



Urban
Farming
**Education for
Sustainable
Future**

**URBAN FARMING IN
NORTH MACEDONIA,
SERBIA, CROATIA,
AND BULGARIA**



Erasmus+



Urban Farming Education for Sustainable Future

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НАЦИОНАЛНА АГЕНЦИЈА
ЗА ЕВРОПСКИ ОБРАЗОВНИ
ПРОГРАМИ И МОБИЛНОСТ

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I. PROJECT OVERVIEW

“Urban Farming Education for Sustainable Future” is a project funded by the European Commission’s Erasmus + Programme (KA220-ADU - Cooperation partnerships in adult education) and it brings organizations from North Macedonia, Bulgaria, Croatia and Serbia partnering together to develop innovative educational resources for the benefit of the citizens in urban areas, adult education providers, educational institutions and local civic associations that work in the field of environment and urban agriculture. Educating adults on how to grow their own food in urban areas is the focus of this project.

Forum – Center for Strategic Research and Documentation is the lead organization partnering with Serbia Organica (Serbia), Eko Zadar (Croatia) and the Bulgarian School of Politics “Dimitry Panitza”.

This Baseline Study is the starting point of our project. The goal of this research is to show how urban farming/gardening has educational, economic, social, and ecological impact on society, and will shed light on how urban farming/gardening motivates community involvement. It will also clarify the role of sustainability in these efforts and motivations. This activity will contribute to the main objective of the project by revealing the true need or necessity for changing the mindset of the citizens regarding environmental and sustainability issues. It used qualitative and quantitative approaches to reveal the impact of urban farming. Based on the observations, first conclusions about the current situation and the necessary preconditions for establishing and/or expanding an urban gardening movement in our countries will be provided. The analysis highlights the bigger initiatives in the region, the ones that have a particular emphasis on sustainability and a strong network to other urban gardens as an example of a successful story. We want to share good policy practices on how urban farming could be accelerated and integrated into local policy agendas.

1.1 Executive Summary

Urban agriculture is the practice of cultivating, processing, and distributing food within or around urban areas. This research aims to understand the benefits and challenges of urban agriculture, as well as the ways in which it can be integrated into urban planning and policy. The study finds that urban agriculture can provide a range of benefits, including increased food security, improved community health and well-being, and economic development. However, the study also identifies challenges such as limited access to land and resources, and the need for appropriate policies and regulations to support the growth of urban agriculture. Overall, the research suggests that urban agriculture has the potential to make a significant contribution to sustainable urban development and should be integrated into urban planning and policy.

The research suggests that urban agriculture can have many benefits, including:

1. Improving access to fresh, healthy food for urban residents, particularly those living in food deserts.
2. Creating jobs and economic opportunities for urban residents, particularly for low-income individuals.
3. Reducing the environmental impact of food production and transportation by shortening the distance between where food is grown and consumed.
4. Improving the aesthetic and social qualities of urban spaces by creating green spaces and promoting community engagement.
5. Increasing the resilience of urban communities by creating local food systems that can operate independently in case of disruptions to global food supply chains.

The research also highlights some of the challenges to implementing urban agriculture, including:

1. Limited access to land and water in urban areas.
2. Lack of regulations and policies to support urban agriculture.
3. Lack of knowledge and skills among urban residents to grow their own food.
4. The need to overcome perceptions of urban agriculture as a lower-quality form of food production.

Through this project we want to change the mindset of adult citizens and encourage their interest in the environment and sustainability. We want to expand urban farming movement in the countries targeted in this project thus contributing to the EU's green agenda, sustainability of the cities and to the fight against climate changes. By embracing urban agriculture as a process of social innovation, we want to increase the social inclusion of vulnerable and marginalized groups, increase employability, and stimulate the livability of cities. We will organize and further encourage educational activities, exchange of knowledge and experience, and strengthen the cooperation and the capacities of adult education providers among countries partnering in this project.

1.2 Introduction

It is estimated that 68% of the world's population will live in cities by 2050. In the same year, it is estimated that the number of inhabitants on Earth will reach 9.7 billion (United Nations, 2019). According to various estimates, urban agriculture can provide about 15%-20% of the food supply to the urban population, so it is essential to address the challenge of food inequality. Also, the introduction of urban agriculture improves biodiversity, protects the environment and promotes local food production. According to the Sustainable Development Agenda it is necessary to take many actions by the end of 2030, such as to double the agricultural productivity and incomes of small food producers, especially women, indigenous people, family agricultural producers,



pastoralists and fishermen, through safe and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for gaining additional value, i.e. employment outside agriculture sector (United Nations, 2015). Considering that industrial agriculture is responsible for 11-15% of global carbon emissions, it is concluded that intensive production processes contribute to climate change (Açıksöz et al., 2021). In this regard, one of the possible tools for achieving the above-mentioned goals is active work on the promotion and faster introduction of urban agriculture in these areas as well.

1.3 Definition

According to one of the definitions, urban farming is a type of activity that develops in cities or very close to them. Therefore, it is initially limited as such, because there is no availability of land in urban areas like in rural areas. At the same time, the problem of rational land use is constantly becoming more acute with the dynamic population growth on the planet, followed by the growth in demand for food and the purchasing power of the population. Urban agriculture increasingly represents an alternative to traditional agriculture. Urban agriculture is a system that serves to meet the needs of the city at certain rates using urban resources and supporting the processes of cultivation, processing and distribution of agricultural products in cities (Mougeot, 2000). The concept of urban agriculture was developed as a solution to environmental and social-economic problems caused by rapid and unplanned urbanization policies due to excessive and unplanned population growth. As noted, it is a complex system that includes a wide range of interests, from activities related to the production, processing, marketing, distribution and consumption of food, to opportunities for recreation and leisure, economic sustainability of the community, and restoration, rehabilitation and beautification of the environment. The production, processing and distribution of food in urban agriculture along with others is a great and rewarding responsibility, for an individual, for a group of friends or for a non-profit organization. This method of agricultural production is an indicator of the struggle due to the ever-increasing need for food, and on the other hand, it can refer to a kind of leisure and hobby to enjoy the greenery and in the middle of the city bustle. Also, it can be applied as a strategy to employ people, reduce crime rates, and improve living conditions in cities. It contributes to the quality of the food chain in two ways: it increases the amount of food available to people in cities and it provides fresh fruits, vegetables, honey, eggs and meat for city dwellers.

1.4 World overview

The history of urban agriculture dates back to ancient times, when people in cities would grow food on small plots of land within the city walls. However, the modern concept of urban agriculture began to take shape in the 19th century, as cities began to grow rapidly, and people started to realize the potential for producing food within urban areas. In the early 20th century, urban agriculture experienced a resurgence as a way to address the food shortages caused by World War I and World War II. Many cities established community gardens and Victory Gardens to provide food for residents during these difficult times. The term “urban agriculture” was used occasionally prior to 1990, but in the 1990s, the term became more common, and a global awareness of the concept coalesced.

In recent years, urban agriculture has gained renewed attention and is becoming increasingly popular as people search for ways to address issues such as food insecurity, poverty, and environmental sustainability. Many cities around the world have implemented policies and programs to encourage urban agriculture, and there has been a significant increase in the number of community gardens, rooftop gardens, and other forms of urban agriculture. Urban agriculture can be used to provide fresh, healthy food to residents of low-income neighborhoods, and it can also be used to create green spaces in urban areas while contributing to the reduction of the ecological and carbon footprint. In the face of rising market prices of food and the dependence on substantial amounts of imported food, urban agriculture can be applied as a means of direct access to fresh food at significantly lower costs. Thus, urban agriculture is a contributing factor to community resilience in times of crisis, such as global pandemics or social unrest, and can alleviate detrimental consequences of climate change by providing the grounds for direct action in terms of adaptation and mitigation.

The state of urban agriculture varies greatly around the world, with some cities being more proactive in promoting and supporting urban agriculture than others. In some parts of the world, urban agriculture is a traditional practice that has been carried out for centuries, while in others it is a newer phenomenon driven by increasing concerns about food security and sustainability.

In Detroit (USA), a large industrial center, a city that experienced bankruptcy, with a large number of abandoned factories and a high unemployment rate, urban agriculture was offered as one of the solutions to reduce unemployment (Mogk et al., 2010, Colasanti et al., 2012)., Walker, 2016). In Paris, the capital of France, the largest roof garden in the world was opened in June 2020, which was financed through a crowdfunding campaign („crowd“ - group, crowd and „funding“ - financing). This is primarily significant due to the fact that because of the emergence of the COVID 19 virus, the transportation and delivery of food became significantly more difficult, thus local food production is seen as a model for a new approach to food production, which in this case is urban farming. In Belgium, the start-up „Peas & Love“ started operating in 2016, when the first urban farm was opened in Voluwe - Saint - Lambert, in Brussels. The idea was to offer interested citizens land near their homes to grow vegetables on. Later in 2020, Peas & Love launches a new idea to introduce citizens to urban agriculture even more transparently, by renting out plots on rooftops and in unused urban spaces for around



\$40 a month. We will give an example of urban agriculture from Sweden, where two young urban farmers have a 250 m² garden called Kajodlingen in Gothenburg, which actually consists of a series of deep wooden boxes neatly arranged on a part of the space of an abandoned bus interchange that they leased from the city authorities. In those boxes, these two young gardeners grow various vegetables, herbs and even edible flowers by themselves, which they then transport and sell to restaurants in their town using an electric bicycle. In order to stand out on the market, they decided to grow crops that are not available in Gothenburg or that have to be imported. After the success of the two urban farmers, they installed new wooden boxes for growing vegetables on the 70m² terrace of the Clarion Post Hotel for the needs of the three hotel restaurants. In 2019, the largest residential complex with urban gardening in Europe was built in Vienna (Austria). Five buildings with a total of 1,100 apartments were built and occupied in Vienna's 23rd district of Liesing. All buildings offer their tenants the possibility of gardening on raised or normal beds located on the roof around the building. In this way, tenants will be able to pick apples, apricots and other fruits from the planted fruit trees, as well as make jams in the common room. Thus, the mentioned Viennese residential complex became the largest European complex of urban gardening, where not only its green component is important, but also the stimulation of interaction between tenants. Examples from Sarajevo (Bosnia and Herzegovina) and Zagreb (Croatia) show that the region is following the necessary changes in the production of food, which is available at any moment. To a large extent, this „helped“ to mitigate the consequences of the pandemic in the conditions of the COVID 19 virus pandemic in urban areas by producing food using organic production methods. Similar initiatives have been launched through projects for the formation of urban gardens in the cities in the region such as Pula (Cro), Skopje (NMKD), Ljubljana (Slo), Maribor (Slo) and others.

On the other hand, there is often confusion and mixing of the term urban farming with other similar activities such as community gardening or growing herbs for one's own needs. These forms of plant production are used to satisfy needs of an individual (food, landscape or ecological aspect). However, urban farms usually emphasize that the plant raw materials and products are sold, not eaten or shared. Urban farming is based on organic methods and it most often takes place in unused parts of urban or suburban land, gardens, on balconies, roofs, parts of existing parks, walls or even in available parts of interior spaces if possible. The most common type of production is vegetable and herb production (Frazier, 2018).

Urban farming and green roofs are growing in popularity in cities around the world that recognize the multiple benefits to the local community. Rooftop plant production (RPP) systems can be used to produce decorative species or food using: raised beds, classic row cultivation or hydroponic cultivation. This way of growing plants achieves positive improvements in the local community and urban landscape by increasing agricultural awareness, stimulating the local economy, mitigating rainwater and reducing heat in urban areas (Sabeh, 2016). Comparing to other types of green areas, green walls and green roofs imply the application of certain construction technologies, provide significant social, ecological and economic advantages and are part of modern strategies for greening urban areas, which take into account, above all, the issue of climate change. FAO supports the transformation of urban farming into a recognized

urban land use and economic activity, integrated into national and local agricultural development strategies, food and nutrition programs, improvement of production, processing and marketing systems and urban planning. This helps national and regional governments and city administrations to optimize their policies and support services for urban farming (Umesha, 2018).

Another positive phenomenon related to urban farming is its „closeness“ to organic production. In general, the population is increasingly paying attention to environmental, health, social and ethical issues and is looking more than ever for value in food, despite increasing urbanization. Consumers are mostly looking for fresh, less processed food from sustainable sources and are very aware of the importance of the quality of the food they consume and are interested in safe food when it comes to the risks associated with certain food products, such as the presence of pesticides, additives in food, as well as the presence of antibiotics, hormones and steroids in meat (Simić, 2020).

1.4.1 Urban and peri-urban agriculture in the European Union - the general situation

In the European Union, urban agriculture is becoming increasingly popular as a way to promote sustainable food production, reduce food miles, and improve the health and well-being of urban residents. There are various forms of urban agriculture in the EU, including community gardens, rooftop gardens, and vertical gardens. Urban agriculture in the EU also includes animal husbandry, such as keeping bees, chickens, and goats in urban areas. This can provide fresh eggs and honey, as well as help with pollination and pest control. These urban lots are used for agricultural purposes to grow a wide variety of fruits, vegetables, and herbs, and are managed by individuals, community groups, or local government, depending on the local context.

Even though the potential is evident, it must be noted that urban agriculture in the EU is not without challenges, such as the availability of land, access to water and light, as well as dealing with urban pollutants. The issues regarding access to land, types of land use, and land ownership are sensitized by some aspects of urban agriculture practices and intersect alongside the potential of vacant public land units with the technological and legal infrastructures of Urban Commons. Nonetheless, many cities in the EU are taking steps to support urban agriculture by providing funding, technical assistance, and training to urban farmers, and creating policies that promote the use of vacant land for food production. In this regard, the situation of urban agriculture in the EU varies greatly between different countries and regions.

In some countries, such as France and Germany, urban agriculture is well-established and has a long history. In these countries, there are many community gardens and urban farms, and urban agriculture is considered an important part of the local food system. In other countries, such as Spain and Italy, urban agriculture is less developed and is not as widely accepted. In these countries, there are fewer community gardens and urban farms, and urban agriculture is not seen as such a high priority. The situation in Slovenia and Croatia somewhat resembles that of Italy, with a recent tendency to follow the examples of Germany. On the other hand, Greece might be similar to Spain in the sense that urban agriculture is mostly in the form of community gardens situated



in large cities such as Athens and especially Thessaloniki with PER.KA (“PERiastikoi KAlliergites”, meaning suburban cultivators in Greek), and such initiatives are on the rise ever since the economic crisis in 2008.

Whereas in countries that used to be parts of the Eastern Bloc prior to joining the EU, such as Poland, Czechia, Slovakia, Hungary, Romania, and Bulgaria urban agriculture is still in the early developmental stages. Even though urban gardening was present in the so-called Communist era, it was stunned, and the legality of such spontaneous bottom-up initiatives was brought into question if not eradicated during the transition period. In comparison, the situation of urban agriculture in the Western Balkans is even worse, during the transition period - an ongoing process - among the poorest stratum of society, those who had any access to arable land practiced subsistence farming on a very small scale, with little surplus to sell only occasionally at the fringes of farmer’s markets. Even though the term “transition” in recent history within the context of the EU signifies a transition towards regenerative cultures, reduction of ecological and carbon footprints, circular economy, development of resilient communities, zero waste and similar tendencies; in the context of the Balkans “transition” signifies a shift from the so-called Socialism towards early forms of Capitalism, marked by criminogenic acquisition of common goods in the hands of oligarchs. Despite the challenging environment, there are some modest grassroots community gardening initiatives manifesting over the last decade.

In the face of regional differences and variations in urban agriculture practices, the EU is increasingly recognizing the potential of urban agriculture to contribute to sustainable development. The EU has adopted policies and initiatives to support urban agriculture, such as the EU Green Infrastructure Strategy and the EU Urban Agenda.

In recent years, there has been a growing interest in urban agriculture in the EU, with more and more people becoming involved in community gardening and urban farming. However, there are still many challenges to overcome, such as lack of access to land, lack of funding, and lack of regulations.

Urban agriculture in the EU has the potential to make a positive impact on the food system and the quality of life in urban areas. However, more support and resources are needed to help urban agriculture thrive. This is where the hopes of developing urban agriculture in the Western Balkans currently lie.

1.4.2 Security of the food supply system by strengthening urban farming _____

Cities are already integrating food production into their matrix. Since half of the world’s population already lives in urban areas, increase in production is a necessity for future economic growth. The security of the food supply system in the cities is closely dependent on the existing sovereignty in food production in the country. Many countries around the world consider ways to make food supply systems in urban areas (city region food system-CRFS) more resilient, primarily through an innovative approach to food production in cities, while strengthening rural-urban ties. One of the recommendations for European countries refers to the establishment of short food supply chains that

contribute to an increasing in the number of markets with local products (farmers' markets) in cities. Traditional forms of production and urban planning methods have contributed to the growth of social, economic and environmental problems, which mark the last millennium. Urban sprawl, inequality, pollution, rigid restrictions, zoning and barriers define daily life in urban areas. The demand for a new approach in production organization, with the opposite directives and goals of the existing traditional methods, is growing more and more. One of the systems that the theory offers as a solution to the inherited chaos is the system of production in urban areas.

Production in urban areas can be defined as manufacturing, industrial and agricultural as well as a number of other services provided within and around cities on a free market. Services include employment of city residents, connections with urban consumers, direct impacts on the urban economy (positive and negative), which are part of the urban spatial system, which compete for land with other urban functions, under the influence of urban policies and plans, the use of typical urban resources, etc. Although researches on this topic have been carried out in different disciplines, it seems that all of them are limited within a specific scientific niche, and lack knowledge of the possibilities that the system offers. The most striking feature that distinguishes production in urban areas is that it is integrated into the urban economy and that it is integrated into the interaction with the spatial structure of the city. In the future, this production will become an integral part of the urban system, with the possibility of changing it indefinitely. One of the examples can be the Urban Policy Development Program at the EU level. This program includes the goals of multifunctional landscapes (and the production of local or high-value food in a more sustainable multifunctional landscape), sustainable resource management and conservation of habitats and cultural landscapes, and emphasizes the need for a new type of multi-level, multifunctional governance to manage and finance these valuable ecosystem services (Piorr et al., 2011).

1.4.3 Biodiversity

Urban agriculture is not only important for food production but also for agrobiodiversity and biodiversity in general. By growing variety of crops, urban farmers can help to preserve plants and animal species that are threatened by habitat loss and other human activities. Urban agriculture can help to preserve and promote traditional and local varieties of crops and animals, which are often lost in conventional agricultural systems. It can also provide habitat for pollinators and other wildlife and help to mitigate the negative impacts of urbanization on biodiversity. Biological diversity or biodiversity in cities is highly specific and depends on many factors (edaphic conditions, microclimate, selection of cultivated species, location,...). According to current knowledge, biodiversity in the conditions of urban agriculture depends first of all on the cultivated species, then on the method of cultivation, and then on the conditions of cultivation. Biodiversity in urban agriculture contributes to nature conservation in cities. In general, urban agriculture has a positive effect on biodiversity because it provides a more complex composition of vegetation and more possibilities for feeding the mostly anthropogenized soil.



Traditionally, it has been assumed that food production leads to loss of biodiversity and negative impacts on the ecosystem. However, a new study by researchers from multiple universities, including the University of Texas at Austin, defies this assumption, showing that urban farms have a positive impact on biodiversity, local ecosystems and the well-being of the people who work there. The study covered 28 urban community gardens across California over a five-year period, and the research attempted to quantify plant and animal biodiversity as well as ecosystem functions such as pollination, carbon sequestration, food production, pest control and human well-being. The study found that the choices urban farmers make can have a big impact on their local ecosystem. Scientists' previous assumptions about the negative impact of food production on biodiversity were based almost entirely on the guidelines for intensive agricultural production carried out in rural areas, which tend to grow only one or two types of crops, often on a large scale. Urban farming tends to grow more types of plants in smaller areas. For example, planting trees outside the bed can increase carbon sequestration without limiting pollinators or reducing food production from too much shade. And mulching only within the crop bed could help improve soil carbon services, avoiding negative effects on pest control and pollinators. We can say that the concept of urban farming has a number of ecological advantages, because it reduces most of the harmful substances in cities, improves urban biodiversity and protects the environment.

1.4.4 Climate change

Urban agriculture can contribute to the development of green spaces within cities, which can help to mitigate the urban heat island effect and provide other environmental benefits. The impact of climate change on urban agriculture is an increasingly important concern, as extreme weather events such as droughts and floods can have a significant impact on crop yields. Nonetheless, urban agriculture can also play a role in mitigating climate change, by reducing the carbon footprint associated with food transportation and by sequestering carbon in soils. Urban agriculture with the application of organic methods can be a „tool“ for minimizing the greenhouse effect and to a significant extent reduce the negative trend of global climate change, i.e. directly through carbon sequestration and indirectly through improving soil quality and health.

1.4.5 Urban heat islands and greening

„Urban heat islands“ occur when cities replace natural land cover with dense concentrations of sidewalks, buildings and other surfaces that absorb and retain heat. This effect increases energy costs (eg for air conditioning), air pollution levels, and heat-related illnesses and deaths. Urban heat islands, as a phenomenon of higher air temperature in cities compared to the surrounding area, represent the most important consequence of the impact of urbanization on the topoclimate. On the other hand, the counterbalance to „Urban heat islands“ can be „greening“. „Greening“ is the process of transforming the environment into more ecologically acceptable forms. Some of

the successful examples can be: „Greening Hong Kong“ and „London’s Environmental Strategy“. The term is often used literally to refer to the planting of trees and smaller plants on any available surface, and some have achieved success in improving air quality, such as the „Great Green Wall“ tree planting campaign in Beijing, which has helped disperse and purify the city’s smog . Despite this, urban greening has also created a number of other benefits beyond its original scope of reducing the environmental impact of cities, including reducing noise pollution. With the growing popularity of urban agriculture, urban greening has the potential to assure food security and promote community engagement for those in need.

1.4.6 Urban gardens

People began to turn more and more to nature and domestic production, so the trend of urban gardens took over the world - many skyscrapers are now covered with greenery among which vegetables and fruits are grown. Gardening is not just about fields and rural environments - according to the United States Department of Agriculture, as much as 15% of the world’s food is grown in urban centers. Urban gardening can be carried out in small backyard plots of buildings or houses in cities, in parks, on the aforementioned roofs, in indoor gardens and even on the walls of buildings. Solutions vary from city to city and state to state, as well as whether they are implemented by individuals, local communities or companies. Thus, restaurants can grow their own vegetables or herbs in a protected garden (greenhouse, greenhouse,...), a neighbor can use part of his yard for a walled garden or gardens in large pots. There are many options.

On the other hand, participation in garden communities has numerous benefits for both the individual and the community. Access to fresh food for some people is limited, due to unaffordable prices or location. The cost of fresh produce in stores is higher compared to home-grown food. According to research conducted in the US by CFSC Urban Agriculture, it is estimated that for every dollar invested in urban gardens, \$6 worth of food is returned, which is a significant profit. Research in the United Kingdom at the University of Sussex, which looked at urban gardens in Brighton and Hove, found that between March and October, these gardens produced fruit worth an average of around £550.

1.4.7 Urban beekeeping

Today’s cities are becoming oases and reserves for bees, because no pesticides are used, and bees have access to a variety of food sources. In many of the world’s metropolises, the trend of urban beekeeping is growing rapidly by placing beehives in public places, on the roofs of buildings, institutions and parks, and by spreading awareness of the importance of bees, and by establishing an increasing number of new beehives, the plant world has more benefits, as well as the urban biodiversity and finally people as consumers of food and more favorable living conditions. Urban beekeeping is a practice that improves the environment of cities and reduces the negative impact on



our daily life. By taking care of a few beehives on the roofs of our buildings, institutions, companies or in city parks and courtyards, we actually contribute to the preservation of the biodiversity of plants, bees and nature.

II. URBAN FARMING IN SERBIA, CROATIA, BULGARIA AND NORTH MACEDONIA

2.1 Serbia

Interest in urban farming in the Republic of Serbia has been continuously growing for the past few years. The reasons for this are different: firstly, the realization that someone who produces raw material/food knows how it was produced, what it was treated with, and how much raw material/food could be produced in a given time and in a certain space. Secondly, due to the emergence of the COVID 19 virus, the transport and delivery of food was greatly hampered, so the local production of raw materials/food with shorter distribution chains such as urban farming, can be seen as a more sustainable and convenient production model. Thirdly, urban farmers increase their physical activity, they spend time outdoors in a place where the air is cleaner and with more oxygen, which is far more favorable for physical and mental health than the passivity that most often happens indoors and which is unfortunately characteristic of most city residents. Fourth, various participants of this study emphasized the desire to preserve in this way „city oases“ in which the existing biodiversity will be protected and improved, the environment will be protected and the emission of carbon dioxide and other harmful gases will be reduced, thus contributing to the reduction of negative impacts that cause climate changes.

The methods generally used in this type of agriculture, and those used in urban farming in the territory of the Republic of Serbia, are the closest to the methods used in organic and biodynamic production. One of the methods - mulching in the larger cities of the Republic of Serbia proved to be an ecologically and economically justified method compared to the classic model of raising greenery in cities, using mulching saves about 50% of funds per m². Another method used in organic production and applied when growing plants in urban agriculture is composting. Also, so-called „eco-corridors“ or „flower belts“ that form strips of 1-2 m width which contain different mixture of annual and/or perennial cultivated and/or wild flowering plant species are used in urban farming as well as organic production. Some of the flowering medicinal and aromatic species are particularly suitable for establishing the so-called. isolation belts, which primarily serve as isolation between organic and conventional production or sources of potential contamination, and secondarily as a habitat for many types of pollinators, predators and parasitoids of harmful insects, which is of particular importance in improving ecosystem services and biodiversity in agroecosystems. Most urban farmers carry out the entire process of growing different types of plants by applying various bioagrotechnical measures by not using any pesticides, using rainwater for watering, and compost made from food scraps from households, urban gardens, hospitals, kindergartens, and restaurants they supply, which closes the production circle.

As it was stated at the beginning of the section regarding urban agriculture in the Republic of Serbia, the situation has been improving in the last few years, as evidenced by several projects implemented mostly by non-governmental organizations, which are led and whose members are mostly women. We will mention some of them: „Urban gardens matter“, „Urban beekeeping“, „Urban gardens from children’s imagination“, „Remember that palace garden?“, „Urban gardens for urban bees“ and others, which generally conduct trainings on the proper cultivation of various plant species in urban and suburban environments. The National Association for the Development of Organic Production „Serbia Organica“, together with the Novak Đoković Foundation, has been implementing the „Alphabet of Good Habits“ project since 2018, where children, parents, teachers and other employees of pre-school institutions in urban areas acquire knowledge about environmental protection, organic production methods, collection of seeds in the bio gardens, storage and preparation for sowing, friendship between plants in the bio gardens and flower belts, about composting and compost created from plant residues from the vegetable gardens and making preparations that can be used in the nutrition and protection of plants in the bio garden and when composting.

Country

In the Republic of Serbia, the concept of urban agriculture is not recognized by decision-makers, which is why it has not been incorporated into any public policy concerning the security of the food supply system and environmental protection in cities. The urban development of Serbia, especially the city of Belgrade, at the end of the 19th and the beginning of the 20th century was faced with the problems of unhygienic conditions, unsatisfactory levels of public health and nutrition. Agriculture and food production was unknown in urban planning because it was recognized as an important economic activity in rural areas. In the course of the last century and the beginning of this century, in the metropolitan area Belgrade - Novi Sad, agricultural production was pushed to the outskirts of the city.

Urban areas in the Republic of Serbia account for 15% of the total area of the country and a little more in the used agricultural land, they are home to about 46% of the population, and they account for about 29% of the number of employees in this sector, and they generate a quarter of the national income of the Republic of Serbia from the agricultural sector. This production forms the basis of supplying the population with basic needs. In Serbia, the practice of differentiating the approach to urban and other agriculture has not yet taken root. However, with Serbia’s approach to the EU, the adaptation of domestic regulations to EU regulations, certain improvements will follow in this domain as well. Urban farming, which is on the rise in Serbia, will gain more and more importance. The trend of permanent population migration from rural to urban areas is also present in our country, which is why the need for fresh food produced in urban areas will increase.



Capacities

The status of urban farming in the Republic of Serbia identifies numerous positive trends and indicates that many participants in the value chain are trying to advance on the path of development. While numerous factors indicate a great potential for the development of urban farming, a number of important obstacles and problems still stand in the way and must be overcome. Some of the main obstacles are: ignorance of the opportunities offered by urban agriculture at all levels of the value chain, low representation and weak organization of participants along that chain, disconnection, low productivity and efficiency of production, processing, transport and marketing.

One of the better representations of the potential capacities that this type of production can bring in urban areas on the territory of the Republic of Serbia is the SWOT analysis of urban agriculture, which is presented in this study, and is the result of discussions conducted with direct and indirect participants in the urban food production and others that are neither directly nor indirectly involved in urban farming. The results obtained in the SWOT analysis lead to the conclusion that there are numerous recognized advantages and numerous opportunities of this sector, but there is also the fact that this „young“ sector is faced with many shortcomings and threats that will be a challenge on the way to its development and progress, which must be overcome in order to fully exploit the advantages and great potential that urban farming possesses.

Table 1: SWOT analysis of the current state of urban farming (UF) in the Republic of Serbia

Strengths	Weaknesses
<ul style="list-style-type: none"> • Faster availability of fresh and processed food. • Visibility of production and safety of the food thus produced. • Micro-agro-ecological resources. • Climate change mitigation. • Better conservation of biodiversity. • Trend of sector development. • Greater employment of the urban population. • Greater employment of women and the younger population. • Proximity to the research sector (faculties, institutes, etc.), advisory sector and educational institutions. • Faster placement of goods due to proximity to the market. • Improved support measures (subventions). • Recreational and volunteer activities of UF. • Developed infrastructure. • Rapid transfer of knowledge and innovation. • Fast and easy transport. • Higher purchasing power of the population. • Composting plant residues from UF and urban households. • Development of a low-carbon, resource-efficient "green" economy. • Regulation of the local (city) microclimate. • Improvement of air quality. • Environmental Protection. 	<ul style="list-style-type: none"> • Small and insufficiently recognizable sector. • Lack of knowledge in the field of UF among producers and consumers. • Lack of systematic and continuous education about UF. • Insufficient cooperation of participants in the value chain. • There are no support measures for UF. • Underutilization of the research and educational sector in relation to UF. • Lack of sufficient presence of an advisory sector that would be narrowly focused on supporting urban farmers. • Insufficient communication between producers, research and advisory sectors. • Weak consumer education. • Conversion of agricultural land into urban construction land and industrial zones. • Insufficiently developed awareness of the population about the advantages brought by UF. • Absence of strategic documents in this area. • Lack of initiatives to introduce meals/snacks from UF in state and private pre-school institutions, hotels, restaurants, etc.



Opportunities	Threats
<ul style="list-style-type: none"> • Increasing demand for food from UF. • There is significant interest among the younger urban population. • Development of research and innovation with the aim of obtaining new technologies and products. • Significant areas of unused and uncultivated land. • The lack of sufficiently strong relations between the village and the city, as they were in the past, as far as food procurement is concerned. • Inclusion of UF in strategic documents of state institutions. • The possibility of developing tourist offers related to UF. • Inclusion of hotels, restaurants, state and private preschool institutions in connection with the use of food obtained in UF. • Increasing the productivity of UF. • Existence of several associations with previous experience in the field of UF. • Application of scientific - research results in practice. • Improvement of knowledge transfer. • Awareness of improving the resilience of food supply systems in cities. • Implementation of a national promotional campaign. 	<ul style="list-style-type: none"> • Accelerated climate changes and increasingly frequent natural disasters. • Unrecognizability of its significance for food production and environmental protection at the political level. • Absence of mass employment of young people in the sector. • Stagnation of the sector due to insufficient support from all levels. • Insufficient visibility of UF in daily life, exemplified by lack of concern for health. • Accelerated loss of biodiversity. • Non-recognition of UF by the sectors of environmental protection, health and education. • Non-recognition of UF by state institutions. • Unestablished cooperation along the value chain. • Uncertainty of providing sufficient amounts of food in cities. • The possibility of mass starvation, disease and repression. • Insufficient knowledge and distrust of consumers in food produced under UF conditions. • Further uncontrolled urbanization, which does not recognize UF as one of the strategic goals of urban development.

Legal framework

Although urban farming has long been recognized at world and European level as one of the strategic goals of the future sustainable development of cities, it is stagnating in the Republic of Serbia due to insufficient support from all levels. On the other hand, we can say that the Urban Food Agenda is FAO's leading initiative for improving sustainable development, food security and nutrition in urban and peri-urban areas and nearby rural areas. This Agenda consists of a wide range of policies, programs and initiatives developed and implemented in partnership with various stakeholders: civil society, academia, UN and international agencies, city networks and relevant public and private individuals and entities. As urban agriculture in the Republic of Serbia is still unrecognized as part of regional and local development, there is still a chance to improve this situation, primarily due to the fact that the Republic of Serbia has committed itself to implement the goals of the UN Agenda due to the impending food insecurity in the cities. The goals of the UN Agenda can prevent the upcoming food insecurity, which according to a large number of estimates will become a significant threat to urban sustainability, and which the Republic of Serbia, as part of its development policy, will have to implement in order to avoid possible catastrophic consequences if the decision-makers do not systematically approach the urgent solution of this issue .

In this regard, the goals defined by the Law on Organic Production ("Official Gazette of RS", No. 30/2010 and 17/2019 - other laws) can be used to a large extent when it comes to establishing urban agriculture as a comprehensive management and food production system based on ecological practices, a high degree of biological diversity (biodiversity), conservation of natural resources and application of high standards of animal welfare and production methods using natural substances and procedures. According to the same law, the aspiration is to establish a balanced crop and livestock production that respects natural systems and cycles, maintains and improves soil fertility and quality, water and air quality. It is also important to use energy and natural resources as rationally as possible, such as soil, water, organic matter, etc. Likewise, production carried out in urban areas must be carried out with the application of procedures (methods) that are not harmful to the health of people, plants, animals and the environment as a whole.

In the Strategy of Sustainable Urban Development of the Republic of Serbia until 2030 ("Official Gazette of the RS", No. 47/2019) in the section Programs to support sustainable urban development using an integral approach in section 6.2. Priority area 2 in urban settlements is defined as: Development of rural-urban connections, urban agriculture, improvement of accessibility and availability, functional, spatial and technical integration of systems (technical, social, economic, etc.). Also, in the "Draft Strategy for the Development of the City of Belgrade" from 2008, which was prepared in accordance with the strategic documents of the Republic of Serbia and the City of Belgrade, as a general long-term goal of agricultural development, the "harmonious connection of production, economic, ecological, landscape and socio-cultural functions" of agricultural land and the rural area as a whole is emphasized, along with the gradual but constant improvement of the material situation of the agricultural population and the increase of the standard and quality of life in the countryside". From the aspect of



sustainable development and environmental protection of cities, urban and peri-urban agriculture has a great importance and role.

Scientific institutions

When analyzing the current situation, through written documents, internet sources and personal contacts with colleagues from various scientific institutions, one gets the impression that this topic, i.e. urban farming is not sufficiently included in the existing formal and informal education, which should be implemented through activities such as courses, trainings, seminars, conferences, workshops, volunteer work. When it comes to informal education, at least until now, various associations from the non-governmental sector have taken the lead in education and recognition of urban farming, which will be discussed in more detail in the „non-governmental sector“ part of the study. As far as involvement in research, dissemination and promotion of the idea of urban farming is concerned, the Forestry Faculty of the University of Belgrade has made a major contribution in the past period. This institution designed and approved several projects and doctoral, master's and graduate theses on the topic of urban agriculture. We will mention only some of the titles:

Čepić, Slavica (2022). Socio-ekonomski značaj urbanih bašta i mogućnosti integracije u sistem zelenih površina Beograda. Doktorska disertacija / The socio-economic importance of urban gardens and the possibility of integration into the system of green areas in Belgrade. Doctoral dissertation.

Uremović, Vanja (2018). Primena đubriva za optimizaciju proizvodnje biljaka u urbanim baštama na Bežanijskoj kosi. Master rad. / Optimization of plant production in urban gardens on the Bežanijska Kosa through application of fertilizers. Master thesis.

Adžić, Tomislav (2012). Urbane baštenske kolonije na užoj teritoriji Beograda, značaj i upotreba. Master rad. / Urban garden colonies in the narrow territory of Belgrade, significance and use. Master thesis.

In addition to the above, several works by authors from the Faculty of Forestry on the topic of urban agriculture were published:

Cepic, S., Tomicevic-Dubljevic, J., & Zivojinovic, I. (2020). Is there a demand for collective urban gardens? Needs and motivations of potential gardeners in Belgrade. *Urban Forestry & Urban Greening*, 53, 126716.

Cepic, S. & Tomicevic-Dubljevic, J. (2017). Contribution of urban gardens to food security in cities. A case study of the city of Kragujevac. In Conference: XXV International Conference "ECOLOGICAL TRUTH". Eco-Ist'17At: Bor. Proceedings, 385-391.

In addition to the indisputable contribution to research related to urban farming, there is also a plant nursery within the Arboretum of the Faculty of Forestry - the Center for the Production of Ornamental Plants. In addition to production of ornamental trees, shrubs and ferns, as well as forest planting material, which is the primary role of the nursery, the nursery is also available to interested citizens and organizations from the non-governmental sector. One such example is the cooperation with the association

Econaut from Belgrade, with which workshops and lectures were organized on several occasions regarding urban farming, growing plants, preserving biodiversity, etc.

According to the research carried out by the Faculty of Forestry, it is estimated that at least 100 hectares, mostly urban construction land, are used for food production according to the guidelines of urban farming in the territory of the city of Belgrade. Students from the Faculty of Forestry investigated the views of citizens of three Belgrade municipalities regarding the possibility of developing urban gardens in their communities within the project „Belgrade Community Gardens for Sustainable Development of the City“, in order to further improve knowledge in this area. More than half of the residents of the Belgrade municipalities of Novi Beograd, Rakovica and Palilula believe that starting a garden community in their municipality is a good idea. And as many as 56% of respondents are interested in renting their own plot within the garden community.

Another positive example of understanding the importance of urban agriculture comes from the Faculty of Architecture of the University of Belgrade and the Institute of Architecture and Urban Planning of Serbia (IAUS). These two scientific institutions, each in their own way, have been trying for several years to draw the attention of the public, both scientific and professional, to the importance of urban agriculture. Thus, from October 17 to 19, 2018, the first international conference on Production in Urban Environments (PRODURB 2018) was organized at the Faculty of Architecture in Belgrade. The general goals of this conference were to promote and offer a synergistic approach that can contribute to future studies and development, implementation and promotion of knowledge about production in urban areas, through discussion and exchange of multidisciplinary knowledge, as well as experiences and scientific and technical results. Some of the topics of the mentioned conference, among others, were: community production / PS, sustainability and self-employment, super-eco urban environment, de-urbanization, urban production and urban farming. On the other hand, researchers of the Institute of Architecture and Urbanism of Serbia have been dealing with topics related to multifunctional urban agriculture, agroforestry, the impact of urban agriculture, green roofs and green walls on climate change in Serbia for more than ten years, thus also contributing to a better understanding of the importance of urban farming both in the Republic of Serbia and in the world.

There were also researches that were financed by the Ministry of Science and Technological Development through projects until 2019. The importance of urban and peri-urban areas for the regional development of the Republic of Serbia was recognized by the Belgrade Institute for Agricultural Economics, which created and implemented the project entitled: „Sustainable agriculture and rural development in the function of achieving the strategic goals of the Republic of Serbia within the Danube region“ (III 46006) in period 2011-2019. In addition to the project holder, the Institute for Agricultural Economics from Belgrade, 9 other scientific research institutions participated in the project. Three subprojects were developed within the project, and one of them was entitled „URBAN AND PERIURBAN AGRICULTURE IN THE METROPOLITAN AREA OF BELGRADE - NOVI SAD“. This project included the following cities: Belgrade, Novi Sad and municipalities on the axis Belgrade - Novi Sad that gravitate to the Danube: Beočin, Irig, Sremski Karolovci, Inđija, Ruma, Pećinci, Stara Pazova, Pančevo and Smederevo. Another research funded by the aforementioned



Ministry was related to urban beekeeping and the work entitled: „Urban honey - the aspects of its safety“ which provided information on the potential contamination of urban bee products with toxic metals, polycyclic aromatic hydrocarbons (PAH) and pesticides. The research was conducted by employees from three institutions, Center for Food Analysis, Faculty of Agriculture, University of Belgrade, Zemun, Belgrade and Faculty of Chemistry, University of Belgrade, Belgrade. As a conclusion of these researches, we convey the words of Prof. Dr. Dušanka Milojković Opsenica from the Faculty of Chemistry, University of Belgrade: „Urban honey is free of pesticide residues because pesticides are not used in such areas, unlike in areas where there is intensive agriculture.“ The professor continues, „Belgrade has great potential for the production of urban honey, and it could follow the example of Paris or Vienna and brand such honey.“

One of the examples of the inclusion of urban farming in the educational system is the course called „Introduction to the Use of New Technologies in Agriculture“, where the „Importance and possibilities of urban farming“ is mentioned in a different way only in a small segment. The host of the course is the BioSense Institute from Novi Sad, and the course itself was created within the framework of the „Take on an Idea“ program. This course was realized with the support of the American people through the US Agency for International Development (USAID).

There are examples where associations are initiators and faculties are participants in various types of applied projects, which we will mention in the „non-governmental sector“ part of the study.

Advisory services

There are a total of 34 Agricultural Advisory and Expert Services in the Republic of Serbia. On the basis of the Law on the performance of advisory and professional work in the field of agriculture („Official Gazette of RS“, No. 30/2010), they are obliged to perform:

- Providing expert assistance in the application of scientific achievements and new technologies;
- Provision of expert advice and services, transfer of practical knowledge and skills for technological and technical improvement of production;
- Acquaintance of agricultural producers with good agricultural practices;
- Carrying out demonstration experiments in different areas of agriculture;
- Training of agricultural producers to manage agricultural holdings and keep farm accounting records;
- Assistance in the affirmation of rural development;
- Providing advice on plant protection based on data from the forecasting and reporting service;
- Encouraging interest association and entrepreneurship in agriculture;

- Providing advice and making proposals for the expansion of economic activities as supplementary activities on the farm;
- Making recommendations in the field of animal husbandry;
- Giving advice and recommendations on the rational use of land and
- Provision of advisory assistance in other areas in which agricultural producers express interest.

Unfortunately, according to the knowledge of the authors of this study, the current work of advisory services and advisors in the territory of the Republic of Serbia does not include urban farming. Also, it is not planned for the future education of advisors, nor of the producers themselves. The reasons for such a situation are different. Starting from the advisors themselves not being informed that there is a certain number of urban producers or those who would like to become one, to the fact that the majority of citizens who are not oriented towards agriculture do not know that there is an Agricultural Advisory and Expert Service and that their work is financed by the state. Unlike agricultural producers who are the focus of the advisory work, urban producers represent another type of producer, an urban producer is someone who grows plants or animals for food in an urban environment, for whom doing this type of agriculture is not usually their primary job. Most of the 34 Agricultural Advisory and Expert Services have their headquarters in a city that is established as such by the Law on Territorial Organization of the Republic of Serbia („Official Gazette of RS“, No. 129/2007, 18/2016, 47/2018 and 9/ 2020 - other laws), which represents the economic, administrative, geographical and cultural center of a wider area and has more than 100,000 inhabitants. In order to improve the situation regarding the provision of advisory services as much as possible, urban farming should be one of the goals of future advisory work as soon as possible. The introduction of urban farming into the existing advisory work should be implemented through further planning of the development of advisory work. The adviser’s task is to facilitate this process for all those interested in urban agriculture, and the adviser should use certain methods of advisory work as the basic mechanism of transferring the necessary knowledge and skills. Informing and educating producers, processors and consumers about the production and advantages of urban farming and its impact on health, environmental protection, positive impact on climate change and preservation of urban agrobiodiversity are just some of the knowledge that the advisor should keep in mind, in order to create the basis for mass urban development in the territory of the Republic of Serbia.

Non-governmental sector _____

One of the most agile sectors in practice so far when it comes to urban farming in the Republic of Serbia is the non-governmental sector, i.e. the past work of certain associations and societies, but also the work of various informal groups. Thus, according to the conversations, findings and interviews of the authors of this study, which were conducted in direct contact with the participants and others who largely „rely“ on this concept, it was found out that some of the goals that led them to become more actively



involved in urban farming were the following:

- Preservation of mental and physical health of city residents.
- Environmental Protection.
- Social involvement, opportunity for work and employment of economically disadvantaged sections of the population.
- Producing enough food for a growing population.
- Education regarding urban farming, reducing environmental pollution, mitigating and adapting to climate change.
- Regulation of the local (city) microclimate.
- Increasing the rate of carbon sequestration (because plants take in CO₂ during photosynthesis).

In the following paragraphs, we will mention only some of the associations whose goal and work idea is dealing with urban farming:

„Econaut“ / „Ekonaut“

Econaut is an association of citizens and an eco-social enterprise that was founded in 2016 with the mission to contribute to the improvement of the environment and the development of the ecological awareness of citizens by designing and implementing numerous projects and activities in the fields of agriculture, spatial planning, architecture and landscape architecture, social entrepreneurship, green economy and ecodesign. The association is one of the more active associations when it comes to the concept of urban farming, primarily through the formation of city gardens as a hobby, as well as advocating the use of garden communities as a tool for sustainable land management. The members of this association are recognized for the organization of numerous educational events in the field of gardening and beekeeping in the city environment. They are particularly focused on the network of interested parties, decision makers, civil sector, professional associations and other interested actors with whom they work to create favorable frameworks in the application of various forms of sustainable management of open urban and peri-urban spaces. The association is actively involved in establishing a structured dialogue with decision-makers at the national and local level, organizing educational events and producing multimedia content. The association pays special attention to cooperation with educational institutions and activities that include work with children and young people. One of the more recognizable brands of this association is „Baštalište“, a project that the association implemented in 2014 together with the „Ama Centar“ Civic Association and the Belgrade Flower Festival with the aim of encouraging the development of garden communities, as well as legally supporting and regulating it. Then the first official campaign and Initiative for the formalization of garden communities at the level of the city of Belgrade was launched. In addition to a large number of well-designed and implemented projects, such as: „Billiard Room“, „Bee Connected“, „Green Laboratory“, „Sensory Garden“, „Baza Bazaar“ and others. We will mention the project „Initiative for Urban Gardening Communities“ which focuses on specific public policies and through cooperation with experts and citizens finds ways

for the most concrete realization of system solutions for the management of areas that are not brought to their intended purpose, which can have numerous benefits for local communities and the city as a whole. Through education and information about the concept of garden communities, citizens are directly involved in project activities. One of such activities was the mapping of potential spaces for garden communities in the territory of Belgrade, when citizens updated locations that have the potential to be used in this way via the ekonaut.org page. With the aim of strengthening the local community, a series of educational activities related to growing ornamental plants and food in urban conditions, as well as ways of forming and organizing garden communities, were organized. The project „Initiative for urban garden communities“ is implemented as part of the „Green Incubator“ project of the Belgrade Open School, with the financial support of the European Union and the Friedrich Ebert Foundation. The project is also supported by the Open Society Foundation. One of the results of this project is the publication entitled „Introduction to urban garden communities“, which aims to inform the general public about the possibilities of organizing common gardens, their benefits, as well as challenges and possible solutions for their sustainable development. It should be mentioned that the members and associates of Econaut participated in the initiation and development of various communal gardens in Belgrade, such as: „Baštaliste“ in Slanci, „Zdravac“ in Makiško polje, „Sensor garden“ in Elementary School „Radivoj Popović“, „Green Classroom“ in the Nova Iskra Creative Hub in Savamala, and also participated in the organization of public events such as „Bašta Bazaar“, lectures and workshops in the field of gardening, beekeeping and medicinal plants.



Picture 1. Organic, floating garden on the raft of the “Kreativa Unlimited” agency in New Belgrade across from the Great War Island (Source: <https://ekonaut.org>)



„Organic garden“ / „Organska bašta“

The Association “Organska Bašta”, i.e. the Association Center for Promotion and Education “Organska Bašta”, is a non-governmental and non-profit association, established for an indefinite period to achieve goals in the areas of: organic agriculture, rural development, ecology and environmental protection, improvement of health and healthy lifestyles ... The goals of the association are: development and improvement in the field of organic gardening and organic agriculture, education of organic gardeners, agricultural producers and consumers, support and affirmation within the field of activity, support and promotion of scientific research work, promotion of the value of the mentioned areas and healthy lifestyles in general, publishing books and publications in the field of activity, improving the quality of life of the individual, family and community, researching the impact of organic products on the health of the population, bringing together individuals, experts and legal entities in the field of activity and improving health and healthy lifestyles. One of the most recognizable activities of this association is its “Organic Gardening School”, which is organized for different levels of participants. The “School of Organic Gardening” has been successfully improving the knowledge of organic gardeners, producers and consumers for over 20 years. The aim of the school is to train students for independent planning, arrangement and maintenance of gardens and homesteads according to ecological principles in order to produce healthy and safe organic food. The largest number of participants in this course are from Belgrade and the surrounding areas, and so far tens of thousands of students have attended the school.



Picture 2,3,4: Education and field work of the association „Organska Bašta“
(Source: <https://organskobastovanstvo.rs>)

“Port of Knowledge” / „Luka znanja“

Port of Knowledge is a non-governmental and non-profit association for the achievement of goals in the field of agriculture, environmental protection, rural development and green economy. The goals of the Association are: promotion and expansion of ecological production systems, especially organic, as part of the green economy. The target groups with which the association works are: children, youth, experts, producers and consumers. The education and training programs of this association are based on a lifelong learning system, adapted to age and needs, as well as regional agro-ecological and social specificities. The association represents and promotes green businesses, which include a green school, a green economy, ecological stands and organic products.

Port of Knowledge is a unique association, with headquarters in Novi Sad, which is active in the area of AP Vojvodina, but also, if necessary, carries out its activities in the territory of Central Serbia and in the territory of Republika Srpska, i.e. Bosnia and Herzegovina through projects, lectures and workshops. The greatest emphasis in the work of the association so far has been on education regarding the establishment and importance of the so-called “bio-gardens”, and about fifteen years ago the book “Garden is green all year round” was published in the Port of Knowledge edition, which was designed and written by prof. Ph.D. emeritus Branka Lazić - doyen of organic production in Serbia, otherwise one of the founders of the association. In addition to the mentioned book, this association has also published a number of other manuals, brochures and flyers intended for producers, consumers and anyone who wants to be educated about green agriculture, environmental protection, organic production and others.



Picture 5. Lecture by prof. Ph.D. emeritus Branka Lazić entitled: „Biogarden - something old, something new“ (Source: <http://www.lukaznanja.rs>)

„Highlanders’ Movement of Novi Sad“ / „Pokret gorana Novog Sada“

The Novi Sad Highlanders’ Movement is a citizens’ association founded in 1960 and today, after 60 years of existence, it mainly deals with educating citizens of all ages about the importance of environmental protection. The largest number of activities is related to combating climate change, planting new forests and forest belts in Vojvodina, which also implies the preservation of existing forests, etc. In the course of 2021, the Highlanders’ Movement implemented a project called: „Garden in the heart of the city“ on the topic of urban gardens and promoting this type of production of various plant species. Within the project, 12 young people from Novi Sad participated, who received training on the topic of urban gardening and held workshops in elementary



schools, and together with the children, they planted the herbs that remained in the schools. Also, for the needs of the project, a brochure was prepared that contains the most common types of herbs that are grown in our country. The implementation of the project lasted from August to December 2021.



Picture 6. Realization of the project of the Highlanders' Movement of the City of Novi Sad under the name: "Garden in the heart of the city" (Source: <https://multiradio.rs>)

„Belgrade Association of Beekeepers“ / „Beogradsko udruženje pčelara“

The Belgrade Association of Beekeepers has a 150-year tradition and currently has around 200 members. Members of the society were visitors and exhibitors at eminent exhibitions where they promoted their honey, which has a great reputation. In addition to honey production, the Belgrade Association of Beekeepers holds training sessions for future beekeepers where you can gain a lot of practical experience necessary for a good start in beekeeping. The mission of the movement is the development of urban beekeeping in Belgrade, the expansion of green areas under honey plants and the education of young beekeepers. This association made a great contribution to education and the practice of urban beekeeping. In cooperation with the company Mad Med and the association Supernatural, with which they have several realized projects on urban beekeeping, the „Belgrade Bee“ movement was founded. Through several projects, the members of the association included some new members, and provided new knowledge to the old ones when it comes to this type of beekeeping. Here we will mention only some of the implemented projects of the association that concerned urban beekeeping: The „Green Embassy“ project, launched in 2015, represents a global and progressive approach through which French diplomatic missions around the world actively and directly contribute to the preservation of the environment. For example, one of the activities of this project was the installation of beehives on the roof of the

French Embassy in Belgrade. The „Urban Beekeeping“ project was aimed at the wider local community with the task of raising awareness of the importance of bees in the urban ecosystem. The project „Eco Academics“ aimed to educate school children about beekeeping and the properties of honey plants, etc..



Picture 7. Belgrade Urban Beekeeper (Source: <https://www.bup.rs>)

„New Spark“ / „Nova Iskra“

New Spark is the first creative hub in the Balkans, founded in 2012, with a mission to design spaces and experiences that enable individuals, organizations and businesses to work, learn, innovate and create together. Perhaps one of the most famous urban gardens in the Republic of Serbia is the „Green Laboratory in Savamala - an open-air classroom“ located in the very center of Belgrade, designed by New Spark, implemented together with Econaut and the Belgrade Flower Festival, and financed by the Oil Industry of Serbia. Another project called „Bee Connected“ was jointly designed and implemented under the auspices of the Swedish Institute and the Swedish Embassy in Belgrade: New Spark, the environmental organization Econaut and the company Happy Honey, which produces innovative honey-based sweets. The project dealt with the problems that bees and other pollinating insects face in the urban environment on both global and local level.



Picture 8. Green laboratory in Savamala - outdoor classroom (Source: <https://novaiskra.com>)

National Association for the Development of Organic Production „Serbia Organica“ / Nacionalno udruženje za razvoj organske proizvodnje „Serbia Organica“

The National Association for the Development of Organic Production „Serbia Organica“ was founded in May 2009 with the aim of providing support for the development of organic production and marketing in the Republic of Serbia. It is an independent, non-governmental and non-profit civil organization, founded on the initiative of interested parties from the organic sector. During its existence, this association cooperated with both physical and legal entities on various bases. The largest number of activities related to the provision of various types of assistance primarily to organic producers, but also to all other interested parties. It participated in the creation of strategic documents at the level of the Republic of Serbia, from strategies, programs, action plans, to the writing and adoption of laws, regulations and ordinances aimed at helping and protecting the interests of producers, processors, traders in organic agricultural production, as well as other interested parties in the field of improvement of health, ecological, agrotechnical and market conditions of life, work and business. One of the more visible activities is continuous education both in the entire territory of Serbia, and in Belgrade and Novi Sad in a large number of cases, where some of the trainings were the staffing of different groups of trainees to deal with the methods used in organic and urban farming. With the aim of more efficient transfer of knowledge and higher quality organization, the association cooperated with the Chamber of Commerce of Serbia, the Cooperative Union of Serbia, the Ministry of Agriculture, Forestry and Water Management, Agricultural Advisory and Expert Services, the Institute for Agricultural Economics, the Institute for the Study of Medicinal Plants „Dr. Josif Pančić“, The Institute of Soil Science, the Institute for the Application of Science in Agriculture, the Faculty of Agriculture of the University of Belgrade, the Chamber of Commerce of the City of Belgrade, the Secretariat for Agriculture of the City Administration of the City of Belgrade, the Open University of Novi Sad and others. The German Organization for International Cooperation (GIZ) and the American Agency for International Development (USAID) have been providing great support to the association for many years in the trainings in Belgrade and Novi Sad, as well as in general, among others.



Pictures 9, 10: The National Association for the Development of Organic Production “Serbia Organica”, together with the “Novak Djokovic” Foundation, has been implementing the “Alphabet of Good Habits” project since 2018 (Source: <https://novakdjokovicfoundation.org>)

„Supernatural“

Supernatural is an environmental NGO from Belgrade that provides consulting services to companies in the field of ecology and sustainable business. This organization is known to the public for the „Supernatural Festival“, which has been celebrating International Earth Day (April 22) since 2007. From the very beginning, the festival promotes the values of love and respect for Mother Earth. In addition to the musical part of the Supernatural program, the festival promotes different types of food and offers different types of workshops and lectures. In addition to the above, the organization produces organic honey „Bee Mama“ and t-shirts, from the sale of which they collect funds for their work and further advocacy for a healthier planet. Since 2012, they have started revitalizing the Ada Huja ecosystem on the Danube under the name „Supernatural Park“, which consists of a green classroom for environmental education, a bird observatory, a greenhouse, an irrigation system, a wind generator, solar panels, a recycling yard, numerous artistic sculptures and a small beach bar. We must point out that in 2014 „Supernatural Park“ was declared one of the 25 best projects in Europe, for which the organization received an award in the European Parliament. The implementation of this project was initiated by Supernatural in 2011 under the name „From the dump to the park“, where 12 hectares of the rubble dump on Ada Huja were transformed into a park. In the next 11 years, biodiversity was completely restored with 41 new species of plants, 91 species of birds, 9 species of butterflies, many insects, bees and abundant wildlife. The newly created forest on the banks of the Danube is protected in the planning documents of the city of Belgrade in 2022. The organization is actively involved in urban beekeeping, in addition to producing honey itself, and is trying to improve the existing state of urban beekeeping to a higher level (projects: „SERBHIWE“, „Belgrade bees“, etc.).



Picture 11: Supernatural Park that was declared the best project in Europe (Source: <https://www.danubeogradu.rs>)

„Ama Centar“

Ama Center is a non-profit association of citizens founded at the end of 2013. The mission of Ama Center is to support the development of sustainable and dignified ways of life, by affirming the virtues of life and selfless service. The vision of the Ama Center is a world in which people live as part of nature, not apart from it. The association operates in the areas of: sustainable development, environmental protection, organic production and permaculture, rural development, community, youth, women's and minority rights, and the media. The goals of this association are above all: support of the physical, emotional and spiritual development of the individual, improvement of the quality of life in the community, nurturing of plants, animals and humans and thus care for the planet, education of different publics about the fields of activity, development and improvement of the fields of activity, promotion of values and healthy lifestyles and the gathering of individuals, experts and legal entities from the field of activity. The projects of "Ama Center" are: "WWOOF Serbia", "Baštaliste", "Baštaonica" and "Women for sustainable and solidarity agriculture".



Picture 12: Baštalište - workshop (Source: <http://amacentar.org>)

Examples of good practice, interviews, internet, youtube channels, etc...

As stated in the previous part of the study, there are currently an enviable number of examples of good practice when it comes to urban farming in the territory of the Republic of Serbia. On the following pages, you will see a few more selected examples that, in our opinion, represent an excellent reflection of the current state of urban farming in the Republic of Serbia. We will present several websites of associations and those that deal with urban farming in different ways, then several YouTube links are given that also refer to various aspects of urban farming in the Republic of Serbia.

Internet pages:

Citizens' Association and Eco-Social Enterprise „Ekonaut“: <https://ekonaut.org>

Association Center for Promotion and Education „Organic garden“ / „Organska bašta“: <https://organskobastovanstvo.rs>

Port of Knowledge / Luka znanja: <http://www.lukaznanja.rs>

Highlander's Movement of Novi Sad / Pokret gorana Novog Sada: <https://pokretgorana.org.rs>

Belgrade Beekeepers Association / Beogradsko udruženje pčelara: <https://www.bup.rs>

New Spark / Nova Iskra: <https://novaiskra.com>

National Association for the Development of Organic Production „Serbia Organika“: <https://serbiaorganica.info/>



Supernatural: <https://www.supernatural.eco>

Ama Centar: <http://amacentar.org>

Urban farming: Everything you need to know about garden communities in Serbia: <https://www.gradnja.rs/bastenske-zajednice-srbija/>

Urban farming - unused potential:

<https://arhingreen.rs/urbana-agrokultura-neiskorisceni-potencijal/>

Urban farming - food production in populated areas: <https://www.gradjevinarstvo.rs/tekstovi/1352/820/urbana-agrokultura-proizvodnja-hrane-u-naseljenim-sredinama>

(SUB)URBAN PRODUCTION: <https://nasamesta.com/suburbana-proizvodnja/>

Invitation to participate in the lecture Organic garden - the future of Serbia, May 17 in Belgrade: <https://serbiaorganica.info/poziv-za-ucesce-na-predavanju-organska-bastabuducnost-srbije-17-maja-u-beogradu/>

Healthy energy is created in „Baštalište“:

<https://energetskiportal.rs/zdrava-energija-nastaje-u-bastalistu/>

Urban farming My garden, my freedom: <https://bif.rs/2016/08/urbana-poljoprivreda-moja-bastica-moja-slobodica/>

Urban beekeeping in Belgrade: High yields and quality honey: <https://www.agromedia.rs/agro-teme/urbano-pcelarstvo-u-beogradu-veliki-prinosi-i-kvalitetan-med/>

World Bee Day: Bees and beekeeping practice in Serbia: <https://elementarium.cpn.rs/naucne-vesti/svetski-dan-pcela-pcele-i-pcelarska-praksa-u-srbiji/?script=lat>

RTV Krusevac – Urban farming – local production of food for local consumption:

<https://www.rtk.rs/112521/urbana-poljoprivreda-lokalna-proizvodnja-hrane-za-lokalnu-upotrebu/>

Video attachments:

Ekonaut - Introducing Econaut: <https://www.youtube.com/watch?v=UhmC5Es1g0E>

Ekonaut - Lecture “Ornamental garden for beginners” - Marija Nikolić:

<https://www.youtube.com/watch?v=rPqR2TsOt9E>

Ekonaut - Workshop “Ornamental garden for beginners “ - Marija Nikolić:

<https://www.youtube.com/watch?v=oM5gYSZksQg>

Ekonaut - Lecture “Home garden” with Ana Svilar:

<https://www.youtube.com/watch?v=p2ggxUbrqsw>

Ekonaut - Lecture “Organic garden for beginners” - Vladimir Milutinović:

<https://www.youtube.com/watch?v=rwSKRdh0Fk0>

Ekonaut - Workshop “Organic garden for beginners” - Vladimir Milutinović:

<https://www.youtube.com/watch?v=f8HFghZa3M8>

Ekonaut - Gardening for Beginners Part 1 - Garden Planning:

<https://www.youtube.com/watch?v=wHu18PQXu7g>

Ekonaut - Gardening for Beginners Part 2 - An Introductory Workshop:

<https://www.youtube.com/watch?v=EofXwqINiZM>

Ekonaut - Gardening for Beginners Part 3 - Lecture - All About Autumn Sowing Vegetables: <https://www.youtube.com/watch?v=6d3IpFX5nvM>

Ekonaut - Gardening for Beginners Part 4 - Workshop - All About Autumn Sowing Vegetables: <https://www.youtube.com/watch?v=7yj3hB4IEf0>

Ekonaut - Gardening for Beginners Part 5 - Lecture - How to Grow a Bountiful Garden: <https://www.youtube.com/watch?v=oclU6dCuQRQ>

Ekonaut - Gardening for Beginners Part 6 - Workshop - How to Grow a Bountiful Garden: <https://www.youtube.com/watch?v=dVWFDwRP9yM>

Nova Iskra Coworking Space, Belgrade, Serbia: <https://www.youtube.com/watch?v=6ARyax6sFK4>

Nova S – Urban gardens: https://www.youtube.com/watch?v=1Z_z2zilw6I

Marka Žvaka – Citygardens: <https://www.youtube.com/watch?v=-D92TqEy1So&t=1328s>

Marka Žvaka – City bees: <https://www.youtube.com/watch?v=WCCVJ4VSvPO>

EU in Serbia - Urban beekeeping - new concepts for improving the environment in cities: <https://www.youtube.com/watch?v=gBnYcQozjbE>

Al Jazeera Balkans - Honey from the rooftops of Belgrade is specific in its purity and taste: <https://www.youtube.com/watch?v=QTpLTcFrNCO>

AGROmedia - Urban Beekeeping: Honey production in urban conditions!?: <https://www.youtube.com/watch?v=lx2jL7yROIE>

AGROmedia - Beekeeping in Belgrade: Big Yields and Quality Honey: <https://www.youtube.com/watch?v=tlhe9QL0Jrs>

Two Rivers - Urban beekeeping on the roof of Erste Bank: <https://www.youtube.com/watch?v=IMQzuj8VaCU>

RTV Krusevac - Urban farming - local production of food for local consumption: <https://www.youtube.com/watch?v=CVYZxDimsn8>

2.2 Croatia

At least 20 Croatian cities have already established urban gardens¹. Most of the urban garden's projects (17 out of 20), were launched in the second decade of 21st century. The term "urban gardens" here is intended as a concept in which plots of land are being allocated to citizens according to specific rules². In most cases those rules are determined by city administrations. Those cities are at the same time owners of the land designated for the urban gardens. Local initiatives related to smaller communal gardens created by the self-organized garden stakeholders, although they most often

1 The research was conducted during February and March 2023, and includes examples of urban gardens for which it was possible to find complete relevant data on the Internet. There are 127 cities in Croatia. The search methodology included the name of each city combined with the term "urban garden" and its synonyms, as well as crosschecking information on the official websites of the city administrations and associations involved in the projects.

2 Present, but not yet realised initiatives to establish urban gardens are considered in the separate chapter.



represent the expression of true ecological awareness and the citizens' will to preserve the space as a green oasis in the urban context, are not here analysed.

The analysed examples are divided into two groups. The first group includes urban gardens that are managed by the city administration and directly allocated to citizens for use through a public call. The second group includes urban gardens that are managed by civil society organizations, including cases in which city administrations allocate gardens for management to those organizations through public calls.

This study includes the following cities, here listed according to the year of the official establishment of the urban gardens. Data on the number of inhabitants³ of each city is added as this information helps understanding that the urban gardens in Croatian context are not established only in highly urbanized environments.

	City	Inhabitants	Year
1.	Ivanić-Grad	12.982	2012
2.	Varaždin	43.782	2012
3.	Virovitica	19.302	2012
4.	Zagreb	767.131	2013
5.	Belišće	8.884	2013
6.	Sisak	40.121	2014
7.	Koprivnica	28.580	2014
8.	Rijeka	107.964	2014
9.	Slavonski Brod	49.891	2014
10.	Osijek	96.313	2014
11.	Velika Gorica	61.075	2015
12.	Karlovac	49.377	2015
13.	Ozalj	5.837	2015
14.	Ludbreg	8.477	2015
15.	Samobor	37.435	2016
16.	Duga Resa	10.212	2016
17.	Križevci	18.949	2016
18.	Rovinj / Rovigno	12.968	2020
19.	Umag / Umago	12.699	2020
20.	Pula / Pola	52.220	2021

As the matter of fact, among 10 Croatian cities with the largest number of inhabitants, only Split and Zadar⁴, the second and fifth cities in terms of population, still do not have established urban gardens.

³ Data on the number of inhabitants is the official data published by the Croatian Bureau of Statistics in the table "Population contingents, by towns/municipalities, 2021 census" and represent the data on the inhabitants of the particular city, where the city is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement.

⁴ According to the 2021 Census, Split has 160,577 and Zadar 70,779 inhabitants. Source: Croatian Bureau of Statistics, table "Population in major towns, municipalities and settlements, 2021 census".



Picture 13: Map of cities with established urban gardens in Croatia

Gardens under the direct management of the cities _____

Generally speaking, the city administrations allocate garden plots to the residents for planting vegetables, berries, herbs and flowers for their own needs for a two-year period with a possibility of extension of the contract, and plots are mostly 50 m² each. The cities also provide storage facilities and common equipment. The plots are allocated free of charge, or a small annual fee is required. The motivation for allocating urban gardens in a number of cases is to help citizens with lower income which transpires from the criteria established in the public calls. In some of the cases it is strictly recommended that the organic agricultural practices must be used.

Ivačić-Grad _____

The city of Ivačić Grad inaugurated the City Gardens project in 2012, when the Mayor's Decision on this matter was published in the Official Gazette⁵. The motivation for this act, as defined in the Decision, is primarily ecological, but the implementation of the allocation of plots also has a social character. It is stated that „the City of Ivačić-Grad follows the practice of certain European countries that improved local production with similar projects, providing financial and energy savings for the benefit of the citizens“. It is furtherly specified that the eligible persons are residents, and that the interested citizens will sign a contract with the City for a period of two years. The size of an individual plot is defined as “the area measured for personal non-profit use for the purpose of planting a garden”.

⁵ Službeni glasnik Grada Ivačić-Grada, no. 3/2012, <https://www.ivanic-grad.hr/media/286466/Slu%C5%BEbeni%20glasnik%203-2012.pdf> on 16.3.2023.



The social component of the Decision is reflected in the provision according to which unemployed persons and social welfare beneficiaries will be provided with planting material and for them, if necessary, the land will be prepared for planting. The gardens are located in the neighbourhood of Žarevinac, and their extension was announced in 2019⁶.

Virovitica

The city of Virovitica created urban gardens in 2012 in the location Južni blok (South block)⁷. At the beginning of the calendar year, the City launches a public Call for expressions of interest for the allocation of plots. The allocated plots vary in size from 200 to 400 m². The plots are primarily allocated to social welfare beneficiaries, unemployed people and pensioners. If the number of interested persons in these categories is not sufficient, the plots then are given to other interested citizens. Preference for allotment of plots is given to users of the gardens in the previous year, who have properly maintained their plot⁸. From 9 allocated plots in 2012, urban gardens have grown to 34 plots in 2016⁹ and city administration is willing to allocate even more plots if the interest of citizens increases¹⁰. The plots are allocated free of charge¹¹.

Zagreb

Officially, Urban gardens in Zagreb have been developing since 2013, when the Conclusion on the implementing project “City gardens” was adopted with a purpose to allocate parcels of the arable land to the citizens for the purpose of food production – vegetables, berries, herbs, and flowers for their personal use. There are currently 14 urban gardens in the City of Zagreb with over 2152 garden plots on an area of 23.03 ha. The common parts of the City gardens were additionally equipped during the project of the City of Zagreb, Radio Kaj and newspaper “24 sata”. With the help of project partners, gazebos, tool stores and other equipment necessary for the gardening were donated to the users of garden plots¹². Citizens exercise their right to allotment of plots through a public call issued by the City of Zagreb. The last such public call, as far as can be read on the official website of the City of Zagreb, was published in 2020¹³. In accordance with the public call, garden plots are allocated for a period of 2 years free of charge, with the possibility of extending the period of use. Residents who do not own, co-own, lease or use other arable land have the right to submit a request for the use of a garden plot. In accordance with the criteria from the public call, people with lower income, unemployed, social welfare beneficiaries and veterans are the priority.

6 <https://prigorski.hr/u-ivanic-gradu-poticu-gradane-na-koristenje-gradskih-vrtova/> on 16.3.2023.

7 <https://www.vpz.hr/2016/02/22/virovitica-jedan-od-prvih-gradova-koji-je-krenuo-s-urbanim-vrtovima/> 23.3.2023.

8 <https://www.virovitica.hr/gradski-vrtovi/> 23.3.2023.

9 <https://www.vpz.hr/2016/02/22/virovitica-jedan-od-prvih-gradova-koji-je-krenuo-s-urbanim-vrtovima/>

10 <https://www.virovitica.hr/gradski-vrtovi/> 23.3.2023.

11 <https://www.vpz.hr/2021/03/09/parcela-vrt-bez-naknade-virovitici-zainteresirani-gradani-mogu-se-javiti-obradu-gradskih-vrtova-juznom-bloku/> 23.3.2023.

12 <https://www.zagreb.hr/o-projektu/84060> 26.3.2023.

13 <https://www.zagreb.hr/javni-poziv-za-podnosenje-zahjteva-za-davanje-vrtn/161662> 26.3.2023.

The gardens are divided into plots of up to 50 m² in size, and the users share the common equipped space (access roads and paths, storage facilities, composters, benches, bins for waste disposal, garden gazebos and canopies). The gardens are fenced, and the common area is intended for users to socialize and rest, for education and workshops. The recognizable mark of the City gardens project is registered as a trademark at the State intellectual Property Office, which legally protects the project's visual identity.¹⁴



Picture 14: Trademark of the City gardens project of the City of Zagreb, source City of Zagreb

City gardens in Zagreb are expanding with a new project - the development of common urban orchards. At the end of 2022, the first fruit trees were planted in the Podbrežje area, and the mayor announced the expansion to other locations. It was also announced by the city administration that the public orchards will be taken care of by volunteers and associations specialized in urban agriculture, while citizens will participate in their maintenance and improvement, as well as free fruit picking.

Belišće

The City of Belišće created urban gardens in 2013, and the project was called “Belišće city gardens”. The gardens were established with the aim of developing ecological awareness and encouraging citizens to adopt a healthy lifestyle through organic gardening and the production of healthy food for their own needs. The project is intended for all residents, regardless of economic status¹⁵. A public call for allocation of the parcels in the City gardens is issued once a year by the mayor. City gardens are allocated for a period of one year, free of charge. In addition to vegetables, users are allowed to grow flowers, medicinal and other plants of their choice¹⁶, as long as the cultivation of the particular plant is not illegal, or it is invasive weed. The cultivation of fruit trees and other plants that take up a lot of space are also not allowed¹⁷. Users are obliged to cultivate the garden applying the principles of organic agriculture. The use of synthetic fertilizers and chemical preparations for controlling weeds and pests is prohibited. The decision on granting garden plots is made by the mayor on the recommendation of the Committee for the Allocation of City Gardens¹⁸.

14 <https://www.zagreb.hr/o-projektu/84060> 26.3.2023.

15 <https://radio-belisce.net/poziv-zainteresiranima-za-gradske-vrtove/> 24.3.2023.

16 <https://belisce.hr/javni-poziv-o-iskazivanju-interesa-za-dodjelu-gradskih-vrtova-8/> 24.3.2023.

17 <https://www.belisce.hr/wp-content/uploads/2020/01/Odluka-o-uvjetima-i-na%C4%8Dinu-raspologanja-Beli%C5%A1%C4%87anskim-gradskim-vrtovima.pdf> 23.4.3023.

18 <https://belisce.hr/javni-poziv-o-iskazivanju-interesa-za-dodjelu-gradskih-vrtova-8/> 24.3.2023.



Users share water pumps, a composting site, tools, and a gazebo. Users are strictly required to use water rationally - water plants early in the morning or late in the evening. The disposal of the gardens is regulated by the Decision on the conditions and management of the Belišće city gardens. With this decision, the land of the city gardens was divided into 150 plots „whose purpose is to build a better, more solidary and healthier society in the local community“. For the sake of the economy of their use, the possibility of dividing the Gardens into a different number of plots is foreseen¹⁹.

Slavonski Brod

Urban gardens in Slavonski Brod were established in 2014 and named “City green gardens”. As a first step in 2013 the City published a call for expression of interest on their official web page, asking citizens who would use the gardens to write them an e-mail. The first contracts with the users were signed few months later. For this purpose, the City of Slavonski Brod provided agricultural land area of 3,265 m² owned by the City. The users are obliged to cultivate their plots according to organic principles²⁰. Contracts with users were signed for a period of three years. The public call was repeated three years later - in 2017²¹.

From the administration of the city of Slavonski Brod²², we learn that the gardens are currently used by 25 users. They also informed us that garden plots are allocated for a period of 3 years without payment, with the possibility of extension. Taking into account the interest, the City of Slavonski Brod expanded the area of the urban gardens to 7,090 m², and there is still interest in the expansion. The city of Slavonski Brod, as stated by the administration, launched another project to ensure healthy nutrition for kindergarten and elementary school students. Land of approximately 2 hectares is being prepared in the area of Jelas, in the immediate vicinity of the City gardens. Considering that only organic agriculture is allowed in the same zone, in this new garden they will grow vegetables for the needs of the city’s kindergartens and elementary schools.

Osijek

Urban gardens in Osijek exist since 2014. Urban gardeners are self-organized through the Association of Users of Urban Gardens OsVrt which they founded with the goal to communicate more easily with the city administration. The land on which the gardens are located is owned by the City of Osijek. The City of Osijek allocates plots to interested

¹⁹ <https://www.belisce.hr/wp-content/uploads/2020/01/Odluka-o-uvjetima-i-na%C4%8Dinu-raspolaganja-Beli%C5%A1%C4%87anskim-gradskim-vrtovima.pdf> 24.3.2023.

²⁰ <https://www.slavonski-brod.hr/vijesti-2/4594-pocela-realizacija-projekta-gradskih-zelenih-vrtova> 24.3.2023.

²¹ <https://www.slavonski-brod.hr/vijesti-2/7048-pozivamo-sve-zainteresirane-gradane-da-sudjeluju-u-projektu-gradskih-zelenih-vrtova> 24.3.2023.

²² E-mail communication of 30.3.2023.

citizens free of charge, based on a public call that is launched every two years²³. On the official website of the City of Osijek, one can read that “Osijek Urban Gardens” project enabled citizens to use arable land for non-profit use - for the purpose of producing food, herbs, medicinal plants and flowers for their own needs. It is also stated that „Urban gardens are a valuable contribution to the quality of life in the city and contribute to sustainable development, the development of the City’s partnership with citizens, the preservation of biodiversity and a healthier environment, the ecological awareness of citizens, the encouragement of the traditional way of growing food, the healthy way of using free time and promoting healthy lifestyle“. Osijek’s urban gardens, at the location JUG II „Rastanci“, consists of 180 garden plots with an area of 50 m² each and common space with common equipment (access roads and paths, tool houses, three wells, composters, benches and bins for waste disposal). So far, it is a pilot project, on a total of 11,000 m², and the plan is - as stated on the official website of the city administration - to expand the gardens to other parts of the city. 20% of the garden plots are allocated for use by non-profit associations, which have the task of transferring examples of good practices of ecological gardening and permaculture to other users. In addition to residents, non-resident full-time students studying in Osijek also have the right to submit a request for the use of a garden plot²⁴. The allocation of garden plots also has a social dimension, and according to a certain number of points, priority is given to people with lower income, social welfare beneficiaries, unemployed, pensioners and veterans²⁵.

Velika Gorica

The city currently has three urban gardens in three different locations with a total area coverage of 11.133 m². In urban gardens, the principles of organic gardening and regenerative agricultural practices are applied²⁶. The first 70 garden plots were allocated to citizens for use in 2015. The City of Velika Gorica allocated the plots for free, and several private companies participated as donors in the action of preparing the gardens for the use in a volunteer action organized by the City of Zagreb and two media publishers²⁷. It is interesting to note that on the official website of the City of Velika Gorica, you can read inquiries from citizens who have expressed interest in urban gardens since 2013²⁸.

²³ <https://www.vecernji.hr/vijesti/nikad-veci-interes-za-urbanim-vrtovima-u-osijeku-zele-imati-svoje-i-zdravo-povrce-1398898> 25.3.2023.

²⁴ <https://www.osijek.hr/gospodarski-kutak/gospodarstvo/urbani-vrtovi/> 25.3.2023.

²⁵ <https://www.osijek.hr/natjecaji/javni-poziv-za-podnosenje-zahjteva-za-davanje-na-koristenje-vrtnih-parcela-na-lokaciji-urbanog-vrta-jug-ii-rastanci-projekt-osjecki-urbani-vrtovi/> 25.3.2023.

²⁶ <https://www.regreen-project.eu/news/the-city-of-velika-gorica-building-a-green-mindset-through-nbs/> 20.3.2023.

²⁷ <https://www.24sata.hr/lifestyle/velika-gorica-je-postala-clan-zajednice-urbanih-vrtova-421025> 20.3.2023.

²⁸ <http://www.gorica.hr/2013/03/gradski-vrtovi/> 20.3.2023.



After 2015, plots were allocated to citizens in 2016 and 2017. Plots are allocated free of charge for a period of two years, and there is a possibility of extension for those who will treat them with due care and diligence. They were also given free water and a tool house equipped with the gardening tools²⁹. Gardens are granted to persons residing in the area of the City of Velika Gorica who do not own, co-own, lease or use other arable land³⁰. Preference is given to persons with lower income, social welfare beneficiaries, war veterans, unemployed and pensioners³¹.



Photo 19: One of the urban gardens in Velika Gorica, (source: City of Velika Gorica)

Karlovac

In Karlovac, urban gardens are located in the neighbourhood Gaza. The area covers almost 6000 m², and 63 plots have been formed. Plots vary from 20m² to 40 m², and the citizens use them free of charge. Gardens are equipped with tool storages, watering pumps, composters, and there are also benches and tables for resting and socializing³². The city gardens were formed in 2015 when the City of Karlovac launched a public call for the allocation of plots. Plots are granted for a period of 5 years with the possibility of extending their use. They are awarded to residents who do not own, co-own, lease or use other arable land in the area of the City of Karlovac. In the public call, it is specified that the citizens can use the garden plots for growing vegetables, berries and berries, herbs, plants and flowers, for their own needs. The criterion for allocating the parcel is simple – the parcels are allocated according to the order in which requests were received³³. No criteria related to social status were established. It is interesting to point

²⁹ <http://www.gorica.hr/2017/05/u-sinjskoj-ulici-otvoreni-treci-gradski-vrtovi/> 20.3.2023.

³⁰ <http://www.gorica.hr/2016/04/urbani-vrtovi-i-u-teslinjoj-ulici/> 20.3.2023.

³¹ <https://www.samobor.hr/dokumenti?trazi=Gradski+vrtovi> 20.3.2023.

³² <https://radio-mreznica.hr/85-karlovkana-dugoresana-i-ozaljicana-obraduje-besplatne-gradske-vrtove-vrtlarenjem-u-gradu-do-svoje-hrane/> 21.3.2023.

³³ <https://www.karlovac.hr/natjecaji-javni-pozivi-obavijesti/natjecaji-javni-pozivi/javni-poziv-za-koristenje-vrtne-parcele-na-lokaciji-gradske-cetvrti-gaza/14326> 21.3.2023.

out that in the Decision on the method of allocation and use of arable land owned by the City of Karlovac³⁴, it is stated that the users of the garden plot may not use any chemical means to protect the plants, which gives the gardens an additional strong ecological dimension.

Ozalj

In Ozalj, the urban gardens are quite large, but according to media report only a few citizens were interested to use them. They are spread over an area of as much as 10 thousand m², and on 3/4 of this area the City of Ozalj itself sows rye. They make rye flour from it, but also straw for the roofs of traditional houses. Along with them, the “Kotačac section” from Slava Raškaj Primary School is planting beans. The city gardens themselves cover an area of 2,500 m² and are used by 6 residents of Ozalj³⁵. The experience in creating urban gardens, and the motivation to do it, was described by the City of Ozalj in an article published on the official website of the Association of Cities. The city of Ozalj started with the project in 2014, when the City council decided to implement the project “City gardens” in order to give part of the arable land free of charge to citizens for planting vegetables and berries, herbs and flowers for their own needs. The land consists of garden plots up to 100 m² in size. The City provided the access road, bought a motor pump for irrigation, and prepared the land for planting. In the report of the City of Ozalj, it is also stated that the “City Gardens” project solved the issue of illegal use of land owned by the City or the state company Hrvatska elektroprivreda d.d. It is furtherly stated in the report that “the gardens were cultivated only by some tenants (those who first occupied public land), and the dissatisfaction of those who could not cultivate a garden in the immediate vicinity of their own apartment was visibly expressed”. The total costs of the project until May 2015 amounted to 172,661.72 HRK³⁶ (22.916,15 EUR), of which the City of Ozalj allocated 152,661.72 HRK (20.261, 69 EUR) and the County of Karlovac 20,000.00 HRK (2.654,46 EUR)³⁷. In accordance with the Decision on the implementation of the “City Gardens” project, plots are allocated to residents who do not own, co-own, lease or use other arable land, and plots are allocated for use according to the order of application³⁸. The city of Ozalj, allocated plots through a public call in 2015. No criteria related to social status were established.

³⁴ <https://www.karlovac.hr/UserDocImages/2018/2018%20dokumenti/Odluka%20o%20na%C4%8Dinu%20dodjele%20i%20kori%C5%A1tenju%20gradskih%20vrtova.pdf> 21.3.2023.

³⁵ <https://radio-mreznica.hr/85-karlovkana-dugoresana-i-ozaljcana-obraduje-besplatne-gradske-vrtove-vrtlarenjem-u-gradu-do-svoje-hrane/> 21.3.2023.

³⁶ Croatian national currency in use until 31.12.2022.

³⁷ <https://www.udruga-gradova.hr/inpuls/ozalj-gradski-vrtovi/> 21.3.2023.

³⁸ https://www.ozalj.hr/index2/images/stories/_2014/_GLASNIK_2/gradski%20vrtovi.pdf 21.3.2023.



Ludbreg

In 2015, the City of Ludbreg established urban gardens by implementing the project “Varoški vrtovi”. 23 of 25 available garden plots were allocated to interested citizens, 50 m² each. The landscaped garden plots are intended for citizens who do not have their own garden, and they are allocated for a period of two years with the possibility of extending the use. The plots were prepared for planting by the City before allocation³⁹. Since at the first public call in 2015 two plots remained unclaimed, the second Public Call for allocation of the plots was launched in 2021. The gardens are intended for food production, i.e. planting vegetables, fruits, herbs and flowers for the consumption of the users. Garden plots are allocated to residents of the City of Ludbreg according to the order in which requests are received. No criteria related to social status were established.

Samobor

The City of Samobor used part of the space of the former military complex Taborec for the establishment of “Urban gardens Samobor”. In 2016, citizens were given 27 garden plots for free use. When allocating plots, social criteria were taken into account⁴⁰. In 2021 the number of plots have grown to 75⁴¹. According to the Public Call launched by the City of Samobor in 2017, one plot is 50 square meters, and citizens are allocated plots for a period of 2 years with the possibility of extension. Resident individuals, but also local associations have the right to be allocated a garden plot. Preference is given to persons with lower incomes, social welfare beneficiaries, war veterans, unemployed and pensioners⁴².

Duga Resa

In Duga Resa, urban gardens are situated near the church of St. Anton, divided in 25 plots, each with 50 m², and they have 24 users. Water is available free of charge, and they also have storage facilities for tools. The city administration promised that if more citizens express their interest, the City will expand the area of the gardens⁴³. The City of Duga Resa launched a public call for allotment of garden plots in 2016. In this call, no advantages related to social status are mentioned, as it was the case in the similar public calls in some other cities. The objectives of the formation of urban gardens are stated, and it can be concluded that the main goal of this act was not to improve economic status of the citizens, but it was ecologically motivated. The stated goals are the following: encouraging citizens to a healthier way of life through the physical activity of gardening, encouraging citizens to naturally grow food for their own needs,

³⁹ <https://ludbreg.hr/varoski-vrtovi/>

⁴⁰ <https://www.zagrebacka-zupanija.hr/vijesti/2874/grad-samobor-svecano-otvorio-svoj-prvi-gradski-vrt> on 16.3.2023.

⁴¹ <https://gradonacelnik.hr/nekategorizirano/samoborci-na-podrucju-bivse-vojarne-ureduju-75-parcela-gradskih-vrtova/> 20.3.2023.

⁴² <https://www.samobor.hr/dokumenti?trazi=Gradski+vrtovi> 20.3.2023.

⁴³ <https://radio-mreznica.hr/85-karlovcana-dugoresana-i-ozaljcana-obraduje-besplatne-gradske-vrtove-vrtlarenjem-u-gradu-do-svoje-hrane/> 20.3.2023.

contributing to the development of ecological awareness in urban areas, equipping a new place for gathering, socializing and education, putting unused urban land in use, connecting with nature and contributing to local self-sustainability⁴⁴. Garden plots are given for use free of charge for a period of 2 years, with the possibility of extending the use, provided that the users treat them with the due care and diligence, respect the contract as well as provisions of the Ordinance on the method of allocation and use of arable land owned by the City of Duga Resa. The Ordinance does not stipulate that users should apply organic farming practices. It simply states that the principles of good agricultural practice should be applied when cultivating the garden plot⁴⁵.

Rovinj / Rovigno

The City gardens in Rovinj were established in 2020, when the first Public Call was launched, and citizens were allocated 63 plots out of the available 65 for a period of two years. Users are provided with the common equipment - access roads, tool storage, composters, benches, waste bins, garden gazebos and canopies⁴⁶. The annual fee for the use of a plot of 50 m² is 50,00 HRK⁴⁷ (6,64 EUR), plus another 200,00 HRK (26,55 EUR) for water consumption. The right to apply for the plot belongs to the residents of Rovinj who do not own, co-own, lease or use other arable land. Priority is given to citizens with lower income, social welfare beneficiaries, unemployed, pensioners, single parents and veterans⁴⁸. The following year - 2021, the City announced another public call and, due to the great interest of citizens, allocated additional 25 plots. Local entrepreneurs also joined the project, donating funds and services for preparing soil for planting and for irrigation purposes as well as agricultural tools⁴⁹. In 2022, the City of Rovinj repeated the public call for allotment of plots in the City gardens, but in accordance with the changes in the regulations, the gardens were allocated to the citizens for use for a period of 4 years. 16 garden plots were offered by this public call, and the annual fee remained unchanged⁵⁰.

Umag / Umago

Umag's city gardens - urban gardens in the city of Umag were opened in 2020 when the city administration announced a public call for plots to be leased, for the purpose of growing fruits and vegetables, herbs and flowers for one's own needs⁵¹. Umag City Gardens are located in the area Vrh. It is arable land consisting of 58 garden plots of approx. 50 m² each, with common parts and equipment - access roads and paths, tool

44 <http://dugaresa.hr/wp-content/uploads/2016/06/2-Javni-poziv-za-iskaz-interesa-gradski-vrtovi-Duga-Resa.pdf> 20.3.2023.

45 Službeni glasnik Grada Duge Rese (Official Gazette of City Duga Resa), 2017, no.4 <https://dugaresa.hr/wp-content/uploads/2014/03/SLUZBENI-GLASNIK-4-2017.pdf> 20.3.2023.

46 <https://www.glasistre.hr/istra/inicijativa-docekana-s-odusevljenjem-rovinjci-se-masovno-bacaju-poljoprivredu-usred-turisticke-perjanice-nicu-urbani-vrtovi-649336> 25.3.2023.

47 Croatian national currency in use until 31.12.2022.

48 <https://www.rovinj-rovigno.hr/wp-content/uploads/2020/05/Gradski-vrtovi-javni-poziv.pdf> 25.3.2023.

49 <https://www.rovinj-rovigno.hr/novosti/gradski-vrtovi-obogaceni-novim-posjednicima/> 25.3.2023.

50 <https://www.rovinj-rovigno.hr/wp-content/uploads/2022/06/Javni-poziv-za-podno%C5%A1enje-zahitjeva-za-davanje-vrtnih-parcela-na-kori%C5%A1enje-u-sklopu-projekta-Gradski-vrtovi.pdf> 25.3.2023.

51 <https://umag.hr/novosti/grad-umag-pokrenuo-projekt-umaski-gradski-vrtovi-282> 26.3.2023.



storage, composter, benches and bins for waste disposal, and garden gazebos. The annual fee for the use of the garden plot is 3.00 HRK⁵² (0.40 EUR)/m² which is approx. 150.00 HRK (19,91 EUR)/year. Garden plots are allocated for a period of 2 years. The right to apply have the residents of the City of Umag who live in an apartment block and do not own, co-own, have or use arable land. Preference is given to social welfare beneficiaries, the unemployed and veterans⁵³. The City gardens are located on an area of 3300 m² and the entire area is surrounded⁵³ by a protective fence. The city of Umag provided users with water, and bought ten wooden tool storages⁵⁴.

Pula / Pola

The city of Pula established urban gardens in 2021, and allocated 88 garden plots for use through two public calls⁵⁵. The gardens are named “Urban gardens Gregovica” after the name of their location. In accordance with the Decision on the Public Call for Submission of Requests for Land Use/Urban Gardens at the Gregovica location⁵⁶, the land is allocated to two types of users – citizens for their own cultivation needs and association for the purpose of managing a Community garden with educational and therapeutic purposes. Citizens are allocated 83 garden plots of approx. 50 m² each, and with the use of common parts with equipment (access roads and paths, tool storage, composters, benches, garden gazebos, canopies, tools). The Decision defines that citizens are allowed to grow vegetables, berries, herbs and flowers for their own needs, and they are recommended to use organic farming practices. The right to use the plot of land belongs to the residents of Pula who do not own, co-own, lease or use other arable land. Garden plots are given for use for a period of 2 years with the possibility of extension. The fee for the use of one garden plot is 250.00 HRK⁵⁷ (33,18 EUR) per plot per year, and this fee includes water consumption in the amount of 200.00 HRK (26,54 EUR). In the case in which City of Pula would decide that the land, while being used by the citizens, is to be used for a purpose determined by the spatial planning documentation, the City reserves the right to unilaterally terminate the contract, with notice to the users three months in advance. In the Decision, priority for the allocation of the garden plots is given to a number of categories of persons in financially disadvantaged position.

The second part of the urban gardens is the Community garden. For the management of the Community garden only could apply non-governmental organization willing to organize educations and transmission of knowledge and skills, schools in nature, workshops, lectures and similar activities for the citizens. The purpose of the Community garden, as stated in the Decision, is “to promote the organic cultivation of plant food, flowers, herbs, medicinal plants and other perennials, acquisition of knowledge and skills necessary for such cultivation, as well as social integration and empowering vulnerable and marginalized groups of people i.e. persons in a disadvantageous position, and promoting a healthy way of life of all citizens of the city of Pula”. To that extent,

⁵² Croatian national currency in use until 31.12.2022.

⁵³ https://umag.hr/uploaded/JAVNI_POZIV_vrtne_parcele_tekstualni_dio_20200421_HR-1588494712735.pdf

⁵⁴ <https://umag.hr/novosti/umaski-gradski-vrtovi-urodili-plodom-gradanima-predani-kljucevi-deset-novih-kucica-za-alat-421.26.3.2023>.

⁵⁵ <https://ipress.hr/istra/71296-pozivaju-se-gradani-da-potpisu-ugovor-za-koristenje-urbanih-vrtova-u-puli> 25.3.2023.

⁵⁶ https://www.pula.hr/site_media/media/uploads/posts/attachments/Odluka_o_raspisivanju_Javnog_poziva_urbani_vrtovi.pdf 25.3.2023.

⁵⁷ Croatian national currency in use until 31.12.2022.

it is foreseen that the land will be allocated to the association free of charge, but also that the association selected as manager will provide parcels to institutions and other associations who would implement activities in the fields of environmental protection, inclusion of marginalized and vulnerable groups of citizens, or therapeutic activities and rehabilitation. It is prescribed that the association that manages the Community Garden is obliged to organize and form at least 3 garden beds of a minimum size of 100x200 cm for the needs of people with mobility difficulties, and at least 3 garden beds of a minimum size of 200x300 cm for the implementation of the practical part of the education program. The management of the Community Garden is granted for a period of 2 years with the possibility of extension. The right to submit a request for the management of the Community garden belongs to an association which is active in the area of the City of Pula, and which is defined, in its founding act, as committed to improving the quality of life in areas such as environmental and nature protection, organic food cultivation, sustainable development, improvement and health protection, i.e. protection and promoting the rights of certain vulnerable groups and promoting a healthy life. When responding to a public call, the association is obliged to submit a proposal of the Community Garden program for a period of two years, which is scored according to the criteria established by the Decision. On the implementation of the Community Garden program, the association is obliged to report in writing to the City of Pula after every 12 months.

Association Zelena Istra (Green Istria) with a consortium of partners was granted the management of the Community Garden on Gregovica for a period of two years. Community garden extends over the area of about 1500 m². Their experience in organizing Community Garden is expressed under the chapter Non-governmental sector: Examples of good practice and experiences.

Gardens under the management of civil society organizations _____

In urban gardens managed by the civil society organizations, the observance of organic agricultural practices is obligatory and, in some cases, permacultural practices are introduced. Also, common activities are encouraged.

Varaždin _____

The city of Varaždin has 3 urban gardens managed by 2 associations.

Association "Gredica" was founded in 2012 and that same year they established the first urban gardens named "Čudesni vrtovi" (Miracle Gardens). The gardens were formed on neglected and overgrown construction land owned by the City of Varaždin with a total area of 13,000 m². Helped by donations, the association equipped the gardens infrastructurally to meet the basic needs of gardeners and enabled its members to independently grow healthy food, educate themselves, socialize and recreate. As a result, neglected construction land gained added value and became a training ground



for healthy living, recreation, gardening, education and socializing of interested citizens and members of the association. The number of families gardening there is around 100 per year. For this socially innovative program, the association Gredica received 2 awards; ZABA donations in the social innovation category - 1st place (2012), and SozialMarie – 3rd place – international award for social innovation (2013)⁵⁸. For the purpose of creating this garden, the City of Varaždin gave the citizens, gathered in the Association “Gredica” 7.7 thousand m² of neglected land for free use. On the occasion of the opening of the gardens, representatives of the administration of the City of Varaždin pointed out that the gardens are open to all regardless of their social status on only one condition - that no chemical agents are used in the cultivation⁵⁹. In the years to follow, the model adopted by the City of Varaždin, differently than some other cities, was not to directly allocate the garden plots to citizens. Instead, the City contracted with associations gathering citizens interested in urban gardening. The next year, 2013, another urban gardening project sprung up in Varaždin – “Vrtovi života” (Gardens of Life) on previously unused city land in Hrašćica at about 6,000 square meters⁶⁰. This project was launched by the eponymous association. However, gardens „Vrtovi života” appear not to be in function today⁶¹. In the following year, 2014, yet another project was launched – “Grabanički vrtovi” (Grabanica gardens). The city of Varaždin gave the Association Grabanički vrtovi (Grabanički gardens) 5,000 square meters of fertile land for free use in the field near the quartier Grabanice. This association was founded at the initiative of the group of citizens with the purpose of establishing the gardens⁶².

Five years later - in 2019, after the expiration of the original contract on the allocation of land for use, the City of Varaždin, after a public tender, concluded a lease contract for the next 5 years with the association “Grabanički vrtovi. At that time, 92 plots were cultivated in these gardens⁶³. The same year, Association “Gredica” signed a lease contract with the City of Varaždin for their second urban garden project - „Zlatni vrtovi” (Golden Gardens) on 6.211 m² in the neighbourhood Banfica. The land was divided into 62 plots of 65 m² each, and the City of Varaždin financed the initial preparation of the land and provided access to water for irrigation⁶⁴. The land lease contracts with the associations “Gredica” and “Grabanički vrtovi”, in accordance with the Decision on the management of the property owned by the City of Varaždin from 2017, was concluded with a fee of 0.03 HRK⁶⁵/m²⁶⁶.

The organization and internal rules in the gardens managed by association “Gredica” were explained at the public debate⁶⁷ in 2020:

58 <http://www.gredica.hr/projekt-cudesni-vrtovi/> 22.3.2023.

59 <https://varazdin.hr/novosti/u-varazdinu-niknuo-prvi-community-garden-407/> 22.3.2023.

60 <https://varazdin.hr/novosti/sadnice-za-vrtove-zivota-u-hrascici-1042/> 22.3.2023.

61 A review of the Register of Associations of the Republic of Croatia revealed that the mandates of authorized persons to represent the association "Gardens of Life" expired in 2017. In the communication with the City of Varaždin, regarding the number of managers of current city gardens, we learned that the City of Varaždin concluded contracts for the lease of land only with the associations “Gredica” “Grabanički vrtovi”.

62 <https://varazdin.hr/novosti/varazdinci-dobili-jos-jedan-gradski-vrt-1486/> 22.3.2023.

63 <https://varazdin.hr/novosti/zemlja-vrtove-i-parcela-surfere-7669/> 22.3.2023.

64 <https://www.varazdinske-vijesti.hr/drustvo/nakon-cudesnih-stigli-i-zlatni-vrtovi-udruga-gredica-poziva-da-se-prijavite-za-svoju-parcelu-39246> 22.3.2023.

65 The amount is too small to be expressed in EUR to two decimal places; the minimum number of decimal places that can be expressed is three and amounts to 0.004 EUR.

66 E-mail communication of 29.3.2023.

67 <https://www.zelena-istra.hr/hr/articles/novosti/747/izvijestaj-s-tribine-u-okviru-kampanje-vrati-vrt-u/> 22.3.2023.



Photo 20: „Čudesni vrtovi” (Miracle Gardens) (source: association “Gredica”)

„Each tool house has its own color and all the gardeners whose plots share that color, i.e. the tool house, share all the resources and obligations. They have to agree on who will do what and when. Micro-groups of gardeners belonging to a particular tool house make decisions together. The gardeners elect managers at a garden level who ensure regular functioning and, alone or with the other fellow gardeners, suggest what should be done. The gardeners themselves must take care of what is needed in the gardens and make initiatives, while the association “Gredica” supports them in the procurement of funds and materials. Gardeners are obliged to attend association meetings, and agreements at meetings are reached with the consent of two-thirds of those present. What the majority decides, all gardeners are obliged to respect, and in this way each garden „goes in its own direction“ and develops according to the needs and wishes of its gardeners. To use the plot, gardeners become members of the association “Gredica” association and pay annual membership fee of 100,00 HRK (13,27 EUR) annually. They are obliged to comply with all the rules from the gardening regulations of Gredica”.

Sisak

City gardens Sisak is project launched by the Society for Social Ecology Zeleno Zlato. Since 2014, this association has been implementing a project of self-sustainable organic gardening and production of healthy food. For this purpose, they cleaned up the illegal waste disposal site and invited citizens to contact them if interested in using a garden plot⁶⁸. Thus, the city of Sisak became the seventh city in Croatia that can boast of the City gardens project⁶⁹. The representatives of the Society for Social Ecology Zeleno zlato addressed the mayoress at the time, who expressed her support for the idea of creating a space where people would learn and work together in order to put neglected and unused city areas into use by gardening⁷⁰.

The City gardens Sisak are located on the very edge of the city, in the green belt along the Odra river where, even before the establishment of the gardens, remains of

⁶⁸ <https://www.zelenozlato.hr/index.php/projekti-u-provedbi/9-gradski-vrtovi-sisak> 20.3.2023.

⁶⁹ <https://sisak.hr/predstavljen-projekt-gradski-vrtovi-sisak/> 20.3.2023.

⁷⁰ <https://zelenozlato.org/index.php> 20.3.2023.



infrastructure such as a greenhouse and concrete troughs for seedlings were present. Also, users of the garden had access to water and electricity from the beginning, but as the land was neglected for years and used as an illegal waste disposal site, the costs for the gardens to be established, as stated by the member of the Society Ognjen Andrić⁷¹, were enormous. The intention of the Society, explained Andrić, was to arrange the allocated land in such a way as to provide a pleasant and fun all-day staying for the whole family. The City helped the Society through the utility company “Komunalac” which cleared part of the plots in order to prepare the land for the gardens. Part of the funds came from donations from the citizens themselves and various companies. The City of Sisak and the Society for Social Ecology Zeleno Zlato signed a land lease agreement, according to which the City allocated to the Society about 13.000 m² of land for use at a symbolic annual fee, which the users return to the association through the payment of an annual membership fee for the use of their plot of 100m². The contract is renewed every five years.



Photos 21 and 22: City gardens Sisak, source the Society for Social Ecology Zeleno Zlato

“Society manages the gardens. Large works such as mulching, arrangement of greenhouses, making storage for tool etc. are organized by the association, while smaller works such as mowing, procurement of water storage, making tables and benches and similar users often take upon themselves”, explained Andrić.

Society expanded the infrastructure of the gardens with different project funds, so a greenhouse and raised flower beds were built, while the financial investments of the users are minimal. Each user has a contract on the use of the plot and it contains rights, obligations and expectations, including the amount of the membership fee for the use of the garden, but most users chose the option of volunteering for 15 hours of work in the garden on joint activities, actions and the like, instead of paying the membership fee. The space allocated to the association exceeds the needs of the gardeners, so they have no problems with the allocation of plots. The idea is that everyone takes as much space as they can cultivate, and as much as is enough for them to grow. That’s why the sizes of the plots vary from one garden bed to 200 m² plot.

Besides the Society, a large part of the decisions is made by the users themselves in accordance with their needs. The only condition that garden users must oblige to is that the garden is grown according to ecological principles, while gardening techniques are

⁷¹ Interview conducted via email, 29.03.2023

individual. The emphasis is put on users not doing damage or harm to themselves or others. Mainly vegetables, flowers and medicinal plants are grown. The fruit trees that were found when the gardens were established are treated by the users as common, and the fruit are picked by all. There are plums, apples, walnuts.

It rarely happens that a plot remains neglected, but in such case it is taken over by a new user, or the „neighbor“ simply expands onto that plot. Conflicts between gardeners are not frequent, and if they happen, gardeners resolve them among themselves. However, growing their own and healthy food, socializing, sharing knowledge and experiences, and spending constructive time in nature with family and friends is what connects these gardeners.

The idea of these gardens at the very beginning was, and still is, ecological cultivation of one's own garden in the city, but also to create an integrative garden so the Society, through a series of project activities, include people with disabilities and social welfare beneficiaries in the work in the gardens which they are especially proud of⁷².

Koprivnica

Association Kopriva, officially opened the „Common Eco Gardens“ on Earth's day 2014. This urban gardens project was established on the land in Špoljarska Street owned by the City of Koprivnica.

The City allocated the land for a period of 10 years to Association Kopriva⁷³ and the association distributed the parcels to the citizens. Ivan Funtek, president of the Association Kopriva explained that the idea was to provide necessary content in the urban environment for people who have the desire to cultivate their own piece of land and grow their own plants, but do not have the conditions or financial means to do so⁷⁴. The land for the use of the „Common Eco Gardens“ has been repurposed from a field of conventionally grown canola to a place of strictly organic farming and divided into 80 plots of 50m² each. Between the plots, running water was brought and all plots are bordered by places for common use such as a compost bin, children's playground, space for socializing and tool houses⁷⁵. The land is divided in 78 plots, and the user can become anyone who is interested in working the plot according to ecological principles. Association Kopriva collects a small annual membership fee (in 2020 it was 100 HRK / 13,27 EUR) in order to pay for water consumption, use of common facilities, procurement of tools similar necessities⁷⁶.

72 <https://www.zelenozlato.hr/index.php/drustveno-poduzetnistvo/17-inkluzivni-poljoprivredni-lanac>

73 <https://koprivnica.hr/novosti/u-koprivnici-svecano-otvoreni-zajednicki-eko-vrtovi/> 22.3.2023.

74 <https://www.poslovni.hr/kako-su-uspjeli/zajednicki-eko-vrtovi-za-razvoj-urbanog-poljodjelstva-291238> 22.3.2023.

75 <https://www.poslovni.hr/kako-su-uspjeli/zajednicki-eko-vrtovi-za-razvoj-urbanog-poljodjelstva-291238> 22.3.2023.

76 <https://drava.info/2020/05/zajednicki-eko-vrtovi-ivan-funtek/> 22.3.2023.



Rijeka

Urban gardens in Rijeka „Zeleni put“ (Green way) were created in 2014. Even before that, the City of Rijeka had a practice of leasing land, which was not brought to its intended purpose, to citizens for agricultural purposes at a price of 2 - 3 HRK (0,27 – 0,40 EUR) per square meter per year, depending on the total size of the plot⁷⁷. The initiative to establish common gardens in 2014 came from the Association Zona 00, which proposed a common garden in the neighbourhood Brašćine, which the City of Rijeka accepted. From then until today, three associations have taken over the position of garden managers. After the Association Zona 00, the gardens were managed by the Association for the Promotion of the Quality of the Family „Šarolija“, and since 2020 the gardens are managed by the Association Center for the Culture of Dialogue. In 2020, this association concluded a land lease contract with the City of Rijeka for three years, free of charge. For the implementation of the urban gardens project, a location determined in spatial planning documentation as agricultural and forest zone was selected. It is a plot of land with an area of 3013 m², which has not been used and therefore not polluted for years and was suitable for agriculture based on ecological and permaculture principles. In addition, it is located near public roads, and is accessible by public city transport, which makes it accessible to the public. The urban gardens have several zones. The most important part is intended for growing food in a common educational-experimental spice garden, with a total size of 1000 m² and individual garden beds varying from 15 to 25 m² and three composting areas. The second zone is intended for the cultivation of berries, the cultivation of existing wild plants and the planting of a Mediterranean orchard of autochthonous varieties. The third zone represents a common space for all users of the gardens with a tool houses and space for trainings⁷⁸. In order to become a user of the garden bed, one must fill out an application form and agree to the Garden regulations. Gardeners hold regular meetings, communicate via Google group. All relevant documents and decisions made at meetings are placed on Google Drive, and it is considered that everyone agrees with the decision made, if no one objects within 14 days. Every two months, the new manager of the garden is chosen and each user pays a fee for the use of the garden bed in the amount of 100 HRK (13,27 EUR) per year. Gardeners are obliged to participate in two meetings and several joint work actions. To exclude an individual user, the consent of two-thirds of all gardeners is required⁷⁹. The Ordinance prescribes the obligation to cultivate the garden by applying the principles of organic gardening and prohibits the use of synthetic fertilizers and chemical products for the control of weeds, pests and the like. As part of the urban garden, the children’s garden „Dolčić“ is organized. It is designed according to permacultural principles with the aim of bringing children and parents together in joint activities that promote ecology, sustainable living and healthy food consumption⁸⁰

77 <https://www.regionalexpress.hr/site/more/izvjetaj-s-tribine-u-okviru-kampanje-vrati-vrt-u-grad> 23.3.2023.

78 <https://www.rijeka.hr teme-za-gradane/stanovanje-i-gradnja/energetska-ucinkovitost-zastita-okolisa/urbani-vrt-zeleni-put/> 23.3.2023.

79 <https://www.regionalexpress.hr/site/more/izvjetaj-s-tribine-u-okviru-kampanje-vrati-vrt-u-grad> 23.3.2023.

80 <https://www.rijeka.hr teme-za-gradane/stanovanje-i-gradnja/energetska-ucinkovitost-zastita-okolisa/urbani-vrt-zeleni-put/> 23.3.2023.

The city gardens in Križevci “Magda’s gardens” were officially created in 2016 on the initiative of the group of citizens, who formalized their association only in 2022 by registering the Association of Križevci Gardeners Magda, and with the support of the City of Križevci. The City allocated land for this purpose and, until 2021, the plots were allocated to citizens through a public call launched by the city administration. In 2022, the City of Križevci, instead of tendering for individual plots, announced a tender for the management of the gardens, and the Association of Križevci Gardeners Magda was awarded the management.⁸¹ After 2022, citizens who want to use plots are required to join the association, and contracts are signed for the period of one year. Plot users are obliged to participate in joint actions, at least in 30 percent of the actions yearly, and to comply with the Garden regulation ⁸². Joint actions refer to the maintenance of common areas of the garden, such as the orchard, maintenance of the tool houses, paths, removal invasive species, etc. The Regulation strictly prohibits the use of pesticides and mineral fertilizers. Instead, it prescribes the observance of organic agricultural practices. Sanctions are clearly defined; those who do not comply with the prescribed rules will lose the right to lease the land. In addition to the above, biodiversity is encouraged, and weeds are removed by hand. The gardens also include a children’s playground, several tool houses, insect hotels and honey points that attract bees and many other beneficial pollinating insects, birdhouses. Fruit bearing trees have been planted in the common area and are free for the gardeners to use. In addition to garden actions, Association Magda organizes various educations, for example about composting or methods of cultivation⁸³. The name of the gardens and Association has historical background. They were both named after Magda Logomer Herucina, herbalist from Križevci, who was accused, tortured and imprisoned on charges of witchcraft in 1758, and was saved from a worse fate by the Habsburg empress Maria Theresa, who brought her to Vienna and there acquitted her of the charges⁸⁴.

“Gardeners have been gardening in this specific area for over 50 years, and in 2016, an organized civic initiative, with the support of the city authorities, named the area Magda's garden. In 2016, additional actions were launched - promotion of gardening, invitations to citizens to garden, installation of fences, etc. - in order to establish general interest of the citizens for urban gardens in that area. As it turned out, there was a wide interest, both from citizens and from other organizations. So, the citizens' initiative submitted a request to protect these, otherwise building parcels, by changing the General Urban Plan and turn them into a public good – urban gardens. So yes, we can say that 2016 is the beginning of Magda's gardens. In Magda's gardens, students who are training to be cooks and waiters in the Ivan Seljanec High School are also gardening. They have their garden beds where they grow vegetables, fruits and aromatic herbs.”

Olga Razum Šujica, vice-president of the Association of Križevci Gardeners Magda

81 <https://www.perforum.info/primjer-dobre-prakse-magdin-vrt/> 22.3.2023.

82 <https://www.krizevci.info/2022/05/02/gredicama-na-krizevackom-gradskom-vrtu-po-novom-upravlja-udruga-magda/> 22.3.2023.

83 <https://www.perforum.info/primjer-dobre-prakse-magdin-vrt/> 22.3.2023.

84 <http://zagorka.net/krizevacka-coprnica-magda-logomer-herucina/> 22.3.2023.



Initiatives and possibilities of the second half of the 20s of the 21st century

From the analysis of the situation in the previous chapter, it is evident that the vast majority of urban gardens were created between 2012 and 2016, recession years in Croatia⁸⁵. From the analyzed data, mainly public calls through which local administrations allocates garden plots, in a large number of cases it follows that these gardens were often seen by the city authorities as a measure of economic assistance to citizens in a disadvantageous position. The environmental component is often, although not necessarily, present in the cases where gardens are directly allocated by cities, and it is manifested as the obligation of ecological farming. After a 4-year pause, at the beginning of the 20's of the 21st century, there is an intensification of initiatives for the establishment of city gardens, some of which have been realized, while others are ongoing. Determining how much the lock-down situation contributed to the launch of new initiatives during the so-called COVID-crisis exceeds the ambitions and needs of this study, but it is realistic to estimate that the incorporation of climate change mitigation measures into strategic documents at all levels of government should have a positive impact that could result in establishing urban gardens even in those cities where they have not yet been established.

In support of the above stated, there are several urban garden initiatives in **Zaprešić** (24.133 inhabitants⁸⁶). At least three can be determined with certainty; the initiative of the landowner who offered his land to citizens for use in 2020⁸⁷, the initiative of the association Eko Zaprešić⁸⁸ and that of the city administration, which in 2022 posted a survey on its social networks with the question for the citizens „Would you use urban gardens that the City of Zaprešić would make available?“⁸⁹ In addition, Solidarity Gardens were also established in Zaprešić, for the implementation of which the City of Zaprešić in 2022 awarded a certificate of appreciation to the president of the association „CRO-ECO Centar Zaprešić“⁹⁰. In **Krapina** (11.530 inhabitants⁹¹), the tenants of residential buildings in Matije Gupca Street grow vegetables on the land given to them by the City⁹². The City of **Oroslavje** (5.834 inhabitants⁹³) announced on its Facebook page in 2022 that they are considering launching the City Gardens project, and invited citizens to answer in the survey whether they are interested in urban gardens and what kind of gardening method they are interested in⁹⁴. In **Split** (160.577 inhabitants⁹⁵), in 2022

85 Arčabić V. "Hrvatska na putu u eurozonu: Analiza poslovnih ciklusa p. 162, <http://web.efzg.hr/RePEc/chapters/chapter18-07.pdf> 28.3.2023.

86 Croatian Bureau of Statistics, table "Population contingents, by towns/municipalities, 2021 census". Number of the inhabitants of the city. The term "City" here is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement

87 <https://www.pressreader.com/croatia/vecernji-list-hrvatska/20200720/282518660811596> 27.3.2023.

88 <http://eko-zapresic.blogspot.com/2013/05/urbani-vrtovi-u-zapresicu.html> 27.3.2023.

89 <https://ic2.hr/2022/04/11/biste-li-koristili-urbane-vrtove-koje-bi-na-koristenje-dao-grad-zapresic/> 27.3.2023.

90 <https://zapresic.hr/u-povodu-dana-grada-dodijeljena-su-javna-priznanja-za-2022-godinu/> 27.3.2023.

91 Croatian Bureau of Statistics, table "Population contingents, by towns/municipalities, 2021 census". Number of the inhabitants of the city. The term "City" here is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement

92 <https://www.zagorje.com/clanak/vijesti/vrtovi-dolac-besplatni-povrtnjaci-za-stanovnike-centra-krapine> 27.3.2023.

93 Croatian Bureau of Statistics, table "Population contingents, by towns/municipalities, 2021 census". Number of the inhabitants of the city. The term "City" here is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement

94 https://www.facebook.com/127037069840/posts/10159756971834841/?locale=hi_IN 27.3.2023.

95 Croatian Bureau of Statistics, table "Population contingents, by towns/municipalities, 2021 census". Number of the inhabitants of the city. The term "City" here is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement

the city administration announced the launch of an urban garden⁹⁶, but, according to a conversation⁹⁷ with a representative of the association Permaculture Dalmacija, which was supposed to be a partner in that initiative, this did not happen. In 2022, the City of **Novigrad - Cittanova** (3.889 inhabitants⁹⁸) also issued a public invitation to citizens through its official website to determine whether there is an interest of citizens in the establishment of urban gardens⁹⁹.

Legal framework

Urban gardens are not subject to legal or by-law provisions in Croatia. Nevertheless, urban gardens and urban agriculture can be found in strategic documents as a type of green infrastructure.

Urban gardens and orchards, cultivated according to organic or permacultural principles, are part of the answer to the challenge of increasing resistance to climatic changes in urban areas. Although they are not explicitly mentioned in the Strategy for Adaptation to Climate Change in the Republic of Croatia for the period up to 2040 with a view to 2070¹⁰⁰, they are part of the green infrastructure to which the Strategy gives significant attention in order to strengthen resistance to climate changes.

Urban gardens as part of green infrastructure are recognized in the Program for the development of green infrastructure in urban areas for the period 2021 to 2030¹⁰¹. In this Program, there is a special chapter dedicated to the social benefit of green infrastructure, which also includes urban gardens, and it is stated:

“Green infrastructure connects different social groups and encourages their interaction and is a countermeasure to alienation with a series of psychological difficulties of contemporary urbanity. Urban areas become safer and more accessible to more sensitive or less mobile residents. City districts with landscaped and accessible parks, tree-lined streets, urban gardens and parks and green spaces around residential, public and educational buildings make everyday life more pleasant and the value of these neighbourhoods higher and more desirable for housing. Temperature in urban areas and urban heat islands unfavourably affect people’s health and quality of life, both due to increased temperature and worse air quality. These adverse impacts can be mitigated by increasing pedestrians and reducing the traffic areas, as well as by interpolating green and water areas into the built urban fabric, which helps to filter floating particles and reduce air pollution”.

In the chapter „Overview of the state of green infrastructure in the Republic of Croatia“ in the part that refers to the planning of green areas by cities and municipalities, it is established that „a negligible number of plans for the green areas refer to types such as urban gardens, rain gardens, green roofs, green walls which represent a relatively new

96 <https://tris.com.hr/2022/03/vijesti-iz-zemlje-uskoro-urbana-blitva-s-turske-kule/> 27.3. 2023.

97 E-mail conversation in March 2023.

98 Croatian Bureau of Statistics, table “Population contingents, by towns/municipalities, 2021 census”. Number of the inhabitants of the city. The term “City” here is intended as administrative unit (which may consist of more than one settlement) and not as eponym settlement

99 <https://novigrad.hr/utvrduje-se-interes-za-koristenje-tzv-gradskih-vrtova-u-novigradu/> 27.3.2023.

100 https://narodne-novine.nn.hr/clanci/sluzbeni/2020_04_46_921.html 29.3.2023 .

101 <https://mpgi.gov.hr/vijesti-8/donesen-program-razvoja-zelene-infrastrukture-u-urbanim-podrucjima/14152> 29.3.2023.



category of urban spaces“, and it is concluded that „the role of green infrastructure in the recovery and transformation of brownfield areas has been neglected“. As a result of the above, urban gardens and urban agriculture are explicitly mentioned in the proposals for improving the situation. Furthermore, in the chapter „Development potentials (possibilities)“ it is concluded: *“The construction of green (front) gardens, green roofs and green facades in building construction should be highlighted as a significant potential for the development of green infrastructure. This possibility is not at all recognized in the planning documents of Croatian cities”*.

In order to establish urban gardens, however, it is not necessary to wait for their eventual inclusion in the legal regulations. From the analysed examples, it is evident that cities allocate citizens the land which is in their property. City administrations manage the land in their property, as any other real estate, on the basis of the Law on Ownership and Other Real Rights¹⁰², and in accordance with this law, they are obliged to dispose of it through the publication of a public tender. On the basis of the said Law, cities make decisions regulating the disposition of their real estate, which also includes land. Allocating to citizens or associations a plot of land for urban gardens is legally no different than “business as usual” granting it on lease.

Advisory services and education

When it comes to urban gardening, there is no institution in Croatia that would function as an official advisory body, but this does not mean that urban gardeners do not have available professional advisory support. A simple internet search shows that practically every association that manages urban gardens organizes workshops, lectures or other forms of education on this and related topics. Such educations are also held in cities where gardens are managed by city administrations. The television show „Vrtlarica“ (The Gardener) which promotes organic gardening, whose author and editor is Kornelija Benyovsky Šoštarić, greatly contributed to the popularization of gardening in Croatia. So far, 8 seasons of this series have been broadcast, all available on the Internet platform of Croatian Television HRTi¹⁰³. Benyovsky Šoštarić is the author of several books about gardening, the most famous being „Zeleni kvadrat - Zdravlje iz organskog vrta“ („The Green Square - Health from an Organic Garden“).

For a gardener who wants to learn how to grow a garden in an organic way, association “Biovrt – u skladu s prirodom” („Biogarden - in harmony with nature“) is an indispensable place. On the website of this association, posts with advices on gardening are being published regularly. The author of these articles Silvija Kolar-Fodor also published the book “Vrtlarjenje u skladu s prirodom” („Gardening in harmony with nature“). Kolar-Fodor holds lectures and educations on organic gardening, as well as online „School of Gardening“¹⁰⁴ and also offers educational videos¹⁰⁵.

Another unmissable place is Green Network of Activist Groups (ZMAG), organization that brings together organic gardeners, practitioners of applicable technologies and eco-

102 Narodne novine (Official Gazette) no. 91/96, 68/98, 137/99, 22/00, 73/00, 129/00, 114/01, 79/06, 141/06, 146/08, 38/09, 153/09, 143/12, 152/14, 81/15, 94/17

103 <https://hrti.hrt.hr/home>

104 <https://www.biovrt.com/kategorija/vrtlarske-edukacije/skola-vrtlarjenja/> 29.3.2023.

105 <https://www.biovrt.com/kategorija/vrtlarske-edukacije/online-edukacije/>

building, permaculture designers, researchers of equitable social models of organization and equal interpersonal relationships, and environmental activists. It is certainly useful to follow announcements in the calendar of events on their web page¹⁰⁶. In December 2022, they organized a two-day free of charge education in Zagreb for young urban gardeners between the age of 15 and 35 on the topics „Urban Permaculture Gardening“ and „Forest Garden in the City“¹⁰⁷. Their offer of educational activities include workshops on ecological gardening in the local community¹⁰⁸. Association ZMAG also organizes Permaculture Design Courses, where one of the topics is „Urban Permaculture and Eco Cities“¹⁰⁹.

Permaculture design courses are also organized by association „Permaculture Dalmacija“, and one of the topics of this course is „Urban permaculture: Techniques for small spaces, buildings and sustainable neighbourhoods“¹¹⁰. It is useful to follow the calendar of events on their website, considering that among the various lectures and other activities they organize, there are also a number of lectures of interest to urban gardeners, such as „Introduction to growing your own food“ or „How to plan and create your own garden“¹¹¹.

Those who are interested in biodynamic gardening should definitely follow the website of “Dr. Rudolf Steiner Center” and inquire about the possibility of organized education or workshops. In 2021, they held a workshop on biodynamic cultivation for the users of urban gardens in Zagreb¹¹².

On the official website of the City of Zagreb, the manual „Vrtlarski priručnik - Projekt „Gradski vrtovi““¹¹³ („Gardening Handbook - Project „City Gardens“) is available for download.

Urban agriculture has also found its place in the academic environment. Urban agriculture is one of the optional subjects of the undergraduate study of Agroecology at the Faculty of Agriculture of the University of Zagreb. In the description of the competences that students acquire, it is stated:

“The subject deals in detail with production in urban gardens (private and city gardens), innovative production systems with space limitations - production on building roofs (green roofs), balcony/terrace cultivation, vertical cultivation, hydroponic and aquaponic cultivation, urban beekeeping and mushroom cultivation; as well as new opportunistic trends in food production - sprouts and microgreens, edible flowers and insects, and alternative poultry farming. (...) The subject is conceived as part of the concept of sustainable management in the urban environment and also deals with the topic of urban ecology - the impact of urban agriculture on the environment, but also the impact of the urban environment on the healthiness of food and waste management. Additionally, regenerative and biodynamic agriculture in the context of the urban ecosphere and contemporary agricultural and recreational activities in the peri-urban area are considered.”¹¹⁴

106 <https://www.zmag.hr/hr/kalendar/>

107 <https://www.zmag.hr/hr/kalendar/edukacija-za-mlade-hrana-i-grad.html> 29.3.2023.

108 <https://www.zmag.hr/hr/edukacija/radionice/radionica-ekoloskog-vrtlarenja.html> 29.3.2023.

109 <https://www.zmag.hr/hr/kalendar/jesenski-tecaj-permakulturnog-dizajniranja.html> 29.3.2023.

110 <https://permakultura-dalmacija.hr/edukacija/> 29.3.2023.

111 <https://permakultura-dalmacija.hr/kalendar-dogadanja/> 29.3.2023.

112 <https://centar-rudolf-steiner.com/2021/07/06/veliki-interes-za-biodinamicki-uzgoj-na-zagrebackim-gradskim-vrtovima/> 29.3.2023.

113 https://www.zagreb.hr/userdocsimages/arhiva/gradski%20vrtovi/Gradski_vrtovi_prirucnik_za_WEB.pdf 29.3.2023.

114 <https://www.agr.unizg.hr/hr/course/hr/1146/Urbana+poljoprivreda> 29.3.2023.



The Faculty of Agriculture of the University of Zagreb, in cooperation with the City of Zagreb, published the university manual “Urbano biovrtlarstvo” („Urban Biogardening“). The manual is available for loan in public libraries.

Non-governmental sector: Examples of good practice and experiences _____

Here described examples of good practice in the formation of urban gardens by civil society organizations and local citizen initiatives were selected in order to present a wider spectrum of self-organization models through several cases.

• Importance and impact of bottom-up pressure in the case of Zagreb _____

In the chapter "Gardens under the direct management of the Cities", it was written that urban gardens in Zagreb have been developing officially since 2013. That qualification is given intentionally. Doing research by using publicly available internet sources, it is not always easy to clearly determine if behind the city administration's decision of establishing the urban gardens, there might be bottom-up pressure by the non-governmental organizations or initiatives. However, the case of Zagreb is well documented regarding this matter. Urban gardens in the neighbourhood Jarun were created in 1987 by the informal initiative of tenants from nearby buildings, i.e. by occupying and appropriating them, and then dividing unused and neglected city land into parcels¹¹⁵. According to Zrnić and Rubić in the article “Urban gardening: Public space and civic engagement in Zagreb” forming of urban gardens was discussed, but disregarded, during the elaboration of the Zagreb Master Plan by Zagreb Urban Planning Bureau, and also that the plans for urban gardens existed already in the 1990s and 2000s¹¹⁶. This article reports that the urban gardens in Zagreb got the public attention only in 2012 when this interest was provoked by the destruction of illegal gardens in housing estate in neighbourhood Travno following the decision of municipal authorities. This situation, explain Zrnić and Rubić, “provoked the inception of the civic initiative Parkticipacija (park + participation) and the nucleus of the initiative consisted of 15 people in their thirties from all over the city, who were highly educated and already involved in various alternative associations”. In the article it's summarized that “during the spring of 2012, Parkticipacija began a public campaign to establish community gardens, organized the signing of a petition for the first community garden in Zagreb”. After ignoring the initiative, the result was that “in the spring of 2013, just as the election campaign for mayor had begun, the mayor of the time, Milan Bandić, presented the “City Gardens” project”.

115 Biti, O., Bergman M. (2014) Urbani vrtovi u Zagrebu – ulaganja i izloženost, inicijative i perspektive. Sociologija i prostor : časopis za istraživanje prostornoga i sociokulturnog razvoja 52(3) p. 265

116 Gulin Zrnić, V., Rubić, T. (2018) City-making through Urban Gardening: Public Space and Civic Engagement in Zagreb, Narodna umjetnost : hrvatski časopis za etnologiju i folkloristiku 55(1) p. 163

Parktipicacija:¹¹⁷ An idea that took root



Figure 23: Parktipicacija's logo (source: Parktipicacija)

Parktipicacija¹¹⁸ is a civic initiative, which later grew into an association, and was involved in the promotion of urban gardening and food growing in the cities and advocated the establishment of a network of community gardens, primarily in Zagreb. Thanks to this initiative and the elaborations created by the work and expertise of Parktipicacija's eco-activists, enthusiasts, permacultural designers and volunteers, the Zagreb city administration launched a network of city gardens in 2013. This network of gardens grew in the meantime and proved to be an extremely popular and useful content for the city, and also a motive for other cities to start similar content. Zagreb's city gardens are most often located on empty city lands that were previously often neglected and unmaintained and that were planned for some future purpose. In parallel with the initiative, Parktipicacija proposed that the category of community garden be included in the General urban planning, that is, that some of these areas in the city be reserved for this purpose or that they be introduced as a possible content in residential zones. Given that they organized a series of campaigns, public events and continuously appeared in the media, they managed to sensitize the public and interest not only citizens but also the city administration in urban agriculture and raise the topic of growing food in the city to a whole new level.

However, the City of Zagreb missed an excellent opportunity for deeper cooperation, participatory planning and co-decision-making through cooperation with the initiative by choosing a model in which the user individually signs a contract for renting a plot of his garden with the City. Despite everything, the City Gardens project is a successful project because the interest in city gardens continues years later, citizens have been given the opportunity to grow their own food and build a local community based on the principles of sustainable development, cooperation, solidarity and mutual respect.

The idea of Parktipicacija, in cooperation with many other initiatives such as "1postozagrad", "Goethe Guerilla Zagreb", "Prostor za vrt initiative", Association for Promotion of Inclusion - Zagreb branch, "Zelena Akcija" ("Green action") and "Slatki kao šećer" ("Sweet as sugar"), was a public advocacy of urban gardens and food growing in urban environments and creating favorable legal frameworks for their establishment, networking interested actors and enabling a platform for citizens who want to get involved in spatial issues in their neighborhoods and the city and thus

¹¹⁷ <https://mail.google.com/mail/u/0/#inbox/KtbxLxGWvNWTsRndZzpngMshRqRpXgWPkg>, the accuracy of all statements is confirmed in the e-mail communication with an activist from Parktipicacija on 29.03.2023.

¹¹⁸ <https://www.facebook.com/ParKtipicacija>



actively participate in designing their environment with a special emphasis on growing food in the urban environment and edible cultures in public spaces. They wanted to start not only an urban garden, but a social garden where users will grow perennials, trees and shrubs in addition to annual plants, as a metaphor for investing attention, energy and patience in the value of something permanent - permanent culture for future generations (C. Bišćević)¹¹⁹.

Parktipacija still formally exists as an association, but in fact it has not been active for years. Namely, after the campaign for urban gardens, food waste and composting, individuals from the initiative/association continue to promote the same topics, but no longer organized as an association. Until recently, members of Parktipacija still maintained a volunteer garden in the Student Center, Vrtuljak SC, which was started by member Andreja Čoh (Zelena Andreja, urban gardener)¹²⁰, but the management removed the garden in 2022.

Initiative for a public orchard in the Jarun neighbourhood

While in 2022 the mayor of Zagreb inaugurated the first common urban orchards in the Podbrežje area, the Initiative for a public orchard in the Jarun neighbourhood has been active for two years. Vesna Janković, a member of the Initiative, spoke about this initiative at the conference "Towards the City of Zagreb's Urban Security Strategy" held at the beginning of 2023 and published her speech at the news portal H-ALTER, whose publisher is the Association for Independent Media Culture, Zagreb:

"Over the past two years we have received the support of local self-government, but we encountered problems in communication with city services (non-transparent procedure, multiple offices involved in the process, misunderstanding of the initiative, lack of legal framework...). One of the biggest problems with what we faced was the unresolved legal status of green areas, i.e. the mismatch between cadastral and land registers. On the more positive side, we aroused great media interest and served as inspiration for civic initiatives in other parts of the city (Staro Brestje, Novi Zagreb, Medveščak...). Although we still did not manage to obtain a permit for the locations we proposed, we expanded our activities to other areas. For example, last summer, in the middle of those terrible droughts, we organized several collective actions of watering and mulching young trees"¹²¹.

Prečko: Self-organised community garden

The citizens of the Prečko¹²² neighbourhood in Zagreb in 2013 formed a common community garden according to permaculture principles on neglected city land. They self-organized in the civic initiative "Eko Ekipa Prečko"¹²³ (Eco Team Prečko) and also in the association Zeleni klik¹²⁴ (Green click). The garden was created by the group

119 <https://vizkultura.hr/intervju-cvijeta-biscevic/?fbclid=IwAR1nOOa94YWHCHnG72se5nlqp7z4j10BCp907UK68TF4AU3J6JaOuLxc0UE>

120 <https://www.facebook.com/zelena.andreja>

121 <https://h-alter.org/planet-zemlja/do-javne-sigurnosti-kroz-javni-vocnjak/> 26.3.2023.

122 Interview with Nikolina Turčinov Dupor is conducted via e-mail 28.03.2023.

123 <https://www.facebook.com/ekoekipa.precko>

124 <https://zeleniklik.hr/o-nama/>

of enthusiasts who primarily wanted to socialize, grow their own food, learn about permaculture, encourage biodiversity and create a community that runs its own garden. At the very beginning, the initiative visited the city administration aiming to achieve cooperation with the City of Zagreb based on the principle of partnership between the association/initiative and the City, where the City would cede neglected and unused land, and the association would coordinate activities in the garden. However, the City of Zagreb was not interested in such cooperation, even though the mayor at the time initiated the “City gardens” project at that same time. Nevertheless, the idea of a community garden in Prečko had been realised, even if without official permission by the City. The garden was created, mostly on city land, of which the City was informed. Part of the garden was given to the association for use by one of the neighbours, without any official contract.

At the very beginning of forming the garden, the association received several small donations in materials, but otherwise all the necessary funds, tools and materials were collected by the gardeners themselves. In the beginning, while the land was still neglected, there were fruit trees that were tried to be preserved. In the last 10 years, a lot of new trees have been planted. In addition, many perennials, herbs, berries, flower beds, bushes are grown as well as the most diverse types of vegetables.



Photo 24: Community garden in Prečko, source: “Eko Ekipa Prečko”

The original design of this community garden was permacultural, given that the initiative Parkticipacija was one of the biggest supporters in establishing the garden, so even today permaculture and organic gardening are mostly practiced. Part of the land is considered a common garden, where various workshops and volunteer gardening actions¹²⁵ are held in cooperation with the association Vestigum, and the users of the workshops are people with disabilities, children from kindergartens, schools or neighbours.

¹²⁵ <https://zeleniklik.hr/vrt-za-sve/>



Strict rules of behaviour in the garden refer only to organic gardening, good neighbourly relations and participation in joint actions in the garden. If someone does not follow these rules or abandons their plot, the plot is allocated to people on the waiting list.

Gardeners also have their own group on Facebook and WhatsApp and distribute tasks among themselves. They agree on who manages the plots, who collects membership fees and the like. Recently, the gardeners together with the association Zeleni klik have been trying to re-establish cooperation with the City in order to protect their garden from the future threatening devastation caused by construction.

- **Green Istria, Pula: From the “bottom up” to inclusive and participatory Community Garden**

Association Zelena Istra (Green Istria¹²⁶) together with its partners, received from the City of Pula the management of the Community Garden in Gregovica for a period of two years. The community garden is part of the Urban gardens and has an area of about 1500 m², and was launched thanks to the engagement of the Group for Urban Gardens of Green Istra¹²⁷, which was created as an initiative of citizens interested in the realization and promotion of urban gardens in Pula and the launch of the first community garden as a place for rest, socializing, growing food and inclusion.

The users of the garden together plan and make decisions about what will be grown in the garden, so there are vegetables, herbs, flowers... while the cultivation and planting of fruit trees and other trees is prohibited. All plants in this garden are grown according to permacultural principles.

After participative and inclusive planning process which resulted in permaculture design, i.e. conceptual solution of the future arrangement of spatial elements of the garden, the plan for 2023 is to ensure the garden accessibility and inclusiveness for people and children with disabilities, i.e. to build access path and install raised garden beds for people with disabilities, as well as to plant a sensory garden for children with disabilities - elements that are necessary to meet the needs of these vulnerable groups, and at the same time good, practical and useful for other users of the Community garden (e.g. elderly people, mothers with children in strollers). Also, volunteer actions and gardening workshops will be held in the Garden, all within the project „Let’s light the spark for inclusion together!“ aimed at attaining a long-term improvement of the quality of life, achieve equality and inclusion of the vulnerable people and enable civic participation in Pula and Vukovar. In cooperation with Association of persons with physical disabilities of southern Istria, Green Istria aims for enriching the garden with an apiary.

The association is obliged to submit a report to the City of Pula on its work for each year.

While in the Community Garden managed by the Association Green Istria, plants are grown according to permacultural principles or at least without any agrochemicals, in the rest of the urban gardens, where plots are managed individually and have been directly allocated to users by the City of Pula, there are no prohibitions regarding the cultivation of plants, but it is recommended that plants be grown ecologically.

The plots of Urban gardens are divided in such a way that each row has its own tool shed, water meter, and composter. The garden has a fence, and all users have keys. The City of Pula provided about 400,000.00 HRK (53.089,12 EUR) from the budget for the implementation of Urban gardens (land clearing, levelling of the land, tool sheds, necessary tools, etc.), and as for the investment in the Community garden managed by the Association Green Istria - the majority on investment was volunteer engagement and donation¹²⁸], while project funds were secured for the activities in 2023¹²⁹

126 <https://www.zelena-istra.hr/en/about-us/>

127 <https://www.zelena-istra.hr/en/articles/none-2/797/community-garden-at-gregovica/>

128 <https://www.zelena-istra.hr/en/articles/none-2/740/project-gardenactivism/>

129 <https://www.zelena-istra.hr/en/articles/none-2/884/lets-light-the-spark-for-inclusion-together/>



Photo 25: the Community garden Gregovica, source: Green Istria

According to Irena Burba¹³⁰, president of the Association Green Istria, the most important about the Community Garden is the following:

“Since May 2021, Green Istria has been managing the Community garden at Gregovica together with Association of Persons with Physical Disabilities of Southern Istria, Pula Gymnasium, School for Training and Education – Pula, Student Association Pula and Autism Association Istria. The garden was awarded to Green Istria after the campaign „Return the garden to the city“ and unique participatory advocacy initiative which involved citizens of Pula and the above-mentioned partners. Within the campaign, they developed a model of Pula urban gardens and Community garden, and advocated for the adoption of the model by the City of Pula. The model was reflected in two corresponding City of Pula’s decisions proposals. In this manner, the City’s decisions were for the first time ever in Pula designed „from the bottom up“! As a result, the City published the call for management and use of the community garden open to civil society organizations, i.e. associations, as well as for applications for garden plots by the individual citizens! Today, the 1.500 m² Community garden at Gregovica serves the purpose which was envisaged for it by the citizens’ initiative and the Green Istria’s Group for urban gardens in early 2020, after the COVID crisis emerged – it’s a place where community members socialize, educate and practice joint organic food cultivation, a place where values of solidarity, cooperation, participatory decision-making, social responsibility and inclusion are highly ranked.

130 E-mail interview on 27.3.2023.

- **Vukovar: A garden to increase employability and self-employment**

This garden is not put in the map of urban gardens in Croatia in this study, as it is not a classic urban gardens project in which plots are allocated to citizens for their private use. This garden was created as part of the „Eco Start“ project¹³¹ and was necessary in order to train people for the production of fruits and vegetables, as well as the production and processing of plants. Udruga žena Vukovar (Vukovar Women Association)¹³² together with their partners received funds for this project from the European Social Fund, through a public tender. The goal was to contribute to increasing the employability and self-employment of vulnerable groups through the implementation of innovative programs in agriculture in the area of Vukovarsko-Srijemska County¹³³. Since the City of Vukovar was partner in this project, they allocated a plot of land that served as garden for the education of 42 people. This garden became a place where the participants of the project acquired knowledge and competence in the ecological cultivation of plants.



Photo 26: Spiral with over 150 aromatic plants, at garden in Vukovar (source: Vukovar Women Association)

Although this project was successfully brought to an end in 2020, in this garden educational and creative workshops are still being organized, and a special emphasis is placed on education and cooperation with local kindergartens and schools so that children can come into contact with some types of plants for the first time. Garden also became a place for the seed exchange and similar activities and socializing. Thanks to another ongoing project¹³⁴ aiming to inclusion of children with developmental disabilities and their parents, the garden will be equipped with access road for people with movement difficulties and raised garden beds as well as with elements of a sensory garden.

131 <https://ekostartvukovar.com/o-projektu/> 20.3.2023.

132 <https://udzvu.org/>

133 <https://ekostartvukovar.com/o-projektu/>

134 <https://www.zelena-istra.hr/hr/projekti/zavrtimo-za-inkluziju-zajedno/>



- **Breza gardens, Zagreb: A private initiative**

Breza gardens¹³⁵ in Brezovica, city district in Zagreb, sprung up when two sisters inherited a lot of land too large for them to farm alone. So that the land would not remain neglected and uncultivated, they decided to divide it into plots of 50 and 100 m² for renting to the interested fellow citizens, so that they could grow their own fruits and vegetables and spend time in nature. The plots are rented for the period of one year with the possibility of extending the contract. The landscaping of the gardens, which includes the installation of fences, the purchase of water tanks, various tools, gazebos, straw and fertilizers, is financed by the owners of the land while the users buy their own seeds, seedlings and other planting material.



Photo 27: Entrance at the Breza gardens, source: Vrtovi Breza

The users of the garden strive for a permacultural and organic method of gardening, and a common composter is also available to them. They mainly plant vegetables and some strawberries, raspberries, melons and watermelons. Fruit trees such as cherries, apricots, blueberries, raspberries and blackberries were planted in the gardens in cooperation with the Vestigium Association and are intended for shared use. Breza Gardens¹³⁶ and its gardeners cooperate a lot with the Vestigium Association and the Zelenica Association, especially through permaculture workshops, workshops on identifying wild edible plants, composting workshops and similar. Users gathered around these gardens in Brezovica chose this principle of urban gardening primarily because they want to eat healthy, spend time in nature with their families, socialize and be in harmony with nature. Many of them say that working in the garden relaxes them and relieves stress, and they are especially glad that their children are outdoors and in nature from an early age.

¹³⁵ Interview conducted with Martina Puljanić Lukšić via email, 23.03.2023.

¹³⁶ <https://www.facebook.com/profile.php?id=100076294184309>

2.3 Bulgaria

Urban agriculture has been an essential element of Bulgarian life for centuries. It is typical for all cities, including Sofia. In all villages, near cities and in central parts of the cities, private gardens and backyards produced food, which was also processed at home. Unlike other countries, private ownership of small plots of land both in rural and urban areas was never abolished. However, since 1990 land use is in a state of transition. The periurban villages next to big cities are no longer areas of agricultural production, as they were strongly urbanised during the past years. Within the cities, agricultural land has been turned into housing complexes, which were constructed on fertile agricultural land. The urban sprawl competes directly with land available for agriculture. Part of the loss of agricultural land can be attributed to the owners, who received their property back after the transition from a centrally-planned to a market-oriented economy. Most of them tried to realise a maximum profit from their land and requested changes in the land-use allocation from farmland towards residential zoning. Such a change in designation increases the potential economic value of the land but reduces the land availability in the city area. (Yoveva A. et al., 1999)

While from a European perspective, urban agriculture can be seen not only as a source of fresh food but also as a mechanism for social integration, economic development, and environmental sustainability implemented in many forms such as community and educational gardens, vertical and rooftop farms, in Bulgaria such practices are still rare and the traditional forms of urban agriculture dominate. These include:

- **micro-farming for personal/family use near the house of residence (family gardens).** They are usually small plots of land in the backyards of households or near the city where people produce vegetables and fruit. Almost invariably the food produced in this way is not enough to provide for all the nutritional needs of a family, so many people regard this activity purely as a leisure and recreational farming activity to combat stress, as it does not provide any monetary income. For many city-dwellers these urban agriculture practices are perceived as such an integral part of life that it is not regarded as “agriculture”, since it is not an entrepreneurial undertaking. People share the opinion that they like to feel connected to nature, in addition to enjoying the personal satisfaction of having produced fresh, clean and healthy food themselves.
- **local food farms and entrepreneurial models of urban agriculture** in compliance with the EU regulations have started appearing on the periphery of the municipality to utilize their proximity to the city and direct their production to the urban market. Their aim is to address the consumer demand for the higher price segment of ecological and organic produce. In recent years, the niche markets and consumer expectations for local, seasonal food produced in a sustainable way have been evolving, which is a push factor for peri-urban farm development and local food supply. These are mainly small family farms that create and maintain their own consumer network which they supply directly and on a regular basis, through a mailing list including consumer cooperatives and markets. Several farmers’ markets have been established with the local municipalities blessing but



not in a legal normative frame because the concepts of farmers' markets and urban agriculture are still not integrated in the current normative framework for urban development or urban planning.

- newer and rare models of urban agriculture practices in Bulgaria are based on **collective actions** such as community and educational gardens. Participants consider joint gardening activities as helpful in building communities by establishing personal contacts, deepening the feeling of trust between individuals, creating close personal connections and an atmosphere of solidarity that lead to social action in other spheres outside urban agriculture. There people meet and cultivate vegetables and herbs in a collaborative way, learning together and sharing their experience, knowledge and tools. Because of lack of any official policy support, engaged local communities face permanent uncertainty about whether they will be removed from the plot. For them, it is important to share what they produce, but most important of all is the connection with the land, social networking and the feeling that they are in charge of the public space. Community garden development is inspired by new, post-material concerns about health, quality of food and the environment. There are also new actors in these developments – young, educated and well-off citizens who are boosting the demand for clean food and responsible consumption models and lifestyles.
- **small educational gardens** based on NGO projects have been initiated at some kindergartens and school yards. These projects focus on opportunities for children to have daily, fulfilling and educational contact with live nature when they are personally involved in vegetable gardening at their kindergarten or school. There, children can learn, work, observe, create and study the principles of nature and how to cooperate with others. (Draganova M., Pickard, D., 2022)

Capacity

In Bulgaria, urban agriculture has a history and potential for development. However, the lack of sustainable support from municipal and state authorities and targeted funding are major challenges for shared urban gardens in large cities. Urban agriculture is currently active in various parts of Bulgaria, but is strongly hindered by the lack of access to municipal properties.

A survey carried out under the project “Urban agriculture as a strategy for improving the quality of life of urban communities” tested the attitudes of 747 citizens of Sofia towards urban agriculture activities in the capital. It showed that:

- First, in Sofia and its suburban areas there is a real diversity of urban agriculture practices, but they are not identified as an important factor for sustainable development of the urban environment in any municipal strategy or program for the development of Sofia. Currently, the strategic visions and local policies in Sofia do not include urban agriculture as a means of improving the quality of life of urban communities.

- Second, the legal framework regulating land relations, land use and agricultural activities in urban areas is not adapted to the spatial and agronomic characteristics enabling successful urban agriculture practices and thus the socio-economic and environmental potential of urban agriculture is not being used.
- Third, on the example of the city of Sofia, urban agriculture offers a long-term business niche for the local economy and could be useful for solving social and environmental problems of the city.

The educational effect of urban agriculture is seen as one of its most important functions by all surveyed categories of respondents. The educational effect on children and adolescents in particular is seen as the most valuable contribution to society that urban agriculture creates. It is generally accepted that if young people knew more about food (where it comes from, production methods, varieties and breeds, pests and diseases, methods of preparation, etc.), they would develop more responsible consumption patterns and pro- environmental behaviour and would make healthier choices in their diet.

To support the development of urban agriculture in the capital, a special digital map has been developed by the municipal enterprise Sofiaplan (formerly Sofproekt) on the idea of the Initiative for the Development of Urban Agriculture in Sofia and association „Gorichka“. (<https://gis.sofiaplan.bg:3344/webappbuilder/apps/5/>). It is in a continuous development process, and the information in it is constantly being upgraded. The ambition is that in the future the map will cover all types of urban agriculture, with which to support the communication between the various stakeholders.

The Bulgarian team participating in the project „Urban agriculture as a strategy for improving the quality of life of urban communities“ points out their observations of what are the most serious obstacles to the development of urban agriculture in Bulgaria and what difficulties are faced by people who have adopted this cause for them:

- shared agricultural gardens are the result of personal and non-commercial initiatives, and accordingly it is difficult to secure funds for their quality development and maintenance;
- there is a lack of serious interest and support from municipal and local authorities towards urban agriculture;
- despite the initiatives of civil organizations, the use of municipal lands for the purposes of urban agriculture has not yet been regulated.

Legal framework

There is no clear legal framework regarding urban agriculture in Bulgaria. In principle, there are no restrictions, both in national legislation and in the regulatory framework, that prevent it from happening. At the same time, by law, even if someone has planted something, he/she has no right to harvest the produce. A negative example is the Municipality of Varna, which banned the cultivation of vegetables on municipal land in



the neighborhoods in the new Ordinance on Public Order, adopted in 2022.

There is a strong need for political support to recognize the potential of urban agriculture practices and provide a binding regulatory framework that regulates the use of public spaces for these practices. If urban agriculture aims to provide greater benefits to urban communities (including disadvantaged groups), this cannot happen without the vision and long-term strategies of the municipalities and public institutions. Although activists are pushing for rules and specific local legislation, municipal authorities argue that there is no need for such policies and accept that their stated support is sufficient. So far, however, municipal political support has been based on impulsive enthusiasm and „wishful thinking“ rather than regulation through mandatory rules and regulations. Therefore, there is a lack of certainty for gardens, farmers' markets, etc., but many of our respondents think that this is a normal part of the political acceptance of new ideas, which is always slow and takes time and a lot of effort. (Project “Urban agriculture as a strategy for improving the quality of life of urban communities”)

The Long-Term Strategy for the Development of Sofia and the Suburban Territories until 2050, adopted in 2020, envisages the preparation of a municipal program and an action plan for the development of urban agriculture on the territory of Sofia Municipality, as well as the analysis and updating of relevant municipal normative documents with a view to the inclusion of urban agriculture in the social policy for the integration of various vulnerable groups, as well as investing in the production of ecologically clean food, including from urban agriculture, the production of which has a low carbon footprint due to the low supply chain. The Municipality of Sofia has set itself a deadline of 2026 to carry out the following activities related to the stimulation of urban agriculture in its territory, including:

- To include „urban agriculture“ in the legal framework and to update the legislative framework regarding the production and consumption of produce from urban gardens;
- To build a mechanism for facilitating, supporting and stimulating public initiatives related to urban agriculture (supporting access to water, if necessary, facilitating access to land, etc.);
- To create financial mechanisms for financing infrastructure necessary for the activities of urban agriculture, when it is part of the strategies and programs of the Municipality of Sofia in various directions - education, social activities, waste management; sports and youth activities; and
- To stimulate an active dialogue with civil organizations, groups and active citizens.

Specific Acts and Regulations (Asenov, A., Iliev, I., 2020)_____

Local Self-Government and Local Administration Act - regulates the basic rights and obligations, as well as the key interactions between the bodies of local self-government and local administration, as well as their relations with the competent state authorities.

Ownership and Use of Agricultural Lands Act - regulates public relations related to the restitution of agricultural lands, as well as their use, in view of their purpose.

Municipal Property Act – regulates the acquisition, management and disposal of municipal real estate and property.

Protection of Agricultural Property Act - regulates the protection of agricultural property from damage, destruction, theft and misappropriation, as well as the order of compensation.

Protection of Agricultural Lands Act - regulates the protection from damage, restoration and improvement of the fertility of agricultural lands and determines the conditions and procedure for changing their purpose.

State Aid Act - defines the terms and conditions for the provision of state aid and minimum aid.

Regulations for the implementation of the Ownership and Use of Agricultural Lands Act - details and regulates separate procedures provided for in the act.

Regulations for the implementation of the Municipal Property Act - details and regulates individual procedures provided for in the act.

Regulations for the implementation of the Protection of Agricultural Property Act - details and regulates separate procedures provided for in the act.

Ordinances of the municipal council are an opportunity for an extremely diverse group of acts, but is also possible for separate decisions of the municipal council.

A separate group consists of **general and individual administrative acts** issued mainly by the administration, which do not have a normative character, but regulate individual specific legal relationships that may be relevant for the matter under consideration.

Advisory services and scientific institutions

Scientific work in the field of urban agriculture in Bulgaria is mainly carried out on a project basis. The Institute of the study of societies and knowledge at the Bulgarian Academy of Sciences is extremely active. Together with experts in economics, ecology and landscape architecture and urban studies, they implemented a project “Urban agriculture as a strategy for improving the quality of life of urban communities” which was funded by the National Science Fund.

The University of Forestry is also working on the topic through the project „Enhancing practical skills of horticulture specialists to better address the demands of the European Green Deal“ (Hort4EUgreen) No. 2020-1-RO01-KA203-080398, financed by the „ERASMUS+“ program.

The university also has a Training and Experimental Field Centre. It is located on an area of 355 614 m² in the Sofia Plain near the quarter of Vrazhdebna. The terrain is plain, covered mainly by grass vegetation. The soil is alluvial-meadow, slightly heavy soil.

In relation to the weather conditions, the Vrazhdebna Training and Experimental Field Center of the University of Forestry is located in a moderate continental climatic subzone.



The average annual temperature is about 8,7°C. The Centre is not suitable for growing warm loving crops. The coldest months of the year in this region are December, January and February, with average temperature of 1,8°C and the day temperatures might be below minus 20°C. The hottest months are July and August.

The average annual precipitation is 650 mm; the precipitation during the growing season is 380 mm. The months with the lowest precipitation are December, January, February and March, and with the highest precipitation – May, June and July.

Underground irrigation system with its own water supplies has been built and has been functioning in the Field Centre.

The Centre has its own agricultural machinery, consisting of various tractor-driven agricultural machines for land tilling.

The Vrazhdebna Training and Experimental Field Centre serves as a basis for carrying out training, scientific research and agricultural activities. The training of students from the Faculty of Agronomy and Faculty of Veterinary Medicine – in the preclinical and clinical courses is held in real conditions.

The students from the Faculty of Agronomy have practical courses in the following fields: Viticulture, Fruit-growing, Vegetable-growing, Plant-growing, General Agriculture, Irrigation, Agrochemistry, Entomology and Phytopathology. There is also a lecture hall where the theoretical conclusions of the practical training are held.

The Training and Experimental Field Centre includes a demonstrative orchard – 5000 m², consisting of 10 fruit tree species of 58 varieties (pome fruit species – apple trees (16), pear trees (8), quince trees (3), medlar trees (2); stone fruit species – nectarine trees (7), peach trees (6), plum trees (6), cherry trees (3), sour cherry trees (3)).

There is a vine plantation, established on an area of 7170 m² of which 2600 m² is a vine collection of 57 varieties (38 wine grape varieties and sorts, 29 grape varieties and sorts and 11 root-stocks varieties). Wine grape varieties, imported from France, are planted on the rest 4500 m² for the future production of wine.

The Training and Experimental Field Centre has 5 polyethylene greenhouses where different vegetable crops are grown. They serve as a basis for scientific research and practical training of students. The polyethylene greenhouses also serve for testing of new Bulgarian or introduced varieties.

The Training and Experimental Field Centre has also an arable land of 262 900 m² where different field and vegetable crops are grown. Scientific and research work and training of students are also carried out.

Traditional vegetable crops, such as cabbage, leek, tomatoes, carrots, courgettes and other species, as well as non-traditional species – broccoli, white squash, Jerusalem artichoke, etc. are grown.

The scientific work, carried out on the territory of the Vrazhdebna Training and Experimental Field Centre is aimed at studying the different stages of the technologies for production of vegetable and field crops. New herbicides are being tested, new fertilization systems are being studied, non-traditional crops, such as broccoli, are being cultivated, methods for keeping the soil moisture and suppressing the weed development are being tested (such as mulching, contemporary agrotechnical systems in fruit-growing, viticulture, etc.). An experiment for testing of different energy crops has also been implemented.

A dendrarium with flowers and ornamental plants has been established on an area of 16 900 m².

A decorative nursery has also been established on an area of 4000 m².

An own cattle farm, where different animal species (cows, sows, poultry, sheep, goats, etc.) are bred, has been established. It serves as a basis for practical training of the students in Veterinary Medicine, as well as for scientific and research work of the lecturers and PhD students. For this purpose, the Training and Experimental Forest Centre has farm premises for cows, heifers and pigs. Cattle-sheds for calves, sheep and goat pens, as well as a shed with poultry voliers have been separately built.

For the animal pasture the Training and Experimental Filed Centre has 28000 m² of meadows. On a part of the arable area fodder crops are grown. Lecture halls of surgery and obstetrics and internal diseases have been equipped. (University of Forestry)

The Agricultural University of Plovdiv also owns training and experimental fields. The research activities are realized on the training and-experimental fields, spreading on 1 850 000 m² around the city of Plovdiv and the village of Brestnik. It maintains on a high agrotechnical level more than 1500 biological units, including 40 apple, 10 peach, 25 sweet cherry, 20 pear, 20 plum and prunes, 9 quince cultivars, lavender, peppermint, maize, barley, sunflower, etc. with possibilities of producing seed and planting material. A big range of subtropical and tropical bushes and tree species are grown, including lemons, oranges, kiwi, etc., offering for sale planting material with the appropriate technology for their adaptation under the conditions of Bulgarian agriculture.

A collection vineyard has been established with over 600 cultivars of table and wine grape cultivars.

The modern experimental and research wine cellar is located on the experimental site in the village of Brestnik. It is the only winery in Bulgaria, designed and constructed for small-scale wine production for scientific and experimental purposes. The winery meets all the modern requirements for grape processing and wine production.

For the development of animal breeding, different animal races are bred for the needs of student training and for reproduction. The good animal welfare of the local sheep and cattle races is quite valuable for practice. (Agricultural University - Plovdiv)

The initiatives for the development of urban agriculture in Bulgaria are led by a community of people who want to contribute with joint efforts to the creation of a network of community gardens for urban agriculture, where people can grow clean fruits and vegetables for personal consumption, help each other, learn from each other by applying agricultural practices that protect and restore the environment. At the moments there aren't any advisory services offered.

Non-governmental sector

The non-governmental sector has a huge role to play in promoting urban farming practices and unleashing the potential of urban gardens in Bulgaria. The participation and commitment of all interested parties - citizens, municipalities and non-governmental organizations - is seen as a key element for sustainable urban agriculture initiatives. On the one hand, top-down policies cannot work without citizen engagement, and on



the other hand, bottom-up initiatives are too uncertain if they are not supported by official policies. The non-governmental sector is considered a necessary intermediary, providing know-how and networking for producers who lack easy access to markets and in-depth knowledge of agro-ecological production methods. (Project “Urban agriculture as a strategy for improving the quality of life of urban communities”)

Urban agriculture has been experiencing a boom in Sofia and in major Bulgarian cities for the last 4-5 years, bringing together non-governmental organizations and citizens mainly through social media or by neighbourhood. However, it remains outside the focus of the state and relies on local communities and private funding.

Examples of good practices

Nikola Bonchev, Founder of “Garden for Druzba”: Anyone who wants to follow the rules can join



Photo 28: Nikola Bonchev, Founder of “Garden for Druzba” (Source: Ilchev 2023)

How long have you been involved in urban gardening?

I came back from abroad and wanted to join a community garden, but there were none. Therefore, I decided to start one. I first began in my yard where I gained knowledge. Then in 2012 I started with community gardens at municipal places. The first was in Nadezhda District of Sofia Municipality, which was removed by the municipality after only 1 season, because of other plans for the area. I recently passed by and 11 years later the place is still empty. In 2013, I transferred to a neighboring place which was unfortunately looted and destroyed.

In 2014, we developed several sample microgardens (small spaces with 2-3 roots of spices) throughout the center of Sofia, with the assistance of “Hrankop”. People really liked them and said they would try to take care of them, and they still do. In 2015, the “Garden for Druzba” was started, when “Hrankop” with the assistance of Municipal Enterprise “Pazari Jug” got the land and we started to develop the garden.

What area does it cover?

When we started, it was 150 m² and at the moment it is 4500 m². There are 56 gardens and over 100 people who cultivate them. Next year we celebrate 10 years, which makes us one of the oldest gardens even in Europe.

Are all gardens of the same size?

No, everyone decides for himself/herself what area he/she wants to cultivate, taking into account his/her capabilities and the time he/she can devote. Another problem is that not all of the garden can be cultivated. There are places where raised beds need to be built because inert soil or gravel has been accumulated.

Is there a restriction to what can be planted?

No, the only restriction is „ask the neighbor if you can use a certain pesticide“. We have a huge area planted with bushy plants (raspberries, currants, etc.). The fruit trees are on the fence. We also had 40 hives with bees, but only 20 remained. The reason is that Municipal Enterprise “Pazari Jug” took part of the territory and leased the field. The rest of the beehives were moved to the garden in German. It is important to know that the honey produced is wonderful, because in Sofia it is not sprayed with pesticides, herbicides, etc. There are even beehives on the roof of the Hilton Hotel.

What is the main ideology behind starting an urban garden?

The underlying philosophy is not to start gardens, but to create societies. I think we’re pretty successful at that because we have many followers. We are decentralized. You come to us, learn, get resources if you need them (tools, seeds, etc.), use them in your garden, and then return the tools. The seeds remain for you and you must propagate them. The whole idea was to create an ecosystem that works together. This includes the “Seed Festival”, “Shared Garden 1”, “Food Not War”, which cooks for disadvantaged people, “Hrankop “- producers who cannot sell their produce donate it to “Food Not War” and they in turn keep the seeds.



Can anyone join?

Yes, as long as he/she follows the established rules. One of the main rules of the “Garden for Druzba” is to help your friend. You won’t weed his/her garden, but you will provide knowledge, tools, or whatever else is needed. We help each other regardless of the different views on life that everyone has.

What is the profile of the members?

Very different. Representatives of radical left and right wings have participated and worked together. This proves that urban gardening brings people together and does not divide them. I have a feeling that this is exactly what politicians are afraid of. It is a public place where everyone can come to participate and help each other.

What is your relationship with the other gardens?

We all communicate with each other and know what is happening in other gardens. For example, if someone wants to have an own space, but we don’t have one, we send him/her to another garden where there is one.

Where do you get your funding from?

We finance absolutely everything ourselves. Everyone pays a voluntary contribution which is symbolic (1 BGN per m² per year). Money is used to buy tools or anything else that is needed. We are not a legal entity and have never received money from donors. We receive donations and volunteers also come to help us.

What problems are you facing?

The main problems are with the municipality. For 10 years there is absolutely no movement from it. We have repeatedly sent proposals for the transformation of part of the territory of Municipal Enterprise “Pazari Jug” into a hub for urban gardening, which can also be used by educational institutions for training purposes. However, the municipality preferred to pave it with asphalt and make it a parking lot to give to a concession. Overall, policy changes are needed, but local government structures are shifting responsibility from one to another. In general, everything good about urban gardening is in spite of the system, not because of it.



Photo 29: "Garden for Druzba" (Source: Ilchev 2023)



„Food Not War“, Sofia (Portal for Culture, Art and Society)

„Food Not War“ is a self-organized initiative to prepare and share hot food and provide clothes and shoes to those in need. The movement is a local branch of the international eco-social justice organization “Food Not Bombs”, which has offices around the world. In Sofia, the members of the movement together with the people at risk maintain a community kitchen, a city garden, a solidarity bath, have mutual aid groups and work together.

The motto of the movement is „Solidarity, not charity“. And the goal is for people at risk not to receive their food ready, but to be involved in growing and preparing it, to become members of society again, to have rights, but also responsibilities. It’s about empowering people. Since 1989, there were several waves of self-organized branches of “Food Not Bombs”, but in this team people have been working since 2016. The main core is a dozen people who volunteer, but around them there are hundreds of others who get involved when they have the opportunity.

This model of preparing and sharing food together with homeless people has existed in Sofia for six years. Now every week between 50 and 60 people rely on the solidarity kitchen in the „Levski V“ district. In winter, their number increases. But before getting there, over the years the volunteers have faced various problems – the police chased them because they were not allowed to distribute food without permission from multiple institutions; they rented room after room, but always someone was unhappy with the gathering of homeless people or their rent was raised to unbearable levels and they had to move; experienced robberies.

For a year and a half, the Solidarity Club has been located in the „Levski V“ district of the capital. The house they rented is old and in need of repair. It has already been repaired several times with the help of volunteers, but there is still work to be done. The place is far from the center of Sofia, but it turns out that it has one big advantage - it has a yard that gradually turns into a garden. And in this garden, volunteers and people at risk work together to cultivate the land and grow vegetables.

All activities are carried out by volunteers and those in need. There are no programs and subsidies to support their activities. Activists and people at risk work together in the garden and use the produce from it, vegetables donated from markets, as well as fruits and herbs picked in the inter-block spaces or outside the city, to prepare food together. They buy the rest of the products they need with their own funds. Donors also come more and more often - people who have heard about the Solidarity Club and bring products or packaging, those much-needed empty jars in which hot food is distributed. Some of the donors bring the fruits they have grown themselves, others buy from the store, for example, lentils and rice. In recent years, thanks to the volunteering platform TimeHeroes, people attracted to the cause have come more and more often - some of them decide to get involved more regularly, or whole teams of corporate employees come to work in the form the solidarity garden or kitchen as a way of team building.

However, there are some things that are unchangeable - the monthly rent and utilities continue to be paid by voluntary instalments until the current owners of the occupied property decide to follow through on their plan to build an apartment building there.

Then the Solidarity Club will have to look for a home again. This scenario has been repeated many times during these six years, and until now the attempts to obtain free use of the premises by a state or municipal structure, or by a non-governmental organization have been unsuccessful.

Activists from „Food Not War“ say that their initiative is informal and not registered as an NGO. However, they want to remain as unencumbered with bureaucracy as possible and to self-organize horizontally. The basic principle in the Solidarity Club is that there is no hierarchy – all decisions are made together. The volunteers go to work and take care of their families and therefore prefer to spend their limited free time in solidarity actions and direct interaction instead of writing projects and submitting reports to institutions. People do what they find most important - fight against inequalities from the lowest level, make decisions about their activities directly democratically, transparently and accountable to the members of the Solidarity Club, building a sustainable community.

People come here not only to get food, but to be an active part of the solidarity community and that is more important. Because an inclusive approach is a way for these people to regain control over their lives – to know that something depends on them and their efforts. It helps people at risk not to be completely rejected by society, but to maintain their dignity and stand on an equal footing with others.

Therefore, even before sharing the food, people join the weekly meeting where they discuss various topics – once during the discussions it is said that only vegan food is cooked in the solidarity kitchen because of solidarity with both people in need and animals. Other times, the topic is how to get new IDs and solve health problems for the uninsured. Sometimes they are talking about the war in Ukraine. Often the discussions drag on even after lunch.

The idea of these community meetings is for people to get useful information that they have difficulty accessing, to search together for solutions to problems of common importance that no one else helps or asks them about, and to offer mutual support.

For the sixth year now, „Food Not War“ has been working on the territory of Sofia, but it seems that the Sofia municipality does not have a constructive attitude towards what is happening. Neither the Ministry of Labor and Social Policy nor any other government institution. Of course, one of the reasons for this is that the civil initiative is not registered as a non-governmental organization. People claim to be aware of the possible advantages of this, but also ask the logical question - do we gain more or lose more from being tied to institutions? They ask the same question about the religious authorities who refused to cooperate with them.

The whole organization, collecting food from different parts of Sofia, preparing a hot lunch, coming to the garden is very complicated in terms of logistics both for the volunteers and for the people in need. It would be much easier to have similar clubs in every neighborhood of Sofia, where there are community centers, for example, and to distribute food there to those in need.“



Photo30: „FoodNotWar“

(Source: <https://kultura.bg/web/%D1%83%D1%80%D0%BE%D1%86%D0%B8%D1%82%D0%B5-%D0%BD%D0%B0-%D1%81%D0%BE%D0%BB%D0%B8%D0%B4%D0%B0%D1%80%D0%BD%D0%B8%D1%8F-%D0%BA%D0%BB%D1%83%D0%B1/>)

The “Miraculous Garden”, Dobrich (Bulgarian farmer)

Since 2017, a social farm exists in Dobrich, where with a lot of hard work and joint efforts, people

with intellectual or physical disabilities grow and sell a crop of flowers and vegetables. The project is called the „Miraculous Garden“ - symbolic of the fact that the harvest is born with work, support and charity. It started with only 3500 m². In 2021 it received a long-awaited and desired gift from the city council in Dobrich- more 14000 m². However, that did not happen easily. Initially, the city council of Dobrich refused to provide the land to the social enterprise. After public pressure, the councillors in Dobrich allowed the expansion of the „Miraculous Garden“. The local parliamentarians, who voted „against“ at their previous meeting, were offended that their refusal was not „welcomed“ by the citizens.

Maria Metodieva and Dr. Hasan Efraimov, managers and founders of the „Miraculous Garden“, say that their decision to engage young people with intellectual disabilities in a garden comes because of the wide variety of activities that can be realized in it. In the garden they have opportunities to acquire many different skills. A big advantage is that the cultivated areas are located close to the Sheltered Housing and the Day Center where they use social services. From the very beginning, 22 people with disabilities work in. For most of them, this is their first job, before which they did not have a chance to develop any specific skills.

The garden works all year round. During the winter months, the areas are prepared, and the seedlings are planted for the vegetables, which the workers in the garden sow themselves - early cabbage, tomatoes, cucumbers, pepper, eggplant, zucchini. The most intensive work is in the spring and summer, when the flowers and vegetables are gradually planted and cared for.



Photo 31: "Miraculous Garden" (Source: <https://garden-710.business.site/>)

Municipal Garden, Troyan (Troyan Express)

In the municipality of Troyan, the municipal greenhouse and orchard, which are cultivated by volunteers, provide healthy, locally grown food. The products are delivered to local kindergartens and homes for the elderly. For three years, the Municipality created a greenhouse complex on unusable municipal property - a former school. In addition to greenhouses, it also has an apiary.

According to Maya Genkova, who is an agronomist and takes care of the greenhouse, the current yield for 2022 is from onions, salads, cucumbers, tomatoes, potatoes, pepper and zucchini. The entire amount is directed to the children's facilities in the municipality and to the users of home social patronage. About 50 kilograms of honey were obtained from the five bee families from the apiary, which was examined by a certified laboratory and has a quality certificate. The Municipality reminds that in the area of Troyansko Pole, it has planted two orchards of apples and plums, which also produce a good harvest, and their maintenance is done entirely voluntarily by employees of the municipal administration.



Photo 32: Municipal Garden, Troyan (Source: <https://troyanexpress.com/>)

Humana's Urban Farming Project, Varna (Humana Bulgaria)

Many people know Humana as second-hand clothing stores. Most of them do not know that behind these clothing stores is the idea of developing and financing environmental protection projects.

That is why one of the main sources of funding comes from collecting, sorting and selling second-hand clothes and shoes. By reusing textiles, Humana supports projects and promotes environmental protection by fulfilling its commitment to the three important „R's“ of environmental programs:

- Reduce: Reducing the volume of clothing;
- Reuse: Using the clothes repeatedly;
- Recycle: Recycling clothes that are in poor condition so they can be transformed into other products;

With the funding generated by the clothing, Humana funds international cooperation projects in areas such as education, health, social integration, agriculture, rural development and community development.

Why an urban farming project?

- Through ecological agriculture, we strive to involve people in the cause of limiting global warming through ecological practices;
- To restore the urban environment;
- To create strong connections between people;
- To promote sustainable and ecological agriculture;

We believe that every person should be socially responsible and active in their actions to protect the environment.

How do we do it?

- We find 2000 m² cultivated area;
- We interview activists willing to join the program;
- We carry out theoretical and practical training;
- We select 15 activists;
- We provide each activist with 28.8 sq.m. cultivated area for the production of products for own consumption;
- We conduct 22 workshops;
- We create an independent and sustainable team;
- Duration of the program 2 years;



Photo 33: Humana's Urban Farming Project (Source: <https://www.facebook.com/3CVarna/>)



My Nature in 5 m². The Great Gardening Opportunities of the Small Balcony (Botanika.bg)

In this new online series of 11 episodes, Boryana from Botanika will show you how you can have a harvest on your balcony 365 days a year in just 6 pots! You don't need a lot of space, just a lot of desire, and she will guide you on the path to urban gardening.

Step by step and month by month you will find out when and what vegetables you can grow so that you have a constant harvest, how to care for them and protect them in all seasons.

The series is available at: https://www.youtube.com/playlist?list=PLdh5JyefiWWwHd5_vUcv-DUeYYPAN6jRE

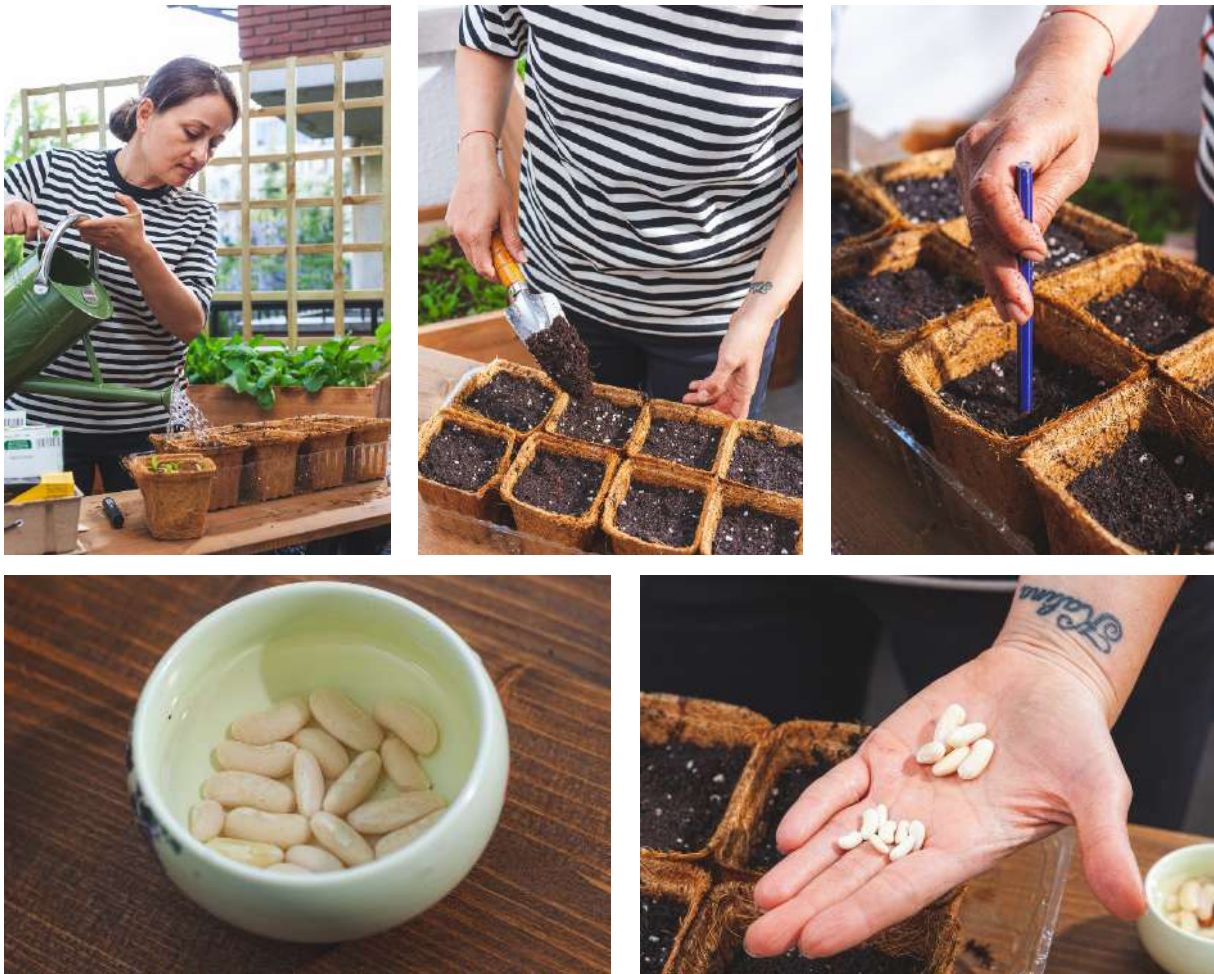


Photo 34: My Nature in 5 m². The Great Gardening Opportunities of the Small Balcony (Source: Botanika.bg)

The Bee as a Pet

Metropolitan rooftops and terraces are being turned into apiaries to keep bees as pets. Thus, on the roof of a residential building in a modern capital district, Petar Petrov, who is an engineer by education, began to raise small bees. He admits it's not a legacy, but rather a curiosity.

„Like all people, I was afraid of bees, but I decided to overcome it and see if I could produce honey, or rather collect it,“ Petrov told. Initially, the young engineer began to take care of an apiary located near Sofia. However, his hobby eventually transformed him and the apiary ends up on his terrace.

„My neighbors didn't even realize that I had a beehive on the terrace, until this swarm came, and there was a big cloud of bees,“ admits Petrov. In fact, swarming is the natural reproduction of bees during the period of May-June, and then they are calmest and do not sting, so they are not dangerous for humans. „A huge cloud of bees is formed, which leaves the hive and is looking for a new home. This is a little stressful for people who are not familiar. There is no reason to stress, unless a person is allergic,“ said Petrov. He added that a bee would never go to a man just to sting him. (Profit.bg)

„We make beekeeping easy through Top Bar hives,“ explained Trifon Mihailov, one of the founders of the “I Have a Bee” foundation. They are horizontal unlike conventional ones which are vertical. The hive does not need to be opened to be serviced, there is a window through which the development of the bee family is observed. They are very suitable for amateur beekeepers, although few are considered such in our country, everyone - even with 1 hive, is considered a professional, says Mihailov.

In amateur urban beekeeping, honey production is not the main goal. „The idea is that you just you give housing of the bees and you raise them as pets“, explains Mihailov. And he gives the example that it is the same way as having a dog or a cat that you do not keep in order to get meat or milk from them.

However, honey can also be obtained from urban beekeeping. In general, in our country, an average of 25 kg is removed from a hive in an apiary. Thus, for urban bees, in order to have enough honey left for them as well, it is good to take not more than 10-15 kg. If this quantity is observed, the bees do not even understand, because the last and furthest comb is always removed.

Wax bases are not used with the Top Bar system in urban conditions. The bees build everything themselves.

Urban bees should be „examined“ at least once a year by a veterinarian or a professional to assess whether they are developing well. Otherwise, the hive itself is made to have a mesh bottom. The mites fall through it and cannot stay inside and attack the bees. The hive is placed on a stand at a height of 0.5-1 m from the ground.

Sofia and most cities in Bulgaria are suitable for beekeeping according to the foundation. Almost everywhere there is a park nearby. For example, clover, which is widespread in parks, is one of the most honey-bearing plants. There are also hives in the capital on the roofs of the Hilton Hotel and the French Embassy. (24 chasa)



Photo 35: The Bee as a Pet (Source: <https://www.24chasa.bg/biznes/article/5730804>)

2.4. North Macedonia

Urban and peri-urban agriculture is a growing trend worldwide and consequently North Macedonia is not an exception. Consequently, urban agriculture seems to be slowly gaining popularity as a possible alternative approach to traditional agriculture. Unfortunately, one of the reasons behind this tendency may well be the desperate state of small-scale traditional subsistence farming and conventional large-scale agriculture in rural areas of the country. With a dwindling and predominantly senior farmer population, devastatingly low purchase prices for local agricultural produce in bulk quantities, and dependence on imported and expensive agricultural input resources, the prospects of agriculture in general seem bleak.

Having the above-mentioned state of the conventional agricultural sector, the country further faces numerous challenges such as rapid urbanization, serious food security issues, and evident environmental degradation, which can be addressed by promoting urban agriculture as harnessing the potential to improve local food production, promote sustainable practices, and support economic development.

This study aims to explore and assess the current state, capacities, legal framework, scientific institutions, advisory services, and non-governmental organizations related to urban and peri-urban agriculture in North Macedonia. Additionally, examples of good practice will be highlighted.

Urban and peri-urban agriculture is still in its early stages in North Macedonia, with only a few initiatives and limited participation from urban residents. There are some initiatives, mostly in Skopje, as well as some in Ohrid and Bitola, however these are almost without exception small-scale and mostly limited to market gardening, beekeeping, free range poultry operations and community gardening. While these practices are still very limited in scope, there is some potential for gradual growth in order to become an important element of urban agriculture in North Macedonia.

The limited access to arable land in urban areas, lack of knowledge, and resources, as well as low public awareness, hinders the development of urban farming. According to recent estimates, less than 5% of urban households engage in some form of urban gardening, mostly for personal consumption or as a hobby. However, there seems to be an opportunity to instigate growing interest in urban gardening among young people, women, and marginalized groups, who might see it as a way to address social and environmental issues in their communities.

Currently, most peri-urban farms in North Macedonia are small-scale and focused on producing vegetables, fruits and eggs for personal consumption or for sale in local markets. A significant number of these peri-urban farms are located in the vicinity of the capital Skopje - in nearby villages such as Kondovo, Volkovo, Rashtak, Bardovci, Viniche, Novo Selo, Stajkovci, Bulachani etc. - building upon the traditional sustenance farming heritage in the valley of Skopje.

Capacities

North Macedonia has a notable history of agriculture, and rural areas are renowned for agricultural production. However, urban agriculture is a new concept, and currently there is a lack of capacity and resources to support its proper growth. To address this, there is a need for training and education for urban farmers, as well as access to land and resources for urban agriculture.

Despite the challenges, North Macedonia has several advantages for urban farming such as a wide variety of local microclimates that could be promising future diversification of agricultural produce. Furthermore, soil is mostly of acceptable quality for agricultural purposes, and water resources seem to be sufficient for the time being. Moreover, there seems to be a growing interest among urban residents to grow their own food and engage in sustainable agriculture practices. However, there is still a marked need for capacity building, especially for marginalized groups, women, youth, and ethnic minorities.

Urban farming in North Macedonia faces several challenges related to access to land, water, and other resources, as well as limited knowledge and skills among practitioners.



However, there are also several capacities that can support the development of urban agriculture, such as the availability of urban organic waste for composting, the existence of some traditional farming knowledge that could be adapted to urban farming and the presence of local markets for agricultural products. Some of the capacities available for urban farming include community gardens, and indoor hydroponic systems. Moreover, there are some ongoing initiatives that promote urban gardening, such as community gardens, especially in the most populated city of Skopje.

Legal Framework

There is no specific legal framework for urban agriculture in North Macedonia. The existing laws and regulations related to agriculture and land use are a bit outdated and do not account for the specific needs and challenges of urban agriculture. The lack of legal recognition and support hinders the development of urban farming and exposes urban farmers to various risks and uncertainties. However, there are several strategies and policies that indirectly support urban farming, such as the [National Strategy On Agriculture and Rural Development](#) and the [National Strategy for Sustainable Development](#). Moreover, the country has laws and regulations that can be used to support urban agriculture. For example, the Law on Spatial Planning and Construction regulates the use of land, while the Law on Agriculture regulates agricultural activities. Nonetheless, there is an urgent need for the development of strategies and laws that specifically support urban agriculture in North Macedonia. These could include the provision of financial and technical assistance to urban farmers, the promotion of sustainable urban agriculture practices, and the integration of urban agriculture into urban planning.

Advisory services and scientific institutions

There are several scientific institutions in North Macedonia that conduct research on conventional agriculture, environment, and rural development such as the Faculty of Agriculture and Food Sciences, the Institute of Agriculture, and the Institute for Environmental Research. For example there is ongoing work done at the department of Biology within the Faculty for Natural Sciences and Mathematics, on site at their Botanical garden, specifically aimed to explore urban gardening through practice on an area of 500 m². Even though these institutions do some research on topics such as urban soil quality, crop production, and agroecology, still the focus is predominantly on conventional agriculture, and there is a lack of research and expertise in urban farming. There is a need to promote interdisciplinary research and collaboration among scientific institutions and urban farmers - especially research on the social and economic aspects of urban farming, as well as on the potential for scaling up urban farming practices.

There are some advisory services provided by government agencies, NGOs, and private consultants. However, these are mostly focused on conventional agriculture and do not provide specific support and guidance for urban farmers. There is a need to develop specialized advisory services that cater to the specific needs of urban farmers.

Non-Governmental Sector

The non-governmental sector in North Macedonia plays a vital role in promoting sustainable agriculture and rural development. However there are less NGOs that work specifically on issues related to urban and peri-urban agriculture, such as The Green Ark in Skopje with their ongoing project Community garden “Bostanie” that offers hands-on experience and education to citizens since 2019 on an area of 3000 m² and is situated within the city of Skopje. They are also working to promote sustainable agriculture and food security in urban areas mostly through permaculture design and agroecological practices. Besides being involved in community gardening, education and awareness-raising, The Green Ark also advocates for policies that support urban and peri-urban agriculture. Among other NGOs working in the area of urban and peri-urban agriculture there are also KMOP - Skopje with their publication of the [Urban Gardening Handbook](#) in 2021; and Eko Gaia - Bitola with their urban hydroponic market garden project lasting from 2020 to 2022.

Examples of Good Practice

Despite the challenges and limitations, there are some examples of good practice in urban and peri-urban agriculture in North Macedonia. This study will focus on eight such examples, four of which are non-profit and four are market oriented, there are other specific features that further differentiate the examples. A categorized short description of the main features of each example is in the table below.

All eight examples fit into the category of small-scale urban agriculture, and most of the non-profit examples could be considered as pilot projects to test the applicability of urban agriculture within the local context in terms of temporality and scalability. The market-oriented examples are commercially structured as urban agriculture operations, some are owners of the arable land they use for food production, while some are paying rent for the land, since in urban areas access to land is limited and often presents a serious challenge. All of the non-profit examples are founded on state-owned land that is not categorized as agricultural, with the permission of the institutions responsible for local land management. Six of the study cases are located in the city of Skopje or in the vicinity, one is located in the city of Bitola, and one is located in the vicinity of Ohrid.



Name of UPA example	Non-profit	Market oriented	NGO	Educational institution	Gardening	Animal husbandry	Location (Distance from city center)
Community Garden Bostanie	Yes	No	Yes	Collaboration with	Yes	No	Novo Lisiche, Skopje (6.8 km)
Botanical Urban Garden	Yes	No	Collaboration with	Yes	Yes	No	PMF, Skopje (4.4 km)
Gradidnina	Yes	No	Collaboration with	Collaboration with	Yes	No	MKC, Skopje (1.5 km)
Eko Gaia Urban Sustainable Garden	Yes	No	Yes	Collaboration with	Yes	No	SOZU Kuzman Shapkarev, Bitola (2.8 km)
Nasha Farma	No	Yes	Collaboration with	No	No	Yes	Novo Selo, Skopje (8.7 km)
Sezer's Organic Farm	No	Yes	Collaboration with	No	Yes	No	Ohrid (4.5 km)
ShutkaFood Garden - CBF	No	Yes	No	No	Yes	No	Shuto Orizari and Volkovo, Skopje (6.5km/10.8 km)
Bobi Bocevski's Urban Farm	No	Yes	No	No	Yes	Yes	Lisiche and Kozle, Skopje (7.2/3.8 km)

Survey

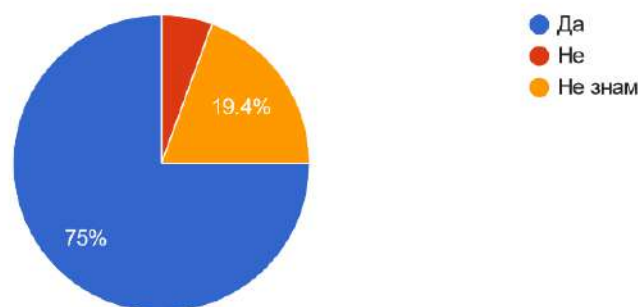
As part of our research, we conducted an online survey to gather information from individual respondents of three different age groups (18-30, 30-60, over 60 years old), regardless of their gender, educational or ethnic background. The main objective of the survey was to determine their attitude and perceptions towards urban gardening, to assess their knowledge, thoughts, and expectations.

The results of this survey will help us to develop an appropriate analysis in the context of the needs and potential for urban gardening in our country. We used Google Forms to create the online survey with multiple question. The survey was shared on social media.

We gathered results from 97 respondents - most of them (74,3%) were in the age group 30-60. We can conclude that most of them (89,2%) are familiar with what is urban gardening, but only 45,9% are familiar about such initiatives in their municipality. A very big percent (93,2) think that urban gardening would be beneficial for their municipality. On the question “Do you think that urban gardening can help you develop skills that will help social development and contribute to sustainable community development?”, 87,7 % answered positively, 5,5% answered negatively, and the rest are undetermined. A big percent of the respondents (76,4%) consider urban gardening a way to help reduce the effects of climate change, and only 11,1 % are undetermined. Big percent 82,2 of the adult respondents answered that would you participate in an urban gardening training, but only 41,7% think that through urban gardening you can increase your chances of finding a job, 30,6% are undetermined, and 27,8% are hesitant that urban farming can provide an opportunity for a job. Most of the respondents (97,3%) consider urban farming as an opportunity for socialization, to develop new skills and a hobby, but also most of the respondents (85,1%) consider urban agriculture as a tool to improve access to healthier food. The last question was “If your municipality provided a public space that could be used to develop an urban garden, would you be interested in getting involved?”, and most of the respondents answered that positively (75%), only 5% answered negatively, and the rest are undetermined.

Дали доколку вашата општина обезбеди јавен простор кој би се користел за развивање на урбана градина, би биле заинтересирани да се вклучите?

72 responses





Дали доколку вашата општина обезбеди јавен простор кој би се користел за развивање на урбана градина, би биле заинтересирани да се вклучите?

75 responses

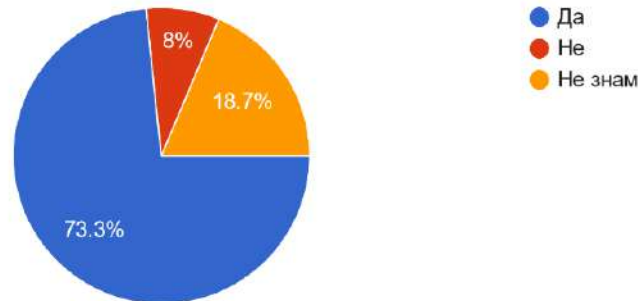


Photo 36: Survey results

This survey is a good starting point for our further research and development of the project, because it gave us a clear picture about the perception and the needs of the citizens in urban areas, and which are the weakest points that we need to address, such as to encourage the participants to seek job opportunities through urban agriculture that were previously not aware of. There are no academic criteria that are required to engage in urban agriculture, which makes it easier for people with lower education to participate in such activities. With our project we will create educational tools that will be useful to organizers of educational activities where every interested citizen can learn more about urban agriculture and develop skills to become involved in building and maintaining an urban garden.

This study continues with a short narrative description of the eight representative cases, followed by a comparative conclusion. The first group consists of the four non-profit urban agriculture projects, while the second four are the commercial urban agriculture operations.

Non-profit urban agriculture projects

1. Community Garden - Bostanie

Bostanie is a community garden in the neighborhood of Novo Lisiche, more precisely within the park "Lisiche", in the city of Skopje, and is founded in 2019 by the NGO The Green Ark and financed by the City of Skopje from 2019 to 2021 within the project titled "Development of The First Urban Garden in the City of Skopje". The community garden covers an area of 3000 m². The design of the garden is based on permaculture principles and is participatory from the conception, through the implementation period, during the daily maintenance and in continual development, engaging actively around 50 citizen-gardeners at the time of this study (April 2023). Citizen-gardeners grow vegetables and fruits using mainly gardening techniques compatible to agroecology such as no-till, biological pest management, composting, intercropping, companion planting etc. The use of synthetic chemical pesticides, herbicides, insecticides, fungicides, as

well as synthetic artificial fertilizers is explicitly forbidden with the Gardening Rulebook - each gardener has to accept upon enrollment in the community garden and is obliged to adhere to while participating in gardening activities. The Gardening Rulebook covers 25 different points which are too specific and detailed to elaborate in this study and regulate the daily conduct and organization in the community garden Bostanie. Participation in the community garden is open and available to anyone who fills in the online application form and accepts the code of conduct stated in the Gardening Rulebook. There are three ways of participation in the gardening activities, as a citizen-gardener dedicated to a specific allotment for a period of one year after the enrollment; as an occasional citizen-gardener periodically helping out the others or tending some of the common raised beds in the common space of the community garden; and finally, as a visitor or participant in some of the hands-on gardening workshops.

A significant turning point in the development of the community garden was the donation of a water-well and a water-pump by the Gradezhen Institut Makedonija, which now serves as the core of the fully automated drip irrigation system covering the whole cultivated area. It must be noted that the early development of the community garden Bostanie was done in the midst of the global COVID-19 pandemic, and that despite the challenges the citizen-gardeners faced together, the garden was the place where they were able to bridge and overcome the threat of social distancing while maintaining a safe spatial distance. Regarding the stages of setting up the basic infrastructure, as an element of the permaculture design aiming to lower the environmental impact of the garden, a neglected object made mostly of glass walls has been relocated from the city center and repurposed to serve as the nursery for the seedlings in Bostanie. This was done in close collaboration with the City of Skopje, and it has been placed on the designated spot in the garden during a participatory action where a significant number of citizen-gardeners were directly engaged. As a consequence the community garden Bostanie is equipped with a facility to produce its own seedlings for the needs of the citizen-gardeners, who simultaneously share a common experience of the joint effort to set the facility in place and make it functional together. Agrobiodiversity is one of the key values of Bostanie, that is why the gardeners engage continually in the development of the seed library of heirloom seeds and organize seasonal seed exchange events. The garden provides a space for community members to come together, socialize, and learn about gardening. Peer to peer exchange of knowledge is also practiced informally almost on a daily basis, as well as sharing it with the wider community in the form of gardening and composting workshops. This is done to help gardeners and participants in workshops coming outside the community garden to learn new skills and improve their gardening practices. The workshops cover topics such as soil preparation, plant selection, pest control, and composting. The workshops are led by experienced gardeners in the field of urban agriculture who can share insights on how to apply permaculture design and agroecology to create edible cityscapes. Another specific feature of the community garden is hosting cultural events like concerts, readings, art exhibitions and collaborations with artists, that in some aspects might relate to community gardening or other environmental issues. Organization-wise, the citizen-gardeners participate in regular monthly meetings to discuss garden-related topics, make decisions about the garden, facilitate the coordination of the activities in the garden, and plan future events. Although decisions are most often made in a consensual manner, some citizen-gardeners as a form of legacy still view Aleksandar Nikolovski, being the official representative of



The Green Ark, as the responsible person for the maintenance and further development of the community garden Bostanie. The meetings also provide an opportunity for the gardeners to share their experiences, knowledge, and skills. The Bostanie community garden strives to become a representative example of urban agriculture and to serve as a model for sustainable and community-driven food production in the city.



Photo 37: Community garden "Bostanie" (Source: D. Samardziev)

As a result, the Bostanie community garden seems to be somewhat successful in promoting urban agriculture and community engagement in Skopje. The gardeners grow various vegetables and fruits, including tomatoes, peppers, zucchinis, cucumbers, pumpkins, and watermelons, mostly using permaculture farming methods. The yield of the garden has been enough to provide a portion of fresh produce for the gardeners and their families. The garden also aims to become a hub for cultural events, attracting visitors from the neighborhood and beyond. The seed library of heirloom seeds is another valuable initiative of the community garden, as well as a collection of open-pollinated seeds that have been saved from plants grown in the garden. Gardeners can borrow seeds from the library, plant them in their own plots, and return seeds from the plants they grow at the end of the season, contributing to preserving traditional varieties of crops and promoting seed agrobiodiversity. That is why from the early days of the community garden development a strategic partnership with the NGO Fabia CSB was formed, in order to preserve, exchange and broadcast heirloom seed varieties in the country and the region, together. Along those lines of collaboration, in September 2021 the community garden Bostanie hosted a regional international gathering of organizations working on the preservation and promotion of heirloom seed varieties, with guests from Albania, Greece, Serbia, Croatia, Romania and Austria.

The wider impact of the work being done in Bostanie is gradually building up and is becoming apparent in the local community. It has brought people together and created a sense of community ownership of the garden. The garden has also provided a space for intergenerational learning and social connections. People of all ages and backgrounds have come together to work on the garden, share knowledge and skills, and participate in cultural events. The work in the garden also helps to raise awareness about the necessity to reduce the carbon footprint associated with food transportation and offers insight into possible approaches to mitigation and adaptation to climate change, food shortages and similar crises through community gardening and the creation of edible landscapes in cities.

2. Botanical Urban Garden

The Botanical Garden of the Faculty of Natural Sciences and Mathematics in Skopje has taken on an ambitious project titled „Urban gardens - potential for creating more greenery in the concrete jungle of Skopje“. The project is a result of the partnership and established cooperation of the NGO Macedonian Society of Botanists with the Faculty of Science and Mathematics in Skopje. The faculty allocated a space within the Botanical Garden which is intended for an urban garden with medicinal and aromatic plants. With the city being highly urbanized and densely populated, it is challenging to find green spaces for the community. However, the project team believes that urban gardens could be the solution to this problem. They have been working on the promotion and development of urban gardening since 2019 with their first project done in collaboration with the Institute of Communication Studies. Their work continues, and has already garnered a great deal of interest from students and local residents alike.

The project is being implemented on a 500 m² allotment in the botanical garden of the Faculty of Science and Mathematics in Skopje, in the municipality of Gazi Baba, approximately 3km from the city center. Regarding the infrastructure, there is a drip irrigation system installed and besides growing plants outside in the open, the team also uses polytunnels and a greenhouse for starting seedlings. For the nurture of the plants, they use natural fertilizers exclusively. As for pest control, other than encouraging habitats for natural predators of pests, they prepare natural based solutions made of nettle, garlic, hot peppers etc. The staff of the botanical garden coming from the Institute of Biology within the Faculty of Science and Mathematics in Skopje, has carefully selected a range of herbs that are well-suited to the urban environment and can thrive in the Skopje climate. These include popular herbs such as thyme, rosemary, lavender, and sage, as well as less commonly known herbs such as lemon balm, hyssop, and yarrow. The team has also implemented sustainable gardening practices such as composting, and natural pest control methods to ensure that the project is environmentally friendly and contributes to the overall sustainability of the city. These plants have various uses in medicine, cosmetics, and culinary arts, making them an excellent addition to any garden. The project team led by M.Sc. Cvetanka Cvetkoska, believes that by cultivating these plants, they could increase the greenery in Skopje while also providing valuable resources to the community.



Photo 38: Botanical Garden of the Faculty of Natural Sciences and Mathematics in Skopje (Source: D. Samardziev)

In addition to growing herbs, the garden hosts gardening workshops and visits from students. The garden has not only become a beautiful and peaceful oasis within the bustling city but also serves as a valuable educational resource. The project regularly hosts gardening workshops and visits from students, where they can learn about the benefits of urban gardening, sustainable gardening practices, and the uses of different herbs. The workshops consist of a practical part and theoretical part. The workshops are held by different trainers who have experience with conventional agriculture and organic production. Interested participants can apply via an open call that is periodically posted on the Facebook page of the Botanical Garden within the Faculty of Natural Sciences and Mathematics in Skopje. The project has received a positive response from the local community, with many residents expressing their appreciation for the increased greenery and the opportunity to learn about urban gardening.

These activities serve as an opportunity to educate the community about the benefits of urban gardening and how they can incorporate it into their daily lives. By engaging with the community, the project team hopes to promote the importance of green spaces and inspire others to create their own urban gardens. Despite the challenges noted by the team regarding air, water, and soil pollution in urban environments, the project has already shown promising results, with the botanical garden becoming a haven for biodiversity and a place for community engagement. Through this project, the Botanical Garden of the Faculty of Natural Sciences and Mathematics in Skopje is demonstrating the potential of urban gardens to make a positive impact on the

environment and local communities. For promotional purposes during one of the open days visitors could have samples of the products made from the plants growing in their urban garden, such as aromatic herbs, spices, teas, and handmade soaps infused with the herbs they have grown. The long term intention is to sell some garden products to a wider target group online, as means to financially support the further development of the urban garden. With the success of this project, it is hoped that more urban gardens will be established throughout Skopje, promoting a healthier and more sustainable lifestyle for its residents. The project team plans to continue their efforts to create more urban gardens throughout Skopje, and they hope that this initiative will inspire others to do the same. By increasing greenery in the city, they believe that they can create a healthier and more sustainable environment for everyone.

3. Gradidnina

Gradidnina is an urban garden located in the central area of Skopje on an area roughly about 150m², on the premises of the Youth Cultural Center (MKC), Skopje.

Gradidnina is a result of the international project Big Time Takeover developed through the „Erasmus KA2 Program for cooperation and innovation and exchange of good practices of the European Union for strategic partnerships, which include educational programs for young people“ in which Youth Cultural Center (MKC) Skopje is a strategic partner. The garden was founded in 2022 in collaboration with Associazione culturale Mulab from Italy, and the local artists Hristina Ivanovska and Yane Chalovski, as well as the permaculturalist Hayan Alhalabi. Gradidnina aims to encourage young people (aged 14 to 18) in three key areas:

- creative expression through an artistic approach to nature;
- using digital tools in the process towards permaculture gardening;
- developing responsibility for their own belongings and the yield from their own work.

Gradidnina encourages young people to express their creativity through an artistic approach to nature. The garden is designed to be aesthetically pleasing, and young people are encouraged to create art installations, murals, and sculptures in the garden. The garden provides a space for young people to explore their artistic abilities and to express themselves in a unique and meaningful way. Additionally, Gradidnina encourages young people to use digital tools in the process towards permaculture gardening. The garden is equipped with technology that allows young people to monitor the growth of plants, track the weather, and collect data on the garden's performance. The use of digital tools provides a way for young people to learn about permaculture gardening in a modern and innovative way. Moreover, Gradidnina aims to develop responsibility for young people's own belongings and the yield from their own work. The garden provides a space for young people to take ownership of their work and to see the results of their efforts. Young people are responsible for maintaining their own plots and for contributing to the overall upkeep of the garden. The garden provides a sense of ownership and responsibility that can be carried into other aspects of young people's lives.



Photo 39: Gradidnina (Source: D. Samardziev)

Regarding the infrastructural capacities of Gradidnina, it is irrigated with tap city water and rainwater harvested in a tank. The plants are fed self-made compost and available organic fertilizing products on the market. For pest management they are using passive methods like diversified planting and attracting beneficial insects, by creating appropriate habitats. All of the plants are planted outside in the open, directly, without prior production of their own seedlings, due to infrastructural constraints. The workshops are structured and organized according to the ethics and principles of Permaculture with focus on educating the public about the urban food security issues and how they can be solved cooperatively and creatively.

Despite the fact that the project officially ends in April 2023, Gradidnina is an example of a successful urban garden attempt that encourages young people to express their creativity, use digital tools in permaculture gardening, and develop responsibility for their own belongings and the yield from their own work. The garden provides a space for young people to explore their artistic abilities, to learn about permaculture gardening, and to take ownership of their work. The garden has become a model for other urban gardens in the city, and its success has inspired other communities to start their own gardens that promote creativity, innovation, and responsibility. Among some of the challenges Gradidnina faces are soil pollution, water pollution, air pollution, somewhat awkward neighbors, and people's commitment to dedicate their attention and effort in maintaining the garden together. The person behind the design and responsible for the development of the garden - Hayan Alhalabi, noted that he has collaborated with the NGO The Green Ark, and that the long term goal is to convert Gradidnina to a small community garden right in the middle of the city hosting 4 to 5 urban gardeners.

4. Urban Sustainable Garden - Eko Gaia

The city of Bitola has a population of approximately 69,000 citizens and limited access to fresh produce. The NGO Eko Gaia initiated this pilot project to articulate the potential for urban agriculture to improve food security and promote sustainability. In partnership with the High School Kuzman Shapkarev, Eko Gaia developed a small-scale urban hydroponic garden to provide fresh produce to the local community. The project was funded by the Global Environment Facility (GEF), which provided the necessary resources for the construction of the hydroponic garden. The project is aimed at providing students with hands-on experience in sustainable agriculture, to improve access to fresh produce in the local community, and to reduce carbon emissions associated with long-distance transportation of produce. Eko Gaia provided technical support, training, and ongoing maintenance of the garden. High school students were trained in hydroponic farming techniques and played a key role in the daily management of the garden.

The hydroponic garden was built inside the facilities of the school, in an area of about 100 m² utilizing up-cycled materials and water-efficient irrigation systems. The hydroponic system consisted of several PVC pipes, each with holes for the plants. The pipes were connected to a water pump and a nutrient solution tank, providing a continuous flow of water and nutrients to the plants. The system utilized a vertical tower design, allowing for a high yield in a small space. The garden was designed to produce a variety of leafy greens, baby salads, microgreens, herbs, and vegetables suitable for hydroponic production in enclosed spaces.

The project had three main objectives:

1. To promote sustainable urban agriculture by demonstrating the benefits of hydroponic gardening.
2. To provide students with hands-on experience in food production and enhance their knowledge about environmental sustainability.
3. To increase the awareness of the local community about sustainable agriculture practices.

Methodology: The hydroponic garden was set up in a small greenhouse on the school grounds. The greenhouse was equipped with LED grow lights, water pumps, and a nutrient delivery system. The hydroponic system used in the project was a deep water culture system. The students were involved in every step of the project, from designing the garden to planting the seeds and maintaining the system. The project was divided into four phases:

Phase 1: Planning and Designing

The students, with the help of Eko Gaia experts, designed the hydroponic garden. They researched the different hydroponic systems and decided on a deep-water culture system, which they believed was the most suitable for the project's needs. They also researched the types of crops that could be grown in the hydroponic garden and decided on lettuce, beetroot, mustard, cabbage, watercress, radish, broccoli and herbs.



Phase 2: Construction and Installation

Once the design was finalized, the students, together with Eko Gaia volunteers, constructed the hydroponic system and installed the LED grow lights, water pumps, and nutrient delivery system. They also set up a monitoring system to keep track of the plants' growth and nutrient levels.

Phase 3: Planting and Maintenance

After the hydroponic system was set up and ready to go, the students planted the seeds and began monitoring the plants' growth. They were responsible for maintaining the system, including adjusting the nutrient levels, monitoring the pH levels, and ensuring that the water pump was working correctly.

Phase 4: Harvesting and Sharing

Once the plants were fully grown, the students harvested them and shared the produce with the school cafeteria and the local community. They also conducted educational tours of the hydroponic garden to share their knowledge and experience with others.



Photo 40: The microgreens offer of the Urban Sustainable Garden - Eko Gaia (Source: Facebook page of the civic organization Eko Gaia)

As a result, the hydroponic garden seems to be successful, students have gained valuable knowledge and experience in sustainable agriculture and are now able to apply this knowledge to other areas of their lives. The garden has produced a consistent supply of fresh produce to provide for the school's cafeteria and students, as well as

sell the excess to the local market, demonstrating that a reduction of the need for long-distance transportation and associated carbon emissions are possible. The project has also helped to raise awareness about the importance of sustainable agriculture and the potential for urban agriculture to improve food security and promote sustainability.

The small-scale urban hydroponic garden developed as a collaborative project between the NGO Eko Gaia and the High School Kuzman Shapkarev in Bitola, financed by the Global Environment Facility GEF, has manifested the potential for urban agriculture to improve food security and promote sustainability. The project has been a success, providing students with hands-on experience in sustainable agriculture, demonstrating a way to improve access to fresh produce in the local community, and reducing carbon emissions associated with long-distance transportation of produce.

Commercial urban agriculture operations:

1. Sezer's Organic Farm

Sezer's Organic Farm is a small-scale urban organic market garden situated on rented agricultural lots next to the lakeside in the vicinity of the city of Ohrid, near the St. Erasmus Hospital, about 4 km from the city center. Akin Sezer (coming from Turkiye) and his family have been running the farm for several years, and have established a loyal customer base in the local community. There seems to be a steadily growing demand for organic produce in the city of Ohrid, which has a population of approximately 42,000 people. Many people are becoming more health-conscious and are seeking fresh and locally-grown produce. Sezer's Organic Farm generates revenue through the sale of organic produce, which is sold through its website, local farmers' markets, and restaurant collaborations. The farm also offers guided tours for visitors and school groups, which provides an additional source of income. The farm's operating expenses include rent, labor, seeds, fertilizer, equipment, and marketing costs.

One of the main challenges facing Sezer's Organic Farm might be competition from larger, more established conventional farms in the area. However, Sezer's Organic Farm has a significant competitive advantage in that it produces high-quality, locally-sourced organic produce that appeals to health-conscious consumers. In order to capitalize on this advantage, the farm could focus on building relationships with its customers and emphasizing its unique selling proposition. Another challenge facing Sezer's Organic Farm is the limited land available for cultivation. As the farm is situated on rented agricultural lots in the vicinity of the city, it may be difficult to expand the business or increase production levels without investing in additional land. As a result, the farm has to operate on a small scale, which limits its ability to meet the growing demand for organic produce. Additionally, the farm is located next to the lakeside, which poses certain risks such as flooding and soil erosion. To address these challenges, Sezer's Organic Farm has implemented a number of solutions. Firstly, the farm has adopted intensive farming techniques such as intercropping to maximize the use of limited space. Secondly, the farm has implemented sustainable and eco-friendly practices such as



composting, crop rotation, and natural pest control methods to reduce its environmental impact. Finally, the farm has developed partnerships with local restaurants and grocery stores to expand its distribution channels and increase its revenue. As a result of these solutions, Sezer's Organic Farm has been able to increase its production and meet the growing demand for organic produce in the city of Ohrid. The farm has also been able to reduce its environmental impact and increase its revenue through its partnerships with local businesses. Additionally, Sezer's Organic Farm has become a community hub for urban agriculture, with many local residents visiting the farm to purchase fresh produce, learn about sustainable farming practices, and participate in community events. Furthermore, Akin Sezer is a member of the NGO Slow Food Macedonia and is involved as an activist, organizing campaigns for guerrilla gardening with seed bombs, and is contributing in seed exchanges of heirloom seed varieties.



Photo 42: Students visiting Sezer's Organic Farm hosted by Akin Sezer (Source: Facebook page of Sezer's Organic Farm)

One opportunity for Sezer's Organic Farm is the growing trend towards sustainable and eco-friendly lifestyles. As more consumers become concerned about the environmental impact of their purchasing decisions, there is a growing demand for organic and locally-sourced produce. Sezer's Organic Farm could capitalize on this trend by marketing itself as an eco-friendly and sustainable business, and by highlighting its use of renewable energy and sustainable farming practices.

Sezer's Organic Farm is a successful small-scale urban organic market garden that has tapped into the growing demand for organic produce in Ohrid. Its strong online presence, sustainable farming practices, and strategic partnerships have helped it to establish a loyal customer base and generate a steady stream of revenue. With continued investment in marketing and operations, the farm is well-positioned for continued growth and success in the future.

2. Shutka Food Garden - CBF

Shutka Food Garden was established by Danie van Niekerk (coming from South Africa) on 320 m² located next to the kindergarten ‚Little Friends‘ in Šuto Orizari, one of the ten municipalities that make up the city of Skopje. It is the only Roma majority and Roma-run municipality in Macedonia and possibly the World, that is situated on the northern outskirts of the city. The neighborhood was set up after the 1963 earthquake to relocate Roma who had been made homeless. It is now the poorest neighborhood in Skopje with very high unemployment.

Shutka Food Garden - CBF was set up to establish a sustainable local food garden, and engage the community to provide them with supplementary food and skills. Shutka Food Garden - CBF was initially funded as a project by Fuel Macedonia, providing initial grants to help get it up and running and ongoing support for the continuation of the project. It was projected to be a long-term and sustainable project that would have the potential to address local needs in poor urban areas.

In 2021 Shutka Food Garden - CBF started off as a 40 m² greenhouse, funded by the British Embassy, that has been built to provide all year round growing for essential vegetables and salads. The area has been included to house a plant nursery for the next generation. Different growing methods are being used to educate those involved, among which traditional and Dutch Bucket growing systems. They also have hydroponics in place. The irrigation system is powered by a water pump supplied by a water well. Once the project is in full flow, they hope to produce a closed circle loop whereby they would compost any waste and maintain ‚no-dig‘ raised beds. In addition to these methods inside the greenhouse, potatoes, maize, and winter squash are being cultivated outside along with fruit trees. However, at the time being Shutka Food Garden - CBF is still dependent on using synthetic crystal fertilizer and some cow manure. Furthermore, pest management is based on conventional insecticides, since they cannot afford to lose a crop, although they would want to use natural means to control pests in the near future.

Danie van Niekerk gradually expanded the urban agriculture operation to Volkovo on another 300 m² and some 1569 m² in the village of Zherovjane, despite all the challenges.



Photo 43: Danie van Niekerk working in the green house of Shutka Food Garden (Source: Youtube channel of Shutka Food Garden)

The final goal is to hand the Food Garden over to trained locals who can not only manage the garden on a day-to-day basis, but train others in the growing methods to provide food for themselves. Normally they teach people in person about the procedures and techniques to manage the agricultural system they use. Danie van Niekerk stated that they do not advertise, the reason being that if people need advice or suggestions, they simply help them out, but in an informal way. The policy of Shutka Food Garden - CBF is to do things in a new modern way and that encourages people to improve the traditional way of producing food within the limited resources available. As for the produce from last year's season, Danie van Niekerk noted that they gave it away to people in need except for a small fraction that was sold to the Food Coop Dobra Zemja, but the delivery was made by Shutka Food Garden - CBF.

Additionally they installed three greenhouses at Poraka Dneven Centar (Day Care Center) in Volkovo, since Poraka Dneven Centar (Day Care Center) do not get enough money from the government, but want to produce more food for themselves. Shutka Food Garden - CBF are planning to install 5 more greenhouses in Zherovjane for Poraka Dneven Centar (Day Care Center).

Currently in Shutka Food Garden - CBF there is a local person from the Roma community responsible for looking after the Food Garden who is being trained to manage it completely and many children helping him to maintain the urban agriculture operation. In Volkovo there are people working and living at the Poraka Dneven Centar helping out Danie van Niekerk in the daily gardening activities.

One of the main challenges for Shutka Food Garden - CBF is the high price of land in urban and peri-urban areas. Another important issue are the documentation requirements from granting agencies like USAID and GIZ that make it almost impossible for Shutka Food Garden - CBF to access or apply for grants.

Shutka Food Garden - CBF has also had a positive impact on the local community in other ways. By providing fresh, locally grown produce, Danie van Niekerk is helping to address food insecurity and promote healthier eating habits. He has also created job opportunities in the local community, with people hired to help run the hydroponic system and assist with sales and marketing.

Looking to the future, Danie van Niekerk hopes to expand Shutka Food Garden - CBF and invest in more advanced equipment. He also plans to continue educating the local community about the benefits of hydroponics and promoting sustainable agriculture practices. Danie van Niekerk wishes to replicate the model in other areas of Macedonia.

3. Bobi Bocevski's Urban Farm

Bobi Bocevski is a small-scale urban market garden producer who operates in the peri-urban neighborhood of Lisiche in the city of Skopje. He produces a variety of products including vegetables, oyster mushrooms, vermicompost, seedlings, chicken, and quail eggs. Bobi uses online social networks such as Facebook to sell his products directly to customers, and he also provides delivery services. Bobi's farm is located in a small plot of land in the peri-urban area of Lisiche, and another in Kozle both he has transformed into productive urban farms. He uses organic farming techniques to grow his produce, and he also uses vermiculture to produce high-quality vermicompost, which he sells as a fertilizer. He has set up a simple vermicomposting system using worm bins, which he maintains using vegetable scraps from his market garden and other organic waste materials.

Bobi's main customers are urban dwellers who are looking for fresh, locally produced food. He has developed a strong customer base through his Facebook page, where he regularly posts updates about his products and availability. Customers can place orders directly through Facebook, and Bobi delivers the orders to their doorstep. Bobi's farm seems to be a good example of urban agriculture. By producing food within the city, he reduces the need for long-distance transportation, which helps to reduce carbon emissions. His farming techniques are also sustainable, as he uses organic methods and vermiculture to produce fertilizer. Bobi has set up a simple irrigation system using drip irrigation to conserve water and ensure his plants receive the necessary amount of moisture. He has also invested in a small greenhouse, which allows him to extend his growing season and produce crops such as tomatoes and peppers year-round.

Bobi has also incorporated oyster mushroom cultivation into his operation. He has set up a simple mushroom house using recycled materials and straw bales, which provides a suitable environment for mushroom cultivation. He uses waste materials from his market garden such as straw, sawdust, and chicken manure to produce mushroom substrate. He strives to create a closed-loop system where waste is reused and recycled to produce food and other products.



Photo 44: Bobi Bocevski working on his urban farm (Source: Facebook profile of Bobi Bocevski)

Bobi's marketing strategy is to promote his products using social media platforms, particularly Facebook, and to offer delivery services to his customers. He has a Facebook page where he posts pictures of his products and updates on his farming activities. He also shares information on the benefits of organic farming and sustainable food production. Bobi believes that by sharing information about his farming practices, he can educate his customers and raise awareness about the importance of sustainable food production. Although social media platforms have helped him to reach a wider audience, he still needs to find ways to expand his customer base and increase his sales. Additionally, he faces the challenge of managing his time effectively, as he has to take care of his crops and animals, as well as handle the delivery of his products.

Bobi faces several challenges as a small-scale urban farmer. He has limited space to grow his crops, which means he has to be careful about what he chooses to grow. He also has to deal with the unpredictable nature of urban farming, as weather patterns and other factors can affect his crops. Despite these challenges, Bobi has managed to build a more or less successful urban farm. He has developed a loyal customer base who appreciate the quality and freshness of his produce, and he has been able to expand his business by selling a variety of products. Bobi's farm is a good example of how small-scale urban agriculture can be sustainable and profitable.

Conclusion:

Urban and peri-urban agriculture have the potential to contribute to sustainable urban development, food security, and environmental protection in North Macedonia. However, there is a need for a more supportive legal framework, capacity building, specialized advisory services, and interdisciplinary research. Moreover, the non-governmental sector can play a vital role in promoting urban farming and providing valuable services to urban farmers and other stakeholders. Even though urban gardening and farming in North Macedonia is still in its early stages, the potential to become an important part of urban agriculture in the country is present. To support its growth, there is a need for the development of a legal framework that specifically supports urban agriculture, as well as policies to increase capacity and resources for urban farmers. Additionally, there is a need for the promotion of sustainable urban agriculture practices, as well as the integration of urban agriculture into urban planning. Finally, examples of good practice can inspire and guide the development of urban farming in North Macedonia. With continued support from government, scientific institutions, advisory services, and the non-governmental sector, urban farming in North Macedonia could continue to grow and perhaps even thrive.



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