Integrated Action Plan (IAP)

City of Sarajevo

Co-funded by the European Union via URBACT IV

Contents

1. Introduction

1.1 Background: Sarajevo's Biodiversity Context

Sarajevo, the capital of Bosnia and Herzegovina, is a city marked by post-war reconstruction and rapid urbanization. According to the *Sarajevo Green Plan 2022*, only **9.5% of the city's land area is functional green space**, far below the EU average of 18%. Urbanization has fragmented habitats, leading to a **40% decline in native bee populations** since 2010 (BiH Environmental Agency, 2023). The city's unique topography, nestled between the Dinaric Alps and the Miljacka River, offers opportunities for ecological restoration but faces challenges like soil degradation and air pollution.

Urbanization and Green Spaces

According to the Sarajevo Green Cantonal Action Plan, the city has been experiencing significant urban development, leading to habitat fragmentation and a reduction in green spaces.[1] This urban expansion has resulted in environmental challenges, including soil degradation and air pollution.

Biodiversity and Endemic Species

Bosnia and Herzegovina is recognized for its rich biodiversity, with approximately 30% of the Balkan endemic flora (around 1,800 species) found within its borders.[2] This places the country among the most biodiverse in Europe.[3] The varied landscapes, ranging from Mediterranean to alpine ecosystems, support a wide array of flora and fauna.

Environmental Challenges

Despite its biodiversity richness, Bosnia and Herzegovina faces significant environmental challenges. Data on biodiversity is scarce, fragmented, and often outdated, hindering effective conservation efforts.[4] Anthropogenic pressures such as habitat conversion, over-exploitation of resources, pollution, climate change, and invasive species pose threats to biodiversity.[5]

1.2 The BiodiverCity Network

[1] Green Cantonal Action Plan for Sarajevo
[2] CBD fifth national report
[3] Convention on Biological Diversity - Country profile
[4] BOSNIA AND HERZEGOVINA BIODIVERSITY
[5] Convention on Biological Diversity - Country profile

In the bustling cities of our Network, a remarkable initiative called BiodiverCity is taking root. With a vision to harness the power of nature-based solutions, BiodiverCity aims to measure biodiversity and account for the related ecosystem services to design and scale up transformative projects. The partner cities of this URBACT project envision a future where vibrant urban ecosystems and community-driven actions harmoniously coexist.

The project encompasses an EU-wide partnership between 10 European cities, covering a diverse group of cultures, urban and green spaces and people - the beating heart of this project. From 2023 until the end of 2025, the partners are as follows: Cieza (ES) Dunaújváros (HU) as Lead Partner, Landscape Laboratory (PT), Limerick City C County Council (IE), Poljčane (SI), Sarajevo (BA), Siena (IT), 's-Hertogenbosch (NL), Veszprém
(HU) and Vratsa (BG).

BiodiverCity harnesses the immense potential of cities in raising awareness and driving innovation to create community-based approaches that value, measure, and account for biodiversity and its associated ecosystem services. The network seeks to empower communities, enabling them to plan and implement powerful nature-based solutions, while nurturing pro-environmental behaviors. With a vision of sustainable urban development, we aim to make a significant contribution to the EU Biodiversity Strategy and the collective effort to safeguard our planet's precious natural heritage.

The central idea of BiodiverCity revolves around the concept of finding solutions in nature itself. By recognizing the value of ecosystem services, such as clean air, water, and pollination, communities can develop nature-based solutions to pressing urban challenges.

Through active participation, communities will contribute to the drafting of Greening Plans, ensuring a sustainable future where human activities and biodiversity thrive
harmoniously. This can be achieved in a myriad of different ways, such as by increasing the green surfaces of a city to successfully combat the drastically increased urban heat of recent years - both by increasing shade and air quality, and by maintaining and further increasing atmospheric humidity to reduce the 'curse' of concrete jungles. This way we can propagate a higher quality urban biome, while also bringing nature closer to us humans – or bringing us back „home", to nature..

Community Engagement and Ecological Initiatives

Sarajevo's approach emphasizes the role of green spaces in promoting peace and community cohesion. Initiatives such as the establishment of insect hotels aim to revive pollinator populations and educate communities about biodiversity. The creation of "Peace Circles," biodiverse green spaces symbolizing unity, in accordance with the Peace Circle™ initiative.

1.3 Project Scope

- **Insect Hotels**: Three installations designed to support pollinator species and serve as educational tools for the schools' and community.
- **Peace Circles**: Two biodiverse green spaces intended to symbolize unity and foster students, school kids and community engagement.
- **Budget**: €10,000 from the URBACT grant
- **Integration with Existing Environmental Strategies**

Sarajevo's participation in the BiodiverCity Network complements existing environmental strategies, such as the Green Cantonal Action Plan and the Environmental Strategy and Action Plan 2030+ (ESAP 2030+).[6] These strategies aim to harmonize environmental practices and actions across Bosnia and Herzegovina, promoting sustainable development and improving the health and well-being of citizens. [7]

Conclusion

Sarajevo's commitment to enhancing urban biodiversity through community-driven projects reflects a broader strategy to integrate ecological restoration with social cohesion. By participating in networks like BiodiverCity and implementing targeted initiatives, the city aims to transform underutilized spaces into vibrant, biodiverse areas that contribute to environmental sustainability and community well-being.

Section 2: Context, Needs, and Vision

2.1 Ecological Profile

Sarajevo, the capital of Bosnia and Herzegovina, is recognized for its rich natural heritage and biodiversity. However, rapid urbanization, post-war reconstruction, and limited green space planning have led to significant ecological challenges.

Addressing these issues is critical to ensuring Sarajevo's environmental sustainability, enhancing climate resilience, and preserving biodiversity.

Key Challenges

Habitat Fragmentation

Data: According to the Sarajevo Urban Institute (2023), 62% of Sarajevo's green spaces are isolated patches due to unchecked urban development and infrastructure expansion. This fragmentation has led to the displacement of several native species and the disruption of ecological corridors essential for species migration.

Impact: Habitat fragmentation reduces genetic diversity, particularly among native species like the

[6] The BiH ESAP 2030+ – BIH ESAP 2030+
[7] Healthy soil will provide for healthy food | United Nations Development Programme

Rosalia alpina[8] beetle (BiH Red List, 2022). Fragmentation creates isolated populations, increasing vulnerability to environmental changes and reducing reproductive success. This issue is exacerbated by the loss of old-growth trees, which are essential for species like the *Rosalia alpina*, as they rely on decaying wood for reproduction

Proposed Solutions:

- **Establishing ecological corridors to reconnect green patches and promote species movement.**
- **Implementing green roof policies to increase biodiversity within urbanized areas.**
- **Expanding tree planting initiatives to create continuous green spaces.**

Soil Degradation

Data: Studies from the Faculty of Agriculture and Food Science (2024) indicate that 30% of Sarajevo's urban soil is either compacted or contaminated due to industrial activities, traffic emissions, and improper waste disposal.

Impact: Degraded soil reduces its ability to support native plant species, thereby limiting habitats for pollinators and soil microorganisms. Soil erosion also contributes to increased runoff and decreased groundwater recharge, exacerbating urban flooding risks.

Proposed Solutions:

- **Implementing urban composting programs to enhance soil quality.**
- **Encouraging the use of permeable surfaces in urban planning to mitigate soil compaction.**
- **Restoring degraded urban land with native plant species to improve soil retention and ecosystem health.**
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Target Sites for Biodiversity Enhancement

University of Sarajevo Campus

- **Size: 13,8 hectares of land.**[9]
- **Opportunity: Integration of insect hotels to support pollination studies and measure the ecological benefits of restored biodiversity.**[10]

[8] Rosalia longicorn — Rosalia alpina (Linnaeus) - Zemaljski muzej BiH
[9] Kampus Univerziteta u Sarajevu – jedan od najvećih projekata - M-Kvadrat
[10] SUSTAINABLE LAND MANAGEMENT

- **Planned Actions: Establishing wildflower meadows, increasing tree canopy coverage, and installing native bee habitats.**
- **Current State: Lawns provide minimal ecological benefits and lack diversity.**
- **Planned Actions: Installing an insect hotel and developing pollinator-friendly gardens to engage students in citizen science.**

2.2 Stakeholder Analysis

URBACT Local Group (ULG) and Stakeholder Contributions

Stakeholder	Role	Contribution
City of Sarajevo	Permitting, funding, oversight	Staff time and 2.496 €
Faculty of Agriculture and Food Science	Maintenance	Staff time

Stakeholder	Role	Contribution
Educational Institutions	Student engagement	Incorporating biodiversity modules into curricula

Community Engagement Findings

- **Participation platform (Decidim) results: 78% of surveyed residents expressed strong support for insect hotels, citing the need for increased urban biodiversity.**
- **Youth Involvement: Primary school pupils at "Aleksa Šantić" and "Kovačići" as well as Faculty of Agricalture students promote sustainability and educate on biodiversity using insect hotels.**

2.3 Policy Alignment

Sarajevo Green Plan 2022

The Sarajevo Green Plan 2022 sets ambitious goals to increase pollinator habitats by 25% by 2030. Initiatives such as tree planting, pollinator-friendly landscaping, and urban farming are included in this strategy to create a sustainable urban environment.

Alignment with the EU Green Deal and UN Sustainable Development Goals

The city's biodiversity IAP aligns with the EU Green Deal, specifically supporting:

- **SDG 11: Sustainable Cities and Communities – improving urban green spaces for biodiversity and public well-being.**
- **SDG 15: Life on Land – restoring ecosystems and halting biodiversity loss.**

2.4 Vision

Vision Statement:
"By 2027, Sarajevo will be a model of urban biodiversity where green spaces foster peace, education, and ecological resilience."

Goals to Achieve by 2027:

- Try to increase Sarajevo's total green space coverage by 5% in cooperation with local municipalities.
- Establish 5 new pollinator-friendly gardens across the city.
- Try to implement biodiversity-focused educational programs in 10% of Sarajevo's schools. (Using actions such as Insect hotel, Peace Circle etc.)

Conclusion

Sarajevo is at a pivotal moment in its environmental strategy. Through biodiversity- focused urban planning and community engagement, the city can emerge as a leader in sustainable urban development. The integration of nature-based solutions, ecological restoration projects, and educational initiatives will ensure that Sarajevo's green spaces serve both environmental and social functions, fostering resilience and sustainability for future generations.

Section 3: Integrated Strategic Framework

3.1 Thematic Intervention Areas

1. Pollinator Habitat Creation

The decline in pollinators is a significant concern in Sarajevo due to habitat loss, pesticide use, and urban expansion. To address this, a targeted pollinator habitat creation program will be implemented across key urban sites.

Actions:

- **Install three insect hotels** using possibly reclaimed wood. These structures provide shelter for beneficial insects, promoting biodiversity and aiding in pollination.[11]

- **Plant native wildflowers** (*Centaurea cyanus*, *Papaver rhoeas*) at all designated sites to increase food sources for pollinators and enhance floral diversity. These species are known to support a variety of pollinators and contribute to ecosystem health.[12]

- **Reduce pesticide use** in public green spaces through awareness campaigns and municipal policy adjustments. This action aims to create safer habitats for pollinators and other beneficial insects.

Key Performance Indicators (KPIs):

- Achieve a **30% increase in pollinator sightings** by 2027, as measured by biannual biodiversity surveys conducted by the Faculty of Agriculture.

2. Peace Circles: Green Spaces for Ecological and Social Resilience

Peace Circles serve as symbolic and functional biodiversity spaces aimed at promoting environmental education and social cohesion.

Design and Implementation:

- **Central Peace Tree:** Plant **Pinus heldreichii** (Bosnian Pine) if possible, a culturally and ecologically significant native species, in each Peace Circle.

- **Circle of Guardians:** Nine **Carpinus betulus** (European Hornbeam) trees will be planted in a ring, honoring Sarajevo-based environmentalists and peacebuilders.[13]

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[11] Insect hotels

[12] Papaver rhoeas and Centaurea cyanus

[13] *Depending on availability*

3.2 Cross-Cutting Integration

To ensure that biodiversity initiatives in Sarajevo are inclusive, technologically enhanced, and aligned with broader sustainability goals, the following integration strategies will be applied:

Gender Equity in Environmental Leadership

- **ULG members:** Ensure that at least **60% of ULG members** leading biodiversity and sustainability are women, promoting gender equity in environmental decision-making.

- **Biodiversity Monitoring App:** Integrate **iNaturalist** to allow residents to record and track pollinator activity, contributing to a citizen-science database.

3.3 Transnational Learning

Sarajevo's urban biodiversity initiatives will incorporate best practices from selected **BiodiverCity URBACT Network** partner cities to ensure practical, adaptable, and locally relevant strategies.

Adapting Best Practices from BiodiverCity Partners

1. Sienna (Italy) Community-Led Biodiversity Monitoring

- **Key Learning:** Sienna has successfully implemented citizen science initiatives using City Nature Challenge to engage residents in biodiversity monitoring and conservation.
- **Adaptation in Sarajevo:**
  - Implement an **iNaturalist-based biodiversity monitoring program** that allows residents to document pollinators and urban wildlife.
  - Train **community volunteers and students** to track and record species diversity in Peace Circles and insect hotel sites.

2. Limerick City & County Council (Ireland): Urban Pollinator Strategies

- **Key Learning:** Limerick has pioneered urban pollinator-friendly projects through collaboration with local businesses and schools.
- **Adaptation in Sarajevo:**
  - Develop a **Sarajevo Pollinator Corridor**, linking green spaces across the city to improve habitat connectivity for bees and butterflies.
  - Work with local schools to create **pollinator-friendly gardens** and integrate biodiversity education into curricula.

Conclusion

The Integrated Strategic Framework for Sarajevo's Biodiversity Plan combines ecological restoration, community engagement, and transnational learning. Through pollinator habitat creation, Peace Circles, gender equity measures, digital tools, and international best practices, Sarajevo aims to become a leading example of urban biodiversity resilience by 2027. These initiatives align with both local environmental policies and broader EU sustainability frameworks, ensuring a lasting impact on the city's ecological and social landscape.

Section 4: Action Plan Details

4.1 Insect Hotel Initiative

Design Specifications

Materials:

- **Reclaimed Wood:** Sourced from the Sarajevo Reuse Center, reclaimed wood offers sustainability benefits by repurposing materials that would otherwise contribute to waste. This aligns with circular construction principles, emphasizing environmental benefits and unique aesthetics.[14]

- **Bamboo Stalks:** Bamboo is a sustainable material known for its rapid growth and minimal environmental impact. Its hollow structure provides ideal nesting sites for various pollinators, particularly solitary bees.[15]

- **Terracotta Pots:** Utilized to create humid microhabitats, terracotta pots support species like lacewings and ladybugs, which are beneficial for pest control.[16]

Dimensions: Each insect hotel will measure 1.5 meters in height and 1 meter in width. The design includes multiple compartments tailored to attract and accommodate different beneficial insect species:

- **Solitary Bees:** Hollow bamboo stalks and drilled wooden blocks will provide nesting sites.
- **Ladybugs:** Compartments filled with dry leaves and twigs will offer shelter, aiding in natural aphid control.
- **Lacewings:** Terracotta pots stuffed with straw will serve as ideal habitats, supporting these insects that prey on common garden pests.

Implementation

*1. **Primary school Aleksa Šantić:***

- **Location:** Primary school Aleksa Šantić backyard
- **Monitoring:** Plan is that school teachers will conduct quarterly species data collection using the iNaturalist platform, facilitating citizen science participation and data transparency.
- **Educational Workshops:** Collaborations with other local schools and community groups will promote awareness about the importance of pollinators and demonstrate how to construct and maintain insect hotels.

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[14] https://www.mdpi.com/2075-5309/14/3/560

[15] Do Bees Like Bamboo Plants

[16] https://www.researchgate.net/publication/339503450_Terracotta_Pots_as_Refuges_for_Beneficial_Insects

2. University of Sarajevo Campus:

- **Current State:** The campus encompasses 10.3 hectares, primarily consisting of monoculture lawns with limited biodiversity.
- **Action Plan:** Installing insect hotel in strategic locations to serve as living laboratories for over 20,000 students, integrating them into biology and environmental science curricula.
- **Community Engagement:** Profesors will participate in the design, construction, and monitoring processes, fostering a sense of ownership and practical learning experiences.

3. Primary school Kovačići:

- **Location:** Primary school Kovačići backyard
- **Monitoring:** Plan is that school teachers will conduct quarterly species data collection using the iNaturalist platform, facilitating citizen science participation and data transparency.
- **Educational Workshops:** Collaborations with other local schools and community groups will promote awareness about the importance of pollinators and demonstrate how to construct and maintain insect hotels.

4.2 Peace Circle Development

Symbolic Elements

1. Central Peace Tree:

- **Species Selection:** Species have been chosen for its cultural significance and resilience to local climatic conditions. These native species symbolizes endurance and peace.
- **Planting Ceremony:** A community event will mark the planting, fostering cultural heritage and community cohesion.

2. ABC Lines:

Inspired by the Establishing a Peace Circle™ manual, the ABC Lines concept incorporates specific plantings to represent core human values.

3. Circle of Guardians:

- **Design:** Trees will be planted in a circular formation.

Budget Allocation

A detailed budget ensures transparency and effective resource management. Below is a breakdown of the allocated funds:

Item	Cost (€)	Supplier
Reclaimed Wood	5,000	
Plants	3,500	
Insect Hotel Materials	2,496,64	
Planting	1,500	
Total	***12.496,64***	

Conclusion

The implementation of insect hotels and Peace Circles in Sarajevo is a pivotal step toward restoring urban biodiversity while fostering community engagement. By integrating sustainable materials, scientific monitoring, and cultural heritage, the project aligns with Sarajevo's Green Plan 2022 and international biodiversity strategies. Continued collaboration among academic institutions, NGOs, and local communities will ensure that these initiatives thrive and expand, serving as models for future ecological restoration projects.

Section 5: Implementation Roadmap

5.1 Governance

Steering Committee and Oversight

The successful implementation of Sarajevo's biodiversity initiatives requires strong governance and collaboration among stakeholders. A dedicated **Steering Committee** will oversee project execution, ensure accountability, and coordinate activities across different sectors.

Committee Structure:

- **Chair:** Department for Sustainable Development, City of Sarajevo.
- **Members:**
  - **Faculty of Agriculture and Food Science, University of Sarajevo:** Responsible for ecological impact assessments and scientific monitoring.
  - **NGO Naše ptice:** Birds tracking, protection and observation. Protection of biodiversity and enviroment.
  - **Local Schools and Universities:** Engage students in biodiversity monitoring and citizen science projects.
  - **Private Sector Representatives:** Support sustainability initiatives through sponsorships and in-kind contributions.

Key Responsibilities:

- **Meetings:** The Steering Committee will convene to review project progress, address challenges, and adjust strategies as needed.
- **Public Reports:** A transparent reporting system will be established to share project outcomes and performance indicators with stakeholders and the general public.
- **Legal and Policy Compliance:** Ensure alignment with Sarajevo's Green Plan 2022, EU biodiversity regulations, and national environmental policies.

5.2 Risk Management

A proactive risk management strategy is essential to address potential obstacles and ensure the long-term sustainability of biodiversity initiatives in Sarajevo.

Risk Identification and Mitigation Strategies

Risk	Mitigation Strategy
Budget Shortfalls	Establish pre-negotiated discounts with suppliers; explore alternative funding from EU grants and corporate sponsorships.
Extreme Weather Events	Utilize climate-resilient plant species; implement protective coverings for young trees and pollinator habitats.
Low Public Engagement	Organize community events, workshops, and media campaigns to raise awareness and encourage participation.
Maintenance Challenges	Assign long-term maintenance responsibilities to local institutions and community groups.

5.3 Monitoring and Evaluation

The monitoring framework will track progress, assess ecological impacts, and ensure that biodiversity targets are met.

Monitoring Tools

- **iNaturalist Platform:** A citizen-science application that enables the public to document pollinator sightings and contribute to biodiversity data collection.
- **Annual Biodiversity Surveys:** Faculty of Agriculture will conduct field assessments to measure plant health, insect populations, and habitat improvements.

Key Performance Indicators (KPIs)

- **Pollinator Diversity:** Achieve a **30% increase in pollinator species diversity** by 2027, as recorded through field observations and iNaturalist data.
- **Community Participation:** Engage **at least 2,000 volunteers** in habitat restoration and biodiversity monitoring activities by 2027.
- **Green Space Expansion:** Increase Sarajevo's functional green space by **5% by 2030**, aligning with the city's sustainability goals.

5.4 Implementation Timeline

A phased approach will be adopted to ensure smooth execution and sustained impact.

Year 1 (2024 - 2025): Project Launch and Infrastructure Setup

- Establish Steering Committee and governance structure.
- Identify target sites for Peace Circles and insect hotels.
- Conduct baseline biodiversity surveys.
- Initiate community outreach and engagement programs.
- Install insect hotels and begin pollinator habitat restoration.

Year 2 (2025 - 2026): Expansion and Community Engagement

- Conduct biodiversity monitoring using iNaturalist and academic field surveys.
- Launch educational workshops and public campaigns.

Year 3 (2026 - 2027): Assessment and Long-Term Strategy

- Evaluate project success based on KPIs.
- Establish long-term maintenance strategies in collaboration with local authorities.
- Expand successful initiatives to additional sites across Sarajevo.

Conclusion

The **Implementation Roadmap** ensures that Sarajevo's biodiversity initiatives are effectively governed, resilient to risks, and closely monitored for impact. By fostering cross-sector collaboration, engaging the community, and leveraging innovative tools, Sarajevo can establish itself as a model city for urban biodiversity and sustainable development.

Section 6: Annexes

Annex A: Partner Profiles

1. Faculty of Agriculture and Food Sciences, University of Sarajevo

- **Role in Project:**

The Faculty of Agriculture and Food Sciences, University of Sarajevo (PPF) serves as the principal scientific partner within the BiodiverCity IAP, providing academic expertise, ecological guidance, and long-term research support for all biodiversity interventions in the Campus of the University of Sarajevo.

As one of the leading institutions in agroecology, ecology, environmental sciences, and sustainable land management in Bosnia and Herzegovina, the Faculty ensures that the project's nature-based solutions are grounded in evidence-based practice and aligned with international biodiversity standards.

The Faculty plays a central role in the implementation of both the Insect Hotel and the Peace Circle located within the University Campus. PPF experts advise on site selection, planting schemes, pollinator-friendly species, and ecological monitoring protocols. The campus transformation—from monoculture lawns into biodiverse micro-habitats—benefits from the Faculty's scientific capacities and its long-standing experience with urban greening and agroecological regeneration.

In collaboration with the City of Sarajevo, academic staff provide continuous oversight through biodiversity surveys, soil assessments, and pollinator monitoring. Students from the Faculty actively engage in hands-on learning, citizen-science observations, and maintenance activities, turning the campus into a living classroom and research hub.

Through workshops, community events, and interdisciplinary cooperation, the Faculty strengthens environmental literacy and supports a replicable model of ecological restoration that can be expanded to other university zones and public green areas across Sarajevo.

Official Website: Faculty of Agriculture and Food Sciences, University of Sarajevo

2. Primary School “Aleksa Šantić”

- **Role in Project:**

Primary School “Aleksa Šantić” is a key education partner in the BiodiverCity project and one of the two schools hosting complete biodiversity interventions: both an **Insect Hotel** and a **Peace Circle**. With a strong tradition of environmental engagement, the school actively incorporates ecological learning into its extracurricular and classroom activities.

Located within a vibrant urban neighborhood, the school represents an ideal setting for demonstrating how small-scale green interventions can create meaningful ecological and social impact. The installation of an insect hotel at the school serves as a practical educational tool for students, enabling them to observe pollinators, participate in citizen-science monitoring, and develop early awareness of biodiversity protection.

The **Peace Circle** planned for the school grounds will further enhance environmental and social values—creating a symbolic and functional green space used for learning, reflection, and community gathering. Students and teachers will participate in planting activities, maintenance, and environmental workshops, strengthening ownership and environmental stewardship.

Through collaboration with the City of Sarajevo and local community groups, “Aleksa Šantić” provides a model of how educational institutions can become centres of urban greening and biodiversity education. The school’s active involvement ensures long-term care of the installations and the integration of biodiversity into school culture.

Official Website: **Primary School “Aleksa Šantić”**

3. Primary School “Kovačići”

- **Role in Project:**

Primary School “Kovačići” participates in the BiodiverCity project through the installation of an **Insect Hotel**, focusing on pollinator awareness, environmental learning, and student engagement. As the school is situated in a densely populated part of the city with limited green spaces, this intervention brings valuable ecological benefits and serves as a catalyst for biodiversity education.

Students and teachers will take part in constructing, placing, and maintaining the insect hotel, learning about the role of solitary bees, ladybugs, lacewings, and other beneficial insects in urban ecosystems. The school integrates these activities into science classes, eco-club initiatives, and awareness campaigns, strengthening environmental responsibility among children.

Although the school does not host a Peace Circle, its involvement in citizen-science monitoring and educational workshops ensures strong participation in the broader BiodiverCity network. Through collaboration with the City of Sarajevo, “Kovačići” contributes to increasing urban biodiversity and inspires environmentally conscious behaviours among young generations.

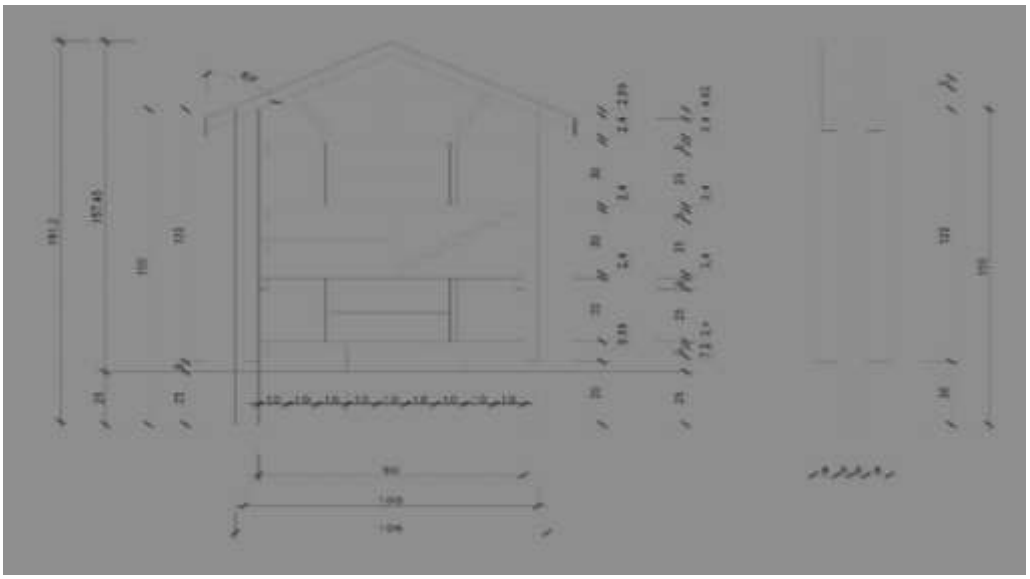
Official Website: [Primary School "Kovačići"]

Annex B: Technical Designs

1. Insect Hotel Blueprint

Design Specifications:

- **Dimensions:** 1.5m height x 1m width
- **Materials:**

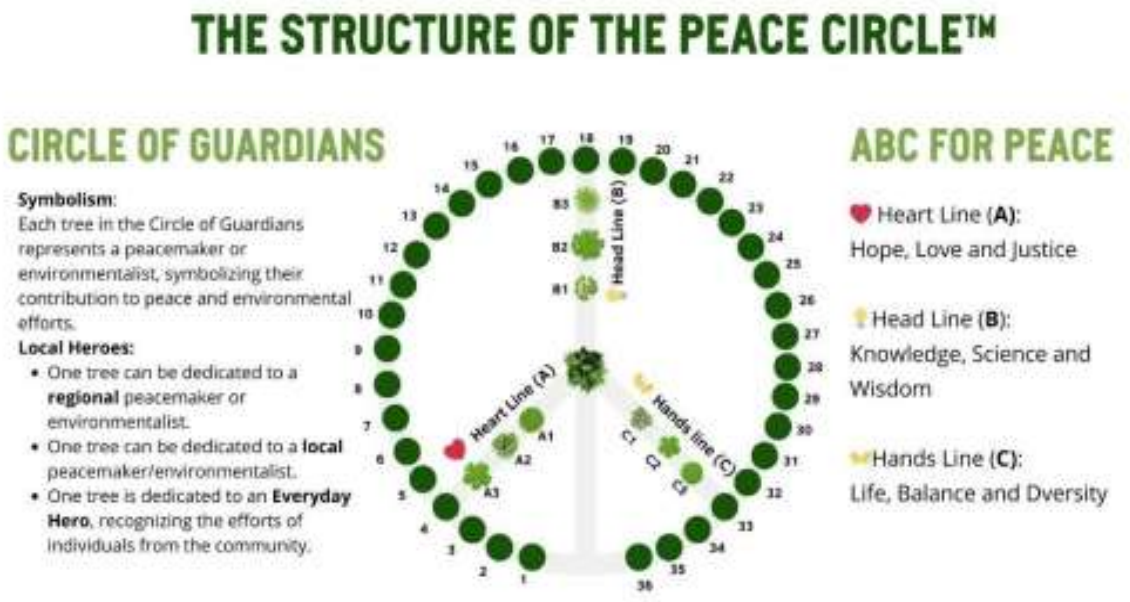


  - Reclaimed wood
  - Bamboo stalks (for bee nesting sites)
  - Terracotta pots (for lacewing habitats)
  - Dried leaves and bark (for ladybug shelters)
- **Structural Features:**
  - Multi-tiered compartments for different pollinator species.
  - Removable panels for maintenance and scientific observation.

2. Peace Circle Layout

Site Planning:

- **Total Area:** 300m² per Peace Circle.
- **Trees used:** Robinia Umbraculifera x48, Tilia cordata x2, Acer platanoiders x2, Abies sp x2, Picea sp x2, Acer negundo flamingo x2, Fraxinus ornus x2, Liriodendron x2, Likvidambar sp. x2, Fraxinus Excelisior x2, Ginko biloba x2), with heights ranging from 2 to 4 meters



Accessibility & Infrastructure:

- **Wheelchair-accessible paths** made from compacted gravel.
- **Seating Areas:** Wooden benches made from reclaimed materials.
- **Informational Signage:** QR codes linking to multilingual educational resources.
- **Community Spaces:** Open areas for workshops and small events.

Annex C: Budget Breakdown

Item	Cost (€)	Supplier/Source
Implementation of SSA (Peace circle and Insect hotels)	*10.000*	*Green style D.O.O / EU funding (URBACT)*
Additional Insect hotels	*2.496,64*	*Green Style D.O.O / City of Sarajevo budget*
Total	***12.496,64***	

Annex D: Policy Alignment

1. Sarajevo Green Plan 2022

- Targets **25% increase in pollinator habitats by 2030**.
- Supports the expansion of **urban biodiversity corridors**.
- Encourages **community-led urban greening initiatives**.

2. EU Green Deal C Biodiversity Strategy

- Aligns with **EU Biodiversity Strategy for 2030**, emphasizing urban rewilding.
- Contributes to **SDG 11 (Sustainable Cities) and SDG 15 (Life on Land)**.

3. Urban Greening Frameworks

- Follows recommendations from the **European Environment Agency (EEA)** on biodiversity in cities.
- Adopts best practices from the **ICLEI network for sustainable urban development**.

Conclusion

This annex provides essential details on partner roles, technical designs, budget allocation, and policy alignment. These elements ensure transparency and accountability in implementing Sarajevo's biodiversity initiatives, creating a replicable model for other European cities.

Integrirani Akcioni Plan (IAP)
Grad Sarajevo

Sadržaj

1. Uvod

Pozadina: Kontekst biodiverziteta Sarajeva

Sarajevo, glavni grad Bosne i Hercegovine, obilježeno je poslijeratnom obnovom i brzom urbanizacijom. Prema Zelenom planu Sarajeva 2022, samo 9,5% površine grada čine funkcionalni zeleni prostori, što je značajno ispod evropskog prosjeka od 18%. Urbanizacija je fragmentirala staništa, dovodeći do pada od 40% populacija autohtonih pčela od 2010. godine (Agencija za okoliš BiH, 2023). Jedinstena topografija grada – smještenog između Dinarskih Alpa i rijeke Miljacke – nudi mogućnosti za ekološku revitalizaciju, ali suočava se s izazovima poput degradacije tla i zagađenja zraka.

Urbanizacija i zeleni prostori

Prema Kantonalnom akcijskom planu za zelene površine, Sarajevo prolazi kroz intenzivan urbani razvoj koji uzrokuje fragmentaciju staništa i smanjenje zelenih površina. Ovakva ekspanzija doprinijela je ekološkim izazovima kao što su degradacija tla i zagađenje zraka.

Biodiverzitet i endemske vrste

Bosna i Hercegovina ima izuzetno bogat biodiverzitet — oko 30% endemične flore Balkana (oko 1.800 vrsta) nalazi se unutar granica zemlje. Raznoliki pejzaži, od mediteranskog do alpinskog, podržavaju širok spektar biljnih i životinjskih vrsta.

Ekološki izazovi

Uprkos bogatstvu biodiverziteta, Bosna i Hercegovina se suočava sa značajnim ekološkim problemima. Podaci o biodiverzitetu su fragmentirani, zastarjeli i nedovoljni, što otežava efikasne mjere zaštite.[17] Podaci o biodiverzitetu su fragmentirani, zastarjeli i nedovoljni, što otežava efikasne mjere zaštite. Prijetnje uključuju pretvaranje staništa, prekomjernu eksploataciju resursa, zagađenje, klimatske promjene, invazivne vrste.[18]

[17] BOSNIA AND HERZEGOVINA BIODIVERSITY

[18] Convention on Biological Diversity - Country profile

Mreža BiodiverCity

U užurbanim gradovima naše Mreže razvija se izvanredna inicijativa pod nazivom BiodiverCity. Sa vizijom korištenja moći rješenja zasnovanih na prirodi, BiodiverCity ima za cilj da mjeri biodiverzitet i ekosistemske usluge, te da na temelju toga dizajnira i proširuje transformativne projekte. Partnerski gradovi ovog URBACT projekta zamišljaju budućnost u kojoj snažni urbani ekosistemi i akcije koje vodi zajednica harmonično koegzistiraju.

Ovaj projekat obuhvata partnerstvo širom EU koje uključuje 10 evropskih gradova, obuhvatajući raznolike kulture, urbane prostore, zelene površine i ljude – što predstavlja srž ovog projekta. Od 2023. do kraja 2025. partneri su:
Cieza (ES), Dunaújváros (HU) kao vodeći partner, Landscape Laboratory (PT), Limerick City & County Council (IE), Poljčane (SI), Sarajevo (BA), Siena (IT), 's-Hertogenbosch (NL), Veszprém (HU), Vratsa (BG).

BiodiverCity koristi ogroman potencijal gradova da podižu svijest i potiču inovacije kroz stvaranje pristupa zasnovanih na zajednici, koji vrednuju, mjere i uzimaju u obzir biodiverzitet i njemu pripadajuće ekosistemske usluge.
Mreža nastoji osnažiti zajednice da planiraju i implementiraju snažna rješenja zasnovana na prirodi, dok istovremeno njeguju pro-ekološka ponašanja. Sa vizijom održivog urbanog razvoja, cilj nam je dati značajan doprinos EU Strategiji biodiverziteta i kolektivnom naporu da zaštitimo prirodno nasljeđe naše planete.

Centralna ideja BiodiverCity projekta je traženje rješenja u samoj prirodi. Prepoznajući vrijednost ekosistemskih usluga – poput čistog zraka, vode i oprašivanja – zajednice mogu razviti prirodna rješenja za ključne urbane izazove.

Kroz aktivno učešće, zajednice će doprinositi izradi planova ozelenjavanja, osiguravajući održivu budućnost u kojoj ljudske aktivnosti i biodiverzitet napreduju zajedno.
To se može postići na mnogo načina, kao što je povećanje zelenih površina u gradovima kako bi se uspješno suzbile drastično povećane urbane temperature posljednjih godina – povećanjem hlada, poboljšanjem kvaliteta zraka i održavanjem više atmosferske vlage, čime se ublažavaju efekti „betonskih džungli".
Na ovaj način možemo unaprijediti kvalitet urbanog biodiverziteta, istovremeno približavajući prirodu ljudima – ili vraćajući nas „kući", u prirodu.

Učešće zajednice i ekološke inicijative

Sarajevski pristup naglašava ulogu zelenih površina u jačanju mira i društvene kohezije. Inicijative poput postavljanja hotela za insekte imaju za cilj obnovu populacija oprašivača i edukaciju zajednice o biodiverzitetu.

Formiranje „Krugova Mira“, biodiverzitetom bogatih zelenih površina koje simboliziraju jedinstvo, provodi se u skladu sa Peace Circle™ inicijativom.

Obim projekta

- **Hoteli za insekte:** Tri instalacije dizajnirane da podrže vrste oprašivača i služe kao edukativni alati za škole i zajednicu.
- **Krugovi Mira:** Dvije biodiverzitetske zelene površine koje simboliziraju jedinstvo i podstiču angažman učenika, djece i zajednice.
- **Budžet:** 10.000 € iz URBACT granta.
- **Integracija sa postojećim strategijama zaštite okoliša**

Učešće Sarajeva u BiodiverCity mreži nadopunjuje postojeće strategije kao što su Kantonalni zeleni akcioni plan i Strategija zaštite okoliša i akcioni plan 2030+ (ESAP 2030+).19 Ove strategije imaju za cilj harmonizaciju praksi i akcija zaštite okoliša u Bosni i Hercegovini, promovirajući održivi razvoj i unapređenje zdravlja i dobrobiti građana.[20]

Zaključak

Posvećenost Sarajeva unapređenju urbanog biodiverziteta kroz projekte vođene zajednicom odražava širu strategiju povezivanja ekološke revitalizacije i društvene kohezije. Učešćem u mrežama poput BiodiverCity i implementacijom ciljnih inicijativa, grad nastoji transformisati neiskorištene prostore u vibrantne, biodiverzitetske zone koje doprinose ekološkoj održivosti i dobrobiti zajednice.

Sekcija 2: Kontekst, potrebe i vizija

[19] The BiH ESAP 2030+ – BIH ESAP 2030+
[20] Healthy soil will provide for healthy food | United Nations Development Programme

Ekološki profil

Sarajevo, glavni grad Bosne i Hercegovine, poznato je po svom bogatom prirodnom nasljeđu i biodiverzitetu. Međutim, brza urbanizacija, poslijeratna obnova i ograničeno planiranje zelenih površina doveli su do značajnih ekoloških izazova.

Rješavanje ovih problema ključno je za osiguravanje ekološke održivosti Sarajeva, jačanje klimatske otpornosti i očuvanje biodiverziteta.

Ključni izazovi

Fragmentacija staništa

Podaci: Prema Urbanističkom zavodu Sarajevo (2023), 62% zelenih površina u Sarajevu čine izolovani fragmenti zbog nekontrolisanog urbanog razvoja i širenja infrastrukture.
Ova fragmentacija dovela je do raseljavanja nekoliko autohtonih vrsta i prekida ekoloških koridora ključnih za migraciju životinjskih vrsta.

Uticaj: Fragmentacija staništa smanjuje genetsku raznolikost, posebno među autohtonim vrstama poput ***Rosalia alpina***[21] (planinska strizibuba) – Crvena lista BiH, 2022.
Izolovana staništa povećavaju ranjivost na promjene u okolišu i smanjuju reproduktivni uspjeh. Ovaj problem dodatno pogoršava gubitak starih stabala, ključnih za vrste poput Rosalia alpina, jer se oslanjaju na trulo drvo za reprodukciju.

Predložena rješenja:

- **Uspostavljanje ekoloških koridora za ponovno povezivanje zelenih površina i olakšavanje kretanja vrsta.**
- **Implementacija politika zelenih krovova radi povećanja biodiverziteta u urbanim sredinama.**
- **Proširenje inicijativa sadnje drveća radi kreiranja kontinuiranih zelenih zona**

Degradacija tla

Podaci: Istraživanja Poljoprivredno-prehrambenog fakulteta (2024) pokazuju da je 30% urbanog tla u Sarajevu zbijeno ili kontaminirano industrijskim aktivnostima, emisijama iz saobraćaja i nepravilnim odlaganjem otpada.

Uticaj: Degradirano tlo smanjuje sposobnost podržavanja autohtonih biljnih vrsta, čime se ograničavaju staništa za oprašivače i mikroorganizme tla.
Erozija tla doprinosi povećanom površinskom oticanju i smanjenom punjenju podzemnih voda, što pogoršava rizik od urbanih poplava.

[21] Rosalia longicorn — Rosalia alpina (Linnaeus) - Zemaljski muzej BiH

Predložena rješenja:

- **Implementacija urbanih programa kompostiranja radi poboljšanja kvaliteta tla.**
- **Poticaj korištenja propusnih površina u urbanističkom planiranju radi smanjenja zbijanja tla.**
- **Obnova degradiranog urbanog zemljišta sadnjom autohtonih biljnih vrsta radi poboljšanja zadržavanja tla i zdravlja ekosistema.**

Ciljane lokacije za unapređenje biodiverziteta

Kampus Univerziteta u Sarajevu

 Veličina: 13,8 hektara zemljišta.

 Prilika: Integracija hotela za insekte za podršku istraživanjima oprašivanja i mjerenju ekoloških koristi obnovljenog biodiverziteta.

 Planirane aktivnosti: Uspostavljanje livada divljeg cvijeća, povećanje krošnji drveća i instaliranje staništa za divlje pčele.

 Trenutno stanje: Travnjaci pružaju minimalne ekološke koristi i nedostaje im raznolikosti.

 Planirane aktivnosti: Instalacija hotela za insekte i razvoj vrtova prilagođenih oprašivačima radi uključivanja studenata u građansku nauku.

2.5 Analiza sudionika

URBACT Lokalna Grupa (ULG) i doprinosi sudionika

Sudionik	**Uloga**	**Doprinos**
Grad Sarajevo	Dozvole, finansiranje, nadzor	Vrijeme osoblja i 2.496 €
Poljoprivredno-prehrambeni fakultet	Održavanje	Vrijeme osoblja

Sudionik	**Uloga**	**Doprinos**
Obrazovne institucije	**Uključivanje učenika**	**Integracija modula o biodiverzitetu u školske programe**

Rezultati o angažmanu zajednice

 Rezultati platforme Decidim: 78% ispitanih stanovnika izražava snažnu podršku hotelima za insekte, navodeći potrebu za većim urbanim biodiverzitetom.

 Uključenost mladih: Učenici OŠ „Aleksa Šantić“ i „Kovačići“, kao i studenti Poljoprivredno-prehrambenog fakulteta, promovišu održivost i edukuju o biodiverzitetu koristeći hotele za insekte.

2.6 Usklađenost politika

Zeleni plan Sarajeva 2022

Zeleni plan Sarajeva postavlja ambiciozan cilj da do 2030. godine poveća staništa za oprašivače za 25%.
Inicijative poput sadnje drveća, uređenja površina prilagođenih oprašivačima i urbanog uzgoja uključene su u strategiju za stvaranje održivog urbanog okoliša.

Alignment with the EU Green Deal and UN Sustainable Development Goals

The city's biodiversity IAP aligns with the EU Green Deal, specifically supporting:

- **SDG 11: Sustainable Cities and Communities – improving urban green spaces for biodiversity and public well-being.**
- **SDG 15: Life on Land – restoring ecosystems and halting biodiversity loss.**

2.7 Vizija

Vizija:

„Do 2027. godine Sarajevo će biti model urbane bioraznolikosti, gdje zeleni prostori potiču mir, edukaciju i ekološku otpornost.“

Ciljevi koje treba postići do 2027. godine:

• Pokušati povećati ukupnu površinu zelenih zona u Sarajevu za 10% u saradnji s lokalnim općinama.
• Uspostaviti 5 novih vrtova prilagođenih oprašivačima širom grada.
• Pokušati implementirati edukativne programe fokusirane na biodiverzitet u 20% sarajevskih škola (kroz aktivnosti poput hotela za insekte, Peace Circle prostora itd.).

Zaključak

Sarajevo se nalazi u ključnom trenutku svoje ekološke transformacije. Kroz urbano planiranje usmjereno na bioraznolikost i aktivno uključivanje zajednice, grad ima priliku postati regionalni lider u održivom urbanom razvoju. Integracijom rješenja zasnovanih na prirodi, projekata ekološke obnove i edukativnih inicijativa, Sarajevo će osigurati da zeleni prostori istovremeno služe i ekološkim i društvenim funkcijama. Ovaj pristup stvara temelje za otporniji, zdraviji i održiviji grad za buduće generacije..

Sekcija 3: Integrisani strateški okvir

3.1 Tematske oblasti intervencije

Kreiranje staništa za oprašivače

Pad brojnosti oprašivača predstavlja veliki izazov u Sarajevu zbog gubitka staništa, upotrebe pesticida i širenja urbanih područja. Kako bi se ovaj problem ublažio, biće implementiran ciljano usmjeren program kreiranja staništa za oprašivače na ključnim urbanim lokacijama.

Aktivnosti:

- **Postavljanje tri hotela za insekte** izrađenih od recikliranog drva, koji obezbjeđuju skloništa za korisne insekte i potiču bioraznolikost.[22]
- ***Sadnju autohtonog cvijeća*** *(Centaurea cyanus, Papaver rhoeas) radi obogaćivanja ishrane oprašivača i povećanja floralne raznolikosti*.[23]
- **Smanjenje upotrebe pesticida** u javnim površinama kroz kampanje podizanja svijesti i prilagođavanje politika upravljanja zelenim površinama.

Indikator uspješnosti:

• Povećanje broja opaženih oprašivača za **30% do 2027. godine**, prema polugodišnjim monitoring studijama Poljoprivredno-prehrambenog fakulteta.

Krugovi mira: Zeleni prostori za ekološku i društvenu otpornost

Peace Circles predstavljaju kombinaciju simboličkih i funkcionalnih biodiverzitetskih prostora koji podupiru ekološku edukaciju i jačaju društvenu koheziju.

Implementacija obuhvata:

- **Sadnju centralnog drveta mira** (Pinus heldreichii), autohtone vrste koja simbolizira otpornost i mir.
- **Formiranje Kruga čuvara** (Circle of Guardians) od devet stabala Carpinus betulus, posvećenih lokalnim ekološkim aktivistima i mirotvorcima..[24]

[22] Insect hotels
[23] Papaver rhoeas and Centaurea cyanus

[24] *Podložno dostupnosti*

Međusektorska integracija

Kako bi inicijative za bioraznolikost bile inkluzivne, pravedne i tehnološki napredne, primjenjuju se sljedeće integracijske mjere:

Rodna ravnopravnost u ekološkom liderstvu

- **ULG članovi:** Osigurati da **najmanje 60% članova ULG-a** uključenih u vođenje aktivnosti **bude ženskog pola,** jačajući rodnu ravnopravnost u donošenju ekoloških odluka**.**
- **Digitalna podrška praćenju biodiverziteta:** Integrisanje aplikacije **iNaturalist** za evidentiranje oprašivača i drugih vrsta, omogućavajući učestvovanje građana u monitoring procesima.

Transnacionalno učenje

Sarajevo u svoje aktivnosti uključuje najbolje prakse iz URBACT BiodiverCity mreže, prilagođene lokalnim potrebama i kontekstu.

Prilagodba dobrih praksi partnera

1. Sienna (Italija) Monitoring biodiverziteta koji vodi zajednica

- **Ključna lekcija:** Siena uspješno koristi citizen-science inicijative, poput City Nature Challenge, čime aktivira građane u praćenju i očuvanju biodiverziteta.
- Primjena u Sarajevu**:**
    - Uspostava programa monitoringa putem **iNaturalist** aplikacije.
    - Obuka volontera i učenika za praćenje vrsta u okolini hotela za insekte i Peace Circle prostora.

2. Limerick (Irska): Urbane strategije za oprašivače

- **Ključna lekcija:** Limerick je razvio primjerene prakse stvaranja zelenih koridora i saradnje sa školama i biznisima.
- **Primjena u Sarajevu:**
    - Kreiranje **Sarajevo koridor oprašivača** – mreže zelenih površina koje povezuju staništa širom grada.
    - Uključivanje škola u kreiranje vrtova prilagođenih oprašivačima i integraciju gradiva o biodiverzitetu..

Zaključak

Integrisani strateški okvir spaja ekološku obnovu, učešće zajednice i međunarodnu razmjenu znanja. Kroz kreiranje staništa za oprašivače, razvoj Peace Circle prostora, rodnu ravnopravnost, digitalne alate i usvajanje evropskih praksi, Sarajevo nastoji postati primjer urbane otpornosti i obnovljene bioraznolikosti do 2027. godine. Ove mjere ujedno prate lokalne strategije i evropske ciljeve, osiguravajući dugoročne pozitivne rezultate za ekološko i društveno okruženje grada.

Sekcija 4: Detalji akcionog plana

4.1 Inicijativa – Hoteli za insekte

Specifikacije dizajna

Materijali:

- **Reciklirano drvo:** Preuzeto iz raznih izvora, predstavlja održivu opciju koja smanjuje otpad i podržava principe cirkularne ekonomije.[25]
- **Bambusove stabljike:** Održive, idealne za gniježđenje samotnih pčela i drugih oprašivača..[26]
- **Terakota posude:** Formiraju vlažne mikrohabitate pogodne za korisne insekte poput zlatookih (lacewings) i bubamara.[27]

Dimenzije: Svaki hotel za insekte izgrađen je visine 1,5 m i širine 1 m, s više odvojenih komora prilagođenih različitim vrstama korisnih insekata:

- **Solitarne pčele:** Šuplje bambusove stabljike i drvene blokove s izbušenim otvorima.
- **Bubamare:** Komore ispunjene suhim lišćem, granjem i korom.
- **Zlatooke vrste:** Terakota posude napunjene slamom i suhim biljnim materijalom.

Implementacija

4. Osnovna škola Aleksa Šantić:

- **Lokacija:** Osnovna škola Aleksa Šantić - dvorište
- **Monitoring:** Učitelji će kvartalno provoditi prikupljanje podataka uz iNaturalist, što omogućava uključivanje učenika i transparentnost.
- **Edukativne radionice:** Saradnja sa drugim školama i lokalnim grupama radi promovisanja značaja oprašivača i praktične izgradnje/održavanja hotela.

5. Univerzitet u Sarajevu - Kampus:

- **Trenutno stanje:** 10,3 ha monokulturnih travnjaka s minimalnom bioraznolikošću.
- **Akcioni plan:** Instalacija hotela na strateškoj lokaciji, kao "živi laboratoriji" za oko 20.000 studenata.
- **Učešće akademske zajednice:** Profesori i studenti će raditi na izgradnji, dizajnu i monitoringu – jačajući praktičnu nastavu.

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[25] https://www.mdpi.com/2075-5309/14/3/560

[26] Do Bees Like Bamboo Plants

[27] https://www.researchgate.net/publication/339503450_Terracotta_Pots_as_Refuges_for_Beneficial_Insects

6. Osnovna škola Kovačići:

- **Lokacija:** Osnovna škola Kovačići - dvorište
- **Monitoring:** Plan je da kvartalno prikupljanje podataka preko iNaturalist aplikacije od strane nastavnika.
- **Radionice:** Uključivanje učenika i roditelja kako ove tako I drugih okolnih škola kroz edukaciju o ekosistemskim uslugama i ulozi oprašivača.

4.2 Razvoj Krugova mira

Simbolični elementi

4. Centralno drvo Kruga mira:

- **Odabir vrsta:** Drvo je odabrano po otpornosti i kulturnoj simbolici (npr. autohtona vrsta poput borova ili hrasta).

5. ABC linije:

U skladu s Peace Circle™ metodologijom, ABC linije simbolizuju temeljne ljudske vrijednosti.

6. Krug čuvara:

- **Dizajn:** Drveće će biti posađeno u kružnoj formaciji.

Budžet

Detaljni budžet osigurava transparentnost I efektvinost korištenja resursa.Ispod u tabeli se nalazi detaljno objašnjenje iskorištenosti budžeta:

Stavka	Iznos (€)	Dobavljač
Reclaimed Wood	5,000	Green style DOO
Plants	3,500	Green style DOO
Insect Hotel Materials	2,496,64	Green style DOO
Planting	1,500	Green style DOO
Total	***12.496,64***	

Zaključak

Uspostavljanje hotela za insekte i Peace Circle prostora predstavlja važan korak ka obnovi urbane bioraznolikosti i jačanju zajedničkog djelovanja kroz edukaciju i angažman stanovništva. Projekat je u potpunosti usklađen sa Zelenim planom Sarajeva 2022 i međunarodnim strategijama biodiverziteta. Kroz saradnju obrazovnih ustanova, akademske zajednice, lokalnih organizacija i građana, ove inicijative postaju dugoročni modeli za ekološku obnovu i stvaranje inkluzivnih, zdravih urbanih prostora.

Sekcija 5: Implementacijska mapa

5.1 Upravljanje

Upravni odbor i nadzor

Uspješna implementacija biodiverzitetskih inicijativa Sarajeva zahtijeva snažno upravljanje i saradnju među akterima. Upravni odbor (Steering Committee) odnosno ULG članovi nadgledat će provedbu projekta, osigurati odgovornost i koordinirati aktivnosti između različitih sektora.

Struktura upravnog odbora:

- **Predsjedavajući:** Služba za održivi razvoj, Grad Sarajevo.
- **Članovi:**
    - **Poljoprivredno-prehrambeni fakultet Univerziteta u Sarajevu:** odgovoran za procjene ekološkog uticaja i naučni monitoring**.**
    - **NGO Naše ptice:** praćenje ptica, zaštita i posmatranje; zaštita biodiverziteta i okoliša.
    - **Lokalne škole i fakulteti:** uključivanje učenika i studenata u aktivnosti monitoringa i projekte građanske nauke.
    - **Predstavnici privatnog sektora:** podrška inicijativama kroz sponzorstva i donacije..

Ključne odgovornosti:

- **Sastanci:** Upravni odbor će se sastajati radi pregleda napretka projekta, rješavanja izazova i prilagođavanja strategija prema potrebi.
- **Public Reports:** Uspostavit će se transparentan sistem izvještavanja kako bi se rezultati projekta i indikatori uspješnosti dijelili sa ključnim akterima i širom javnošću.
- **Pravna i propisna usklađenost:** Odbor osigurava da je provedba projekta u skladu sa Zelenim planom Sarajeva 2022, EU propisima o biodiverzitetu i relevantnim nacionalnim politikama zaštite okoliša.

5.2 Upravljanje rizicima

Proaktivan pristup upravljanju rizicima ključan je za uspjeh i dugoročnu održivost inicijativa biodiverziteta u Sarajevu.

Identifikacija rizika i strategije ublažavanja

Rizici	Strategije ublažavanja
Nedostatak budžeta	Uspostavljanje unaprijed dogovorenih popusta s dobavljačima; istraživanje alternativnih izvora finansiranja poput EU grantova i sponzorstava privatnog sektora.
Ekstremni vremenski uslovi	Korištenje klimatski otpornih vrsta biljaka; zaštita mladih stabala i staništa oprašivača pokrivkama i odgovarajućom njegom.
Slab angažman javnosti	Organizacija događaja, edukativnih radionica i medijskih kampanja za podizanje svijesti i povećanje učešća zajednice.
Problemi s održavanjem	Dodjeljivanje dugoročnih odgovornosti lokalnim institucijama, školama i zajednici kako bi se osigurala kontinuirana briga o postavljenim strukturama.

5.3 Monitoring i evaluacija

Monitoring omogućava praćenje napretka, mjerenje ekoloških koristi i osiguravanje da se ciljevi projekta ostvaruju u skladu s planom.

Monitoring alati

- **iNaturalist platforma:** Aplikacija koja omogućava građanima da dokumentuju oprašivače i tako doprinose zajedničkoj bazi podataka.
- **Godišnje procjene biodiverziteta:** Istraživači Poljoprivredno-prehrambenog fakulteta procjenjuju zdravlje biljaka, prisutnost insekata i poboljšanja staništa.

Ključni indikatori (KPI's)

- **Raznlikost oprašivača: 30% povećanje raznolikosti oprašivača do 2027. godine**, prema iNaturalist podacima i terenskim opažanjima.
- **Učešće zajednice:** najmanje **2.000 volontera** uključeno u aktivnosti monitoringa i edukacije.
- **Širenje zelenih površina:** povećanje funkcionalnih zelenih površina za **5% do 2030. godine**.

5.4 Vremenski okvir implementacije

Provedba projekta odvija se u tri faze:

Prva faza (2024 - 2025): Pokretanje projekta i postavljanje infrastrukture

- Formiranje Upravnog odbora.
- Odabir lokacija za hotele za insekte i Peace Circle prostore.
- Bazni monitoring biodiverziteta.
- Organizacija radionica i početnih događaja sa zajednicom.
- Instalacija hotela za insekte i početak obnove staništa.

Druga faza (2025 - 2026): Proširenje i uključivanje zajednice

- Redovno praćenje uz iNaturalist i terenske studije.
- Javne kampanje, radionice i aktivnosti građanske nauke.
- Uključivanje škola u aktivnosti biodiverziteta i sadnje.

Treća faza (2026 - 2027): Evaluacija i dugoročna strategija

- Evaluacija uspjeha prema KPI-jevima.
- Izrada završnog izvještaja o biodiverzitetskom uticaju.
- Definisanje dugoročnih planova održavanja uz podršku lokalnih institucija.
- Širenje modela (Peace Circles i hoteli za insekte) na dodatne lokacije.

Zaključak

Plan implementacije osigurava strukturiran, odgovoran i održiv pristup sprovođenju inicijativa iz IAP-a. Kroz koordinaciju institucija, uključivanje zajednice i korištenje savremenih alata, Sarajevo se strateški pozicionira kao grad koji aktivno obnavlja urbanu prirodu i gradi kulturu ekološke svijesti.

Sekcija 6: Aneksi

Aneks A: Partnerski profili

1. Poljoprivredno-prehrambeni fakultet, Univerzitet u Sarajevu

- **Uloga u projektu:**

Poljoprivredno-prehrambeni fakultet Univerziteta u Sarajevu (PPF) djeluje kao glavni naučni partner u okviru BiodiverCity IAP-a, pružajući stručnu podršku, ekološko savjetovanje i dugoročno istraživačko praćenje za sve aktivnosti biodiverziteta smještene u Kampusu Univerziteta u Sarajevu.

Kao jedna od vodećih visokoškolskih institucija u oblasti agroekologije, ekologije, zaštite okoliša i održivog upravljanja zemljištem u Bosni i Hercegovini, Fakultet osigurava da su projektne prirodbazirane intervencije zasnovane na naučno potvrđenim praksama i usklađene s međunarodnim standardima biodiverziteta.

Fakultet ima centralnu ulogu u implementaciji **Insect Hotela** i **Peace Circle** instaliranih u **Kampusu UNSA**. Stručnjaci PPF-a učestvuju u odabiru lokacija, planiranju sadnje, odabiru biljnih vrsta pogodnih za oprašivače te razvoju protokola za ekološki monitoring. Transformacija Kampusa – od monokulturnih travnjaka do malih biodiverzitetnih staništa – direktno se oslanja na naučne kapacitete i dugogodišnje iskustvo Fakulteta u urbanoj ekologiji i regeneraciji zelenih površina.

Akademsko osoblje provodi kontinuirani nadzor kroz terenske preglede, procjenu tla i praćenje oprašivača. Studenti aktivno učestvuju u praktičnom učenju, citizen-science opažanjima i održavanju instalacija, čime Kampus postaje živi laboratorij i istraživački centar.

Kroz radionice, angažman zajednice i interdisciplinarnu saradnju, Fakultet jača ekološku pismenost i doprinosi razvoju modela urbane ekološke obnove koji se može replicirati u drugim dijelovima Univerziteta i širom Sarajeva.

- **Oficijelna vebstranica:** Poljoprivredno-prehrambeni fakultet, Univerzitet u Sarajevu

2. Osnovna škola “Aleksa Šantić”

- **Uloga u projektu:**

Osnovna škola “Aleksa Šantić” je ključni obrazovni partner BiodiverCity projekta i jedna od dvije škole koje će ugostiti obje planirane intervencije: **Insect Hotel** i **Peace Circle**. Škola ima dugu tradiciju učešća u ekološkim aktivnostima, te redovno integrira teme zaštite prirode u nastavu i vannastavne programe.

Smještena u dinamičnom urbanom okruženju, škola predstavlja primjer kako male zelene intervencije mogu imati snažan ekološki i društveni uticaj. Postavljanje Insect Hotela pruža učenicima praktičnu mogućnost da posmatraju oprašivače, učestvuju u citizen-science monitoringu i razvijaju rano razumijevanje važnosti biodiverziteta.

Planirani **Peace Circle** na školskom dvorištu dodatno će obogatiti prostor stvaranjem simbolične i funkcionalne zelene oaze namijenjene učenju, zajedničkim aktivnostima i okupljanjima. Učenici i nastavnici učestvuju u sadnji, održavanju i ekološkim radionicama, čime se jača osjećaj pripadnosti i brige za okoliš.

U saradnji s Gradom Sarajevo i lokalnom zajednicom, škola “Aleksa Šantić” postaje primjer kako obrazovne institucije mogu biti centri urbane obnove, ekološkog obrazovanja i dugoročne brige o prirodbaziranim rješenjima.

Oficijelna vebstranica: Osnovna škola “Aleksa Šantić”

3. Osnovna škola “Kovačići”

- **Uloga u projektu:**

Osnovna škola “Kovačići” učestvuje u BiodiverCity projektu kroz instalaciju **Insect Hotela**, doprinoseći edukaciji o oprašivačima, zaštiti okoliša i aktivnom uključivanju učenika u projektne aktivnosti. Škola se nalazi u gusto naseljenom dijelu grada gdje je zelenih površina malo, pa ova intervencija donosi značajne ekološke koristi i doprinosi jačanju svijesti o biodiverzitetu.

Učenici i nastavnici će učestvovati u izradi, postavljanju i održavanju Insect Hotela, učeći o solitarnim pčelama, bubamarama, zlatookama i drugim korisnim insektima koji igraju važnu ulogu u urbanim ekosistemima. Aktivnosti će biti integrisane u nastavu prirode i društva, biologiju, ekološke sekcije i školske kampanje podizanja svijesti.

Iako škola ne implementira Peace Circle, njeno aktivno učešće u citizen-science monitoringu i ekološkim radionicama osigurava snažnu povezanost sa BiodiverCity mrežom. Kroz saradnju sa Gradom Sarajevo, O.Š. “Kovačići” doprinosi širenju urbanog biodiverziteta i razvoju ekološke svijesti kod mladih generacija.

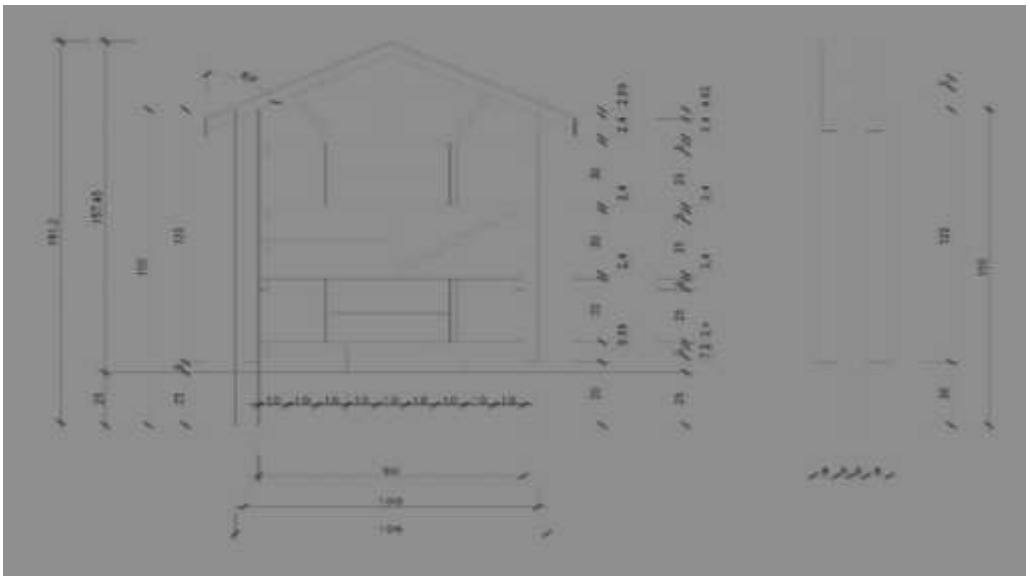
Oficijelna vebstranica: Osnovna škola “Kovačići”

Aneks B: Tehnički dizajn

1. Insekt Hotel - nacrt

Dizajn i specifikacije:

- **Dimenzije:** 1.5m visine x 1m širine
- **Materials:**



- reciklirano drvo,
- bambusove stabljike (gniježđenje pčela),
- terakota posude (staništa za zlatooke),
- suho lišće i kora (skloništa za bubamare)

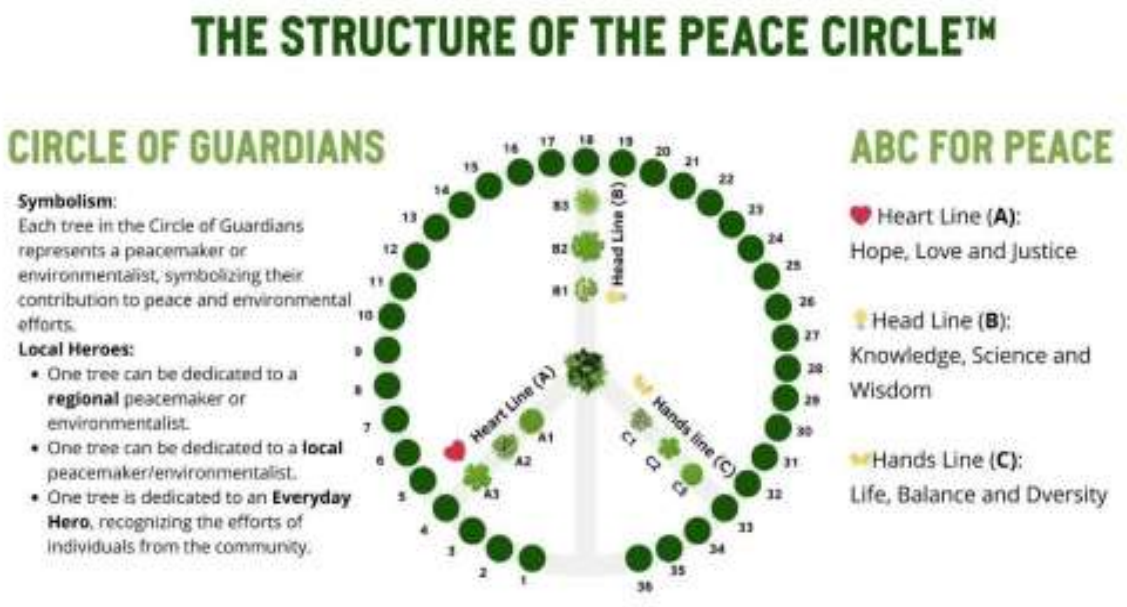
Struktura:

Višeslojni dizajn sa odvojenim komorama za različite vrste korisnih insekata
Uklonjive stranice radi lakšeg čišćenja, održavanja i naučnih posmatranja
Osnovna konstrukcija dizajnirana da izdrži vanjske uslove i minimizira oštećenja od vlage

2. Izgled Krug mira

Planiranje lokacije:

- **Ukupna površina:** cca 300m² po Krugu mira.
- **Drveće koje ćemo saditi:** Robinia Umbraculifera x48, Tilia cordata x2, Acer platanoiders x2, Abies sp x2, Picea sp x2, Acer negundo flamingo x2, Fraxinus ornus x2, Liriodendron x2, Likvidambar sp. x2, Fraxinus Excelisior x2, Ginko biloba x2), visine 2 do 4 metra.



Pristupačnost i infrastruktura:

Pristup osobama u kolicima, staze napravljene od šljunka

Aneks C: Budžetski prikaz finansiranja

Item	Cost (€)	Supplier/Source
Implementation of SSA (Peace circle and Insect hotels)	*10.000*	*Green style D.O.O / EU funding (URBACT)*
Additional Insect hotels	*2.496,64*	*Green Style D.O.O / City of Sarajevo budget*
Total	***12.496,64***	

Aneks D: Usklađenost s politikama

1. Zeleni plan Sarajeva 2022

• Cilja povećanje staništa za oprašivače za 25% do 2030. godine.
• Podržava širenje urbanih biodiverzitetskih koridora.
• Promoviše inicijative koje vode građani, uključujući sadnju drveća i uređenje zelenih zona.

2. EU Green Deal C - Strategija biodiverziteta

- Usklađena s EU Strategijom biodiverziteta za 2030. godinu, s naglaskom na urbanu rewilding politiku.
- Direktno doprinosi:
  – **SDG 11:** Održivi gradovi i zajednice
  – **SDG 15:** Život na zemlji

3. Okviri za urbano ozelenjavanje

• Prati preporuke Evropske agencije za okoliš (EEA) za jačanje biodiverziteta u gradovima.
• Usklađeno s najboljim praksama ICLEI mreže za održivi urbani razvoj.

Zaključak

Aneksi pružaju ključne tehničke, finansijske i strateške detalje koji podupiru implementaciju IAP-a. Zajedno osiguravaju transparentnost, jasno definisane procese i snažnu povezanost projekta sa evropskim i lokalnim politikama. Ovaj integrisani pristup čini sarajevske inicijative za biodiverzitet modelom primjenjivim i u drugim evropskim gradovima..