, D. E. (2010) *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy*. London: Routledge.
- Jordan, A. and Lenschow, A. (2010) 'Environmental policy integration: a state of the art review', *Environmental Policy and Governance*, 20(3), pp. 147-158.
- Kowarik, I. (2018) 'Urban wilderness: supply, demand, and access', *Urban Forestry & Urban Greening*, 29, pp. 336-347.
- Lafferty, W. M. and Hovden, E. (2003) 'Environmental policy integration: towards an analytical framework', *Environmental Politics*, 12(3), pp. 1-22.
- Lauria, M. and Schively Slotterback, C. (eds.) (2020) *Learning from Arnstein's Ladder: From Citizen Participation to Public Engagement*. London: Routledge.
- Leminen, S., Westerlund, M. and Nyström, A. G. (2012) 'Living Labs as open-innovation networks', *Technology Innovation Management Review*, 2(9), pp. 6-11.
- Liang, H., He, Y. D., Theodorou, P. and Yang, C. F. (2023) 'The effects of urbanization on pollinators and pollination: a meta-analysis', *Ecology Letters*, 26(9), pp. 1601-1617. DOI: 10.1111/ele.14277.
- Mahmoud, I. H., Morello, E., Bisello, A. and Vona, C. (2025) 'Integrating science, technology, and experimental knowledge for sustainable innovation: a Living Lab approach to urban biodiversity management', *Journal of Entrepreneurship, Management and Innovation*, 21(2), pp. 5-28.
- Nassauer, J. I. (1995) 'Messy ecosystems, orderly frames', *Landscape Journal*, 14(2), pp. 161-170.
- Nassauer, J. I., Wang, Z. and Dayrell, E. (2009) 'What will the neighbors think? Cultural norms and ecological design', *Landscape and Urban Planning*, 92(3-4), pp. 282-292.
- Owens, A. C. S., Cochard, P., Durrant, J., Farnworth, B., Perkin, E. K. and Seymoure, B. (2020) 'Light pollution is a driver of insect declines', *Biological Conservation*, 241, 108259.
- Pineda-Pinto, M., Frantzeskaki, N. and Nygaard, C. A. (2024) 'Understanding collaborative governance of biodiversity-inclusive urban planning: methodological approach and benchmarking results for urban nature plans in 10 European cities', *Urban Ecosystems*, 27(3), pp. 873-892.
- Ranalli, R., Quaranta, M., Bortolotti, L. and Sgolastra, F. (2025) 'From cities to refuges for pollinators: urban practices for enhancing pollinator habitats in changing landscapes', *Journal of Applied Ecology*, 62(5), pp. 1023-1038.
- Scannell, L. and Gifford, R. (2010) 'Defining place attachment: a tripartite organizing framework', *Journal of Environmental Psychology*, 30(1), pp. 1-10.



- Sintomer, Y., Herzberg, C. and Röcke, A. (2016) Participatory Budgeting in Europe: Democracy and Public Governance. London: Routledge.
- Steg, L. and Vlek, C. (2009) 'Encouraging pro-environmental behaviour: an integrative review and research agenda', *Journal of Environmental Psychology*, 29(3), pp. 309-317.
- Suvinen, N., Konttinen, J. and Nieminen, M. (2010) 'How necessary are intermediary organizations in the commercialization of research?', *European Planning Studies*, 18(9), pp. 1365-1389.
- Threlfall, C. G., Mata, L., Mackie, J. A., Hahs, A. K., Stork, N. E., Williams, N. S. G. and Livesley, S. J. (2017) 'Increasing biodiversity in urban green spaces through simple vegetation interventions', *Journal of Applied Ecology*, 54(6), pp. 1874-1883.
- European Commission (2019) The European Green Deal. COM(2019) 640 final. Brussels: European Commission.
- European Commission (2020) EU Biodiversity Strategy for 2030: Bringing Nature Back into Our Lives. COM(2020) 380 final. Brussels: European Commission.
- European Commission (2021) New European Bauhaus: Beautiful, Sustainable, Together. COM(2021) 573 final. Brussels: European Commission.
- European Commission (2021) New European Bauhaus Concept Paper. Brussels: European Commission, High-Level Round Table.
- European Commission (2021) New EU Forest Strategy for 2030. COM(2021) 572 final. Brussels: European Commission.
- European Commission, Joint Research Centre (2023) BiodiverCities: A Roadmap to Enhance the Biodiversity and Green Infrastructure of European Cities by 2030. Luxembourg: Publications Office of the European Union.
- European Commission, Directorate-General for Research and Innovation (2024) Nature-based Solutions Research Policy: State of the Art and Future Directions. Brussels: European Commission.
- European Environment Agency (2020) State of Nature in the EU - Results from Reporting under the Nature Directives 2013-2018. EEA Report No 10/2020. Copenhagen: EEA.
- European Environment Agency (2022) Who Benefits from Nature in Cities? Social Inequalities in Access to Urban Green and Blue Spaces across Europe. EEA Report. Copenhagen: EEA.
- European Union (2024) Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on Nature Restoration. Official Journal of the European Union, L 199/1.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (2019) Global Assessment Report on Biodiversity and Ecosystem Services. Bonn: IPBES Secretariat.
- Beatley, T. (2011) *Biophilic Cities: Integrating Nature into Urban Design and Planning*. Washington, DC: Island Press.
- Climate-ADAPT (2020) *Urban Green Spaces: A Brief for Action*. European Climate Adaptation Platform. Copenhagen: European Environment Agency.
- ENoLL (2020) *Living Lab Methodology Handbook*. European Network of Living Labs. Brussels: ENoLL.
- EUROPARC Federation (2023) *About Urban Greening Plans: A Guide for Local Authorities*. Regensburg: EUROPARC.



Interreg Central Europe (2024) URBIO BAUHAUS - Project Description and Subsidy Contract. Project ID CE0200659. Vienna: Joint Secretariat.

UNaLab (2020) Living Lab Handbook for Urban Nature-Based Solutions. EU Horizon 2020 UNaLab Project (Grant Agreement 730052).

URBIO BAUHAUS Consortium (2025) D3.1.1 Partner Workshop Note. Internal project document, Interreg Central Europe.

World Health Organization Regional Office for Europe (2016) Urban Green Spaces and Health: A Review of Evidence. Copenhagen: WHO Europe.

World Health Organization Regional Office for Europe (2017) Urban Green Space Interventions and Health: A Review of Impacts and Effectiveness. Copenhagen: WHO Europe.

World Health Organization Regional Office for Europe (2020) GreenUr - The Green Urban Spaces and Health Tool. Copenhagen: WHO Europe.

European Commission Urban Nature Platform: https://environment.ec.europa.eu/topics/urban-environment/urban-nature-platform_en (accessed April 2026).

European Commission New European Bauhaus initiative: <https://new-european-bauhaus.europa.eu> (accessed April 2026).

Interreg Central Europe URBIO BAUHAUS project page: <https://www.interreg-central.eu/projects/urbio-bauhaus/> (accessed April 2026).

URBACT Programme: <https://urbact.eu> (accessed April 2026).