NICOLAUS COPERNICUS UNIVERSITY IN TORUŃ

Bulletin of Geography. Socio-economic Series, No. 68 (2025): 221-232
https://doi.org/10.12775/bgss-2025-0023

BULLETIN OF GEOGRAPHY. SOCIO–ECONOMIC SERIES

journal homepages:
https://apcz.umk.pl/BGSS/index
https://www.bulletinofgeography.umk.pl/

A typology of community garden in terms of location and shape in urban spaces

Agnieszka Dudzińska-Jarmolińska

University of Warsaw, Faculty of Geography and Regional Studies, Warsaw, Poland, e-mail: a.dudzinska-ja@uw.edu.pl, https://orcid.org/0000-0003-2284-2236

How to cite:
Dudzińska-Jarmolińska, A. (2025). A typology of community garden in terms of location and shape in urban spaces. *Bulletin of Geography. Socio-economic Series,* 68(68): 221-232. DOI: http://doi.org/10.12775/bgss-2025-0023

Abstract. The aim of this paper is to present the author's spatial typology of community gardens by defining their spatial characteristics, forms of development, and socio-cultural context. The typology was developed based on field research conducted in three U.S. cities and three European cities. As a result, it was determined that community gardens can be classified into six distinct spatial types.

Article details:
Received: 07 June 2024
Revised: 22 May 2025
Accepted: 30 June 2025

Key words:
community gardens,
urban studies,
geography, planning & development,
local community,
urban wasteland,
grassroots initiatives

Contents:

1. Introduction

The current dynamic development of cities is due, among other things, to people migrating to them from outside areas (Zhang et al., 2023). In DOI:ng so, a number of unfavourable phenomena are occurring, such as urban sprawl (Kremer et al., 2013; Gasperi et al., 2016). Sprawl can affect the degradation of central areas in the city (Anderson & Minor, 2017) and, for example, the formation of vacant spaces (of various sizes and shapes) with no specific function (Kim et al. 2018). At the other extreme of this phenomenon, there is a process of increasing urban density (development of vacant spaces, e.g., neighbourhoods) (Kaczmarek, 2021). This densification reduces the amount of green space in the city and, at the same time, worsens the living conditions of the residents of the area (de Oliveira & Thomson, 2015).

Urban development does not usually proceed in a harmonious manner, resulting in the spatial structure of agglomerations becoming a set of mosaic spaces with different functions, forms of development or amounts of green areas. The result is a differentiation of living conditions in different areas of one city. This differentiation has an impact on social stratification in the areas in question – the emergence of more and less privileged groups. This leads to the accumulation of inequalities between individual city residents. One example is environmental inequality – understood here as unequal access to, for example, green spaces (Bojar-Fijałkowski, 2018) and, consequently, to the ecosystem services they provide. These services include air cleaned from pollution, reduced air temperature and a healthy living environment (Dudzińska-Jarmolińska, 2019). Degraded (and often abandoned) areas are characterised by a small amount of green space, which makes them more vulnerable to the effects of climate change (heat waves or local flooding) (Kato-Huerta & Geneletti, 2023). Thus, so-called climate inequality (Jasikowska et al., 2022) between better-off and worse-off residents also occurs here.

This article characterises different spatial types of community gardens, whose implementation in the urban fabric can be a tool for redressing environmental inequalities between different urban communities.

1.1. Urban wastelands and attempts to redevelop them: impacts on urban development

In urban spaces, we see the phenomenon of wastelands. These are empty, undeveloped spaces. Abandoned land in the city may have been previously developed and used or may have never had a specific function. Its presence in the urban fabric may indicate the state of crisis of a given space and the community that inhabits it (Kim et al., 2018), a decline in the growth rate of a given population, or population aging or migration (Nassauer & Raskin, 2014).

The emergence of such areas has a varied genesis, including areas where: there was previously some kind of development that was destroyed or demolished; original functions have been lost, e.g. post-industrial or post-transportation areas (e.g., post-port, post-rail) (Kim et al., 2018); or there was some kind of disaster, e.g. of a climatic nature (Nassauer & Raskin, 2014), warfare, etc. Gaps in urban spaces are also the result of poorly implemented urban policies, such as the lack of development plans for a given space or the blocking of given areas for long-term planned investment purposes or even for the purpose of land speculation (Kim et al., 2018). The deterioration of certain spaces can also be the result of current economic factors (Smith et al., 2021) or financial miscalculations in the real-estate market (Nassauer & Raskin, 2014). Another type of abandoned areas comprises those at risk of a catastrophic phenomenon (e.g., areas prone to flooding, landslides, etc.) (Kim et al., 2018).

The spatial characteristics of vacant spaces in cities vary in form, size and location. These areas are perceived negatively by local communities (Kim et al., 2018; Preston et al., 2023) because urban wastelands contribute to the generation of many negative phenomena, such as increased crime (Anderson & Minor, 2017). These phenomena prevent the building of a stable urban community (Kim et al., 2018). The identity of these communities is then lost (Kim et al., 2020).

At the same time, gaps in urban spaces can be an important resource for social, economic or environmental development (Anderson & Minor, 2017). They can become areas for the implementation of greenery – thus having an impact on improving environmental conditions (e.g., through retention and treatment – phytoremediation – of rainwater) or social conditions (e.g., by reducing crime) (Anderson & Minor, 2017). Over time, they can then become a producer of the following ecosystem services: provisioning, regulatory, cultural and supportive,

which is important in building urban social-ecological systems (Kremer et al., 2013).

The implementation of green spaces in these areas is the result of various types of political mechanisms (Kremer et al., 2013), grassroots initiatives, and local community involvement. This is a process of socially planning a common neighbourhood and thus taking responsibility for it (Kim et al., 2020). An important tool here is the organisation of community gardens, which represent either a temporary solution (Foo et al., 2014) or a long-term solution – the development of a given space.

Community gardens can be classified according to various criteria. One is the way in which they are managed – top-down (e.g., by local authorities, government departments, etc.) or bottom-up (by the gardeners according to rules they themselves set) (Fox-Kämper et al., 2018; Petrovic et al., 2019). Another applicable division of these spaces is based on status of use – or the division of space into smaller plots for individual gardeners (Rogge & Theesfeld, 2018). They can also be classified according to the functions they perform, such as recreational, productive, school/educational, therapeutic/therapeutic, etc. (Temizel, 2022).

Sites of this type are used for growing vegetables (including in plastic tunnels and greenhouses), fruits (urban orchards) or flowers (Firth et al., 2011), and there are also sometimes areas for growing hops used by local breweries (www.asla.com). Very often their form of development is much more elaborate. Community gardens comprise many additional elements, such as ornamental ponds, apiaries, chicken coops, compost piles, retention barrels, elements for recreation and integration of the local community (gazebos, bread ovens, barbecues). These elements create a unique genius loci (sculptures, mosaics, toys, frescoes), giving them a kind of identity and narrative. Thus, community gardens are not built according to a single model but are the result of the current demands of a particular community using a particular urban space (Firth et al., 2011).

1.2. Historical outline; the emergence of community gardens in the cities of the study area

Community gardens began to appear as early as the 1970s, with the emergence of the first urban movements in the U.S. (Firth et al., 2011). One of them was the so-called urban guerrilla movement (Christensen et al., 2019), which, among other things, dealt with the development of vacant spaces emerging as a result of the financial and industrial crisis of the time, beginning in the 1960s (Torres et al., 2018). The gaps in the urban space created at that time were the result of arson attacks on tenements to defraud insurers or to demolish them (Drake & Lawson, 2014). At the time, vacant land in New York City accounted for 13% of the city's total land area, and by the 1990s, the area had shrunk to 9.7% of the city (Kremer et al., 2013). In the first phase of the emergence of community gardens, vacant and neglected plots of land were occupied by local communities (ethnic and religious groups), who cleared the area and then gave it a utilitarian function by raising animals and vegetables (the gardens were tended mainly by women) that were the basis of local cuisine (Graf, 2022). In 1978, the City of New York initiated the GreenThumb programme, which coordinated the leasing of vacant urban lots for community gardens, and also educated local communities and provided expertise and materials to help them create gardens (www.nycgovparks.org).

In the 1990s, during Mayor Rudy Giuliani's tenure in New York City, many community gardens were liquidated, and the plots of land they occupied were used for commercial purposes (Drake & Lawson, 2014). However, some of them have been preserved, such as through the purchase of land on which they operated, with funds from both municipal and private organisations (www.nycgovparks.org). Currently, the city's spatial policy is moving towards the development of urban wasteland for temporary forms such as community gardens (Kremer et al., 2013). They are regulated by the GreenThumb organisation administered by the New York City Parks Department (www.nycgovparks.org). In Europe, urban gardening began to develop in the early 21st century (Maćkiewicz et al., 2018). In Paris, the structure of the city is very compact, with little greenery (according to data from 2004, there was 14.5 m^2 of greenery per Parisian). To change this in line with the so-called new city development plan (according to the Grenelle Law), tools such as community gardens were used to make the city greener. These gardens have been created in urban gaps, as well as on rooftops and terraces (the "Green Thumb of Paris" programme is run by the municipal authorities). This is intended to be a temporary form of development of a given area for one year, with the possibility of renewal for five years. Selected investments are financed by the city, which has contributed to the spread of this type of landscaping in the French capital. In 2002, Paris had only five community gardens, but in 2018 there were already 119. The idea is that these spaces provide not only beneficial (for the ecosystem) greenery but also have

social functions (by integrating the local community and promoting environmental activities) (Torres et al., 2018). Community gardens in Copenhagen are developed as part of the city's spatial planning and are also co-financed by the city (Rutt, 2021). Their development by the city authorities is seen through the prism of a tool to integrate multicultural (immigrant) communities into the city, where they can simultaneously maintain their cultural identity (Christensen et al., 2019). In Oslo, the development of urban gardening is supported by the City of Oslo's Environment Agency. It has developed the "Sprouting Oslo" programme, which funds the construction of new community gardens, as well as education in this field (including environmental education). An interesting form of community gardens is school gardens grown by students. Urban gardening is subsidised both by the city (EUR 250,000) and by individual districts (EUR 25,000) – (in 2020) (Gustavsen et al., 2022).

Thus, community gardens are spaces designed with the participation and shared responsibility of the local communities. They are created on vacant urban lots (private or public) for collective or individual benefit, with a specific distribution of the resources obtained (Okvat & Zautra, 2014). According to Japanese researchers, community gardens are Productive Urban Landscapes (PUL) (Hino et al., 2023). In addition to this, they perform many other important social and also environmental functions – diverse social groups interact and integrate in these small spaces, making them a tool for solving the problems of urban communities (Firth et al., 2011; Petrovic et al., 2019).

They are also an element of environmental education (Caneva et al., 2020). They participate in the formation of so-called collective memory, building national belonging and identity. This can be seen in the names of individual gardens or in the elements that create them (Petrovic et al., 2019). Examples include the Fireman's Memorial Garden and the Carmen Pabon del Amanecer Garden on the Lower East Side of New York City.

It is also important to remember that community gardens also become public spaces with free access and democratic control (Petrovic et al., 2019), although the example of the "Jeff Dullea Inter Generational Garden At Penn South Coop" illustrates that they can also be spaces that contribute to various types of social conflict. As such, they also play an important role in civic engagement and increase collective efficacy (Petrovic et al., 2019) (Table 1).

2. Research materials and methods

The purpose of this article is to attempt to present a typology of community gardens by defining their spatial characteristics. To this end, three research questions are posed: (1) What is the possibility of calibrating community gardens in terms of their relationship with the urban fabric (buildings, traffic routes, green spaces)? (2) What form of landscaping is most commonly used in this type of area, and (3) What socio-cultural context guided their construction in the urban spaces concerned? The conducted analysis brings additional knowledge about building community gardens around the world, which can be used to popularise this idea in Poland. This is particularly important in the context of inhabitants creating a city, which may contribute to building local communities resistant to the consequences of climate change. Three research methods were used in the study: a literature analysis of the emergence of urban wastelands and their impact on urban functioning, and the origins and role of community gardens in cities. Field studies were also conducted (2022) in Paris (04/05), Copenhagen (06), Oslo (06 and 09), New York, Boston and Philadelphia (08) under an international research grant from the IdeaLab (a project called CoAdapt). Their scope included an urban inventory in terms of: the relationship of the garden to the urban fabric, the determination of the size and shape of the garden, how the garden progressed, and the form of organisation. Ethnographic observations (passive and participatory) were also made to explore the social and cultural value of these units. As a result of the research and analysis, 88 community gardens were catalogued in New York (43), Boston (9), Philadelphia (5), Paris (17), Copenhagen (5) and Oslo (9).

The analysis of the collected material made it possible to assign individual community gardens to specific types of spatial organisation in relation to the existing urban fabric. The results are presented in a table, in which individual gardens are categorised into seven types.

The first category comprises gardens created on plots where a building once stood. The second category consists of gardens in vacant spaces between traffic routes and residential buildings. The third type is gardens located within built-up areas. The fourth category comprises gardens situated in green spaces between modernist buildings. The fifth group consists of gardens established next to public buildings. The sixth category is gardens located in designated park spaces, while the seventh type encompasses gardens on former allotment sites.

Table 1. The role of community gardens is diverse. They are important in environmental, economic, social, and spatial aspects

No.	Aspect	
1	environmental	Community gardens can perform the functions attributed to green infrastructure (Petrovic et al., 2019; Smith et al., 2021), influence urban temperature regulation, participate in stormwater retention, improve biodiversity (Smith et al., 2021), and support and shape urban ecological networks (Caneva et al., 2020). They can be an important element in building sustainable cities (Drake & Lawson, 2014). They are considered to be an NBS (Nature-based Solution) tool for adapting cities to climate change (Cabral, 2017).
2	economic	Community gardens are an important element in improving the economic situation of urban communities by building food security (Firth et al., 2011), i.e. subsistence agriculture. They can also generate income (Drake & Lawson, 2014) through the distribution of the food that is grown in them.
3	spatial	Built on vacant lots in the city that are often neglected, they improve the aesthetics of their neighbourhoods. They are a form of temporary development of a space (Drake & Lawson, 2014). Thus, they are a good tool for urban revitalisation (Firth et al., 2011) or for protecting areas from the activities of speculators (Caneva et al., 2020). Therefore, community gardens are important elements in the development of an area in times of crisis. They can also become areas for recreation (Drake& Lawson, 2014) and education, filling an immediate need for certain spatial functions in previously undeveloped areas.
4	social	Community gardens are fundamental in counteracting social inequality in cities (Smith et al., 2021). They also serve the purpose of integration, especially in areas inhabited by poor populations that are culturally and linguistically diverse. Hence, they are often part of the development of social settlements. They are a tool for building intergenerational interaction (Truong et al., 2022) and contribute to improving security in urban spaces (Torres et al., 2018). Community gardens also

Source: author's own elaboration

The article concludes with findings and answers to the research questions posed at the beginning.

3. Research results

3.1. Classification of community gardens in terms of their relationship to the urban fabric; analysis of spatial form

Field and theoretical research shows that community gardens are established in neglected areas and urban wastelands as a grassroots activity aimed at the economic betterment of a given community – through the cultivation of vegetables and fruit. Another purpose of this type of land development is to clean and regenerate degraded areas for social and recreational purposes. Community gardens are becoming a tool to fill vacant gaps in the city. This improves spatial conditions in cities through new forms of social and political activities (Swyngedouw, 2009).

The field research permitted the identification of spatial forms of community gardens, which result from their spatial location within the urban tissue. The typology is presented in Table 2.

Community gardens are also found on rooftops and terraces. As a space for community interaction,

Table 2. Classification of community gardens in terms of relationship to urban fabric; analysis of the form of their development

Aspect	
Community gardens located in gaps in urban spaces (Fig. 7a)	These gardens are created on small plots of land that are gaps in the urban fabric. They are located in areas previously occupied by residential buildings. Consequently, their size and shape varies by plot. They are characterised by: - Shape – Rectangular and elongated. - Average size – Some are narrow and relatively small with limited access to light. Others are larger, occupying two or three previously empty plots. The size of each plot is determined by the footprint of former buildings. - Spatial organisation – The boundaries of smaller gardens are defined by pedestrian routes and neighbouring buildings. Gardens at the corner of a plot are enclosed by the walls of adjacent buildings and roads. Additionally, some gardens span two perpendicular plots, covering the entire length of the area. As a result, these gardens have entrances on two sides, accessible from two parallel streets (Fig. 1). - Layout – Some resemble traditional domestic gardens with a cohesive composition (e.g., in New York and Paris). In Boston and Philadelphia, however, some gardens lack a unified composition and instead consist of individual plots of equal size, each cultivated by a different gardener. - Number catalogued – 34 (New York), mainly in the Lower East Side; 3 (Boston); 4 (Philadelphia); 4 (Paris), primarily in the 18th and 20th districts. - Examples – Liz Christy Garden (Lower East Side, New York); Joe Ciampa Community Garden (East Boston); La Esquina Community Garden (Ludlow, Philadelphia); Jardin in Blanc (20th district, Paris).
Community gardens located in gaps between existing buildings; types of use (Fig. 7b)	Community gardens located along transportation routes. They are created in vacant spaces in front of a building or between a street and a sidewalk. They are characterised by: - Shape – Narrow and elongated. - Medium area – Medium in size, depending on the length of the building in question. - Spatial organisation – Existing buildings do not form a compact urban frontage in this case. The gardens are located between buildings, pavements and carriageway strips; they also appear on street corners. - Layout – Some have a cohesive composition (Fig. 2) (New York, Boston, Paris), while in Oslo, vegetables are grown in containers placed along the building façade. - Number catalogued – 4 (New York); 5 (Boston); 1 (Paris); 3 (Oslo). - Examples – La Guardia Corner Garden (Greenwich Village, New York); Gardens for Charlestown (Charlestown, Boston); Les Jardins du Ruisseau (18th arrondissement, Paris); Dynekilgata Street Garden (Grünerløkka, Oslo).
Within development quarters (community gardens as semi-private spaces) (Fig. 7c)	Community gardens built inside development quarters have been catalogued in Paris, Copenhagen and Oslo. These gardens are located in multicultural neighbourhoods, often next to developments with special housing. They provide a space for integrating the ethnically diverse population in a given urban area. They are characterised by: - Shape – No defined shape. - Average size – Medium, depending on the available open space in housing estates, which is much smaller than in modernist estates. - Spatial organisation – Limited by housing and courtyard developments (e.g., playgrounds, gyms, or sports facilities). - Layout – A cohesive composition, often with some plants grown in containers (Fig. 3). They are found in Europe (Paris, Copenhagen, Oslo). - Number catalogued – 2 (Paris); 3 (Copenhagen); 1 (Oslo). - Examples – Gardens in Baggesensgade (Nørrebro, Copenhagen); Jardin Hérold (19th district, Paris); Backyard Garden (Tøyen, Oslo).
In green areas in the spaces of modernist complexes (Fig. 7d)	Gardens are located in the midst of loosely-spaced buildings; in housing estates they are created as part of revitalisation measures; their function is to integrate the local community (as a top-down measure). - Shape – No defined shape. - Average size – Medium or large, depending on the amount of open space available. - Spatial organisation – Constrained by residential development, lawn areas and traffic layouts, they can be separated from the larger space and fenced off. - Layout – They have a coherent composition and can be placed in beds and containers. - Number catalogued – 4 (New York); 1 (Paris) - Examples – Grant Community Garden (Harlem, New York), Jardin au Ver Tetu (18th district, Paris).

park areas, as a separate space (Fig. e)	- Shape – Geometric, an elongated rectangle. - Average size – Medium or large, located on the edge of parks. - Spatial organisation – In the vast majority of cases, the beds are arranged in quarters. - Layout – Lack of coherent composition. - Number catalogued – 1 (New York); 1 (Boston); 1 (Philadelphia); 7 (Paris); 2 (Copenhagen); 1 (Oslo). - Examples – Roosevelt Island Garden Club (Roosevelt Island, New York); Bremen Street Community Garden (East Boston); Liberty land community garden (Northern Liberties, Philadelphia); Garden in Martin Luther King Park (Clichy-Batignolles, Paris) (Fig. 5); Garden in Remiseparken (Urbanplanen, Copenhagen); *Bakerenga Hagelag* (Baglerbyen, Oslo).
Allotment gardens transformed into community gardens (Fig. 7f)	Community gardens created on the site of traditional allotment gardens have been catalogued in Oslo and Paris. Individual plots are cultivated by individual gardeners. They are a good alternative to traditional RODs and are also part of the unique heritage of a place, as in the case of the "Grand Parc des Docks" in Paris, or they are part of educational activities, e.g. the "Oslo Kommunale Sholehager" (Fig. 6) community gardens. - Shape – Irregular, limited by the road system - Average size – Very big. - Spatial organisation – The garden consists of a network of individual plots tended by individual gardeners or schoolchildren. - Layout – Lack of coherent composition. - Number catalogued – 1 (Paris); 3 (Oslo). - Examples – Community garden in Grand Parc des Docks (Saint-Ouen-sur-Seine, Paris); Oslo Kommunale *Sholehager* (Ullevål, Oslo) (Fig. 6).

Source: author's own elaboration

Fig. 1. Campos Community Garden", New York
Source: author

Fig. 2. "La Guardia Corner Garden", New York
Source: author

Fig. 3. "Baggesensgade Street Gardens", Copenhagen
Source: author

Fig. 4. "Jardin au Ver Tetu", Paris
Source: author

Fig. 5. "Community Garden in Martin Luther King Park", Paris
Source: author

Fig. 6. "Oslo Kommunale Sholehager", Oslo
Source: author

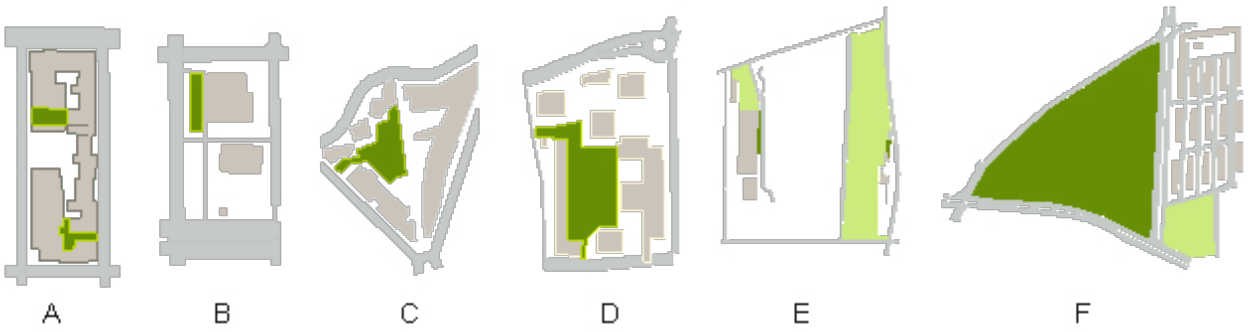

Fig. 7. Spatial placement of community gardens in urban spaces. A) In gaps of urban spaces, B) In gaps between existing buildings and types of use, C) Within development quarters (community gardens as semi-private spaces), D) In green areas in the spaces of modernist complexes, E) In park areas, as a separate space, F) Transformed from allotment gardens
Source: author

they also serve the role of traditional green roofs. There are also publicly accessible community gardens of this type, which are additionally recreational spaces. Two such examples were catalogued during the research: Jardin Suspendu in Paris and on the Økern Portal building in Oslo. As their shape depends on the size, shape and construction of the roof, and the urban space does not influence or interact with their final shape, they have been deliberately omitted from Table 2.

The typology presented (which identified seven spatial types of community garden) indicates that the size and form of a community garden are a consequence of the spatial conditions in the area.

3.2. Analysis of the socio-cultural context of community gardens

As previously stated, community gardens are, by definition, temporary spaces. However, for many communities that utilise them, they become significant locations for the preservation of cultural or ethnic heritage. Additionally, they are beginning to function as social or public spaces where workshops or meetings are organised for the communities concerned. Furthermore, they play an important role in the education of children and young people. The fact that community gardens have a function in a given space that is accepted by the

Table 3. The socio-cultural context of community gardens (based on field observations)

Aspect	
The garden as part of the preservation of cultural identity	The first community gardens in New York were established by minority communities. They were set up to reduce food expenses and cultivate types of vegetables in local cuisine but not commercially available. These include gardens still in operation today that were established by the Puerto Rican community (e.g., the Toyota Children's Learning Garden) or the broader Latino community (e.g., The Humanitarians Garden) or the Bangladeshi community (e.g., the East Side Outside Community Garden). Today, these gardens serve as a forum for the cultivation of cultural differences and as a venue for celebrating secular and religious celebrations together. In the present day, numerous gardens serve to restore and develop the community of Loisaida (NY).
The garden as part of local identity	In New York, community gardens represent a tangible manifestation of the city's cultural heritage. For example, the "Liz Christy Garden" was created in honour of an activist involved in developing local gardens. The "Fireman's Memorial Garden" commemorates a young firefighter, Martin R. Celic, who died fighting a fire in an apartment building on the site of today's garden. The "Carmen Pabon del Amanecer Garden" is named after a Puerto Rican activist known as "Mother Loisaida".
Community garden as a social/public space	Community gardens (NYC) also serve an important social function, offering a variety of free activities (both regular and occasional) that facilitate integration and the creation of public spaces. These include physical activities such as yoga or Tai Chi (Dais y Flores Garden), artistic activities such as summer cinema (6th Street and Avenue B Community Garden), DIY activities such as jewellery making (Carmen Pabon del Amanecer Garden), cooking together (e.g., La Plaza Cultural de Armando Perez Community Garden) or environmental courses such as composting (Lower East Side Ecology Center Community Garden).
Community garden as a place of education	In Oslo, Paris and New York, community gardens play an important role in the education of young people of all ages. This is particularly evident in Oslo, where allotment gardens are being transformed into community gardens and partly used for educational activities for young people who work in them growing vegetables (Oslo Kommunale Sholchager) or gardens located in Paris (Parc de Bercy garden). A significant proportion of New York's gardens serve as playgrounds, providing a safe environment for children (103rd Street Community Garden [Disney]) or hosting lectures (Fifth Street Slope Garden).

Source: author's own elaboration

local communities means that many gardens have been in existence for many years, with some having been in use for 50 years. As Table 3 shows, the social functions of community gardens are many and varied. One of the most important is their ability to preserve the cultural identities of ethnic minorities through language interactions, celebrating holidays and festivals, and cooking together in these small spaces. These gardens are often named after a local leader from a particular community, helping to maintain the identity of the group that has formed in a particular urban area. Studies have also shown that these spaces complement the system of public green spaces in cities, contributing to more equitable access to green spaces and the benefits they provide. They also provide a venue for many educational activities for children, young people and the elderly.

4. Discussion and conclusions

Community gardens are a relatively new form of urban land use that is increasingly common in metropolitan areas around the world. They are seen as low-cost and effective interventions in urban problem areas, helping to integrate local communities and support regeneration processes.

The research carried out shows that community gardens follow a pattern that is repeated all over the world, which allows them to be categorised (according to certain characteristics). In the literature, the classification of this type of spatial organisation is done according to the way they are managed (Fox-Kämper et al., 2018; Petrovic et al., 2019), the forms of their use (Rogge & Theesfeld, 2018) or the functions they perform (Temizel, 2022). This article, on the other hand, attempts to classify them according to an urbanistic classification resulting from their relationship to the existing urban fabric. The research has shown that they can be classified as: objects in existing gaps in urban spaces, between a building and another form of use, e.g. a roadway, within neighbourhoods (as semi-private spaces), between buildings in modernist housing estates, a separate space in urban parks, and on the site of former allotment gardens. This classification made it possible to answer the first research question posed before the analysis. The classification also distinguished the most popular

type of space for community gardens, i.e. those created in the spaces of urban wasteland, the so-called gaps in the compact urban fabric (of the 88 gardens studied, 45 qualified for this type).

The gardens described also have a similar spatial composition, as a coherent spatial system with a smooth transition between the different types of functions located within it. Such gardens are jointly maintained by a specific group of users and are also open to the public, becoming a complementary green space for the residents of the neighbourhood. The study also showed that there are communal gardens within neighbourhoods, where the garden is shared by several gardeners who look after their crops individually. They have a utilitarian character and are generally not accessible to other residents of the neighbourhood. These findings made it possible to answer question number two.

In response to research question number three, the socio-cultural analysis carried out showed that community gardens are important elements of integration for the communities concerned (which is particularly important in multicultural neighbourhoods), which is used by city authorities in integration policies and in the revitalisation of multicultural neighbourhoods. Good examples are Copenhagen (Rutt, 2021; Christensen et al., 2019) and Osolo (Firth et al., 2011; Petrovic et al., 2019). They are also important spaces for communities at risk of exclusion, for example on the basis of sexual orientation (e.g., in New York). A community's attachment to the land it cultivates is also expressed in the names of the gardens themselves, such as Liz Christy Garden or Carmen Pabon del Amanecer Garden, which commemorate important local leaders – or events, such as with Fireman's Memorial Garden. This illustrates the need to promote ethnic and cultural distinctiveness through these gardens and to build a new cultural heritage for the area.

Community gardens are not built to a single model but are the result of the ongoing needs of a particular community using a particular urban space (Firth et al., 2011). They also provide an alternative to traditional forms of green space in densely built urban areas, often inhabited by low-income populations. They help to bridge environmental and climatic inequalities between communities within a city. As a result, community gardens are becoming an important tool in the design of modern cities and an alternative to traditional forms of urban greenery.

Acknowledgment

CoAdapt benefits from a 1.4 million euro grant from Iceland, Liechtenstein and Norway through the EEA Grants. The National Centre for Research and Development in the project Operator. The project is 15% co-financed from Polish budgetary funds.

References

Albro, S. (2019). *Vacant to Vibrant - Creating Successful Green Infrastructure Networks*. IslandPress, Washington.

Anderson, E., & Minor, E. (2017). Vacant lots: An underexplored resource for ecological and social benefits in cities. *Urban Forestry & Urban Greening,* 21: 146-152. DOI: 10.1016/j.ufug.2016.11.015.

Bojar-Fijałkowski, T. (2018). Równe prawo do środowiska należytej jakości w założeniach sprawiedliwości ekologicznej (Equal right to a quality environment in the assumptions of environmental justice – in Polish). In: Gronowska B., Rakoczego B., Kapelańska-Pręgowska J., Karpus K., Sadowski P. (eds.), *Prawa człowieka a ochrona środowiska – wspólne wartości i wyzwania (Human rights and environmental protection - common values and challenges – in Polish)*. Katedra Praw Człowieka Wydział Prawa i Administracji Uniwersytet Mikołaja Kopernika, Toruń.

Caneva, G., Cicinelli, E., Scolastri, A., & Bartoli, F. (2020). Guidelines for urban community gardening: Proposal of preliminary indicators for several ecosystem services (Rome, Italy). *Urban Forestry & Urban Greening*, 56: 126866. DOI: 10.1016/j.ufug.2020.126866.

Cabral, I., Costa, S., Weiland, U., & Bonn A. (2017). Urban Gardens as Multifunctional Nature-Based Solutions for Societal Goals in a Changing Climate, In: Kabisch N., Korn H., Stadler J., Bonn A. (eds.), Nature-Based Solutions to Climate Change Adaptation in Urban Areas. Springer Open.

Christensen, S., Malberg Dyg, P., & Allenberg K. (2019). Urban community gardening, social capital, and "integration" – a mixed method exploration of urban "integration-gardening" in Copenhagen, Denmark. *Local Environment*, 24(3): 231-248 DOI: 10.1080/13549839.2018.1561655.

de Oliveira, S., & Thomson, W. (2015). Green infrastructure and health. In: Sinnett D., Burgess S., Smith N. (eds.), *Handbook on Green Infrastructure*. Edward Elgar Publishing Ltd. Cheltenham.

Drake, L., & Lawson, L. (2014). Validating verdancy or vacancy? The relationship of community gardens and vacant lands in the U.S., *Cities*, 40(B): 133-142 DOI: 10.1016/j.cities.2013.07.008.

Dudzińska-Jarmolińska, A. (2019). Bioswales jako elementy dostosowania miast do zmian klimatu i nowy sposób kształtowania krajobrazu miejskiego na przykładzie Warszawy (Bioswales as elements of urban adaptation to climate change and a new way of shaping the urban landscape on the example of Warsaw – in Polish). *Prace komisji krajobrazu kulturowego,* 41(1): 147–166

Firth, Ch., Maye, D., & Pearson D. (2011). Developing "community" in community gardens. *Local Environment*, 16(6): 555-568. DOI: 10.1080/13549839.2011.586025.

Fitzgerald Revitalization Project: Landscapes as the Framework for Community Reinvestment. Available at: https://www.asla.org/2017awards/327798.html.

Foo, K., Martin, D., Wool, C., & Polsky C. (2014). Reprint of "The production of urban vacant land: Relational placemaking in Boston, MA neighborhoods". *Cities*, 40(B): 175-182. DOI: 10.1016/j.cities.2013.06.012.

Fox-Kämper, R., Wesener, A., Münderlein, D., Sondermann, M., McWilliam, W., & Kirk, N. (2018). „Urban community gardens: An evaluation of governance approaches and related enablers and barriers at different development stages". *Landscape and Urban Planning*, 170: 59-68.

Gasperi, D., Pennisi, G., Rizzati N., Magrefi, F., Bazzocchi, G., Mezzacapo, U., Centrone, M., Sanyé-Mengual, E., Orsini, F., & Gianquinto, G. (2016). Towards Regenerated and Productive Vacant Areas through Urban Horticulture: Lessons from Bologna, Italy. *Sustainability*, 8(12): 1347. DOI: 10.3390/su8121347.

Graf, J. (2022). Life between buildings; or what can grow where you least expect it. Available at: https://www.momaps1.org/post/162-life-between-buildings-curatorial-essay.

Gustavsen, G., Berglann, H., Jenssen, E., Kårstad, S., & Rodriguez D. (2022). The Value of Urban Farming in Oslo, Norway: Community Gardens, Aquaponics and Vertical Farming. *International Journal on Food System Dynamics*, 13(1): 17-29 DOI: 10.18461/ijfsd.v13i1.A2.

History of Community Gardens. (2024). Available at: https://www.nycgovparks.org/about/history/community-gardens.

Hino, K., Yamazaki, T., Iida, A., Harada, K., & Yokohari M. (2023). Productive urban landscapes contribute to physical activity promotion among Tokyo residents. *Landscape and Urban Planning*, 230: 104634 DOI: 10.1016/j.landurbplan.2022.104634.

Jasikowska, K., Sierpowski, P., Styrnol, N., & Guzik D. (2022). (Nie)sprawiedliwość klimatyczna (Climate (in)justice – in Polish). In: Jasikowskiej K., Pałasza M. (eds.), Za pięć dwunasta koniec świata. Kryzys klimatyczno-ekologiczny głosem wielu nauk (The end of the world in five twelve. The climate-ecological crisis in the voice of many sciences – in Polish). Biblioteka Jagiellońska, Kraków.

Kaczmarek, P. (2021). Przestrzenny wymiar dogęszczania zabudowy na wielkich osiedlach mieszkaniowych w Poznaniu po 1989 roku (Spatial dimension of overdevelopment in large housing estates in Poznań after 1989 – in Polish). *Rozwój Regionalny i Polityka Regionalna*, 57: 147–160.

Kato-Huerta, J., & Geneletti, D. (2023). A distributive environmental justice index to support green space planning in cities. *Landscape and Urban Planning*, 229: 104592. DOI: 10.1016/j.landurbplan.2022.104592.

Kim, G., Miller, P., & Nowak, D. (2018). Urban vacant land typology: A tool for managing urban vacant land. *Sustainable Cities and Society*, 36: 144-156. DOI: 10.1016/j.scs.2017.09.014.

Kim, G., Newman, G., & Jiang, B. (2020). Urban regeneration: Community engagement process for vacant land in declining cities. *Cities*, 102: 102730. DOI: 10.1016/j.cities.2020.102730.

Kremer, P., Hamstead, Z., & McPhearson, T. (2013). A social–ecological assessment of vacant lots in New York City. Landscape and Urban Planning 120: 218-233. DOI: 10.1016/j.landurbplan.2013.05.003.

McPhearson, T., Kremer, P., & Hamstead, Z. (2013). Mapping ecosystem services in New York City: Applying a social–ecological approach in urban vacant land. *Ecosystem Services*, 5: 11-26. DOI: 10.1016/j.ecoser.2013.06.005.

Middle, I., Dzidic, P., Buckley, A., Bennett, D., Tye, M., & Jones R. (2014). Integrating community gardens into public parks: An innovative approach for providing ecosystem services in urban areas. *Urban*

Forestry & Urban Greening, 13(4): 638-645. DOI: 10.1016/j.ufug.2014.09.001.

Nassauer, J., & Raskin, J. (2014). Urban vacancy and land use legacies: A frontier for urban ecological research, design, and planning. *Landscape and Urban Planning*, 125: 245-253. DOI: 10.1016/j.landurbplan.2013.10.008.

Okvat, H.A., & Zautra, A.J. (2014). Sowing Seeds of Resilience: Community Gardening in a Post-Disaster Context. In: Tidball. In: K., Krasny, M. (eds.), Greening in the Red Zone. Springer, Dordrecht.

Petrovic, N., Simpson, T., Orlove, B., & Dowd-Uribe, B. (2019). Environmental and social dimensions of community gardens in East Harlem. *Landscape and Urban Planning*, 183: 36-49 DOI: 10.1016/j.landurbplan.2018.10.009.

Preston, P., Dunk, R., Smith, G., & Cavan, G. (2023). Not all brownfields are equal: A typological assessment reveals hidden green space in the city. *Landscape and Urban Planning*, 229: 104590. DOI: 10.1016/j.landurbplan.2022.104590.

Rogge, N., & Theesfeld, I. (2018). Categorizing urban commons: Community gardens in the Rhine-Ruhr agglomeration, Germany. *International Journal of the Commons*, 12(2): 251-274.

Rutt, R.L. (2021). A green, livable Copenhagen in the shadow of racializing, neoliberalizing politics. In: Anguelovski, I. & Connolly, J.J. (eds.), The green city and social injustice: 21 tales from North America and Europe. Routledge.

Smith, J., Meerow, S., & Turner, B. (2021). Planning urban community gardens strategically through multicriteria decision analysis. *Urban Forestry & Urban Greening*, 58: 126897. DOI: 10.1016/j.ufug.2020.126897.

Temizel, S. (2022). Community Gardens. In: Türker H. B., Gül A. (eds.), *Architectural Sciences and Urban Agriculture*. Ankara: Iksad Publications.

Torres, A., Prévot, A., & Nadot, S. (2018). Small but powerful: The importance of French community gardens for residents. *Landscape and Urban Planning*, 180: 5-14. DOI: 10.1016/j.landurbplan.2018.08.005.

Trendov, N. (2018). Comparative study on the motivations that drive urban community gardens in Central Eastern Europe. *Annals of Agrarian Science*, 16(1): 85-89. DOI: 10.1016/j.aasci.2017.10.003.

Truong, S., Gray, T., & Ward, K. (2022). Enhancing urban nature and place-making in social housing through community gardening. *Urban Forestry & Urban Greening*, 72: 127586. DOI: 10.1016/j.ufug.2022.127586.

Zhang, B., Hu, S., Wang, H., & Zeng, H. (2023). A size-adaptive strategy to characterize spatially heterogeneous neighborhood effects in cellular automata simulation of urban growth. *Landscape and Urban Planning*, 229: 104604. DOI: 10.1016/j.landurbplan.2022.104604.