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Urban Agriculture as a Sustainable Development Strategy: Istanbul Yedikule and Ayvansaray Gardens

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Abstract The interest in urban agriculture practices is increasing around the world due to growing awareness at both local and global levels of achieving food security and sustainable development in urban areas. In fact, urban agriculture is not a single practice. The integration of ideas, designs, and applications with designers and users can form different practices of urban agriculture, which can be defined as a set of practices based on social practice theory. Therefore, understanding the social and environmental dynamics of urban agriculture, which have led to its integration into the city structure, is crucial. As a result, analyzing and evaluating the planning of urban agriculture practices in major urban cities can contribute to understanding how these practices are integrated into the urban fabric. In this regard, a study was conducted in Istanbul to analyze Yedikule and Ayvansaray Gardens, located in the historical Fatih district. This study aims to evaluate urban agriculture planning in Istanbul and study its impact on sustainable development and the formation of alternative food networks. "Social Practice Theory" was used as an analytical framework to understand how these practices impact the urban environment and how they interact with local communities. This study aims to explore how planned urban agriculture contributes to the UN's 2030 sustainable development goals, through analyzing the planning process of urban agriculture in both Yedikule and Ayvansaray gardens.

Keywords Urban agriculture · city planning · social practice theory · market gardens · Istanbul

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Introduction

Urban agriculture has been an essential component of the urban fabric since ancient civilizations such as Mesopotamia. Its location has changed over time, as it moved outside cities during the Middle Ages. In the modern era, neoliberal urbanization has pushed agriculture to the rural/urban fringes as part of global food systems. However, modern cities face significant challenges, including food insecurity and sustainability, making the reintegration of urban agriculture into cities an urgent priority for sustainable development. Today, urban agriculture plays a vital role in providing local food and enhancing food security and sovereignty in cities. This research aims to address these challenges by exploring how to exploit the potential of urban agriculture in city planning. In fact, global challenges such as food price fluctuations and climate change call for efficient solutions to enhance food security and local food systems. Urban agriculture could be an essential tool to achieve sustainable urban development in urban areas. It contains different practices and forms based on the context, goal, and legal framework. Therefore, there is a need to understand how these practices can be integrated into urban planning to address local and global challenges.

When exploring the global context, different agendas are found to control urban agriculture practices and planning in both developing and developed countries. Regional sustainable urban development agendas have begun to highlight the importance of global partnerships in addressing global urban issues. These guiding principles affect urban interventions at the local level as well. Literature of urban planning and environmental studies in developed countries has begun to emphasize the relationship between urban agriculture practices and food systems, sustainability, and food security (Mincyte & Dobernig, 2016; Mougeot, 2006; Siegner et al., 2018).

In 2022, approximately 29.6% of the global population experienced moderate to severe food insecurity (FAO, IFAD, UNICEF, WFP, & WHO, 2023). This fact highlights the urgent need to study how urban agriculture can be used as an effective strategy to address the challenges of food insecurity. The concern for food security through sustainable development strategies has become a global trend in urban planning and policy making fields. Many studies in related literature have used social practice theory to analyze urban agriculture within planning practices in developed countries (Dobernig et al., 2016; Jansma & Wertheim-Heck, 2022; Jansma & Van Der Valk, 2017; Kontothanasis, 2017; Stolwijk, 2023; Touliatos, 2011). Due to the complexity of urban systems such as urban agriculture, the use of social practice theory provides an analytical framework for analyzing the interconnected relationships between practices, actors, and social structures, helping to develop innovative and impactful solutions. In other words, there is a need to understand how urban agriculture practices have emerged and changed in a certain context over time to design sustainable urban agriculture initiatives. An analytical framework, such as social practice theory, which is considered a medium between practice, actors, and social structure, is needed for deconstructing and understanding the overlapping connections of elements within complex urban systems such as urban agriculture. This approach will allow urban agriculture to be analyzed not only as a tool for food production but also as a means of achieving social integration and promoting sustainable change.

Istanbul, the largest city in Turkey, is known for its historical market gardens, which were responsible for feeding the city in the past. These market gardens have cultural and historical importance. Today, different municipalities in the mega city focus on creating more green spaces to promote wellbeing, social integration, and environmental awareness. For example, Yedikule and Ayvansaray Gardens on the Fatih historical peninsula promote urban agriculture practices. Yedikule Garden, a part of the historical Yedikule Market Gardens, offers a socially and culturally accepted urban agriculture model that was also applied to Ayvansaray Garden.

Both Yedikule and Ayvansaray Gardens in Istanbul were chosen as a case study for research to examine how urban agriculture planning contributes to achieving the 2030 Sustainable Development Goals, focusing on the potential of urban agriculture planning in creating alternative food networks. This research will provide clear recommendations for how to integrate these practices into urban planning, emphasizing their impact on enhancing food security and sustainable practices locally and globally.

Further research is needed to understand the phenomenon of urban agriculture as a social practice that encourages the sustainable behaviors of individuals. The significance of this research is evident in its contribution to the fields of urban planning, sustainable development, and community engagement by highlighting the transformative potential of urban agriculture planning. The findings can inform urban policymakers, planners, and community organizations on how to harness the power of urban agriculture to create more sustainable, productive, and inclusive cities. The objectives of the research include the following points:

- Explore the evolution of urban agriculture practices to understand their dynamics and how they change over time in different contexts.
- Urban agriculture as a social practice is explored by analyzing the relationship between practices, actors, and social structure using social practice theory.
- Explore the potential of urban agriculture planning as a tool for achieving the 2030 Sustainable Development Goals (SDGs).
- An urban agriculture planning model in Istanbul was analyzed using Yedikule and Ayvansaray Gardens as a case study to understand their role in building sustainable food networks.
- Provide recommendations for policymakers and planners to adopt planning strategies and models that integrate urban agriculture into inclusive and sustainable cities while promoting local and sustainable food networks and encouraging community engagement.
- Integrating local and global contexts to understand the relationship between local interventions in Istanbul and global urban contexts provides a holistic approach toward effective solutions in urban agriculture planning.

Literature Review

To begin, sustainable urban development and the basic concepts and characteristics of urban agriculture were reviewed in the related literature in both developed and developing countries context. The literature review focuses on urban gardens, which is the main type of urban agriculture and the scope of this research.

Global and Local Sustainable Development Visions

In urban planning field, understanding global urban challenges is essential for taking effective actions at the local level. Different global agendas and frameworks for sustainable urban development have been founded since 1992, such as “Agenda 21”, the “Millennium Development Goals”, “The Johannesburg Summit”, “Rio+20” and “2030 Agenda for Sustainable Development”. The United Nations member states adopted UN 2030 Agenda for Sustainable Development in 2015. This initiative aims to create a roadmap to promote urgent actions to end poverty and deprivation while increasing peace and prosperity in the present and future (United Nations, 2015). After the announcement of development agenda, the issue of localizing sustainable development goals came to the fore. In this regard, Sweden developed a solid institutional framework and launched a Local Agenda 2030 in 2019 with civil society participation based on the principles of the 2030 agenda (Bostancı, 2021).

Strategic Planning in Turkey

Globalization has increased the need for strategic planning instead of traditional planning to provide a framework that guides a country's development and growth (Akman & Özaslan, 2018). Turkey, which is the main context of this research, has adopted different strategic plans for sustainable development. Turkey is a transcontinental country with geostrategic importance. According to the World Bank Economies List, Turkey has a population of 84.1 million and has reached upper middle income (World Bank, 2022a). In addition, according to the United Nations' World Economic Situation and Prospects, Turkey is considered a developing country (United Nations, 2021). In 2015, Turkey with 193 countries signed the UN 2030 Agenda which reflects the commitment of Turkey toward the global sustainable development. Development planning in Turkey is divided into three periods: the statist period (1923-1950), the liberal period (1950-1960) and the planned period starting in 1960 when the State Planning Organization was established. After 1980, a strategy-based approach was adopted in the development plans, and more targets were included. National development plans include priorities for a 5-year period to consider the sustainability of the development process. A total of 11 national development plans were prepared and implemented in Turkey from 1963 to 2022, focusing on economics, policies, and current issues throughout each period. The issue of regional development was included in the 2nd Five-Year Development Plan (1968-1972) (Toy & Çalışkan, 2016). Turkey has created a road map aligned with the 2030 Agenda through national development plans. High-level national documents guide the strategic management design of public institutions. Although sustainable development goals are accepted in strategic planning in Turkey, there is a need to effectively integrate these goals into the planning process and improve their implementation (Yereli & Ünal, 2022).

According to Article 41 of Municipality Law No. 5393, if the population of the municipality is over 50,000, it is obliged to prepare strategic plans in accordance with regional and zoning plans. Thus, Istanbul, Turkey's largest city and a major metropolis on a global scale, has undergone various strategic planning initiatives to address complex urban challenges, support sustainable development, and improve the overall quality of life of its residents. Istanbul is one of the four cities in Turkey with a strategic plan that includes the Sustainable Development Goals (Yereli & Ünal, 2022). A matrix was created in the Istanbul Strategic Plan (2020-2024) to establish a connection between the SDGs and the 2020-2024 Istanbul Metropolitan Municipality Strategic Plan. The strategic plan aims to address external challenges and opportunities by examining global urban trends. It focuses on adding value to economic, environmental, social, and governance aspects to promote sustainability and heritage preservation supporting urban agriculture and green areas (Istanbul Metropolitan Municipality, 2020). Different other documents such as the Istanbul Food Strategy and Istanbul Vision 2050 are prepared as well. These documents aim to determine the city's food strategy based on food security and food sovereignty as well as the city's future and goals. Istanbul Vision 2050 emphasizes the promotion of urban agriculture practices such as "Vertical Farming" and "Urban Gardens" as well.

Food Sovereignty and Food Security

In existing studies on urban and regional planning, the most important concepts used in urban agriculture are food security and food sovereignty. Many sustainable urban development agendas adopted the concept as a goal to achieve justice, capacity building, and sustainable cities. Therefore, this concept has emerged as one of the main goals to be achieved in modern urban development agendas. Food sovereignty goes beyond the concept of food security. Food sovereignty advocates that the feeding of nations is a matter of national security or sovereignty. When a country's people depend on the global economy for their next meal, on the goodwill of a powerful country not to use food as a weapon, or on the uncertain and high cost of

long-distance transportation, that country lacks real security, both nationally and in terms of food security (Rosset, 2003). The food sovereignty movement aims to guarantee people the space, ability, and right to define their own food patterns and to protect production, distribution, and consumption (Pimbert, 2009).

On the other hand, according to the Food and Agriculture Organization of the United Nations (FAO), "The State of Food Security and Nutrition in the World 2023" report highlights the complexity of food security and the increasing hunger situation in the world due to COVID-19 economic recovery efforts, the conflict in Ukraine, and high food prices. According to projections of food security, almost 600 million people could suffer from chronic malnutrition by 2030, and urbanization will reshape food systems. In 2022, approximately 29.6% of the global population faced moderate to severe food insecurity (FAO, IFAD, UNICEF, WFP, & WHO, 2023). FAO has emphasized the flexibility of the concept of food security, with nearly 200 definitions in publications, especially in the fields of research studies and policymaking. Food security as a concept began to emerge during the global food crisis in the mid-1970s (FAO, 2003). At the 1996 World Food Summit, the World Bank focused on four main dimensions of food security. The other three dimensions include the physical availability of food, economic and physical access to food, food use, and stability of the other three dimensions over time (World Bank, 2022b). In addition to the previous four dimensions of food security definition, FAO has highlighted two other dimensions of food security: agency and sustainability. In all conceptual definitions of the right to food, food security is evaluated on these 6 dimensions (FAO, 2020; FAO, IFAD, UNICEF, WFP, & WHO, 2021). In the field of environmental studies, many recent studies have begun to focus on urban agriculture as a main contributor to food security in different contexts, such as Armanda et al. (2019), while examining the relationship between food security and climate change in terms of its effects on food production, such as Amthor (2001), Führer (2003), Long et al. (2005), Walker et al. (1999).

The Concept of Urban Agriculture

Many studies in the literature have defined urban agriculture differently, depending on the purpose, context, and time (Aldington, 1997; Bailkey & Nasr, 2000; FAO, 1999; Mougeot, 2000; Smit, et al., 1996). Since urban agriculture has many dimensions, there is no single agreed-upon definition. Urban agriculture and peri-urban agriculture were initially used as a term by researchers and media. Later, it was adopted by United Nations (UN) organizations such as the United Nations Development Program (UNDP) and the Food and Agriculture Organization of the United Nations (FAO) (Mougeot, 2000). The defined concept of urban agriculture at the United Nations Habitat Conference in Istanbul in 1996 described the cultivation, processing, and distribution of food and other products through extensive plant cultivation and animal husbandry in and around cities (Butler & Maronek 2002, as cited in Akyol, 2011).

The FAO defines urban agriculture as follows;

"Urban and Peri-Urban Agriculture (UPA) occurs within and around the boundaries of cities worldwide and includes products obtained from crop and animal agriculture, fisheries, and forestry in urban areas." It also includes non-timber forest products and ecological services provided by agriculture, fisheries, and forestry. More than one farming and horticulture system is often found in and near a single city" (FAO, 1999, p. 9).

These definitions of urban agriculture answer the following questions: what, where, and why. Other definitions of urban agriculture include the motivations behind growing food for self-sufficiency, including production, exchange, and sale. These definitions distinguish between rural and urban agriculture for food production and other recreational agriculture (Belows, 2011, as cited in Akyol, 2011). Another definition of

urban agriculture is urban waste recycling and meeting daily urban needs (Smit et al., 1996). A comprehensive definition of urban agriculture should include all factors affecting urban agriculture in a way that can answer the questions of "what, where, why and who": This perspective was adopted in Baumgartner and Belevi (2001).

Examples of Urban Agriculture in Developed and Developing Countries

Each developed or developing country has a different urban agriculture model that is suitable for its own context. Community gardens, home gardens, commercial farms, individual gardens, institutional gardens, guerrilla gardens, controlled environment farms, and urban parks are the main forms of urban agriculture in developed countries. The most common forms of urban agriculture in developing countries are community gardens, home gardens, commercial farms, individual gardens, and guerrilla gardens (Wadumestrige Dona et al., 2021). Examples of collective and public urban agriculture practices are examined within the scope of this study.

A country's socioeconomic conditions can affect the characteristics of urban agriculture. Developed countries emphasize social interactions, recreation, and education through urban agriculture, ensuring social integration and environmental protection. Government support and policy interventions play critical roles in promoting urban agriculture in developed countries. For example, proximity is an important characteristic of urban agriculture and local food systems in developed countries. Canada and the USA defined the concept of "local" produce in their regulations. In Canada, local produce is defined as 50 miles across the border. In addition, it was defined as being within the state or territory. In the USA, local produce must be within a state or 400 miles from origin (Enthoven & Van den Broeck, 2021). In contrast, developing countries are focusing on the economic benefits of urban agriculture and exploring its potential for waste management and pollution reduction (Wadumestrige Dona et al., 2021). Recently, authorities in developing countries have started to include urban agriculture in their strategic plans, following developed countries. For example, since the 1990s, urban agriculture policies have been revised in Dar-es-Salaam, Tanzania, and urban agriculture has been included in land use planning. Additionally, both the governments of Uganda and Kenya are developing urban agriculture policies (Lee-Smith, 2010; Wadumestrige Dona et al., 2021).

Community gardens are known in developed countries as examples of urban agriculture. In Berlin, Germany, Allmende Kontor is a community garden that was planned through participatory planning that transformed the site of a former airport called Tempelhofer Freiheit (Schalk, 2014). In the United States and Canada, urban agriculture takes three primary forms: small commercial farms, courtyards, community-supported agriculture and community gardens. The purpose varies from selling fresh products to promoting food security in terms of accessibility, affordability and self-sufficiency (Mok et al., 2013). Moreover, city gardens in Vienna are generally created on the basis of public demand by municipalities and are organized by garden groups (Henden Şolt & Kaymak Heinz, 2017).

An innovative model of urban agriculture, such as vertical farming, has also been founded in developed countries. In Singapore, vertical farming is an important urban strategy to address limited space, increase food security, and promote sustainability through innovative techniques such as hydroponics and vertical towers (de Oliveira et al., 2020).

Libman, (2007), focused on the relationship between gardening, food awareness, and youth nutrition in Brooklyn, New York. The study found that growing food naturally not only increases understanding of food production and processing but also increases fresh produce consumption. The Brooklyn Botanic Garden

(BBG) Children's Garden is an example (Libman, 2007). Incorporating educational programs into urban gardens is another common approach in developed countries, such as Canada. The High Park Children's Garden is a community-based initiative in High Park, Toronto. It provides environmental education for children through gardening and learning about ecosystems (HighPark.org, n. d.). Similarly, the Royal Botanic Garden in Sydney, Australia, offers a variety of educational programs and initiatives, including the "Growing the Future" program that promotes sustainable gardening, environmental education, workshops, school programs, and community activities for children and women (Botanic Gardens of Sydney, n.d.).

On the other hand, there are many examples of different urban agriculture projects in developing countries, such as China. In Shanghai, China, a program focused on making the city self-sufficient in grain by producing 2 million tons of wheat annually (Yi Zhang & Zhangen, 2000). In Latin American countries such as Argentina, Brazil, and Cuba, governments have developed national policies and programs to support urban gardening. Meanwhile, in Africa, the Democratic Republic of the Congo has successfully established an institutional framework to advance national urban gardening development (Orsini et al., 2013). NGOs such as FAO also support many urban agriculture projects in developing countries such as Colombia and the Democratic Republic of Congo (Taguchi & Santini, 2019).

Research Methodology

Context

Istanbul is known for its green agricultural landscape, which has been used to feed the city since the Byzantine and Ottoman periods. Market gardens were used to play a vital role in supplying Istanbul's local food system, which is considered part of the Byzantine and Ottoman heritage. Most of the market gardens were founded within the city walls and later moved to other places outside the city walls with urban expansion (Figure 1). There were 344 market gardens within the walls of Istanbul. Nine of these 344 market gardens are located in the area, which is surrounded by walls, especially from the Yedikule Gate to the Silivri Gate (Shopov & Han, 2013, as cited in Kanbak, 2016). A historical document from the 1900s stated that there were over 1,200 orchards on both the Asian and European sides of Istanbul, effectively meeting the city's fruit and vegetable needs (Günçıkan, 1990, cited in Kanbak, 2016).

Figure 1

Market Gardens in Istanbul

Source: Durusoy & Cihanger, 2016

According to Henden Şolt and Kaymak Heinz, Yedikule Market Gardens contained architectural remains such as wooden annexes, barns, terracing systems and 5-m-diameter cisterns from the 19th century. These structures provide evidence that the gardens were integrated into Istanbul's urban planning over time. In 1939, the 6,650-meter Theodosian Walls were accepted as a protected area, and in 1985, the entire wall complex was added to the UNESCO World Heritage List as the Historic District of Istanbul (Henden Şolt & Kaymak Heinz, 2017). For this reason, Yedikule Market Gardens are considered an important part of the city's cultural identity (Figure 2).

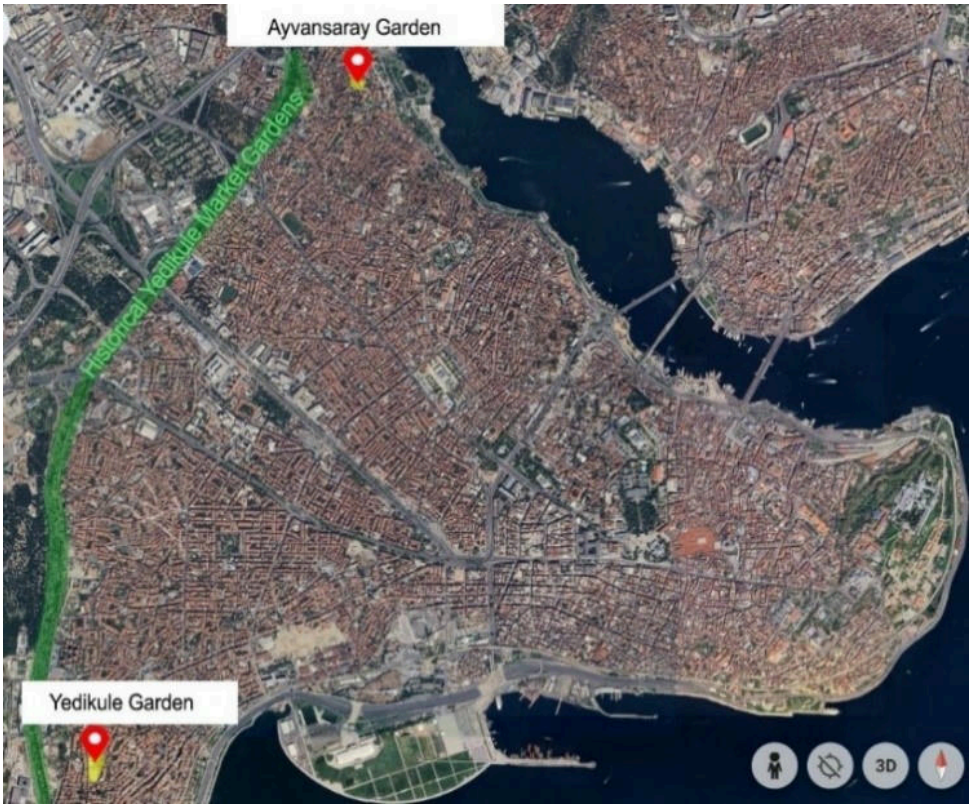
Figure 2

Historical Yedikule Market Gardens

The phenomenon of market gardens, which represents the cultural identity of Istanbul, needs to be examined in terms of its potential in creating sustainable development strategies. Market gardens have enhanced food security by becoming a part of the local food system since the past. There is a need to measure the micro level of market gardens as part of urban agriculture practices. For this reason, Yedikule and Ayvansaray Gardens in Istanbul were chosen as a case study to examine urban agriculture practices (Figure 3).

Figure 3

Location of Yedikule and Ayvansaray Gardens and Historical Yedikule Market Gardens



Source: Google Earth, 2023

Launched by Fatih municipality, the project aims to promote urban agriculture education for children and women, which emphasizes a significant character. Yedikule Garden was opened in 2020 in the Yedikule Neighborhood (Figure 4 and Figure 5).

Figure 4

Map of Yedikule Garden

Source: Google Earth, 2023

Figure 5

Yedikule Garden before and after renovation

Source: Fatih Municipality Activity Report, 2020

Following the same model, Ayvansaray Gardens were opened in 2022 in the Ayvansaray Neighborhood (Figure 6 and Figure 7) (Fatih Municipality, 2020a; 2022b).

Figure 6

Map of Ayvansaray Garden

Source: Google Erath, 2023

Figure 7

Ayvansaray Garden Before Renovation

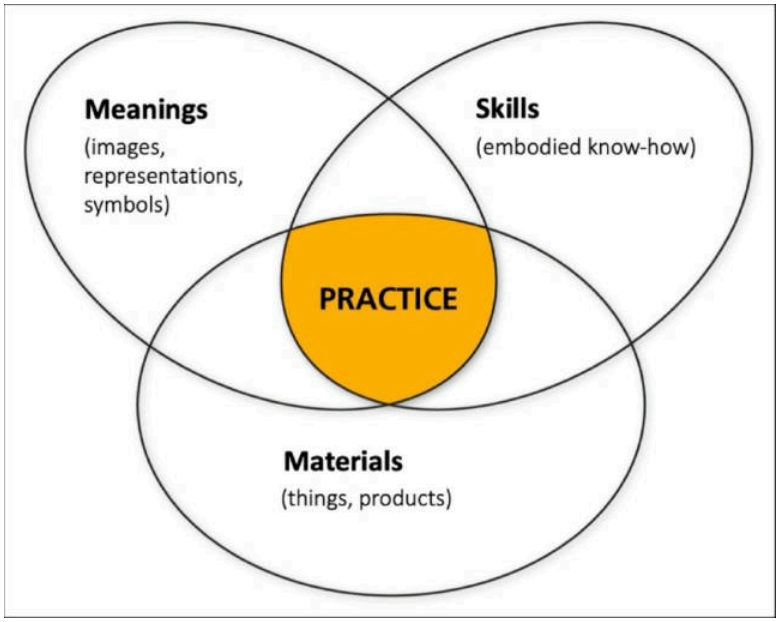
Source: Fatih Parks and Gardens Directorate, 2022

Methods

To analyze how urban agriculture planning contributes to the achievement of the UN's 2030 Sustainable Development Goals and the promotion of alternative food networks, the study adopted a qualitative research approach guided by the framework of social practice theory as an appropriate analytical approach for the case study. Qualitative methods included interviews with municipal employees, observation, and analysis of social media posts, municipal documents, brochures, YouTube videos, visual analysis, and online media articles. The data collected from Yedikule and Ayvansaray gardens were analyzed through the lens of social practice theory, which is based on three main elements: meaning, skills, and materials using thematic analysis (Figure 8) (Morgan et al., 2022). According to social practice theory, urban agriculture encompasses a set of activities that occur within a society, including practices, interactions, and information exchange between individuals and communities engaged in urban agriculture. Therefore, understanding these issues, along with other aspects of planning, is vital for developing future urban agriculture interventions. Examining an existing example of urban agriculture in Istanbul within the framework of social practice theory will help to deconstruct the dynamics of evolution and changing and mutual practices of an application in the city. This helps in integrating future planning for urban agriculture with sustainable development strategies that provide food security and better socio-economic status.

Figure 8

Social Practice Theory Elements of Shove et al. (2012),



Source: Morgan et al., 2022

In order to examine urban agriculture planning through the case study of Yedikule and Ayvansaray Gardens in Istanbul, interviews were held with Fatih Municipality Planning and Projects Directorate and employees from both gardens. The data obtained from the interviews aims to explore the dynamics that have changed urban agriculture practices in Istanbul over time. Interviews were conducted with 2 people from Fatih Municipality Planning and Projects Directorate, 4 employees from Ayvansaray Garden and 2 employees from Yedikule Garden. On Wednesday, September 13, 2023, an interview was held with both architects and planners working at Fatih Municipality Planning and Projects Directorate. This interview includes both open-ended and closed-ended questions to investigate the high-level strategic planning of Yedikule and Ayvansaray Gardens and the planning process, including the project's vision, goal, stakeholders, and land selection. On the other hand, on Thursday, September 14, 2023, an interview was held with Ayvansaray Garden Unit Manager and 3 other employees, and 2 employees at Yedikule Garden. The aim of this interview was to examine the management and operations of the two gardens.

In accordance with ethical considerations and confidentiality protocols, the Yedikule and Ayvansaray Gardens employees who participated in this study preferred anonymity. Therefore, generic identifiers were used consistently throughout this thesis to protect the identities and confidentiality of the interviewed participants. Employees at Ayvansaray Garden are part-time agricultural engineers defined as (Employee A1), part-time employees defined as (Employee A2), and full-time gardeners defined as (Employee A3). Employees at Yedikule Garden are agricultural engineers, defined as (Employee Y1) and landscape architects, defined as (Employee Y2). All employees at Ayvansaray and Yedikule Gardens were asked about urban agriculture practices in the gardens. The questions focused on technical information regarding the training workshops and the operational process in the gardens.

After collecting data from the interviews, data were refined using the thematic analysis method based on social practice theory elements: meaning, skills, and materials. This thematic outcome aims to study the relationship between practice, actors, and social structure using social practice theory to understand urban

agriculture as a social practice. After analyzing the obtained data according to social practice theory, a matrix was created to explore the relationship between urban agriculture planning in Yedikule and Ayvansaray Gardens, reflected through the analyzed themes, and the 2030 Sustainable Development Goals. This matrix guides a comparison between the characteristics of these gardens and urban agriculture practices in developed and developing countries to explain the role of urban gardens in achieving SDGs and to compare local interventions with the global context. The comparison used data collected through interviews with the Fatih Municipality Planning and Projects Directorate to explore the aim, location, spatial configuration, actors and legal framework of Yedikule and Ayvansaray Gardens. This study provides a thorough analysis of the urban agriculture planning model in Istanbul and its role in building sustainable food networks. Yedikule and Ayvansaray Gardens were also evaluated as an alternative food network. These findings provide insights for policymakers and city planners on how urban agriculture can be used as a strategic tool to promote sustainable development while enhancing food security.

Urban Agriculture in Yedikule and Ayvansaray Gardens: A Social Practice Theory

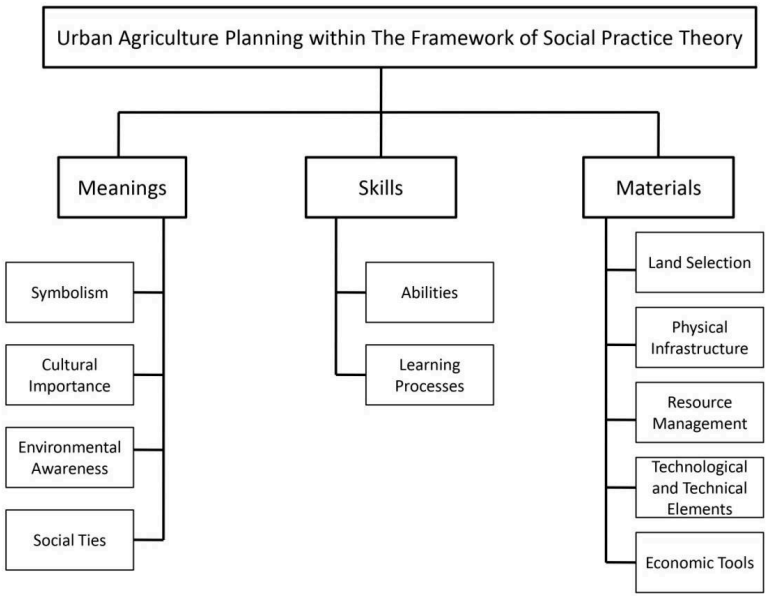
Many recent studies have used social practice theory as a framework to relate urban agriculture and local urban planning practices to national visions and to analyze urban agriculture in developed countries. Jansma and Wertheim-Heck (2022) analyzed the planning of urban agriculture in the Dutch city of Oosterwolde, using three elements of social practice theory as their main theme. Recent studies have focused on the social dimension as a major force that influences all systems in urban areas. When studying the evolution of global food systems and their replacement by local and alternative food systems, the social dimension appears to be a key factor in guiding this process, alongside the economic, cultural, and environmental dimensions. In the context of urban agriculture, the literature on food landscapes and urban planning considers it a social practice driven by actors such as supporters and users. This practice is dynamic and changes according to factors such as knowledge, desire, and ability to produce and consume. Therefore, understanding and analyzing urban initiatives requires an in-depth study of these dynamics.

The philosophical foundations of social practice theory are related to Marxism, existentialism, pragmatism, and analytical philosophy (Miettinen et al., 2009; & Reckwitz, 2002). Social practice theory is a group of theories that focus on social practices as a starting point for social change, rather than focusing on individual consumption patterns (Touliatos, 2011). Social practice theory includes three main elements: materials, meaning, and skills. Materials are the things that objects are made of, technologies, and tangible physical entities. Meanings denote the meanings of goals, ideas, and symbolism. Skills are knowledge, abilities, and techniques (Shove et al., 2012).

The data regarding urban agriculture planning obtained from the interviews with Fatih Municipality Planning and Projects Directorate and employees at both Yedikule and Ayvansaray Gardens were analyzed through the lens of social practice theory. The data obtained from the interviews about urban agriculture practice were decomposed into many smaller practices based on the three elements of social practice theory: meaning, skills, and materials, providing thematic analysis (Figure 9). This approach created a holistic approach to understanding Istanbul's urban agriculture planning model.

Figure 9

Social Practice Theory's Thematic Analysis of Yedikule and Ayvansaray Gardens



Urban Agriculture as "Meanings"

Meanings ensure that connections between verbal words and physical elements are established. Thus, four different themes were determined in the "meanings" section using the thematic analysis method: symbolism, cultural importance, environmental awareness, and social ties. According to Braun and others, thematic analysis is a method that identifies and analyzes stereotyped meanings. In addition, thematic analysis interprets these stereotypical meanings or themes through qualitative data (Braun et al., 2014). Fatih Municipality emphasizes some meanings related to Yedikule and Ayvansaray Gardens in its official discourse. These meanings are physically represented in the implementation of the Yedikule and Ayvansaray Gardens projects.

- **Symbolism:**

Yedikule and Ayvansaray Gardens symbolize the institutional commitment of Fatih municipality to green areas and sustainable living in Istanbul. Since the main character of Yedikule and Ayvansaray Gardens is "urban agriculture", it is not emphasized as a separate word in the strategic plan documents or even in the official discourse of the municipality. Rather, these gardens are described as "hobby gardens". Fatih Municipality focuses on increasing green spaces and improving social life by providing free agricultural education with appropriate spatial planning, diversity of spaces, and infrastructure. The aim for developing the food production process in the future is represented by adding a greenhouse in each garden for experiments (Figure 10). The topography and surrounding landscape were also considered during the planning process. The traditional arrangement of the market gardens in Yedikule Garden was well preserved. On the other hand, the "garden concept" in the Ayvansaray Garden's layout provides a friendly and well-planned space (Figure 11).

Figure 10

Greenhouse in Ayvansaray Garden

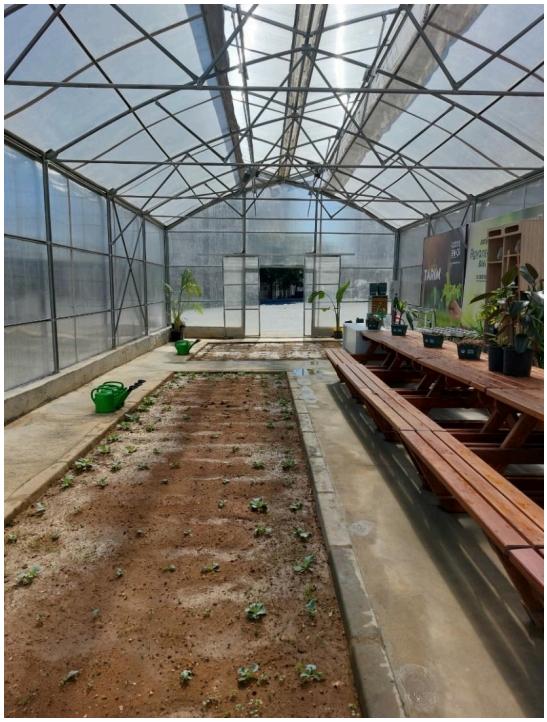


Figure 11

Ayvansaray Garden

- **Cultural Importance:**

The cultural significance of Yedikule and Ayvansaray Gardens represented in the selection of their location and agricultural education activities. Both land areas are agricultural within the zoning plan. The UNESCO-protected Yedikule Market Gardens, which extend along the walls of the historic Fatih Peninsula, form an important part of Istanbul's heritage. The historical Yedikule Market Gardens extend along the historical walls of Fatih's Historical Peninsula, from Yedikule, where Yedikule Garden is located, in the south, to Ayvansaray, where Ayvansaray Garden is located, in the north. The geographical location of both gardens creates a visual connection between them, enhancing the possibility of linking them together as a green belt with historic market gardens. In addition, the planning reflects the preservation of agricultural heritage through traditional practices such as growing seasonal crops and medicinal plants. The gardens celebrate Istanbul's agricultural traditions through harvest festivals and workshops that convey the importance of food culture to new generations.

- **Environmental Awareness:**

Fatih municipality uses urban agriculture as a strategy to raise environmental awareness among children through techniques such as organic farming and waste reduction, turning consumers into producers and creating alternative food networks that reduce the environmental footprint by shortening supply chains. Due to the dense population of children in the Yedikule and Ayvansaray neighborhoods, the project targeted children in these areas. The municipality reflects its commitment to environmental awareness in its implementation of the Avansaray Garden by preserving existing olive, mulberry, and walnut trees and planting medicinal and aromatic shrubs to protect agricultural production. In Yedikule Garden, the original agricultural function of the land was preserved and developed, again reflecting the municipality's environmental awareness.

- **Social Ties:**

Yedikule and Ayvansaray Gardens offer a space where neighborhood residents can come together, interact, and collaborate in collective activities. This project serves both environmental and social dimensions by providing common areas for children and families. Educational and social activities such as harvest festivals encourage social cooperation and shared ownership. During the field observation, it was noticed that each field was assigned to each school in the neighborhood. Since the names of each school are written on the signs in the field, the number of children belonging to the garden will be increased.

Urban Agriculture as "Skills"

- **Abilities:**

Practicing urban agriculture requires technical and practical skills. These skills range from cognitive skills to practical skills acquired through learning and experience. Professional teams of agricultural engineers, landscape architects and gardeners support agricultural activities in the gardens and convey their knowledge to children, women and families. This includes sustainable agriculture skills such as organic farming and seasonal farming. Professionals also conduct greenhouse experiments to develop new technologies using their coordination, organization and management skills. The garden staff work in harmony despite their different units in managing and planning agriculture.

- **Learning Processes:**

Knowledge about urban agriculture practices in Yedikule and Ayvansaray Gardens was acquired through hands-on learning and direct application. This is based on practical activities provided by professionals to acquire the required agricultural skills. These activities contribute to the dissemination and promotion of urban agriculture practices within the community. The professional staff also learn through their experiences in the workshops, where they undergo an experimental process to develop the content of the workshops. The short-term agricultural workshops combine both formal and informal learning and cover topics such as product cultivation, animal husbandry, and organic farming. Both sensory interaction with nature and theoretical information, presented through short videos on social media, enhance the learning experience in the workshops.

Urban Agriculture as "Materials"

Materials refer to the selection of land, physical infrastructure, material and resource management, technological and technical elements and economic tools to implement social practice. Urban agriculture was conceptualized as the main material in the planning of Yedikule and Ayvansaray Gardens. Accordingly, agricultural training workshops were the main means of initiating urban agriculture practices in both gardens. Infrastructure is another important tool for providing urban agriculture which was maintained in good way in both gardens. The gardens include all the necessary materials and tools for urban agriculture, such as compost fertilizers, seeds, seedlings, water supply, soil, vegetables, fruits, medicinal plants, and flowers.

- **Land Selection:**

The selection of suitable sites for the Yedikule and Ayvansaray Gardens project was the basis of the planning phase, and these two neighborhoods were prioritized based on a comprehensive analysis of the population and socioeconomic situation. Yedikule Garden land has historical and cultural significance as it is part of the historical Yedikule Market Gardens, reflecting the serious desire to preserve traditional urban agriculture. The selection of the Ayvansaray Garden land, an informal settlement, reflects an orientation toward urban rehabilitation. The different needs of each area to raise living standards and provide green spaces, drive the transformation of these lands into hobby gardens. In this way, Fatih Municipality could promote sustainability and environmental renewal.

- **Physical Infrastructure:**

The physical infrastructure includes physical elements that facilitate gardening and recreation practices. The infrastructure of Yedikule and Ayvansaray Gardens includes the layout, plant species, irrigation systems, agricultural tools, and urban furniture. This infrastructure aims to facilitate agricultural and recreational practices. Ayvansaray Garden has a larger public green space than Yedikule Garden and offers more recreational activities due to the need for recreational green spaces in the Ayvansaray neighborhood. Both gardens were designed to meet the needs of each neighborhood while considering the overall context. The municipality provides agricultural tools, water, and electricity free of charge and allows online reservations to register for workshops and activities. In other words, participation in different activities in both gardens is a controlled process that increases safety.

- **Resource Management:**

Resource management is an effective approach to developing existing resources. This approach ensures that existing resources are used efficiently while also reducing waste. This can save the municipality more time and budget. The resource management approach in Yedikule and Ayvansaray Gardens reflects the project management principles applied by the municipality. Developing resource management strategies can provide more efficiency and sustainability in terms of providing sufficient materials for agricultural practices. All the necessary resources are provided for the efficient implementation of urban agriculture with resource management in Yedikule and Ayvansaray Gardens. However, a problem encountered in Yedikule Garden is the inadequacy of the necessary materials for agricultural and social activities. Waste reduction strategies that recycle seeds and preserve them naturally to turn them into seedlings and reuse them in organic planting can ensure sufficient resource management. In addition, the irrigation systems in the gardens are sustainable and aim to reduce water waste.

- **Technological and Technical Elements:**

Technologies refer to all automation systems used in Yedikule and Ayvansaray Gardens to increase efficiency and function. The technology found in both Yedikule and Ayvansaray Garden is a soilless agriculture system. An automatic drip irrigation system is currently used in Ayvansaray Gardens and is planned to be added to Yedikule Gardens. In addition, because it is a public area, an automatic monitoring system is available for security purposes. There are no advanced active sustainable technologies such as solar panels or rainwater collection systems. However, such technologies are planned to be integrated in the future. Techniques refer to simple techniques used in agriculture. In both Yedikule and Ayvansaray Gardens, different sustainable planting and irrigation techniques are used. In addition, some methods are used in both gardens for sustainable waste management.

- **Economic Tools:**

Economic tools include the management of budget, financial and human resources by the municipality. The diversity of activities has created various jobs, providing employment opportunities for residents of Istanbul. All workshops and activities are free of charge; agricultural products are not sold but are given as gifts to participants, used in cooking workshops, or distributed among employees. Due to the increased demand for fresh produce in the gardens, selling fresh produce was included in the future development plan of the project (Figure 12). In this way, new income streams can strengthen the financial situation of the project ensuring efficient project management while supporting the local economy. The project aims to expand to other neighborhoods and thus have the potential to create alternative food networks.

Figure 12

First Sales Point in Yedikule Garden

Results

The relationship between Yedikule and Ayvansaray Gardens and Alternative Food Networks

Yedikule and Ayvansaray Gardens Project was not initially planned for commercial purposes, but rather as a model focused on social and environmental development in Fatih neighborhoods. This model is expected to be applicable in any urban context. However, during the operation of the project, employees noticed an increase in demand for organic produce from the gardens. Although there is no direct relationship between the project and alternative food networks, some features of alternative food networks are reflected in the project, which opens the door to possibilities for the formation of alternative food networks in the future.

First, the short distance between producers and consumers is a key feature of alternative food networks (Enthoven and Van den Broeck, 2021; & Reckinger, 2022). Yedikule and Ayvansaray Gardens provide easily accessible agricultural production activities due to their location within neighborhoods and near schools.

Second, unlike industrial agribusinesses, alternative food networks are small-scale farming practices that use organic production methods (Enthoven & Van den Broeck, 2021). Organic production methods are adopted in agricultural practices in Yedikule and Ayvansaray Gardens, such as using natural compost, recycling waste, and using the existing historical well in Yedikule Garden for irrigation.

Third, commitment to sustainable food production and consumption is another characteristic of alternative food networks. Yedikule and Ayvansaray Gardens were primarily planned to increase the environmental awareness of children. Free agricultural education workshops aim to transform the habits and mentality of children toward the environment when making consumption decisions. However, further research on the participants and their perceptions of the project is recommended.

Fourth, the socialization of agricultural activities is another important feature of community gardens and community-supported agriculture, which are the main types of alternative food networks. Social integration with agricultural activities was reflected in both Yedikule and Ayvansaray Gardens.

Finally, food producers are also considered consumers in both gardens, a model found in alternative food networks. In other words, if Yedikule and Ayvansaray Gardens start selling fresh produce and similar gardens are opened in different neighborhoods of Fatih, there will be great potential in creating a local organic agricultural food production network. This potential can contribute to sustainable urban development. The potential of Yedikule and Ayvansaray Gardens to create an alternative food network can serve as an example of strengthening sustainable food strategies in both Istanbul and Turkey. Increasing local food systems in Turkey can improve food security, sustainability, and the economy by creating a green circular economy.

The relationship between Yedikule and Ayvansaray Gardens and their Sustainable Development Goals

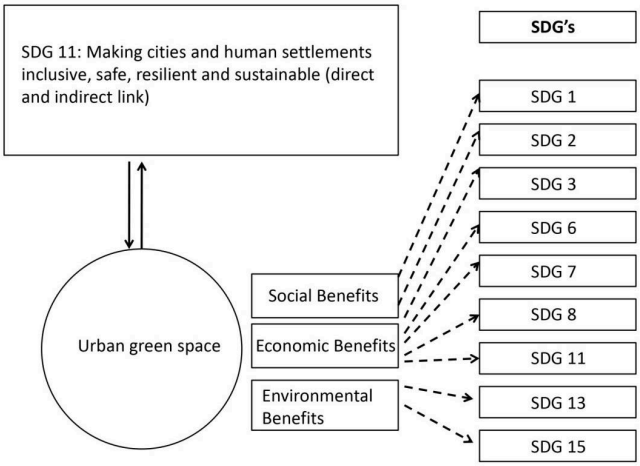
Urban agriculture in Yedikule and Ayvansaray Gardens is compatible with many Sustainable Development Goals (SDG 1,2,3,8,11,12,13,15).

A comprehensive analysis and matrix were created to evaluate the links between each theme and the SDGs. This evaluation is based on the theory of social practice to understand how urban agriculture in Yedikule and Ayvansaray Gardens relate to the SDGs and how they contribute to improving the efficiency of future planning of these initiatives. In an interview with the Fatih Municipality Planning and Projects Directorate, it was emphasized that all projects should consider the 2030 SDGs. The United Nations 2030 Agenda for Sustainable Development and the New Urban Agenda are the main reference sources for the municipality when making any decision.

Through deconstructing the planning process of the gardens into smaller applications when analyzed through the lens of social practice theory, the complexity of urban agriculture system was well understood, revealing the relationship between the project and the 2030 Sustainable Development Goals of the UN. In this regard, Hyder and Haque (2022), in their study, established links between urban green spaces and the 2030 Sustainable Development Goals of UN were founded using empirical evidence and examples (Figure 13).

Figure 13

Urban Green Space and Related 2030 Sustainable Development Goals Adapted from



Source: Hyder & Haque, 2022

This study was conducted to determine the relationship between Yedikule and Ayvansaray Gardens and the 2030 Sustainable Development Goals specified in this study. A matrix of the relationship between the United Nations Sustainable Development Goals and the objectives of the 2020-2024 Strategic Plan prepared by Istanbul Metropolitan Municipality was used as a reference point for the findings in this evaluation (Figure 14).

Figure 14

Matrix of Municipal Goals and Sustainable Development Goals in the Istanbul Strategic Plan

Subject	Purpose	The eradication of all forms of poverty everywhere	End hunger, achieve food security and improved nutrition, and support sustainable agriculture	Ensuring healthy lives and promoting well-being at all ages	Ensuring inclusive and equitable quality education and promoting lifelong learning for all	Achieving gender equality and empowering all women and girls	Ensuring accessibility and sustainable management of water and sanitation for all	Ensuring everyones access to affordable, reliable, sustainable and modern energy	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Building resilient infrastructures, supporting inclusive and sustainable industrialization and fostering innovation	Reducing inequalities within and between countries	Making cities and human settlements inclusive, safe, resilient and sustainable	Securing sustainable consumption and production patterns	Immediate action to combat climate change and its effects	Conservation and sustainable use of oceans, seas and marine resources for sustainable development	Conservation, development and promotion of the sustainable use of terrestrial ecosystems, sustainable management of forests, combating desertification, halting and restoring terrestrial degradation and preventing biodiversity loss	Promoting peaceful and inclusive societies for sustainable development, ensuring access to justice for all and building effective, accountable and inclusive institutions at all levels	Strengthening the means of implementation and reviving the Global Partnership for Sustainable Development
1	Building a durable city by qualified and functional living areas						x			x		x						
2	Development of urban transportation in the scope of sustainable mobility									x		x						
3	Strengthening sustainable environment and energy management						x	x						x	x	x		
4	Contributing to the rising economic value of the city				x	x			x	x			x					x
5	Building a shared city by welcoming social needs by equal and inclusive means	x	x	x		x			x		x		x				x	
6	Creating a living city by increasing social life opportunities			x														
7	Preserving and improving cultural, architectural and natural city inheritance															x		
8	Ensuring financial stability																	x
9	Developing our institutional structure and business model by fair, participant and innovative methods																x	x

Source: Istanbul Strategic Plan 2020-2024, 2020

According to Hyder and Haque (2022), urban green spaces include functional green spaces, such as productive and institutional green spaces. Since the functional green areas are similar to those of Yedikule and Ayvansaray Gardens, the connections created in the study were used as a reference to find similar connections. The sustainable development goals regarding green space determined by Hyder and Haque (2022) were checked with the matrix contained in the 2020-2024 Strategic Plan of Istanbul Metropolitan Municipality. This control synthesizes similar and different goals related to urban agriculture. In the study of Hyder and Haque (2022) determined that sustainable development goals 6 and 7 did not include a relationship with urban agriculture or green areas in the Istanbul Strategic Plan matrix. Therefore, SDGs 6 and 7 are excluded. SDG 12 is not included in the work of Hyder and Haque (2022), but it is related to urban agriculture and green spaces in the Istanbul Strategic Plan matrix. Thus, SDG 12 was added to the other Sustainable Development Goals of Hyder and Haque (2022).

Since urban agriculture is used as a strategy for sustainable urban development in the Fatih Historical Peninsula, there are some connections between some sustainable development goals of the United Nations and the Yedikule and Ayvansaray Gardens project. These connections have also been strengthened in the local development objectives of the Istanbul 2020-2024 Strategic Plan. To achieve the 2030 sustainable development goals, it is important to consider a local framework. Istanbul Metropolitan Municipality devel-

opment goals that match the sustainable development goals of urban agriculture (1,2,3,8,11,12,13,15) were extracted from the municipality matrix (Figure 6). The municipal goals include the following:

Goal 1: To build a resilient city by developing qualified and functional living spaces

Goal 2: Improving urban transportation within the scope of sustainable mobility

Goal 3: Strengthen sustainable environmental and energy management

Goal 4: Contributing to the Increase of the economic value of the city

Goal 5: To create a shared city by meeting social needs in an equal and inclusive way

Goal 6: Imagine a living city by improving social life opportunities

Goal 7: Protecting and developing cultural, architectural, and natural city heritage

It is recommended that urban agriculture strategies for the effective realization of the 2030 sustainable development goals focus on the previous objectives of the Istanbul 2020-2024 Strategic Plan. Although Yedikule and Ayvansaray Gardens currently meet these objectives, attention should be paid to improving energy management in the gardens. After matching the 2030 Sustainable Development Goals of the UN regarding green areas with the Istanbul Strategic Plan, a matrix was created to evaluate the urban agriculture themes analyzed within the scope of social practice theory in Yedikule and Ayvansaray Gardens. The aim of this study is to evaluate how each goal under the theme relates to each sustainable development goal of green spaces, based on an in-depth understanding of urban farming practices in Yedikule and Ayvansaray Gardens. A scale of 1-5 was used in the evaluation (Table 1).

Table 1

Scale Indicators for the evaluation of the Yedikule and Ayvansaray Gardens Urban Agriculture Goals with Sustainable Development Goals

Score	Indicator	Explanation
1	Incompatible	There is no clear evidence that urban agriculture ambition is compatible with the stated 2030 sustainable development goal.
2	Limited Fit	Note that compatibility is not clearly defined.
3	Moderate Compatibility	There is some evidence of fit for purpose, but there may be shortcomings.
4	Solid Fit	The goal demonstrates significant alignment with the stated sustainable development goal and provides clear and robust evidence to support it.
5	Perfect Fit	The goal demonstrates outstanding alignment with the established 2030 sustainable development goal and provides comprehensive and robust evidence to support it.

This evaluation is subjective, and the scores are based on an analysis of urban agriculture practices in Yedikule and Ayvansaray Gardens within the framework of social practice theory. This is based on interpretation. The subjective interpretation arises from the time and scope limitations of the study. A matrix was created to evaluate the relationship between the Sustainable Development Goals and the urban agriculture goals in Yedikule and Ayvansaray Gardens (Table 2).

According to the matrix, within the theme of meanings: the first axis of symbolism (promoting green areas), social ties, and within the theme of materials: physical infrastructure, resource management, and economic tools received the lowest ratings in relation to achieving the 2030 SDGs, such as poverty reduction (SDG 1), hunger (SDG 2), good health (SDG 3), decent work (SDG 8), climate action (SDG 13), and life on land (SDG 15). The linkage of these goals and urban agriculture is weak and needs to be developed.

In contrast, under the theme of meanings: the second axis of symbolism (agricultural education), social ties, and under the theme of skills: abilities and learning processes, and under the theme of materials: land selection, physical infrastructure, resource management, technology, and economic tools received the highest ratings in relation to the goals of sustainable cities (SDG 11), decent work (SDG 8), responsible consumption (SDG 12), and life on land (SDG 15). Therefore, it is necessary to develop other strategies regarding urban agriculture practice that focus on the themes of (meanings) and (materials) to achieve the 2030 SDGs more effectively and to enhance the integration between urban agriculture goals and the SDGs.

Table 2

A Matrix for the Evaluation of Yedikule and Ayvansaray Gardens' Urban Agriculture Goals in Terms of 2030 Sustainable Development Goals

		Sustainable Development Goals for 2030							
Theme of Urban Agriculture	The purpose of urban agriculture	SDG 1: Elimination of all forms of poverty	SDG 2: End hunger, ensure food security and improved nutrition, and support sustainable agriculture.	SDG 3: Ensuring healthy lives and promoting well-being among all ages	SDG 8: Promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	SDG 11: Making cities and human settlements inclusive, safe, resilient, and sustainable	SDG 12: Securing sustainable consumption and production patterns	SDG 13: Urgent action to combat climate change and its effects	SDG 15: Protecting, developing, and supporting the sustainable use of terrestrial ecosystems, sustainable management of forests, combating desertification, stopping and improving terrestrial degradation, and preventing biodiversity loss
	1) Symbolism: *A) Promoting green areas through harmonization of municipal strategic goals*	**2**	**3**	**3**	**2**	**4**	**4**	**4**	**4**
Theme 1: Meanings	*B) Agricultural education*	**4**	**4**	**3**	**2**	**4**	**5**	**4**	**4**
	2) Cultural Importance	**3**	**4**	**4**	**3**	**4**	**4**	**3**	**4**
	3) Environmental Awareness	**3**	**4**	**4**	**3**	**4**	**4**	**4**	**4**
	4) Social Ties	**3**	**2**	**4**	**3**	**5**	**3**	**2**	**3**
Theme 2: Skills	1) Abilities	**3**	**4**	**4**	**5**	**4**	**4**	**4**	**4**
	2) Learning Processes	**3**	**4**	**4**	**4**	**5**	**4**	**3**	**4**
Theme 3: Materials	1) Land Selection	**3**	**3**	**4**	**3**	**5**	**4**	**4**	**5**
	2) Physical Infrastructure	**2**	**2**	**3**	**4**	**5**	**4**	**4**	**4**

		Sustainable Development Goals for 2030							
Theme of Urban Agriculture	The purpose of urban agriculture	SDG 1: Elimination of all forms of poverty	SDG 2: End hunger, ensure food security and improved nutrition, and support sustainable agriculture.	SDG 3: Ensuring healthy lives and promoting well-being among all ages	SDG 8: Promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	SDG 11: Making cities and human settlements inclusive, safe, resilient, and sustainable	SDG 12: Securing sustainable consumption and production patterns	SDG 13: Urgent action to combat climate change and its effects	SDG 15: Protecting, developing, and supporting the sustainable use of terrestrial ecosystems, sustainable management of forests, combating desertification, stopping and improving terrestrial degradation, and preventing biodiversity loss
	3) Resource management	**3**	**4**	**2**	**4**	**4**	**5**	**4**	**5**
	4) Technological and Technical Elements	**3**	**4**	**4**	**3**	**4**	**5**	**4**	**5**
	5) Economic Tools	**4**	**3**	**3**	**5**	**4**	**4**	**2**	**2**

Comparison of Yedikule and Ayvansaray Gardens with Urban Agriculture in Developed and Developing Countries

Due to the differences in economic, social, cultural, legal, and environmental situations, countries are classified in the international system as developed or developing, which affects urban development agendas and sustainable development goals that can be achieved. In 1996, the classification of "developed" and "developing" regions by the United Nations was introduced into the Standard country codes, known as (M49), for statistical purposes only. There was no intention to distinguish the developmental stage in each region. Later, the distinction between “developed” and “developing” regions has become irrelevant over time because of the dynamic evolution of many countries classified as “developing”. Since 2017, the Sustainable Development Goals report has adopted geographic classifications instead of developing and developed regions distinction. Based on consultations with international and regional organizations, this classification was removed from the M49 codes in December 2021. Accordingly, agencies may select appropriate groupings for their own purposes and update them as necessary. For example, the term “developing countries” is still used in some Sustainable Development Goals indicators, with its composition varying depending on the mandate, membership, or analytical objectives of the agency (United Nations, 2023).

In cooperation with the United Nations Conference on Trade and Development (UNCTAD), the Development Policy and Analysis Division (DPAD) of the Department of Economic and Social Affairs of the United Nations Secretariat (UN/DESA) and five United Nations Regional Commissions: the Economic Commission for Africa (ECA), the Economic Commission for Europe (ECE), the Economic Commission for Latin America and the Caribbean (ECLAC), the Economic and Social Commission for Asia and the Pacific (ESCAP), and the

Economic and Social Commission for Western Asia (ESCWA), countries were classified as developing and developed based on different standards. Accordingly, the World Economic Situation and Prospects report is a publication reflects not only the net economic status of countries around the world, but also the geographic location, temporal criteria, and level of development measured by gross national income (GNI) per capita determined by the World Bank. This classification includes three main categories of economies: developed, transition, and developing economies. Countries are classified based on geographic conditions. For example, developing regions include Africa, East Asia, South Asia, West Asia, the Caribbean, and Latin America. Countries are also classified based on ad hoc criteria. Accordingly, major developed economies are classified based on their membership in the Group of Seven. Among developing and transition economies, regions are classified based on fuel exports and imports. The level of development measured by gross national income (GNI) per capita grouped the countries as high-income, upper-middle-income, lower-middle-income, and low-income, which is used by the World Bank. For analytical purposes, the classifications are updated periodically, while data are collected from national and private sources such as the World Bank, the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF), and the United Nations World Tourism Organization (UNWTO) (United Nations, 2014).

Developed countries are stable countries with high incomes, advanced infrastructure and technology. In contrast, developing countries face challenges such as low incomes, structural problems, and dependence on fluctuating agricultural exports. The situation where countries rich in natural resources experience higher rates of corruption, lower income levels, and lower development indicators compared to countries with less resources is known as the "natural resource curse" or "paradox of plenty." Developing countries are dependent on agricultural exports and raw materials at fluctuating prices, which negatively affect their economies. Furthermore, because industrialization is not yet at an advanced level, financial capital cannot be provided for machinery and technological investments in developing countries (Kowalski, 2020).

The comparison of the characteristics of urban agriculture between developing and developed countries is complicated due to differences in many factors, such as motivations, context, and legal frameworks of urban agriculture. This section compares urban agriculture in these two types of countries (developed) and (developing) in terms of purpose, location, spatial configuration, actors, and legal framework. These factors were chosen because they can affect food systems, production, and consumption patterns. The aim is to understand how these countries in the international system approach urban agriculture according to their development agendas, geographical locations, and economic situations. This realization aims to explore the opportunities for urban agriculture development through case studies (Table 3). After analyzing urban agriculture as a strategy for achieving some SDGs in Yedikule and Ayvansaray Gardens, their characteristics are compared with urban agriculture practices in developed countries, revealing similarities and differences in urban development agendas, while emphasizing that urban agriculture varies according to the complex local context of each region.

Table 3

Characteristics of Urban Agriculture in Turkey and Abroad, E.g. Yedikule and Ayvansaray Gardens

Comparison Theme	Characteristics of Urban Agriculture in Turkey, E.g. Yedikule and Ayvansaray Gardens	Characteristics of Abroad Urban Agriculture	Example from abroad
Aim	• There is no direct relationship between urban agriculture and food security. • It is used as a strategy to improve social status and environmental awareness. • It is used as a strategy to increase quality of life by creating green areas.	• In developed countries: 1)It is related to local food production and food security, such as alternative food systems. 2)Urban agriculture and peri-urban agriculture are a single entity and a strategy for sustainable development. 3) It has many purposes, including educational	• Social and educational agriculture in the Royal Botanic Garden in Sydney, Australia. • Brooklyn Botanical Garden, USA. • High Park Children's Garden, Toronto, Canada.

Comparison Theme	Characteristics of Urban Agriculture in Turkey, E.g. Yedikule and Ayvansaray Gardens	Characteristics of Abroad Urban Agriculture	Example from abroad
	• It is planned as a model to be implemented on a larger scale.	purposes. • In developing countries: It is a coping strategy to reduce hunger and poverty.	
Location and Spatial Configuration	• Proximity to markets and city centers in busy districts, such as the Fatih historical peninsula. • Despite its small-scale and location within dense neighborhoods, there is an interest in R&D and advanced agricultural techniques. • Urban transformation is occurring in the land selection process for Yedikule and Ayvansaray Gardens.	In developed countries: • Proximity to markets and city center. • Innovative applications, generally small-scale, and located in dense neighborhoods. • Used as an urban transformation strategy for slums and brownfields in industrial or commercial sites. • Common ownership in the form of (community gardens, hobby gardens or corporate gardens, etc.). In developing countries: • Marginalized/unplanned areas far from city centers. • Larger sclae in unplanned areas • Property rights issues, limiting access to land for urban agriculture.	• In the USA, local is within 400 miles or state of origin; in Canada, it is within the province/territory or 50 km beyond the border. • Technological innovations in food security in Singapore, such as vertical farms. • Allmende Kontor was built on the site of a former airport called Tempelhofer Freiheit in Berlin.
Actors	There is diversity among actors, including the municipality, NGOs, professional landscapes, and agricultural engineers.	There is diversity among actors, including partnerships between the public and private sectors, civil society, and NGOs.	City Gardens in Vienna.
Legal Framework	• Yedikule and Ayvansaray Gardens is a municipality-led initiative that promotes inclusivity and social solidarity. • Cultural and heritage value. • It can be a strategy to achieve the 2030 sustainable development goals. • Not stated as a clear strategy in food or urban development documents.	• Municipality- and community-led initiatives. • Cultural and heritage value. • It is planned from regional to local levels. • Integration into food development strategies.	• Urban Food Policies Framework of Milan Pact food policies. • Urban agriculture policies were reorganized and reviewed in Dar-es-Salaam, Tanzania, in collaboration with NGOs such as the Urban Management Program (UMP) and UN-Habitat. Both the Ugandan and Kenyan governments are developing urban agriculture policies.

First, developed countries have adopted local food strategies and urban agriculture within their sustainable development agendas, while developing countries consider urban agriculture as a hunger and poverty deviation strategy, with challenges related to hygiene and expertise (Taguchi & Santini, 2019). Developed countries consider urban and peri-urban agriculture as one entity used as a tool to enhance food security and local food systems by diversifying the objectives of urban agriculture, such as environmental and educational purposes. The different motivations for urban agriculture practices enhance long-term sustainable development achievement. Some of these objectives overlap with the objectives of the Yedikule and Ayvansaray Gardens initiative; it aims for social, environmental development and an increasing qulaity of life, focusing on scalability and the ability to expand as a model. Food security is not recognized which is a characteristic found in developing countries. However, there is the potential to create an alternative food network in the city if the model is expanded and more similar gardens are opened.

Second, urban agriculture practices are located near city centers and markets in developed countries, whereas they are also found in informal and marginalized areas in developing countries (Davies et al., 2020; Opitz et al., 2015). Urban agriculture is an innovative small-scale practice located in dense neighborhoods with common ownership, and it is being used as a transformation strategy for brownfields. On the other hand, urban agriculture is larger in scale and far from city centers, as people are facing property rights issues that limiting accessibility to urban agriculture practices in developing countries. Both Yedikule and Ayvansaray Gardens share some similarities with urban agriculture characteristics in developed countries; their locations are within dense neighborhoods near the city center, with small-scale practices. Innovation and sustainable urban agriculture practices, such as soilless and seasonal agriculture techniques, are also practiced in gardens due to expertise, hygiene, and resource availability, which is similar to the

characteristics of urban agriculture in developed countries. Yedikule and Ayvansaray Gardens are based on a transformative approach to agriculturally repurposed abandoned lands in original zoning plans. This approach of renovation and rehabilitation of slums aims to increase green spaces and quality of life.

Third, urban agriculture in developed countries is characterized by a diversity of stakeholders and a clear legal framework, whereas developing countries use a more centralized, top-down approach (Opitz et al., 2015; Wadumestrige Dona et al., 2021). The actors of urban agriculture in developed countries include the public and private sector, educational institutions, non-governmental organizations, and individuals, whereas in developing countries, the main actors of urban agriculture are generally individuals and NGOs. Yedikule and Ayvansaray Gardens have various actors and stakeholders similar to those in developed countries.

Finally, the legal framework of urban agriculture in developed countries generally regulates urban agriculture practices, starting from the regional level and extending to the local level. For example, the Milan Pact on Urban Food Policies provides a framework for such policies. However, the measurement system needs to be expanded and improved. Unlike developing countries, measures for the development of food and urban agriculture policies are given more importance (Opitz et al., 2015). Additionally, government officials are allowing bottom-up urban development initiatives, including urban agriculture, which opens the door to civil society participation in decision-making processes. This legal agriculture model in developed countries enables innovation, social participation, and human capital support in urban agriculture practices. In developed countries, individuals, innovative entrepreneurs and non-governmental organizations manage urban agriculture (Opitz et al., 2015). Since municipalities are solely responsible for the opening of gardens, the management and operation of these green spaces is usually performed by members of the public, such as garden groups.

In Yedikule and Ayvansaray Gardens, the entire project is carried out by the municipality, and all employees are hired by the municipality. Measures related to urban agriculture policies are recommended to be developed in projects such as Yedikule and Ayvansaray Gardens, and deeper research into urban agriculture planning, sustainable development, and food policies in the context of developing countries is needed. However, several initiatives have been launched to develop global urban agriculture policies, including the Urban Agriculture and Food Security Resource Centers, the International Development Research Center, the Urban Management Programme and the United Nations Human Settlements Programme (UN-Habitat). They seek to promote sustainable urban strategies and support research on urban agriculture (Lee-Smith, 2010).

Discussion

Urban agriculture in Istanbul, particularly in Yedikule and Ayvansaray gardens, is a social practice with cultural and historical value that serves as urban heritage for the city. This heritage reflects the social acceptance of urban agriculture as a source of local food production and a recreational tool that promotes community engagement. Data from interviews with employees at both Yedikule and Ayvansaray gardens confirmed that urban agriculture is divided into sub-practices that are categorized under meanings, skills, and materials. The data show that the relationship between urban agriculture and actors, such as the municipality, residents, and employees, and the social structure represented by the cultural and historical context of Istanbul reflects the complexity of the urban agriculture system. Analyzing this relationship using social practice theory enabled an understanding of the interaction between actors and social structures, providing a holistic view for more effective planning of urban agriculture. Data collected from interviews with

employees at Yedikule and Ayvansaray Gardens are vital to understanding how urban agriculture impacts the social and cultural context of Istanbul. These data form a fundamental basis for analysis, providing valuable insights into the relationship between urban agriculture and actors and helping to draw accurate conclusions about its role in achieving the Sustainable Development Goals.

An in-depth analysis of data obtained from interviews guided the evaluation of urban agriculture practices within social practice themes in accordance with the UN's 2030 Sustainable Development Goals. Accordingly, there are practices in planning urban agriculture that show weak links to SDGs, such as green space promotion and resource management, which need to be developed to strengthen their link to goals such as eradicating poverty and hunger. In contrast, there are practices that are strongly linked to SDGs, such as sustainable cities and responsible consumption, including agricultural education and land selection, which demonstrate strong potential to support sustainable development. On the other hand, there is a need to strengthen urban agriculture strategic planning practices to achieve greater alignment between local and regional plans, especially in the context of alternative food networks and food security.

Data obtained from interviews with Fatih Municipality Planning and Projects Directorate explored the planning process of such an urban agriculture initiative in Istanbul by exploring the aim, location, spatial configuration, actors and legal framework, as these factors affect food systems, including production and consumption. This exploration revealed the municipal approach to urban agriculture planning to achieve environmental awareness, agricultural educational purposes and green space enhancement. However, there has been a lack of consideration of urban agriculture as an alternative food network to enhance food security and sovereignty. There was no direct consideration of food security by the municipality when they planned the gardens, yet the gardens' potential enhances food security and their ability to create alternative food networks. A comprehensive comparison between Istanbul's experience in urban agriculture planning and similar initiatives in different global contexts could be conducted. Such comparisons support the development of sustainable urban policies that consider the interrelationship between actors and social structure and encourage the implementation of effective environmental policies that contribute to positive social change toward sustainable behaviors and a long-term vision for urban agriculture. Next, recommendations are provided for policy makers and planners to adopt planning strategies and models that integrate urban agriculture into inclusive and sustainable cities while promoting local and sustainable food networks and encouraging community engagement.

Focusing on urban agriculture as a tool to achieve the 2030 Sustainable Development Goals is recommended to ensure sustainable urban agriculture practices. Moreover, an effective planning process for urban agriculture, alignment with global and local guiding frameworks is crucial. It is recommended to set vision and purpose for urban agriculture practices, while considering it more seriously in zoning plans to tackle several problems related to random practices by individuals. It is important to consider urban agriculture as a catalyst for environmental awareness and education while activating this role. Many developed countries have started to find initiatives to educate children about agricultural practices and the environment through urban agriculture. This can increase individuals' environmental awareness through sustainable behavioral changes.

Urban agriculture plays a vital role in enhancing food security and sovereignty in any context. Therefore, providing an efficient legal framework for urban agriculture practices through planning, zoning, and proper urban policies while enhancing social integration and participation in decision-making processes regarding operational processes can ensure the sustainability of urban agriculture practices. The collaboration

between municipalities and civil communities highlights a participatory approach to governance and fair resource management. This is evidence in developed countries, where local governments plan and support community gardens and agricultural practices, while NGOs and civil communities manage them. In developing countries more centralization is dominant, which affects democratic governance.

Finally, it is important to consider the viability and dynamics of urban agriculture practices, including social, economic, environmental, spatial, technological dynamics, and policy and governance dynamics. Therefore, the process of managing and planning such practices is also dynamic and continuous. For example, Yedikule and Ayvansaray Gardens adopted organic agricultural production methods through an operational process that provides an opportunity to develop local agriculture and improve food security. Flexibility in planning urban agriculture initiatives as a model that can be applied in different contexts resembles an opportunity for upscaling urban agriculture practices, such as the project of Yedikle and Ayvansaray Gardens.

Conclusion

In conclusion, urban agriculture has gained increasing importance in academic research owing to the environmental, economic, and social challenges facing large cities. The literature has previously focused on urban agriculture in the context of developing countries but has recently expanded to developed countries, such as the United States, England, Canada, and Europe. This shift reflects a more serious approach to managing development strategies, focusing on food security and sustainability in these countries. Urban agriculture plays an important role in creating alternative food networks that are part of local food systems. Alternative food networks contribute to sustainable development strategies by enhancing food security and social justice, while providing sustainable food sources in response to the food crisis. In this context, developed countries have adopted sustainable food strategies, focusing on urban agriculture as a key component.

Recent literature has shown that urban agriculture is no longer just a response to the food crisis or low-income situations; it has become an effective tool for achieving sustainable development goals at various environmental, social, and economic levels. This research is based on data collected from interviews with employees of Yedikule and Ayvansaray Gardens and the Fatih Municipality Planning and Projects Directorate. These data reveal the complex dynamics that govern urban agriculture practices in Istanbul, including strategic planning, operational management, and social connections. The data obtained from the interviews enhances clear understanding of the role urban agriculture plays in achieving social development, food security, and environmental sustainability. Interviews with Yedikule and Ayvansaray Gardens employees revealed that these gardens are not only sites for food production but also educational and social spaces that contribute to building communities and strengthening social connections.

The results indicate the importance of urban gardens with agricultural practices as key components of sustainable development strategies because they contribute to improving food security, raising environmental awareness and promoting sustainable agricultural practices. Yedikule and Ayvansaray Gardens provide agricultural education and aim to raise environmental awareness among children and women, encouraging the adoption of similar projects to support the urban agriculture movement in Istanbul. Expanding the model of these gardens to other neighborhoods and cities is recommended to enhance alternative food networks and food security.

This study analyzes urban agriculture planning in Yedikule and Ayvansaray Gardens through social practice theory while examining how these gardens are compatible with sustainable development goals and the Istanbul Strategic Plan 2020-2024. Data from interviews with employees at these gardens show that urban agriculture is not just about food production but also about fostering social connection and building communities, which contribute to social well-being. This provides insights into the dynamics of urban agriculture practices and future planning processes. There is a need for in-depth analysis that conceptualizes urban agriculture as a micro-scale social practice in any context due to its complexity. Therefore, this research aims to fill this gap in this regard. The social practice analysis of urban agriculture shows the importance of promoting sustainable development strategies. It is recommended to consider urban agriculture in land use plans and urban policies due to its importance to the development process. It is also recommended that comprehensive strategies that include local community participation in planning and implementing urban agriculture projects be developed to ensure sustainability.

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