Deliverable 1.5:

RECOMMENDATIONS FOR IMPLEMENTING COMMUNITY-LED URBAN GARDENS IN SARAJEVO CITY

„The EIT Community New European Bauhaus (NEB) is funded by the European Institute of Innovation & Technology (EIT) and supports citizens, grass-roots initiatives and startups that embody the core values of the European Commission's New European Bauhaus movement – sustainability, inclusivity, and beauty – through business creation & acceleration, funding, mentorship, and networking".

November 2025.

Contents

Summary

Sarajevo Canton is experiencing increasing environmental and socio-spatial pressures, including critically low accessibility to public green space, intensified urban heat effects, poor air quality, and uneven spatial distribution of environmental amenities. This report demonstrates that community-led urban gardens can serve as a viable, scalable, and socially embedded mechanism to operationalize these strategic aims, while addressing land underutilization, fostering community cohesion, and improving ecological performance in urban neighborhoods. The analysis is grounded in spatial mapping results generated from 43 citizen-submitted locations, policy alignment assessments, participatory inputs, and a systematic evaluation of environmental, social, and institutional conditions. The findings confirm that Sarajevo benefits from strong community interest, active civil society engagement, educational stakeholders willing to participate in stewardship, and a notable number of underused urban micro-sites suitable for incremental greening interventions. However, the assessment also identifies persistent structural barriers, including unclear land tenure frameworks, inconsistent institutional coordination, limited financial mechanisms for neighborhood-level green interventions, and the absence of formalized co-governance models that would enable citizens to assume stewardship roles beyond short-term project cycles. Addressing these systemic gaps is essential to shifting community gardening from volunteer-based activation toward sustained, city-supported green infrastructure. To ensure long-term viability, the report proposes an institutionalized implementation pathway embedding spatial equity, secure land access, community co-management structures, environmental safety protocols, and measurable social and ecological monitoring systems. These elements are critical for transitioning urban gardens into formalized, widely distributed, and administratively supported assets of urban resilience.

List of tables:

List of Figures:

1. Introduction

Sarajevo Canton faces a convergence of **environmental, climatic,** and **social challenges** that increasingly threaten urban quality of life. Rapid urbanization within a confined mountain basin has intensified **air pollution, constrained land use,** and **eroded access to public green areas**. According to the Green Cantonal Action Plan (GCAP) prepared for the European Bank for Reconstruction and Development (EBRD) and Canton of Sarajevo, air quality is among the **most pressing** and **critical environmental issues** facing Sarajevo.

Concentrations of fine particulate matter (PM10 and PM2.5) routinely exceed EU and WHO limits, particularly during winter, when thermal inversions trap emissions from household heating and an aging vehicle fleet.

Canton's dependence on fossil fuels remains high, with renewable energy comprising only a small share of total energy generation, while more than **50%** of private vehicles are diesel-powered and exceed **16 years of age.**

At the same time, **urban green space per capita** is critically low. GCAP analysis notes that built-up areas have expanded well beyond regulatory thresholds, with the green-to-built ratio violated in several city zones. Illegal construction and urban sprawl continue to reduce available green areas, while regulatory enforcement remains weak. Within the urban limits, less than **2%** of total land area is classified as green space. Such limited vegetation exacerbates heat-island effects and reduces the city's ability to ventilate air pollutants.

Climate change compounds these problems. **Rising average temperatures, prolonged summer droughts**, and **more frequent extreme precipitation events** increase risks of landslides and soil erosion, hazards already documented across nearly **900** registered sites in 2017. Water quality is similarly threatened. Canton's wastewater system lacks full separation of rainwater and sewage, and non-revenue water losses exceed **50%** in some municipalities, reflecting systemic inefficiencies

Against this backdrop, Sarajevo's Green Cantonal Action Plan articulates a clear vision:

"Sarajevo Canton will become renowned as a compact, sustainable place to live and work, with good quality green spaces accessible to everyone and an efficient system of land uses."

Community-led urban gardens provide a practical and participatory means of realising this vision. By repurposing vacant or underused land into **productive ecological zones**, urban gardens can improve air quality, enhance stormwater retention, promote biodiversity, and foster social inclusion. They also serve as **climate adaptation tools**, reducing local heat, absorbing CO_2, and creating opportunities for environmental education and community interaction.

This report integrates desk research, stakeholder consultations, and spatial analysis to explore how community gardens can strengthen Sarajevo's environmental and social resilience. Specifically, the report aims to:

- Present an overview of the policy and spatial context for community-led urban greening;
- Conduct a SWOT assessment of urban gardening opportunities in the city;
- Present the mapped sites identified as most suitable for future community garden projects.
- Propose policy and implementation recommendations

By linking climate adaptation goals with participatory action, this report outlines how Sarajevo can turn its environmental challenges into an **opportunity for collective urban renewal and greener, more liveable neighbourhoods.**

2.Methodology

The preparation of this report followed an **integrated** and **evidence-based methodological approach** combining desk research, stakeholder consultations through the iNaturalis application, and spatial mapping and analysis. The approach aimed to link policy analysis with participatory citizen input and geographic data in order to define feasible and community-supported locations for urban gardens in Sarajevo.

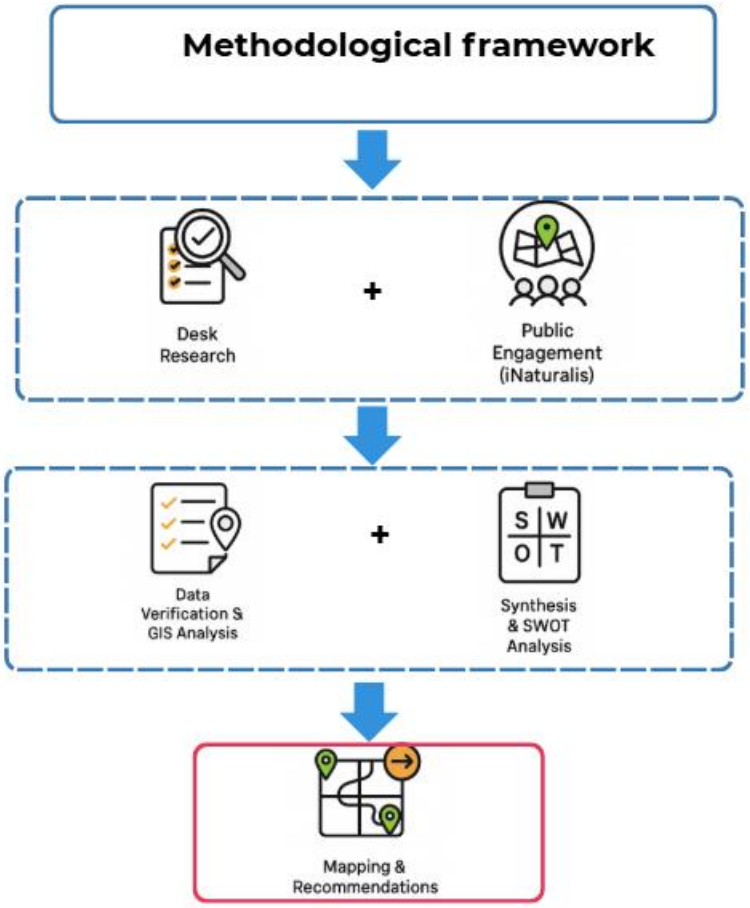


Figure 1. *Integrated Methodological Workflow for Developing Community-Led Urban Garden Recommendations*

A **comprehensive desk review** was conducted to analyse the existing policy and planning framework related to urban greening and community gardening in Sarajevo Canton. The review covered strategic documents including the Green Cantonal Action Plan (GCAP, 2020), the Development Strategy of Sarajevo Canton 2021–2027, the Spatial Plan of Sarajevo Canton 2003–2023, and selected municipal environmental and land-use plans. This

analysis identified institutional responsibilities, planning gaps, and the degree of alignment with the Green Agenda for the Western Balkans, EU Biodiversity Strategy 2030, and Sustainable Development Goals (SDGs).

Public engagement formed a central component of the methodology. To ensure that citizens and community groups could actively contribute to identifying potential locations for urban gardens and their needs, consultations were carried out using the iNaturalis digital platform. The platform enabled residents to propose, map, and comment on potential garden sites directly on an interactive map of Sarajevo Canton.

This participatory tool gathered georeferenced inputs. Data submitted through iNaturalis were subsequently verified and analysed to assess feasibility, accessibility, and community interest for each proposed site.

Findings from the desk research and iNaturalis consultations were synthesised into a **SWOT analysis**, providing a structured overview of Sarajevo's institutional, environmental, and social readiness for community-led urban gardening. The analysis captured both the enabling conditions (e.g., civic interest, available plots, NGO expertise) and the barriers (e.g., unclear land ownership, maintenance responsibilities, regulatory limitations).

Based on the verified community submissions and GIS analysis, a map of promising sites for future garden projects was developed.

All evidence gathered was consolidated into a set of **implementation recommendations,** addressing governance, funding models, participatory management, and educational use of urban gardens. The final recommendations aim to provide a practical roadmap for supporting community-led green initiatives in line with local climate resilience priorities.

3.Current Context and Policy Environment

Sarajevo's urban fabric is characterised by a narrow valley surrounded by steep hills and mountains. This topography concentrates built development in the lowlands while large swaths of green space lie on the slopes. A recent study on green space indicators mapped the **urban green space (UGS) system** across the city and its four urban municipalities: Novi Grad, Novo Sarajevo, Centar and Stari Grad. It estimated that Sarajevo has **58.5 km² of total UGS**, with continuous green areas located mainly in hilly and mountainous zones. Public UGS per capita across the city is **28.0 m²,** but falls to **9.8 m²** when forest parks (mainly on hillsides) are excluded.

The distribution of green space varies considerably by municipality. Total UGS per capita in Novo Sarajevo is just **65.7 m²** and only **45.6 % of its area** is classified as green space. By contrast, Novi Grad contains large tracts of UGS on its hills and records significantly higher per-capita figures. The same study calculated **public UGS per capita** as follows: **Novi Grad- 42.8 m², Centar- 33.8 m², Stari Grad- 18.6 m² and Novo Sarajevo- 16.8 m².** Forest parks have the largest share of public UGS in all municipalities. They are usually located on the periphery of theresearch area and are less accessible to many residents of the city centre. Green spaces around apartment buildings rank second in terms of the share of public UGS. Only Centar and Novo Sarajevo have formal urban parks, and even there these cover a small proportion of total green space. *(Tatlić et al., 2024).*

The **Green Cantonal Action Plan (GCAP)** confirms these findings and notes that green areas within built-up zones are *"very limited and unevenly distributed"*, regulatory limits on building/green-space ratios are routinely exceeded and **illegal construction** further reduces available open space. GCAP's baseline indicator for **open green space area ratio** is **9 m² per capita**, with mid-term and long-term targets of **10 m²** and **>10 m²** respectively *(EBRD, 2020).*

Table 1. Urban green space indicators for Sarajevo's municipalities

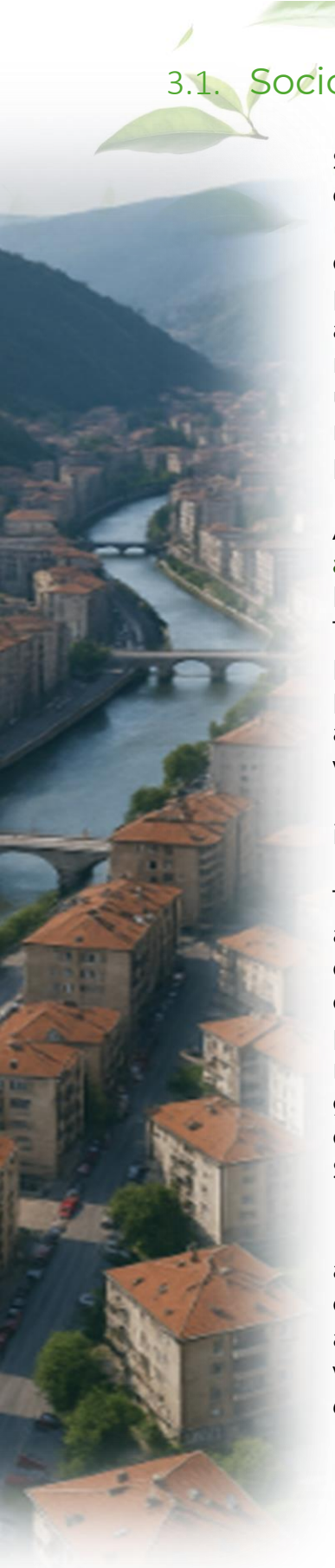
Municipality	Total UGS per capita (m^2)	Public UGS per capita (m^2)
Novi Grad	277.8	42.8
Centar	207.0	33.8
Stari Grad	263.7	18.6
Novo Sarajevo	65.7	16.8

***Note**: Public UGS per capita is used to evaluate the social effectiveness of greenery. It is determined by the ratio of the total area of public green spaces to the population of the urban area; Total UGS per capita provides a quantitative measure of all types of green spaces available to residents.*

Source: Tatlić et al., 2024.

Novi Grad records the highest provision of green space, with 277.8 m^2 of total UGS per capita and 42.8 m^2 of public UGS per capita, indicating comparatively good access to both public and other types of greenery. Stari Grad and Centar also exhibit relatively high levels of total UGS per capita (263.7 m^2 and 207.0 m^2), but their public UGS per capita is significantly lower. By contrast, Novo Sarajevo is clearly disadvantaged, with only 65.7 m^2 of total UGS per capita and 16.8 m^2 of public UGS per capita, which points to both a quantitative deficit of green space and more limited public access.

3.1. Socio-Economic Context and Community Needs



Sarajevo's population was estimated at **348,404** in 2025, with an overall density of around **5,630 people per square mile** (≈ 2,170 people per km²). Novo Sarajevo, however, is much denser: over **19,000 residents per square mile** (≈ 7,340 people per km²) *(World Population Review, 2025)*. The canton's administrative area is 141.5 km², but steep slopes and protected natural areas leave little flat land for development. Rapid urbanisation since the 1990s has led to crowded neighbourhoods, traffic congestion and increased demand for public space *(Höftberger et al., 2023)*.

According to the **World Bank Climate Risk Profile for Bosnia and Herzegovina**, average annual and seasonal temperatures have risen since 1961, with summer norms exceeding the 1961-1990 average by **1.2 °C** and winters by **0.8 °C**. Future projections warn of hotter, drier summers and more intense precipitation events. Sarajevo's basin topography exacerbates air pollution and heat-island effects. Poor ventilation during winter inversions frequently drives $PM_{2.5}$ and PM_{10} levels above EU limits, contributing to respiratory and cardiovascular illnesses *(The World Bank Group, 2021)*.

The **European Environment Agency (EEA)** emphasises that accessible urban nature provides disproportionate benefits to disadvantaged groups: children, elderly people and low-income communities, and that community gardens and allotments promote healthy food and social inclusion. The EEA recommends that all urban residents should have access to green space within **300 m** of their homes and urges cities to deliver **Urban Nature Plans** aligned with the EU Biodiversity Strategy 2030 *(EEA, 2022)*.

In general, based on the 2012 data, the area of publicly accessible green space per inhabitant tends to be higher in cities in northern European countries than in cities in southern and eastern European countries, with the exception of Poland, where public green space per inhabitant is also higher *(Maes et al., 2019)*.

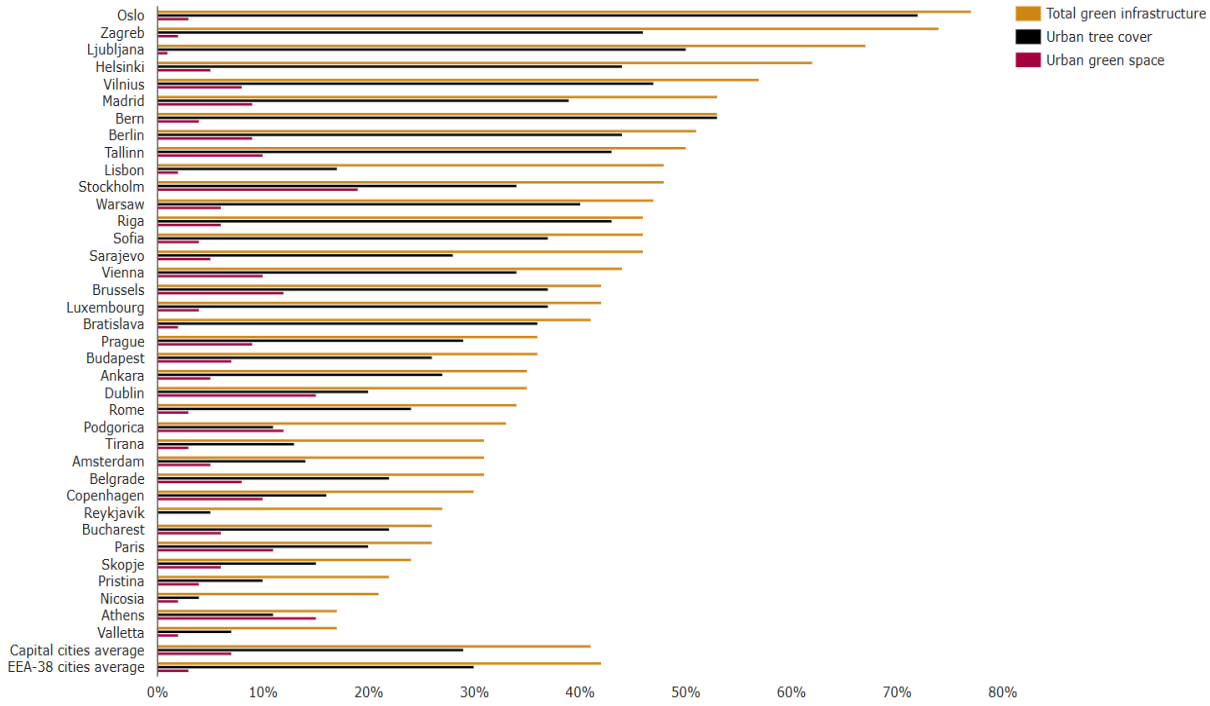


Figure 2. *Percentage of total green infrastructure, urban green space, and urban tree cover in the area of EEA-38 capital cities (excluding Liechtenstein)*

Source: EEA, 2022.

Sarajevo ranks in the middle range among European capital cities in terms of total green infrastructure. However, when focusing on urban green space (publicly accessible parks, gardens, and recreational areas), Sarajevo's share drops below 10%.

Taken together, Sarajevo's high population density, socio-economic challenges and climate vulnerability accentuate the importance of **easily accessible green spaces**. Well-designed community gardens can deliver ecosystem services, while also providing safe spaces for recreation, education and social integration.

3.2. Policy and Strategic Frameworks

As part of the desk-based research, a comprehensive review of key strategic and policy documents was conducted at the cantonal, municipal, national, and European levels. Bosnia and Herzegovina has no comprehensive national legislation on urban agriculture or community gardening, frameworks are generally embedded in land-use and environmental laws. The table below summarises the key provisions of these documents and their implications for community-led urban gardening initiatives in Sarajevo.

Table 2. *Policy and Strategic Frameworks*

Policy/Strategy	Key provisions related to urban greening/gardening	Relevance / implications
Green Cantonal Action Plan (GCAP 2020) – Sarajevo Canton	Identifies limited urban green space as a priority; aims to increase open green space per capita from 9 m^2 to >10 m^2 and raise the share of green space within urban limits from 2 % to 38 %; calls for GIS-based land-use database and harmonisation of legislation.	Establishes strategic targets for green space provision; emphasises need for integrated planning and data.
Development Strategy of Sarajevo Canton 2021-2027.	Proposes goals to improve air and water quality, protect soil, expand high-quality green areas, reduce GHG emissions, and protect biodiversity; integrates nature-based solutions and green infrastructure as priorities; calls for multi-stakeholder cooperation and indicator development; the formation of a green corridor.	Provides a framework for municipal actions and funding; highlights the need for participatory governance.
Spatial Plan of Sarajevo Canton 2003-2023	Calls for preparation of spatial and management plans for areas of special natural values and assessment of their protection regimes.	Although it does not explicitly address community gardening, the Plan provides the spatial and regulatory foundation for integrating such initiatives within designated green and recreational zones.

Strategy of the Municipality of Novo Sarajevo 2021-2027.	Defines Measure 3.6.1 – Improvement of the condition of public and green areas, recognising the continuous loss of green space due to urban expansion and the need for new recreational zones within the dense urban fabric. The measure focuses on transforming neglected localities into well-designed park and green spaces for rest and recreation, and on enhancing overall green infrastructure through green roofs, botanical gardens, therapeutic gardens, green walls, green streets, rain gardens, and tree-lined avenues. It emphasises the multifunctional use of natural resources and the creation of accessible, high-quality open spaces for all residents.	This measure establishes a clear operational entry point for developing community-led urban gardens as part of the municipality's green infrastructure system. By recognising the shortage of recreational green spaces and promoting multifunctional solutions (such as therapeutic and botanical gardens), the strategy provides both policy justification and spatial opportunities for integrating community gardens into the urban landscape. Implementing this measure can strengthen social inclusion, environmental education, and local participation while improving ecological resilience and quality of life in Novo Sarajevo.
Local Environmental Action Plan (LEAP) 2023-2027.	Serves as the municipality's main operational environmental management framework. The plan identifies major environmental pressures and prioritises actions in areas such as land use, waste management, air quality, water protection, and green infrastructure. It promotes participatory planning, environmental education, and cooperation with NGOs. The LEAP highlights the need to rehabilitate degraded and underused urban spaces, develop sustainable land-use models, and increase vegetation cover through small-scale greening projects.	The LEAP provides a practical implementation mechanism for community-led urban gardening initiatives. By recognising degraded urban areas and prioritising their transformation into green and multifunctional public spaces, it establishes a policy pathway for integrating community gardens within the municipality's environmental goals. The plan's emphasis on public participation, awareness-raising, and partnerships with civil society creates an enabling institutional environment for developing educational, therapeutic, and community-based gardens that enhance urban resilience and environmental quality.

Environmental Protection Plan 2017–2022 (KEAP) - Sarajevo Canton	Serves as the overarching environmental management document for Sarajevo Canton, outlining strategic and operational measures to improve air quality, waste management, water protection, soil conservation, and biodiversity. The plan is structured according to the DPSIR model (Driving forces–Pressures–State–Impacts–Responses) and includes a comprehensive set of indicators for monitoring environmental quality. It emphasises sustainable development, the rehabilitation of degraded urban and peri-urban areas, and citizen participation in environmental protection activities	KEAP provides a cantonal policy framework that can support the development of urban green infrastructure projects, including community gardens, as instruments for environmental restoration and public engagement. By calling for the rehabilitation of degraded land, integration of environmental education, and participatory planning, KEAP creates an enabling environment for municipalities to incorporate community gardening within broader sustainability and biodiversity objectives. Such initiatives contribute to improving air quality, mitigating urban heat, and enhancing the overall resilience of Sarajevo's urban ecosystem.
EU Nature Restoration Regulation 2024/1991 and Biodiversity Strategy 2030	Requires restoration of at least 20 % of degraded land and sea by 2030; obliges cities to maintain or increase urban green spaces and tree canopy; states that cities with more than 20,000 residents should develop Urban Nature Plans; integrates green spaces into buildings/infrastructure and mandates stakeholder participation in National Restoration Plans.	Sets future EU obligations that BiH must align with; emphasises no net loss of green space by 2030 and steady increase thereafter; calls for Urban Nature Plans as a planning tool to integrate biodiversity and community gardening.
The European Green Deal	Frames urban nature, green infrastructure, sustainable food systems, and climate-resilient cities as key components of Europe's ecological transition; promotes nature-based solutions, circular resource use, and enhanced urban biodiversity; encourages Member States to integrate green infrastructure and low-carbon land-use planning.	Provides overarching EU-level direction for urban greening initiatives; positions urban nature as a tool for mitigation, adaptation, and improved quality of life.

The current policy landscape presents both significant opportunities and persistent challenges. Realising the full potential of community-led urban gardens will require addressing several systemic barriers. These include unresolved issues of land ownership and access, the absence of clear legal and institutional frameworks, insufficient funding for long-term maintenance, and limited community empowerment mechanisms. Strengthening participatory planning processes and building local capacities will be essential to ensure the sustainability and scalability of such initiatives across Sarajevo.

4. Community-Led Urban Gardening: Global and Regional Insights

The global process of urbanization is irreversible, with the world's population projected to increase by approximately 2.2 billion people by 2050. In developing countries, urbanization is expected to continue at a rapid pace between 2021 and 2050. This accelerated urban expansion has intensified challenges related to hunger and food security, while also contributing to global warming and amplifying the urban heat island effect, factors that profoundly influence the social and cultural dynamics of urban life. Urban green spaces are fundamental to creating healthy, sustainable, and resilient cities. Among these, community gardens have become increasingly recognized for their diverse ecological, social, and educational benefits. These gardens are collectively managed green areas where local residents cultivate plants, typically for food production, learning, and social interaction. Unlike urban parks, which are primarily recreational, or commercial urban farms, which are profit-driven, community gardens focus on participation, inclusion, and non-commercial objectives *(Ding et al., 2025)*.

In the following chapters the evolution of community gardening is examined, highlighting key trends, benefits, and implementation models relevant to Sarajevo's context.

4.1. Evolution of community gardens

During the oil and financial crises of the 1970s, New York City witnessed the emergence of community gardens that, for the first time, developed independently of government support. The initiative was led by the "Green Guerrillas," a collective of artists and activists who promoted grassroots action to enhance human well-being, strengthen social ties, and reclaim neglected urban spaces for community use *(Eizenberg, 2013)*. This movement served as a catalyst for similar initiatives in the United Kingdom and the Netherlands, where urban gardening became intertwined with the spirit of the late 1960s counterculture, environmentalism, and social activism *(Mckay, 2011)*. Across Europe, these developments reflected growing public dissatisfaction with conventional urban planning systems and a rising demand for greater citizen participation in shaping urban environments *(Haumann, 2013; Othengrafen & Sondermann, 2015)*. The history of urban gardening precedes the New York movement of the 1970s, with its roots reaching back to earlier social and economic crises.

The following table provides a structured overview of the historical evolution of community-led urban gardens, tracing their development from early grassroots initiatives to contemporary policy-supported models. It highlights key socio-economic contexts, driving forces, and regional characteristics that have shaped the emergence and institutionalisation of community gardening as a global urban sustainability practice.

Table 3. *Historical Evolution of Community-Led Urban Gardens*

Early origins (19th century)	
Period/event	**Description**
Industrial-era poverty and the potato-patch program (1890s)	Economic depression in the US led to the first organised community gardens, known as *potato patches* or *vacant-lot gardens*. In Detroit and other cities, school teachers and civic groups turned vacant land into plots for unemployed families to grow potatoes and other crops. These early gardens served both food security and social welfare aims.
Allotment movement in Europe (18th–19th centuries)	In England and other European countries, allotments allowed urban labourers to lease small plots on the outskirts of towns. An 1829 survey reported 54 allotment sites in England; by 1873 this had grown to 242,542 sites. Allotment gardens were promoted to improve health and self-sufficiency.
War-time gardening and mid-20th-century revival	
World War I and Liberty Gardens (1917-1918)	The U.S. government encouraged citizens to plant Liberty Gardens (later renamed War Gardens) to reduce pressure on public food supply. These efforts built on

	earlier potato patches and fostered patriotic participation.
Great Depression & Relief Gardens (1930s)	During the Depression, municipal Relief Gardens helped unemployed families produce food and preserve morale. These programmes were administered by local governments and charities.
Victory Gardens (World War II)	Over 20 million U.S. households planted gardens during WWII. By 1944, these Victory Gardens supplied around 40 % of the nation's fresh vegetables, showing the large-scale impact of community gardening on food supply.
Post-war decline and 1970s revival	
Post-war decline	After WWII, many Victory Gardens were abandoned as industrial food systems recovered and suburbanisation reduced the need for self-provisioning. Allotment numbers dropped in the UK and Europe; waiting lists disappeared. Yet interest persisted among older gardeners
1970s urban crisis and Green Guerrillas (NYC)	In response to fiscal crises and urban decay in U.S. cities, local residents began reclaiming derelict lots. In Green Guerillas, activists began by throwing seed-bombs over fences and negotiating symbolic leases for vacant lots. This grassroots movement laid the foundation for the modern community-garden movement, emphasising neighbourhood empowerment and food security
Recent resurgence (2000s–present)	
Post-2008 financial crisis & early 2010s emergence	Following the 2008 global financial crisis, many urban areas in both the United States and Europe faced rising unemployment, reduced investment, and an increase in vacant or underused land. In this context, community gardens re-emerged as vital instruments for social resilience, local food security, and urban revitalisation. Often referred to as "recession gardens," these initiatives enabled households to supplement their diets, lower food expenses, and rebuild social cohesion during economic hardship.
2010s growth & diversification in major citie	Across many European cities, the 2010s saw a marked expansion of community gardening, shifting from small, ad-hoc plots to city-recognized elements of green infrastructure.
Policy and legal developments (2010s-2020s)	European policy frameworks increasingly recognise community gardens. The EU Biodiversity Strategy 2030 and Urban Nature Plans encourage cities to integrate green infrastructure and citizen co-creation into planning (see report above). National reforms are also progressing.

Sources: Crouch & Ward, 1988; Hardman etl a., 2018; Lawson, 2005; Linder, 2021; Stein-Roggenbuck, 2008.

Community gardens developed out of social and economic crises in industrialized countries. In Europe and North America during the 19th century, rising industrialization and poverty led to the creation of “allotment gardens”, small plots leased to urban workers for vegetable production and recreation. During World War I and II, “war gardens” or “victory gardens” provided produce when supply chains were disrupted. These movements demonstrated how urban residents could grow food collectively and foster social cohesion. In modern times community gardens are known by different names worldwide: allotment gardens, citizen farms, food gardens, hobby gardens and “family gardens”. Their forms have diversified. Besides ground-level plots, gardens now appear on rooftops, walls and balconies. The subsequent section examines how community gardens are conceptually defined and classified within contemporary academic and policy frameworks. It provides an overview of the main typologies that have evolved over time, reflecting variations in ownership structures, management models, and primary functions.

4.2. Defining and Classifying Community-Led Urban Gardening

Community gardens are part of the broader concept of urban agriculture. Urban agriculture encompasses the cultivation of plants and animals in cities for food, ornamental plants or other products (such as beekeeping and aquaculture). Gardens occupy diverse spaces, balconies, rooftops, backyards, vacant lots and even underground spaces. Unlike commercial urban farms, community gardens are non-profit and driven by social goals *(EEA, 2016)*.

Literature highlights several key features:

- **Self-initiated and participatory nature**: Studies describe community gardens as "urban commons" transformed by residents into shared resources. Most gardens emerge bottom-up; citizens initiate the project themselves, share decisions and governance, and develop their own rules and norms. They pool resources: land, water, tools, compost or funds.

- **Community orientation:** The goal is not only food production but also creating social networks, building community identity, offering education and recreation. Harvests are shared or used for personal consumption, but some initiatives sell produce at markets *(Rogge & Theesfeld, 2018)*.

- **Self-governance and durability**: Successful gardens rely on local leaders and long-term commitment from residents. Analyses of community gardens in the United States show that gardens initiated by local leaders last longer and function better than top-down initiatives. Gardeners often require wider community support to secure land, water and funding *(Adam, 2011)*.

- **Public and private character**: Although often labelled "public gardens," land ownership may be public, private or collective. In many cities local authorities provide permits, water or temporary leases, while maintenance relies on volunteers *(EEA, 2016)*.

Based on these traits, community-led urban gardening can be defined as collectively managed green spaces in cities where food, ornamental plants and social networks are cultivated to meet local needs and generate personal and communal benefits. The definition emphasizes self-initiative, self-governance, shared resources and the social dimension of gardens.

Different research studies and policy frameworks distinguish community-led gardens based on their participants, governance arrangements, spatial characteristics, and intended functions.

According to Kordon's review (2024), community gardens can be classified into six main types, reflecting variations in purpose and participant groups. These range from neighbourhood-based gardens to entrepreneurial farms, encompassing educational, therapeutic, and income-oriented models.

Table 4. *Summary of the Types of Community Gardens*

Garden Type	Participant Groups	Land Type	Garden Space	Use of Products	Primary Purpose
Neighborhood Gardens	People in the community	Public land; Private land	Individual or communal single-plot	Personal use; Give away; Selling is not allowed	Gardening; Gathering; Socialising
Youth/School Gardens	Students; Teachers; Families	Private land; Government; Schoolyards	Raised beds; Individual plots	Products used in school kitchens	Education; Curriculum; Nutrition education; Outdoor learning; Science classes
Farmers' Market Gardens	Unemployed people; Residents in disadvantaged neighbourhoods	Public or private land	Individual plots	Sold to local markets, restaurants and farmers' markets	Income generation; Poverty and social exclusion reduction; Improved production techniques

	Individuals or people in housing groups	Private or government-supported housing yards	Individual plots	Personal use; Shared with residents	Gardening; Gathering; Socialising
	Patients; Seniors; Retirement communities	Public or private organisations (hospitals, senior centres, outpatient treatment centres)	Individual or communal single-plots	Used in institutional kitchens; Donated	Social education; Psychological and physical well-being; Mental or physical rehabilitation; Job training; Skill development
	Public participants; Students; Job and skill learners	Botanical gardens; Education institutions	Individual or communal single-plots	Used in institutional kitchens; Donated	Outdoor classroom; Public education (e.g. composting, organic gardening, water conservation, beekeeping, garden design, carpentry)

***Source**: Kordon (2024)*

Different classification frameworks illustrate the conceptual diversity and contextual adaptability of community-led gardening initiatives. Analysing these typologies provides valuable insights for policy-makers, planners, and community practitioners in tailoring strategies that address distinct social, economic, and environmental dimensions of such projects, while enhancing their long-term sustainability and inclusiveness.

4.3. Benefits and key challenges facing community led urban gardening

Community-led urban gardens represent a multidimensional approach to sustainable city development, providing intertwined social, environmental, economic, and health benefits. As Kordon *(2024)* notes, their role extends far beyond food production, they foster community cohesion, ecological restoration, and urban resilience. The following table summarize these benefits, illustrating how community-led urban gardens contribute to multiple dimensions of sustainable urban development.

Table 5. *Overview of the Key Benefits of Community-Led Urban Gardening*

	Main Benefits	Examples / Outcomes
Social 	- Strengthens neighborhood networks - Promotes intergenerational learning - Encourages cultural exchange	- Community events and workshops - Shared responsibility and mutual trust - Cultural food traditions maintained
Environmental 	- Increases green space and biodiversity - Supports pollinators and ecosystems - Mitigates heat island effect and enhances air quality	- Habitat creation - Stormwater infiltration & rainwater reuse - Composting reduces landfill waste
Economic		

	- Reduces food costs and supports local markets - Provides training and employment opportunities - Increases property and neighborhood value	- Farmers' market linkages - Skill development programs - Neighborhood revitalization
Health 	- Improves physical activity and nutrition - Reduces stress and supports mental health - Provides therapeutic environments for vulnerable groups	- Exercise through gardening - Fresh fruit and vegetable consumption - Relaxation and social therapy for elderly/patients

Source: Kordon (2024)

Although community-led urban gardening provides significant social, economic and environmental benefits, it also faces persistent challenges such as insecure land tenure, limited funding and resources, policy and governance gaps, inclusion and equity issues, environmental constraints, and the need for more comprehensive data.

In numerous European cities, community gardens often operate on short-term leases or temporarily allocated plots, leaving them highly susceptible to redevelopment pressures. According to a study commissioned by the European Parliament, peri-urban agriculture initiatives in cities such as Ghent and Kortrijk experience increasing "pressure on open space and farmland," as urban expansion leads to the irreversible conversion of agricultural land and intensifies competition among farmers for available plots (*McEldowney, 2017).* Moreover, tensions between conventional farmers and emerging urban agriculture movements frequently hinder collaboration and knowledge exchange.

In Berlin, for instance, many community gardens occupy land designated only for temporary use, lacking both tenure security and institutional financial support. As a result, they are often compelled to engage in ancillary income-generating activities, such as running cafés or organizing events, to sustain their operations *(Mayayo, 2019).* Similarly, in Paris, the Main Verte

programme facilitates access to land but limits tenure to short-term agreements that expire once development needs arise, thereby undermining the efforts of low-income gardeners to maintain stable spaces for food production and community engagement *(Horst et al., 2021)*.

European community gardens frequently rely on a combination of public grants, private donations, and volunteer labour to sustain their activities. The European Parliament's analysis highlights that high initial investment costs, particularly those associated with retrofitting existing buildings and installing basic infrastructure, render many projects economically fragile and heavily dependent on subsidies *(McEldowney, 2017)*. In the absence of stable financial support, these gardens often face operational difficulties and are unable to fully deliver on broader policy expectations related to food production, employment generation, and vocational training.

Berlin's community gardens illustrate this financial precarity: limited municipal support and the absence of consistent funding streams compel them to engage in commercial activities, such as running cafés or hosting events, to remain viable *(Mayayo, 2019)*.

In Europe, urban agriculture occupies an ambiguous position between policy domains: it is often considered neither rural enough for support under rural development programmes nor agricultural enough to benefit from Common Agricultural Policy measures. In Belgium, complex legislation related to competition policy, food safety, and spatial planning presents significant barriers to the development of urban farming initiatives *(McEldowney, 2017)*. Moreover, the lack of municipal recognition of community gardens' contributions and the absence of clear legal frameworks defining gardeners' rights and responsibilities hinder their long-term stability *(Mayayo, 2019)*. In France, temporary tenancy agreements under the *Main Verte* programme illustrate the precarious nature of such projects, as gardens can be displaced when land is needed for development. Meanwhile, policy discussions increasingly prioritise high-tech, commercial models of urban agriculture, raising concerns that non-profit community gardens and low-income gardeners may be overlooked.

Although community gardens are designed to be inclusive public spaces, participation patterns often reflect wider social inequalities. New garden projects frequently appear in higher-income neighbourhoods, while the needs and contributions of working-class communities receive less attention. At the same time, growth in high-tech, commercially oriented urban agriculture models has raised concerns that these initiatives may primarily benefit more advantaged groups, rather than addressing the needs of low-income residents *(Horst et al., 2021)*.

Community gardens make an important contribution to urban greening and environmental improvement across European cities. While some sites may require careful management due to past industrial activity or nearby waste areas, such challenges can often be addressed through proper soil testing, raised-bed cultivation, and the use of clean soil inputs *(McEldowney, 2017)*.

A large share of existing academic literature on community gardening focuses on experiences from North America and Western Europe, while research from Central and Eastern Europe remains comparatively limited. Case studies from Belgium and Berlin highlight the importance of developing context-specific data on land tenure, governance models, and social inclusion.

Table 6. *Common challenges for EU community gardens*

Challenge	Key issues
Land access & tenure	○ Temporary leases and insecure tenure; ○ Pressure on open space and farmland; ○ Competition between traditional farmers and new urban farming initiatives
Funding & resources	○ Reliance on grants and volunteer labour; ○ High capital costs; ○ Limited municipal support; ○ Need for diversified funding sources
Policy & governance	○ Fragmented policy frameworks that blur urban and rural distinctions complex regulatory requirements (competition, food safety, spatial planning); ○ Lack of formal recognition and clear legal rights
Participation & equity	○ Potential exclusion of working-class residents in gentrifying areas; policy emphasis on high-tech commercial projects; ○ Barriers for marginalized groups due to insecure land tenure
Environmental constraints	○ Soil contamination and pollution; ○ Limited capacity for climate regulation compared with larger parks; limited contribution to overall food self-sufficiency
Research gaps	○ Sparse data from Central and Eastern Europe; ○ Need for long-term, context-specific studies; ○ Need for integration into urban planning frameworks

Source*: McEldowney, 2017; Horst et al., 2021, Mayayo, 2019.*

Having outlined the key definitions, characteristics, benefits and challenges of community-led urban gardens, the report now turns to the practical task of identifying and prioritising sites. The following section introduces the spatial mapping and site-identification methodology, which relies on active public engagement through a digital platform. By inviting citizens and community groups to propose and evaluate potential locations, this approach ensures that the selection of sites reflects local needs and preferences, and lays the foundation for data-driven decisions on feasibility, accessibility and community interest.

5.Spatial Mapping and Site Identification

As part of the participatory component of the project, citizens were invited to actively contribute to the identification of potential locations for community-led urban gardens through the iNaturalis digital platform. This interactive tool enabled users to mark areas within Sarajevo Canton that they considered suitable for future garden development. By uploading georeferenced photographs and precise addresses, residents helped to build a collective map of open and underutilised spaces across the city.

Based on these citizen-generated proposals, a map of potential urban garden sites was developed to inform subsequent spatial and policy analysis. In total, 43 submissions were collected through the platform, reflecting diverse urban contexts.

The table below provides a detailed overview of these community inputs. It summarises each proposed area with its exact address, municipality, and a brief site description, alongside representative images submitted by citizens. Together, these entries form the foundation for understanding local perceptions of suitable urban gardening spaces and serve as a key reference for future pilot interventions.

Table 7. *Citizen Proposals for Potential Urban Garden Locations*

Location photo	Municipality	Exact Address	Description of the Area
	Novi Grad	Aleja Lipa 71 000 Sarajevo	Unused green area adjacent to a residential building. A small grassy plot located between a residential block and the Olympic Pool complex. The area is currently undeveloped and lacks infrastructure but is easily accessible from both sides (from the pool and the residential building). It holds strong potential for conversion into a shared community garden.
	Novi Grad	Brčanska 17a 71 000 Sarajevo	This location represents an unused public green space situated between multi-storey residential buildings. The area is covered with dense grass and partially landscaped with medium-sized trees and ornamental shrubs. Benches are also visible, indicating previous or occasional use for recreation by residents; however, the current condition suggests neglect and a lack of active maintenance.

	Novi Grad	The street located between Prijedorske, Aleja Lipa i Žrtava fašizma streets	The photo shows an undeveloped public green area located directly adjacent to a busy urban roadway and a small kiosk. The space is partially shaded by trees, while the remainder consists of dense grass without any defined paths or infrastructure. Visible elements include several neglected benches, small structures such as a newsstand and electrical distribution cabinets, and a parking area along the site's edge.Situated in a highly frequented location between residential and commercial zones, the area holds potential for transformation into a mobile community garden or a small recreational park.
	Novo Sarajevo	Gradačačka 10	An unused green area located between residential buildings in the Čengić Vila neighbourhood. This part of the city contains numerous underutilised green spaces between buildings, which are ideal for projects such as community gardens, green micro-zones, and intergenerational gathering spaces.

	Novo Sarajevo	The street across from Ilije Engela, near the playground	The photo shows a wide, undeveloped green area located between multi-storey residential buildings, with clearly visible pedestrian access and existing vegetation, including both coniferous and deciduous trees. Several benches, a surrounding parking area, and partially mowed grassy sections can also be observed. Although currently unmaintained, the area remains open, sunny, and spatially valuable. Its size, orientation, and position between residential blocks make it highly suitable for establishing a shared community garden.
	Novo Sarajevo	Gradačačka 28	The site represents a neglected and partially overgrown public green area situated between multi-storey residential buildings. It includes an old concrete table tennis platform that is no longer in use, as well as several mature chestnut trees providing natural shade. A pedestrian shortcut created by residents indicates that the area is used informally as a passageway. Although currently unmaintained, the location holds significant potential for the development of a community-driven urban garden or an intergenerational space for social interaction and learning.

	Novo Sarajevo	Gradačačka 58	The area located at Gradačačka 58, in Sarajevo's Čengić Vila neighbourhood, represents a significant unused public green space. Surrounded by multi-storey residential buildings and positioned between urban roads, the site features mature trees and a natural grass cover but is currently neither functionally arranged nor integrated into community life. The absence of elements such as pathways, benches, playgrounds, or garden structures makes it an ideal location for transformation into a community garden, educational park, or intergenerational garden centre engaging residents of all ages. Its proximity to a large number of households further enhances its potential to become a participatory, sustainable, and inclusive urban space.
	Novo Sarajevo	Gradačačka 136	This location represents a large, unused public green area. The space is surrounded by multi-storey residential buildings.

	Novo Sarajevo	The area between Grbavička 89 and Grbavička 107	The location is part of a residential block and features a shaded green area characterised by a dense canopy of trees and bare soil beneath. Although currently undeveloped, the site offers strong potential for establishing a small forest garden, a space for nature-based workshops or meditation, or an area equipped with benches and social elements that do not require direct sunlight.
	Novo Sarajevo	Extending towards Grbavička Street	This location is situated within the residential zone of the Grbavica neighbourhood, in close proximity to multi-storey apartment buildings. The area features a modest and aging children's playground equipped with simple play structures, positioned on a gravel surface and partially shaded by mature trees.

	Novo Sarajevo	Extending towards Grbavička Street	This green area is located between two residential buildings and is easily accessible from both sides. It receives ample sunlight throughout most of the day and is surrounded by residential structures, offering an excellent opportunity for community engagement. The terrain is flat, with spontaneously grown and poorly maintained vegetation.
	Novo Sarajevo	Grbavička 40-52	A green area located adjacent to a mixed residential and commercial building in the Grbavica neighbourhood. On one side, it is bordered by a sidewalk and entrances to local businesses (including a bakery and other commercial premises), while on the other side, a pedestrian pathway runs beneath a line of trees. The area is partially sunlit, with several large trees providing natural shade.

	Novo Sarajevo	Extending towards Hamdije Ćemerlića Street.	This location in the Grbavica neighbourhood features a partially shaded green area situated among trees, characterised by spontaneously grown vegetation and an unmaintained ground surface.
	Novo Sarajevo	Located between Hasana Brkića Street and Hamdije Ćemerlića Street	This location in the Grbavica neighbourhood is situated along a pedestrian pathway between multi-storey residential buildings, with a grassy area on the right and rows of trees with benches on the left. The space is partially sunlit, easily accessible, and frequently used by residents and passers-by.

	Novo Sarajevo	To 21 Hasana Brkića Street	The photograph shows a spacious green area situated between residential buildings. The site is covered with tall grass and surrounded by diverse tree species, including birch trees and mature canopies that provide pleasant shade."
	Novo Sarajevo	The street located between Porodice Ribar Street and Topal Osman-paše Street	An open and mown green area within the residential neighborhood, featuring several young trees and good sun exposure. The space is easily accessible, flat, and located near residential buildings and recycling containers, making it suitable for the development of a community urban garden.

	Centar	Franje Račkog 2	A semi-enclosed green area adjacent to a public facility in the centre of the neighbourhood. The space is bordered by a stone fence and shaded by trees, offering potential for a small educational or decorative community garden. Its proximity to the building and pedestrian pathways enables easy engagement of the local community
	Novo Sarajevo	Between 34 Ferde Hauptmana Street and 32 Ferde Hauptmana Street	An open green area situated between residential buildings, featuring young trees and existing infrastructure such as benches and pedestrian pathways. The location is suitable for establishing a community garden due to its good sun exposure, accessibility, and the already demonstrated interest of local residents through the planting of ornamental vegetation.

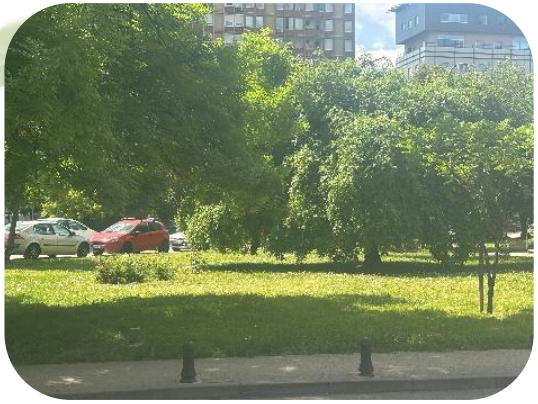
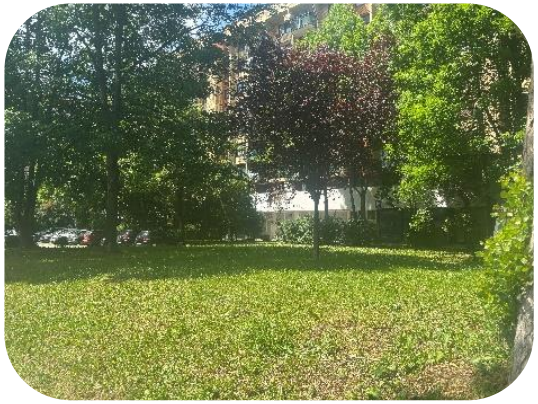
	Novo Sarajevo	Next to 40 Ferde Hauptmana Street	A spacious, partially sun-exposed green area situated between residential buildings, surrounded by trees and shrubs. Visible footpaths through the grass indicate regular use of the space. The location shows strong potential for establishing a community urban garden.
	Novo Sarajevo	Between Ferde Hauptmana Street and Meša Selimović Boulevard	An open public green area located alongside a busy urban roadway.The space is partially shaded and currently underused, featuring existing natural elements such as tall grass and mature trees. This location offers strong potential for developing a representative community garden that could serve as a visual and educational green point within the central urban area.

	Novo Sarajevo	Grbavička 55	A shaded green area located between residential buildings, positioned under the canopy of mature trees. The space is partially enclosed and naturally sheltered, featuring low vegetation and favourable ground conditions. The location is suitable for developing a forest-style community garden or a sensory garden, with opportunities for engaging the local community in maintenance and educational activities.
	Novo Sarajevo	Behdžeta Mutevelića 14	An unmanaged and neglected green area adjacent to a residential building, currently without a defined purpose and with visible litter. The location has potential for activation through the establishment of a small community garden, which would improve the visual quality of the space and encourage resident engagement.

	Novo Sarajevo	Behdžeta Mutevelića 28	An existing urban park equipped with infrastructure and amenities for rest, recreation, and leisure. The space is already functional, yet there is potential to activate a portion of the area, such as near the fountain or alongside the pathway, for an educational garden, a sensory planting space, or community-raised beds
	Novo Sarajevo	The area in front of the building at 109a Behdžeta Mutevelića Street.	A green area adjacent to a pedestrian pathway, partially shaded by trees and currently without a defined function. Its proximity to existing infrastructure and frequent pedestrian movement makes it suitable for a small-scale intervention—such as planting ornamental vegetation, establishing a mini garden, or installing educational elements.

	Novo Sarajevo	Behdžeta Mutevelića Street, across from the Grbavica Stadium	An open, flat, and sunny green area situated between residential buildings, adjacent to a pedestrian pathway. The space is currently unused and lacks amenities, yet offers significant potential for establishing a community garden. Its good accessibility and visual connection with nearby buildings can encourage active participation from the local community.
	Novi Grad	Bulevar Meše Selimovića 51	A neglected and undeveloped area with traces of a concrete surface and dense vegetation. The space is not currently in active use but holds potential for conversion into an educational or demonstration garden in an urban fringe zone, particularly following waste removal and soil preparation

	Novi Grad	Džemala Bijedića 55	A small green area shaded by trees, located between a residential building and a traffic roadway. The site is suitable for a micro-intervention, such as establishing a flower bed, planting aromatic herbs, or installing hanging planters within the existing shrubbery. The proximity of residents enables strong opportunities for community involvement.
	Centar	The street between Kranjčevićeva Street and Franca Lehara Street	A green area located along a busy street and adjacent to a commercial building, currently partially damaged and poorly maintained. Due to its high visibility and good sun exposure, the space is well-suited for planting ornamental vegetation, creating a public green corner with an informational panel, or hosting a mini visual campaign on urban biodiversity.

	Centar	Franca Lehara Street	A well-maintained green area within the urban core, partially shaded by trees and easily accessible from multiple directions. The location is suitable for introducing small-scale educational and decorative elements, such as information boards, low planting beds, or a mini aromatic garden that could enhance both local biodiversity and the aesthetic value of the space.
	Centar	Kranjčićeva 17	A green area located between residential buildings, featuring mature trees that provide natural shade and partial buffering from the street. The space holds strong potential for the establishment of a community garden, an educational corner, or semi-shaded planting areas. The proximity to residential buildings and local amenities supports active community involvement and participation.

	Centar	Magribija 2 - Park Nijaz Duraković – Hastahana	A large urban area with a concrete surface and partial vegetation, formerly used as a hospital site. The space currently lacks a defined purpose but remains highly frequented and carries strong symbolic importance for the local community. While not a green area, it represents an underutilized urban space with significant potential for activation through participatory urban gardening, mobile educational installations, or temporary climate-resilient interventions.
	Centar	Marijin Dvor- Kranjčićeva Street	A green area featuring existing urban furniture (stone table and benches), partially shaded by trees and located in close proximity to residential buildings and a roadway. The site is suitable for further activation through the planting of low-growing aromatic herbs, the installation of educational elements, or the introduction of micro-planting beds near the pathway.

	Centar	Kranjčićeva 23	An open, unused green area in an urban setting, situated opposite a high-traffic shopping centre. The site benefits from good sun exposure and visibility, making it suitable for a small decorative and educational garden featuring aromatic herbs, raised beds, or an awareness board promoting urban sustainability.
	Centar	Tešanjska 24A	An unused and neglected urban plot, currently covered with gravel, waste, and spontaneous vegetation. The site is suitable for ecological restoration and redevelopment through a participatory approach, aiming to create a functional green space within the urban environment.

	Centar	Halida Kajtaza Street	Green area located between roadways and residential blocks, with free pedestrian flow and basic green elements (trees and lawn). The space is suitable for light interventions such as planting aromatic plants along the pathway, creating planting beds in undeveloped zones, and installing educational signage.
	Ilidža	Čolakovića kula 9	An open green area in a suburban residential neighbourhood, currently unmanaged and covered with tall grass. The space has strong potential for the establishment of a community garden developed in collaboration with local residents, particularly for growing vegetables, culinary herbs, and planting trees.

	Ilidža	Ibrahima Ljubovića 19	This location features a small green area between residential buildings, partially shaded by tree canopies. The terrain is flat, with a visible worn footpath indicating frequent pedestrian movement. In close proximity, there is a tree, concrete paving, and a ground-level access area adjacent to the building. The surrounding environment includes residential units and parked vehicles, suggesting good accessibility. The site holds potential for establishing a small urban garden, particularly due to the natural shade, high walkability, and the close presence of the local community.
	Ilidža	The street between Muhameda Mehmedbašića Street and Ibrahima Ljubovića Street	The image shows a well-maintained green area situated between multi-storey residential buildings. The surface is flat and easily accessible from the surrounding sidewalks and access paths, with several small trees and shrubs visible in the background. The location offers potential for establishing a small community urban garden, subject to prior verification of land ownership and designated land use. Its position within the neighbourhood makes it well-suited for community-based activities, including engagement of local residents, senior citizens, and families with children.

	Ilidža	The street between Muhameda Mehmedbašića Street and Ibrahima Ljubovića Street	The lawn is partially neglected, with dry patches and areas lacking grass cover. The site is flat, receives good sunlight, and could potentially accommodate small raised planting beds along the building façade, subject to prior approval from residents and the building management. A nearby tree provides partial shade to the area.
	Ilidža	Mala Aleja	The photograph shows a well-maintained grassy area within a courtyard space, bordered by concrete walkways and complemented by mature trees. The setting appears quiet and sheltered, offering potential for seating areas or intergenerational educational activities beneath the tree canopy. The location is well-suited for hanging or container-based urban gardening initiatives.

	Ilidža	Mala Aleja	This photograph shows a large, open green area along the riverbank. The space is spacious and natural, covered with low grass and demonstrating clear potential for larger community gardening projects.
	Ilidža	Velika aleja	The image shows a public park featuring two benches and waste bins, set within a green environment with numerous trees and expansive grassy areas. The location is suitable for introducing educational garden features, particularly due to the existing recreational infrastructure.

Using this table as the primary dataset, each location was geocoded and added to a GIS layer, resulting in a map that visually displays potential community urban garden sites across the Sarajevo urban area. The map represents a **spatial translation of community contributions**, showing where residents see opportunities for transforming unused or underutilised land into productive green spaces.

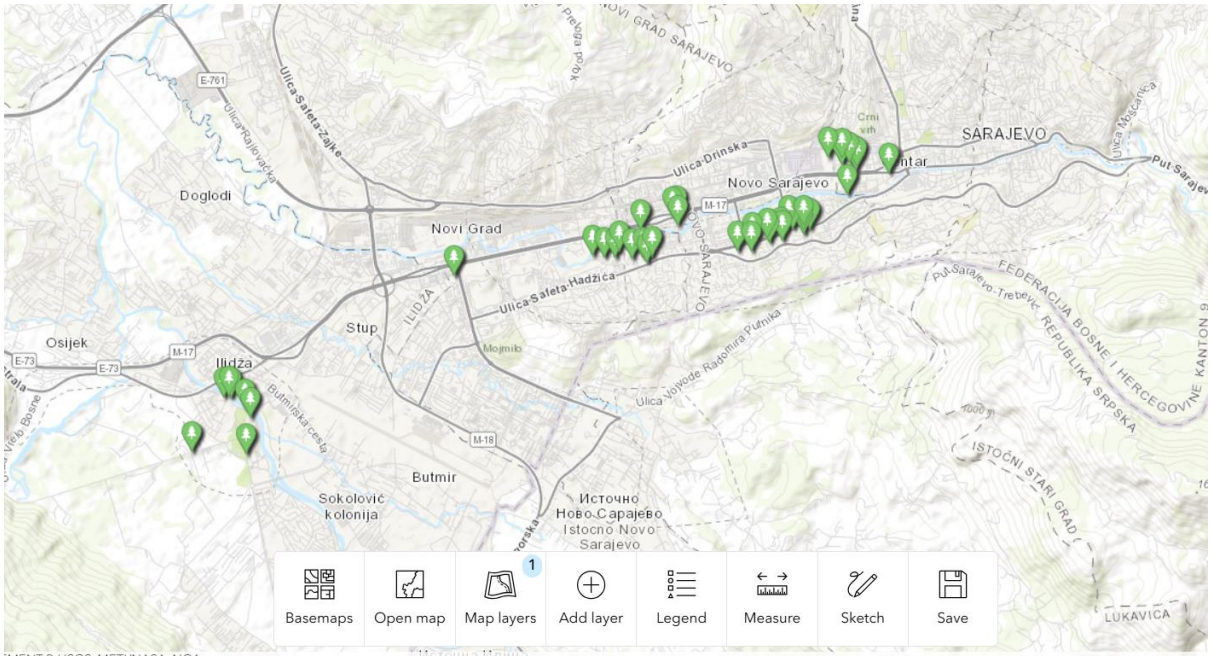


Figure 3. *Citizen-Mapped Locations for Community-Led Urban Gardens*

Through the participatory mapping process, citizens provided **42 valid** georeferenced submissions, each containing sufficient location data.

Submissions were spatially categorized according to municipality, resulting in the following distribution:

- **Novo Sarajevo:** 21 points (50%)
- **Centar:** 9 points (21%)
- **Ilidža:** 7 points (17%)
- **Novi Grad:** 5 points (12%).

The spatial analysis of community-submitted locations reveals several notable patterns that provide insight into citizen priorities, site typologies, and implementation opportunities:

- **Clustered interest in Novo Sarajevo:** Roughly half of all submissions are concentrated in Novo Sarajevo. This indicates either a stronger civic interest/awareness there or the presence of many suitable interstitial and public spaces that residents identify as potential garden sites.
- **Interstitial and micro-sites predominate**: A large share of entries describe small, under-used spaces located between residential blocks, beside walkways, or adjacent to local businesses. These are typical urban garden opportunities: modest in size, close to residents, and often requiring low-cost, incremental interventions (raised beds, container gardening, small shading, or seating).
- **Varied site condition spectrum:** Submissions include well-maintained lawns and parks (suitable for demonstration/educational beds), partially shaded courtyard spaces (good for sensory/forest-style plantings), and neglected plots with debris or concrete remnants (requiring clean-up and soil remediation). This variety calls for a differentiated implementation approach (low-intervention pilots vs. sites needing remediation).
- **Accessibility and visibility are recurring strengths**: Many points lie adjacent to pedestrian paths, residential entrances, or visible urban corridors. High visibility and good walkability are favourable for volunteer recruitment, ongoing stewardship and informal surveillance.

Drawing on the desk research and the insights gathered through the participatory citizen mapping process, a comprehensive **SWOT analysis** was developed to evaluate the strategic potential, feasibility, and enabling conditions for community-led urban gardens in Sarajevo. This analysis synthesises evidence from policy and planning documents, municipal spatial data, and citizen-generated site proposals, allowing for a holistic assessment of internal strengths and limitations, as well as external opportunities and risks that may influence implementation. The results of the SWOT analysis are presented in the following chapter.

6. SWOT Analysis: Opportunities for Community Gardening in Sarajevo

Community-led urban gardening initiatives in Sarajevo reveal strong potential to contribute to **environmental quality**, **social inclusion**, and **neighbourhood revitalisation**. Based on desk research, policy review, georeferenced citizen inputs, and analysis of local planning documents, a SWOT analysis was conducted to assess internal and external factors influencing the feasibility and long-term sustainability of community gardens in the city.

The SWOT framework examines Sarajevo's **strengths and weaknesses** (internal conditions related to community capacity, available land, and institutional support), as well as opportunities and threats (external drivers such as funding, climate conditions, urbanisation pressure, and policy context). The analysis helps identify where early investment and strategic action may deliver the highest impact.

Figure 4. Swot Matrix for Community-Led Urban Gardens in Sarajevo

STRENGTHS

- Citizen interest and willingness to participate
- Active community organisations and NGOs involved in sustainability
- Existing informal green stewardship
- Available vacant or under-utilised plots
- Supportive educational institutions
- Dense urban fabric enables close-to-home participation
- Strong social cohesion at neighbourhood level in many areas
- Positive public attitude towards organic gardening and sustainability
- Successful pilot projects of community gardens

WEAKNESSES

- Scarcity of flat, accessible public green space in dense neighbourhoods
- Unclear land ownership and fragmented property rights
- Weak legal framework for community-managed public space
- Lack of long-term maintenance and stewardship arrangements
- Limited horticulture / urban agriculture knowledge within communities
- Insufficient dedicated funding for community-scale greening initiatives
- Bureaucratic procedures for approvals and permits
- Lack of tools and basic gardening infrastructure at community level

S W O T

OPPORTUNITIES

- Access to EU and donor funding
- Potential to integrate gardens with schools, senior centres, social housing
- Educational use: outdoor learning, STEM projects, climate literacy
- Promotion of local food systems and organic production
- Improving microclimate, shading, urban heat island mitigation
- Enhancing social inclusion (youth, elderly, vulnerable groups)
- Conversion of neglected or vandalised spaces into safe community areas

THREATS

- Competing urban priorities (parking, densification, construction)
- Illegal construction on vacant land
- Climate change: heatwaves, water scarcity, drought periods
- Pollution of soil on former industrial or parking areas
- Lack of guarantee of long-term land tenure (temporary use only)
- Rising maintenance costs in case municipal support is withdrawn
- Possible conflicts between residents over land use
- Continued urbanisation pressure and loss of undeveloped land

Sarajevo holds a **strong foundation** for scaling community-led urban gardening, supported by **active citizen engagement**, an **experienced local NGO ecosystem**, **cooperation-oriented schools**, and an **urban fabric** that includes numerous underutilized green and interstitial spaces. These comparative advantages indicate not only **social readiness**, but also a **latent spatial potential** that, if adequately managed, could expand the city's green infrastructure through community stewardship models.

Despite these enabling conditions, several structural constraints continue to challenge long-term implementation. The most persistent barriers include **fragmented land tenure systems**, **inconsistent land-use records, limited earmarked municipal funding for neighbourhood-scale greening**, and the **absence of a formalised governance model** that can delegate public land management to residents or civic organisations. Additionally, community gardening currently lacks institutional integration within local development frameworks, meaning that existing initiatives **rely primarily on project-based funding**, **goodwill**, and **volunteer labour**, rather than structured municipal support or policy incentives. Without systemic backing, many interventions risk remaining small-scale, temporary, or unevenly distributed across the city.

To unlock the opportunities identified in the SWOT analysis, Sarajevo should prioritise a phased, **multi-actor implementation model** grounded in three parallel pillars:

- **community activation,**
- **institutional alignment**, and
- **resource mobilisation.**

Strategic collaboration among municipalities, schools, building representatives, environmental NGOs, youth organisations, and informal resident groups will be essential for ensuring continuity. Schools and universities, in particular, represent multipliers for long-term cultural adoption, functioning as hubs for citizen science activities, green curriculum integration, youth engagement, and intergenerational knowledge transfer. Community gardens must transition from being perceived as isolated beautification projects to becoming recognised as social infrastructure, delivering measurable impact on public health, education, environmental quality, and community resilience.

Institutionalising land access represents another critical step. This requires the development of a transparent and replicable mechanism for temporary or long-term land use agreements that enable citizen groups to cultivate public spaces safely and legally. Establishing such a model would reduce administrative uncertainty, enhance accountability, and unlock wider funding opportunities by providing donors and municipal partners with a clear governance structure.

From a **financing perspective**, expanding the model will depend on blending municipal co-funding with external investment streams, including EU urban greening programmes, climate adaptation funds, environmental education grants, and bilateral donor mechanisms. In parallel, capacity-building programs should equip local residents with practical skills in soil preparation, urban agriculture, organisational management, participatory planning, and long-term stewardship, shifting community gardens from volunteer-driven activities toward community-managed urban assets.

If strategically scaled, community gardening can evolve into one of the key instrument for Sarajevo's **urban transition**. Beyond food production, these spaces can become drivers of urban climate adaptation, social cohesion, mental health support, civic participation, circular resource use, and improved liveability.

By embedding community gardens into **planning frameworks** rather than treating them as temporary projects, Sarajevo has the opportunity to redefine them as a permanent layer of the city's public service ecosystem.

7.Implementation Framework and Recommendations

To ensure sustainability, institutional longevity, and measurable urban impact, community-led urban gardens in Sarajevo should be grounded in principles explicitly supported by major European policy and knowledge frameworks. The New Leipzig Charter- *The Transformative Power of Cities for the Common Good* emphasises **co-governance**, **community participation**, **cross-sectoral cooperation** and **long-term urban stewardship** for the common good, indicating that local residents should be partners in decision-making rather than temporary consultees (European Union, 2020).

Spatial equity and fair access to green infrastructure are core recommendations of the EEA report on Nature-based Solutions, which states that green interventions must be socially inclusive, geographically balanced, and avoid reinforcing existing spatial inequalities. The same report underscores the importance of embedding monitoring systems and indicators to evaluate environmental and societal impact over time (EEA, 2021).

The EU Biodiversity Strategy for 2030 positions urban green spaces and nature-based solutions as essential tools for biodiversity protection, climate adaptation, ecosystem restoration, and public health benefits, reinforcing the need for multifunctional green infrastructure in cities (European Commission, 2021). Similarly, the FAO Urban and Peri-Urban Agriculture Framework confirms that community-based urban agriculture delivers food, education, social cohesion, health benefits, and community resilience, and highlights the value of **incremental, scalable** and **low-cost interventions** that evolve through local capacity building (FAO, 2017).

Collectively, these frameworks confirm that community urban gardens should not operate as isolated greening actions, but must be integrated into **wider urban planning**, **climate adaptation strategies**, **biodiversity commitments**, **education systems**, and **community governance models**, with clearly defined pathways for participation, monitoring, maintenance and long-term institutional support.

The methodology, developed by the European Commission, provides a structured pathway for integrated urban nature planning. In the context of community-led urban gardens, this framework can be applied to shift gardens from small-scale grassroots actions into institutionalised, co-governed, and socially inclusive green infrastructure, aligned with urban resilience, biodiversity, well-being, and climate adaptation goals *(EC, 2023)*.

Table 8. *Urban Nature Plan 10-Step Framework Adapted for Community-Led Urban Gardens*

STEP	Purpose / What the step ensures	Application to Community-Led Urban Gardens
1. Secure a long-term political commitment	Ensures formal political approval and cross-department support; legitimises the process and enables mainstreaming nature into all municipal decisions.	City/Municipality adopts a formal commitment (e.g., council decision or signed statement) to support community gardens as public interest projects; includes long-term maintenance beyond project cycles.
2. Establish a working structure	Creates a governance mode- coordinator, cross-department team, defined roles; ensures cooperation across sectors.	Form a permanent task force (urban planning + utility companies + NGOs + schools + residents) responsible for selecting pilot garden locations and coordinating permitting and maintenance.
3. Establish a co-creation process	Engages key stakeholders (citizens, NGOs, experts, private sector); ensures equity, broad participation and shared ownership.	Run workshops and mapping sessions with residents, neighbourhood associations, schools; use participatory tools (e.g., iNaturalis submissions, co-design workshops) to select and design gardens.
4. Develop long-term vision and goals	Sets a shared vision and SMART goals (10–15 years); aligns expectations across stakeholders.	Define city-wide goals (e.g., "10 community gardens by 2030", "one garden per neighbourhood cluster"); integrate social goals (intergenerational engagement, inclusion, climate education).
5. Analyse the current state of nature and green spaces	Maps land-use, biodiversity, accessibility and socio-demographic factors; identifies gaps and inequities.	Use community-generated geolocation data + GIS to identify vacant lots and underserved neighbourhoods with low access to green space; assess sunlight, soil, ownership and risks.
6. Set indicators and targets	Defines measurable KPIs to track progress (green space %, biodiversity, canopy cover, accessibility).	Set indicators such as: number of gardens established, number of active volunteers, m^2 of land activated, biodiversity increase, compost generated, number of educational workshops held.
7. Agree on priorities, actions, responsibilities, timelines, financing	Develops an action plan- who does what, where, when, with which resources.	Create a Standard Operating Model for each garden: responsible group (residents/NGO), maintenance schedule, micro-budget, access to tools, water,

		composting; identify sources (municipality + EU funds).
8. Develop a communication, education, and awareness strategy	Builds public support, increases participation, communicates benefits; includes behaviour change.	Launch social media campaigns, signage in neighbourhoods, workshops with schools; produce "How to start a community garden" guide; involve local media to showcase success stories.
9. Establish a monitoring, reporting, and evaluation system	Tracks progress toward targets, enables adaptive management and transparency.	Residents submit seasonal updates (photos, plant health, events); municipality publishes annual progress dashboard (locations, number of volunteers, social/health benefits).
10. Adopt, publish, and implement the plan	Formal adoption by City Council; public access and transparency; beginning of implementation cycle.	Publish a Community Garden Strategy with criteria for selecting sites, co-management rules, and a platform for residents to apply for new garden spaces. Gardens become part of official urban planning.

***Adapted from**: EC, 2023.*

7.1. Transition to Implementation: From Framework to Practice

While the methodology for Urban Nature Plans offers a strategic and participatory framework for planning and governance, the next stage focuses on translating these principles into practical implementation steps. Drawing upon the EPA's Interim Guidelines for Safe Gardening Practices on Brownfield Sites (2011), the following steps outline a systematic approach to safe and sustainable implementation of urban gardens.

Table 9. *Step-by-Step Implementation Framework for Urban Gardens*

 **Identify Previous Land Use**	Conduct historical research on each potential garden site to determine previous industrial, commercial, or residential uses. This helps assess the potential risk of soil contamination and informs future remediation needs.
 **Perform Soil and Environmental Sampling**	Collect representative soil samples to test for contaminants such as heavy metals, hydrocarbons, or pesticides. Testing should include both soil quality (pH, nutrients) and safety parameters.
 **Interpret and Evaluate Results**	Analyze test results to determine whether the site meets safety standards for urban agriculture. Collaborate with environmental experts to evaluate whether risks can be managed through mitigation or if remediation is required.

Manage and Mitigate Environmental Risks

Apply appropriate risk management strategies, such as soil replacement, phytoremediation, or constructing raised beds. Select the most feasible remediation approach based on contamination levels and garden design.

Implement Best Management Practices

Integrate safety measures that reduce exposure and enhance soil health, including composting, mulching, soil amendments, physical barriers, and safe irrigation systems.

Develop and Adjust a Garden Business/Operational Plan

Prepare an operational and financial plan that incorporates costs of remediation, infrastructure, and maintenance.

Begin Planting and Site Activation

Initiate the cultivation phase using safe growing practices. Involve the local community through co-creation activities, volunteer programs, and capacity-building workshops.

Monitor, Maintain, and Educate

Establish monitoring systems for soil quality, crop health, and environmental impact. Conduct regular community education programs to ensure continued adherence to safety and sustainability practices.

Adapted from: *U.S. Environmental Protection Agency, 2011.*

7.2. Case Study: Intergenerational Urban Garden in Sarajevo

The Green Connections: Intergenerational Urban Gardens for Sustainable Communities project, supported by the EIT Community New European Bauhaus (NEB) and implemented by Center for Energy, Environment and Resources- CENER 21 in close collaboration with the Center for Healthy Aging Novo Sarajevo, brought to life an inclusive model of community-driven urban gardening that bridges generations, strengthens social cohesion, and builds environmental awareness.

7.2.1. Planning and Participatory Co-Design

From the outset, the project adopted a bottom-up, community-centred design methodology that placed intergenerational cooperation at its core. The co-design workshop **"Let's Design Our Garden Together"** brought together senior citizens, school pupils, university students, and local volunteers to jointly plan the garden's layout and functions.

Using an **interactive, visual planning approach**, participants worked in mixed-age teams around a large site map, assigning stickers and sketches to indicate planting areas, seating, pathways, composting infrastructure, and biodiversity features. Seniors contributed practical horticultural experience, advising on planting distances, micro-climate considerations, and soil preparation, while younger participants enriched the plan with creative elements.

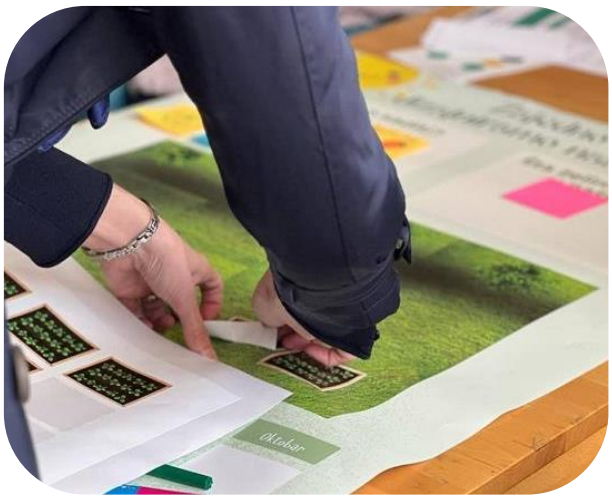


Figure 5. *Intergenerational Stakeholders Co-Creating the Garden Design*

7.2.2.

8.2.2. Implementation: Community-Led Planting Day

Following the participatory co-design phase, the project advanced into its practical implementation stage through the flagship community activity titled “Planting Day,” marking the transition from conceptual planning to physical execution. During this phase, over **50 participants**, including older adults, schoolchildren, university students, volunteers, and community members, actively contributed to the establishment of the garden, translating the collectively developed design into a tangible and functional community asset.

Figure 6. *Participants collaborating during planting day*

The implementation process was deliberately guided by the principles of **inclusion** and **accessibility**, with the objective of ensuring equitable participation regardless of age or physical ability. In alignment with these principles, the garden infrastructure was strategically designed to remove physical barriers and facilitate active engagement for all participants. Key features included raised planting beds, modular garden structures, and mobile planting containers, enabling the meaningful involvement of older adults and individuals with reduced mobility.

Beyond its operational outcomes, this approach reinforced broader social objectives, **fostering intergenerational collaboration**, **strengthening community ownership**, and **embedding inclusive participation** as a foundational element of the garden's long-term sustainability.

7.2.3. Intergenerational Learning and Capacity Building

Intergenerational learning within the Green Connections project was designed as a participatory and practice-based process that enabled reciprocal knowledge exchange between older adults, youth, and community stakeholders. Rather than applying a traditional one-way teaching model, the workshops utilised a **co-learning approach**, where seniors contributed experiential knowledge in gardening and sustainability, while younger participants supported digital interaction, creative design, and gamified learning activities. Capacity building was structured around three core pillars:

- **ecological literacy**, including composting, soil care, and plant identification;
- **technical gardening skills**, such as garden co-design, planting and seasonal maintenance; and
- **social competencies**, including intergenerational communication, teamwork, and shared stewardship.

Learning methods prioritised hands-on engagement, co-design simulations, compost creation, plant-recognition challenges, and collaborative garden tasks, ensuring that knowledge was acquired through practice rather than instruction alone. Interactive and gamified activities further strengthened retention, motivation, and cross-generational dialogue.

Beyond skill acquisition, the process generated broader community value by fostering social trust, strengthening intergenerational solidarity, and

establishing long-term responsibility for the community garden. The garden itself became a shared learning environment, functioning simultaneously as an educational space, social hub, and sustainability model for community-based urban action.

Figure 7. *Intergenerational Learning and Capacity Building*

7.2.4. Harvesting, Celebration, and Long-Term Stewardship

The harvest phase marked a pivotal moment in the project, showcasing the **results of sustained intergenerational collaboration** and community engagement. Through collective harvesting of seasonal produce, participants reinforced practical skills while celebrating shared achievements and knowledge exchange. Following the harvest, a sustainable stewardship model was established. Participants collectively committed to the **ongoing care of the garden**, integrating routine tasks such as watering, composting, seasonal planting, and garden maintenance

into their community activities. As a result, the garden transitioned from a structured learning intervention into a community-owned and co-managed asset, fostering long-term cooperation, environmental responsibility, and enduring intergenerational solidarity.

Figure 8. *Collective Harvesting*

7.2.5. Impact and Legacy

The intergenerational urban garden has evolved from a pilot activity into a recognised community asset and serves as an example of how urban ecological interventions can generate multi-layered social benefits.

Key outcomes include:

Social Cohesion	Improved intergenerational interaction and community trust
Environmental Awareness	Increased understanding of composting, biodiversity, and seasonal food systems
Community Empowerment	Shared ownership and collaborative decision-making
Knowledge Transfer	Reciprocal exchange of traditional horticultural knowledge and ecological literacy
Well-Being	Increased outdoor activity, meaningful engagement, and strengthened sense of purpose

The Green Connections Intergenerational Urban Garden in Sarajevo demonstrates that community-led urban greening extends beyond ecological value, it strengthens **human connections**, nurtures **shared responsibility**, and empowers communities to **co-create more resilient**, **inclusive**, and **sustainable urban environments**.

8. Conclusion

The evidence presented confirms that community-led urban gardens in Sarajevo hold strategic value that extends far **beyond small-scale greening** or local food production. They constitute a **multidimensional urban development instrument** capable of advancing environmental restoration, climate adaptation, social inclusion, public health, civic participation, and neighbourhood resilience. Crucially, their long-term success depends not solely on community motivation, which demonstrably exists, but on **institutional transformation** in how urban land can be accessed, governed, financed, and monitored.

The current model, centred on individual initiatives and short-term approvals, must evolve toward a **structurally supported system** in which citizens are recognised as long-term co-managers of urban green assets. This requires moving from consultative participation to formalised co-governance, accompanied by transparent land-use agreements, dedicated financial and technical support, equitable spatial distribution, and integration into official urban planning processes.

When **supported through appropriate policy instruments**, monitoring frameworks, and intersectoral cooperation, community gardens can transition from isolated interventions to a connected urban ecosystem serving ecological, educational, social, and infrastructural functions. Such a transition would position Sarajevo not only as a city activating community potential, but as a city that institutionalises civic stewardship as a foundation for sustainable urban development.

With coordinated governance, strategic investment and long-term institutional commitment, Sarajevo has the opportunity to redefine its urban landscape, not through conventional green infrastructure alone, but through collectively shaped, **community-managed urban nature** that strengthens resilience, regenerates public space, and restores the relationship between citizens and the environment they inhabit.

9. Literature

1. Acton, L. (2011). Allotment gardens: A reflection of history, heritage, community and self. Papers from the Institute of Archaeology, 21(1).
2. Adam, K. L. (2011). *Community gardening*. ATTRA.
3. Bende, C., & Nagy, G. (2020). Community gardens in post-socialist Hungary: Differences and similarities. Geographia Polonica, 93(2), 211-228.
4. Climate Risk Profile: Bosnia and Herzegovina (2021): The World Bank Group.
5. Crouch, D., & Ward, C. (1988). The allotment: its landscape and culture (p. 322pp).
6. Ding, X., Zhang, H., Fan, X., Zhang, X., Yue, X., & Shu, P. (2025). Comprehensive Review of Ecosystem Services of Community Gardens in English-and Chinese-Language Literature. Buildings, 15(12), 2137.
7. Drevno, A. (2014). Can home gardens scale up into movements for social change? Human Ecology Review, 20(2), 1–20.
8. European Bank for Reconstruction and Development (EBRD). (2020, December). *Green Cantonal Action Plan for Sarajevo (GCAP) – Final – EN v5.2*.
9. European Commission, & Directorate-General for Environment. (2023). Urban Nature Plans: Guidance for cities to help prepare an Urban Nature Plan (LIFE programme). Publications Office of the European Union.
10. European Commission. (2021). *EU Biodiversity Strategy for 2030: Bringing nature back into our lives.*European Commission, Directorate-General for Environment.
11. European Environment Agency (EEA). (2021). *Nature-based solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction.* EEA Report No. 01/2021, European Environment Agency.
12. European Environment Agency. (2016, June 7). *Climate smart urban agriculture: Urban farming and gardening* [Adaptation option]. Climate-ADAPT
13. European Environment Agency. (2016, June 7). *Climate smart urban agriculture: Urban farming and gardening* [Adaptation option]. Climate-ADAPT.
14. European Union. (2020). *New Leipzig Charter – The Transformative Power of Cities for the Common Good.* Adopted at the Informal Ministerial Meeting on Urban Matters, Leipzig, 30 November 2020. https://ec.europa.eu/regional_policy/sources/docgener/brochure/new_leipzig_charter/new_leipzig_charter_en.pdf
15. Food and Agriculture Organization of the United Nations (FAO). (2017). *Urban and Peri-Urban Agriculture Sourcebook: From production to food systems.* FAO,Rome.
16. Glowa, K. M. (2014). The politics of landing: Urban agriculture, socioecological imaginaries and the production of space in the San Francisco Bay region. University of California, Santa Cruz.

17. Hardman, M., Chipungu, L., Magidimisha, H., Larkham, P. J., Scott, A. J., & Armitage, R. P. (2018). Guerrilla gardening and green activism: Rethinking the informal urban growing movement. Landscape and Urban Planning, 170, 6-14.
18. Hayden-Smith, R. (2014). Sowing the seeds of victory: American gardening programs of World War I. McFarland.
19. Hayden-Smith, R. (2014). Sowing the Seeds of Victory: American Gardening Programs of World War I and II. McFarland & Company.
20. Höftberger, K., Djuric, A., Klumpner, H., Krebs, R., Matić, K., Pavlović, A., & Walczak, M. (2023, September). Brownfield Regeneration in Sarajevo–Sustainable Growth Towards a Polycentric City. In *LET IT GROW, LET US PLAN, LET IT GROW. Nature-based Solutions for Sustainable Resilient Smart Green and Blue Cities. Proceedings of REAL CORP 2023, 28th International Conference on Urban Development, Regional Planning and Information Society* (pp. 73-82). CORP–Competence Center of Urban and Regional Planning.
21. Horst, M., McClintock, N., Baysse-Lainé, A., Darly, S., Paddeu, F., Perrin, C., ... & Soulard, C. T. (2021). Translating land justice through comparison: a US–French dialogue and research agenda. *Agriculture and Human Values*, *38*(4), 865-880.
22. Keshavarz, N., Bell, S., Zilans, A., Hursthouse, A., Voigt, A., Hobbelink, A., ... & Gogová, Z. (2016). A history of urban gardens in Europe. In Urban allotment gardens in Europe (pp. 8-32). Routledge. Onaj pocetni dio za histroiju ubranih basti
23. Kwartnik-Pruc, A. (2023). The role of allotments and community gardens: A review of the literature. Land, 12(5), 965.
24. Lawson, L. J. (2005). City bountiful: A century of community gardening in America. Univ of California Press.
25. Lawson, L. J. (2013). Garden for victory! The American victory garden campaign of World War II. In Greening in the red zone: Disaster, resilience and community greening (pp. 181-195). Dordrecht: Springer Netherlands.
26. Lindner, C. (2021). " Rooted in Community": The Importance of Community Gardens. Liberated Arts: a journal for undergraduate research, 8.
27. Lindner, C. (2021). The importance of community gardens. Papers in Canadian Studies, 2(1), 1–14. Western Open Journal Systems.
28. Mayayo, A. M., van Koppen, K., & Buijs, A. (2019). *Community gardens as possible challengers of (eco) gentrification* (Doctoral dissertation, Master's thesis, Wageningen University & Research).
29. McEldowney, J. (2017, December 18). Urban agriculture in Europe: Patterns, challenges and policies (In-Depth Analysis No. PE 614.641). European Parliamentary Research Service. https://www.europarl.europa.eu/thinktank/en/document/EPRS_IDA(2017)614641

30. Ochoa, J., Sanyé-Mengual, E., Specht, K., Fernández, J. A., Bañón, S., Orsini, F., ... & Gianquinto, G. (2019). Sustainable community gardens require social engagement and training: a users' needs analysis in Europe. *Sustainability*, *11*(14), 3978.
31. Rogge, N., & Theesfeld, I. (2018). Categorizing urban commons: Community gardens in the Rhine-Ruhr agglomeration, Germany. *International Journal of the Commons*, *12*(2).
32. Stein-Roggenbuck, S. (2008). Negotiating relief: The development of social welfare programs in depression-era Michigan, 1930-1940. The Ohio State University Press.
33. Tabela histroija: Cialdella, J. S. (2014). A Landscape of Ruin and Repair: Parks, Potatoes, and Detroit's Environmental Past, 1879-1900. *Michigan Historical Review*, *40*(1), 49-72.
34. Tatlić, D., Čabaravdić, A., Bajrić, M., Ljuša, M., Klarić, S., & Hukić, E. (2024). Assessing green space indicators: A case study of Sarajevo, Bosnia and Herzegovina. Urbani izziv, 35(2), 141-151.
35. U.S. Environmental Protection Agency. (2011). *Brownfields and Urban Agriculture: Interim Guidelines for Safe Gardening Practices*.
36. World Population Review. (2025). Sarajevo population 2025. Retrieved November 5, 2025.