Hort4EUGreen

Strategic Partnership No. 2020-1-RO01-KA203-080398

URBAN HORTICULTURE

Urban horticulture policy and urban planning

Volume 2

University of Agronomic Sciences and Veterinary Medicine of Bucharest

Лесотехнически университет

MATE

Erasmus+

Bucharest, 2026

Hort4EUGreen

Strategic Partnership No. 2020-1-RO01-KA203-080398

CONTRIBUTORS

USAMV

Oana VENAT
Claudia FABIAN
Roxana CICEOI

University of Agronomic Sciences and Veterinary Medicine of Bucharest

Editing
Oana VENAT

University of Forestry

Milena YORDANOVA
Vera PETROVA
Elena TSVETKOVA
Rumen TOMOV
Tsvetelina NIKOLOVA

Лесотехнически университет

ISBN 978-606-072-487-2
ISBN 978-606-072-489-6

Bucharest, 2026

Hort4EUGreen

Strategic Partnership No. 2020-1-RO01-KA203-080398

"The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the National Agency and Commission cannot be held responsible for any use which may be made of the information contained therein"

2026

Table of Content

Learning outcome descriptors

By the end of the module, the trainees should be able to prove they acquired both general and transferable skills and knowledge, understanding and professional skills.

General and transferable skills

1	Cultivate the ability to work collaboratively with peers, professionals, and stakeholders in interdisciplinary teams to address urban challenges and develop comprehensive solutions.
2	Enhance the ability to analyze and evaluate urban horticulture policies and urban planning strategies, considering their implications for environmental sustainability and community well-being.
3	Learn to articulate and advocate for informed urban horticulture policies within the broader framework of urban planning, engaging with policymakers and influencing decision-making processes.

Knowledge, understanding and professional skills

1	Acquire knowledge and skills in designing green spaces,understanding the principles of urban green infrastructure to enhance biodiversity
2	Understand the impact of climate change on urban environments and develop skills in crafting horticulture policies that contribute to climate resilience in urban planning.
3	Develop the ability to analyze existing urban horticulture policies, identify gaps and propose evidence-based recommendations.

Volume 2 Urban horticulture policy and urban planning

Claudia Fabian

Introduction.
The city as a system

The city is an open system. It is a place of compact coexistence of people, enclosed by conditional boundaries from "external" spaces related to it. Each city is a unique combination of location and its inhabitants, which, with its emergence and development, is tied to the socio-economic activity of humans. The city occupies a specific part of the Earth's surface, which includes a high-density human population, complex production processes, infrastructure, as well as a specific natural (natural), artificial, and socio-cultural environment, thus representing an **urban geosocial system**, or simply an **urban system** (Golubets, 1994). In this system, people, as a social unit, perform managerial and control functions.

The city is an open system, whose elements are interconnected and connected to its external environment through streams of energy, matter, and information. The city consumes energy resources in the form of fossil fuels and food, utilizes incoming information resources from the external environment, and "incorporates" new inhabitants.

The result of the functioning of urban systems (urbosystems) is expressed not only in the production of material and spiritual goods, new information, but the city generates a significant portion of solid, liquid, and gaseous waste that pollutes the environment, as well as diverse impacts that locally alter the climate in cities.

The natural subsystem of the **urban geosocial system**, through which the city is "embedded" in the structure of the biogeocenotic Earth cover and through which it maintains connections with the biosphere, is called the settlement (urban) ecosystem (urboecosystem).

The condition and stability of the urban ecosystem, including its ability to self-cleanse and self-sustain its nutritional needs, depend on the size of the urban territory and its characteristics (landscape and urban development characteristics, the presence of open spaces, water bodies, green areas), climatic conditions, and the quantity of incoming pollutants, among many other factors.

In this context, certain management possibilities for the state of urban ecosystems are outlined through reducing the quantities of incoming pollutants and organizing urban space accordingly. For instance, improving ventilation conditions in the urban area through rational architectural and planning solutions, redirecting transportation traffic to city bypass

roads, increasing the percentage of territory occupied by green and water areas, and so forth.

Green spaces, including urban gardening, can be interconnected, forming a network of green infrastructures (Mahmoud and Mohammed, 2012). Urban green infrastructures play a clear role in defining the urban ecosystem (Bolund and Hunhammar, 1999), whose complexity (and therefore stability/sustainability) is enhanced by urban agriculture. Several studies examine the role of urban vegetable gardens in improving human well-being by providing ecosystem services and delivering food to city residents (Matsuo, 1995; Brown and Jameton, 2000; Jim, 2004; McClintock, 2010; La Greca et al., 2011; Braat and De Groot, 2012; Orsini et al., 2013).

Green infrastructures, including urban gardening areas, can reduce the ecological footprint of the city (Ecological Footprint - EF) by decreasing pollution and noise, absorbing CO2 emissions, and controlling the urban heat island (UHI) effect through shading, among other benefits.

Interactions between the settlement ecosystem and the technical and socio-economic subsystems of the urbangeosociosystem are complex and diverse. The city is formed based on a natural (natural) ecosystem that varies and

functions under the influence of anthropogenic and social factors. Anthropogenic factors include the architectural and planning decisions of the city, industrial production, transportation flows, and other economic activities. Social factors include administrative management of the urban complex through authorities and mass media, demographic processes, and more.

In this way, the city represents a complex system that includes:

- Settlement ecosystem, i.e., a modified (transformed) natural ecosystem under the influence of humans, located on the city's territory;
- Social subsystem, i.e., a functionally differentiated group of people or the so-called socio-sphere of the city;
- Industrial complex, or the so-called technosphere of the city.

In this distribution of subsystems, the socio-sphere takes on the task of being a "representative" of the natural ecosystem to the technosphere, limiting the negative impact of the technosphere on the natural ecosystem. This is where the role of urban ecology and urban gardening, in particular, comes into play.

Unit 2.1
Regulation related to urban horticulture

Claudia Fabian, Oana Venat,
Elena Tsvetkova, Milena Yordanova

There is no specific EU regulation related to urban horticulture now days, however, there are several EU regulations and policies that promote sustainable development and environmental protection, which indirectly support urban horticulture and green acquisitions, like European Green Deal, Farm to Fork, EU Biodiversity Strategy for 2030, Nature Restoration Law

Examples of such regulations and policies include:

European Green Deal

The European Green Deal is a comprehensive policy framework for achieving climate neutrality by 2050. It includes measures to promote sustainable and circular agriculture, reduce pesticide use, and restore ecosystems.

The European Union's Green Deal is designed to safeguard and enhance the EU's natural resources while protecting citizens' health and well-being from environmental hazards (European Commission, 2019). Within this framework, urban agriculture (UA) is endorsed as a nature-based solution for climate change adaptation and urban regeneration, aligning with the goals of the European Green Deal.

Urban agriculture helps preserve and rejuvenate ecosystems and biodiversity in urban settings, reduces the intensity of urban heat islands, enhances air quality, manages water runoff, and creates habitat networks across cities. Additionally, it maintains agricultural knowledge among urban communities, boosts human health and well-being, and supports food security by delivering social, economic, and environmental advantages.

Urban Farming Sustainability, Concept Captured, Milan

Sustainable Development Goals (SDGs)

The SDGs are a set of 17 global goals adopted by the United Nations to promote sustainable development. Several goals are relevant to urban horticulture, including Goal 2 (Zero Hunger), Goal 11 (Sustainable Cities and Communities), and Goal 15 (Life on Land).

The United Nations' 17 Sustainable Development Goals;
image sourced from the
United Nations Department of Economic and Social Affairs

Common Agricultural Policy (CAP)

The CAP is the main EU policy for supporting agriculture and rural development. It includes measures to promote sustainable agriculture, biodiversity conservation, and climate action.

Water Framework Directive (WFD)

The WFD is an EU directive aimed at achieving good water status for all EU waters. It includes measures to reduce pollution and protect aquatic ecosystems, which are important for urban horticulture.

Urban Agenda for the EU

The Urban Agenda for the EU is a policy framework aimed at improving the quality of life in urban areas. It includes measures to promote green infrastructure, such as urban parks and gardens, which can support urban horticulture.

The Urban Agenda's priority themes for cities are:

- air quality
- circular economy
- climate adaptation
- culture and cultural heritage
- digital transition
- energy transition
- housing
- inclusion of migrants and refugees
- innovative and responsible public procurement
- jobs and skills in the local economy
- sustainable use of land and nature-based solutions
- urban mobility
- urban poverty
- security in public spaces

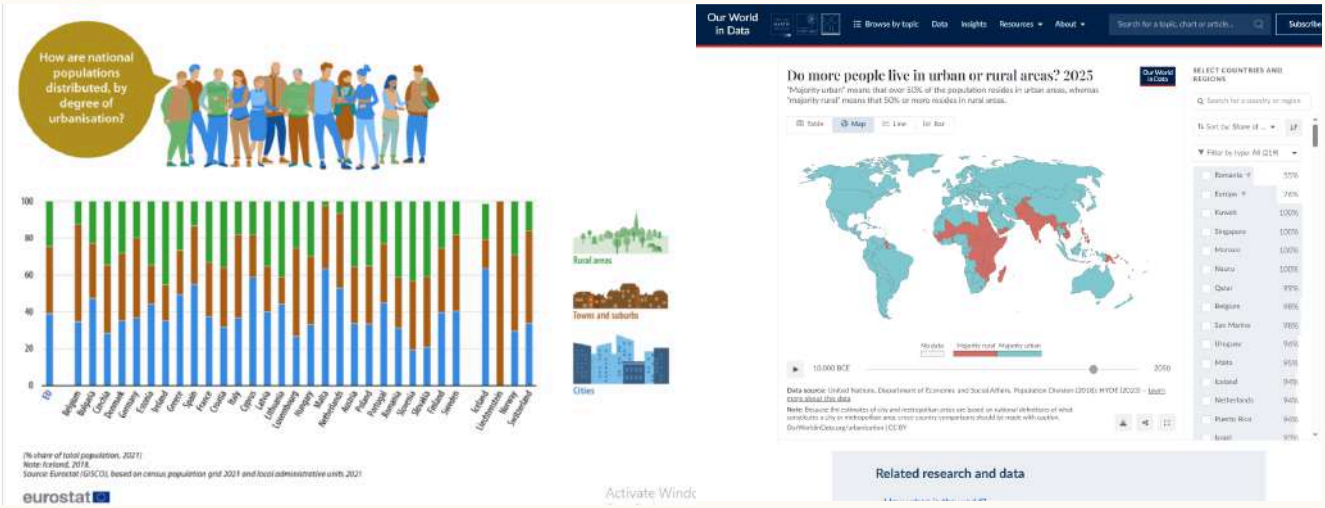
These urban themes were set forth in the Pact of Amsterdam, ratified by urban-policy ministers from the EU member countries in May 2016 and in the 2019 Declaration of ministers 'Towards a common framework for urban development in the European Union'.

Source here

Overall, while there is no specific EU regulation related to urban horticulture, there are several EU regulations and policies that indirectly support these practices as a way to promote sustainable development and environmental protection.

According to Eurostat data in 2021, more than 74% of the population in the EU resides in large and small cities, suburbs, and the share of urban population continues to grow.

Similar is the trend on both a continental and global scale. The proportion of the population living in urban areas compared to rural areas is constantly increasing, as seen from forecasts until 2016, combined with United Nations projections until 2050.



The presented data indicate that today, greener cities are more important than ever in addressing the fundamental challenges facing our planet. Green cities have a growing potential as key centers for implementing global programs and involving citizens in the political decision-making process.

According to the European Parliament Resolution of 2022 - European Year of Greener Cities, green infrastructure (GI) is a strategically planned network of natural and semi-natural areas, including environmental elements, designed and managed to provide a broad range of ecosystem services. This integrates green areas (or blue areas in the presence

of water ecosystems) and other physical features in terrestrial (including coastal) and marine areas in rural and urban environments. Green infrastructure offers ecosystem services crucial to our well-being, food production for cities, water circulation and retention, enhances infiltration, reduces pollution through natural processes, regulates temperature, supports biodiversity (including pollinators), improves nutrient cycling, enhances the aesthetics of residential areas, provides better conditions for residents' physical activity, and contributes to their well-being.

The resolution emphasizes that the greening of cities is not limited to implementing initiatives for **more greenery** in urban areas, as clean air, clean water, and clean soil, along with the presence of urban landscapes promoting biodiversity, are essential to ensure the sustainability of green spaces. Green infrastructure is a fundamental component of the **Biodiversity Strategy for 2030.**

Today, large cities face a range of challenges—from the impact of climate change on the health of residents to ecological issues. Green infrastructure, and urban gardening in particular, is one of the many nature-centric, environmentally, economically, and socially sound solutions to contemporary urban problems. In most cases, urban gardening implies sustainability and long-term operation at relatively low costs while also creating job opportunities.

European law concerning urban horticulture has begun to embrace the principles of environmental sustainability and circular economy, particularly under the influence of the European Green Deal. According to recent studies, the guidelines for the horticulture sector have been directed to enhance practices that support sustainable and resilient urban development. These guidelines aim to integrate urban horticulture into city planning and development processes, ensuring that urban green spaces contribute effectively to ecological stability and human well-being.

Source here

Moreover, there has been an environmental assessment of the potential implementation of rooftop greenhouses in urban areas across Europe and South America. These initiatives are seen as a proactive approach to mitigating the urban heat

island effect, enhancing local air quality, and promoting food security within densely populated areas. Such efforts are also geared towards maintaining biodiversity and providing ecological benefits, demonstrating the holistic approach taken by European legislation to incorporate urban agriculture within broader environmental and urban policies.It is necessary to increase awareness of green infrastructure and its numerous positive impacts on ecosystems and the services they provide to the population. This is essential to further promote nature-friendly solutions in the field of land planning and territorial organization. It includes the creation and restoration of green spaces, accelerating the shift from "grey" to "green" infrastructure in urban planning and territorial development, allowing cities to better adapt to the adverse effects of climate change.

Resources:

Eigenbrod, C. & Gruda, N. (2015).Urban vegetable for food security in cities. A review. Agron. Sustain. Dev. 35, 483–498.

Edmondson, J. L. et al. (2020). The hidden potential of urban horticulture. Nat. Food 2020, 1, 155–159.

Gardening as a component of urban green infrastructure (GI) plays an important role for cities by:

- Enhancing the resilience of ecosystems against climate change and contributing to the reduction of atmospheric CO2 through direct carbon capture. It also contributes to reducing the pumping and processing of water and wastewater and the associated energy needs. Additionally, it aids in decreasing energy consumption and emissions from buildings thanks to "smart buildings" that integrate ecological elements such as roofs and walls, incorporating new materials to enhance resource efficiency. Green infrastructure also contributes to reducing energy demand and pollution associated with transportation by facilitating the adoption of alternative clean transportation methods, such as cycling and walking.

Source here

- Protecting natural capital, improving environmental conditions, managing water bodies, and ensuring food safety.
- Regulating extreme temperatures and improving the quality of life for residents in urban areas in the EU, mitigating the negative impact of increasing extreme meteorological events (heatwaves, forest fires, extreme precipitation, floods, and droughts)/The significance of urban and green infrastructure: 2022 - European Year of Greener Cities. Resolution of the European Parliament on September 17, 2020, regarding the year 2020 - European Year of Greener Cities (2019/2805(RSP)) https://www.europarl.europa.eu/doceo/document/TA-9-2020-0241_BG.html/
- Plant life regulates microclimate through shading surfaces and evapotranspiration from leaf surfaces, positively influencing human thermal comfort (Balany et al., 2020; Wong et al., 2021).
- Regarding synergistic effects, the use of trees, shrubs, and vertical gardens can lead to a reduction in noise pollution in urban areas. Noise is the second most significant environmental factor affecting health, following air quality. Within the framework of the EU-funded research project HOSANNA, it was concluded that natural plant-based acoustic barriers better protect residents from traffic noise than commonly used straight acoustic barriers. Biodiversity and nature are adversely affected by noise pollution, emphasizing that green city efforts should include initiatives to reduce noise pollution.

The European Commission considers that solutions with environmentally friendly (green and blue) infrastructure in cities have health benefits, such as clean air and better water quality. It creates a stronger sense of community and enhances the connection with voluntary cooperation from civil society. Additionally, it contributes to combating social exclusion and isolation (Eco-friendly infrastructure (EI) – enhancing Europe's natural capital. EC Communication SWD(2013) 155 final).

Well-designed Green Infrastructure is one of the most successful ways to increase the number of ecological green and blue corridors, thereby protecting biodiversity. / The significance of urban and green infrastructure: 2022 - European Year of Greener Cities Resolution of the European Parliament of September 17, 2020, regarding the European Year of Greener Cities (2019/2805(RSP)) Source here

Contemporary urban agriculture must address the challenges posed by the Circular Economy, which, in turn, can significantly reduce the negative impact on the environment and contribute to the restoration of biodiversity and Europe's natural capital. In 2020, the European Commission adopted a new Circular Economy Action Plan, one of the key pillars of the European Green Deal, Europe's new program for sustainable growth (A new Circular Economy Action Plan. For a cleaner and more competitive Europe, 2020).

Source here

In various cities, the presence or absence of municipal policies or regulations for urban gardening is of crucial importance. Unfortunately, in the large cities of Bulgaria, there is still no unified municipal legal framework associated with incentivizing urban agriculture. It is necessary:

- To include "urban agriculture" in the regulatory framework of major cities and to update the legislative framework related to the production and consumption of urban garden products;
- To establish a mechanism for facilitating, supporting, and incentivizing public initiatives related to urban agriculture (supporting access to water, if necessary, facilitating access to land, etc.);
- To create financial mechanisms for funding the infrastructure needed for urban agriculture activities in various areas – education, social activities, waste management; sports and youth activities; and
- To encourage an active dialogue with civic organizations, groups, and engaged citizens.

Source here

There are several EU regulations related to urban horticulture, including:

Regulation (EC) No 1107/2009 on the placing of plant protection products on the market - This regulation establishes the rules for the approval of plant protection products used in urban horticulture and other agricultural activities.

Regulation (EU) No 1305/2013 on support for rural development from the European Agricultural Fund for Rural Development (EAFRD) – This regulation provides funding and support for projects aimed at the development of rural areas, including initiatives related to urban horticulture.

Regulation (EU) No 2016/2031 on plant health - This regulation aims to prevent the introduction and spread of pests and diseases affecting plants, which can have a significant impact on urban horticulture and agricultural production.

Directive 2006/125/EC on the use of urban wastewater in agriculture - This directive establishes rules for the safe utilization of wastewater in urban horticulture and other agricultural activities to prevent health and environmental risks.

Regulation (EU) No 1143/2014 on invasive alien species – This regulation aims to prevent the introduction and spread of non-native species that may have a negative impact on urban horticulture and biodiversity.

it is advisable to apply the rules of sustainable agricultural practices in urban horticulture, which are legally regulated by a set of EU regulations. Some of the main principles include:

- to use fertilizers and soil improvers approved for organic production (described in Annex I of Commission Regulation (EC) No 889/2008).
- to use plant protection products against pests and diseases that are approved for organic production (described in Annex II of Commission Regulation (EC) No 889/2008).
- Do not plant invasive species of plants.

https://lex.bg/bg/laws/ldoc/2137229454

Two fundamental approaches are encountered for engaging the community in the creation of a shared garden (https://www.ngobg.info/uf/documents/7154/2656gardeningmanual.pdf), that predetermine different legal relationships:

- The municipality to be only the landowner, without any other commitments related to the shared garden. In this case, the most suitable option is for the municipality to enter into a contract with a legal entity that coordinates the activities of the garden and enters into individual agreements with the participants in the garden.
- The municipality to be not only the landowner but also an active party in the creation and operation of the shared garden. In this case, the municipality enters into individual agreements with the individual participants in the garden.

Strict and clear regulation is needed to stimulate urban gardening. Unfortunately, there are also cases in the opposite direction. For example, in Article 11, paragraph 6 of the Public Order Ordinance of the Municipality of Varna from August 2022, **it is prohibited** to "use inter-block spaces, parks, gardens, and other areas ... for agricultural purposes and others" (https://varna.obshtini.bg/doc/4949409).

source here

2.1.1 Biodiversity strategy

Elena Tsvetkova, Oana Venat
Claudia Fabian, Rumen Tomov,
Roxana Ciceoi

Nature is vital for each of us!

The member states of the European Union (EU), through the **Biodiversity Strategy for 2030 and the Green Deal**, are implementing a strategic plan for the restoration of biodiversity, which includes the exceptional richness of Earth's species, with small parks and gardens in urban areas being an integral part of it (this category also includes objects with urban gardening). We are all part of this biological chain and are entirely dependent on it. Nature is equally important for both human mental and physical well-being and for our society's ability to cope with global changes, health threats, and disasters (**EU Biodiversity Strategy for 2030**).
(https://eur-lex.europa.eu/legal-content/bg/TXT/?uri=CELEX%3A52020DC0380)

Nature is a fundamental ally in the fight against climate change. As nature regulates the climate, nature-based solutions are crucial for reducing emissions and adapting to climate change. Planting trees, including fruit trees, and establishing green infrastructure in cities, including urban agricultural gardens, will help cool urban areas and mitigate the impact of natural disasters (https://ec.europa.eu/research/environment/index.cfm?pg=nbs)

The EU Biodiversity Strategy for 2030, launched as a core part of the European Green Deal, is a comprehensive plan aiming to reverse biodiversity loss and enhance the natural wealth of the continent by 2030. This strategy sets out ambitious objectives, including the protection of 30% of the EU's land and sea areas, restoring degraded ecosystems by 2030, and introducing measures to enable a transformative change in society's approach to biodiversity (EU Commission, 2020). Specifically, it highlights the establishment of binding nature restoration targets across various ecosystems, from agricultural and urban areas to forests, wetlands, and peatlands, aiming for a significant uplift in organic farming and the use of biodiversity-friendly practices.

Moreover, the EU Biodiversity Strategy emphasizes integrating biodiversity considerations across all policy areas to ensure the sustainability of economic activities, including a significant increase in funding to support biodiversity. Critically, the strategy focuses on mainstreaming biodiversity, ensuring that ecosystem services are embedded in decision-making processes, and promoting a global framework for biodiversity at international levels. The strategy also envisions a new governance framework to strengthen compliance and align national strategic plans with these ambitious biodiversity goals, showcasing a path forward for biodiversity that is not only protective but also inclusive and integrative (EU Commission, 2020).

Within the European Recovery Plan NextGenerationEU (https://commission.europa.eu/strategy-and-policy/recovery-plan-europe_bg), measures are envisaged to support nature recovery, limit soil sealing and urban sprawl, and take actions to address pollution and invasive alien species.

In the Strategy, it is emphasized that "the environmental and economic consequences of soil degradation in the EU are significant." The main reasons for this lie in poor land management (including deforestation, depletion of pastures, unsustainable agricultural and forestry practices), construction activities, and soil sealing (European Environment Agency, 2019 - EEA Signals 2019: Land and Soil in Europe). Soil fertility loss in Europe continues due to urban sprawl.

To reverse this negative trend, the EU has developed the EU Soil Strategy for 2030, which aims to protect and restore soils by ensuring their sustainable use.

(https://environment.ec.europa.eu/topics/soil-and-land/soil-strategy_en). The strategy sets a vision and goals for achieving healthy soils by 2050, with specific actions that need to be taken by 2030. It also includes the development of the Soil Health Law to ensure a high level of environmental conservation and health.

The EU Soil Strategy is an important element of the overall EU Biodiversity Strategy for 2030 and contributes to the goals of the European Green Deal. Healthy soils are crucial for achieving climate neutrality, promoting a circular economy, and addressing desertification and land degradation. They also play a vital role in reversing biodiversity loss, ensuring food security, and safeguarding human health.

To support the implementation of the Soil Strategy, the "Soil Deal for Europe" mission focuses on scientific research and innovation. It aims to find solutions for the protection and restoration of soil health, ensuring the long-term sustainability of soil resources.

Overall, the EU Soil Strategy for 2030 recognizes the critical role of soils in various socio-economic and ecological aspects. It aims to promote their health and sustainable use through specific actions and legislative measures.

The strategy encourages member states to integrate the "land take hierarchy" into their plans for greening cities, prioritizing the reuse and "recycling" of land and high-quality urban soils at the national, regional, and local levels. This integration should be achieved through appropriate regulatory initiatives and by discontinuing financial

incentives that contradict this hierarchy, such as local tax breaks for converting agricultural land or land in its natural state into built environments. (https://eur-lex.europa.eu/legal-content/BG/TXT/PDF/?uri=CELEX:52021DC0699).

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0699
In 2023, the EU proposed a new soil monitoring law to protect and restore soils, ensuring their sustainable use. https://environment.ec.europa.eu/publications/proposal-directive-soil-monitoring-and-resilience_en

The emphasis is placed on the fact that "Soil degradation harms human health. Particles transported in the air by wind erosion cause or worsen respiratory and cardiovascular diseases. Sealed soils prolong the duration of high temperatures during heatwaves and have a lower capacity to act as pollutant absorbers. Contaminated soils affect food safety. For example, approximately 21% of agricultural soils in the EU contain concentrations of cadmium in the upper soil layer that exceed permissible norms for subsoil waters. The recreational value of the environment and nature, linked to our physical and mental health, is also supported by healthy and sustainably managed soils. This is particularly valuable in urban areas, where the adoption of sustainable

imanagement practices can help create healthy green spaces, reduce heat islands, improve air quality, and enhance living conditions. Urban agricultural gardens fall into this category.

Improving soil health is crucial for enhancing the EU's resilience to adverse events and adapting to climate change. Europe's resilience to climate change depends on the level of soil organic matter and fertility, water retention and filtration capacity, and erosion resistance. Carbon farming practices help store CO_2 in the soil, contributing to climate change mitigation. The soil's capacity to retain water aids in both preventing and responding to disaster risks. When soils can absorb more precipitation, it reduces the intensity of floods and alleviates the negative effects of drought periods. Some soil bacteria, part of the biodiversity in healthy soils, can also assist cultivated plants in tolerating drought. This fully encompasses the concept and good practices of urban gardening.

To have healthy soils, we must take advantage of several available funding opportunities for the protection, sustainable management, and regeneration of soils. The "Mission Soil Health and Food" is one of the five missions of the EU's Horizon Europe program, specifically dedicated to promoting soil health. The Soil Mission is a key tool for

implementing this directive. Its goal is to guide the transition to healthy soils by financing an ambitious research and innovation program, establishing a network of laboratories, including in urban areas, and more. Important programs for soil conservation include the Common Agricultural Policy, funds from the cohesion policy, the Environment and Climate Action Program, the Horizon Europe work program, the Technical Support Instrument, the Recovery and Resilience Mechanism, and InvestEU.

The planting of trees, aimed at supporting biodiversity and restoring ecosystems, is encouraged through strategic plans in the context of the Common Agricultural Policy and funding under the cohesion policy. Tree planting in cities is facilitated through the new **European platform for greening cities**, including within the LIFE program.

https://environment.ec.europa.eu/strategy/zero-pollution-stakeholder-platform_en
https://cor.europa.eu/bg/engage/Pages/zero-pollution-going-local.aspx https://cor.europa.eu/bg/our-work/commissions/Pages/enve.aspx
https://cor.europa.eu/bg/our-work/commissions/Pages/enve.aspx

Green urban farms provide diverse benefits for people, business opportunities, and shelter for various biological species. They reduce noise and air and water pollution, offer protection against floods, droughts, and heatwaves, and

maintain the connection between people and nature. The restrictive measures recently imposed due to the **COVID-19** pandemic highlighted the importance of green urban spaces for the **physical and mental well-being of individuals**. Although some of these spaces are already subject to more effective protection, they often find themselves in a losing position in the competition for land, as the proportion of the population living in urban areas continues to grow. According to the Biodiversity Strategy, within or partially within cities, there are 11,000 protected areas under "Natura 2000," constituting 15% of the total area of the "Natura 2000" network.

The goal of the **EU Biodiversity Strategy for 2030** is to reverse these trends and halt the loss of green urban ecosystems. Promoting ecosystems in good condition, green infrastructure, and nature-based solutions should be systematically integrated into urban planning, including public spaces, infrastructure, and the design of buildings and the surrounding areas. This is where urban horticulture can appropriately take its place in the urban environment.

In order to restore nature in cities and offset the actions of local communities, plans for greening should be developed. These plans should include measures such as creating accessible and biodiversity-friendly urban forests, parks, and

gardens, urban farms, green roofs and walls, tree-lined streets, urban meadows, and living hedges. The plans should also improve connections between green spaces, eliminate the use of pesticides, and restrict excessive mowing of green urban areas and other practices harmful to biodiversity. Political, regulatory, and financial instruments need to be mobilized for the implementation of these plans.

To support efforts in this direction, the European Green City Platform was created within the framework of the Green City Accord (https://environment.ec.europa.eu/topics/urban-environment/green-city-accord_en). This was done in close collaboration with the European Covenant of Mayors (https://eu-mayors.ec.europa.eu/en/home). City greening plans are a crucial factor in the selection of the European Green Capital and the awarding of the "European Green Leaf" (https://environment.ec.europa.eu/topics/urban-environment/green-city-accord_en).

https://cor.europa.eu/bg/engage/Pages/Chamber-of-National-Ambassadors-of-the-Covenant-of-Mayors.aspx
https://cor.europa.eu/en/engage/Pages/Chamber-of-National-Ambassadors-of-the-Covenant-of-Mayors.aspx

The Commission supports Member States and local and regional authorities through technical guidance and

assistance in mobilizing funding and building capacity. It also reflects the stated goals in the European Climate Pact (https://climate-pact.europa.eu/index_en).

The strategy focuses on reducing pollution, a key factor contributing to biodiversity loss and adverse impacts on human health and the environment. It recognizes the need for more efforts to reduce pollution. Biodiversity is affected by the discharge of nutrients, chemical pesticides, pharmaceuticals, hazardous chemicals, urban and industrial wastewater, as well as other waste, including solid waste and plastics.

Within the Commission's ambition for zero pollution with the goal of achieving a non-toxic environment, the Zero Pollution Action Plan for air, water, and soil has been adopted.

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0400
https://eur-lex.europa.eu/resource.html?uri=cellar:a1c34a56-b314-11eb-8aca-01aa75ed71a1.0009.02/DOC_1&format=PDF

The Zero Pollution Action Plan emphasizes the possibility of promoting areas that are free from pollution and restored as potential public green spaces, including urban gardens within this category. The goal, once again, is to address social

inequality by ensuring equal access to eco-friendly infrastructure in urban areas to the greatest extent possible. https://environment.ec.europa.eu/topics/urban-environment/green-city-accord_en

The goal is to achieve zero pollution with nitrogen and phosphorus deposits from fertilizers by reducing nutrient losses by at least 50%, while ensuring that there is no deterioration of soil fertility. As a result of these measures, the use of fertilizers will be reduced by at least 20%. In urban horticulture, fertilization practices are generally precise and in very limited quantities due to the scale of cultivated areas and the purpose of production primarily for personal use.

The "From Farm to Fork" strategy aims to reduce pesticide use and associated risks, supporting the broader implementation of integrated pest management (Directive on Sustainable Use of Pesticides (2009/128/EC). Within this strategy, the risk assessment of pesticides on the environment is optimized. Special attention is given to plastic pollution, for which measures are outlined in the European Plastics Strategy (European Strategy for Plastics in the Circular Economy (COM(2018) 28) and the new Circular Economy Action Plan (New Circular Economy Action Plan: For a Cleaner and More Competitive Europe (COM(2020) 98).

2.1.2 European Green Deal

Roxana Ciceoi, Tsvetelina Nikolova
Vera Petrova, Claudia Fabian,

Climate change and environmental degradation have negative impacts on urban ecosystems, posing significant threats to Europe and the world. To address these challenges, the EU has adopted the European Green Deal, which aims to transform the Union into a modern, resource-efficient, and competitive economy.

The European Green Deal has three main objectives:

Achieving net-zero greenhouse gas emissions by 2050 This goal aligns with the commitments of the Paris Agreement. It involves a significant reduction in emissions across various sectors, including energy, industry, transportation, agriculture, and buildings, while promoting the use of clean and renewable energy sources.

Decoupling economic growth from resource use, leading to environmental degradation. The goal is to promote efficient resource utilization, circular economy practices, and sustainable production and consumption models. This includes promoting sustainable agriculture, reducing waste, and improving recycling and the reuse of materials.

Ensuring that no one is left behind - The European Green Deal emphasizes the importance of a fair and inclusive transition. The pact aims to ensure that all citizens, workers, regions, and sectors can benefit from and contribute to the green transition. This includes creating new job opportunities, supporting affected communities, and addressing social inequalities.

The European Green Deal aims to overcome the consequences of the COVID-19 pandemic and the challenges posed by the situation in Europe. A total investment of 1.8 trillion euros, equivalent to one-third of the NextGenerationEU Recovery Plan combined with the seven-year EU budget, will be allocated to the European Green Deal. This ensures that recovery efforts align with green objectives, promoting long-term sustainability, resilience, and economic growth.

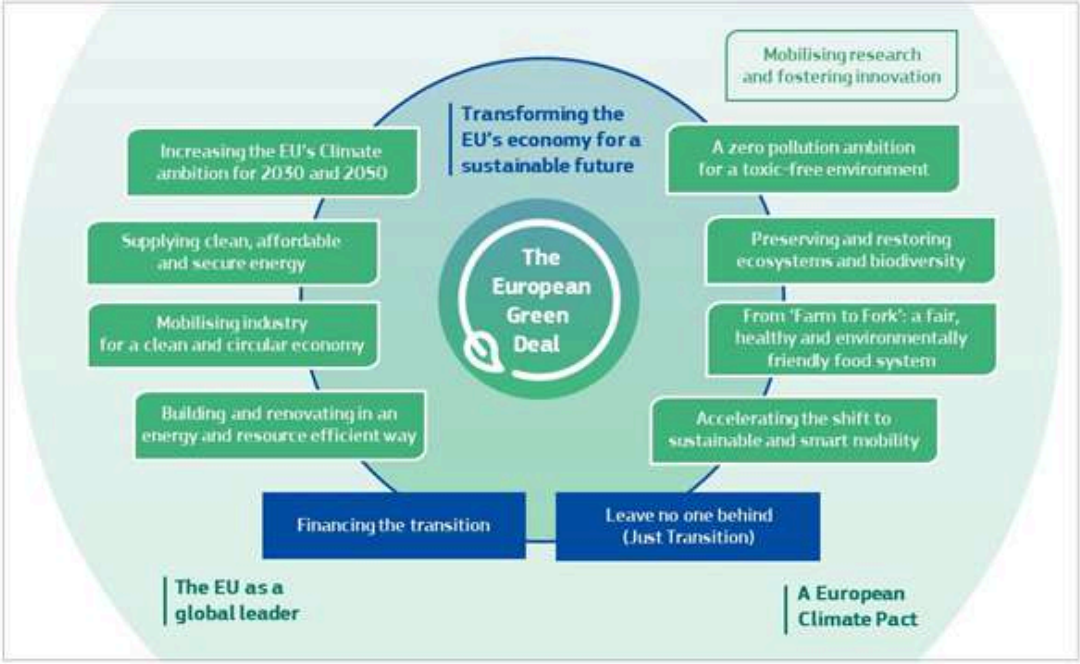
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_bghttps:/commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

The EU aims, through the implementation of various policies in the areas of climate, energy, transport, and taxation, to reduce net greenhouse gas emissions by at least 55% by 2030 compared to the 1990 levels.

The Green Deal is directed towards actions that will collaborate with nature to protect our planet and our health. The EU's Biodiversity Strategy for 2030 is a comprehensive, long-term plan for preserving nature and restoring biodiversity in Europe for the benefit of people, the climate, and the planet. It is a fact that biodiversity restoration leads to the desired capture and storage of carbon, as well as supporting adaptation to climate change and mitigating the impact of increasingly severe natural disasters, such as floods, droughts, and heatwaves.

Increasing net carbon uptake and stimulating carbon sinks in the EU are of paramount importance. The EU's target for net carbon removal by natural sinks will increase to 310 million tons of carbon dioxide equivalent by 2030. Member states share the responsibility for removing carbon from the atmosphere; they are responsible for caring for their carbon sinks and enhancing them to achieve the EU's new target.

https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en



https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_bg
https:/eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0021

As seen in the figure, several key policies underlie the Green Deal, directly or indirectly impacting urban horticulture. These include:

Increasing the EU's climate ambition for 2030 and 2050
Ambition for zero pollution and a non-toxic environment.
Conservation and restoration of ecosystems and a non-toxic environment
"From Farm to Fork": a fair, healthy, and environmentally friendly food system

In summary, the European Green Deal is a comprehensive and ambitious plan that combines actions in the areas of climate, efficient resource use, and social inclusion. It aims to address climate change, environmental degradation, and the impact of the COVID-19 pandemic and the war in Europe while promoting a sustainable and competitive economy for the EU.

Unit 2.2 EU initiative on greener and healthier cities

Oana Venat

The EU is launching several initiatives to promote greener and healthier cities. These initiatives aim to enhance the quality of urban life, improve sustainability, and mitigate the impact of climate change. Here are some key initiatives of the EU in this regard:

European Green Capital Award

This annual award is bestowed upon a European city with over 100,000 residents that has demonstrated a commitment to environmental sustainability and achieved outstanding results in various areas, including green urban planning, mobility, waste management, and biodiversity conservation.

https://environment.ec.europa.eu/topics/urban-environment/european-green-capital-award_en

---

European Green Leaf Award

This award encourages and rewards the efforts of small European towns with populations ranging from 20,000 to 99,999 residents. These towns aspire to enhance the quality of life for their inhabitants and reduce their impact on the local and global environment. The award recognizes and celebrates the sustainable initiatives and achievements of these smaller communities in their commitment to environmental responsibility and improvement of residents' well-being.

The European Union has taken proactive measures to foster greener and healthier urban environments through various initiatives, emphasizing the critical need for sustainable city planning and development. One prominent example is the European Green Capital Award, initiated in 2010 by the European Commission, which encourages cities to improve environmental management and share best practices. Cities like Stockholm, Hamburg, and Copenhagen have been recipients of this award, recognized for their efforts in maintaining environmental standards and pushing towards more sustainable futures (Rudden et al., 2015). These cities serve as role models, demonstrating the feasibility of thriving urban centers that prioritize green spaces, sustainable transport, and energy efficiency.

Furthermore, the EU supports projects that integrate green infrastructure into urban planning, such as the creation of urban parks, green roofs, and the revitalization of derelict areas to mitigate the urban heat island effect. These initiatives not only enhance the aesthetic value of cities but also contribute significantly to public health by improving air quality and providing residents with valuable recreational spaces. For example, projects in Paris and Freiburg have been highlighted for their innovative approaches to urban sustainability, showcasing successful

integration of nature into the urban fabric which aligns with the EU's broader goals of promoting environmental justice and reducing socioeconomic inequalities among urban dwellers

Environmental sustainability of European cities/ Patrick J. Rudden, Katie O'Neill, Brenda McEvoy, and Angela Treanor. Proceedings of the Institution of Civil Engineers - Civil Engineering 2015 168:2, 75-80
Samuel Mössner, Sustainable Urban Development as Consensual Practice: Post-Politics in Freiburg, Germany, Journal: Regional Studies, 2016, Volume 50, Number 6, Page 971
DOI: 10.1080/00343404.2015.1102875 in Green Cities of Europe 2012 ISBN : 978-1-59726-220-0

Sourde here

https://environment.ec.europa.eu/topics/urban-environment/european-green-capital-award_en

EU Cities PrograM

This initiative aims to promote sustainable urban development by encouraging collaboration and the exchange of best practices among cities, member states, and relevant stakeholders. Focused on areas such as air quality, housing, transportation, and energy efficiency, the program was launched in 2016. The EU Cities Program concentrates on the three pillars of policy development and implementation within the EU framework: Better Regulation, Better Financing, and Better Knowledge. It emphasizes the need for improved regulatory frameworks, enhanced financial mechanisms, and a deeper understanding of urban challenges to foster sustainable urbanization (European Commission, 2016).

https://futurium.ec.europa.eu/en/urban-agenda

During the period 2021–2027, support for the EU Cities Program will be provided within the framework of the European Cities Initiative.

European Urban Initiative (EUI)

This initiative supports cities in developing and implementing innovative solutions for urban challenges. It provides funding, expert knowledge, and networking opportunities to assist cities in managing and scaling up sustainable urban projects.

https://www.urban-initiative.eu/#

The legislative package for cohesion policy for the period 2021-2027 includes the establishment of the European Urban Initiative (EUI). This new initiative serves as a key instrument to support cities of all sizes, building their capacity and knowledge, fostering innovation, and developing portable and scalable innovative solutions for urban challenges of significance to the EU. As the EUI supports the EU Cities Program and can additionally support intergovernmental cooperation on urban issues, the initiative is also considered a specific contribution of the EU to multi-level governance and intergovernmental collaboration in Europe.

https://www.urban-initiative.eu/sites/default/files/2022-08/Description%20of%20the%20EUI.pdf

Smart Cities Initiative

The EU promotes the development of smart cities that utilize technologies and data to enhance the efficiency of urban services, improve the quality of life for citizens, and reduce resource consumption. This initiative supports the implementation of intelligent solutions in areas such as energy, transportation, ICT, and governance.

https://commission.europa.eu/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en

Mayors' Agreement on Climate and Energy

This initiative encourages local authorities to voluntarily commit to reducing greenhouse gas emissions and improving energy efficiency. By joining the Covenant, cities commit to developing and implementing action plans for sustainable energy and climate.

https://eu-mayors.ec.europa.eu/en/home

LIFE Program

The European Union's financial instrument for environmental and climate actions, the LIFE program, supports projects for urban sustainability. It provides funding for innovative urban initiatives related to energy efficiency, green infrastructure, sustainable mobility, and air quality improvement.

https://cinea.ec.europa.eu/programmes/life_en

These initiatives underscore the EU's commitment to promoting greener and healthier cities. By supporting sustainable urban development, the EU aims to create cities that are resilient, resource-efficient, and provide a high quality of life for their residents.

10 Emerging trends and policies for greener, healthier, and more resilient cities

1. Integration of green and blue infrastructure in urban planning

Recent EU and national initiatives have emphasized the integration of green and blue infrastructure (GBI) into land use planning. The EU Green Infrastructure Strategy, the Biodiversity Strategy for 2030, and Nature Restoration Law aim to restore 20% of degraded ecosystems by 2030, while promoting ecosystem services that improve urban resilience (Tóth, 2022).

Case studies from cities such as Coimbra (Portugal) highlight the importance of multi-level coordination between national, regional, and local administrations to achieve full policy integration of GBI concepts (Pinto et al., 2020).

2. Nature-based solutions as climate-resilience tools

Across Europe, the idea of working with nature rather than against it has left the laboratories and entered the heart of cities. **Nature-Based Solutions (NBS)** - once an abstract policy term - are now reshaping urban landscapes, threading together ecology, technology, and community life.

From Liverpool to Valladolid, the URBAN GreenUP project has turned neglected districts into living laboratories: networks of green corridors, urban wetlands, and shaded plazas designed not just to cool the air but to restore a sense of belonging. In

Manchester, the GrowGreen initiative has tested how rewilded spaces can double as flood buffers and social gathering points, proof that environmental design can also heal civic space (O'Sullivan et al., 2020).

Yet the story is not only celebratory. Researchers caution that the term "NBS" risks becoming a convenient slogan if biodiversity itself remains in the background. Planting lawns and shrubs may green a district, but without ecological depth—without pollinators, soil health, or native species—cities risk building green façades that look alive but function poorly. As Fearghus O'Sullivan and colleagues argue, true NBS success depends on how well cities monitor ecological health and involve citizens in its stewardship, turning each neighborhood into a small ecosystem of shared responsibility.

In this evolving landscape, NBS stand not merely as design tools but as social contracts—promises between citizens, scientists, and local authorities to rebuild the urban fabric through the quiet intelligence of nature.

Urban forestry and carbon sequestration: greening the future of European cities

Urban forests have quietly become Europe's new lungs. Beyond their poetic appeal, these living networks now occupy a decisive place in the EU's environmental policy architecture. In Italy, the National Urban Forestry Plan (2023) marks a turning point: it weaves ecological transition with civic life, using trees not as

decoration but as **instruments of resilience.** Supported by the National Recovery and Resilience Plan (PNRR), cities such as Genoa are experimenting with large-scale afforestation projects that measure not only CO_2 absorption but also the psychological well-being of their residents (Magliocco & Sabbion, 2025).

Urban forestry, once peripheral to planning, is now **a form of social infrastructure.** Citizens plant trees not only to shade playgrounds but to claim agency in shaping their neighborhoods. These participatory approaches, when coupled with rigorous ecological monitoring, are redefining what "public space" means in 21st-century Europe: a hybrid between habitat and commons, between mitigation policy and community expression.

4. Building climate-resilient urban infrastructures

Resilience has become the language of contemporary urbanism - and for good reason. As climate volatility accelerates, European and Asian cities alike are turning to adaptive frameworks that blend design, governance, and ecology. Recent analyses from Sustainability and Land reveal how the introduction of **climate-resilient city** (CRC) programs can measurably improve urban sustainability indices, particularly in regions with fragile infrastructure (He et al., 2025).

In Europe, the **Recovery and Resilience Facility** (RRF) has provided fertile ground for this approach. Greece's 2022 reform of Local and Special Urban Plans channels RRF funding into zoning reform, flood adaptation, and energy efficiency - a rare

convergence of spatial planning and climate policy (Vassi et al., 2022). Cities are learning that resilience is not a static goal but a moving target - a verb, not a noun - requiring continuous recalibration as urban systems evolve.

5. Green roofs: the architecture of living energy

High above the traffic and noise, Europe's rooftops are turning green - and increasingly, solar. The fusion of photovoltaic panels and vegetation has opened a promising frontier in sustainable architecture. Studies show that vegetation can cool solar panels by up to 20%, raising their efficiency while simultaneously cutting building energy use (Mangili & Calheiros, 2025). In Oslo, a detailed GIS-based mapping of rooftop potential identified thousands of viable surfaces, leading to a policy framework that treats roofs as micro-ecosystems - agents of air purification, stormwater retention, and energy generation (Hu et al., 2025).

These hybrid roofs - part garden, part power plant - are rewriting the vocabulary of the European skyline. They embody a philosophy that cities can be productive landscapes, capable of feeding biodiversity and grids alike.

6. Rethinking proximity: the 15-minute city

Few urban concepts have captured the European imagination as vividly as the 15-minute city. Its appeal lies in its simplicity: every citizen should be able to access work, education, healthcare, and recreation within a short walk or ride. Yet behind this simplicity lies a profound social reordering.

The **Thessaloniki pilot project** demonstrates that when urban design aligns with human time rather than traffic flow, cities become healthier, fairer, and quieter (Shoina et al., 2024). The model also dovetails with the EU's broader ambitions for decarbonization and **smart urban mobility**, suggesting that climate policy and urban happiness might, for once, share the same path.

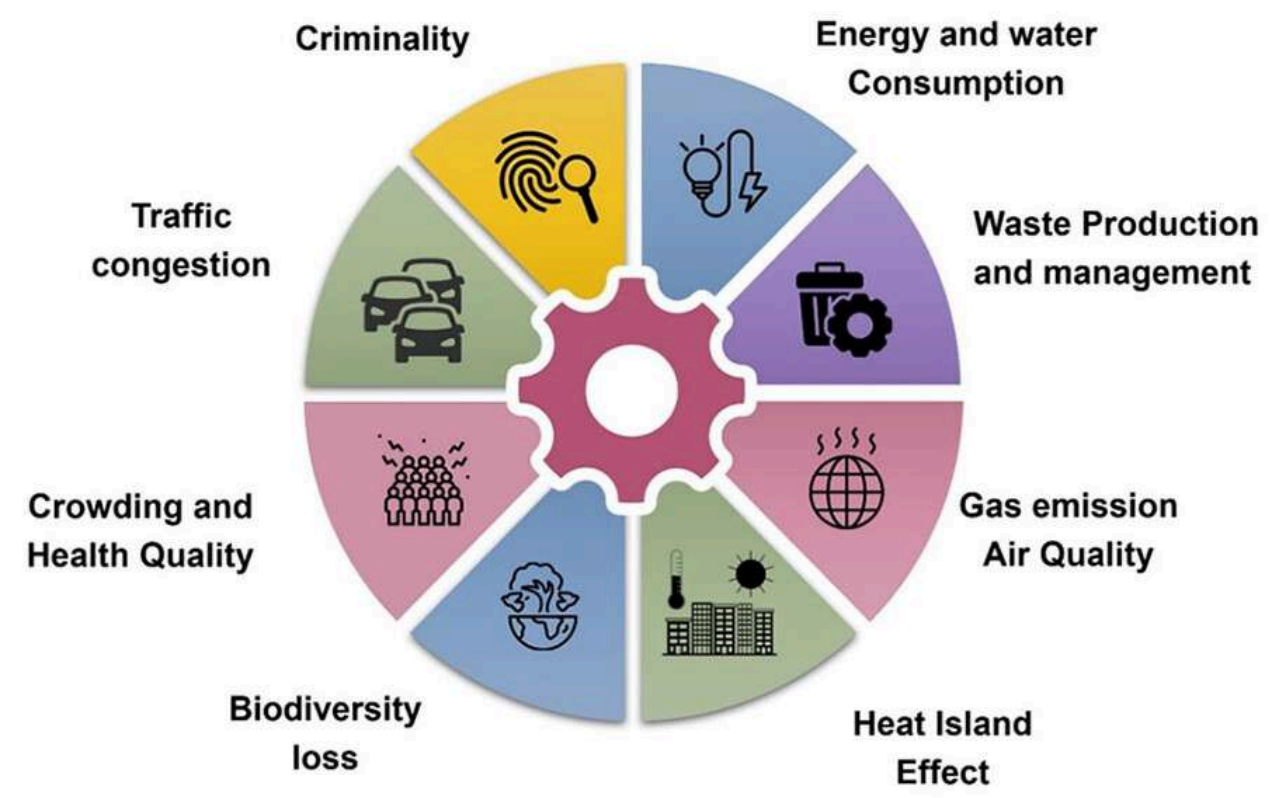


Figure 1. The impact of urbanization.
Source: Figure created by the authors.

7. The water–energy–food nexus: a new grammar for urban resilience

In Mediterranean and Middle Eastern cities, resilience cannot be discussed without invoking the water–energy–food (WEF) nexus. This triad, once relegated to agricultural policy, now defines urban survival. The European Commission's partnerships with cities in the Southern Neighbourhood have shown that governance - not technology - is often the decisive factor. Effective decentralization, participatory planning, and cross-sector coordination are what transform isolated projects into systemic resilience (Abdullah et al., 2021). The WEF approach reminds policymakers that sustainability must begin at the interfaces — where water meets energy, where food meets equity, where climate meets governance.

Source here

8. Circular construction: reinventing the urban material cycle

Concrete, the silent backbone of modern cities, is also one of their greatest polluters. Recent breakthroughs in eco-friendly concrete technologies - from geopolymer mixes to self-healing and recycled aggregate blends—are redefining what sustainable construction can mean.

These materials can slash CO_2 emissions by up to 90%, extend building lifespans, and embody the circular logic of reuse and regeneration (Sitorus, 2025). But innovation alone is not enough. Without updated building codes, training programs, and fiscal incentives, these technologies risk remaining boutique solutions. The challenge for European cities is to institutionalize innovation - to make green construction not exceptional, but expected.

9. The urban vulnerability - adaptation - settlements nexus

Cities are no longer viewed as static entities but as living organisms with vulnerabilities, adaptive capacities, and settlement dynamics that interact in complex feedback loops. The emerging VAS nexus captures this interplay: urban sustainability depends not just on infrastructure or policy, but on the **quality of resilience** - how well communities can adapt and evolve under stress (Jiang et al., 2025). Recent research advocates for a shift from measuring "growth speed" to "resilience depth." This new metric asks: c*an a city recover creatively, not just functionally? Can it transform its crises into laboratories of innovation and solidarity?*

10. The European Green Deal in motion: resilience amid crisis

Even amidst geopolitical tension and economic uncertainty, the European Green Deal continues to evolve as a blueprint for a climate-neutral, just, and regenerative Europe. From the *Nature Restoration Law* to the Deforestation-Free Supply Chains Regulation, the EU has kept biodiversity and circular economy at the core of its climate strategy, demonstrating an unexpected policy resilience even in times of war (Tosun, 2023).

These frameworks show a Union increasingly aware that environmental policy is not a luxury, but a condition of stability. In this light, the Green Deal reads less like an environmental plan and more like Europe's social contract with the future - an evolving pact to rebuild cities as ecosystems of life, equity, and imagination.

Unit 2.3 Governance, participation, and urban democracy in the green transition

Oana Venat

The transition to greener and healthier cities is not merely a technical process - it is a profoundly political and democratic transformation. At its core lies a simple question: *who decides what "sustainability" means for a city, and who benefits from it?* Over the past decade, scholars and practitioners alike have warned that without participatory governance, the Green Transition risks becoming a top-down, technocratic project serving institutional efficiency more than civic equity (Bäckstrand, et al., 2022).

Urban democracy is, therefore, the beating heart of sustainability. While climate policies define goals, it is governance that defines pathways. The European Green Deal (2019) envisions a "just transition," but justice is not a fixed policy principle - it is an evolving civic negotiation. Local actors, from city councils to neighborhood cooperatives, are the laboratories where European ideals meet urban realities.

The governance of the Green Transition, then, is not about finding the most efficient way to plant trees or build solar panels; it is about building new relationships between citizens, institutions, and ecosystems. This transformation

requires political courage: the willingness to decentralize, to experiment, and to accept that sustainability will look different in every community.

Traditional urban governance operated through hierarchy: mayors decided, departments implemented, citizens obeyed. The climate crisis has shattered this linear model. Environmental complexity demands polycentric governance, where multiple actors - public, private, civic, and ecological - share overlapping responsibilities and co-produce solutions (Ostrom, 2010; Swilling & Hajer, 2017). In Europe, this paradigm shift has been codified through the Urban Agenda for the EU (2016–2027), which promotes a "partnership model" for policy design. Instead of delegating sustainability to experts, cities are urged to mobilize networks of knowledge—from energy cooperatives to universities, from urban gardeners to data scientists.

For instance, **Ghent's Climate Pact** has formalized civic engagement as part of its decarbonization roadmap, integrating citizen assemblies into the decision-making structure (Peters et al., 2023).

Governance in the Green Transition thus resembles a living ecosystem rather than a bureaucratic pyramid. It thrives on feedback loops, adaptability, and trust. A mayor today must not only lead but listen; a planner must not only design but negotiate. Urban sustainability, at its best, is a co-produced act of imagination: an ongoing dialogue between vision and voice.

Co-governance and citizen participation: from policy recipients to co-creators

The transformation of cities into sustainable systems requires not only technological innovation but also a fundamental redefinition of who governs and how. In the contemporary European context, this means moving from hierarchical "command-and-control" systems to models of co-governance, where citizens, public institutions, universities, and local businesses collaborate to design and implement solutions together.

This participatory turn, often referred to as co-creation or co-production, represents one of the most significant governance innovations of the last decade (Lund, 2018). In this framework, the legitimacy of governance stems less from traditional representative democracy and more from output legitimacy—the ability of collaborative networks to produce tangible, innovative, and socially just results. Citizens thus become not merely stakeholders but active agents of urban transformation, bringing local knowledge and lived experience into the policy process.

A comparative study of 76 European Smart Cities revealed that participatory governance has expanded from symbolic consultation to practical collaboration, especially in domains like urban mobility, energy, and climate action (Cortés-Cediel et al., 2019). Cities such as Amsterdam, Ghent, and Vienna have

integrated participatory mechanisms at every stage of their smart city strategies—co-designing digital services, co-monitoring emissions data, and co-managing public assets through community cooperatives.

At the same time, the rise of co-creation has transformed urban administration. As noted by Leino and Puumala, co-creation breaks down traditional hierarchies between citizens and institutions, fostering multi-directional problem-solving processes rather than top-down governance (Leino & Puumala, 2020). Yet, they also caution that inclusivity cannot be assumed: power asymmetries, digital divides, and social inequalities often determine whose voices are heard in “participatory” frameworks. The challenge, then, is to transform participation from an invitation into an infrastructure - a stable, long-term component of governance.

One of the most promising vehicles for this shift is the **Urban Living Lab (ULL)** - a model of experimental, place-based collaboration where citizens, researchers, and public officials co-design sustainability solutions.The **CLEVER Cities** and **Sharing Cities projects**, for instance, illustrate how ULLs can foster genuine shared governance by aligning local experimentation with EU-level policy learning (Mahmoud et al., 2021). These initiatives demonstrate that collaboration itself - not merely its outcomes - has become a form of governance capacity, nurturing trust, reflexivity, and collective responsibility.

The European Green Deal (2019) echoes this participatory logic by calling for the active engagement of citizens and local authorities in climate neutrality pathways. The IMPACT project in the Meuse - Rhine Euroregion has gone even further, promoting citizen participation in climate action through local measurement, urban gardening, and food waste reduction campaigns (Alsamara et al., 2023).

Such examples reveal how co-governance can extend beyond formal consultations into everyday practices of sustainability- turning the street, the garden, and the neighborhood into laboratories of collective adaptation.

However, scholars warn that the enthusiasm for participation must be tempered by critical reflection. Who participates remains as important as how. Participation that reproduces existing inequalities risks legitimizing exclusion rather than empowering citizens (Leino & Puumala, 2020). Therefore, the co-governance of urban sustainability is not merely a matter of procedure but of justice and imagination. In the words of Dorthe Hedensted Lund, *"co-creation must remain a democratic experiment - an ongoing negotiation of knowledge, power, and purpose"* (Lund, 2018).

This view captures the spirit of a new urban governance paradigm: one that measures success not by control, but by collaboration; not by speed, but by inclusion.


Tour Sa Aking Rooftop Garden I Vegetable Gardening
Copy link
MY PANDEMIC VEGETABLE ROOFTOP GARDEN TOUR
Watch on YouTube

Source here


HOW MUCH FOOD?
1 Year of Growing Food - A whole season of vegetable gardening
Copy link
Watch on YouTube

Source here

REFERENCES

Abdullah, H., Elgendy, K., & Knaepen, H. (2021). Climate Resilience in Cities of the EU's Southern Neighbourhood: Opportunities for the EU Green Deal. . https://doi.org/10.55317/casc016.

Alsamara, I., Beinert, S., De Jong, J., Klapp, M., Marewsk, V., & Orhan, R. (2023). IMPACT: Ideal Measures for Participation and Awareness of Climate Change: Stronger Together Citizen participation in achieving the European Green Deal in the Meuse-Rhine Euroregion. South Eastern European Journal of Public Health. https://doi.org/10.56801/seejph.vi.282.

Bäckstrand, Karin & Koliev, Faradj & Mert, Ayşem. (2022). Governing SDG Partnerships: The Role of Institutional Capacity, Inclusion, and Transparency. 10.1007/978-3-031-07461-5_4.

Bolund P., & Hunhammar, S. (1999). Ecosystem services in urban areas. Ecological Economics, 29, 293-301. http://dx.doi.org/10.1016/S0921-8009(99)00013-0

Braat, L. C., De Groot, R. (2012). The ecosystem services agenda: Bridging the worlds of natural science and economics, conservation and development, and public and private policy. Ecosystem Services, 1, 4-15.

Brown, K. H. & Jameton, A. L. (2000). Public health implications of urban agriculture. Journal of Public Health Policy, 21, 20-39.

Cortés-Cediel, M., Cantador, I., & Bolívar, M. (2019). Analyzing Citizen Participation and Engagement in European Smart Cities. Social Science Computer Review, 39, 592 - 626. https://doi.org/10.1177/0894439319877478.

Elinor Ostrom, Polycentric systems for coping with collective action and global environmental change, Global Environmental Change,Volume 20, Issue 4,2010,Pages 550-557,ISSN 0959-3780, https://doi.org/10.1016/j.gloenvcha.2010.07.004.

He, W., Guo, X., & Zhang, C. (2025). Assessing the Impact of Climate-Resilient City Development on Urban Sustainability: Evidence from China. Sustainability. https://doi.org/10.3390/su17104381

Hu, A., Badach, J., & Chaudhuri, A. (2025). Green infrastructure for resilient urban design: the mapping and management of green roofs in Oslo. Linköping Electronic Conference Proceedings. https://doi.org/10.3384/ecp212.036.

Iaione, Fernando Christian; De Nictolis, Elena. (2020). Vita activa. In Eduardo Staszowski and Virginia Tassinari (Eds.), Designing in Dark Times : An Arendtian Lexicon (pp. 245-248). Bloomsbury Publishing. Isbn: 9781350070264.

Jiang, J., Cai, D., Yang, Q., & Huang, M. (2025). Scientometric insights into urban sustainability: exploring the vulnerability-adaptation-settlements nexus for climate resilience. Frontiers in Environmental Science. https://doi.org/10.3389/fenvs.2025.1596271.

Jim, C. Y. (2004). Green-space preservation and allocation for sustainable greening of compact cities. Cities, 21, 311-320.
La Greca, P., D. La Rosa, Martinico, F. & Privitera, F. (2011). Agricultural and green infrastructures: The role of non-urbanised areas for eco-sustainable planning in a metropolitan region. Environmental Pollution, 159, 2193-2202.
Leino, H., & Puumala, E. (2020). What can co-creation do for the citizens? Applying co-creation for the promotion of participation in cities. Environment and Planning C: Politics and Space, 39, 781 - 799. https://doi.org/10.1177/2399654420957337.
Lund, D. (2018). Co-Creation in Urban Governance: From Inclusion to Innovation. Scandinavian Journal of Public Administration. https://doi.org/10.58235/sjpa.v22i2.11422.
Magliocco, A., & Sabbion, P. (2025). Advancing Urban and Extra-Urban Afforestation: A Case Study of the Italian National Urban Forestry Plan in the Metropolitan City of Genoa. Land. https://doi.org/10.3390/land14040695.
Mahmoud, I., Morello, E., Ludlow, D., & Salvia, G. (2021). Co-creation Pathways to Inform Shared Governance of Urban Living Labs in Practice: Lessons From Three European Projects. , 3. https://doi.org/10.3389/frsc.2021.690458.
Mahmoud, N. & Mohammed, G. (2012). Green infrastructure connectivity within social sustainability: Case studies around the world. Canadian Journal on Computing in Mathematics, Natural Sciences, Engineering and Medicine, 3, 225-232.
Mangili, A., & Calheiros, H. (2025). Photovoltaic Green Roofs: Sustainable Solutions for Urban Environments. Revista de Gestão Social e Ambiental. https://doi.org/10.24857/rgsa.v19n4-131..
Matsuo, E. (1995). Horticulture helps us to live as human beings: Providing balance and harmony in our behavior and thought and life worth living. Acta Horticulturae, 391, 19-30.
McClintock, N. (2010). Why farm the city? Theorizing urban agriculture through a lens of metabolic rift. Cambridge Journal of Regions, Economy and Society, 3, 191-207.
O'Sullivan, F., Mell, I., & Clement, S. (2020). Novel Solutions or Rebranded Approaches: Evaluating the Use of Nature-Based Solutions (NBS) in Europe. , 2. https://doi.org/10.3389/frsc.2020.572527.
Oh RRY, Suarez-Castro AF, Fuller RA, Tervo M, Rozario K, Peters B, Chowdhury S, von Gönner J, Friedrichs-Manthey M, Berger A, Schultz T, Dean AJ, Tulloch A and Bonn A (2025) Using nature-based citizen science initiatives to enhance nature connection and mental health. Front. Environ. Sci. 13:1461601. doi: 10.3389/fenvs.2025.1461601
Orsini F., Kahane, R., Nono-Womdim, R. & Gianquinto, G. (2013). Urban agriculture in the developing world. A review. Agronomy for Sustainable Development, 33, 695-720.

Peters, M.A., et al. (2023) AI and the Future of Humanity: ChatGPT-4, Philosophy and Education—Critical Responses. Educational Philosophy and Theory, 1-35. https://doi.org/10.1080/00131857.2023.2213437

Pinto, L. V., Ferreira, C. S. S., Pereira, P., Jacobs, S., Misiune, I., Leone, M., Palliwoda, J., Priess, J., & Ferreira, A. D. (2019). Integration of Ecosystem Services and Green and Blue Infrastructures Concepts in the Land Use Planning Process: The Coimbra Case Study. Proceedings, 30(1), 90. https://doi.org/10.3390/proceedings2019030090

Shoina, M., Voukkali, I., Anagnostopoulos, A., Papamichael, I., Stylianou, M., & Zorpas, A. (2024). The 15-minute city concept: The case study within a neighbourhood of Thessaloniki. Waste Management & Research, 42, 694 - 710. https://doi.org/10.1177/0734242x241259926.

Sitorus, H. (2025). Eco-Friendly Concrete Technology Innovation for Sustainable Construction in Modern Cities. Jurnal Ar Ro'is Mandalika (Armada). https://doi.org/10.59613/armada.v5i1.5359.

Swilling, M., & Hajer, M. (2017). Governance of urban transitions: towards sustainable resource efficient urban infrastructures. Environmental Research Letters, 12. https://doi.org/10.1088/1748-9326/aa7d3a.

Tosun, J. (2023). The European Union's Climate and Environmental Policy in Times of Geopolitical Crisis. JCMS: Journal of Common Market Studies. https://doi.org/10.1111/jcms.13530.

Tóth, A. (2022). Planning and designing green infrastructure across landscapes and scales. Acta Horticulturae et Regiotecturae, 25, 1 - 7. https://doi.org/10.2478/ahr-2022-0001.

Vassi, A., Siountri, K., Papadaki, K., Iliadi, A., Ypsilanti, A., & Bakogiannis, E. (2022). The Greek Urban Policy Reform through the Local Urban Plans (LUPs) and the Special Urban Plans (SUPs), Funded by Recovery and Resilience Facility (RRF). Land. https://doi.org/10.3390/land11081231.

Hort4EUGreen

Remain In Touch

University
of Agronomic Sciences
and Veterinary Medicine
of Bucharest

021 318 2266

https://hortgreen.com/

Address: Bulevardul Mărăști 59, București 011464

ISBN 978-606-072-487-2
ISBN 978-606-072-489-6