Integrated Action Plan 2025

Climate-resilient 's-Hertogenbosch

URBACT

Co-funded by the European Union
Interreg

's-Hertogenbosch

Summary

As part of the European URBACT programme, the city of ’s-Hertogenbosch has developed an Integrated Action Plan (IAP) to strengthen biodiversity and climate resilience. This plan was created within the BiodiverCity network, a collaboration of ten European cities working together to integrate nature more effectively into urban planning and governance. The IAP combines international knowledge exchange with local stakeholder engagement, ensuring that the voices of residents, businesses, experts, and civil society are reflected in the city’s strategy.

The main objective of the IAP is to create an inclusive, connected, and resilient urban green network. To achieve this, the plan sets out four strategic goals: improving equal access to green and cooling spaces across all neighborhoods, restoring ecological connectivity within and around the city, embedding biodiversity and climate adaptation into municipal governance, and fostering long-term community ownership of urban nature.

These goals are translated into concrete actions across three domains. In the area of greener and climate-resilient landscapes, the city will spread wildflower seeds using grass clippings to enhance habitat quality, develop natural play areas that integrate ecological elements, and implement climate-adaptive tree and green space management by aligning policy, procurement, and field practices.

In the domain of governance and regulation, nature-inclusive construction will become mandatory for large developments. The municipality will also assess the effectiveness of existing green norms to better align with current urban challenges.

To raise awareness and build community ownership, the city will organize BioBlitz events, a Biodiversity Week, and public art installations. Residents will be invited to participate in Jane Jacobs-inspired walks, and informative signage will be placed at ecological intervention sites. Schools will receive biodiversity-themed lessons, and a practical guide for vertical greening and green roofs will be co-developed with local partners.

Together, these actions form a comprehensive and participatory roadmap toward a greener, healthier, and more resilient ’s-Hertogenbosch, where people and nature thrive side by side. Actions are indicative and dependent on available budget, priorities and decisions.

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1. Introduction

The municipality of ‘s-Hertogenbosch is part of the URBACT BiodiverCity Network, working on strengthening urban biodiversity and climate resilience through community-driven approaches.

1.1. URBACT Programme

The URBACT programme is an European exchange and learning initiative that helps cities develop sustainable and integrated solutions to urban challenges. It promotes sustainable urban development,

A key principle within URBACT is the use of integrated participation processes. Cities work closely with local stakeholders, such as residents, businesses, knowledge institutions, and civil society, ensuring that different perspectives are included in decision-making.

Through Action Planning Networks (APNs), participating cities collaborate with peers across Europe to co-create Integrated Action Plans (IAPs). These plans combine shared European knowledge with local needs and priorities, helping cities design concrete and holistic strategies for a more sustainable urban future.

1.2. BiodiverCity network

BiodiverCity is an URBACT Action Planning Network that focuses on strengthening the role of nature in cities. The network brings together European cities to explore how urban planning and governance can better integrate biodiversity. It is a collaboration between ‘s-Hertogenbosch and the following cities: Dunaújváros & Veszprém (Hungary), Vratsa (Bulgaria), Poljčane (Slovenia), Guimarães (Portugal), Cieza (Spain), Siena (Italy), Limerick (Ireland) and Sarajevo (Bosnia Herzegovina).

The project started in June 2023 and runs until 2026. During this period, the partner cities collaborate to tackle common challenges and co-develop local action plans that drive change in their communities. The core focus is on knowledge sharing: exchanging best practices, giving feedback, and identifying shared learning needs to strengthen urban biodiversity.

Key topics include urban biodiversity, ensuring diverse species and habitats can thrive in the city; ecosystem services, highlighting the benefits that nature provides to people,

such as cleaner air, cooling, and wellbeing; and nature-based solutions, using natural processes to address urban challenges like flooding, heat stress, and social cohesion.

By sharing knowledge and co-developing Local Action Plans, the BiodiverCity network helps cities design strategies that make urban environments greener, healthier, and more resilient.

1.3. Objective

The municipality of ’s-Hertogenbosch aspires to be a climate resilient city with more biodiversity where people and nature live together in balance. To contribute to this ambition, the city wants everyone (residents, organizations, companies and visitors) to play a role in shaping a resilient living environment that can better cope with changing natural conditions. Strengthening climate awareness is key: encouraging people to cherish, protect and promote green spaces across the city.

’s-Hertogenbosch joined the BiodiverCity network to reinforce these ambitions for a greener, healthier and more climate-resilient city. Through collaboration with European partners, the municipality learns from best practices, exchanges knowledge and co-creates innovative solutions that enhance urban biodiversity.

1.4. Development of Integrated Action Plan

‘s-Hertogenbosch’s Integrated Action Plan (IAP) was developed within the BiodiverCity network, combining local stakeholder engagement with international knowledge exchange.

Local engagement

At the local level, an URBACT Local Group (ULG) was established, bringing together representatives from government, NGO’s, academia, civil society, and the private sector (table 1). To ensure broad representation, a stakeholder mapping was conducted. This participatory process helped to tailor the plan to the specific needs of ’s-Hertogenbosch.

The ULG group played a central role in identifying the key challenges for urban biodiversity and co-developing solutions. Also the testing actions were designed and implemented with their help.

Table 1. Overview of stakeholder groups and representatives

Stakeholder group	Representative
Municipality ‘s-Hertogenbosch	Department living environment, WXL Unit green, Strategy
Regional governments	Waterschap Aa en Maas (water authority)
Nature and environmental organizations.	IVN, Brabants Landschap, Stichting Natuur op Noord, Staatsbosbeheer, FLORON, RAVON, Paddenstoelenonderzoek Nederland, Groene pad, Kanaalpark rangers
Academia	HAS Green Academy, Avans Hogeschool
Businesses	Agricultural businesses and beekeepers
Community gardens and local stewardship groups	Multiple community gardens and stewardship groups
Citizens	A hand full of enthousiastic citizens, district and neighbourhood councils

Transnational exchange

At the transnational level, the network facilitated continuous knowledge sharing. Experts provided online and in-person presentations on relevant topics, such as nature-based solutions, community engagement, and ecosystem services. Partner cities hosted study visits (often combined with a core network meeting), to showcase good practices and gather recommendations from the other cities.

Each city also carried out testing actions, experimenting with different approaches to address biodiversity challenges. These experiments and exchanges enriched the collective knowledge base. The experiences and insights of partner cities were actively shared with the ULG in 's-Hertogenbosch, allowing international lessons to be incorporated into the city's own planning framework.

Inspiring projects and practices

Throughout the URBACT network, city visits and online exchanges have provided valuable insights and inspiration for the development of the Integrated Action Plan (IAP) in ’s-Hertogenbosch. These examples demonstrate how other cities creatively address biodiversity, climate resilience, and community engagement.

Informative signage with information about projects.

In Veszprém, clear signage explaining the purpose and ecological value of wildflower meadows helped reduce public resistance and even generated support. This highlights the importance of transparent communication, especially for projects that challenge conventional aesthetics or land use.

Organizing a Bioblitz

Cities like Siena, Guimarães, and Sarajevo have successfully used BioBlitz events to engage citizens in biodiversity monitoring. These short, intensive surveys raise awareness and foster a sense of ownership, an approach that aligns well with ’s-Hertogenbosch’s goal of community stewardship.

Green Brigade & Contradas

In Guimarães, “green brigades” are local ambassador groups that maintain green spaces and organize clean-ups. Similarly, in Siena, neighbourhood groups (contradas) care for green areas and use them for community events. These models show how decentralised stewardship can strengthen long-term engagement and ecological care.

Communication campaigns

Guimarães uses waste collected from river clean-ups in awareness campaigns, displaying retro packaging to highlight the longevity of pollution. In Dunaújváros, children’s drawings about waste were used to engage schools and families. These examples show how creative communication can amplify environmental messages across generations.

Art to increase awareness

In Guimarães and Limerick, biodiversity-themed murals, wooden sculptures, and benches are used to make nature visible and valued in urban settings.

Organising programs for schools

The Landscape Laboratory in Guimarães runs biodiversity education programs and monitors changes in children's perceptions. This evidence-based approach supports the IAP's ambition to embed ecological literacy in schools and measure impact.

Improving connectivity

Veszprém and Siena have developed recreational routes linking urban areas to green spaces. Siena's ConVersi project uses co-design to improve ecological and social connectivity, an approach that resonates with 's-Hertogenbosch's goal to strengthen habitat and human connections.

Multilingual signage

In Veszprém, multilingual signs promote inclusivity and accessibility, especially for tourists and international residents. This supports the IAP's aim to make green spaces welcoming for all.

Viewpoint in green area

Veszprém's elevated viewpoints offer immersive nature experiences, encouraging people to explore and appreciate green areas, an idea that could enhance recreational value in 's-Hertogenbosch.

Combining cultural history and experiencing nature

In Dunaújváros, industrial relics are displayed in forests, and in Sarajevo, a bobsleigh track with art is located in a wooded area. These examples show how integrating cultural history with nature can attract diverse audiences to green spaces.

Multifunctional green space

Cities like Limerick, Veszprém, and Dunaújváros have created green areas with sports equipment, seating, and seasonal facilities. These multifunctional spaces encourage physical activity, social interaction, and ecological awareness.

Natural play area

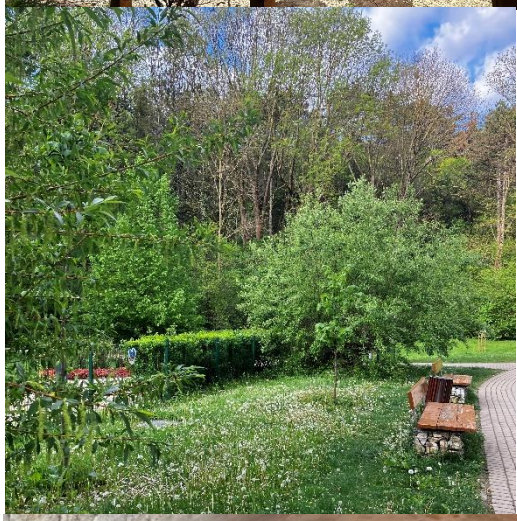
Limerick has developed several natural play areas that combine recreation with ecological education

Sensory garden, Sarajevo

In Sarajevo, a sensory garden stimulate all senses and it promotes inclusivity, offering inspiration for accessible green design in ’s-Hertogenbosch.

Wildflower meadows

Veszprém spreads wildflower seeds using grass clippings, enhancing biodiversity in residential areas. A challenge is tall grass obstructing paths, which Limerick solves by mowing only the edges, an example of adaptive maintenance that supports ecological and user needs.



Jane Jacobs Walk

In Cieza, Jane Jacobs Walks involve residents in observing and improving public space. This participatory method aligns with ’s-Hertogenbosch’s ambition to co-create resilient neighbourhoods.

Legal rights for nature reserve

In Cieza we also learned about citizens successfully campaigning to grant legal rights to the Mar Menor lagoon, making it the first ecosystem in the EU with legal personhood. This powerful example shows how civic action can lead to transformative environmental governance.

Climate resilient tree maintenance

In Cieza, climate-adaptive tree care significantly improved ecosystem services. This reinforces the importance of smart maintenance practices.

Testing Actions ‘s-Hertogenbosch

As a pilot the municipality of ‘s-Hertogenbosch organised the Biodiversity Week, with the aim to increase climate and biodiversity awareness among residents. The Week of Biodiversity, held from 18 to 24 May 2025, served as a testing ground to explore effective ways to engage citizens with nature, ecosystems, and sustainable practices. By combining citizen science, guided excursions, hands-on workshops, and interactive activities, the municipality was able to observe participation, gather data, and assess which approaches most effectively foster awareness, learning, and connection with local biodiversity. The insights gained from this week now inform the municipality’s ongoing action planning for biodiversity and environmental engagement.

To increase climate awareness among citizens, the municipality implemented several pilot initiatives. As part of this pilot, the municipality collaborated with (nature) organizations and citizens to organize the Week of Biodiversity, which took place from 18 to 24 May 2025. Throughout the week, a variety of activities were held to raise awareness about biodiversity and ecosystems, emphasizing the importance of nature preservation and sustainable development. Another key objective was to help residents become more familiar with the biodiversity present in their own neighborhoods and surroundings.

The municipality facilitated the week, while most activities were planned and organized by (nature) organizations and citizen ambassadors.

BioBlitz

Throughout the whole of the week a BioBlitz event was hosted (18th until the 24th of May) A BioBlitz is a form of citizen science where you observe and record all living species in a designated area and over a continuous time period. With the goal to gather as much data as possible about the different species. The municipality had not hosted one before.

In the Netherlands the website Waarneming.nl is most used to gather species observations. We organised a challenge through this platform to make sure we could easily observe which data was collected during the organized BioBlitz. In the field citizens could use the app ObsIdentify. When this app is used you can take a picture of a specie and the app identifies it and gives you the accuracy percentage, you can also see pictures of what the supposed species looks like to check for yourself. If you think the observation is correct you can upload it. The uploads are later verified by experts.

Two dedicated excursions were organized by ecologists specifically for the BioBlitz to identify species in urban areas.

During the BioBlitz 1.166 species were observed and recorded, there was a total of 6.493 observations done by 308 observants.

Thematic walks & urban excursions

Several guided walks and thematic excursions took place across the city and surrounding nature areas. Examples included urban nature walks, forest and wetland excursions, and visits to neighborhood gardens and food forests. Participants explored species in their local environment, learned about sustainable land management, and discovered how urban planning and biodiversity can coexist. These activities were designed to engage citizens of all ages and included interactive elements such as observation challenges and species identification.

Workshops and Hands-on Activities

Throughout the week, residents were invited to actively participate in nature management and conservation. Activities included planting, weeding, building insect hotels, and crafting with natural materials. Workshops for children introduced them to biodiversity in an interactive way, with opportunities to observe insects, birds, and plants closely.

Biodiversity Festival

We closed the Biodiversity Week with a festival at Hof Eyghentijds. Visitors joined a special walking route with workshops and activities, discovered the BioBlitz results, enjoyed live music, and celebrated the competition winners.

Take-aways

The testing actions conducted during the Week of Biodiversity provided essential insights for the municipality's action planning process. By organizing activities such as the BioBlitz, guided thematic walks, urban excursions, and hands-on workshops, the municipality was able to observe how citizens engage with biodiversity in their own living environment. The collaboration with (nature) organizations and citizen ambassadors during the planning and execution of the week also revealed effective ways to bring stakeholders together and strengthen networks. The data collected through the BioBlitz, along with observations of participation and engagement in excursions and workshops, offered concrete evidence on which approaches successfully raise awareness, foster learning, and connect residents with nature. These insights support the design of future initiatives by highlighting methods that are practical, inclusive, and capable of promoting long-term engagement with biodiversity in the community.

Pilot area and broadened scope

Initially, the Diezemonding River Park was selected as a pilot area. The municipality aims to rewild and transform the area into a coherent, contiguous and integrally managed nature reserve. The main challenge here was to involve local communities in the rewilding process and creating lasting ownership. However, as the project progressed, the scope was broadened. Valuable lessons and good practices emerging from the network proved relevant not only for the Diezemonding but also for the wider biodiversity and climate resilience ambitions of the municipality as a whole.

1.5. Reading guide

This Integrated Action Plan (IAP) outlines how ’s-Hertogenbosch aims to strengthen urban biodiversity through a series of locally developed and tested actions.

Chapter 2 describes the local context and vision for biodiversity in the city. Chapter 3 presents the overall logic and strategic framework, while Chapter 4 details twelve concrete actions, each with implementation steps, timing, responsibilities, costs, funding, monitoring indicators, and risk mitigation. Chapters 5 and 6 describe the implementation framework, dissemination plans, and governance structure, including monitoring, funding, and risk management.

2. Local context

This chapter describes the local context and challenges related to biodiversity and climate resilience that 's-Hertogenbosch faces, based on stakeholder input and international exchange.

's-Hertogenbosch is a municipality shaped over centuries by the interplay between society and its natural environment. Geographically, it spans from higher sandy soils to the wetter river clay plains of the Maas. The Aa and Dommel rivers converge into the Dieze, creating a rich mosaic of habitats and ecosystems. This diversity underpins urban biodiversity, offering opportunities to harness ecosystem services and implement nature-based solutions for a resilient city.

The city itself was founded on a river dune where the Maas, Aa, and Dommel rivers converge. Fortifications built here provided both defense and flood protection, earning the city the nickname "The Swamp Dragon". This nickname highlights the importance of water in shaping the city's identity and its historical relationship with the surrounding wetlands.

Over time, urban expansion reclaimed marshlands and created sand extraction lakes, fueling growth. Later developments were built on raised ground or protected by dikes and pumping stations. While these technical measures prevented flooding, they reduced natural water space. This became evident during the 1995 floods, which highlighted the limits of purely technical solutions. Climate change, bringing heavier rain, longer droughts, and hotter summers, further exposes these limits. Soil, water, and nature have lost resilience, leading to water nuisance, drought, heat stress, and declining biodiversity.

Where water was once used as a weapon in 's-Hertogenbosch. Today, water remains central to the city, but rather than a defensive tool, it is now harnessed as part of nature-based solutions to improve climate resilience, enhance biodiversity, and strengthen the quality of urban life.

The natural environment within the city is dynamic, evolving as urban spaces continue to change. 's-Hertogenbosch's urban areas, once dominated by asphalt, now host a growing number of green spaces and species, blurring the boundary between nature and urban life. In forgotten corners, wild plants have blossomed, and animals have adapted to life in the city. These changes reflect the potential for integrating nature into urban life and for expanding green spaces further, which can improve biodiversity and the quality of urban life.

2.1. Current situation

The urban environment of 's-Hertogenbosch is dynamic and diverse. The city can be distinguished into different zones, including the historic centre, river clay and sandy

neighbourhoods, sandy villages, polder districts, sand extraction lakes, open clay polders, small sandy landscapes, green belts, connecting green structures, and rivers, streams, and floodplains. Each of these zones has distinct characteristics and challenges in terms of biodiversity, green infrastructure, and climate adaptation.

Despite progress, urban greenery is unevenly distributed. Densely built districts lack cooling green spaces, increasing vulnerability to heat stress. Habitat fragmentation due to infrastructure and intensive agriculture further weakens ecological connectivity.

This rich but vulnerable ecological and urban structure forms the basis for the challenges that 's-Hertogenbosch faces today in terms of climate resilience, biodiversity, and quality of life.

2.2. Policies

The Integrated Action Plan (IAP) of ’s-Hertogenbosch is linked to the municipality’s broader policy frameworks and long-term ambitions for sustainability, climate resilience, and biodiversity.

At the local level, the IAP directly builds on the municipal policy *Sustainable ’s-Hertogenbosch* (2019), which formulated four ambitions for 2050:

- Healthy, green and climate resilient
- Climate neutral
- Circular economy
- Sustainable mobility

These ambitions have since been further operationalized in subsequent frameworks. The *Green and Climate Resilient Policy* (2021) elaborates the vision for urban greening and climate adaptation, supported by the *Trees, Water and Green By-law* (2021), which sets binding rules for tree felling, water management, and the integration of green spaces in developments. Earlier, the *Tree Policy Plan* (2017) was adopted to protect and enhance valuable trees.

In 2024, the municipality introduced *Area Passports Green and Climate Resilient*. These passports translate the policy ambitions to the level of specific districts and neighbourhoods, by identifying area-based challenges, opportunities, and ambitions in water, ecology, and climate adaptation. They provide concrete building blocks for green and climate-resilient urban development, and have been used to define and prioritize projects within the recently adopted *Green and Climate-Resilient Implementation Program: Groots Vergroenen* (2025). This program introduces the *nature-enhancing development* approach, which structurally integrates green, water, and ecological values into planning processes. It also emphasizes behavioural change, neighbourhood approaches, and close cooperation with local stakeholders such as housing associations, water boards, and community groups.

The IAP directly links to these policy frameworks by taking their ambitions as the foundation for local action planning.

Beyond the local level, the IAP is also closely aligned with regional, national, and international policy priorities. Regionally, the ambitions of the IAP resonate with the Province of Noord-Brabant’s climate and energy strategies, such as the Regional Energy and Climate Strategy (REKS). These strategies emphasize multifunctional land use, climate adaptation, and the integration of nature and water into spatial development. By embedding green and climate-resilient principles into neighbourhoods, the IAP strengthens the regional agenda and provides practical examples that can be scaled across Brabant.

At the national level, the IAP contributes to the objectives of the Dutch biodiversity and climate adaptation frameworks. It reinforces the ambitions of the National Ecological Network (NEN) and the Natura 2000 programme, which aim to preserve and restore biodiversity through connected ecosystems and sustainable land use. It also aligns with the Dutch National Biodiversity Strategy and Action Plan (NBSAP 2025–2030), which sets clear commitments to enhance biodiversity, restore ecosystems, and link climate and nature policies. By operationalizing these goals in the urban context, the IAP provides a concrete contribution to national ambitions, particularly in areas where nitrogen reduction and urban nature-inclusive development are key challenges.

Internationally, the IAP is fully in line with the European Union's Biodiversity Strategy for 2030 and the recently adopted Nature Restoration Law, both of which call for ambitious action to protect, restore, and integrate nature into all sectors of policy. The IAP's focus on urban biodiversity, ecosystem services, and nature-based solutions reflects these European priorities and contributes to the EU Green Deal's broader objective of creating greener, healthier, and more resilient cities. Moreover, the IAP supports the implementation of global commitments under the Convention on Biological Diversity (CBD), translating international targets into local action through inclusive governance and co-creation.

Through this multi-level alignment, the IAP not only strengthens the municipality's own ambitions but also serves as a local instrument for delivering on regional, national, and European biodiversity and climate objectives.

2.3. Scope

The Integrated Action Plan (IAP) for 's-Hertogenbosch addresses four interrelated challenges that hinder the city's transition toward climate resilience and biodiversity. These challenges have been translated into four key intervention areas:

- Unequal distribution and quality of green spaces,
- Fragmented ecological connectivity,
- Gaps in governance and monitoring, and
- Limited community engagement.

A SWOT analysis (Figure 1) was conducted to identify the key factors influencing this transition.

Figure 1 SWOT analysis for transition of 's-Hertogenbosch towards becoming climate-resilient.

's-Hertogenbosch faces substantive environmental challenges, particularly the uneven distribution of green space and poor ecological connectivity. While the municipality has developed a solid foundation of policies and regulations to address these issues, gaps remain in how these frameworks are embedded, monitored, and enforced across departments and projects. These limitations can hinder long-term effectiveness and adaptive capacity.

In addition, the municipality's limited control over land in densely built areas makes it essential to actively involve residents, housing associations, and other stakeholders. To effectively address both the environmental challenges and the institutional conditions that shape them, the Integrated Action Plan (IAP) takes a dual approach: tackling core ecological issues while strengthening governance and fostering community engagement.

Distribution and quality of green space

Green space is unevenly distributed across the municipality. While some neighbourhoods benefit from tree-lined streets and large parks, others are dominated by paved surfaces with little shade or cooling capacity. This disparity increases vulnerability to heat stress, particularly during increasingly hot summers.

Densely built areas—such as the historic centre, sandy neighbourhoods, sand villages, and polder districts—offer limited opportunities for vegetation and natural cooling. In addition, the ecological quality of existing green spaces varies widely. While long-grass areas and flower strips support biodiversity, intensively mown grasslands provide minimal ecological value.

Habitat connectivity

Ecological fragmentation is a pressing issue. Major infrastructure, including highways and ring roads, disrupts wildlife movement and weakens connections between parks, rivers, and natural areas. In rural surroundings, agricultural practices such as drainage and land consolidation have further degraded habitat quality and reduced ecosystem services.

Governance and monitoring gaps

’s-Hertogenbosch has established several policy frameworks and regulations to support biodiversity and climate resilience, including the Green and Climate Resilient Policy, the Trees, Water and Green By-law, and the Area Passports. These instruments provide a solid foundation for integrating ecological values into urban development.

However, despite this progress, there are still areas for improvement. In practice, policies are not always consistently embedded across departments, and monitoring and enforcement mechanisms can be strengthened. This limits the municipality’s ability to track progress, ensure compliance, and adapt strategies based on outcomes. Strengthening governance structures and improving coordination between policy, implementation, and evaluation is essential to achieve long-term impact.

Community engagement

The municipality owns relatively little land in densely built areas, making it difficult to implement green and climate-resilient interventions unilaterally. Achieving meaningful progress requires active participation from residents, housing associations, nature organizations, and businesses. Community engagement is essential not only for expanding green infrastructure and managing rainwater, but also for fostering a shared sense of ownership and stewardship over the city’s ecological future.

These four challenges form the core of the Integrated Action Plan (IAP) and have been translated into four strategic objectives and associated intervention areas.

2.4. Vision IAP

A future-proof ’s-Hertogenbosch where nature and people thrive together in a resilient urban landscape. The city envisions a healthy, green, and biodiverse environment that offers shade, clean water, fertile soils, and connected habitats while also providing residents with inclusive, accessible, and inspiring spaces to live, work, and play. By embedding biodiversity and climate resilience into every layer of urban life (streets, neighbourhoods, public spaces, and governance) ’s-Hertogenbosch will become a city where ecological richness strengthens social well-being, and where citizens, organizations, and businesses share responsibility for protecting and enhancing the natural systems that support life.

3. Overall Logic and Integrated Approach

The Integrated Action Plan (IAP) translates ’s-Hertogenbosch’s ambitions for biodiversity and climate resilience into a coherent set of strategic goals and intervention areas, this section outlines how the IAP is structured to address them in an integrated and actionable way.

3.1. Main objective

The Integrated Action Plan (IAP) aims to strengthen biodiversity and climate resilience in ’s-Hertogenbosch by developing an inclusive, connected, and resilient urban green network. This network is supported by strong governance structures and active community participation, ensuring that ecological and social values are embedded throughout the city.

3.2. Strategic goals

The IAP defines four strategic goals that guide implementation:

- Promote equal access to high-quality green and cooling spaces
- Strengthen ecological connectivity
- Embed biodiversity and climate adaptation in governance
- Foster long-term community ownership and stewardship

These goals reinforce each other. Together, they form the backbone of a resilient urban strategy that integrates ecological, spatial, and social dimensions.

3.3. Intervention areas

To operationalize the strategic goals, the IAP organizes actions into four intervention areas:

- **Greener and Climate-Resilient Landscapes**: spatial and ecological interventions

- **Governance, Monitoring, and Regulation**: institutional embedding and accountability
- **Awareness, Education, and Community Ownership**: behavioural change and engagement

This structure allows the IAP to address local ecological and social challenges in an integrated way, while remaining flexible enough to align with and contribute to broader regional, national, and international biodiversity and climate goals.

3.4. Planned actions

The IAP of 's-Hertogenbosch includes 12 actions to address climate resiliency.

Greener and climate resilient landscapes

Action 1. Spreading wildflower seed mixtures using grass clippings

This action enhances biodiversity by reusing mown grass to distribute native wildflower seeds, improving habitat quality and supporting pollinators in urban green spaces.

Action 2. Developing natural play areas

Developing play spaces that integrate natural elements like logs, plants, and water features encourages outdoor activity, supports child development, and contributes to a greener urban environment.

Action 3. Climate-adaptive tree and green space management

This action aims to align municipal policy, procurement, and field practices to ensure that urban vegetation is resilient to climate change. By planting and maintaining trees and green spaces that can withstand drought and heat, the municipality contributes to cooling, biodiversity, and long-term sustainability. The action also includes improving collaboration between departments and contractors, revising tender criteria, and educating maintenance staff to recognize ecological signals in the field and adapt their practices accordingly.

Governance, monitoring and regulation

Action 1. Mandatory nature-inclusive construction

To structurally embed biodiversity in urban development, the municipality is looking into making nesting opportunities in large construction projects mandatory. This ensures that urban growth supports local fauna and contributes to ecological resilience.

This approach encourages developers to design spaces that are not only functional for humans but also hospitable for wildlife, contributing meaningfully to the city's biodiversity goals.

Action 2. Assessing current regulation and policies and their effectiveness

The municipality will evaluate the existing green norm both quantitatively and qualitatively, including the implementation process and, where possible, the outcomes. This assessment will explore how the norm can better align with current challenges such as inner-city development and emerging technologies.

Awareness, education and community ownership

Action 1. BioBlitz

Organizing BioBlitz events where citizens, ecologists, and volunteers work together to identify and record local species. Camera traps are used to monitor wildlife activity, raising awareness of urban biodiversity.

Action 2. Biodiversity Week

A themed week filled with activities, workshops, and educational events to engage residents, schools, and organizations in learning about biodiversity and its importance for a resilient city.

Action 3. Biodiversity art

Public art installations, such as murals and wooden sculptures, are used to creatively highlight biodiversity and spark curiosity and dialogue in the community.

Action 4. Jane Jacobs Walk

Guided walks inspired by urbanist Jane Jacobs, encouraging residents to explore their neighbourhoods through the lens of ecological and social resilience, and to reflect on the role of nature in urban life.

Action 5. Informative signs

Installing clear and accessible signage at locations where ecological interventions may raise questions or concerns, helping to inform and engage the public transparently.

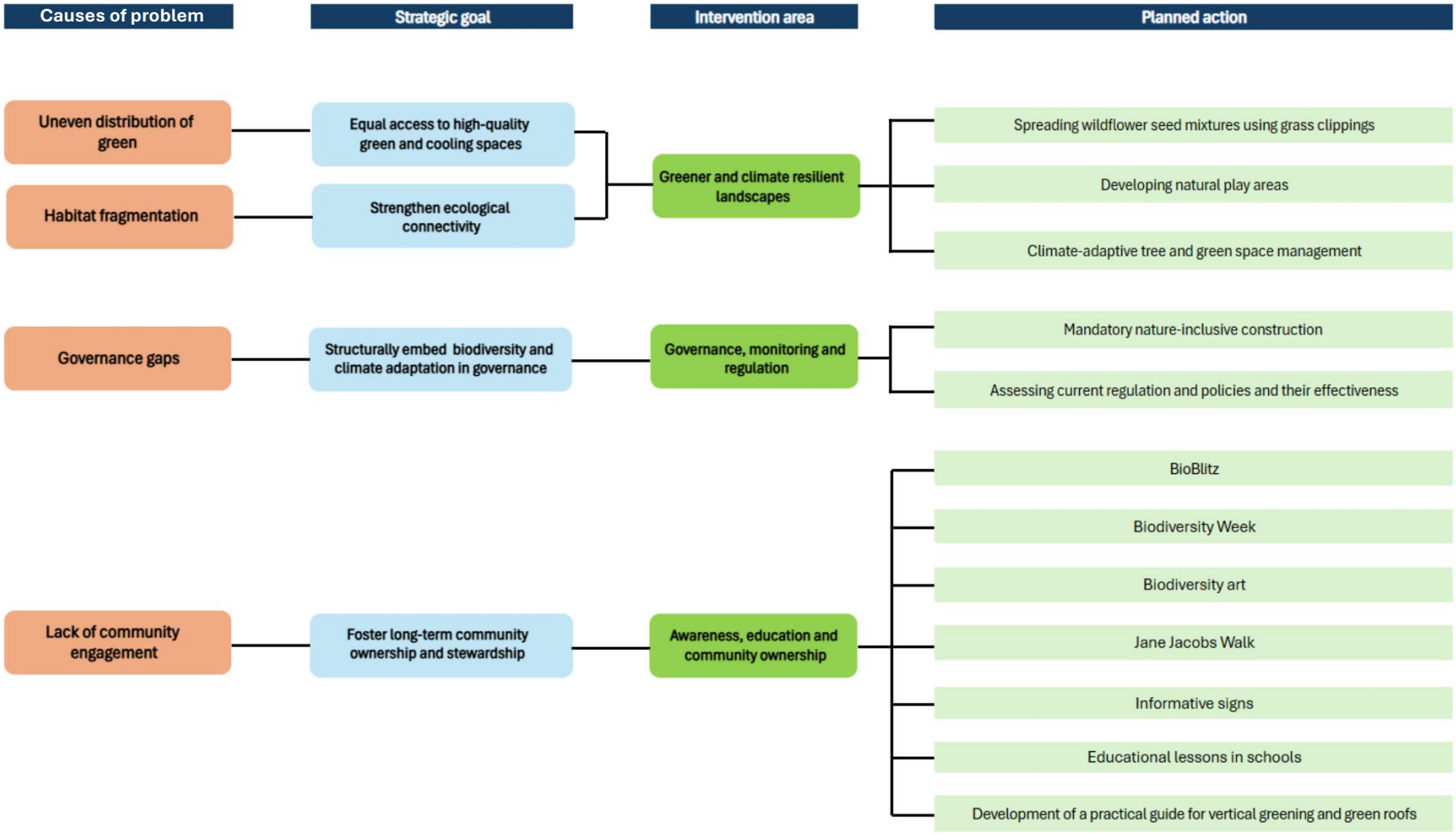
Action 6. Educational lessons in schools

Biodiversity-themed lessons are delivered in schools, with pre- and post-activity surveys to monitor changes in students' perceptions and understanding of nature and climate resilience.

Action 7. Development of a practical guide for vertical greening and green roofs

The municipality will explore the possibility of developing this guide as a student project in collaboration with HAS or Avans. The guide will be co-created with housing corporations, tenant associations, urban ecologists, and municipal staff, and will offer practical advice on requesting, installing, and maintaining vertical greenery and green roofs, based on best practices.

Integrated Action Plan ‘s-Hertogenbosch



3.5. Integration

Integration is essential for addressing complex urban challenges such as climate resilience and biodiversity. In the context of the IAP, integration refers to the alignment and coordination across sectors, scales, stakeholders, and policy domains to achieve systemic impact. The IAP of ’s-Hertogenbosch embraces this by combining ecological, social, spatial, and governance dimensions into a unified strategy.

The European Urban Agenda outlines the following 12 aspects of integration:

1. Vertical integration (across governance levels)
2. Horizontal integration (across departments/sectors)
3. Territorial integration
4. Functional integration
5. Financial integration
6. Legal integration
7. Policy integration
8. Stakeholder integration
9. Knowledge integration
10. Temporal integration
11. Participatory integration
12. Monitoring and evaluation integration

Most Relevant Aspects for ’s-Hertogenbosch

For the IAP and the local context of ’s-Hertogenbosch, the aspects policy, stakeholder, monitoring and evaluation; participatory, and horizontal are most important.

Policy Integration

Biodiversity and climate adaptation must be embedded across urban planning and environmental policies. The IAP addresses this through updates to the Environmental Plan and the Green Norm evaluation.

Stakeholder Integration

Given the limited municipal land, collaboration with housing corporations, tenant associations, businesses, and residents is vital. The IAP includes co-creation of practical guides and community-led initiatives.

Monitoring and Evaluation Integration

the municipality will develop a process for evaluating and monitoring existing norms and regulations, such as the green norm and environmental provisions. This will support adaptive governance and help align policy frameworks with current urban challenges and sustainability goals.

Participatory Integration

Actions such as BioBlitz, Jane Jacobs Walks, and school education programs foster citizen engagement and ownership, ensuring long-term stewardship.

Horizontal Integration

The IAP promotes collaboration between departments (e.g. city development, city maintenance) and external partners to align maintenance, design, and policy.

Current Levels of Integration

While ’s-Hertogenbosch has made progress in integrating biodiversity and climate resilience into urban planning, several gaps remain:

- Policy and legal integration are underway but not yet fully embedded across all departments.
- Stakeholder and participatory integration are strong in pilot projects but need scaling and structural support.
- Monitoring integration requires further development for consistent evaluation.
- Horizontal integration is improving, especially in green maintenance and procurement, but still faces coordination challenges.

Key aspects to improve through IAP

To strengthen integration, the IAP focusses on making steps towards:

- Embedding biodiversity and climate goals into all relevant municipal policies and instruments.
- Creating formal structures for stakeholder collaboration and co-creation.
- Developing robust monitoring frameworks with clear indicators and feedback loops.
- Enhancing interdepartmental coordination and knowledge sharing.
- Ensuring long-term funding and legal support for integrated actions.

Cross-cutting themes

The URBACT cross-cutting themes; **digital transition**, **green transition**, and **gender equality and inclusion**, offer a valuable lens through which to assess and strengthen the Integrated Action Plan (IAP) of ’s-Hertogenbosch. These themes help ensure that urban transformation is not only sustainable, but also inclusive and future-proof.

Green transition

The green transition is at the heart of the IAP. The plan directly addresses climate resilience and biodiversity through actions such as nature-inclusive construction, climate-adaptive tree management, and ecological connectivity. The ambition to create a connected, inclusive green network aligns strongly with URBACT's green transition goals. Transnational learning within the network has helped reinforce the importance of integrating ecological principles into urban design and governance, particularly through examples of nature-based solutions and community-led greening from other European cities.

Digital Transition

While not a central focus of the current IAP, digital tools offer significant potential to enhance monitoring, citizen engagement, and data-driven decision-making. For example, the use of camera traps in BioBlitz events introduces digital methods for biodiversity tracking. Transnational exchanges have highlighted opportunities to further integrate digital platforms for mapping green spaces, visualizing climate risks, and facilitating participatory planning. The IAP recognizes the need to explore these possibilities in future iterations, especially in the development of monitoring frameworks.

Gender Equality and Inclusion

The IAP emphasizes equal access to green and cooling spaces across all neighbourhoods, addressing spatial and social inequalities. Actions such as natural play areas and educational programs are designed to be inclusive and accessible. Transnational learning has underscored the importance of designing public spaces that are safe, welcoming, and usable for all genders, ages, and backgrounds. The IAP aims to embed these principles more explicitly in future design and engagement processes.

4. Detailed actions

4.1. Spreading wildflower seed mixtures using grass clippings

This action enhances biodiversity by reusing mown grass to distribute native wildflower seeds, improving habitat quality and supporting pollinators in urban green spaces.

Implementation steps

- Identify existing wildflower meadows with mature seed sets suitable for mowing.
- Select new recipient sites (parks, road verges, vacant plots, community gardens) where biodiversity value can be enhanced.
- Assess ecological suitability (soil type, sunlight, current vegetation).
- Schedule mowing at the right ecological timing (late summer/early autumn).
- Mow wildflower meadows when seed heads are mature.
- Collect grass clippings from municipal mowing activities.
- Spread the wildflower mowings across selected sites.
- Adjust mowing regime to protect emerging wildflowers.
- Maintain ongoing management
- Communicate the purpose of the action to residents (signage, online channels).
- Monitor establishment of wildflowers over multiple growing seasons.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Site selection: Q1 – Q2
- Collection and spreading: annually Q2 & Q3
- Communication and awareness activities: Q2 & Q3 first year
- Monitoring: annually during flowering season May–July 2-3 years

Responsibilities

- **Municipality: (Green) Management Unit (SB & WXL)**
  - Organize and execute mowing logistics in municipal green areas.
  - Provide technical expertise on grass clipping collection and handling.
  - Coordinate distribution of clippings mixed with seed.
- **Municipality: Department of Living Environment**
  - Advise on the ecological suitability of selected sites.
  - Oversee integration of this action into broader biodiversity and climate resilience policies.
  - Support with stakeholder engagement and alignment with other green projects.

- **Municipality: Communication Advisors (across departments)**
    - Develop and deliver awareness campaigns to inform residents about the purpose and benefits of the action.
    - Provide signage and online/press communication to increase understanding and support.
- **Local Nature Organizations (e.g. Brabants Landschap, Staatsbosbeheer, Natuurmonumenten)**
    - Advise on the ecological suitability of selected sites.
    - Conduct or support biodiversity monitoring (flora and pollinators).
- **Local nature organizations focussed on education (e.g. IVN, Groene Pad)**
    - Participate in awareness campaigns through citizen engagement activities.
    - Conduct or support biodiversity monitoring (flora and pollinators).

Costs

- Mowing and transport: included in regular green management budget (additional logistics minimal).
- Communication & awareness: €3,000–€5,000 (signage, campaign materials, workshops).
- Monitoring: €5,000–€7,500 (shared between municipality and partners).
- Total indicative cost per year: €8,000–€12,500 (excluding regular mowing operations).

Funding

- Municipal green management budget.
- Potential co-funding via provincial/national biodiversity or climate adaptation subsidies.
- Potential EU small-scale urban greening grants (LIFE, Interreg).
- In-kind contributions from local nature organizations and community groups (volunteer time, knowledge).

Monitoring indicators

- **Ecological indicators**
    - Number of sites receiving seed-rich clippings.
    - Increase in plant species richness at recipient sites (baseline vs. after 2–3 years).
    - Increase in pollinator activity (observational counts).
- **Process indicators**
    - Volume (m^2/ha) of clippings reused annually.
- **Engagement indicators**
    - Public awareness levels (survey or feedback during campaigns).

Risk mitigation

- **Low seed germination**: Combine spreading with light soil disturbance or repeat process in following years.
- **Wrong timing of mowing**: Develop ecological mowing calendar and train staff/contractors.
- **Unfavorable site conditions**: Conduct ecological suitability assessment beforehand.
- **Maintenance gaps**: Ensure recipient sites adopt long-term biodiversity-friendly mowing regime.

4.2. Developing natural play areas

Developing play spaces that integrate natural elements like logs, plants, and water features encourages outdoor activity, supports child development, and contributes to a greener urban environment.

Implementation steps

- Identify suitable urban locations (e.g. parks, schoolyards, unused green spaces)
- Engage with local communities and child development experts
- Design play spaces with natural elements (logs, plants, water features)
- Obtain necessary permits and approvals
- Procure materials and hire contractors
- Construct and landscape the play areas
- Launch and promote the spaces

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1–Q2: Site selection, stakeholder engagement, ecological assessment.
- Q3: Design finalization and permit applications.
- Q4 2026 – Q1 2027: Procurement and construction.
- Q2 2027: Launch and community celebration.
- Annually: Monitoring and maintenance.

Responsibilities

- **Municipality: Urban Planning & Green Management**
    - Lead site selection, design coordination, and construction oversight.
    - Integrate play areas into broader green infrastructure and child-friendly city policies.

- **Municipality: Department of Living Environment**
  - Advise on ecological integration and climate resilience.
  - Align with biodiversity and health promotion strategies.
- **Municipality: Communication Advisors**
  - Develop and implement awareness campaigns.
  - Provide signage and digital communication.
- **Local Schools and Childcare Centers**
  - Participate in design workshops and educational use of the play areas.
- **Nature and Play Organizations (e.g. IVN, Speelnatuur, Natuurmonumenten)**
  - Advise on ecological design and child development.
  - Support with community engagement and monitoring.

Costs

- Design and consultation: €5,000–€7,500
- Materials and construction: €15,000–€25,000
- Communication and engagement: €2,000–€3,000
- Monitoring and maintenance (annual): €3,000–€5,000

Funding

- Municipal green infrastructure, recreational budget or neighbourhood funds
- Provincial/national subsidies for nature-based play and climate adaptation
- EU small-scale urban greening grants (e.g. LIFE, Interreg)

Monitoring indicators

- Usage indicators
  - Number of children using the space weekly
  - Diversity of play activities
- Ecological indicators
  - Increase in native plant cover and insect activity
  - Soil and water retention improvements
- Engagement indicators
  - Community satisfaction (surveys, feedback)

Risk mitigation

- **Safety risks**: Regular inspections and compliance with playground norms
- **Vandalism**: Community involvement and visibility
- **Ecological degradation**: Use of resilient native species and low-impact design
- **Low usage**: Co-creation with users and promotion via schools
- **Budget constraints**: Phased implementation and reuse of local materials

4.3. Climate-adaptive tree and green space management

This action aims to align municipal policy, procurement, and field practices to ensure that urban vegetation is resilient to climate change. By planting and maintaining trees and green spaces that can withstand drought and heat, the municipality contributes to cooling, biodiversity, and long-term sustainability. The action also includes improving collaboration between departments and contractors, revising tender criteria, and educating maintenance staff to recognize ecological signals in the field and adapt their practices accordingly.

Implementation steps

- Policy review: Assess current green space and tree management policies for climate resilience and biodiversity principles.
- Internal alignment: Facilitate structured dialogue between policy teams, operational departments (e.g. SB, WXL), and procurement advisors to ensure consistency between policy goals and field execution.
- Contract and tender revision: Review existing contracts and procurement documents to include climate-adaptive species, biodiversity-friendly maintenance, and flexibility for field-based ecological deviations.
- Instructional video: Produce a short, practical video for municipal staff and contractors on recognizing ecological signals in the field and adjusting maintenance accordingly.
- Training sessions: Organize internal workshops or toolbox meetings to present the video and discuss real-life examples from the field.
- Feedback loop: Establish a mechanism for field staff to report ecological deviations and suggest adaptive maintenance responses.
- Monitoring: Track how often deviations are reported and how they influence maintenance practices and ecological outcomes.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1: Policy scan and internal coordination
- Q2: Contract revision and video production start
- Q3: Launch of video and first training sessions
- Q4 2026 – Q2 2027: Monitoring and feedback integration
- Ongoing: Evaluation and policy refinement

Responsibilities

- **Municipality: Policy Department (Living Environment)**

    - Coordinate policy alignment
    - Integrate feedback into climate and biodiversity strategies
- **Municipality: Operational Departments (SB & WXL)**
    - Share field experience and identify ecological deviations
    - Participate in training and feedback processes
- **Municipality: Procurement Team**
    - Update tender documents and contracts with adaptive criteria
    - Ensure ecological flexibility is embedded in execution terms
- **Municipality: Communications & Education**
    - Produce and distribute the instructional video
    - Organize internal learning activities
- **External Partners (Contractors, Nature Organizations)**
    - Participate in training and provide ecological expertise
    - Support adaptive maintenance practices

Costs

- Policy analysis and internal coordination: €5,000–€7,500
- Contract revision and procurement advisory: €5,000–€10,000
- Instructional video production: €7,500–€10,000
- Training and workshops: €3,000–€5,000
- Monitoring and evaluation: €3,000–€5,000

Funding

- Municipal climate adaptation and green management budget
- EU programs for urban greening and capacity building (e.g. LIFE, Interreg)

Monitoring indicators

- Process indicators
    - Number of contracts revised with climate-adaptive criteria
    - Number of staff and contractors trained via video and workshops
    - Number of ecological deviations reported from the field
- Qualitative indicators
    - Staff satisfaction with policy-practice alignment
    - Improved ecological quality of maintenance (observations, audits)
- Organizational indicators
    - Integration of field feedback into policy updates

Risk mitigation

- Limited policy uptake: Ensure regular cross-departmental meetings and shared planning tools
- Field staff unaware of ecological signals: Provide practical, visual training and repeat sessions

- Rigid contract terms: Include flexible ecological clauses in tenders
- Resistance from contractors or staff: Co-create training materials and acknowledge field expertise
- Lack of monitoring: Set up a simple reporting system and link it to policy review cycles

4.4. Mandatory nature-inclusive construction

To structurally embed biodiversity in urban development, the municipality will make nesting opportunities in large construction projects mandatory. This ensures that urban growth supports local fauna and contributes to ecological resilience.

This approach encourages developers to design spaces that are not only functional for humans but also hospitable for wildlife, contributing meaningfully to the city's biodiversity goals.

Implementation steps

- Test feasibility of planned norm on some development plans
- Policy update: Make nesting provisions mandatory in large-scale construction projects through updated municipal planning guidelines.
- Scoring system revision: Update the biodiversity score
- Permit integration: Embed the biodiversity score into the permitting process for large developments.
- Internal coordination: Align departments responsible for urban planning, ecology, and permitting to ensure consistent application of the updated requirements.
- Developer guidance: Create clear guidelines and examples for developers on how to meet biodiversity requirements and achieve the minimum score.
- Monitoring framework: Develop a system to assess biodiversity outcomes post-construction (e.g. nesting success, species presence).
- Communication: Inform developers, architects, and planners about the new requirements
- Feedback loop: Collect feedback from developers and ecological experts to refine the scoring system over time.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q4 2025: Policy for inspection (update and scoring system revision)
- Q1-Q2 2026: Establishment of policy

- Q2: Internal coordination and developer guidance and launch of communication campaign
- 2026 onward: Monitoring and iterative refinement

Responsibilities

- **Municipality: department living environment**
  - Coordinate policy update and integration into planning procedures
  - Coordinate with permitting and ecological teams
- **Municipality: Ecology and Biodiversity Advisors**
  - Provide technical input and monitor ecological outcomes
- **Municipality: Permitting and Legal Teams**
  - Ensure legal enforceability of biodiversity requirements
- **Municipality: Communications Team**
  - Develop outreach materials and organize stakeholder engagement
- **Developers and Architects**
  - Implement biodiversity measures in project design
  - Submit documentation for scoring and permitting

Costs

- Monitoring framework: €5.000

Funding

- Municipal urban development and biodiversity budgets

Monitoring indicators

- Process indicators
  - Number of projects assessed using the revised biodiversity score
  - Number of nesting provisions implemented
- Ecological indicators
  - Presence and activity of target species post-construction
  - Habitat quality and connectivity improvements
- Engagement indicators
  - Developer satisfaction and compliance rates
  - Feedback received on scoring system usability

Risk mitigation

- Low compliance from developers: Provide clear guidance and support during design phase
- Scoring system too complex: Pilot test and refine based on feedback
- Ecological measures poorly implemented: Include post-construction monitoring and enforcement

- Internal misalignment: Establish regular coordination meetings across departments
- Limited impact on biodiversity: Continuously update criteria based on ecological data and expert input

4.5. Assessing current regulation and policies and their effectiveness

The municipality will evaluate the existing green norm both quantitatively and qualitatively, including the implementation process and, where possible, the outcomes. This assessment will explore how the norm can better align with current challenges such as inner-city development and emerging technologies.

Implementation steps

- Quantitative assessment: Analyse how the green norm has been applied across urban development projects, including surface area calculations and compliance rates.
- Qualitative assessment: Evaluate the ecological and spatial quality of green spaces created under the norm, including usability, biodiversity value, and climate resilience.
- Process review: Examine how the norm is implemented in planning, permitting, and project execution, identifying bottlenecks or inconsistencies.
- Stakeholder engagement: Consult with internal departments (e.g. urban planning, ecology, project delivery) and external partners (e.g. developers, landscape architects) to gather insights.
- Contextual analysis: Assess how the norm aligns with current challenges such as densification, inner-city redevelopment, and emerging technologies (e.g. green roofs, smart irrigation).
- Scenario development: Explore options for updating the norm to better reflect ecological, spatial, and technological realities.
- Policy proposal: Draft recommendations for updating the green norm, including revised definitions, thresholds, and implementation guidelines.
- Communication: Share findings and proposed updates internally and externally to build support and transparency.
- Monitoring framework: Design a system to track the impact of the updated norm on green space quality and quantity over time.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1–Q2 2026: Data collection and stakeholder engagement & Analysis
- Q3 2026: Drafting and internal review of proposed updates
- Q4 2026: Communication and decision-making
- Q4 2026 onward: Implementation and monitoring

Responsibilities

- **Municipality: department living environment & planning**
  - Lead the evaluation and coordinate across departments
  - Integrate findings into spatial planning frameworks
  - Assess ecological quality and climate adaptation potential
  - Advise on biodiversity and resilience criteria
- **Municipality: Project Delivery and Permitting Teams**
  - Provide input on implementation challenges and feasibility
  - Support integration into project workflows
- **Municipality: Data and GIS Teams**
  - Support quantitative analysis and mapping of green space distribution
- **External Stakeholders (Developers, Designers)**
  - Provide feedback on practical implications and opportunities

Costs

- Monitoring framework: €5,000–€8,000
- Staff costs

Funding

- Municipal planning and sustainability budgets

Monitoring indicators

- Process indicators
  - Number of projects assessed under the green norm
  - Rate of compliance and exceptions granted
- Qualitative indicators
  - Ecological value and usability of green spaces
  - Stakeholder satisfaction with the norm's clarity and applicability
- Outcome indicators
  - Increase in green space coverage and quality post-update
  - Integration of innovative green technologies in urban projects

Risk mitigation

- Lack of data availability: Use proxy indicators and collaborate with GIS/data teams
- Stakeholder resistance: Engage early and transparently, and co-develop scenarios

- Overly rigid updates: Build flexibility into the revised norm to accommodate diverse urban contexts
- Implementation gaps: Align updates with permitting and project delivery processes
- Limited ecological impact: Include biodiversity and climate resilience as core evaluation criteria

4.6. BioBlitz

Organizing BioBlitz events where citizens, ecologists, and volunteers work together to identify and record local species. Camera traps are used to monitor wildlife activity, raising awareness of urban biodiversity.

Implementation steps

- Select sites (parks, river valleys, community gardens, schoolyards, natural areas).
- Set dates, among which some during the Week of Biodiversity.
- Form organizing team (municipality, ecologists, nature organizations, schools).
- Acquire or borrow camera traps
- Recruit volunteers, schools, and citizen scientists.
- Launch communication campaign (social media, newsletters, schools).
- Provide instructions for participants (how to observe, record, use apps).
- Organize a 24–48h BioBlitz event where teams identify and record as many species as possible.
- Place camera traps in strategic spots before the event to capture nocturnal/hidden wildlife.
- Run guided tours and mini-workshops (e.g. insect nets, bird watching, fungi walks).
- Collect data via ObsIdentify app
- Retrieve and analyze camera trap footage.
- Document findings
- Share results with participants, schools, and the wider public (website, exhibitions, social media). Highlight species richness and conservation needs
- Use results as baseline biodiversity monitoring for the city
- Evaluate event with stakeholders and prepare next edition.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Preparation & recruitment: 3–4 months before the event.
- Camera traps placed: 1–2 weeks before BioBlitz.

- BioBlitz event: 24–48h (during Week of Biodiversity and possibly also outside).
- Data analysis & reporting: 1–2 months after the event.
- Awareness campaign & exhibition: immediately after results are ready.
- Repetition: annual or more frequently

Responsibilities

- **Municipality: Department of Living Environment**
  - Overall coordination, integration of results into city monitoring.
  - Permit management for event locations if needed.
- **Municipality: Communication Advisors**
  - Event promotion (press releases, social media, posters, school outreach).
  - Dissemination of results to the wider public.
- **Municipality: Green Management Unit**
  - Logistical support (site preparation, safety).
- **Local Nature & Environmental Organizations (e.g. IVN, Brabants Landschap, Stichting Natuur op Noord, RAVON, FLORON)**
  - Provide ecological expertise and guided walks.
  - Support analysis of camera trap data.
- **Academia (HAS Green Academy, Avans)**
  - Provide student volunteers and biodiversity expertise.
  - Support data analysis and link to scientific knowledge.
- **Citizen groups & volunteers**
  - Active participation in species identification.
- **Schools & youth groups**
  - Participation in special education-focused BioBlitz sessions.

Costs

- Camera traps (purchase/borrow): €2,000–€5,000 depending on quantity.
- Communication & awareness: €3,000 (materials, online campaigns).
- Event logistics: €2,000 (equipment, safety, tents, refreshments).
- Data analysis/reporting: €2,500 (staff/student involvement).

Funding

- Municipal biodiversity/education budgets.
- Sponsorships from local businesses (in-kind or financial).
- Volunteer contributions reduce staffing costs.

Monitoring indicators

- **Ecological indicators**
  - Number of species recorded per BioBlitz.
  - Diversity of taxa covered (plants, birds, mammals, insects, fungi).
  - New species records for the city.

- **Engagement indicators**:
  - Number of participants
  - Number of organizations involved.
  - Social media reach and event visibility.
- **Process indicators**:
  - Number of camera traps deployed and hours of footage collected.
  - Quality of data submitted to citizen science platforms.

Risk mitigation

- **Low participation**: Strengthen outreach via schools, community groups, and social media.
- **Poor weather**: Provide alternative indoor activities (lectures, exhibitions).
- **Data quality issues**: Ensure ecologists oversee species verification.
- **Equipment theft/damage**: Use lockboxes for camera traps, insure expensive gear.
- **Limited follow-up**: Secure commitment to repeat events and integrate results into city monitoring.

4.7. Biodiversity Week

A themed week filled with activities, workshops, and educational events to engage residents, schools, and organizations in learning about biodiversity and its importance for a resilient city.

Implementation steps

- Select main activities: workshops, school lessons, guided walks, art projects, BioBlitz, film screenings.
- Develop program schedule
- Involve local schools, NGOs, community gardens, cultural organizations, and businesses.
- Assign responsibilities for co-organization
- Create communication plan
- Target residents, schools, and community groups to maximize participation.
- Launch event
- Execute planned activities across neighborhoods (education, excursions, exhibitions, creative workshops).
- Facilitate inclusive access (activities for different age groups and backgrounds).
- Collect attendance numbers and participant feedback.
- Document events with photos, short videos, and testimonials.
- Track media coverage and social media reach.
- Publish results and reflections online and in local media.
- Use feedback to improve next editions.

- Integrate outcomes into long-term biodiversity awareness campaigns.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Preparation: 6–8 months before event.
- Partnership building & outreach: 4–6 months before.
- Promotion: 2 months before.
- Week of Biodiversity: 7 days (e.g. in May, aligned with International Biodiversity Day).
- Evaluation & reporting: 1–2 months after.
- Repetition: annual event

Responsibilities

- **Municipality: Living Environment Department**
  - Overall coordination, budget management, alignment with biodiversity policy.
  - Facilitate permits/logistics for events in public space.
  - Lead some educational workshops and guided activities.
  - Provide expert input on biodiversity and ecological value.
- **Municipality: Communication Advisors**
  - Design and execute awareness campaigns (press, social media, posters).
  - Disseminate outcomes and success stories.
- **Local Nature Organizations (IVN, Brabants Landschap, Stichting Natuur op Noord, etc.)**
  - Lead educational workshops and guided activities.
  - Provide expert input on biodiversity and ecological value.
- **Academia (HAS Green Academy, Avans)**
  - Involve students in workshops and monitoring perceptions (before/after surveys).
- **Schools & Youth groups**
  - Integrate biodiversity lessons into school programs.
  - Encourage student participation in BioBlitz and creative projects.
- **Community gardens & stewardship groups**
  - Host workshops, site visits, and hands-on activities
- **Artists & cultural partners**
  - Organize biodiversity art projects (e.g. exhibitions, performances).

- **Citizens & volunteers**
    - Active participation in activities.

Costs

- Coordination & logistics: included in municipal staff hours or in-kind contributions of partners.
- Communication campaign: €5,000 (design, printing, online promotion, photography).
- Workshops, materials, and activities: €5,000–€10,000.

Funding

- Municipal budget: biodiversity, education programs.
- Provincial/national subsidies: for environmental education, climate awareness, or cultural events.
- EU small grants: URBACT, LIFE
- Local businesses & sponsors: in-kind (e.g. providing space, catering, or materials) or financial.
- Community co-contributions: volunteer support, schools providing spaces, NGOs offering workshops.

Monitoring indicators

- Engagement indicators:
    - Number of participants overall and per activity.
    - Number of schools and organizations involved.
    - Demographic diversity of participants.
- Awareness indicators:
    - Pre/post surveys on biodiversity knowledge and attitudes.
    - Social media reach and engagement (shares, likes, comments).
    - Media coverage (articles, radio/TV mentions).
- Process indicators:
    - Number and variety of activities organized.
    - Feedback from organizers and participants.

Risk mitigation

- Low participation: strengthen outreach via schools, community networks, and diverse communication channels.
- Limited diversity of audience: ensure inclusive programming (activities in different neighborhoods, free access, events in multiple languages if needed, also accessibility of locations).
- Poor weather: provide indoor alternatives (lectures, film screenings, exhibitions).
- Capacity constraints: distribute responsibilities across organizations and volunteers.

- Sustainability risk: secure early agreements to repeat annually, ensuring continuity.

4.8. Biodiversity art

Public art installations, such as murals and wooden sculptures, are used to creatively highlight biodiversity and spark curiosity and dialogue in the community.

Implementation steps

- Identify suitable public spaces (e.g. squares, parks, near schools, community centers).
- Develop artistic concepts in collaboration with local artists, ecologists, and community groups.
- Obtain permits and align with municipal departments (spatial planning, public works).
- Create and install artworks (murals, wooden sculptures from dead trees, etc.).
- Launch with community events or guided tours to explain meaning and link to biodiversity.
- Maintain and periodically update installations (cleaning murals, preserving sculptures).

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Preparation & concept design: 2–3 months.
- Permits and approvals: 1–2 months (can run parallel).
- Implementation/installation: 1 month per artwork.
- Awareness campaign & events: directly after installation.
- Ongoing maintenance: annually or as required.

Responsibilities

- **Municipality (Department living environment (designers of public space) & culture)**: site selection, permits, embedding in public space policy.
- **Municipality (Communication advisors)**: awareness campaign, storytelling, linking artwork to biodiversity themes.
- **Local artists/ art collectives**: design and realization of the artworks.
- **Local nature organizations & ecologists**: provide ecological input, ensure artworks connect with biodiversity message.
- **Community groups & schools**: involvement in co-creation, workshops, and unveiling events.

- **Facility management / Public Works**: long-term maintenance coordination.

Costs

- Artist fees & materials (murals, sculptures): €5,000–€10,000 per installation (depending on size and complexity).
- Communication & awareness campaign: €1.000
- Maintenance (cleaning/protection): €500–€1,000 annually per installation.

Funding

- Municipal cultural budgets, neighbourhood funds, and/ or biodiversity budgets
- Provincial / national cultural funds (public art, education).
- EU creative/environmental programs (Creative Europe, LIFE).
- Corporate sponsorships (local businesses supporting public art).
- Community fundraising/ in-kind contributions (workshops, materials, volunteers).

Monitoring indicators

- Number of art installations realized.
- Number of visitors/participants at related events.
- Media coverage and social media engagement.
- Surveys on community awareness/ perception before and after.
- Longevity and visibility of installations in public space.

Risk mitigation

- Vandalism or damage: use protective coatings, engage local community in co-ownership.
- Low community acceptance: co-create with residents and schools, include participatory workshops.
- Budget overruns: pilot small-scale installations first, secure multiple funding sources.
- Maintenance gaps: agree on long-term responsibilities upfront with facility management.

4.9. Jane Jacobs Walk

Guided walks inspired by urbanist Jane Jacobs, encouraging residents to explore their neighbourhoods through the lens of ecological and social resilience, and to reflect on the role of nature in urban life.

Implementation steps

- Concept development: Define the purpose and themes of the walks, inspired by Jane Jacobs' principles of urban vitality, with a focus on ecological and social resilience.
- Route selection: Identify suitable neighbourhoods and walking routes that highlight urban nature, community spaces, and resilience features.
- Content creation: Develop walking guides, reflection prompts, and materials that encourage participants to observe and discuss the role of nature in urban life.
- Promotion and outreach: Launch a communication campaign to invite residents, using online channels, flyers, and community networks.
- Walk implementation: Organize a series of guided walks across different neighbourhoods, ensuring accessibility and inclusivity.
- Feedback collection: Gather participant feedback through surveys or informal conversations to evaluate impact and improve future walks.
- Documentation and reporting: Summarize outcomes, insights, and recommendations for future engagement activities.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q2 2026: Concept development, route selection
- Q3 2026: Facilitator training, content creation, and promotion
- Late summer to early autumn 2026: Walk implementation and feedback collection
- Q4 2026: Evaluation and reporting

Responsibilities

- **Municipality: Urban Planning and Sustainability Teams**
  - Lead concept development and coordination
  - Ensure alignment with broader resilience and engagement strategies
  - Facilitate walks and contribute to content development
- **Municipality: Communications Team**
  - Support outreach and promotion
  - Assist with documentation and reporting

Costs

- Facilitator training and fees: €4,000–€7,000
- Promotional materials and outreach & Evaluation and reporting: €2,000–€3,000

Funding

- Municipal engagement and sustainability budgets
- Cultural or educational grants
- In-kind contributions from partners

Monitoring indicators

- Participation indicators
  - Number of walks organized
  - Number and diversity of participants
- Engagement indicators
  - Participant feedback on awareness and learning
  - Interest in follow-up activities or initiatives
- Process indicators
  - Number of facilitators trained
  - Number of neighbourhoods involved

Risk mitigation

- Low participation: Engage trusted local partners and tailor outreach to community needs
- Limited accessibility: Ensure routes are inclusive and offer alternative formats (e.g. audio guides)
- Weather disruptions: Plan flexible scheduling and indoor alternatives
- Lack of impact: Use strong facilitation and reflection tools to deepen engagement

4.10. Informative signs

Installing clear and accessible signage at locations where ecological interventions may raise questions or concerns, helping to inform and engage the public transparently.

Implementation Steps

- Site identification: Map locations where ecological interventions (e.g. altered mowing regimes, habitat creation, water buffering) may raise questions or concerns among residents.
- Message development: Create clear, concise, and engaging messages that explain the purpose, benefits, and expected outcomes of the intervention.
- Design and accessibility: Ensure signage is visually appealing, weather-resistant, and accessible to diverse audiences (e.g. multilingual, easy-to-read, inclusive design).
- Coordination with departments: Align messaging and placement with relevant municipal teams (e.g. ecology, public space, communications).
- Production and installation: Print and install signage at selected sites, ensuring visibility and minimal disruption to the intervention itself.

- Digital integration: Link signage to online resources (e.g. QR codes) for deeper information, videos, or citizen science opportunities.
- Monitoring and maintenance: Regularly check signage condition and relevance, and update as needed based on feedback or ecological changes.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1 2026: Site selection and message development
- Q2 2026: Design finalization and coordination
- Q3 2026: Production and installation
- Q4 2026–Q1 2027: Engagement activities and monitoring

Responsibilities

- **Municipality: Ecology and Green Management Teams**
  - Identify intervention sites and provide ecological content
  - Ensure accuracy and relevance of messages
- **Municipality: Communications Team**
  - Coordinate design, accessibility, and public-facing messaging
  - Coordinate digital integration and outreach
- **Municipality: Public Space and Maintenance Teams**
  - Support installation and upkeep of signage
- **External Partners (e.g. IVN, nature organizations)**
  - Advise on messaging

Costs

- Content development and design, production and installation, digital integration and QR-linked resources: €2,000

Funding

- Municipal biodiversity and public engagement budgets

Monitoring indicators

- Process indicators
  - Number of signs installed
  - Number of sites covered
- Engagement indicators
  - QR code scans or website visits
  - Public feedback and awareness levels
- Maintenance indicators

  - Condition and readability of signage over time
  - Frequency of updates or replacements

Risk mitigation

- Vandalism or damage: Use durable materials and place signage in visible, well-used areas
- Low public engagement: Combine signage with interactive elements and outreach campaigns
- Message confusion: Test messages with target audiences before rollout
- Outdated content: Set review cycles and link to dynamic digital resources
- Installation delays: Coordinate early with public space teams and contractors

4.11. Educational lessons in schools

Biodiversity-themed lessons are delivered in schools, with pre- and post-activity surveys to monitor changes in students' perceptions and understanding of nature and climate resilience.

Implementation steps

- Curriculum development: Design engaging biodiversity-themed lessons tailored to different age groups, focusing on nature, ecosystems, and climate resilience.
- School outreach: Identify and collaborate with schools willing to participate, and align content with existing educational goals.
- Survey design: Create pre- and post-activity surveys to measure changes in students' knowledge, attitudes, and perceptions of biodiversity and nature.
- Teacher training: Provide materials and optional training sessions for people delivering the lessons.
- Lesson delivery: Implement the lessons in classrooms or outdoor settings, using interactive and experiential learning methods.
- Survey administration: Conduct pre-surveys before the lesson and post-surveys immediately after or in the following weeks.
- Data analysis: Evaluate survey results to assess impact and identify areas for improvement.
- Reporting and refinement: Share findings with schools and partners, and refine lesson content based on feedback and outcomes.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1 2026: Curriculum and survey development, school recruitment

- Q2 2026: Teacher training and lesson preparation
- Q3 2026: Lesson delivery and survey administration
- Q4 2026: Data analysis, reporting, and refinement

Responsibilities

- **Municipality: Education and living environment department**
  - Coordinate curriculum development and school engagement
  - Oversee survey design and data analysis
  - Deliver lessons and support survey administration
  - Provide feedback on content and student engagement
- **External Educators and Nature Organizations (e.g. IVN, Groene Pad)**
  - Support lesson delivery and contribute to content development
  - Assist with training and evaluation
- **Municipality: Communications Team**
  - Support outreach and share results with broader audiences

Costs

- Training and materials: €5,000–€10,000

Funding

- Municipal education and sustainability budgets
- EU funding for environmental education and youth engagement
- In-kind contributions from schools and nature organizations

Monitoring indicators

- Participation indicators
  - Number of schools and students involved
  - Number of lessons delivered
- Impact indicators
  - Change in student knowledge and attitudes (pre/post survey results)
  - Teacher feedback on lesson effectiveness
- Process indicators
  - Number of people trained
  - Quality and relevance of materials used

Risk mitigation

- Low school participation: Engage early and align with curriculum goals
- Limited impact on students: Use interactive and age-appropriate methods
- Survey fatigue or low response rates: Keep surveys short and engaging
- Inconsistent delivery: Provide clear guidance and optional support for educators
- Budget constraints: Leverage partnerships and seek co-funding

4.12. Development of a practical guide for green roofs

The municipality will explore the possibility of developing this guide as a student project in collaboration with HAS or Avans. The guide will be co-created with housing corporations, tenant associations, urban ecologists, and municipal staff, and will offer practical advice on requesting, installing, and maintaining vertical greenery and green roofs, based on best practices.

Implementation steps

- Project scoping: Define the objectives, target audience, and content structure of the guide, focusing on practical advice for requesting, installing, and maintaining vertical greenery and green roofs.
- Student collaboration setup: Establish a partnership with HAS or Avans to develop the guide as a student project, including supervision, timelines, and deliverables.
- Stakeholder engagement: Involve housing corporations, tenant associations, urban ecologists, and municipal staff in co-creation workshops to gather input and best practices.
- Content development: Collect and synthesize technical, ecological, and procedural information, including case studies and visual examples.
- Design and accessibility: Ensure the guide is user-friendly, visually clear, and accessible to a broad audience (e.g. tenants, housing managers, municipal staff).
- Review and validation: Organize expert reviews and stakeholder feedback sessions to refine the guide.
- Publication and distribution: Publish the guide digitally and/or in print, and distribute through municipal channels, housing networks, and educational platforms.
- Follow-up and evaluation: Monitor how the guide is used and gather feedback for future updates or complementary materials.

Timing

Below is an indication of the intended phasing in quarters. These quarters are provided solely as a general guideline and do not constitute a formal schedule. The implementation of actions depends on available resources, internal prioritization, and collaboration with stakeholders.

- Q1 2026: Project scoping and student collaboration setup
- Q2 2026: Stakeholder engagement and initial content development and drafting, design, and review
- Summer 2026 (Q3): Finalization, publication, and distribution
- Q4 2026 onward: Evaluation and follow-up

Responsibilities

- **Municipality: department of living environment**
  - Coordinate project scope and stakeholder involvement
  - Ensure alignment with municipal greening policies
  - Advise on ecological and technical accuracy
  - Review and validate content
- **HAS / Avans (Student Team + Supervisors)**
  - Lead content development and design
  - Manage project planning and delivery
- **Housing Corporations and Tenant Associations**
  - Provide practical insights and user needs
  - Support dissemination and implementation
- **Municipality: Communications Team**
  - Support design, publication, and outreach

Costs

- Design and layout, publication and distribution: €2,000–€4,000

Funding

- Municipal sustainability & communication budget

Monitoring indicators

- Output indicators
  - Number of guides distributed/downloaded
  - Quality and clarity of content (based on feedback)
- Impact indicators
  - Increase in tenant or housing corporation interest in vertical greenery
  - Uptake of green roof or façade initiatives following guide publication

Risk mitigation

- Limited student capacity or delays: Set clear timelines and provide supervision
- Content gaps or inaccuracies: Include expert review and iterative feedback
- Limited uptake of the guide: Promote through trusted networks and link to practical support

5. Implementation framework

Each action within the Integrated Action Plan (IAP) is implemented by the relevant municipal department, based on its mandate and expertise. Coordination occurs through existing interdepartmental processes, with policy alignment ensured by the Department living environment. Progress is monitored through regular reporting and internal reviews, supported by action-specific indicators. Stakeholder engagement is

embedded where relevant, and feedback from implementation is used to refine future actions.

Participation will continue through stakeholder involvement in the implementation of individual actions. Existing partnerships with residents, schools, nature organizations, and developers will be maintained via co-creation, feedback sessions, and public engagement activities.

Each action has its own budget and funding strategy, combining municipal resources with potential co-funding from provincial, national, or EU programs. In-kind contributions from partners and community groups will support cost-efficiency.

Implementation will take place in the coming years. Actions will be reviewed collectively to identify priorities and assess what is realistically feasible each year. The timing is dependent on capacity and alignment with other municipal processes.

Monitoring will be action-specific, using predefined indicators (e.g. ecological impact, participation, process quality). Progress will be reviewed internally and shared with stakeholders where relevant, supporting learning and accountability.

Risks are managed at the action level, with mitigation strategies tailored to each activity. Common risks include low engagement, budget constraints, and implementation delays, addressed through early planning, flexible design, and strong partnerships.

6. Dissemination of IAP

To share the Integrated Action Plan (IAP) locally, the municipality organized one or more dissemination events in Q4 2025. These events will bring together internal staff, stakeholders, and community partners to present the IAP, highlight key actions, and invite feedback. The format may include a plenary session, interactive breakout discussions, and visual presentations of selected actions. In parallel, a communication package will be developed to support broader outreach.

Do you have questions or suggestions in regards to the Integral Action Plan?
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