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Developing a Siting Methodology for Urban and Peri-urban Agriculture in Rome

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Introduction

The purpose of this thesis is to develop a place-based siting methodology to support decision-makers in the planning and implementation of urban and peri-urban agriculture in the city of Rome. The intention is to support the development of agricultural practices, whose importance has been increasingly recognized in the past decade, but that have encountered various difficulties in translating from theory to practice.

To achieve this objective, the work opens with an introduction to the urbanization phenomenon, which calls for a shift in perspective regarding the multifunctionality of agriculture and the relationship between cities and farmland. The Roman context is also presented, framing Rome as an agricultural municipality and highlighting its untapped potential, which takes on the shape of urban voids and unused agricultural land.

The main body of the thesis is then organized into three parts: a theoretical framework, an investigation on case studies, and the application of the proposed methodology. The first part begins with the clarification of some key definitions relevant to this research, followed by a typology on urban and peri-urban agriculture, outlining all the possible manifestations of UPA and identifying the key elements that allow distinctions to be drawn between the different categories. A structured interdisciplinary literature review on siting criteria is subsequently conducted, resulting in the definition of a traffic-light matrix that will serve as the primary analytical instrument of the siting methodology. This is followed by a comparative overview of international planning experiences to better understand how the criteria identified in literature have been addressed in a range of contexts.

The second part focuses on the city of Rome, presenting a selection of UPA experiences across its territory and analyzing the regulatory framework and planning instruments that currently govern it. With respect to the experiences, the study focuses on practices such as the community parks of *Ortg* and *Garbatella*, and the community garden of *Monte Ciocci*, in addition to the agricultural park of *Casal del Marmo* and the urban farm of *Agricoltura Nuova*. These examples will also allow for an in-depth analysis of some of the themes that often intersect with such experiences, including the rise of bottom-up initiatives, the right to the city, Alternative Food Networks, opposition to land consumption and urban sprawl, and so forth. Regarding the regulatory and planning framework, this study investigates regulations and planning instruments at multiple scales, with a view to assessing what effectively facilitates UPA, and what already helps locating sites for UPA.

The third part addresses the application of the proposed siting methodology to an area in *Municipio IX*, to assess whether the site is suitable for urban agriculture or not. In the conclusions, some considerations will be addressed, regarding an assessment of the methodology and its limitations, the role of urban planning in enabling and sustaining UPA, and the adequacy of the current legislative and planning framework for governing the emergence of new agricultural practices in Rome.

The work presented in this thesis stems from my internship experience within the RealUrbanGreen project, co-financed by the European Territorial Cooperation Program Interreg Euro-MED. The project's aim – which is still ongoing – is to regenerate a green area in the *Municipio XIV* of Rome, through a process which heavily relies on civic participation and engagement, promoting practices to enhance climate resilience in urban areas. The area chosen for this project is adjacent to the

community garden of *Monte Ciocci*, and the plan is to add to the existing lots with new raised beds, in addition to implementing an ecological pond that will be used for irrigation purposes. The proximity to the community garden meant that the activities were in close contact with the people involved in the horticultural practices, and I was lucky enough to get to know the vast world revolving around urban agriculture from a very personal perspective. From the internship, the important role of such practices in an urban context was made abundantly clear: from the social benefits to the environmental ones, from beautification to climate resilience. The multifunctionality of urban agriculture is a resource that cannot be overlooked anymore; instead, it should be the driving force for the integration of agricultural practices within the urban landscape. Finally, during the internship it was also made clear that the current panorama does not always facilitate the implementation of further UPA practices within the Roman perimeter; that is why this thesis' objective is to suggest an instrument to support the decision-making process with creating new opportunities for UPA.

i. Global urbanization's pressure on agriculture

Today almost 45% of the world's population lives in cities[1], with prospects expecting a further increase in the next few years (United Nations, 2025). This demographic shift represents a fundamental transformation in the relationship between humans and the territories they inhabit, with profound implications for food provisioning systems, ecological networks, quality of life and – generally speaking – for the use of the land. As cities grow, urbanization pressure consumes agricultural and natural land at the periphery, reducing the ecological and productive capacity of the territories surrounding cities and generating landscapes of fragmentation, abandonment, and degradation at the urban fringe. Within cities themselves, the scarcity of green spaces undermines quality of life, exacerbates the urban heat island effect, and reduces the resilience of urban populations to the increasingly severe climatic events associated with global warming. In this context, local food production and urban greening are no longer merely desirable amenities but strategic components of urban resilience, capable of contributing simultaneously to food security, ecological restoration, carbon sequestration, and the social cohesion of urban communities (Cohen, 2020; Forte et al., 2022; Gottero, 2023).

The policy response to these interconnected challenges found a significant landmark in the European Landscape Convention adopted in Florence in 2000, that encourages the public to take an active part in the protection of landscape, conserving and maintaining its heritage value. The Convention defines the landscape as "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*" (Council of European Union, 2000), encompassing not only the protected or exceptional landscapes traditionally associated with heritage conservation, but all territories as perceived by people, including the degraded, ordinary, and transitional landscapes of the urban fringe. In doing so, the Convention established a normative framework within which the agricultural peri-urban areas – long treated as passive reserves awaiting urbanization – can be recognized as landscapes worthy of protection, valorization, and active planning. More recently, the European Green Deal and its associated Farm to Fork Strategy have reinforced this landscape protection logic within a broader food systems and sustainability framework, explicitly recognizing the role of urban and peri-urban agriculture in building more resilient, sustainable, and socially equitable food systems across European cities.

1 According to the World Urbanization Prospects 2025 another 35.6% lives in towns, leaving almost 20% of the world's population in rural areas (United Nations, 2025)

ii. Rome, the biggest agricultural municipality in Europe

Rome represents a significant case study as it is the largest agricultural municipality in Europe by surface area, encompassing within its administrative boundaries a territory of approximately 128˙819 hectares (ISTAT, 2024), of which 46˙241 ha are used for agricultural purposes (UAA[2]) (ISTAT, 2022), retracing part of the historical *Agro Romano*. It is important to note that such number does not include urban agriculture and agricultural parks, as urban agriculture (another 3.5 ha (ISTAT, 2021)) is considered part of the "urban green", and agricultural parks are counted within protected natural areas.

The *Agro Romano* is the product of millennia of continuous agricultural use that has shaped both the physical landscape and the cultural identity of the city of Rome; indeed, protecting and valorizing this heritage is not merely an aesthetic or historical imperative, it is a condition for maintaining the ecological, productive, and cultural infrastructure that gives Rome its distinctive character as a city embedded in its agricultural territory. Despite this heritage, however, the agricultural dimension of Rome is inadequately reflected in public discourse and insufficiently protected by planning instruments. The *Piano Regolatore Generale* of 2008 – the main municipal planning instrument governing land use across the city – designated three agricultural parks (in article 70 of its *Norme Tecniche di Attuazione* (Comune di Roma - Dipartimento VI Politiche della Programmazione e Pianificazione del Territorio, 2008)) representing a formal recognition of the need to protect and valorize the city's agricultural heritage through dedicated planning tools. However, the implementation of these designations has remained incomplete, and the agricultural parks have yet to be fully realized, leaving much of the *Agro Romano* in a condition of regulatory uncertainty that exposes it to continued urban pressure.

This tension between planning intentions and planning practice is not unique to the agricultural parks, and extends to the broader challenge of developing urban and peri-urban agriculture within Rome's territory. Despite the growing recognition of UPA as a multifunctional resource – capable of contributing simultaneously to food security, ecological resilience, and social cohesion – its development in Rome remains largely dependent on the spontaneous initiatives of grassroots organizations and civil society actors operating in the absence of a coherent and supportive regulatory framework. In this context, the activation of Rome's extraordinary agricultural potential requires not only the political will to recognize UPA as a legitimate and valuable urban function, but the development of concrete planning instruments capable of identifying suitable sites, evaluating their potential, and protecting them from the urban pressures that currently threaten to render them unavailable for agricultural use before their potential can be realized.

iii. Non-Used Agricultural Areas and urban voids: a latent resource

Within this broader territorial picture, a specific and particularly urgent planning problem emerges: the existence of more than 1˙600 hectares of non-used agricultural areas (NUAA) within the Metropolitan Area of Rome[3] – land that is classified as agricultural in the zoning system but

2 Used Agricultural Areas (in Italian documents written as SAU) encompass land actually used for agricultural purposes, excluding woodlands and buildings (which area instead considered in the SAT parameter, or Total Agricultural Land).

3 Note that the data does not exist at the Municipal scale.

is currently neither cultivated nor actively managed – constituting a vast latent resource whose potential remains largely untapped (Regione Lazio - Direzione Regionale Agricoltura, promozione della filiera e della cultura del cibo, caccia e pesca, foreste, 2026).

This phenomenon is closely connected to the broader issue of urban voids, also called "in-between" spaces by Berger (2006). They are abandoned, underutilized or residual spaces within the urban fabric that represent missed opportunities for regeneration, greening, and productive reuse (Gabbianelli, 2017). Urban voids are a characteristic feature of contemporary cities, generated by the uneven dynamics of urban growth and contraction, by the abandonment of industrial and infrastructure uses, by unresolved planning conflicts, and by the speculative retention of land awaiting more profitable development (Clément, 2005). In Rome, as in many other European cities, these voids are not a marginal or exceptional phenomena but a structural component of the urban landscape, present at multiple scales from small interstitial plots to large abandoned complexes (Zanfi, 2008).

The most paradigmatic example in the context of this thesis is the *Tor di Valle* area, located in *Municipio IX* along the Tiber River, south of the city center. Once hosting a celebrated racecourse and subsequently the object of a long and contested planning history involving proposals for a major sports and entertainment complex, a portion of *Tor di Valle* is today a large urban void of approximately 90 hectares, abandoned and deteriorating, whose planning status remains unresolved. As such, it represents both the scale of the challenge posed by urban voids in Rome and the potential of a rigorous siting methodology capable of evaluating whether and how such areas could be activated for new agricultural uses.

The ecological and social costs of non-used agricultural areas and urban voids are substantial and well-documented. The loss of agricultural productivity and biodiversity, the risk of soil sealing and land consumption, the degradation of the urban landscape, and the absence of the ecosystem services[4] that functional green and agricultural areas would provide, all represent concrete costs borne by the urban community as a whole. Data from ISPRA on land consumption in the Lazio region confirm that the rate of soil sealing in the Metropolitan Area of Rome remains among the highest in Italy (+254 ha from 2022 and 2023, reaching a total of 70˙620 ha of land consumed) (SNPA, 2024), underscoring the urgency of planning responses capable of protecting and activating the city's remaining agricultural and green resources before they are irreversibly lost to development.

iv. Towards a new relationship between city and farmland

The planning challenges described in the preceding sections point toward a deeper conceptual shift that is gradually emerging in urban planning theory and practice: the need for a new paradigm in the relationship between city and farmland, one that moves beyond the traditional opposition between urban development and agricultural land and recognizes the productive, ecological, and

4 Ecosystem services have been defined by the Millennium Ecosystem Assessment as "*benefits human populations derive, directly or indirectly, from ecosystem functions*", and they have been classified following functional guidelines as: provisioning services (such as water, food, raw materials), regulating services (climate regulation, air quality management, erosion control, ...), cultural services (educational values, aesthetic values, social relations, ...), and supporting services (photosynthesis, pedogenetic processes, ...). "*The MA definition follows the work of Costanza et al. (1997) in considering both natural and human-modified ecosystems as sources of ecosystem services, and it follows Daily et al. (1997) in using the term "services" to encompass both the tangible and the intangible benefits*" (Castilla et al., 2005).

cultural functions of agriculture as integral dimensions of the city itself. The emerging alternative paradigm – variously described in the literature as multifunctional peri-urban agriculture – proposes to recognize agricultural land as a strategic infrastructure of the city, providing food, ecosystem services, landscape quality, social cohesion, and cultural identity alongside its productive function (Gottero, 2023; Zasada, 2011). This conceptual shift has important implications for planning practice: it implies moving from a purely protective approach – designating agricultural land as a zone of restriction on development – to an active valorization approach that identifies, supports, and develops the productive, ecological, and social potential of urban and peri-urban agricultural areas. It also implies developing the planning tools – including the siting methodologies, evaluation frameworks, and regulatory instruments – necessary to translate this conceptual shift into operational practice.

v. Research questions

The confluence of the global urbanization challenge, the policy framework for landscape protection and a sustainable food system, the extraordinary agricultural heritage of Rome, the scale of non-used agricultural areas and urban voids within the city's territory, and the emerging planning paradigm of multifunctional peri-urban agriculture, together define the research context of this thesis and motivate its central questions.

The growing urban pressure makes the development of planning instruments capable of identifying and evaluating sites suitable for UPA an urgent practical necessity. The existing UPA experiences in Rome demonstrate that the potential for urban agriculture in the city is real, vital, and deeply rooted in local social fabric. However, the absence of an overarching municipal strategy risks leaving these experiences isolated and fragile, dependent on the organizational capacity of individual actors rather than supported by a coherent institutional framework capable of consolidating existing practices and guiding the development of new ones. It is in response to this gap that this thesis proposes a place-based siting methodology, setting out to answer two interconnected research questions. First: what are the criteria that determine the establishment and success of urban and peri-urban agricultural experiences? This question motivates the structured literature review and criteria synthesis that constitute the theoretical framework of the thesis, culminating in the development of a traffic-light matrix that organizes the identified criteria into a transparent and replicable evaluation instrument. Second: where would it be possible to develop new UPA experiences in Rome, and specifically in *Municipio IX*? This question motivates the application of the siting methodology to a specific territorial context, testing the operationalizability of the theoretical framework against the complex and multifaceted conditions of a real planning situation.

Part I – Key concepts on Urban and Peri-urban Agriculture

1. Key definitions

The concept of "Urban and Peri-urban Agriculture" (hereinafter referred to as UPA) is defined by Mougeot as:

> *"an industry located within (intraurban) or on the fringe (periurban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area"* (Mougeot, 2000, p.10).

Moreover, Richter et al. (1995) stated that "*it is not its urban location which distinguishes Urban Agriculture from rural agriculture, but the fact that it is embedded in and interacting with the urban ecosystem*".

From these definitions it is possible to gather a few key aspects of UPA: firstly, the strong correlation with the context it is embedded in, which encompasses both the urban fabric and the people that live in it. Secondly, the fact that UPA produces ecosystem services, meaning benefits that people derive from the properties and processes of ecosystems (Costanza et al., 1997), combining "*materials, energy and information from natural capital stocks [...] with manufactured and human capital services, to produce human welfare*" (Costanza, 1991). So, UPA is not only a way to produce food but it also has a multifunctional nature, in being a practice for climate mitigation, biodiversity maintenance, and recreation (Cassatella & Gottero, 2025), community building, intergenerational and intercultural exchange (Tei & Gianquinto, 2010), urban environmental management (Forte et al., 2022), education and beautification (Cheema et al., 1996), inclusivity, physical and mental health improvement, and for the creation of job opportunities (Gottero, 2023).

Furthermore, in doing so UPA also fits the European Commission's definition of a Nature-Based Solution, "*[providing] environmental, social and economic benefits [...], [bringing] more – and more diverse – nature and natural features and processes into cities, [...] through locally adapted, resource-efficient and systemic interventions*" (European Commission, 2025).

Another concept that should be clarified with respect to this research is "peri-urban". Gottero et al. (2021) define it as "*a zone of contact between city and countryside characterized by material and immaterial relationships, where a system of functional, socio-economic, spatial and ecosystemic relations is recognizable between rural areas and urban areas*". These areas are also characterized by low population density, fragmentation of human settlements, vast open spaces and woodlands. It is quite tedious to trace a precise perimeter of a peri-urban area, however it is possible to identify some attributes of this kind of landscape: more often than not, peri-urban areas include protected areas and ecological networks, water networks, areas of agronomic or landscape interest, a distinctive typology of architecture, elements of historical and cultural interest, scenic elements and recreational networks (Gottero et al., 2021).

One more concept that's worth defining for the purpose of this work is "alternative food networks" (AFN), which is used to describe practices that produce and process food closer to the consumers,

using organic, eco-friendly, ethical and holistic farming methods, and that distribute it through farmers markets, box schemes and community-led initiatives, as an alternative to the industrialized food supply chain (Michel Villarreal et al., 2025). AFN are also linked to "foodscapes", in the sense that they create spaces that allow for an interface between individual and collective food practices and food provisioning, processing and distribution networks (Milano et al., 2022). Within AFN, civic food networks (CFN) are a subgroup that prioritize civic engagement (Smith, 2023), community-building and shared governance, fostering a sense of ownership and collaboration (Michel Villarreal et al., 2025). UPA practices therefore have many points of contact with AFN (Morgan, 2015) and especially CFN, if we consider the provisional aspect explained previously, as well as the community-related functions.

2. A typology of Urban and Peri-urban Agriculture

Within the European project EFUA, Jansma et al. (2024) stated that UPA is "*an umbrella concept*" that includes a large number of labels, used inconsistently and interchangeably to refer to a variety of initiatives, that always comprehend agricultural production, but that also combine it with other activities and services in an indefinite number of combinations. They also pointed out that "*urban agriculture is continuously evolving and reacting to continuously changing urban needs and opportunities*" and that "*a typology will never be a definitive one, but rather a reflection of a certain period in time*" (Jansma et al., 2024). Based on these premises, this section of the work aims at collecting typologies developed in recent years, in an effort to spell out all the possible manifestations of UPA, and identify the key elements that allow distinctions to be drawn between the different categories.

In terms of methodology, several research have identified different building blocks of UPA, that serve the purpose of delineating a first draft of categories. For instance, Mougeot (2000) recognized these distinguishing characteristics: types of economic activities, food/non-food categories of products, intraurban and peri-urban character of location, types of areas where UPA is practiced, types of production systems, product destination and production scale. Meanwhile, Jansma et al. (2022) highlighted: product destination, organization and focus, ownership, maintenance, production method, spatial aspects, products, financing, degree of permanence, size and scale. A later project instead based their work on: type of product (food, non-food, services), product destination (own consumption, gifting, selling), location (inside/on buildings, outside), production method, ownership and maintenance, size and permanence (Jansma et al., 2024). Another research considered also the degree of social interactions possible, and the impact on urban regeneration (Mazzocchi & Marino, 2019). Meanwhile, Branduini et al. (2016) recognized that also the degree of permeability of the perimeter of the area destined to UPA plays a role in defining its character, as it influences the social aspect. And lastly, Gottero (2023) provides a classification based on five dimensions of UPA benefits, which include the socio-cultural sphere, the environmental benefits, the economic benefits, and a positive influence both on general health and on food.

From this methodological standpoint, a number of authors have outlined some typologies that do share some conclusions, but do not always perfectly overlap. For instance, Lohrberg et al. (2016) classified UPA practices in allotment gardens, family gardens, community gardens, educational and therapeutic gardens. Whereas Mazzocchi & Marino (2019) stated that only three categories can encompass all the different variations: urban gardening, urban farming and micro agriculture.

However, a later research renewed a more sectorial codification, distinguishing between urban farms, community parks, DIY gardens/farms, zero acreage farms, social farms and community gardens (Jansma et al., 2022).

For the purposes of this research, and by no means claiming to be exhaustive, what follows is a systematization of the typologies mentioned, considering also other codifications from other reviewed papers.

		types				
characteristics		urban farm	community park	community garden	DIY garden	zero acreage
location	intraurban	•	•	•		•
	peri-urban	•			•	
type of area	outdoors	•	•	•	•	•
	inside/on buildings					•
	public		•	•		
	private	•		•		•
degree of permanence	permanent	•	•	•	•	•
	end time			•	•	•
	squatted			•	•	•
size	zero acreage					•
	small			•		
	medium		•		•	
	high	•				
products	food	•	•	•	•	•
	non-food	•	•			
	services	•	•	•		
production system	organic	•	•	•	•	•
	renewable resources	•	•	•	•	•
	high tech					•
	elevated	•	•	•		•
product distribution	sale	•				•
	own consuption		•	•	•	
	gifting		•	•		•
economic activities	market/shop	•				
	restaurant	•				•
organisation/management	professional farmer	•				
	association		•	•	•	•
	NGOs	•	•	•		
	informal group			•	•	
ownership	individual lots		•	•	•	
	communal areas/sharing	•	•	•		•
	rent/cession		•	•	•	
	own	•			•	
benefits	environment	•	•	•	•	•
	health	•		•	•	
	food	•		•	•	•
	socio-cultural	•	•	•	•	
	economic	•				•
degree of social interaction	high		•	•		
	medium	•				
	low				•	•
impact on urban regeneration	high		•	•		•
	medium	•				
	low				•	

Figure 1: UPA typology (Source: own elaboration based on Branduini et al. (2016), Gottero (2023), Jansma et al. (2022), Jansma et al. (2024), Lohrberg et al. (2016), Mazzocchi & Marino (2019), Mougeot (2000).)

Urban farms

Urban farms can be found both within cities and at their margins, most of their activities are conducted outdoors, on a private area with high acreage and permanent agricultural use. The products of their activities can be food (mostly organic) and non-food related, but also services to the community. Their production system often includes renewable energy, and the products are mainly destined for on-site shops or close by farmers' markets, but they can also cater for other local economic activities such as restaurants. Urban farms are – for the most part – managed by professional farmers who own the land, and are financed by their sales and paid services. They usually have a positive impact on the environment in terms of quality and quantity of urban green spaces, and natural habitats; moreover, they bring improvements in food quality and security, and they create job opportunities fostering local economies. Furthermore, they can be the scenario for social interactions thanks to services such as hosting leisure activities and educational events, and they can affect the urban fabric by contrasting soil sealing. Urban farms also occasionally include therapeutic activities, on the premises of great positive impact given by contact with nature (Tei & Gianquinto, 2010). Such activities include (but are not limited to) horticultural therapy for physical and mental rehabilitation (Matsuo, 1998), animal-assisted therapies, and different kinds of "*plant-assisted therapy*" (Matsuo, 2008) which differentiate from one another based on the plants involved, the place in which the therapy is carried out, and the activity put forth.

Community parks

Community parks originate from the combination of horticultural activities and park elements in publicly accessible spaces, and they are generally found inside cities' perimeters, in medium-sized areas. They allow for the growth of food – generally organic – and ornamental plants, and they sometimes make use of elevated structures, especially if they include activities for people with reduced mobility. Their products can be destined for gifting, but they are more often meant for self-consumption among the members of the association that manages the space; this can either mean that everything that is produced gets shared among everyone, or that each person gets what they have cultivated in the plot ceded to them, depending on the specific case. Community parks help reduce the heat island effect, and they contribute to maintaining quality green spaces in highly constructed areas, enriching the quality of life in such contexts. They also improve social cohesion, facilitate the sharing of cultural values, and generate a sense of belonging, in addition to providing educational activities that raise awareness on food and environment-related issues.

Community gardens

Community gardens' main focus is community building by means of food, which makes them quite similar to community parks, although some key differences can be noted. Starting with their establishment, they usually take on smaller areas within neighborhoods where bottom-up initiatives arise. They are usually a manifestation of the desire for active participation in the creation of a space, and a way to reclaim the "right to the city" (Bergamaschi, 2012; Cassatella & di Campli, 2021; Galli, 2023; Mudu & Marini, 2018). They can start as an informal practice but often gain recognition and permission to occupy the land for a certain amount of time. They too can be divided into individual plots or constitute a shared space between all the members of the association; whichever the case, they commonly have a regulation which includes opening hours to the public. Because their main focus is social cohesion, they often host leisure activities and events for cultural and intergenerational exchange; moreover, they value physical and mental health and

promote quality food. Besides, they too have the same positive impacts as community parks on the environment and the urban fabric.

DIY gardens

DIY (do it yourself) gardens generally arise in peri-urban areas from the initiative of an informal group, but can also derive from the work of an association. As a bottom-up practice, they can start from squatting but usually find an agreement that allows for limited or permanent use of the area. Their main focus is the production of organic food for self-consumption, and for this reason they are usually organized in individual plots over a medium acreage area, that can be rented, ceded, or even owned. They have positive impacts on the environment and on the people that use these spaces, bettering their physical and mental health. They also provide socio-cultural benefits and improved food sovereignty. However, given that leisure activities are not really one of the objectives, social relations are not especially fostered here.

Zero acreage farms

Zero acreage farms are located within cities, inside or on buildings, or in spaces adjacent to buildings. They can start as bottom-up initiatives to give a new use to abandoned spaces, but similarly to DIY gardens, they can also develop formal agreements that allow for different degrees of permanence. Another frequent reason for their establishment is the lack of open green spaces, which makes people turn to alternatives such as vertical structures, rooftops, raised containers or other highly technological production systems to cultivate food. In zero acreage farms the management of the space is oftentimes shared among all the members, and the products are typically intended for commercial distribution and are sometimes processed in adjacent economical activities such as restaurants; although there are a few cases where products are gifted or donated to the local community. Even if this UPA practice does not necessarily have a social vocation, it still promotes local economies, improves food quality, and can foster leisure activities for social cohesion. Moreover, it can have a significant impact on the regeneration of an urban area, especially when carried out in a brownfield site[5].

Agricultural parks

A further addition to this typology would be Agricultural parks, which share some similarities both with urban farms and community parks, but that also carry some peculiar characteristics. However, they are sometimes defined as a planning instrument, rather than a UPA type. This derives from their main purpose of protecting landscape, with its natural, historical, and archaeological heritage, while resisting urban pressures and also preserving traditional agricultural activities (Comune di Roma, 2008; Fanfani, 2018; Paül, 2015; Zazo Moratalla, 2015). They are also seen as a combination of top-down policies with bottom-up initiatives (Magnaghi & Fanfani, 2010), that through cooperation provide social and environmental benefits, contributing to the establishment of alternative food networks and managing the landscape (Zazo Moratalla & Paül, 2022). If we were to consider Agricultural parks as a UPA typology, we could state that they are mainly present in peri-urban contexts but sometimes can be found also within cities, they cover high acreage areas, and their estate comprehends also buildings that are used to process their products and carry out

5 A brownfield site is a parcel of land whose expansion, redevelopment, or reuse may be complicated by the presence of a hazardous substance, pollutant, or contaminant. It does not pose as a serious health or environmental threat, however it is a social and economic threat because it prevents development (Steiner & Butler, 2007).

services and economic activities. They are permanent in nature and usually administered by a managing institution, although sometimes they are partially entrusted to third parties. Lastly, they have a great impact on the urban landscape, as they constitute an effective tool for curbing urban sprawl (Fanfani, 2018).

3. Siting criteria for UPA in literature

As previously stated in the definition of a typology, UPA can manifest in a variety of ways, adapting to the context and the resources made available. This means that it can exist in a multitude of sizes, on different kinds of surfaces, in heterogeneous locations, with different purposes and at the initiative of various actors. Although very flexible (Jansma et al., 2024), UPA practices – especially newly established ones – are indeed fostered by certain criteria and limited by others. This chapter will investigate a wide array of such siting criteria, to try to understand which conditions render UPA possible, which ones hinder its development, and also which criteria could facilitate UPA, contingent on the implementation of specific measures.

3.1. Literature review on siting criteria

To investigate the siting criteria for UPA, a structured literature review was conducted using the Scopus database. Without claiming to be exhaustive, this review draws on the existing literature to identify the criteria most consistently supported across diverse geographic and typological contexts. The search was limited to peer-reviewed documents classified as "article" or "journal", in order to ensure the academic rigor and reliability of the sources included; besides, a set of keywords was selected, resulting in the following search string:

TITLE-ABS-KEY ("urban agriculture") AND TITLE-ABS-KEY (motivation OR driver OR "siting criteria" OR "location criteria" OR "site selection" OR "spatial analysis" OR "multi-criteria" OR "potential site" OR suitability) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (DOCTYPE , "ar")).

From this structured search – conducted on the 30th of June 2026 – a corpus of 441 documents was yielded. The first screening consisted in excluding documents that were not written in either English, Spanish or Italian, in addition to ruling out documents for which full text access was unavailable, given the necessity of conducting a thorough reading of the retained documents. This brought the results down to 251 elements, which were consequently screened by title and abstract to assess their relevance to the research scope. For this step, some exclusion criteria were established, to leave out documents that mentioned UPA only tangentially without discussing its siting, motivations or drivers; or documents that focused on measuring the performance and impact of a project without correlating them to its physical location. It is important to note that, while the primary focus of this review was the identification of siting criteria, studies addressing the motivations behind UPA engagement were also included, given that motivational factors and demand-side drivers frequently carry implicit or explicit spatial and locational implications, relevant to site selection. Upon application of the exclusion and inclusion criteria, 57 documents were retained for full-text analysis, of which 45 were used to compile the extraction table in Annex A.

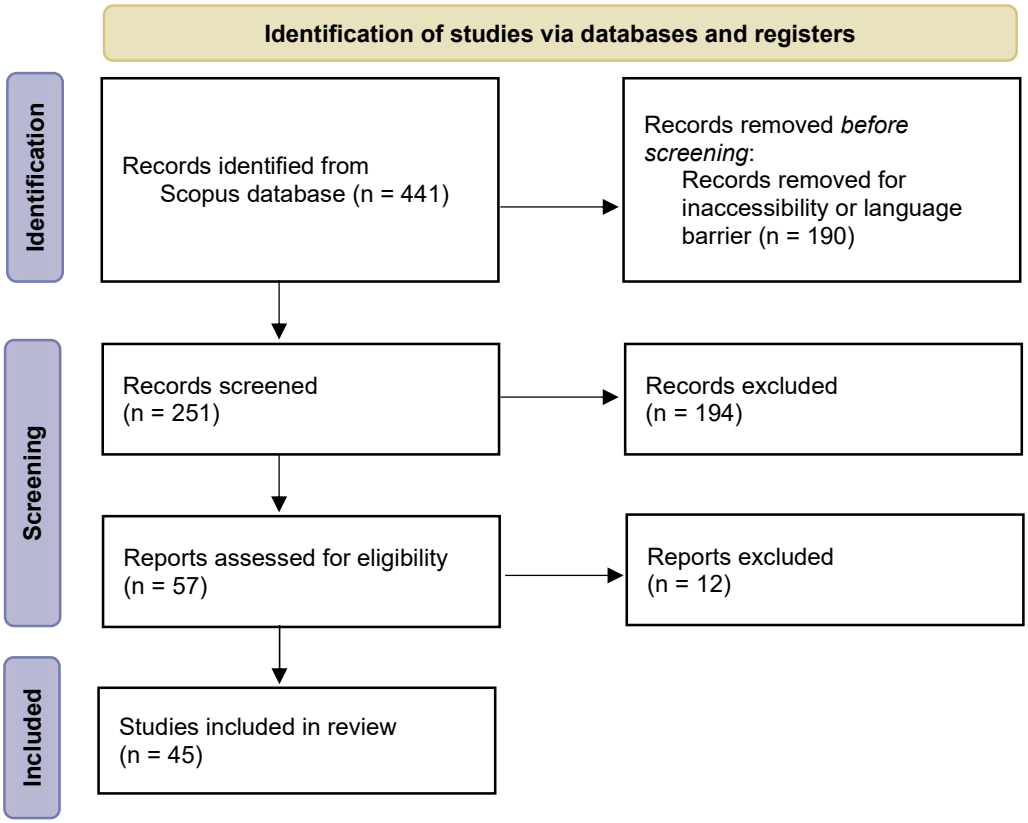


Figure 2: Flow diagram for literature review methodology (Source: own elaboration using PRISMA flow diagram for new systematic reviews (Page et al., 2021))

3.2. Categorization of siting criteria

Across the literature reviewed, 52 distinct siting criteria were identified, ranging from land use designation and accessibility of the area to presence of pollinators and need for urban quality improvement. Such findings have then been organized around 4 thematic categories: environmental and physical characteristics, infrastructures and utilities, regulatory and planning framework, and socio-economic context.

The first category encompasses the **physical and environmental conditions** of the site itself, including both intrinsic characteristics – such as size, topography and soil properties – and climate-driven parameters – namely temperature and precipitation level – derived from the larger-scale context. These criteria are significant because they allow for a preliminary assessment of the area, determining which interventions are required before agricultural activities can commence, as well as which conditions fall beyond the reach of planning and designing.

The second category, **infrastructure and utilities**, covers the technical systems and spatial connections that enable the operational functioning of a UPA practice, including access to water and electricity networks, road and public transit accessibility, and proximity to distribution and supply chain infrastructures. These criteria are particularly relevant to assess the logistical feasibility of a site, as the absence or inadequacy of existing infrastructure represents a significant cost barrier to UPA establishment.

The **regulatory and planning framework** category comprises all the conditions governing the use of a site, such as land use designation – both of the site itself and its surroundings –, building codes, land tenure arrangements, and the availability of incentives. This category is of utmost importance because, unlike physical or infrastructural barriers which can be often overcome through targeted interventions, regulatory and tenure-related obstacles tend to be systemic and difficult to resolve at the individual project level. Moreover, the presence of financial instruments can determine whether an otherwise unsuitable site is indeed economically accessible. Lastly, this category allows for an evaluation of the operational conditions of planning instruments and programs, bridging the gap between theoretical intent and practical actualization.

The fourth and final category – the **socio-economic context** – includes the demographic, economic, and social conditions of the population surrounding a specific site; including indicators of community organizational capacity, income levels, food system needs, and broader quality of life deficits that UPA could address. Such criteria capture the importance of the people at the base of all UPA practices, without whom no activities would be possible.

Together, these four categories constitute a comprehensive analytical framework for the evaluation of possible sites where UPA practices could be established. In the subsequent section, each criterion within these categories will be described in detail, to understand how they will inform the siting methodology developed and applied later in Part III.

environmental and physical characteristics

- soil characteristics
- brownfields
- vacant land
- size
- slope
- visual opennes
- exposure to winds
- sunlight availability
- hydrogeological risk
- concentration of vegetation
- presence of pollinators
- recreational landscape
- risk of diseases
- load capacity
- precipitation level
- temperature

infrastructures and utilities

- accessibility of the area
- accessibility to public transit
- proximity to distribution channels
- proximity to agricultural retail shops
- proximity to public services
- access to water resources
- access to electricity resources

(continued on next page)

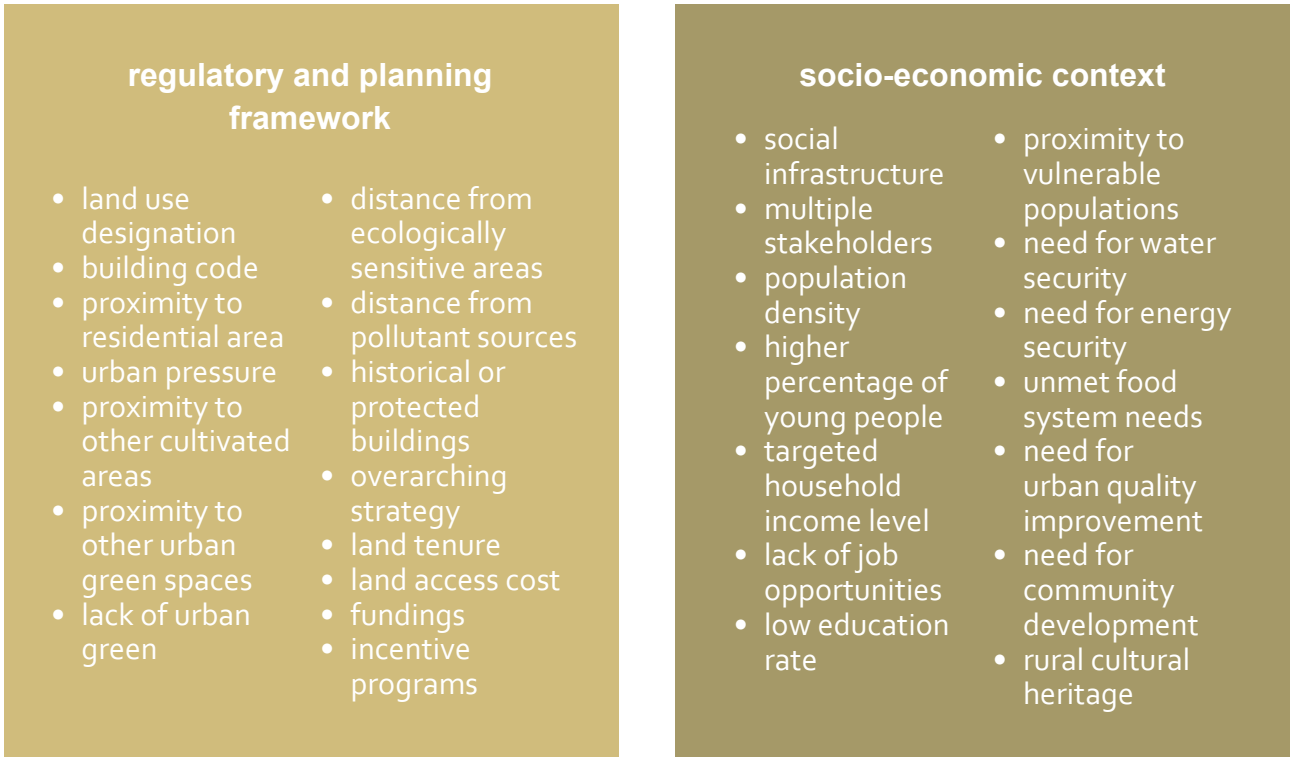


Figure 3: Thematic categories of siting criteria (Source: own elaboration based on the resources from the literature review)

3.3. Detailed analysis of siting criteria

Environmental and physical characteristics

Among the first category, **soil properties** emerge as the most consistently identified criterion across literature, appearing in studies spanning diverse geographic and typological contexts (Al-Johari & Sharaf, 2024; Alkhaja et al., 2025; Fontalvo Buelvas et al., 2025; Huan et al., 2025; Kanosvamhira et al., 2025; Koopmans et al., 2017; Lee et al., 2023; Mack et al., 2017; Naazie et al., 2024; Pace Ricci & Conrad, 2018; Rahimi & Jung, 2024; Ruggeri et al., 2016; Sardeshpande et al., 2025; Sonneveld et al., 2021; Sylla et al., 2020). Some examples of soil characteristics that have a great impact on UPA activities are fertility, composition, texture, organic matter content, water retention and drainage capacity. Some of these parameters vary considerably depending on the history of use of land, whether the site has always remained undeveloped greenfield land, or constitutes a **brownfield** site with possible contamination issues (Hendrickson & Porth, 2012) (note that brownfields are another siting criteria found in literature (Koopmans et al., 2017; Manente et al., 2025)). Although important, the inadequacy of such properties does not constitute a definite barrier for the establishment of a UPA practice; depending on the case, some adjustments may be required in the production system, or it might be necessary to intervene with soil amendment[6] or soil remediation[7] before the start of the activities. With regard to the possible options, Mees & Stone (2012) stated that raised beds are a less expensive alternative to testing the soil, meanwhile

6 A soil amendment refers to "any material added to the soil to improve its physical or chemical properties" (Soil Amendments, n.d.), some examples are: barnyard manure, compost, wood ash, cover crops, lime, sand or perlite.

7 Soil remediation refers to the process of removing or neutralizing contaminants from soil that has been polluted, to restore it to a safe and beneficial condition (Müller et al., 2023)

Hendrickson & Porth (2012) support the usage of grain and vegetable crops to absorb contaminants from soil, particularly heavy metals. This last option makes agricultural uses beneficial to brownfield redevelopment, even if they are only established as a temporary use. One more aspect worth noting is the possibility of coming across a site with high agricultural soil quality that is currently not being used; in that case, the establishment of UPA activities can also serve a protection purpose, as fertility is maintained through cultivation, and lost with abandonment (Koopmans et al., 2017).

Closely related, **vacant land** is another important indicator of a site that can potentially be used for UPA (Johansson et al., 2024; Kafle et al., 2022; Kanosvamhira et al., 2025; Kishimoto & Yan, 2023; Mack et al., 2017; Mancini et al., 2021; Manente et al., 2025; Maseko, 2026; Newell et al., 2022; Ruggeri et al., 2016; Sardeshpande et al., 2025; Thapa et al., 2021; Yap, 2019). Vacant land is an umbrella concept that encompasses brownfields and abandoned areas, but that more broadly refers to undeveloped or underutilized land, regardless of their history. This criterion is particularly mentioned in research focusing on reuse of derelict spaces, ecosystem services provision, bottom-up initiatives and beautification; however, it is not a criteria that can be used independently, as it is in strong correlation with land use designations and the regulatory framework in general.

Another location criterion concerns the **size** of the site (Artmann et al., 2021; Darly et al., 2021; Kafle et al., 2022; Mack et al., 2017; Sardeshpande et al., 2025), the optimal dimension of which varies considerably depending on the UPA typology, but also according to "*the dilemma between being small enough as an initiative to allow for social relationships and cohesion to emerge, but big enough to operate efficiently in order to allow for either a sufficient amount of self-supply or affordable prices*" (Artmann et al., 2021). Within the same typology it is also possible to adapt to different available surfaces, provided that the production system is adjusted accordingly, and keeping in mind that it is more costly to use technologies that allow for cultivation on multiple levels, with respect to in-ground production. One more thing to take into consideration is that some infrastructure costs remain fixed regardless of the dimensions of the space – such us installing water or energy lines or hooking into existing networks –, meaning that a larger area shared among a greater number of users results in a lower per-capita expenditure.

More site-specific criteria depend on the site topography, such as slope, visual openness, exposure to winds and sunlight availability. Starting with **slope**, some researchers state that a gentler incline facilitates agricultural operations and water retention, whilst a steep gradient would increase the risk of erosion and complicate both irrigation and maintenance, especially with bigger lots that rely on machinery (Al-Johari & Sharaf, 2024; Kanosvamhira et al., 2025; Li, 2023; Manente et al., 2025; Morán-Alonso et al., 2025; Pace Ricci & Conrad, 2018; Rahimi & Jung, 2024; Sardeshpande et al., 2025; Wang & Zhang, 2023). Moving on to **visual openness**, Artmann et al. (2021) explain that a higher visibility strengthens the relations with the surrounding area, increasing a sense of security and making a greater impact on the beautification of the neighboring area. Regarding **exposure to winds**, when talking about rooftop farming Wang & Zhang (2023) say that buildings no higher than 50 meters are preferable, as they are not exposed to strong winds. **Sunlight availability** has also been discussed repeatedly (Fontalvo Buelvas et al., 2025; Kil et al., 2023; Kirnbauer & Baetz, 2012; Naazie et al., 2024; Rahimi & Jung, 2024; Sylla et al., 2020; Wang & Zhang, 2023), being framed as depending both on the slope orientation and adjacent elevations, including surrounding buildings that can cast shadows on the cultivated land hindering photosynthetic activities.

Under the physical and environmental category, absence of **hydrogeological risks** is a further criterion mentioned in different documents (Lee et al., 2023; Li, 2023; Morán-Alonso et al., 2025), encompassing erosion and flooding risks, as well as salinization. **Concentration of vegetation** (Al-Johari & Sharaf, 2024), **presence of pollinators** (Lee et al., 2023; Rahimi & Jung, 2024), **recreational landscape** (Bayr et al., 2025), **risk of diseases** (I. Richter et al., 2025), and **load capacity** – applicable to practices established inside or on buildings (Wang & Zhang, 2023) – are other less frequently discussed parameters.

The last criteria included in this category are **precipitation levels** (Kanosvamhira et al., 2025; Lee et al., 2023; Li, 2023; Morán-Alonso et al., 2025; Naazie et al., 2024; Rahimi & Jung, 2024; Sylla et al., 2020) and **temperature** (Kanosvamhira et al., 2025; Li, 2023; Morán-Alonso et al., 2025; Naazie et al., 2024; Rahimi & Jung, 2024; Sylla et al., 2020). Both are climate-driven, therefore their relevance is at a greater inter-urban or regional scale, and they cannot be used to discriminate between sites that are close to each other. Nevertheless, they constitute fundamental preconditions for agricultural production, influencing the length of the period viable for cultivation and the range of plants that can be grown. Moreover, because they fall beyond the reach of planning and designing, they can be veto conditions for the establishment of UPA activities.

Infrastructures and utilities

The **accessibility** of the area, meaning how easily the site can be reached by potential users, is consistently identified as a fundamental criterion for all UPA typologies (Artmann et al., 2021; Huan et al., 2025; Johansson et al., 2024; Koopmans et al., 2017; Li, 2023; Mancini et al., 2021; Manente et al., 2025; Pace Ricci & Conrad, 2018; Ruggeri et al., 2016; Sardeshpande et al., 2025; Sonneveld et al., 2021; Thapa et al., 2021; Wang & Zhang, 2023). It mainly depends on the road network and the vicinity to residential areas (which will be discussed in more details later in this chapter), but it is also linked to two other criteria: **accessibility to public transit** and proximity to distribution channels. The first one, although less mentioned in older research (Pace Ricci & Conrad, 2018), is becoming increasingly important (Al-Johari & Sharaf, 2024; Bayr et al., 2025; Manente et al., 2025) as we move towards a less car-dependent mobility, and it is especially relevant in contexts where car ownership is not common. On the other hand, **proximity to distribution channels** – in the form of markets, farm shops and other sales outlets – is more broadly discussed (Artmann et al., 2021; Bayr et al., 2025; Diehl, 2020; Houessou et al., 2020; Kanosvamhira et al., 2025; Kil et al., 2023; Kirnbauer & Baetz, 2012; Lee et al., 2023; López-Estébanez et al., 2022; Naazie et al., 2024; Sardeshpande et al., 2025), given the participation of UPA practices in Alternative Food Networks, and the establishment of commercially oriented UPA activities whose economic viability highly relies on this criterion. **Proximity to agricultural retail shops** (Bayr et al., 2025; Lee et al., 2023) and to **public services** (Manente et al., 2025; Ruggeri et al., 2016) are other two criteria that facilitate UPA activities, easing the access to tools and seeds and favoring the integration within the urban fabric. Especially with public services like schools or healthcare facilities, a broader range of participants can be attracted to UPA practices, leveraging their educational or therapeutic functions to foster community development in areas where social cohesion is otherwise lacking.

Access to water is an additional widely discussed criterion (Al-Johari & Sharaf, 2024; Alkhaja et al., 2025; Fontalvo Buelvas et al., 2025; Houessou et al., 2020; Lee et al., 2023; Manente et al., 2025; Maseko, 2026; Morán-Alonso et al., 2025; Naazie et al., 2024; Pace Ricci & Conrad, 2018; Ruggeri et

al., 2016; Sardeshpande et al., 2025), with Bourque (2000) stating that "*After land, water is probably the second most important resource for urban agriculture*". In an urban or peri-urban context, several potential water sources are available to support agricultural activities: potable water from the municipal supply network, most of the time considered too costly and wasteful; groundwater, extracted from aquifers via wells; reclaimed water, that is treated wastewater processed for agricultural reuse; graywater, meaning domestic wastewater reusable after basic treatments; harvested rainwater, collected from rooftops or other surfaces; stormwater runoff, collected from streets and other impervious urban surfaces; fountain and overflow water; desalinated water. Given that the majority of UPA practices involve a diversity of crops, it must also be considered that water requirements may vary considerably within the same lot (Pollard et al., 2018). To address this, targeted irrigation management systems are generally employed, such as drip irrigation systems. However such implementations generate additional costs, which compound to the initial expense of installing water lines, pumps or water shafts – or of connecting to existing water networks – as well as the ongoing expenditure for water consumption (Hendrickson & Porth, 2012). Nevertheless, in addition to assessing the potential water sources available, it is of key importance to identify the legislative framework governing water use, water quality and the protection of surface water bodies. For instance, in Europe the Regulation 2020/741 establishes specific rules for the reuse of treated urban waste water for agricultural irrigation; such rules mainly concern safety standards and administrative procedures, setting minimum requirements for water quality and monitoring (Regulation (EU) 2020/741 on Minimum Requirements for Water Reuse, 2020).

Another important resource for the establishment of UPA is **electricity** (Johansson et al., 2024; Wang & Zhang, 2023), which is used for lightning, automated irrigation systems and pumps, but also refrigerators and wall outlets in the case of sites which include spaces for the community. As with water networks, connecting to existing electricity networks entails significant costs, as does the provision of electricity to sites where no infrastructures are currently available. Consequently, producing energy on site is becoming increasingly popular, with the most discussed option being agrivoltaics. Such system combines solar photovoltaic plants with agricultural productions, installing the solar panels either on the space between the crop rows or above the crops themselves (Widmer et al., 2024).

Regulatory and planning framework

Coherent **land use designation** emerges across literature as the most significant criterion in the regulatory and planning framework category, as an incompatible zoning system may prevent UPA from being established regardless of how favorable the site might be in all other respects (Al-Johari & Sharaf, 2024; Alkhaja et al., 2025; Bayr et al., 2025; Kanosvamhira et al., 2025; Kil et al., 2023; Kirnbauer & Baetz, 2012; Kishimoto & Yan, 2023; Koopmans et al., 2017; Lee et al., 2023; Mancini et al., 2021; Manente et al., 2025; Morán-Alonso et al., 2025; Pencharz et al., 2026; Sonneveld et al., 2021). The ways in which different planning systems have attempted to address this gap will be examined in greater detail in the following Chapter 4, through an analysis of international planning responses to the regulatory challenges posed by UPA. Closely related, a coherent **building code** (Ashikuzzaman et al., 2025) is essential for UPA practices that are heavily dependent on buildings, as it regulates not only the structural compatibility but also aesthetics and volumes.

The land use designation is discussed not only in reference to the site itself, but also concerning its surroundings, in terms of keeping it adjacent to residential areas, other cultivated plots and

urban green spaces; while detaching from ecologically sensitive areas, pollutant sources, and historical or protected buildings. **Proximity to residential areas** (Alemu & Grebitus, 2020; Alkhaja et al., 2025; Maseko, 2026; Pace Ricci & Conrad, 2018; Pencharz et al., 2026; Sardeshpande et al., 2025; Sonneveld et al., 2021) ensures accessibility and facilitates the social infrastructure (that will be analyzed in detail in a following paragraph), however it sometimes collides with the necessity to evade **urban pressure** (Kishimoto & Yan, 2023; Langemeyer et al., 2026; Lee et al., 2023; López-Estébanez et al., 2022; Sylla et al., 2020). This criterion too is frequently discussed in order to avoid competition with other more profitable land uses in case of future developments; especially in rapidly growing urban contexts where new urbanization can represent an obstacle to long-term viability, and cause market-driven displacement of UPA activities. **Closeness to other cultivated areas** (Bayr et al., 2025; Sonneveld et al., 2021) and **green spaces** (Pencharz et al., 2026) serves the purpose of establishing or strengthening a green network, and enhancing the ecological connectivity of a site; although **lack of urban green** is also mentioned in literature (Kingsley et al., 2019; Newell et al., 2022) as a demand-side criterion to collocate UPA activities where green spaces are missing and probably most needed. On the other hand, **ecologically sensitive areas** – including nature reserves, wetlands and forests – are best kept separate to preserve areas with a high biodiversity value and sites that are ecologically vulnerable (Huan et al., 2025; Kanosvamhira et al., 2025; Langemeyer et al., 2026; Sonneveld et al., 2021; Sylla et al., 2020); instead, keeping a safe **distance from pollutant sources** is meant to protect the people practicing UPA activities and their products (Ruggeri et al., 2016; Sardeshpande et al., 2025), albeit it is not uncommon for UPA practices to be established on brownfields, provided that the necessary remediations and preparatory measures have been implemented. Lastly, **absence of historical or protected buildings** prevents conflicts with heritage conservation requirements, which might impose significant restrictions on the type of structures or interventions permitted (Wang & Zhang, 2023). Moreover, the presence of an **overarching strategy** at the municipal or regional level is presented as an enabling condition (Delgado, 2020), as it provides further institutional support and a framework for development, putting together the economical, environmental and social dimensions.

Under the regulatory and planning framework category, **secure land tenure** is another highly discussed criterion (Alkhaja et al., 2025; Artmann et al., 2021; Diehl, 2020; Houessou et al., 2020; Koopmans et al., 2017; Lee et al., 2023; Sardeshpande et al., 2025; Sonneveld et al., 2021), as the absence of it may represent a significant threat to the longevity of UPA initiatives, in addition to discouraging investments and undermining long-term planning. Land tenure security encompasses ownership and long-term leases, and it can derive from governments, formal legal systems, or community. Similarly, **low land access costs** (Alemu & Grebitus, 2020; Kil et al., 2023; Li, 2023; Pencharz et al., 2026), **regular fundings** (Delgado, 2020) and **incentive programs** (Ashikuzzaman et al., 2025; Lee et al., 2023) ensure financial accessibility and continuity of UPA practices, drawing upon subsidized lease rates, free use concessions, tax reductions, grants, funds and micro-finance programs (Cabannes, 2012; Dubbeling & Veenhuizen, 2003). Indeed, one of the discerning factors for the implementation of a UPA practice is the initial investment needed, which covers the acquisition or lease of the land, soil testing and remediation, the installation of infrastructures, possibly the creation of a fence, tools and machinery, seeds or plants, and the creation of structures – if needed – such as a greenhouse, storage facility, and raised beds. After the initial phase, other expenses need to be taken into consideration for the whole duration of

the activities; these are related to energy, water, more seeds and plants, and routine maintenance (Cazcarro & Pérez Ibarra, 2019). On the other hand, it is worth noting that UPA can also generate revenues, by selling the products or providing services to the community (Dorward et al., 2013). These for-profit strategies won't necessarily make UPA practices profitable; however, in this case "possible" doesn't necessarily coincide with "profitable", as many of the people that participate in these initiatives do so for leisure, and are not concerned about profit (Cazcarro & Pérez Ibarra, 2019).

Socio-economic context

A strong **social infrastructure** – here understood, following Klinenberg (2018), as the physical places and organizations that shape the way people interact – is widely identified as a fundamental precondition for most UPA initiatives (Alemu & Grebitus, 2020; Artmann et al., 2021; Delgado, 2020; Diehl, 2020; Fontalvo Buelvas et al., 2025; Guzman-Molina et al., 2026; Johansson et al., 2024; Koopmans et al., 2017; Mancini et al., 2021; Yap, 2019). Such practices rely on community engagement for operational continuity, drawing on community networks, associations, volunteer capacity, and organizational experience as essential enabling resources. At the same time, social capital[8] functions as both an input and an output of UPA (Caldas & Christopoulos, 2023), with pre-existing social infrastructure enabling the establishment of UPA, whilst UPA strengthens community bonds and generates new forms of social capital in return. Moreover, Kanosvamhira & Tevera (2019) identified a strong correlation between the success of UPA practices and the ability of urban farmers to form collective organizations in order to access resources and advocacy networks, suggesting that a solid social infrastructure also underpins UPA success by facilitating knowledge exchange and resource sharing. On a similar note, **multiplicity of stakeholders** – sometimes considered part of the social structure, but here highlighted as an independent enabling condition as stated by Johansson et al. (2024) – is another criterion correlated with UPA's success and long-term viability. Such interested party – which includes public institutions, civil society organizations, private actors and researchers – is particularly significant for more complex and multidimensional UPA initiatives.

Other criteria function as socio-demographic indicators and are more readily quantifiable through statistical datasets. These are: population density, income level, unemployment rate, education rate, and indicators of social vulnerability. The first two are the most commonly discussed in literature, with **high population density** emerging as a fundamental criterion to ensure a sufficient base of potential participants and customers (Bayr et al., 2025; Huan et al., 2025; Kil et al., 2023; Kirnbauer & Baetz, 2012; Kishimoto & Yan, 2023; Li, 2023; Pencharz et al., 2026; Sonneveld et al., 2021; Thapa et al., 2021). Most authors refer to the general population – though they broadly agree that participants tend to be of older age – however, Kishimoto & Yan (2023) specifically underline the importance of a **higher concentration of young people**, particularly children aged 0-14, as families tend to engage more actively with allotment gardens for their educational function. **Household income level** is another criterion on which most authors converge (Darly

8 According to Coleman (1988), social capital is a resource that derives from social structures, as a product of social relationships; this resource can be drawn upon by actors to pursue their interests, as they would do with financial capital. Because it is something that exists in organizational arrangements between people, Caldas & Christopoulos (2023) believe it must be already present before the establishment of a UPA practice, in the form of existing associations, trust network and shared norms; but it will also later be a by-product of the initiative itself, continuously fostering the activities.

et al., 2021; Diehl, 2020; Gripper et al., 2022; Rojas-Pardo et al., 2026; Ruggeri et al., 2016; Thapa et al., 2021), with the prevailing view holding that middle/low-income households constitute the primary demand-side drivers of UPA practices oriented toward self-sufficiency; Li (2023), however, emphasizes that higher income levels may generate appeal for premium-quality food products. **Lack of job opportunities** and **low education rate** are two more demand-side indicators (I. Richter et al., 2025; Thapa et al., 2021) pointing to areas where UPA could provide economic development and ability-building benefits alongside food production. On a similar note, proximity to **vulnerable populations** – including elderly residents, people with disabilities and socially marginalized groups – is identified as a criterion to locate UPA initiatives where social inclusion and therapeutic assistance are most needed (Kirnbauer & Baetz, 2012).

Further studies have identified more siting criteria in relation to UPA's multifunctionality. This is the case for Guzman-Molina et al. (2026) who stressed the importance of the role played by UPA in contexts where **water and energy security** are not always guaranteed. Indeed, UPA practices can function as a green infrastructure[9] for stormwater collection and management, thereby making the city more resilient to climate change-related extreme rainfall events, by increasing the city's permeable surfaces (Cohen, 2020).

In this sense, UPA sites can themselves constitute a water harvesting opportunity, capturing and storing precipitation that would otherwise be lost as runoff. Moreover, UPA practices can work in unison with other nature-based solutions – such as rain gardens, or bioretention areas[10] – as part of integrated water-sensitive urban design strategies for the redevelopment of neighborhoods, which would also carry additional benefits like biodiversity promotion and the mitigation of the heat island effect in highly constructed areas (Urban Nature-Based Solutions and Water. A Catalogue from the URWAN Project, 2024) (URBiNAT NBS Catalogue, 2023). Furthermore, the possibility of integrating renewable energy systems within UPA practices can lead to significant contributions to local energy resilience.

Additional necessities that can be met through the establishment of UPA are food-related needs, urban quality and community development. Among these, **food system needs** are the most discussed one (Alemu & Grebitus, 2020; Alkhaja et al., 2025; Delgado, 2020; Fontalvo Buelvas et al., 2025; Guzman-Molina et al., 2026; Mack et al., 2017; Maseko, 2026; Newell et al., 2022; I. Richter et al., 2025; Thapa et al., 2021), given the direct correlations between UPA practices and AFN. Indeed, UPA can help with contrasting food insecurity, limited access to fresh produce and inadequate dietary quality. **Urban quality amelioration** (Alemu & Grebitus, 2020; Gripper et al., 2022; Johansson et al., 2024; Kingsley et al., 2019; Manente et al., 2025; Rojas-Pardo et al., 2026) – encompassing both aesthetic beautification and improvement of perceived safety

9 Green infrastructures are defined by the European Commission (2026a) as "*a strategically planned network of natural and semi-natural areas with other environmental features, designed and managed to deliver a wide range of ecosystem services, while also enhancing biodiversity*".

10 "*Rain gardens are slight depressions in the soil filled with vegetation, designed to collect and treat rainwater drained from surrounding impermeable surfaces, by filtering and removing pollutants. The treated water is then directed into a connected storage tank, where it can be collected and reused for purposes like irrigation or non-potable water needs, reducing reliance on municipal water supplies*" (Urban Nature-Based Solutions and Water. A Catalogue from the URWAN Project, 2024). Bioretention areas work like rain gardens, collecting and treating rainwater; however, they are more highly engineered to also intercept, divert, change volume and velocity of a stormwater flow (World Bank, 2021).

– and **community development** (Alkhaja et al., 2025) can also be motivating factors for the establishment of UPA activities in degraded urban areas, where the activation of vacant lots through agricultural use can produce rapid and visible improvements in environmental quality, fostering a sense of belonging and strengthening social bonds.

Lastly, the presence of **rural cultural heritage** – either local or transmitted through migrations – is identified as a social resource that can facilitate the establishment of UPA and promote community engagement (Diehl, 2020; Fontalvo Buelvas et al., 2025; Yap, 2019).

Correlation between siting criteria and UPA typologies

All of these criteria carry different weight depending on the UPA typology under consideration, as practices with diverse characteristics are not equally sensitive to all criteria. Establishing a correlation between siting criteria and UPA typologies therefore constitutes a significant methodological refinement, allowing to tailor the application of the criteria so that only those relevant to the specific practice under evaluation are assessed. This correlation is shown in Figure 4, however there are some situations that need further explanation. For example, the characteristics of the soil are relevant to all UPA typologies as long as they rely on in-ground cultivation, so when zero acreage practices are established in or on buildings, they are not at all affected by them. Size, slope and targeted household income are, instead, to be assessed depending on the typology under consideration, as each one will need a different manifestation of those criteria. Exposure to winds and sunlight availability are relevant to all typology but require special attention when considering zero acreage practices, as cultivations on top of buildings are more affected by strong winds, and activities carried out close to buildings tend to be more subject to shading. On the contrary, precipitation level and temperature have the least impact on zero acreage, granted that the activities are carried out in enclosed spaces. Access to electricity is mostly relevant to urban farms because of the frequent need for on-site shops, although it is something worth considering in the case of zero acreage practices too, in order to support the establishment of high-tech cultivation methods. Lastly, lack of job opportunities can be a driving factor for urban farms, whilst unmet food system needs can leverage DIY practices, whose main aim is food production for self-consumption.

(on the following page) Figure 4: Correlation betweeen siting criteria and UPA typologies (Source: own elaboration based on the resources from the literature review)

Category	Siting criteria	Typology
environmental and physical characteristics	soil characteristics	all typologies
	brownfields	all typologies
	vacant land	all typologies
	size	all typologies
	slope	all typologies
	visual openness	community park and garden
	exposure to winds	zero acreage (rooftop)
	sunlight availability	all typologies
	hydrogeological risk	all typologies
	concentration of vegetation	all typologies but zero acreage
	presence of pollinators	all typologies
	recreational landscape	community park, urban farm
	risk of diseases	all typologies
	load capacity	zero acreage
	precipitation level	all typologies
	temperature	all typologies
infrastructures and utilities	accessibility of the area	all typologies
	accessibility to public transit	community park and garden
	proximity to distribution channels	urban farm
	proximity to agricultural retail shops	urban farm
	proximity to public services	community park and garden, zero acreage
	access to water resources	all typologies
	access to electricity resources	urban farm, zero acreage
regulatory and planning framework	land use designation	all typologies
	building code	zero acreage
	proximity to residential area	all typologies
	urbanization pressure	community park and garden, urban farm
	proximity to other cultivated areas	community park and garden, urban farm
	proximity to other urban green spaces	community park and garden, urban farm
	lack of urban green	all typologies
	distance from ecologically sensitive areas	all typologies but zero acreage
	distance from pollutant sources	all typologies
	historical or protected buildings	all typologies
	overarching strategy	community park and garden, urban farm
	land tenure	all typologies but zero acreage
	land access cost	all typologies but zero acreage
	fundings	all typologies
	incentive programs	all typologies
socio-economic context	social infrastructure	community park and garden
	multiple stakeholders	community park and garden, urban farm
	population density	all typologies but zero acreage
	higher percentage of young people	all typologies
	targeted household income level	all typologies
	lack of job opportunities	all typologies
	low education rate	all typologies
	proximity to vulnerable populations	community park and garden, zero acreage
	need for water security	community park and garden
	need for energy security	community garden, urban farm
	unmet food system needs	DIY
	need for urban quality improvement	community park and garden
	need for community development	community park and garden
	rural cultural heritage	community park and garden

3.4. Exclusionary, conditional or discretionary criteria

The siting criteria identified through the literature review can also be distinguished according to their different nature. Indeed, some of the criteria function as **exclusionary** indicators, representing hard constraints that cannot be compensated for by any combination of favorable conditions elsewhere, meaning that their presence or absence determines the fundamental feasibility of UPA in a given site. A second group, designated as **conditional** criteria, comprises conditions that can be assessed on the basis of measurable, observable, or legally defined parameters, independently of the subjective priorities of the evaluating actor. The key characteristic of these criteria is that their non-satisfaction does not automatically exclude a site from the possibility of establishing a UPA practice; instead, it signals that specific interventions or adaptations are required, and those too must be factored into the overall assessment. Finally, a third group consists of **discretionary** criteria, whose weight varies depending on the political agenda, institutional priorities, community values, or strategic objectives of the actors involved. These criteria do not determine feasibility in absolute terms but shape the relative attractiveness or priority of a site depending on who is evaluating it and why; meaning that a site may score highly on a discretionary criterion according to one evaluating actor and poorly according to another, not because they observe different conditions but because they assign different importance to the criterion itself. For this reason, their contribution to the assessment cannot be determined without first establishing the strategic context and declared objectives of the evaluating actor.

Category	Siting criteria	Exclusionary / Conditional / Discretionary
environmental and physical characteristics	soil characteristics	exclusionary / conditional
	brownfields	exclusionary / conditional
	vacant land	exclusionary / conditional
	size	discretionary
	slope	exclusionary / conditional
	visual openness	discretionary
	exposure to winds	exclusionary / conditional
	sunlight availability	exclusionary / conditional
	hydrogeological risk	exclusionary / conditional
	concentration of vegetation	conditional
	presence of pollinators	conditional
	recreational landscape	discretionary
	risk of diseases	exclusionary
	load capacity	exclusionary / conditional
	precipitation level	exclusionary / conditional
	temperature	exclusionary / conditional
infrastructures and utilities	accessibility of the area	exclusionary / conditional
	accessibility to public transit	conditional / discretionary
	proximity to distribution channels	conditional / discretionary
	proximity to agricultural retail shops	conditional
	proximity to public services	discretionary
	access to water resources	exclusionary / conditional
	access to electricity resources	conditional

(continued on next page)

Category	Siting criteria	Exclusionary / Conditional / Discretionary
regulatory and planning framework	land use designation	exclusionary / conditional
	building code	exclusionary / conditional
	proximity to residential area	discretionary
	urbanization pressure	exclusionary / conditional
	proximity to other cultivated areas	discretionary
	proximity to other urban green spaces	discretionary
	lack of urban green	discretionary
	distance from ecologically sensitive areas	exclusionary / conditional
	distance from pollutant sources	exclusionary / conditional
	historical or protected buildings	exclusionary / conditional
	overarching strategy	discretionary
	land tenure	exclusionary / conditional
	land access cost	exclusionary / conditional
	fundings	conditional
	incentive programs	conditional
socio-economic context	social infrastructure	exclusionary / conditional
	multiple stakeholders	conditional / discretionary
	population density	conditional
	higher percentage of young people	discretionary
	targeted household income level	discretionary
	lack of job opportunities	discretionary
	low education rate	discretionary
	proximity to vulnerable populations	discretionary
	need for water security	discretionary
	need for energy security	discretionary
	unmet food system needs	discretionary
	need for urban quality improvement	discretionary
	need for community development	discretionary
	rural cultural heritage	discretionary

Figure 5: Categorization of siting criteria into exclusionary, conditional or discretionary (Source: own elaboration)

The classification presented above reveals that the three categories are not always mutually exclusive. In fact, several criteria appear as both exclusionary and conditional, while others stand in between being conditional and discretionary. This is intentional and reflects the fact that these criteria can take on a spectrum of values and – depending on their expression – they can be part of a different category. The distinction between the exclusionary and conditional manifestations of the same criterion rests on two factors: the reversibility of the condition and the proportionality of the intervention required to address it. A criterion is exclusionary when it is either irreversible or when the intervention required to address it is so disproportionate in cost, time, or institutional complexity as to render UPA establishment practically unfeasible regardless of other favorable conditions. By contrast, a criterion is conditional when it can be addressed through targeted, proportionate, and realistically implementable measures. Moreover, a criterion can be conditional in the sense that an intervention exists to address it, while simultaneously being discretionary in the sense that whether that intervention is considered feasible, desirable, or proportionate depends on the values and objectives of the actor making the assessment. For example, accessibility to public transit is conditional because inaccessibility can be ameliorated by policies or plans regarding mobility, but at the same time it is discretionary because proximity to public transport might not be a criterion everybody looks for.

3.5. Definition of traffic-light matrix intervals

The classification of criteria into exclusionary, conditional, and discretionary categories establishes the theoretical foundation of the siting methodology, but does not yet constitute an operative evaluation tool. The traffic-light matrix developed in the following section (as shown in Figure 6) translates this classification into a practical instrument for site assessment, assigning to each criterion a set of color-coded evaluation intervals: the color red highlights when a certain criterion represents a threshold or a significant setback which is hardly compensated, the color yellow indicates situations that need intervention but that can eventually support UPA activities, and the color green underlines enabling conditions. Particular attention should be given to the fact that not all red conditions are exclusionary, as they include severe challenges that are technically addressable but economically or practically prohibitive, rather than absolute impossibilities. On the other hand, all yellow manifestations are conditional, as they signal that specific interventions or adaptations are required. The matrix therefore does not introduce a new analytical framework but rather gives operational form to the distinctions already established, providing the evaluating actor with a transparent and replicable tool for translating site observations into structured siting assessments.

It is also important to note that discretionary criteria cannot be organized in a traffic-light matrix, given that their satisfaction can be a driver for UPA practices however not meeting these criteria will not pose obstacles.

	Siting criteria			
environmental and physical characteristics	soil characteristics *	sandy consistency	low/moderate fertility, clay-rich soil, low organic matter content, low porosity, low water retention capacity	high fertility, loamy soil, high organic matter content, high water retention capacity
	brownfields	irreversible contamination	site is currently a brownfield	-
	vacant land	irreversible contamination	reversible contamination	undeveloped or underutilized land
	slope **	>30%	30%-12%	<12%
	exposure to winds	presence of strong winds	exposure to moderate winds	absence of strong winds
	sunlight availability ***	less than 3 hours of sun	3-4 hours of sun	5-8 hours of sun
	hydrogeological risk	high risk	moderate risk	low/no risk
	concentration of vegetation	-	low/moderate concentration	high concentration
	presence of pollinators	-	few species *4	higher concentration
	risk of diseases	high/moderate risk	-	no risk
	load capacity *5	not enough load capacity	possibility to reinforce structures	adequate load capacity
	precipitation level *6	extreme weather conditions (drought/extreme rainfall)	insufficient precipitations with possibility to use othe sources of water	adequate precipitation level for rainfed agriculture
	temperature	extreme temperatures	suboptimal conditions for open-air cultivation (possibility for improvement with greenhouses)	ideal conditions
infrastructures and utilities	accessibility of the area	remote site, difficult to access	practicable distance from residential area but road network needs improvement	easily accessible site
	accessibility to public transit	-	no public transit available, with possibility to implement it	public transit availabe
	proximity to distribution channels	-	distribution channels are insufficient but practices can rely on self-consumption	wide distribution network available
	proximity to agricultural retail shops	-	absence of agricultural retail shops close by	presence of agricultural retail shops close by
	access to water resources	no clean water available	possibility to source water	resources already available
	access to electricity resources	-	no infrastructure available but it is possible to produce energy on site	resources already available

(for *, **, and *** see the description on the following page)
*4 plants that rely on wind or self-pollination can be cultivated
*5 criterion applicable only for UPA practices inside/on buildings
*6 this criterion should be addressed in relation to other water sources

(continued on next page)

	Siting criteria			
regulatory and planning framework	land use designation	cultivation is prohibited	no explicit aknowledgment for UPA, specific enablig instruments can be activated	explicit aknowledgment and permit for UPA
	building code *5	cultivation is prohibited	only certain practices are allowed	explicit aknowledgment and permit for UPA, possibility to add specific structures (e.g. greenhouses)
	urbanization pressure	high urbanization pressure with no protective plan	no immediate development pressure, planning instruments are needed for long term security	low urbanization pressure
	distance from ecologically sensitive areas	adjacent ecologically sensitive areas	proximity to ecologically sensitive areas that require appropriate mitigation measures (e.g. environmentally compatible cultivation)	no ecologically sensitive areas nearby
	distance from pollutant sources	adjacent pollutant sources	pollutant sources at a distance and periodic contamination control	no pollutant sources nearby
	historical or protected buildings	site under restrictions that prohibit UPA	presence of historical or protected buildings that do not hinder all UPA activities	absence of historical or protected buildings on site
	land tenure	insecure land tenure with high risk of displacement	temporary access to the land	ownership of the land or long-term leases
	land access cost *7	high land access costs and absence of external help	land access cost can be sustained with fundings or financial incentives	low land access cost
	fundings	-	sporadic, variable fundings	regular fundings
	incentive programs	-	application of incentive instruments is not guaranteed	applicable incentive programs available
socio-economic context	social infrastructure	no social infrastructure present	weak social infrastructure that can be strenghtened through the promotion of community engagement	strong community networks, associations, volunteer capacity and organizational experience
	multiple stakeholders	-	few stakeholders	multiple stakeholders that bring multidimensionality
	population density	-	low/medium population density	high population density

*7 this criterion should be addressed in conjunction with other citeria connected to financial accessibility (incentive programs and fundings)

Figure 6: Traffic-light matrix intervals for siting criteria (Source: own elaboration based on **Al-Johari (2024), **Li (2023), ***Reiners (2020), *RUG Deliverable 1.1.1 (2026))

Within the environmental and physical characteristics category, several conditions can render a site unsuitable for UPA – functioning as exclusionary criteria –, most notably a high risk of diseases and extreme weather conditions. Instead, some criteria only constitute prohibitive conditions in their most severe manifestations, namely a sandy consistency and irreversible contamination of the soil, a slope steeper than 30% (Al-Johari & Sharaf, 2024), exposure to strong winds, insufficient sunlight (Reiners, 2020), high hydrogeological risk, an insufficient load capacity and extreme temperatures. On the other hand, some of these same criteria can manifest in milder conditions, meaning that targeted interventions and mitigation measures can be put in place to render a site still favorable for the establishment of UPA. In the case of poor-quality soil and reversible contamination, for example, it is possible to intervene through amendment or remediation. Similarly, moderate winds, moderate hydrogeological risk, and a slope between 12% and 30% can all be addressed though naturalistic engineering works. Moreover, it may be possible to reinforce existing structures to accommodate indoor or rooftop cultivation, in addition to installing greenhouses to compensate for suboptimal temperature conditions that would otherwise limit open-air production. Finally, being subject to droughts can be mitigated by sourcing water from alternative resources rather than relying exclusively on precipitation, and the scarcity of pollinators can be overcome by adjusting the production system by prioritizing plants that rely on wind or self-pollination. Within the same category, the optimal conditions that enable the establishment of UPA practices are high fertility, loamy soil, high organic matter content, high water retention capacity, no history of contamination, gentle slope, absence of strong winds, exposure to 5-8 hours of sun daily, low hydrogeological risk, high concentration of vegetation and pollinators, no risk of diseases, adequate precipitation level and ideal temperatures.

The absence of clean water sources is the only criteria under the infrastructure and utilities category that would render the development of UPA unfeasible. However, it does not represent always a veto condition, as accessing water through one of the various alternative sources described in the preceding sections can still render UPA possible. Even the absence of an electricity infrastructure is a limiting but manageable condition – through the production of energy on site –, as are the inaccessibility of a remote site, unavailability of public transit, insufficient distribution channels, and absence of agricultural retail shops in the vicinity. The most enabling conditions in this category are easy accessibility – including through public transit –, a wide distribution network, nearby agricultural retail shops, and the availability of water and electricity resources already present on site.

Contrary to the previous category, several criteria classified within the regulatory and planning framework can function as veto conditions – if in their harshest manifestation – representing situations that can render all other favorable characteristics irrelevant. Land use designation is the clearest example: where cultivation is explicitly prohibited by the applicable zoning system, UPA establishment is legally unfeasible without formal revision of the planning instrument. Building code and protective restrictions due to the presence of historical buildings or ecologically sensitive areas follow the same logic. Even insecure land tenure with a high risk of displacement constitutes a significant constraint, exposing UPA initiatives to sudden dispossession regardless of the quality of the site; similarly, high costs combined with the absence of external financial support are significant obstacles, as is a high urbanization pressure combined with the absence of protective planning instruments. Some interventions may be possible to address regulatory obstacles, such

as temporary use concessions, planning derogations, or targeted zoning modifications. Moreover, even irregular financial incentives can contribute to sustaining UPA development, in addition to periodic monitoring and testing in case of proximity to pollutant sources, and adjustments in the production system to mitigate the effects on ecologically sensitive areas and avoid ecological disturbance. Finally, within this category, the most favorable situation for the establishment of UPA would be found where land use designation – or the building code – explicitly acknowledges and permits such activities, in addition to areas subject to low urbanization pressure. Absence of ecologically sensitive areas, pollutant sources and historical buildings are all permissive conditions too, as are a secure land tenure, low land access costs, the availability of applicable incentive programs, and regular funding.

Most of the criteria under the socio-economic context category function as discretionary factors, so they cannot be evaluated though a traffic-light matrix. Of the few remaining conditions, the absence of a social infrastructure constitutes a significant constraint; meanwhile, the scarcity of stakeholders and a low population density – with no prospect future development plan – can weaken the possibility of implementing a UPA practice but still represent manageable conditions. On the other hand, a strong community network, multiple stakeholders and a high population density are all favorable conditions.

3.6. Weighing of siting criteria

The consistent recurrence of certain criteria – most notably soil characteristics, vacant land, land use designations, accessibility, strong social infrastructure and unmet food system needs – across geographically diverse contexts suggests a robust core of siting considerations applicable regardless of local specificity. Other criteria, by contrast, emerge as highly context-dependent, requiring adaptation to the particular planning, climatic, and social conditions of the study area. Moreover, some criteria may also represent emerging themes, making them rarely appear in the reviewed literature. In order to operationalize these findings, the criteria identified through this review have been weighed using a frequency count stemming from the literature analyzed, in addition to an evaluation by a panel of experts selected to involve a variety of expertise, including people participating in UPA practices and people who have contributed to their implementation. For the frequency count, Figures 7 and 8 show the results based on the literature review, indicating how many times each criterion appears in the sources; meanwhile Figure 9 shows the panel's results. This last analysis was conducted applying the Analytic Hierarchy Process (AHP), asking the panelists to compare two things at a time; however, because the number of pairwise comparisons required grows exponentially with the number of criteria, the comparisons were made only between thematic categories (the questions asked to compare each category with the rest of the categories, for a total of 6 pairs).

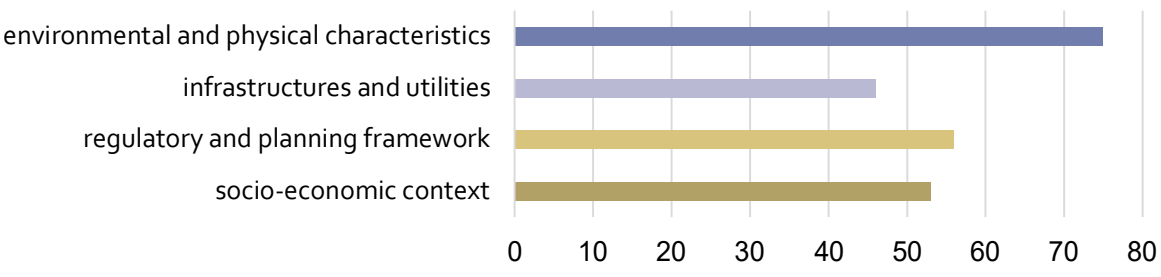


Figure 7: Frequency count by thematic categories (Source: own elaboration)

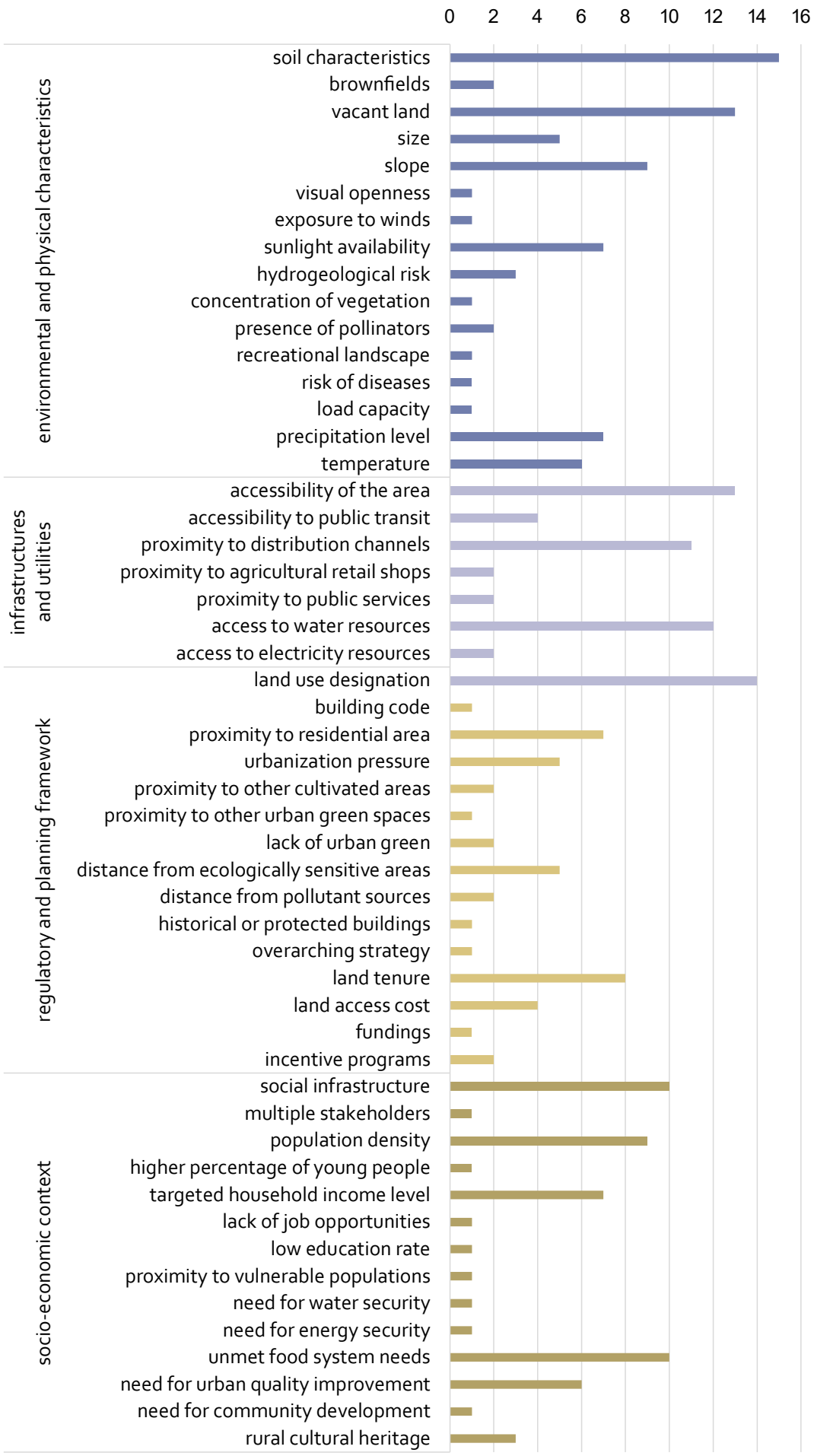


Figure 8: Frequency count of siting criteria (Source: own elaboration based on the resources from the literature review)

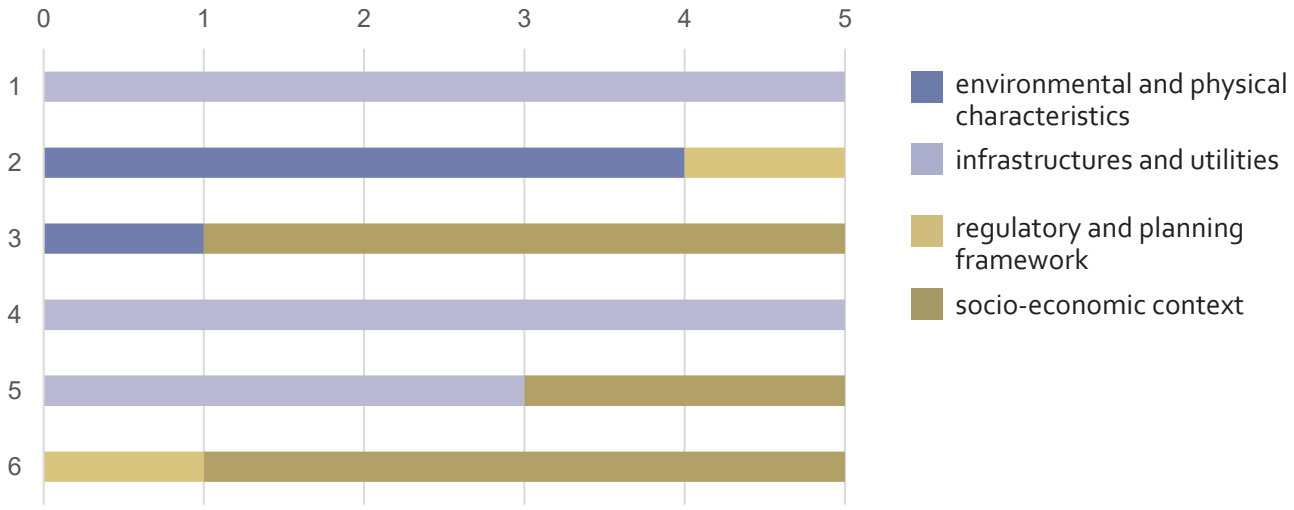


Figure 9: Results from the experts' panel. On the vertical axis the questions are represented, while the horizontal axis indicated how many panelists voted for each category. For example, in the first question all panelists answered "infrastructure and utilities" over "environmental and phyiscal characteristics", while in the second one, four out of five panelists voted "environmental and phyiscal characteristics" over "regulatory and planning framework". (Source: own elaboration based on the answers of the Head of the European Unit at Risorse per Roma SpA, a European Project Manager at Risorse per Roma SpA, the president - and an active participant - of Orchi Urbani Monte Ciocci APS, one of the co-founders of Ecoinspire Lab ETS, and a European Project Manager at ANCI Lazio)

From the expert's panel it is possible to assign a weight to each category, depending on the frequency of preferences over other categories: for example, infrastructure and utilities are chosen over environmental and physical characteristics by five experts, over the regulatory and planning framework again by five experts, and over the socio-economic context by three experts. This results in a score of 5+5+3=13. Following the same logic, the regulatory and planning framework has a score of 2, the socio-economic context has a score of 10, and the environmental and physical characteristics have a score of 5. From these scores it is then possible to calculate the standardized weight of each category; followed by – using the results of the frequency count – the standardized weight of each criterion within each category (indicated as "relative weight" in Figure 10, and calculated by dividing each frequency count by the sum of the frequency counts within the same category), and lastly the final weight of each criterion overall (indicated as "absolute weight" in Figure 10, and calculated by multiplying the relative weight by the category's weight).

Finally, a list of core indicators can be extracted (applying natural breaks to the absolute weights), comprising the accessibility of the area, proximity to distribution channels, access to water resources, social infrastructure, population density, targeted household income level, and unmet food system needs.

(on the following page) Figure 10: Weights of the siting criteria (Source: own elaboration)

Category	Score	Weight	Siting criteria	Frequency count	Relative weight	Absolute weight
environmental and physical characteristics	5	5/30 = 0,167	soil characteristics	15	0,200	0,033
			brownfields	2	0,027	0,004
			vacant land	13	0,173	0,029
			size	5	0,067	0,011
			slope	9	0,120	0,020
			visual openness	1	0,013	0,002
			exposure to winds	1	0,013	0,002
			sunlight availability	7	0,093	0,016
			hydrogeological risk	3	0,040	0,007
			concentration of vegetation	1	0,013	0,002
			presence of pollinators	2	0,027	0,004
			recreational landscape	1	0,013	0,002
			risk of diseases	1	0,013	0,002
			load capacity	1	0,013	0,002
			precipitation level	7	0,093	0,016
			temperature	6	0,080	0,013
infrastructures and utilities	13	13/30 = 0,433	accessibility of the area	13	0,283	0,122
			accessibility to public transit	4	0,087	0,038
			proximity to distribution channels	11	0,239	0,104
			proximity to agricultural retail shops	2	0,043	0,019
			proximity to public services	2	0,043	0,019
			access to water resources	12	0,261	0,113
			access to electricity resources	2	0,043	0,019
regulatory and planning framework	2	2/30 = 0,067	land use designation	14	0,250	0,017
			building code	1	0,018	0,001
			proximity to residential area	7	0,125	0,008
			urbanization pressure	5	0,089	0,006
			proximity to other cultivated areas	2	0,036	0,002
			proximity to other urban green spaces	1	0,018	0,001
			lack of urban green	2	0,036	0,002
			distance from ecologically sensitive areas	5	0,089	0,006
			distance from pollutant sources	2	0,036	0,002
			historical or protected buildings	1	0,018	0,001
			overarching strategy	1	0,018	0,001
			land tenure	8	0,143	0,010
			land access cost	4	0,071	0,005
			fundings	1	0,018	0,001
			incentive programs	2	0,036	0,002
socio-economic context	10	10/30 = 0,333	social infrastructure	10	0,189	0,063
			multiple stakeholders	1	0,019	0,006
			population density	9	0,170	0,057
			higher percentage of young people	1	0,019	0,006
			targeted household income level	7	0,132	0,044
			lack of job opportunities	1	0,019	0,006
			low education rate	1	0,019	0,006
			proximity to vulnerable populations	1	0,019	0,006
			need for water security	1	0,019	0,006
			need for energy security	1	0,019	0,006
			unmet food system needs	10	0,189	0,063
			need for urban quality improvement	6	0,113	0,038
			need for community development	1	0,019	0,006
			rural cultural heritage	3	0,057	0,019

3.7. Final results about siting criteria

To refine the operative tool to evaluate a site's feasibility for UPA activities, all of the findings from the preceding sections can be merged as shown in Figure 11. Note that – because of the discretionary nature of some criteria – the weights have been recalculated to consider only the indicators that objectively influence the evaluation of a site for the establishment of UPA practices is general. A further development of this tool would be to calculate criteria's weights based on typologies, however this falls beyond the scope of the present work.

(on the following page) Figure 11: Final operative tool to evaluate a site's feasibility for UPA activities (Source: own elaboration)

Category	Non-discretionary siting criteria	Absolute weight		Typology		Traffic-light matrix	
environmental and physical characteristics	soil characteristics	0,037		all typologies	sandy consistency	low/moderate fertility, clay-rich soil, low organic matter content, low porosity, low water retention capacity	high fertility, loamy soil, high organic matter content, high water retention capacity
	brownfields	0,005		all typologies	irreversible contamination	site is currently a brownfield	-
	vacant land	0,032		all typologies	irreversible contamination	reversible contamination	undeveloped or underutilized land
	~~size~~	-	/	all typologies	-	-	-
	slope	0,022		all typologies	>30%	30%-12%	<12%
	~~visual openness~~	-	/	community park and garden	-	-	-
	exposure to winds	0,002		zero acreage (rooftop)	presence of strong winds	exposure to moderate winds	absence of strong winds
	sunlight availability	0,017		all typologies	less than 3 hours of sun	3-4 hours of sun	5-8 hours of sun
	hydrogeological risk	0,007		all typologies	high risk	moderate risk	low/no risk
	concentration of vegetation	0,002		all typologies but zero acreage	-	low/moderate concentration	high concentration
	presence of pollinators	0,005		all typologies	-	few species *4	higher concentration
	~~recreational landscape~~	-	/	community park, urban farm	-	-	-
	risk of diseases	0,002		all typologies	high/moderate risk	-	no risk
	load capacity	0,002		zero acreage	not enough load capacity	possibility to reinforce structures	adequate load capacity
	precipitation level	0,017		all typologies	extreme weather conditions (drought/extreme rainfall)	insufficient precipitations with possibility to use othe sources of water	adequate precipitation level for rainfed agriculture
	temperature	0,015		all typologies	extreme temperatures	suboptimal conditions for open-air cultivation (possibility for improvement with greenhouses)	ideal conditions

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infrastructures and utilities	accessibility of the area	0,194		all typologies	remote site, difficult to access	practicable distance from residential area but road network needs improvement	easily accessible site
	~~accessibility to public transit~~	-	/	community park and garden	-	-	-
	~~proximity to distribution channels~~	-	/	urban farm	-	-	-
	agricultural retail shops	0,030		urban farm	-	absence of agricultural retail shops close by	presence of agricultural retail shops close by
	~~proximity to public services~~	-	/	community park and garden, zero acreage	-	-	-
	access to water resources	0,179		all typologies	no clean water available	possibility to source water	resources already available
	access to electricity resources	0,030		urban farm, zero acreage	-	no infrastructure available but it is possible to produce energy on site	resources already available
regulatory and planning framework	land use designation	0,022		all typologies	cultivation is prohibited	no explicit aknowledgment for UPA, specific enablig instruments can be activated	explicit aknowledgment and permit for UPA
	building code	0,002		zero acreage	cultivation is prohibited	only certain practices are allowed	explicit aknowledgment and permit for UPA, possibility to add specific structures (e.g. greenhouses)
	~~proximity to residential area~~	-	/	all typologies	-	-	-
	urbanization pressure	0,008		community park and garden, urban farm	high urbanization pressure with no protective plan	no immediate development pressure, planning instruments are needed for long term security	low urbanization pressure
	~~proximity to other cultivated areas~~	-	/	community park and garden, urban farm	-	-	-

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regulatory and planning framework	~~proximity to other urban green spaces~~	-	/	community park and garden, urban farm	-	-	-
	~~lack of urban green~~	-	/	all typologies	-	-	-
	distance from ecologically sensitive areas	0,008		all typologies but zero acreage	adjacent ecologically sensitive areas	proximity to ecologically sensitive areas that require appropriate mitigation measures (e.g. environmentally compatible cultivation)	no ecologically sensitive areas nearby
	distance from pollutant sources	0,003		all typologies	adjacent pollutant sources	pollutant sources at a distance and periodic contamination control	no pollutant sources nearby
	historical or protected buildings	0,002		all typologies	site under restrictions that prohibit UPA	presence of historical or protected buildings that do not hinder all UPA activities	absence of historical or protected buildings on site
	~~overarching strategy~~	-	/	community park and garden, urban farm	-	-	-
	land tenure	0,012		all typologies but zero acreage	insecure land tenure with high risk of displacement	temporary access to the land	ownership of the land or long-term leases
	land access cost	0,006		all typologies but zero acreage	high land access costs and absence of external help	land access cost can be sustained with fundings or financial incentives	low land access cost
	fundings	0,002		all typologies	-	sporadic, variable fundings	regular fundings
	incentive programs	0,003		all typologies	-	application of incentive instruments is not guaranteed	applicable incentive programs available

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socio-economic context
social infrastructure
0,167
multiple stakeholders
0,017
population density
0,150
community park and garden
community park and garden, urban farm
all typologies but zero acreage
higher percentage of young people
targeted household income level
opportunities
low education rate
proximity to vulnerable populations
need for water security
need for energy security
unmet food system needs
need for urban quality improvement
need for community development
rural cultural heritage
all typologies
all typologies
all typologies
all typologies
community park and garden, zero acreage
community park and garden
community garden, urban farm
DIY
community park and garden
community park and garden
community park and garden
no social infrastructure present
-
-
-

A note on sustainability

In addition to understanding if favorable conditions are present in order to develop a UPA practice, it should also be noted that other investigations should be carried out in relation to the initiative's sustainability. "*Sustainability of UPA basically implies its ability to continue in the future and operate at the current or increased levels. In order to be sustainable, UPA should be profitable and economically viable, environmentally sound, socially just and culturally acceptable*" (Veenhuizen & Danso, 2007). Bauer & Fletcher (2015) have identified some indicators and parameters to assess sustainability, which evaluate food production, environmental data, social data, health data, and economic data. Other studies have based their research on criteria like land security, productivity, protection of the environment and people, economic viability, social and political acceptability, and ability to form cooperatives (Danso et al., 2003). Nevertheless, a comprehensive evaluation framework has yet to be established, underscoring the need for further research.

4. Supporting UPA through planning: international policy experiences

Before proceeding with the analysis of the Roman context, it is important to consider how the criteria identified in the preceding sections have been addressed in planning practice across different international contexts, in order to establish a comparative reference framework for the evaluation of the Roman case.

As UPA is mainly addressed by policies concerning food, its development is still held back by local land use regulations and zoning codes, in addition to conflicts over land use, access, and ownership (Cassatella & Gottero, 2025). Moreover, because UPA is not an explicit topic in the EU's Common Agricultural Policy[11] (Renting & Segreto, 2023) – although the CAP represents one of the primary policy frameworks governing agricultural activities – a significant gap persists between agricultural policies and urban planning instruments: the former being focused on farming activities in a rural context, while the latter concentrates on urban zoning. This results in policies that lack operational conditions, and that remain weak and mainly based on protection rules (Cinà & Di Iacovo, 2015) for rural and peri-urban areas.

As a consequence, as in most countries there is no independent category for UPA in municipal zoning plans (Opitz et al., 2016), the most common land use designations where it is possible to encounter UPA are agricultural area, green urban area, public facility area, mixed-use built-up area, specialized built-up area (commercial or industrial use), future development area, and protected area (Forte et al., 2022). Nonetheless, there have been some attempts as regulating space allowance for UPA, for example in Barcelona non-profit associations can use vacant land to create or renovate urban spaces through allotment gardens, via temporary free land use concessions which include also free access to water and tools (Marini et al., 2023). Rotterdam (Netherlands) and Cleveland

11 The Common Agricultural Policy is the European Union's main framework for policies regarding agriculture. It is financed through two funds (also called pillars) as part of the EU budget: the European agricultural guarantee fund (EAGF), which provides direct support and funds market measures; and the European agricultural fund for rural development (EAFRD), which finances rural development (Council of the EU, 2025). the CAP aims to "*support farmers and improve agricultural productivity, ensuring a stable supply of affordable food; safeguard European Union farmers to make a reasonable living; help tackle climate change and the sustainable management of natural resources; maintain rural areas and landscapes across the EU; keep the rural economy alive by promoting jobs in farming, agri-food industries and associated sectors.*" (European Commission, 2026b)

(Ohio, USA) have similarly identified vacant lots to destine to UPA, and have included policies for the implementation of more practices, especially in the context of new residential developments (Cassatella & Gottero, 2025; Cohen, 2020; Meenar et al., 2017). Meanwhile, in Italy the *Friuli Venezia Giulia*'s regional landscape plan has tried to integrate UPA as a way to pursue urban revitalization and regeneration, however at municipal level UPA is not yet recognized as a distinct practice and it is not specifically regulated (Marini et al., 2023). Other cities in Europe and Japan have taken a different direction, adopting measures to use UPA as a tool to protect prime farmland, as already discussed in relation to agricultural parks (Cassatella & Gottero, 2025; Meenar et al., 2017). In the United States and Canada, another approach that has proven effective in fostering UPA – without establishing a specific lad use category – has been the modification of policies concerning selling permits, allowing for the commercialization and distribution of UPA's products within their production perimeter (Cohen, 2020; Hendrickson & Porth, 2012; Pennisi et al., 2019).

A small number of cities have gone further, developing fully integrated regulatory frameworks. Sacramento, Seattle and New York City have introduced financial instruments to facilitate the development of UPA, such as Urban Agriculture Incentive Zones and property tax reductions to landowners (Forte et al., 2022). New York City, in particular, represents a notable example of comprehensive integration: it has established a community land trust[12] to protect gardens and farms from urban development, granting them permanent land tenure; it compiled a publicly accessible inventory of all city-owned and city-leased parcels, including information on soil suitability for UPA (Cohen, 2020; Hendrickson & Porth, 2012); and it amended its zoning resolution to encourage rooftop agriculture, by exempting greenhouses from the building volume calculations (Cohen, 2020). An even more exhaustive integration has been achieved in Almere (Netherlands), Rosario (Argentina), Brno (Czech Republic), Detroit (Michigan, USA) and Philadelphia (Pennsylvania, USA), where UPA has been fully incorporated into the land use planning system (Cassatella & Gottero, 2025; Koopmans et al., 2017; Meenar et al., 2017).

12 A Community Land Trust is a non-profit organization that owns land and "*puts it to use for community benefit*" (Parkdale Neighbourhood Land Trust, 2024). By separating the ownership of land from the ownership of housing and other structures, CLTs seek to preserve long-term affordability and protect community assets from speculative increases in land value (Perry & Donoghoe, 2024).

Part II - Case study: exploring location potential within the City of Rome

The preceding chapter established the theoretical framework within which UPA can be understood, classified, and evaluated in terms of its locational suitability. The present chapter applies this framework to the specific context of Rome, with the dual aim of documenting existing UPA experiences and analyzing the regulatory and planning instruments related to them.

5. Existing UPA experiences in Rome

The analysis of existing UPA experiences in Rome serves multiple and complementary purposes within this thesis. Most immediately, it provides an opportunity to observe how the theoretical framework developed in the preceding chapters manifests in real planning situations, translating abstract themes connected to UPA practices into concrete manifestations. Real-world experiences are irreplaceable in this regard, as they reveal dimensions of UPA that the literature can only partially anticipate: the informal negotiations that precede formal recognition, the creative adaptations through which communities overcome unfavorable site conditions, the unexpected obstacles that arise during implementation, and the ways in which the social, physical, and regulatory dimensions of a site interact in practice rather than in theory.

Beyond this general grounding function, the analysis of existing experiences in Rome will serve other more specific purposes. Between them, the resulting catalogue of working practices will be of use as an empirical foundation for an ex-post validation of the siting criteria identified in the literature review. Indeed, for each experience analyzed, data on the site conditions prior to the establishment of the UPA practice will be gathered and evaluated against the traffic-light matrix developed in Part I. The resulting assessments will reveal how many and which criteria were met, partially met, or unmet at the time of establishment and, crucially, whether conditions classified as red in the matrix were in fact present at sites where UPA was nonetheless successfully established. Should a significant number of red conditions prove to have coexisted with successful UPA practices, they would constitutes evidence that the corresponding criteria – or their thresholds – may need to be reconsidered, either because the condition in question is less determinant than the literature suggests, or because the adaptive capacity of the communities involved was sufficient to overcome what the matrix would classify as a veto condition. This validation exercise therefore does not merely apply the methodology but actively tests and refines it, contributing to the iterative improvement of the siting framework itself.

The experiences selected for analysis have been chosen to ensure maximum variety across typologies – including community gardens, community parks, urban farms, and agricultural parks – as well as different governance models, scales, territorial locations within the city, and social contexts.

Ort9

Ort9 is a community park located in *Municipio* IX of Rome, in the *Casal Brunori* neighborhood. It covers an area of approximately 1.3 hectares, with 107 lots used for cultivation purposes and almost a third of the area dedicated to community spaces, which include picnic and barbecue areas, shading structures, and an outdoor workstation (Vivere In aps, n.d.). It was established in 2017 on city-owned

land, from a bottom-up initiative and thanks to the SidigMed project, funded by the European Neighborhood and Partnership Instrument for Cross-border cooperation in the Mediterranean (ENPI CBCMED). The aim of the project was "*to promote social and intercultural dialogue through cross-border cooperation in the realm of local Urban and Peri-Urban Agriculture related governance issues*" (SIDIG-MED Project, 2021); moreover, it aligned with the local community desire to create a community garden, but also a space that could work as a public square which was missing from the neighborhood. In an attempt to design a space that would serve both purposes, a community park was born, integrating spaces for cultivation activities with areas for community gatherings. Moreover, during the design process, one aspect was particularly important: the space that was being created was meant for everyone, so there had to be no architectural barriers. This meant designing seating areas that would include people on wheelchairs, and incorporating elevated structures for cultivation specifically designed for wheelchair users.



Figure 12: Photo of a lot dedicated to a vegetable garden (Source: own photo)



Figure 13: Photo of one of the areas designed for the community (Source: own photo)

This project was also conceived as one of the so-called "*Punti Verde Qualità*" (Quality Green Points) (Grilli, 2019), a program established in 1995 under the Rutelli administration to recover abandoned green spaces by entrusting private operators with their management, whilst allowing them to use up to one third of the area for fee-based recreational and sporting activities (Dipartimento Grandi Eventi, Sport, Turismo e Moda di Roma, 2019). The program ultimately proved unsuccessful – as most of the projects turned out to be too financially unsustainable – and it was suspended in 2023; however, the Ort9 experience represents one of the few successful projects that were brought to completion.

One of the reasons for this park's success is its management committee, which represents a peculiar characteristic of this UPA practice. Indeed, the association Vivere In... APS who manages the area is divided into different branches with specific scopes: one of them oversees the cultivation activities, another one cares for the aesthetic of the area, and a different one looks for projects to participate in and fundings. This division makes the management easier and more efficient, and for this reasons it was recognized as a good practice to transfer to other EU cities, within the Ru:rban project (*RU:RBAN Urban Agriculture for Resilient Cities*, 2025).

Ort9 is also involved in one more project – SUN4U – regarding energy communities. Thanks to this, a solar panel was built on top of a workstation inside the park, offering shade to the users of the structure while producing electricity for 40 families who adhered to the energy community. Moreover, thanks to more solar panels that will be installed in the near future, the revenues collected from the sale of the electricity surplus will be used for the neighborhood maintenance. Lastly, this community park is preparing to host a child neuro-psycho-motor center, to add horticultural therapy to its already vast range of activities.



Figure 14: Photo of one of the structres for cultivation designed for wheelchair users (Source: own photo)



Figure 15: Photo of the workstation powered by the solar panel (Source: own photo)

Monte Ciocci

In *Municipio* XIV, between the neighborhoods of *Balduina, Valle Aurelia* and *Eroi Trionfale*, the hill of *Monte Ciocci* hosts a community garden born in 2014, from a bottom-up initiative at the hands of the local community. The area was previously abandoned and being used as an open-air landfill, when a group of citizens decided to clean it and give it new use for the community. This practice represents a clear example of how UPA can develop from people manifesting their "*right to the city*"[13] (McClintock, 2014), taking back what has been abandoned by the institutions to transform it into something of use for the community. Now, the community garden has 23 lots on an area of 1600 square meters, that encompasses also a greenhouse, a few fruit trees, and a smaller-scale woodland; and it has not lost its original vocation as a space for the local community, with its motto being "we cultivate social relationships, and a few vegetables" (Orchi urbani Monte Ciocci APS, n.d.).



Figure 16: Photo of lots dedicated to vegetable gardens (Source: own photo)



Figure 17: Photo of the space dedicated to community activities (Source: own photo)

Recently, *Monte Ciocci* has been involved in the RealUrbanGreen project, which is part of the European Territorial Cooperation Program Interreg Euro-MED. The aim of the project – which is still ongoing – is to "*develop and tests an innovative, holistic model to co-design and co-manage healthy, multifunctional, and climate-resilient Urban Green Spaces*" (RealUrbanGreen, n.d.). This will result in the implementation of an ecological pond – fed by fountain overflow and whose water will be used for irrigation purposes – and new raised beds to expand the community garden. A fundamental component of this project is the participatory model based on citizen science, which asks citizens to gather and interpretate data – with the help of trained professionals – during all the different phases of the project. In this case it meant collecting and analyzing samples of the earth before the realization of the works, and it will continue with other investigations about temperature, humidity, shading, … but also perception of the space, its security and inclusivity.

Lastly, the community garden of *Monte Ciocci* is also involved in the Horti Urbis project, for pollinator biodiversity conservation and drivers in urban allotment gardens, by the European Fund for Youth Action on Pollinators. The aim of this project is to strengthen biodiversity and community engagement in urban conservation, promoting pollinator-friendly habitats in urban allotment gardens, through citizen science and participatory activities that involve both the allotment holders and the local community (Martelli, 2026). In *Monte Ciocci* the project is being implemented through the voluntary participation of some gardeners, who observe and report insects' activities on their lot to the researchers.



Figure 18: Photo of a participatory activity within the RUG project (Source: own photo)



Figure 19: Photo of the study area dedicated to the Horti Urbis project (Source: own photo)

13 Starting from the writings of the urban sociologist Robert Park – who once said that "*in making the city man has remade himself*" (Park, 1967) – David Harvey (British geographer, anthropologist and sociologist) stated that the in claiming the "*right to the city*" men claim power over the process of urbanization. This right is generally confined in the hands of a small elite, however in the past few years a movement for the democratization of the right to the city has been spreading, with the aim to take back control of the city (Harvey, 2008).

Garbatella

Since the early 1920s, the area between the newly built neighborhood of *Garbatella* and the artery of *Cristoforo Colombo* was being used as an informal park by the inhabitants of the area, even though it constituted a private buildable land (StoryAP Archive, 2023). In 1993 the *Circolo Garbatella di Legambiente* initiated a collection of signatures to ask the municipal administration to transfer the buildable volumes elsewhere, in order to establish a park whose vegetation would protect the neighborhood from the pollution coming from the close by expressway (Grilli, 2021); and finally the Roman Municipality acquired the area in 1999 (Scandurra & Attili, 2013). This marked the succession of different projects that were never put into place, until in 2009 a network of associations from the area decided to occupy a portion of the space to create a community park, that was formally recognized two years later (Orti Urbani Garbatella, 2017). This experience represents a clear example of how UPA can start as a bottom-up initiative against real estate speculation, and how it can be a manifestation of the right to the city. Regarding this, Mudu and Marini (2018) stated that "*the existence of abandoned and "empty" spaces is one of the most important opportunities that enables the exercise of a collective power to affect the processes of urbanization*".



Figure 20: Satellite image of the area (Source: own elaboration based on images from Google Earth)

Nowadays, the Community park of *Garbatella* hosts 25 lots, some of which are assigned to local schools and associations. One of them in particular is destined to the *Lega del filo d'oro ETS* – a charity that offers help to people who are deaf and/or blind – who can make use of an elevated vegetable garden specifically designed to be used by people with disabilities. Moreover, within the park there are also fruit trees, aromatic herbs, a nursery to grow trees that will later be planted throughout the neighborhood, beehives and a communal compost bin (Orti Urbani Garbatella, 2017). Apart from cultivating activities, the association that manages the park also organizes open air cinema, concerts, social lunches and other activities for the community.

Within the park an experiment is also being conducted for the realization of an intensive woodland, following the method developed by Akira Miyawaki (Sapienza Università di Roma, 2023) to plant multiple trees and shrubs in an relatively small area, with the aim to absorb polluting particles from the adjacent expressway and to better the microclimate of the park (Circolo Legambiente di Garbatella, 2019).



Figure 21: Photo of the vegetable garden dedicated to the Lega del filo d'oro ETS (Source: own photo)



Figure 22: Photo of the beehives (Source: own photo)

Casal del Marmo

The Agricultural Park of *Casal del Marmo* covers approximately 400 hectares, which have been formally delimited by the 2008 PRG with the dual objective of promoting agricultural and rural areas of local interest, and revitalizing agriculture "*as an instrument of active conservation of the landscape of Agro Romano*" (Cafiero et al., 2004).

More than eighteen years after its designation, however, the park has yet to be formally established. A significant portion of the land remains privately owned, and the various sections of the area are managed by different institutions with little to no coordination. Among these, *Roma Natura* manages the Natural Reserve of the *Insugherata*, which extends partially across the territory of the park; two further portions – corresponding to the northern part of *Fosso delle Campanelle* and to the area between *Fosso del Marmo Nuovo* and *Fosso della Polledrara* – were previously occupied by informal vegetable gardens (Succhiarelli, 2002) and are now earmarked for UPA, although their assignment under the Regulation on Community Gardens of 2024 has not yet taken place. A third portion is then managed by the agricultural cooperative CO.BR.AG.OR., which occupied a section of the site – then vacant land – in 1977 and subsequently obtained the authorization to use the land under a gratuitous use concession in 1978 (Cobragor, n.d.). It currently cultivates 40 hectares of land (Succhiarelli, 2002) and, apart from being entirely dedicated to organic agriculture, it is part of the *Petra Molino Quaglia* network which promotes high-quality food, particularly grain. As it currently stands, CO.BR.AG.OR. represents the closest existing expression of what an agricultural park should be, while the remainder of the area lacks a comprehensive project and consists mostly of vacant and unmanaged land. Beyond its agricultural activities, the cooperative also promotes didactic activities and agritourism in the area, and it operates an on-site shop for the direct sale of its products to customers.



Figure 23: Photo of one of the fields just sown (Source: own photo)



Figure 24: Photo of one of the fields about to be harvested (Source: own photo)



Figure 25: Photo of part of the fruit trees (Source: own photo)



Figure 26: Photo of the farmers' market on the premises of the CO.BR.AG.OR agritourism (Source: own photo)

The establishment of the park's perimeter had an unintended consequence for the surrounding neighborhoods, with the buildable volumes previously designated within the perimeter suddenly transferred to nearby neighborhoods, generating dense and poorly equipped settlements that quickly became degraded. The full realization of the agricultural park would therefore also contribute to the improvement of urban quality in these areas. Finally, the protection of this area from land consumption is further significant in that it forms part of an crucial ecological connectivity network, being in relative proximity to several Natural Reserves.

Agricoltura Nuova

The Cooperative *Agricoltura Nuova* was established in 1977 at the initiative of a group of young unemployed people – some of whom were farmers – with the aim of creating new job opportunities in the agricultural sector and protecting the area from urban sprawl (Società Cooperativa Integrata "Agricoltura Nuova," 2024). Through their efforts, they managed to restore the agricultural use across more than 6000 hectares of *Agro Romano* (Parchi Lazio, n.d.-a); then, the protection of the

area was officially recognized with the definition of the perimeter of the Regional Park of *Decima Malafede* by means of a variant to the *PRG*, and finally the cooperative was granted the official concession of a portion of the area in 1996 (Città Metropolitana di Roma Capitale, 2021a), at which point all production was also converted to organic farming.

The area now occupied by this urban farm was a paradigmatic example of two phenomena that characterized Rome in 1960s and 1970s: illegal urban sprawl and the speculative paralysis of agricultural land, held in anticipation of urban expansion in order to extract greater profit. The occupation of 1977 by the cooperative was an act of resistance against these phenomena, while simultaneously providing jobs and food security through the cultivation of vegetables, and the production of meat and milk. In an interview for a national news broadcast during the occupation, one of the cooperative's members explicitly stated that the crops to be cultivated were going to be selected so as to generate the greatest number of job opportunities possible (Cooperativa Agricoltura Nuova, 1977).

This experience also demonstrates that – contrary to what is suggested in the literature[14] – the coexistence of UPA and natural reserves is feasible, albeit the production system must be adjusted accordingly. Indeed, the Regional Park of *Decima Malafede* was recognized as a Natural Reserve in 1997, and a portion of it was designated as a "Special Zone for Conservation" (ZSC) within the network of Natura 2000 in 2016, through Regional Government Resolution 159 of the 14th of April 2016. Moreover, the area also contains historical buildings, the oldest of which date to the Medieval Age.

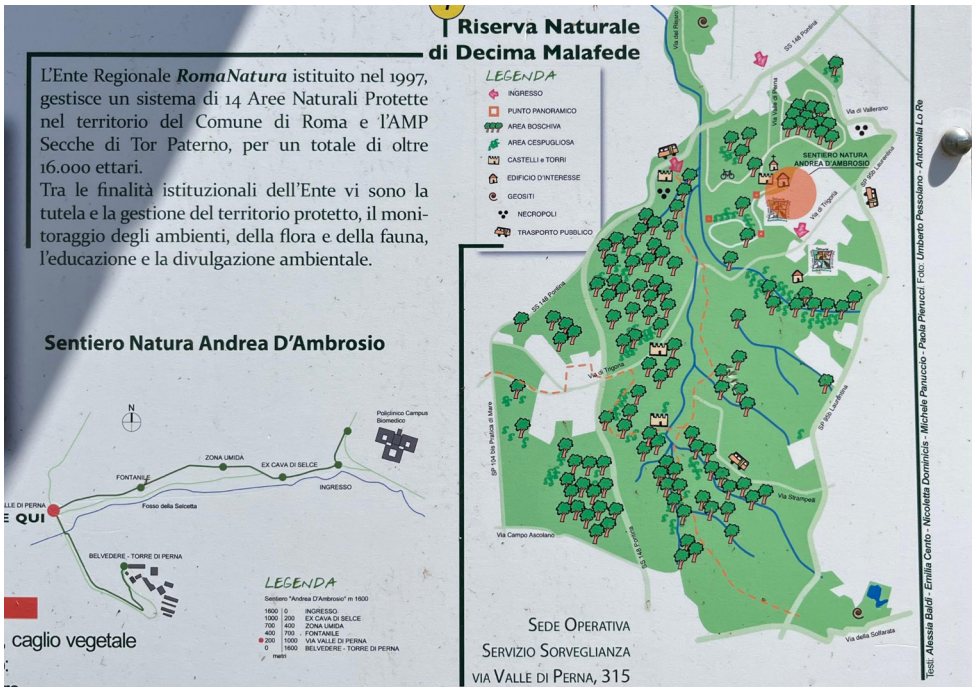


Figure 27: Photo of one of the information plaques present in the area, about the Natural Reserve of Decima Malafede (Source: own photo)

14 (Huan et al., 2025; Kanosvamhira et al., 2025; Langemeyer et al., 2026; Sonneveld et al., 2021; Sylla et al., 2020)

For the distribution of its products, the urban farm operates an on-site shop, a café and a restaurant, selling directly to consumers. Moreover, it has been granted – for agricultural, zootechnical, and forestry products and their derivatives – the regional trademark for certified origin "*Natura in Campo – i prodotti dei parchi*", which is awarded to "*producers of agri-food excellence from the territories of Naturally Protected Areas and the Natura 2000 Network, who commit to operating in accordance with the principles of environmental sustainability, nature conservation, local traditions, and native genetic resources*" (Parchi Lazio, n.d.-b).

Finally, on the premises, in addition to cultivation activities, the cooperative keeps bees, hens, pigs, sheep and cattle; furthermore, it offers hippotherapy sessions and operates a didactic farm for children.



Figure 28: Photo of the open space around which services are organized (Source: own photo)



Figure 29: Photo of the "bug hotel" realized for the LIFE BEEadapt project (Source: own photo)

Retrospective assessment of siting conditions

The compilation of the traffic-light matrix for each existing experience required the systematic collection of data on the site conditions that characterized each location prior to or at the time of the establishment of the UPA practice. This data collection process drew on multiple and complementary sources, combining cartographic and documentary analysis – based on zoning maps and the General Regulatory Plan of Rome – with primary qualitative data gathered through direct field observation and semi-structured interviews, conducted during site visits. Such qualitative data constitutes a particularly significant source for criteria that cannot be adequately assessed through documentary sources alone, most notably those pertaining to the socio-economic context and the history of the site's activation.

Semi-structured interviews were conducted with representatives of the organizations managing each site, allowing for the collection of first-hand accounts of the conditions encountered at the time of establishment, the obstacles overcome, and the enabling factors that proved most decisive. This data is especially valuable for the ex-post validation purpose of the analysis, as it provides insight into how practitioners themselves perceived and navigated the conditions that in the traffic-light matrix are classified as red or yellow, finding a way to transcend them.

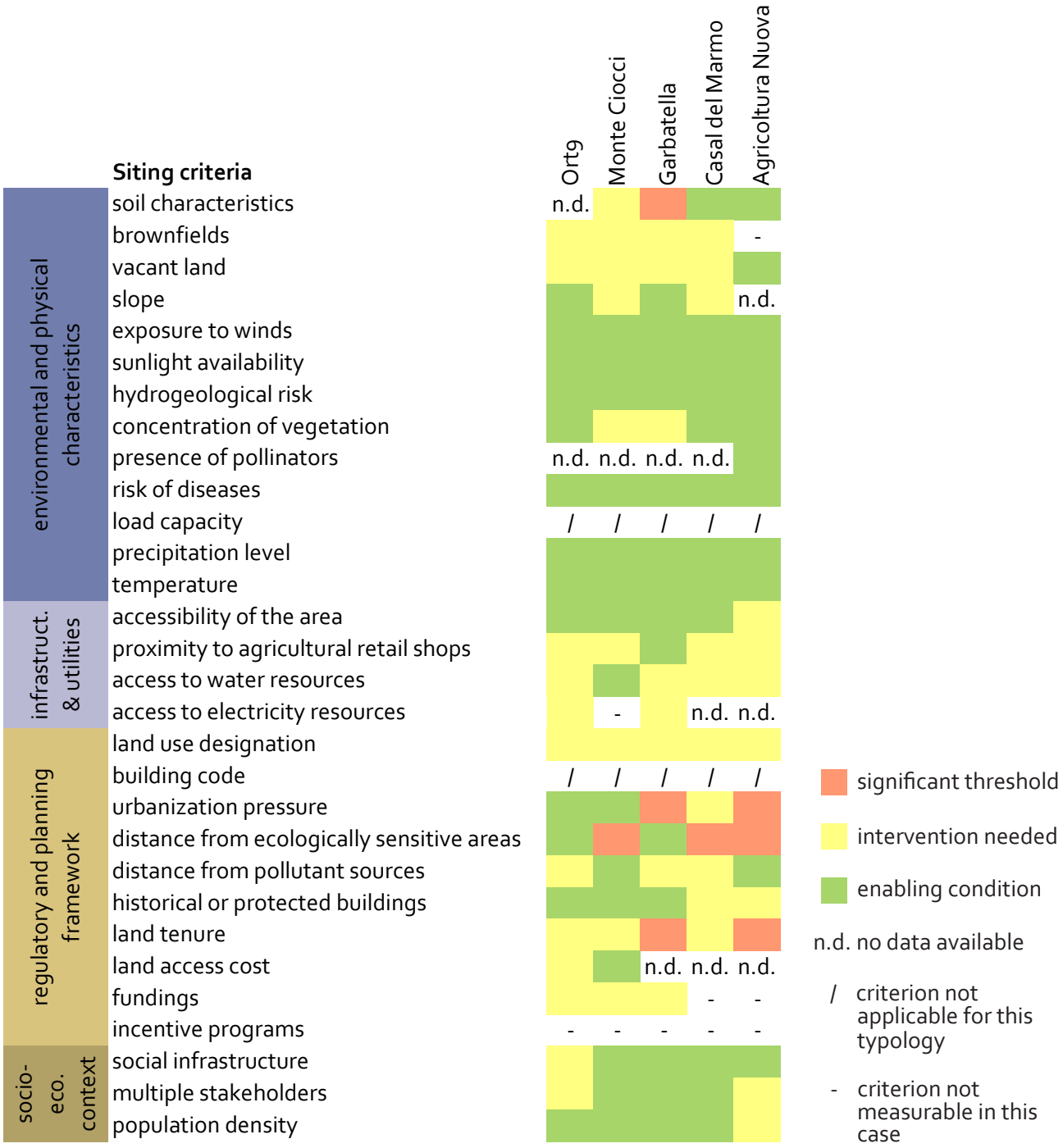


Figure 30: Traffic light matrix applied to UPA experiences in Rome, according to their state before the implementation of the activities. The colors were assigned according to the intervals established in the traffic-light matrix. (Source: own elaboration based on the interview to the president of Vivere In APS – Ort9 community park conducted on the 31st May 2026; the interview to the president of Orchi Urbani Monte Ciocci APS – Monte Ciocci community garden conducted on the 29th May 2026; the video interview to Anna Maria Baiocco (co-founder of Legambiente Garbatella) (StoryAP Archive, 2023); the guided site visit to the agricultural park of Casal del Marmo on the occasion of Open House Roma 2026 on the 15th May 2026; the research by Succhiarelli on the area of Casal del Marmo (2002); the video interview to the founders of the Cooperativa Agricoltura Nuova (Cooperativa Agricoltura Nuova, 1977); the map of the hydrogeological risk by Città Metropolitana di Roma Capitale (2021b))

6. Regulatory framework and planning instruments

"*An effective governance framework requires the development of the necessary policies, incentives, laws and regulations through multi-actor and multisectoral approaches that fully take into account all relevant economic, social and environmental dimensions.*" (Salbitano et al., 2016)

6.1. National legislative framework

The national legislative framework comprises a set of laws, guidelines and strategic instruments that together establish the principles, objectives, and operative tools within which regional, metropolitan and municipal planning instruments must operate. While none of the national instruments address urban and peri-urban agriculture as its primary object, they collectively provide a normative foundation that is directly relevant to UPA, recognizing urban and peri-urban green systems as legitimate and valuable components of the urban environment.

The examination of the national legislative framework is not an end in itself but serves a specific methodological purpose: to identify which national instruments provide a legal and normative basis for the siting and governance of UPA in Rome, and which gaps or constraints at the national level the siting methodology must account for.

L10/2013

The first significant national instrument is Law number 10 of 14th January 2013, which establishes the legal framework for the governance of urban green systems in Italy. Its relevance to UPA stems primarily from two articles. Article 3 provides for the establishment of an institutional body specifically dedicated to urban green governance – a **Committee for the Development of Public Green Spaces** – charged with proposing a national plan and developing operative tools at all scales. Specifically, it decrees that

> *"a Committee for the Development of Public Green Spaces is established within the Ministry of the Environment and Protection of Land and Sea [...] which is responsible for proposing a national plan [...] to establish criteria and guidelines for the creation of permanent green areas around major conurbations and tree-lined avenues along roads,"*

in addition to verifying the implementation of Ministerial Decree No. 1444 of 1968[15], the foundational national instrument governing green space standards in Italian urban planning, whose inadequate implementation has been a persistent issue in the governance of urban green across Italian municipalities.

Article 6 is particularly significant as it establishes both the multi-scalar governance of urban green and an explicit connection between green space provision, soil consumption, and the conservation of non-urbanized landscapes. On the one hand, it states that

15 The Ministerial Decree No. 1444 of 2 April 1968 establishes minimum standards for public facilities and green spaces in urban areas, assigning a minimum surface for each inhabitant. With regard to green areas, the national minimum standard is 9 square meters per inhabitant, although some Regions have increased it through regional laws. One aspect worth mentioning that has been at the center of recent discussions is the fact that the national law only provides a quantitative standard, with no reference to the quality of the space, which ultimately means that the designing process becomes less important, with no guarantees that the final product will be a good quality area.

> *"regions, provinces, and municipalities, each within the scope of their respective competences and available resources, shall promote the expansion of urban green spaces and 'green belts' around conurbations to delimit urban areas, […] and shall adopt measures aimed at promoting energy savings and efficiency, the absorption of fine particulate matter, and the reduction of the urban heat island effect, while simultaneously facilitating the regular collection of rainwater."*

On the other hand, and perhaps more significantly for the governance of peri-urban agricultural areas, it states that

> *"with a view to limiting soil consumption and safeguarding non-urbanized municipal areas, municipalities may […] provide for appropriate instruments and interventions for the conservation and restoration of the non-urbanized rural or forest landscape falling within the competence of the municipal administration."*

This provision is directly relevant to the Roman context, where the conservation of the *Agro Romano* and the activation of non-used agricultural areas constitute precisely the kind of intervention envisaged by Article 6.

L194/2015

A further piece of national legislation directly relevant to this analysis is Law 194 of 1st December 2015, which establishes the national framework for the protection and valorization of biodiversity of agricultural and food interests.

Article 1 establishes the foundational principles of the law, stating that it

> *"establishes the principles for the creation of a national system for the protection and valorization of biodiversity of agricultural and food interest, aimed at safeguarding local genetic resources of food and agricultural interest from the risk of extinction and genetic erosion. The protection and valorization of biodiversity of agricultural and food interest are pursued also through the protection of rural territory, contributing to limiting depopulation phenomena and to preserving the territory from genetic pollution and the loss of genetic heritage".*

This framing is significant because it explicitly connects agricultural biodiversity protection to the broader governance of rural territory – establishing a legal principle that the protection of genetic resources cannot be separated from the protection of the landscapes in which they are embedded.

Article 2 then provides for the creation of an institutional tool for tracking and monitoring threatened genetic resources – the National Register of Biodiversity of Agricultural and Food Interest – while Article 4 complements it with an operative instrument – The National Network for Biodiversity of Agricultural and Food Interest – and Article 10 establishes a financial instrument to support these activities, through the Fund for the Protection of Biodiversity of Agricultural and Food Interest.

The most directly relevant provision for the purposes of this thesis, however, is Article 13, which introduces the concept of "food and biodiversity communities" as a governance tool for local food system sustainability. The article reads:

> *"With a view to raising public awareness, supporting agricultural and food production [...] and promoting behaviors conducive to the protection of biodiversity of agricultural and food interest, the Ministry of Agricultural, Food and Forestry Policies and the regions [...] may promote the establishment of food and biodiversity communities of agricultural and food interest."*

These are understood as

> *"local contexts arising from agreements between local farmers, custodian farmers, solidarity purchasing groups, school and university institutions, research centers, associations for the protection of the quality of biodiversity of agricultural and food interest, school canteens, hospitals, catering establishments, commercial outlets, small and medium-sized artisanal agri-food processing enterprises, and public bodies.*
>
> *The agreements may have as their object [...] the creation of educational, social, urban, and collective gardens, as instruments for the valorization of local varieties, environmental and agricultural education, social aggregation, the regeneration of abandoned or degraded areas, and the activation of unused agricultural land".*

This article is particularly significant because it frames urban gardens not merely as leisure or welfare instruments, but as tools for biodiversity protection, territorial regeneration, and the activation of non-used agricultural land.

National Guidelines for Urban Green Management (2017)

The Committee for the Development of Public Green Spaces established by Law 10/2013 redacted, in 2017, the National Guidelines for Urban Green Management, which represent the primary operative instrument translating the principles of the national law into concrete planning tools. Indeed, these Guidelines decree the redaction – and the contents – of different instruments at the municipal level, starting with the **Regulation on Green Areas** – both urban and rural – designed to enhance ecosystem services and to formally recognize the agricultural, landscape, historic, cultural, sanitary and recreational value of green areas. The Regulation is also required to discipline the process for entrusting and managing community gardens; however, it should be noted that the Regulation does not necessarily apply to the entirety of the municipal territory, but only within the perimeter of the "Area of interest for urban green", established by the municipality. This may translate into a significant limitation, leaving portions of peri-urban agricultural land outside its scope of application.

The second instrument is a **Plan for Green Areas**, designed to define the structure of the city's green and blue infrastructure, with the aim of enhancing the ecosystem services and the ecological connectivity, including the possibility of designating temporary green areas. The Plan is also required to define criteria for new green infrastructure capable of reducing air and acoustic pollution, the urban heat island effect, and soil sealing.

The last instrument is a **Plan for Monitoring and Managing Urban Green**, with the objective of programming annual monitoring and management activities for public green areas, in addition to scheduling cultivation activities. Within this Plan, one of the options considered to manage broader parks at the periphery – not frequently visited by citizens and close by peri-urban agriculture – is

the restoration of the agricultural use (especially grazing), which would limit public expenses whilst implementing sustainable activities and promoting environmental education.

The Guidelines also address the dimension of active citizen participation in urban green governance, framing it both as a communicative process – through the activation of a specific channel for communication and reception of comments – and as on operative form of co-management, through the experimentation of new innovative forms of management with redevelopment or research purposes as objectives. One of the examples brought forward is the establishment of experimental vegetable gardens or orchards, however sponsorship and entrusting of green areas are probably the most frequent initiatives. It is also highlighted how urban green areas can be used to increase citizens awareness on green matters, through various activities such as community gardens – for which the Guidelines also recognize an important social function – defined as small plots of land owned by the municipality and cared for by citizens on a gratuitous loan, meant for cultivation and whose products are intended exclusively for self-consumption. The Guidelines also briefly acknowledge the necessity to implement incentives to support the establishment and management of green areas such as community gardens, a recognition that signals the national framework's awareness of the financial barriers to UPA development discussed in the theoretical framework of this thesis.

National Strategy for Urban Green (2018)

Complementing the instruments discussed above, the National Strategy for Urban Green was also born in actualization of Law 10/2013 by the Committee for the Development of Public Green Spaces. This Strategy represents the most ambitious and conceptually developed instrument in the national framework for urban green governance, articulating a vision of urban green as a multifunctional infrastructure of the city. Its aim, as stated in the document, is

> *"to integrate the functions of extensive forest formations with the opportunities offered by green spaces functionally associated with buildings and architectural green spaces, within a systemic and integrated vision consistent with the local Territorial Ecological Network and with the guidelines already disseminated."*

In addition to this, the objective is also

> *"to integrate the functionality of ecosystems with the environmental technological innovations necessary to mitigate the effects of climate change and to facilitate direct fruition of green spaces – including urban gardens and agricultural systems – within a framework of full economic, environmental, and social sustainability."*

This vision finds its clearest expression in the following passage, which is worth quoting at length:

> *"These are not simply "green areas," but a structural and functional network of natural and semi-natural systems capable, through their own "services," of improving quality of life in social and economic terms as well. They therefore constitute systems of green areas that are essential for improving habitat resilience, ecological efficiency, the full functionality of ecosystems, and ecological connectivity, while simultaneously enhancing the aesthetic and perceptual experience associated with the presence of natural systems and nature-based solutions provided for in the Municipal Plan for Green Areas."*

The implementation of the Strategy explicitly requires a particularly active role at the municipal level, promoted and supported by the State and the Regions. For this reason, it develops thorough guidelines for the preparation of the Municipal Plan for Green Areas: starting from the base studies – focused on understanding the context and the resources available –, moving on to the identification of the problems and necessities, and concluding with the development of the plan itself, defining its scale and duration and identifying the actions to be pursued. Moreover, the Strategy sets common objectives for these plans, in order to translate its principles into concrete actions; these include: to protect biodiversity in order to guarantee the full functionality of ecosystems and Green Infrastructure in a resilient city; to increase the surface area and improve the ecosystem functionality of Green Infrastructure at the territorial, local, and architectural green scales; and to improve the health and wellbeing of citizens through the removal of pollutants by the forest ecosystem. In so doing, the agricultural system, urban gardens and urban farms are recognized as contributing together to the landscape identity of a city – a formal acknowledgement of the multidimensionality of urban agriculture that further strengthens its legitimacy as a subject of urban planning.

It is worth noting that the National Strategy draws explicitly from the FAO Guidelines on Urban and Peri-urban Forestry, adopting a broad and systemic conception of urban green. In the words of the FAO definition on which the Strategy is based,

> *"Urban forests can be defined as networks or systems comprising all woodlands, groups of trees, and individual trees located in urban and peri-urban areas; they include, therefore, forests, street trees, trees in parks and gardens, and trees in derelict corners. Urban forests are the backbone of the green infrastructure, bridging rural and urban areas and ameliorating a city's environmental footprint."* (Salbitano et al., 2016).

So, when using "urban forestry", the Strategy encompasses all urban green, classified into five simplified types derived from the FAO system:

- peri-urban forests and woodlands, surrounding towns and cities and providing goods and services such as wood, fiber, fruit, other non-wood forest products, clean water, recreation and tourism;

- city parks and urban forests, encompassing large (> 0,5 ha) urban or district parks with a variety of land cover and at least partly equipped with facilities for leisure and recreation;

- pocket parks and gardens with trees, consisting of small district parks equipped with facilities for recreation, and private gardens and green spaces;

- trees on streets or in public squares;

- other green spaces with trees, such as urban agricultural plots, sports grounds, vacant lands, lawns, riverbanks, open fields, cemeteries and botanical gardens.

The inclusion of urban agricultural plots within the FAO typology adopted by the Strategy is truly significant, as it formally positions urban agriculture within the broader framework of urban green infrastructure rather than treating it as a separate or residual land use category.

The Common Agricultural Policy

Before examining the regional framework, it is worth mentioning that all the national instruments described above operate within a broader agricultural policy context that is primarily shaped by the EU Common Agricultural Policy (CAP). As established in Chapter 1, the CAP is the European framework governing agricultural activities and their financing through Rural Development Programs, and it does not recognize UPA as an explicit category of supported activities. Because of this, UPA is left in a regulatory interstice between the agricultural policy domain, which does not recognize it, and the urban planning domain, which has only recently begun to acknowledge it through the instruments described in this section.

Concluding reflections on the national framework

The analysis of the national legislative framework reveals a set of recurring themes and principles that outline UPA as a legitimate and strategically significant component of urban governance. For the purposes of this thesis, the national framework yields a set of operative conclusions that will inform both the subsequent analysis and the application of the siting methodology to *Municipio IX*.

First, the most structurally significant outcome is the establishment of a multi-scalar governance framework for urban green, which distributes responsibilities and operative tools across the different scales, while recognizing the centrality of local action. The national instruments described above do not operate in isolation but constitute a layered framework in which national principles are translated into regional and municipal instruments, each calibrated to the specific competences and resources of the respective administrative level. This articulation is directly relevant to the siting methodology, as it establishes that the operative instruments most capable of enabling or constraining UPA at the site level are found at the regional and municipal levels – examined in the following sections – rather than at the national level, which sets principles and objectives but delegates their implementation downward.

Moreover, the national framework articulates a set of objectives that are directly relevant to establishing the legitimacy of UPA as a subject of urban planning. The mitigation of climate change – through the reduction of the urban heat island effect, the absorption of fine particulate matter, and the facilitation of rainwater collection – is identified as a primary function of urban green systems, positioning green areas as active components of urban climate adaptation strategies, rather than passive landscape amenities. This is also reinforced by the recognition of the ecosystem services generated by urban green – encompassing ecological, agricultural, landscape, historic, cultural, recreational and sanitary values – as a public good whose enhancement constitutes an objective of municipal planning. The limitation of soil consumption and the conservation and restoration of non-urbanized landscapes are similarly identified as explicit planning objectives, providing a normative basis for the protection of peri-urban agricultural areas from urban development pressure. The framework also establishes a clear connection between agricultural land protection and biodiversity conservation, recognizing that the protection of rural territories contributes to safeguarding genetic resources and preventing their erosion. This principle extends explicitly to urban and collective gardens through Law 194/2015, which makes them instruments for the valorization of local varieties and the activation of unused agricultural land. In this context, UPA is formally recognized as a tool for territorial regeneration and the reactivation of degraded or abandoned spaces – supporting the planning argument developed throughout this thesis. The

importance of ecological connectivity is a further recurring theme, articulated most clearly in the National Strategy's vision of a structural and functional network of natural and semi-natural systems consistent with the Territorial Ecological Network. This systemic and integrated vision is particularly significant for the development of UPA, as it positions agricultural areas, urban green spaces and peri-urban landscapes as nodes within a broader ecological network rather than isolated residual spaces. All these objectives are directly relevant to the siting methodology developed in this thesis as they align with several of the criteria identified in the literature review, especially with those classified as discretionary, offering a sense of the priorities and desires expressed at the national level.

Several further principles emerging from the framework are worth highlighting for their practical implications. The recognition of temporary use as a legitimate planning tool provides a normative basis for the activation of vacant and underutilized sites through transitional agricultural uses, which is directly relevant to the siting methodology developed in this thesis. The acknowledgment that agricultural use in peri-urban areas can serve as a cost-effective land management strategy frames UPA not only as an ecological and social instrument, but also as a financially rational planning choice. Finally, the emphasis on active citizen participation provides an institutional framework for bottom-up initiatives.

Taken together, these principles outline a vision of urban green – and of UPA within it – as a multifunctional infrastructure of the city: not simply a collection of green areas, but a systemic network of natural, semi-natural and productive spaces capable of delivering simultaneously ecological, social, economical and cultural benefits. This vision is compelling and aligned to the theoretical framework developed in Part 1; however, its principal limitation lies in the gap between principle and actualization, as the national framework establishes objectives and tools but leaves their implementation largely to the discretion of regional and municipal authorities.

6.2. Regional instruments

Regional Agricultural Plan (2020, revised in 2023-2026)

The Regional Agricultural Plan was introduced through Regional Law 7/2017 and represents the primary regional instrument governing agricultural activities across the territory; although its significance lies in its dual nature as both an agricultural sectorial instrument and a territorial planning tool for rural areas in general. This dual orientation is significant for the siting methodology because it establishes that agricultural planning in Lazio is not confined to the purely productive dimension but explicitly encompasses territorial governance. In this regard, the PAR promotes a multifunctional conception of agriculture, recognizing its role in the demographic and social revitalization of rural and peri-urban areas. Moreover, it emphasizes the valorization of agricultural land that still persists within the perimeters of compact urbanization, going beyond the rural perimeter.

The Plan also includes a **Map for the Land Capability Classification**, which – based on the physical and chemical properties of the soil and the characteristics of the environment in which it is embedded – groups soils according to their capacity to produce crops, fodder, or timber without undergoing degradation.

Regional Landscape Plan (PTPR) (2021)

The Regional Landscape Plan is the primary regional instrument for landscape protection and governance in Lazio, and while its references to urban agriculture are limited, those that exist are still analytically significant. Within the Implementing Technical Standards (NTA) of the Plan, UPA is not directly mentioned, although Articles 28 and 43 are still worth mentioning as they cover aspects connected to it. More precisely, Art. 28 – concerning the protection of the landscape of urban settlements – mandates the "*maintenance of green corridors within urban fabrics and/or connecting them with adjacent natural and agricultural landscapes*"; meanwhile, Art. 43 subjects the agricultural areas of the *Agro Romano* – including the *Tenuta di Casal del Marmo*, one of the case studies analyzed in Chapter 5 – to landscape protection constraints.

More interesting for the purpose of this work are the PTPR's guidelines for landscape valorization, which contain several explicit references to urban gardens and peri-urban agriculture. Firstly, they state that the conservation of residual spaces designated for agricultural use of the soil is appropriate, and it may be incentivized through specific support and promotion actions like urban gardens, identified as "*cardinal elements for the construction of the urban ecological network*". Moreover, "*in the event of the cessation of agricultural activity, their use as urban park areas is promoted.*" Finally, the guidelines recommend

> "*evaluating the possibility of using agricultural areas completely incorporated within building expansion zones for the formation of public green areas, collective facilities, or urban gardens that contribute to the ecological and environmental rebalancing of the most heavily anthropized contexts".*

Lr16/2021

Regional Law 16 of 2021 is primarily a social welfare instrument, focused on the promotion of active aging; however, Article 8 contains a provision of direct relevance to the governance of urban gardens, which is worth quoting at length.

> "*Municipalities may entrust elderly people, individually or in association, with the free management of municipal land on which to carry out gardening, horticulture, and, in general, the care of the natural environment, ensuring accessibility and usability also for people with disabilities. To this end, and with a view to intergenerational sharing of the management of common goods, they may promote memoranda of understanding with Third Sector organizations, youth associations, and university and school institutions of the territory, also for the purpose of assigning urban gardens within the framework of projects for the regeneration of degraded areas."*

This provision is important because it establishes a regional legal basis for the assignment of municipally owned land to community garden initiatives, and it also explicitly references them as instruments of urban regeneration, while highlighting the multiplicity of stakeholders that could be involved.

Concluding reflections on the regional framework

The regional framework provides a normative basis for UPA that is considerably more operative than the national framework examined in the preceding section, comprising specific landscape

designations, soil capability assessments, and legal provisions for the governance of community gardens. In particular, the Land Capability Classification constitutes a directly usable cartographic tool for the evaluation of the soil quality criterion, providing a regionally validated and spatially explicit assessment of soil suitability across the *Lazio* territory. Furthermore, the Regional Landscape Plan establishes a planning basis for UPA in precisely the types of areas most relevant to the siting methodology – marginal zones, areas incorporated within urban expansion perimeters, and heavily anthropized contexts – directly supporting the identification of vacant land, brownfields, and lack of urban green as relevant siting criteria. It also explicitly frames urban gardens as instruments of ecological connectivity and environmental rebalancing, reinforcing the normative justification for the proximity criteria related to urban green spaces and ecological networks. Finally, the Regional Law number 16 of 2021, with its reference to community gardens as instruments of urban regeneration, reinforces the need for urban quality improvement as a discretionary motivational criterion in the siting framework.

However, while the regional framework provides normative support for UPA and specific instruments for community gardens, it does not establish a comprehensive and integrated regional strategy for UPA development, nor does it provide the financial resources or monitoring mechanisms necessary to ensure consistent implementation across municipal territories. This gap reinforces the finding from the national framework analysis that the operative instruments most directly relevant to siting decisions are found at a lower scale, which will be analyzed in the following sections.

6.3. Metropolitan planning instruments

General Provincial Territorial Plan (PTPG) (2010)

The General Provincial Territorial Plan, though predating the establishment of the Metropolitan City of Rome in 2015, remains a significant reference for the metropolitan territory, with Chapter 8 of its Territorial Report being the most relevant for the scope of this work.

Within that chapter, the PTPG identifies twelve landscape types that shape the rural territory of the Province of Rome, among which the "Landscapes of Urban and Peri-Urban Agriculture" constitute a specific and formally recognized category. Such landscapes are characterized by the presence of "*agricultural land uses as elements of discontinuity within the urban landscape, either insular in character – entirely surrounded by the urban fabric – or in continuity with systems of green spaces, both agricultural and non-agricultural*". The Plan explicitly acknowledges that these areas are subject to real estate pressure from surrounding urban contexts, while simultaneously recognizing their value as open visual fields, panoramic points, and spaces of high recreational value. For these areas, the PTPG recommends the preparation of detailed valorization studies and programs, with a view to the establishment of Agricultural Parks, to be managed by the Municipalities. The Plan also recognizes the economic potential of these areas through the promotion of traditional and innovative forms of direct sales, and it acknowledges their capacity to provide multiple services.

Within the PTPG, the **Agricultural Park** is introduced as tool offered to municipalities for the promotion of agricultural or rural areas of local interest. It is also described as particularly suited for developing renewed forms of agricultural management of open spaces, and as a useful instrument for the promotion – in social, economic, and environmental terms – of rural landscapes whose conservation or regeneration is considered of particular strategic and cultural interest for a local

community. Two pilot projects are mentioned: the agricultural park of *Casal del Marmo* within the municipality of Rome – already analyzed as a case study in the preceding chapter – and the agricultural and archaeological park of *Gabii-Castiglione* in the municipality of *Monte Compatri*. At a broader scale, the PTPG also identifies "Areas for the Promotion of Rural Landscape and Economy" as territorially extensive areas of supra-municipal interest, for which it suggests the design of two agricultural parks: one for *Agro Romano* and another one at the base of *Castelli Romani*. Finally, the Plan explicitly recommends an agricultural park along the Tiber River, which would require regional coordination.

Metropolitan Strategic Plan (2022)

"*Sustainable agriculture and forestation*" is one of the strategic directions for sustainable urban development of the Metropolitan Strategic Plan. Within this direction, urban gardens are explicitly mentioned as instruments for returning abandoned areas to collective use, with the intention of initiating experiences of active citizenship that contribute to the landscape, urban, and social regeneration of the contexts in which they emerge. Moreover, the Strategic Plan promotes the use of greenery for climate mitigation and adaptation actions, and as a way to reduce soil consumption, though the primary reference is to forestation activities rather than urban agriculture specifically.

Of particular relevance is the adoption of the concept of "*metropolitan metabolism*", which involves a "*reunifying perspective of urban and rural reality with the objective of promoting the co-design of territorial food resilience by connecting urban, peri-urban, and rural areas*".

Concluding reflections on the metropolitan framework

Both metropolitan instruments reveal a significant asymmetry between strategic ambition and operative capacity, which is unsurprising given that they are – by their nature – orientating and coordinating instruments rather than spatially operative ones. Precisely for this reason, however, they contribute primarily to the discretionary dimension of the criteria assessment, providing normative support for objectives such as food resilience, ecological connectivity, and community development, instead of referencing potential spatial implications for the localization of UPA. Specifically, the Metropolitan Strategic Plan signals the metropolitan administration's political orientation toward urban agriculture and food resilience; whilst the PTPG – recognizing urban and peri-urban agricultural landscapes as a specific landscape typology, subject to real estate pressure – directly supports the classification of low urbanization pressure as a relevant siting criterion and reinforces the normative basis for the protection of candidate sites from competing urban uses.

The agricultural parks represent a partial exception to this pattern, constituting the most spatially operative instrument identified at this scale. However, this analysis confirms the findings – consistent across all levels examined so far – that the instruments most directly relevant to siting decisions are found at the municipal level.

6.4. Municipal planning instruments

General Regulatory Plan (PRG) (2008)

The General Regulatory Plan of 2008 is the primary municipal planning instrument governing land use across the entire territory of the Municipality of Rome, and its Implementing Technical Standards (NTA) contain different articles of particular significance for UPA.

Article 70 establishes the legal definition and planning framework for agricultural parks, defining them as "*rural areas [...] of naturalistic, landscape, and historical-archaeological interest, to be protected and valorized*". Three agricultural parks are formally designated in the PRG's prescriptive documents, specifically within the "Ecological Network Map", and they are: *Casal del Marmo, Arrone-Galeria*, and *Rocca Cencia*. The objectives established for these areas encompass the preservation and strengthening of agricultural activities, including through the local commercialization of products; the protection and valorization of the naturalistic, environmental, and landscape heritage; the preservation, restoration, and re-naturalization of the hydrographic network; and the creation of a public fruition system, through the development of naturalistic itineraries with cycling and pedestrian paths, and the introduction or strengthening of hospitality, recreational, sporting, and service uses. Finally, for these areas the PRG prescribes the writing of **Unified Intervention Programs**.

Article 74, on the other hand, governs the *Agro Romano*, defining it as the extra-urban territory dedicated to productive agricultural activities and characterized by

> *"essential environmental values for the maintenance of ecological cycles, for the protection of the agricultural landscape, of the historical heritage and its context, and for an appropriate balance between built and non-built areas in order to guarantee equilibrated conditions of naturalness, healthfulness, and productivity of the territory"*.

Among the permitted uses within the *Agro Romano*, Article 74 explicitly includes recreational and social gardens, to be established within agricultural enterprises and publicly owned agricultural areas and assigned to private individuals, organizations, or associations, with the objective of improving the most degraded agricultural areas and serving recreational, social, and educational purposes.

Finally, Article 85 includes social urban gardens among the permitted uses of areas designated as "*public green and local public services*", albeit limited to less than 5% of the total area. These are identified on the "Systems and Rules" maps, within the PRG's prescriptive documents, establishing a further planning basis for community gardens within publicly designated green areas.

Guidelines for the Regulation on the Management of Green and Landscape of Rome (2017)

The Regulation on the Management of Green and Landscape of Rome, adopted in 2017, represents an operative instrument for the management of Rome's green areas at the municipal level. Its aim is to establish a comprehensive and uniform regulation of all green areas, although the management of smaller green areas is delegated to the Municipal Districts.

The regulation acknowledges the cultural, educational, social, and recreational values of green areas, while explicitly recognizing that

> *"urban green performs a function of general public interest as a fundamental resource for urban sustainability, contributing to the mitigation of temperatures and various forms of pollution as well as to the conservation of biodiversity and ecological processes, improving environmental quality for the health of citizens";*

Moreover, it promotes models of public-private partnership and horizontal subsidiarity, alongside participatory management instruments such as **Adoption Agreements** and **Sponsorships**. Of particular relevance is also the possibility to create urban gardens "*with the objective of raising citizens' awareness on the need to regenerate the territory through processes of self-management of common goods, without profit motives, and also with the aim of promoting food security*." These are subject to free use concessions for a duration not exceeding six years, but that can be renewed.

Regulation on Public and Private Green and on Urban Landscape (2021)

The Regulation on Public and Private Green and on Urban Landscape of 2021 formally recognizes urban gardens as a typology of urban green, constituting an important step toward their institutional recognition within the municipal planning framework. This Regulation promotes citizen participation not only in the management and valorization of green areas but also in their planning and protection, through instruments like **Adoption Agreements** and **Collaboration Pacts**. These last tools, in particular, represent a significant instrument for UPA governance: they arise from citizens' initiative but are also promoted by the municipality through the publication of a list of areas that can be subject to pacts, which is publicly accessible on the *Roma Capitale* website[16] (although it must be noted that as of today 3rd of August 2026 only one area has not been assigned yet and is still available for a collaboration pact).

Regulation on Community Gardens (2024)

The most recently adopted and most directly relevant municipal instrument for the governance of UPA in Rome is the Regulation on Community Gardens of 2024, which for the first time establishes a dedicated regulatory framework specifically addressing urban gardens as a distinct planning and governance category. The Regulation defines a community garden as

> *"a space that is visible and accessible to everyone, [...] a way of returning a space to the territory, where people meet, exchange views, and learn to share, establishing their own rules and functioning, self-determining and self-defining as part of a community".*

It further specifies that

> *"a Community Garden is managed collectively and has a variety of functions related to leisure, social activities, wellbeing, education, inclusion, and integration. Cultivation may be a characteristic of such a site, but it may not be the primary or sole purpose".*

Community gardens are also promoted in connection with a wide range of themes: territorial stewardship, valorization of green and agricultural heritage, active community participation, local food security, social aggregation, sustainable and resilient environmental practices, intergenerational encounter, the recovery of local agricultural traditions, and organic agriculture. They may be established through collaboration pacts with Third Sector Organizations, and are suggested to involve diverse actors in their governance.

From an administrative and infrastructural standpoint, the Regulation establishes that a dedicated administrative office is responsible for assigning the area and monitoring activities, and it must

16 https://www.comune.roma.it/web/it/scheda-servizi.page?contentId=INF981984&pagina=5

ensure the supply of potable water and guarantee the availability of connections to the electrical and sewage network in proximity to the area, although users may also install photovoltaic systems to power irrigation pumps and lighting. The office is also responsible for conducting initial analyses of irrigation water and soil quality, and it must proceed with remediation if contamination is found. According to this regulation, concessions are now granted for a maximum duration of nine years and can still be renewed.

Concluding reflections on the municipal framework

The municipal framework is the most directly operative scale for the siting methodology, providing – from a strictly regulatory standpoint – a formally enabling environment for UPA in Rome. Indeed, agricultural parks are designated in the PRG, community gardens are recognized as a typology of urban green, and the 2024 Regulation establishes the most comprehensive and dedicated regulatory framework for urban gardens adopted at any scale examined in this chapter. For the siting methodology, this means that several criteria classified as potential veto conditions at a general level – most notably coherent land use designation and secure land tenure – are, in the Roman context, more likely to fall within the conditional class than the exclusionary one, as the combination of PRG designations, collaboration pacts, and the 2024 Regulation provides multiple legal pathways through which UPA can be formally established on municipally owned land.

However, the municipal framework also reveals a structural tension that is directly relevant to the broader argument of this thesis and that merits explicit attention. Across all the instruments examined urban gardens are consistently framed as something that emerges from citizens rather than something that is actively planned, located, and promoted by the municipality. The dominant governance model across all instruments is one of response and facilitation: the municipality provides a regulatory framework, assigns areas upon request, and monitors activities, but does not itself identify candidate sites, develop siting criteria, or proactively promote the establishment of new UPA initiatives in locations where they would generate the greatest planning, ecological, or social benefit. However, a place-based siting methodology implies that the identification of suitable sites for UPA is an active planning exercise conducted by institutional actors, not a passive response to citizens' requests. The consistent framing of urban gardens as bottom-up, citizen-driven initiatives across the entire municipal regulatory framework suggests that this active planning role has not yet been assumed by the Municipality, and that the development of a siting methodology capable of supporting decision-makers in this role constitutes a genuine gap in the current governance landscape. In this sense, the municipal framework does not undermine the thesis; on the contrary, it reinforces its relevance by confirming that the institutional capacity and methodological tools necessary for proactive UPA planning are precisely what is currently missing.

For the siting methodology specifically, the municipal framework yields several operative conclusions. The 2024 Regulation's requirement for preliminary soil analysis and remediation by the municipal administration directly supports the assessment of soil quality and contamination criteria, establishing a formal institutional pathway for addressing what would otherwise be a conditional or exclusionary obstacle. The maximum concession duration of nine years (renewable) is then directly relevant to the land tenure criterion, confirming that secure but time-limited tenure is the standard condition for community gardens in Rome. Furthermore, the explicit permission for photovoltaic systems supports the conditional classification of electricity access, confirming that on-site energy production is a formally recognized alternative to grid connection. Finally, the

multifunctionality of UPA, recognized by all the instruments at the municipal level, contributes to the discretionary dimension of the criteria assessment, signaling the administration's political orientation.

7. Proposed methodology to site UPA in Rome

The framework developed in the preceding chapters constitutes the analytical foundation of the siting methodology proposed in this thesis, with each step contributing to the final result. The literature review on siting criteria established the conditions most consistently associated with the evaluation of suitability for UPA of candidate sites, across diverse geographic and typological contexts. The classification of such criteria into exclusionary, conditional, and discretionary categories refined these conditions by highlighting the presence of prohibiting circumstances, and the fact that the weighing of some criteria depends on the subjective priorities of the actors involved. The definition of a traffic-light matrix then posed the foundations for a practical evaluation tool, defining intervals to assess each criterion and identifying possible interventions to support UPA practices in suboptimal circumstances. Subsequently, the frequency analysis and expert panel consultation provided an evidence-based weighing system capable of reflecting the relative importance of criteria as recognized by both the academic literature and professional expertise. The retrospective assessment of existing UPA experiences in Rome later served a dual purpose: on the one hand, it grounded the theoretical framework in the concrete conditions of the Roman context, revealing how the criteria identified in the literature manifest in real planning situations; on the other, it constituted a first empirical test of the methodology, verifying whether the traffic-light matrix produces assessments consistent with the outcomes observed in practice. Finally, the analysis of the regulatory framework at national, regional, metropolitan, and municipal levels established the institutional and normative context within which the methodology must operate, identifying the planning instruments, legal provisions, and governance tools available to a decision-maker seeking to support UPA in Rome. Taken together, these components constitute an integrated methodology for the siting of UPA in Rome, whose application is demonstrated in Part III through its deployment in the Tor di Valle area.

The methodology is designed to respond directly to the gap identified throughout this thesis between the theoretical recognition of UPA as a legitimate and strategically significant urban practice and the absence of operative planning instruments capable of translating this recognition into concrete siting decisions. It is structured as a sequential, multi-stage process that moves from the broadest territorial scale to the most site-specific level of analysis, progressively narrowing the field of candidate sites through the application of increasingly precise evaluative criteria. This scalar progression mirrors the planning logic of the instruments examined in the regulatory framework chapter and is designed to be replicable, making it a transferable tool.

The first stage of the methodology would consist in identifying, within a defined study area, all sites that present the basic conditions necessary to be considered as candidate sites for UPA. This stage draws on cartographic and documentary sources to produce a preliminary map of candidate sites. At this stage, the exclusionary criteria identified in the traffic-light matrix are applied as a preliminary cartographic filter, eliminating from consideration all sites that present conditions whose non-satisfaction constitutes an absolute veto regardless of all other factors. The result of this filtering is a map of candidate sites that merit further evaluation in the subsequent stages.

This stage constitutes a necessary preliminary step in any full application of the siting methodology to a defined territory; however, in the present thesis, the territorial screening stage is not applied to *Municipio IX* in its entirety, as this would fall outside the scope of the work given the scale of the territory and the data requirements involved. The full cartographic screening of *Municipio IX* – and more broadly of the entire municipal territory of Rome – constitutes a natural and promising direction for future research and planning practice, and one for which the methodology developed here provides a directly applicable framework. The application presented in the following chapter instead focuses on the *Tor di Valle* area as a specific candidate site, applying the subsequent stages of the methodology to assess its suitability for UPA without the preliminary territorial screening phase.

The second stage applies the full traffic-light matrix to each candidate site, producing a comprehensive profile of its siting conditions across the four thematic categories. This profile serves two analytical purposes simultaneously. First, it identifies which conditions are immediately enabling, which require targeted interventions before UPA can be established, and which present significant challenges that must be carefully evaluated before proceeding. Second, it provides the basis for a typology-specific assessment: since different UPA typologies are not equally sensitive to all criteria, the profile of each site can be read against the typology-criterion associations to identify which typology or typologies are most appropriate. Moreover, where multiple typologies appear compatible with a site's conditions, the matrix allows for a comparative assessment that identifies the best-performing option. The weighted criteria will also inform the relative importance assigned to each criterion in this evaluation.

Subsequently, the third stage addresses the discretionary criteria in order to identify the contexts where specific typologies would generate the greatest social, ecological, or planning impact. In the application of the methodology to *Tor di Valle*, the discretionary criteria are pondered according to the objectives found during the analysis of the regulatory and planning framework to reflect the context of *Municipio IX*, but also to reflect the broader argument about the potential of UPA as a multifunctional planning instrument.

The fourth and final stage of the methodology envisions the translation of the outputs of the preceding stages into a concrete planning proposition. In the present thesis, this stage is addressed through the brief presentation of a project for the Tor di Valle area, drawing on the results of the traffic-light matrix assessment to outline the most appropriate UPA typology and referencing the existing experiences to suggest elements that should be included in the design. This presentation is intended as an illustrative demonstration of the methodology's generative capacity – its ability to move from evaluation to proposition – rather than as a fully developed design or implementation plan. A complete project development, including detailed spatial design, stakeholder engagement, and implementation programming, constitutes a further development of the methodology that falls outside the scope of the present work and represents a natural next step for future planning practice.

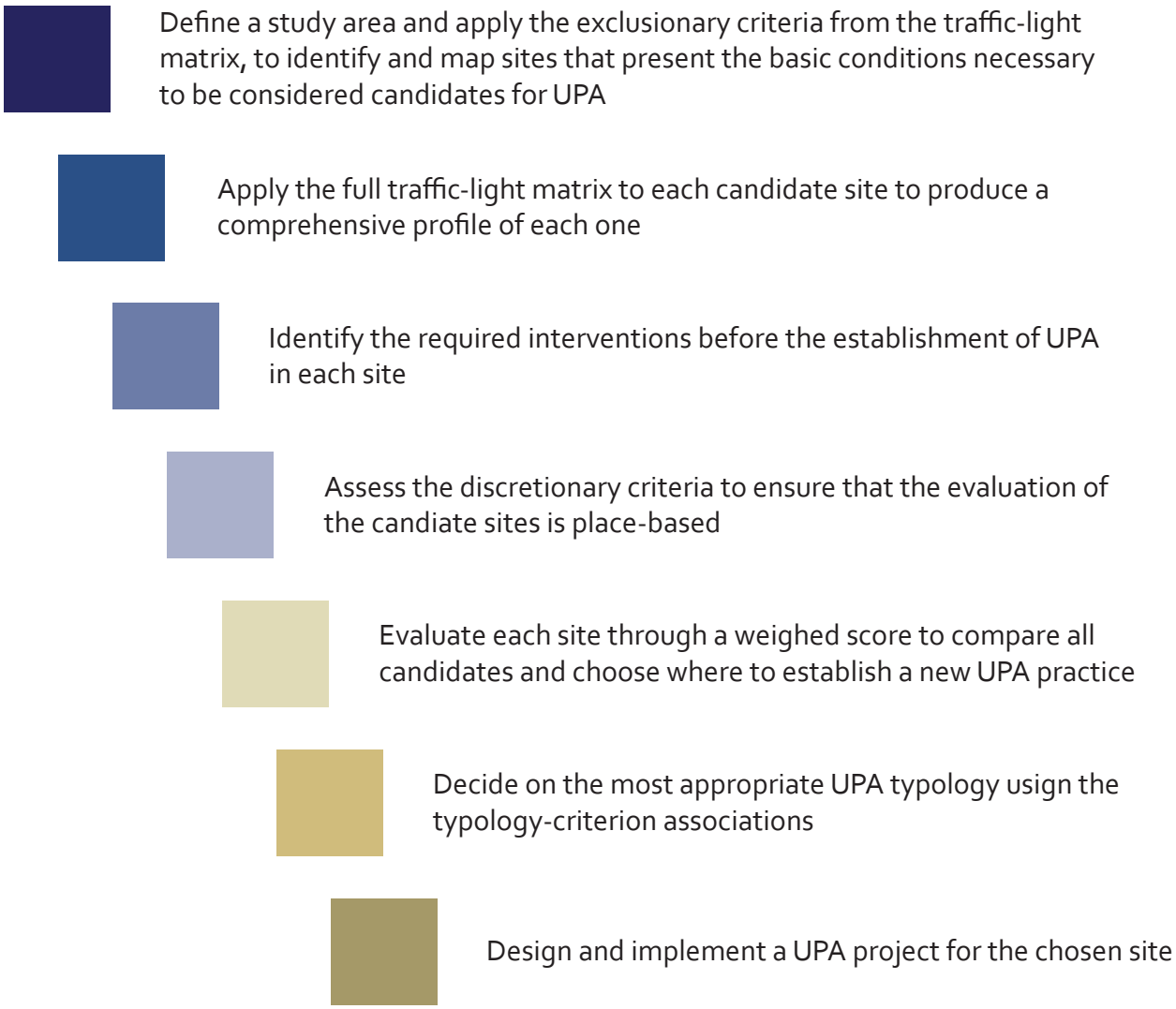


Figure 31: Scheme that summarizes the steps for the application of the methodology (Source: own elaboration)

Part III – Application of the siting methodology

8. Identifying a potential site: Tor di Valle

On the left bank of the Tiber River, in *Municipio IX* in the south of Rome, there is an area of approximately 2500 hectares which takes its name from an ancient farmhouse called *Turris de Vallora*, known as *Tor di Valle*. The first references to the farmhouse date back to the XIV century, when the area was part of an estate dedicated mainly to grazing activities (Ercolani, 2021). This use was maintained up to the 1950s, when a racecourse was built at the hands of the entrepreneur Gateano Turilli, designed by the Spanish architect Julio Lafuente, covering an area of 45 hectares. The races ended in 2013, and the land was later bought by the sport club A.S. Roma to build its new football stadium (Rerum Romanorum, 2017). The project was abandoned in 2021, meanwhile a long debate was carried out to decide whether the building by Lafuente was worthy of the declaration of cultural interest (debate that was ultimately archived by the new head of the *Ministero dei Beni Culturali* Francesco Prosperetti at the end of 2017) (Dellapasqua, 2018), and the property was then ceded to Cpi Property Group.

At present the area is completely abandoned, serving as an open-air dumping ground and having recently been affected by a significant fire. In the meantime, the inhabitants of the neighboring districts have been asking for the realization of a public park for the last several years, with the aim of protecting what remains of the natural character of this part of Rome. Indeed, a significant portion of Tor di Valle was never built on, and today it represents a great opportunity to restore what was once part of the Agro Romano. Moreover, this area hosts a segment of one of the longest dedicated cycling routes in Rome, which – if further developed – could establish a continuous connection between the center of Rome and the coast. In support of a possible transformation of the area into a public park, the cartographic elaborates produced for the PRG of Rome in 2008 establish that the land is suitable for cultivation and constitutes an important component of the city's Ecological Network, whilst the planned land use designated falls under the category of "public green and local public services". However, the more recent Master Plan for the Tiber River – approved in July 2023 – has excluded this portion of the river from its regeneration and revitalization project, leaving it with no future plan.

9. Siting assessment of Tor di Valle

While the preceding section presented the first stage of the methodology – although simplified as already explained –, the second and third stages are presented here jointly, constituting the operative core of the methodology's application to the *Tor di Valle* area. In particular, the study will be conducted on the portion of the site that is currently undeveloped.

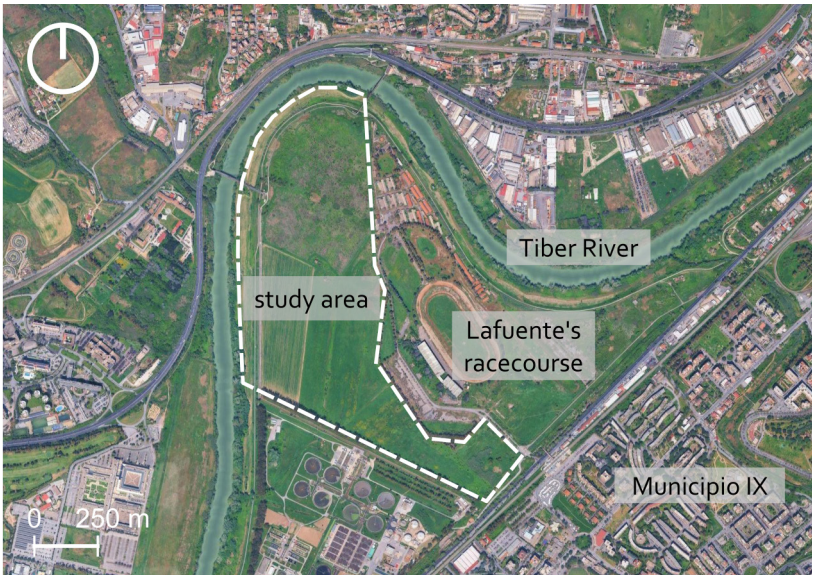


Figure 32: Satellite image of the study area (Source: own elaboration based on images from Google Earth)

The traffic-light matrix was compiled on the basis of the data gathered through the combination of cartographic, documentary, and primary sources. Each non-discretionary criterion was assigned a green, yellow, or red evaluation according to the thresholds and intervals defined in the theoretical framework, producing a comprehensive profile of the site's siting conditions across the four thematic categories. The table below shows the full results of the matrix.

	Siting criteria	Tor di Valle		Criteria weight	Site weight
environmental and physical characteristics	soil characteristics	high fertility (last tested in 2019)		0,037	0,037
	brownfields	-		0,005	0,005
	vacant land	undeveloped/underutilized land		0,032	0,032
	size *	83 ha	*	-	-
	slope	<12%		0,022	0,022
	visual openness *	almost no visual barriers	*	-	-
	exposure to winds	absence of strong winds		0,002	0,002
	sunlight availability	around 8 hours of sun		0,017	0,017
	hydrogeological risk	moderate risk		0,007	0,007
	concentration of vegetation	moderate concentration		0,002	0,000
	presence of pollinators	n.d.	n.d.	0,005	n.d.
	recreational landscape *	dedicated cycling route	*	-	-
	risk of diseases	no risk		0,002	0,002
	load capacity	/	/	0,002	/
	precipitation level	insufficient precipitation but possibility to use other sources		0,017	0,000
	temperature	ideal conditions		0,015	0,015

(continued on next page)

* discretionary siting criteria, cannot be assessed through the traffic-light matrix

infrastructures & utilities	accessibility of the area	easily accessible site through Via del Mare		0,194	0,194
	accessibility to public transit *	walkable distance from metro station	*	-	-
	proximity to distribution channels *	close by biweekly market	*	-	-
	proximity to agricultural retail shops	absence of agricultural retail shops close by		0,030	0,000
	proximity to public services *	walkable distance from schools	*	-	-
	access to water resources	possibility to source water		0,179	0,000
	access to electricity resources	resources already available		0,030	0,030
regulatory and planning framework	land use designation	explicit aknowledgment and permit for UPA (although limited to 5% of the total area)		0,022	0,022
	building code	/	/	0,002	/
	proximity to residential area *	close by residential area	*	-	-
	urbanization pressure	no immediate development pressure, planning instruments are needed for long term security		0,008	0,000
	proximity to other cultivated areas *	closest cultivated area at 3 km	*	-	-
	proximity to other urban green spaces *	proximity to natural areas	*	-	-
	lack of urban green *	absence of parks nearby	*	-	-
	distance from ecologically sensitive areas	area adjacent to the Tiber River		0,008	0,000
	distance from pollutant sources	adjacent expressway		0,003	-0,003
	historical or protected buildings	no historical or protected buildings on site		0,002	0,002
	overarching strategy *	absence of an overarching strategy	*	-	-
	land tenure	currently a private property		0,012	-0,012
	land access cost	n.d.	n.d.	0,006	n.d.
	fundings	-	-	0,002	-
	incentive programs	-	-	0,003	-
socio-economic context	social infrastructure	strong community networks and organitazional experience		0,167	0,167
	multiple stakeholders	n.d.	n.d.	0,017	n.d.
	population density	medium population density		0,150	0,000
	higher percentage of young people *	in a radius of 2 km there are 8 schools	*	-	-
	targeted household income level *	middle class	*	-	-
	lack of job opportunities *	average	*	-	-
	low education rate *	no	*	-	-
	proximity to vulnerable populations *	yes	*	-	-
	need for water security *	no	*	-	-
	need for energy security *	no	*	-	-
	unmet food system needs *	no	*	-	-
	need for urban quality improvement *	yes	*	-	-
	need for community development *	yes	*	-	-
	rural cultural heritage *	yes	*	-	-

Figure 33: Application of the siting criteria to the study area of Tor di Valle (Source: own elaboration based on AUBAC (2019); Comune di Roma (2008); Meteoblue (2026); Regione Lazio (2020))

From these data – specifically from the criteria that scored yellow or red in the traffic-light matrix – it is possible to understand the necessary interventions required to support UPA activities. Starting with the current private ownership, which constitutes the primary obstacle to the realization of any project by the Municipality, the first necessary intervention would be to formally acquire the land or negotiate a long-term concession. The development of a collaboration pact to ensure long-term security would then have to follow, drawing on the instruments established by the 2024 Regulation on Community Gardens. Another intervention concerns the infrastructure to source water, in order to provide irrigation all year round, given that the study of existing experiences showed that the precipitation level alone is not sufficient. Moreover, during the design phase it will also be of utmost importance to plan a production system that does not interfere with the ecological functioning of the Tiber River – including appropriate buffer zones and runoff management measures –, and to develop a monitoring plan for the pollutants coming from the adjacent expressway. Finally, it would be necessary to identify entities and tenders that could fund at least the first stages of the project.

Proceeding with the discretionary criteria, the site's characteristics reveal a particularly compelling case for UPA at *Tor di Valle*, as its multifunctionality would contribute to the goals set by the regulatory and planning framework, supporting a municipal decision-maker committed to urban regeneration, ecological connectivity, and community development. Indeed, implementing UPA on this site could contribute to the valorization of the *Agro Romano*, attracting people thanks to the existing cycling route that connects the area both to the coast and to the city center; a UPA practice here could function as a destination point along this route, generating visitor flows that would support the economic viability of the practice while simultaneously raising awareness of the agricultural heritage of the Roman territory. Moreover, it could bring to the establishment of an Alternative Food Network, using the nearby market as a springboard to develop an on-site farmers market. It would also be an opportunity to bring children and teenagers together with the elderly, working towards the intergenerational exchange and carrying out an educational function. Finally, the site could fulfill the longstanding request of neighboring residents for an accessible public open space in which to gather, improving the urban quality of this area and helping with the development of the community. It is also important to note that an overarching strategy – encompassing this site – could help with the realization of a coherent planning project for the entirety of the Tiber River within Rome's municipal boundaries, and it would also strengthen the city's Ecological Network, given the strategic location of this site on the river's bank.

In order to produce a synthetic and comparable assessment of the site's overall suitability for UPA, a quantitative scoring system was later applied to the traffic-light matrix results. Each criterion was assigned a numerical value according to its color assessment: green conditions were assigned a score of +1, yellow conditions a score of 0, and red conditions a score of -1. These values were then multiplied by the absolute weight assigned to each criterion through the frequency analysis and expert panel consultation, producing a weighed score for each criterion relatively to this site. The sum of all weighted scores constitutes the overall siting score for the site, which totals to 0.539. To contextualize this result, the same scoring system was applied retrospectively to the existing UPA experiences in Rome analyzed in the preceding chapter, producing the following comparative scores:

- Monte Ciocci 0.761
- Casal del Marmo 0.602
- Garbatella 0.573
- Tor di Valle 0.539
- Ort9 0.429
- Agricoltura Nuova 0.261

Tor di Valle scores above the midpoint of the comparative range, ranking fourth out of six assessed sites. This result is analytically significant as it confirms that the site presents a level of siting suitability comparable to – and in some respects superior to – existing UPA experiences that are already operative in Rome, suggesting that the obstacles it presents are not categorically different in nature or severity from those that were successfully overcome in establishing those experiences.

At this point it is possible to identify the most appropriate UPA typology for the site, drawing on the typology-criterion associations established in the theoretical framework and the overall matrix profile produced above. The size of the *Tor di Valle* area – approximately 83 hectares – immediately excludes the zero-acreage typology, which is by definition confined to building surfaces, indoor spaces and small outdoor lots adjacent to buildings. Among the remaining typologies, the matrix profile produces the highest scores for the community garden and community park typologies, both of which are compatible with the site's characteristics. Between these two, the community park typology emerges as the most appropriate recommendation for several converging reasons. The explicit request of citizens for a public gathering space directly supports a typology whose defining characteristic is the combination of productive agricultural activities with recreational, social, and educational functions in a publicly accessible setting. The DIY garden typology also scored relatively highly in the matrix assessment, reflecting the site's physical suitability for multiple small-scale individual cultivations; however, its primary defining criterion – the presence of significant food insecurity in the surrounding population – is not prominently manifested in the Tor di Valle context, making this typology a less compelling choice despite its technical compatibility.

The recommendation of the community park typology is therefore grounded not only in the quantitative matrix results but in the convergence of multiple analytical dimensions. A proposition for a community park at *Tor di Valle* is consequently briefly outlined in the following section, as an illustrative demonstration of the methodology's generative capacity, with the understanding that its full development constitutes a further step beyond the scope of the present thesis.

10. Towards a community park at Tor di Valle

River parks that integrate agricultural activities within a broader public green framework are not without precedent in Italy. The *Parco Fluviale Gesso e Stura* in the Piedmont Region and the *Parco del Ticino* in Lombardy represent well-established examples of how river corridors can be managed as multifunctional landscapes combining ecological protection, recreational use, and productive agriculture. However, in both cases agricultural activities are predominantly managed by professional farmers operating within the park's territory, rather than by the communities living in its vicinity. The project outlined here for *Tor di Valle* proposes a different model, one in which the community itself is the primary actor in the establishment, management, and governance of the agricultural park, drawing on the participatory governance frameworks established by the 2024 Regulation on Community Gardens and the collaboration pact instruments available under Roman municipal law.

The project is organized around five core objectives that reflect both the site's specific conditions and the broader planning goals identified through the application of the siting methodology:

- The first objective is the restoration of the *Agro Romano* as a living agricultural landscape, capable of raising awareness of the extraordinary agricultural heritage of the Roman territory among residents and visitors alike. The site's location along the Tiber cycling route makes it a natural destination for a broad and diverse public, and the restoration of its agricultural character would give tangible expression to the multifunctional vision of the *Agro Romano* articulated the national, regional and metropolitan regulatory and planning frameworks.

- The second objective is the creation of a public park offering recreational and educational functions alongside its productive agricultural role, responding directly to the necessity for an accessible open space in which to gather. The park would serve simultaneously as a space for community building and social inclusivity, welcoming participants of all ages and abilities, including elderly residents through community gardening activities and children and teenagers through dedicated educational programs, given the site's proximity to numerous schools in *Municipio IX*.

- The third objective is the promotion of a Civic Food Network, raising awareness of the benefits of locally and organically produced food through the direct relationship between producers and consumers that a community park enables. Furthermore, this network could also include school canteens, supplying them with part of the production.

- The fourth objective is the strengthening of Rome's Ecological Network, protecting and enhancing the biodiversity of the Tiber River corridor through the restoration of a continuous landscape consistent with the ecological connectivity designations of the PRG and the PTPR. This objective would be pursued through the establishment of habitat-enhancing elements including wildflower meadows, hedgerows, beehives to support pollinator populations, and a small woodland buffer between the park and the *Via del Mare* expressway, which would simultaneously serve as a vegetative barrier against pollutants and noise.

- The fifth objective is the creation of a climate shelter – a space capable of mitigating the urban heat island effect – through the combined action of vegetation, water features, and permeable surfaces that together reduce temperatures and improve the microclimate for park users.

In terms of spatial and programmatic content, the park would include a diversity of cultivated areas – encompassing vegetable plots, fruit trees, aromatic and medicinal herbs, and flowering species to support pollinators – alongside areas specifically designed for community gatherings and events. Shading structures would be distributed throughout the park to ensure comfortable outdoor use during the summer months, while elevated vegetable garden beds would ensure accessibility for people with reduced mobility. Beehives would be integrated into the design both for their ecological function and as an educational resource. Picnic and barbecue areas would be provided to encourage informal use and social interaction, reinforcing the park's role as a community gathering space. The feasibility of installing photovoltaic panels – to power irrigation systems, lighting and other park infrastructure, as well as to establish an energy community – would then be assessed during the design phase.

A distinctive and methodologically essential feature of the project would be the involvement of citizens in all phases of its development, from the initial participatory design process, through the establishment of the governance and management arrangements, to the ongoing stewardship of the park's agricultural and naturalistic resources. This participatory approach is not merely a procedural preference but a substantive condition for the park's long-term viability: as demonstrated by the existing UPA experiences analyzed in the preceding chapter, and as theorized through the concept of social infrastructure developed in the theoretical framework, community ownership of a UPA practice is the most reliable predictor of its sustained engagement and operational continuity. The governance model would draw on the collaboration pact and Third Sector partnership instruments established by the 2024 Regulation, ensuring that the community's role in the park is formally recognized and institutionally supported.

Finally, the project envisions a broader planning horizon that extends beyond the immediate boundaries of the community park. As a future development, it would be worth exploring the possibility of a restoration and adaptive reuse project for the abandoned racecourse, contributing to the comprehensive regeneration of the site as a whole. Similarly, the project should be conceived as a component of a larger overarching strategy for the Tiber River corridor within Rome's municipal boundaries; a strategy that, as noted in the methodology chapter, is currently absent from the planning framework but that would be essential for ensuring the long-term ecological and planning coherence of any intervention at this scale.

Conclusions

This thesis set out to develop a place-based siting methodology to support decision-makers in the planning and implementation of urban and peri-urban agriculture in the city of Rome, responding to the persistent gap between the theoretical recognition of UPA as a legitimate and strategically significant urban practice and the absence of operative planning instruments capable of translating this recognition into concrete siting decisions. The research proceeded through a series of interconnected analytical stages whose findings are synthesized here.

The theoretical framework established in the first part of the thesis confirmed that urban and peri-urban agriculture is not merely a way to produce food within urban territories – although food provisioning remains an important element for some practices – but a phenomenon of inherently multifunctional nature, capable of contributing simultaneously to climate mitigation, biodiversity maintenance, recreation, community building, intergenerational exchange, education, urban beautification, physical and mental health improvements, and social inclusivity. This multifunctionality is not incidental but constitutive: it is what makes UPA a planning subject of genuine strategic significance, and what justifies the development of a dedicated siting methodology capable of identifying sites where its full range of functions can be most effectively expressed.

The typological analysis provided a panoramic view of the possible manifestations of UPA, revealing an important pattern with direct implications for the scope of this work: most practices originate from bottom-up initiatives driven by civil society actors, with agricultural parks representing the principal exception. This observation is particularly significant given that the aim of this thesis is to support decision-makers, so the first shift that the methodology posed here seeks to facilitate is precisely the involvement of public institutions as active rather passive actors in UPA governance: communities are fundamental and their role must remain central, but public administration should also play a proactive part in such practices, developing networks of shared knowledge and establishing initiatives that are formally recognized from the very beginning, rather than regularized retroactively after years of informal operation.

The structured literature review on siting criteria provided the analytical foundation necessary for an evidence-based assessment tool, grounding the methodology in a broad and multidisciplinary body of research. The subsequent analysis of each criterion shed light on the complexity of the real-world siting conditions, which then informed the classification of criteria into exclusionary, conditional, and discretionary categories, and the definition of traffic-light matrix intervals. One important limitation emerged from this process: since not all research address UPA through the same typological framework, most siting criteria do not refer to a specific typology in particular. This means that when attempting to establish a correlation between the criteria an typologies, very few siting criteria stand out as clearly typology-specific, limiting the methodology's capacity to produce a clear typological distinction at the site evaluation stage. This limitation will also be discussed further below in relation to the application of the methodology to Tor di Valle.

The differentiation between objectively assessable criteria and discretionary criteria – whose weight depends on the political agenda, institutional priorities, community values or strategic objectives of the evaluating actor – was among the most significant contributions of the theoretical framework.

This differentiation made explicit the power that resides in the hands of those who decide whether and where to establish UPA practices, as their preferences can change the overall assessment of a particular site. Indeed, the methodology is designed to make these choices transparent and accountable rather than concealed within an apparently neutral technical assessment. Moreover, the compilation of the traffic light matrix represented a critical step to move from the theoretical foundation of the siting methodology to the operative evaluation tool, a transition that addresses precisely the main scope of this thesis.

The weighting of criteria through frequency analysis and expert panel consultation added a further layer of methodological rigor, grounding the relative importance of criteria in both the cumulative evidence of the academic literature and the professional judgment of practitioners. The results of the panel yielded an analytically interesting finding: the regulatory and planning framework category received the lowest weight among the four thematic categories, a result that can likely be explained by the long history of bottom-up initiatives in Rome that emerged and thrived without a structured regulatory framework (note that the most operative instruments have been drafted only in the past decade). However, this finding should not be interpreted as a dismissal of the regulatory dimension's importance. Indeed, it should also be noted that other practices have ceased precisely because of the absence of institutional support, so the development of a robust regulatory and planning framework – supported by tools such as the siting methodology proposed in this work – is of paramount importance in the long run, to guarantee security of tenure, continuity of funding, and formal recognition for UPA practices across the city.

The overview of international policy experiences served a dual purpose: it provided a first impression of practical responses to themes and challenges that emerged in the theoretical framework, and it established an international frame of reference that ensures the evaluation tool is transferable to other contexts. Indeed, the methodology would require slight adaptations if transferred to other contexts to better mold to the relevant local conditions. These adaptations would mostly influence the weighing of the criteria, given that experts from different contexts could respond differently to the questionnaire administered during the panel.

The analysis of existing UPA experiences in Rome was a key step in the research process, as it revealed dimensions of UPA that the literature could only partially anticipate. Moreover, the retrospective application of the traffic-light matrix to the selected experiences served as a validation exercise for the assessment tool, testing whether the evaluation of the possible circumstances was correct. Indeed, the retrospective assessment highlighted how conditions that were previously considered as severely constraining can be and have been successfully managed by determined communities, a result that may warrant recalibration in a future refined version of the tool. Although there are some circumstances that still maintain their threshold nature, like hostile weather, adverse land use designation, risk of diseases or severe hydrogeological risk.

The analysis of the regulatory and planning framework confirmed that the importance of UPA is largely legitimized across all levels of governance. However, none of the instruments examined provide concrete indications on how to locate sites for UPA. The closes approximations are the PTPG – which, given its metropolitan scale, identifies only agricultural parks without specifying their perimeters – and the PRG, which allows social urban gardens to occupy 5% of the total surface of areas designated as "public green and local public services" (Comune di Roma, 2008), a provision

too weak and insufficiently operative to constitute a genuine siting tool. The governance model that emerges across all levels is one of response and facilitation – surely – but there is no proactive promotion or plan for the establishment of new UPA initiatives, which reinforces the need for tools such as the siting methodology presented in this work.

The regulatory analysis also uncovered a significant tension between legislative ambition and operative actualization. Furthermore, it highlighted how UPA is almost exclusively framed as a practice oriented toward self-sufficiency and self-consumption, with commercial distribution largely absent from the regulatory imagination. Yet, the experience of *Agricoltura Nuova* demonstrates that the local sale of organically produced food can represent an important source of financial sustainability for UPA practices. Finally, the regulatory analysis also provided insight into the strategic objectives and institutional priorities for the territory of Rome, which proved directly useful for the assessment of discretionary criteria in the application of the methodology to Tor di Valle, and revealed that certain enabling interventions – including preliminary soil and water testing, in addition to the guarantee of grid connections – are already formally assumed as municipal responsibilities under the 2024 Regulation on Community Gardens.

The application of the methodology to Tor di Valle demonstrated that the assessment tool produces analytically meaningful and practically useful results. The site achieved an overall siting score of 0.539, ranking fourth among the six UPA experiences assessed — a result that positions it as a viable candidate for UPA establishment, comparable in its overall conditions to existing experiences that are already operative in Rome. The example of *Agricoltura Nuova* – the lowest-scoring experience, established on a site that faced significant regulatory and tenure challenges at the time of its founding, but that has since become a success UPA practice in Rome – is particularly instructive in this regard: it demonstrates that a lower siting score is not in itself an obstacle to successful UPA establishment, provided that the appropriate enabling interventions are pursued. The score should therefore be read not as a verdict on the site's potential but as a map of the conditions that must be addressed to realize it; and comparative scores should be used primarily to identify which sites to prioritize, and which others require more substantial preparatory work.

The typological assessment for *Tor di Valle* recommended the community park as the most appropriate typology, given the convergence of the site's physical conditions, the longstanding request of neighboring residents for a public gathering space, and the site's potential for multifunctional programming encompassing education, recreation, ecological restoration, and Alternative Food Network development. However, the difficulty encountered in producing a clear typological distinction on the basis of the matrix results alone – a consequence of the limited typological specificity of most siting criteria in the literature – suggests that the typology-criterion associations are more usefully applied in situations where a typology is already broadly identified and the decision-maker seeks to verify its feasibility at a specific site, rather than as a tool for selecting among typologies from scratch. This represents a methodological refinement that future development of the tool should address.

Future perspectives

The research conducted in this thesis opens several directions for future development, both in terms of the refinement of the methodology itself and its application at broader scales.

The most immediate and analytically grounded future development is the fine-tuning of the traffic light matrix drawing from the findings from the retrospective assessment of existing experiences. A revised version of the matrix should re-evaluate some of the conditions previously indicated as "red" (or severely constraining) in light of the empirical evidence gathered from the Roman case studies, progressively calibrating the assessment intervals to better reflect the real-world adaptive capacity of communities and institutions.

A second direction concerns the elaboration of a typology-specific weighing system. As noted in the conclusions above, the current weighting system treats most criteria as equally applicable across typologies, which limits the methodology's capacity to produce typology-differentiated assessments. Future research should develop a set of typology-specific weight sets, on the basis of a more systematically structured review of the typology-criterion associations.

A third direction is the expansion of the expert panel, encompassing a broader range of professional backgrounds, geographic contexts, and institutional affiliations. Moreover, the questionnaire should also be expanded to include comparisons within thematic categories, not only between them; and it could be complemented by a scoring exercise in which respondents assign independent scores to each criterion rather than making pairwise comparisons between categories alone.

A fourth and particularly significant direction is the development of an evaluation framework that considers not only the siting feasibility but also the predicted sustainability of UPA at a specific site. The methodology proposed in this thesis assesses the conditions necessary for UPA to be established; it does not, however, assess the conditions necessary for it to thrive over time – a dimension that encompasses productivity, environmental changes, and financial viability. Further research is needed to develop complementary assessment tools capable of addressing this temporal dimension, drawing on data from existing UPA experiences and on the growing body of research on UPA monitoring and evaluation.

The fifth and most ambitious development is the application of the methodology at a broader territorial scale, first to the entirety of *Municipio IX*, and subsequently to the entire municipal territory of Rome. This would require the systematic application of the criteria across the territory, producing a comprehensive map of candidate sites that could serve as a directly actionable planning tool for decision-makers at *Roma Capitale*. Such a map would represent the most concrete and operationally significant output of the methodology, transforming it from a proof-of-concept demonstration into a fully operative planning instrument. Finally, the methodology should ultimately be put to the test through the design and implementation of actual UPA projects at sites identified through its application.

Rome is, by any measure, a city with an extraordinary agricultural heritage, one that its territory still carries in the form of the *Agro Romano* and the communities that have worked to keep it alive, believing in its value before institutions were ready to recognize it. What is needed now is not more recognition of this heritage, but the planning instruments and institutional commitment to act on it. This thesis offers one such instrument, in the hope that it may contribute – however modestly – to a city in which urban agriculture is not a fragile and contingent phenomenon but a planned, sustainable, and formally recognized component of the urban landscape, one that serves its communities equitably and endures over time

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Annex A: Literature review extraction table (own elaboration)

Citation	Geographic context	Typology addressed	Standardized siting criteria
Alemu M.H., Grebitus C. (2020)	Phoenix, Arizona & Detroit, Michigan	community gardens	low land access cost, proximity to residential area, strong social infrastructure, unmet food system needs, need for urban quality improvement
Al-Johari E.E., Sharaf F.M. (2024)	Amman City, Jordan	*UPA in general*	coherent land use designation, high concentration of vegetation, adequate soil characteristics (components, texture), gentle slopes, access to water resources, accessibility to public transit
Alkhaja N., Alawadi K., Almemari K., Alshehhi G. (2025)	*international*	*UPA in general*	secure land tenure, proximity to residential area, coherent land use designation, access to water resources, adequate soil characteristics, unmet food system needs, need for community development
Artmann M., Specht K., Vávra J., Rommel M. (2021)	*international*	*UPA in general*	accessibility of the area, adequate site size, high visual openness, proximity to distribution channels, strong social infrastructure, secure land tenure
Ashikuzzaman M., Swapan M.S.H., Zaman A.U., Song Y. (2025)	Dhaka city, Bangladesh	rooftop farming	coherent building code, incentive programs, coherent land-use designation (mixed use)
Bayr U., Krøgli S.O., Eiter S. (2025)	Norway	professional farms	proximity to distribution channels, accessibility to public transit, proximity to agricultural retail shops, proximity to other cultivated areas, recreational landscape (e.g. hiking paths), coherent land use designation, high population density
Darly S., Feuillet T., Laforêt C. (2021)	Paris, France	home garden	adequate site size, targeted household income level
Delgado C. (2020)	Portugal	*UPA in general*	overarching strategy, regular fundings, unmet food system needs, strong social infrastructure
Diehl J.A. (2020)	Sydney, Australia	professional farms	strong social infrastructure, rural cultural heritage, proximity to distribution channels, targeted household income level, secure land tenure
Fontalvo-Buelvas J.C., Pulido-Silva M.T., Escalona Aguilar M.Á., Romero Ramírez R. (2025)	Veracruz, Mexico	*UPA in general*	rural cultural heritage, strong social infrastructure, unmet food system needs, adequate soil characteristics (fertility), access to water resources, sunlight availability
Gripper A.B., Nethery R., Cowger T.L., White M., Kawachi I., Adamkiewicz G. (2022)	Philadelphia, Pennsylvania	community gardens	targeted household income level, need for urban quality improvement
Guzman-Molina J., Sannou R.O., Caucci S. (2026)	*international*	*UPA in general*	strong social infrastructure, unmet food system needs, need for water security (through water recycling, water cycle management, and water retention), need for energy security

Houessou M.D., van de Louw M., Sonneveld B.G.J.S. (2020)	Benin	*UPA in general*	secure land tenure, access to water resources, proximity to distribution channels
Huan Y., Nijhuis S., Tillie N. (2025)	Rotterdam, Netherlands	*UPA in general*	accessibility of the area, adequate soil characteristics, high population density, sufficient distance from ecologically sensitive areas (e.g. nature reserves/wetlands/forests)
Johansson J., Roitto M., Steiner B., Alakukku L. (2024)	Finland	zero acreage	accessibility of the area, access to water and electricity resources, strong social infrastructure, multiple stakeholders, need for urban quality improvement, vacant land
Kafle A., Hopeward J., Myers B. (2022)	Adelaide, Australia & Kathmandu Valley, Nepal	*UPA in general*	vacant land (for economic viability), adequate site size
Kanosvamhira T.P., Musasa T., Mupepi O. (2025)	Cape Town, South Africa	*UPA in general*	adequate soil characteristics, adequate precipitation level, gentle slopes (for water retention), sufficient distance from ecologically sensitive areas (e.g. surface water), adequate temperatures, proximity to distribution channels, vacant land, coherent land use designation
Kil S.-H., Park H.-M., Park M., Kim Y.I., Lee E. (2023)	Seoul, South Korea	rooftop greenhouses	low land access cost, proximity to distribution channels, high population density, sunlight availability, coherent land use designation
Kingsley J., Foenander E., Bailey A. (2019)	Melbourne, Australia	community gardens	need for urban quality improvement, lack of urban green
Kirnbauer M.C., Baetz B.W. (2012)	City of Hamilton, Ontario	*UPA in general*	sunlight availability, high population density, proximity to vulnerable populations, proximity to distribution channels, coherent land use designation
Kishimoto K., Yan W. (2023)	Tokyo, Japan	allotment gardens	vacant land, coherent land use designation (mixed agricultural and residential), low urbanization pressure, high population density, higher percentage of young people
Koopmans M.E., Keech D., Sovová L., Reed M. (2017)	Brno, Czech Republic & Ghent, Belgium & Bristol, UK	*UPA in general*	adequate soil characteristics (high agricultural soil quality), brownfields, accessibility of the area, secure land tenure, strong social infrastructure, coherent land use designation
Langemeyer J., Gervasi G., Caballé S.V., Mendez G.V. (2026)	Metropolitan Area of Barcelona, Spain	*UPA in general*	low urbanization pressure, sufficient distance from ecologically sensitive areas

Lee S., Shin S., Lee H., Park M.S. (2023)	*international*	*UPA in general*	adequate soil characteristics, low urbanization pressure, access to water resources, proximity to agricultural retail shops, proximity to distribution channels, presence of pollinators, absence of hydrogeological risk, adequate precipitation level, incentive programs, coherent land use designation, secure land tenure
Li J. (2023)	Fuzhou, China	*UPA in general*	absence of hydrogeological risk, adequate temperature, gentle slope, adequate precipitation level, high population density, targeted household income level, low land access cost, accessibility of the area
López-estébanez N., Yacamán-ochoa C., Mata-olmo R. (2022)	Metropolitan Region of Madrid, Spain	*UPA in general*	low urbanization pressure, proximity to distribution channels
Mack E.A., Tong D., Credit K. (2017)	Phoenix, Arizona	community gardens	unmet food system needs, vacant land, adequate site size, adequate soil characteristics
Mancini M.C., Arfini F., Antonioli F., Guareschi M. (2021)	Reggio Emilia, Italy	"edible" park	accessibility of the area, strong social infrastructure, coherent land use designation (not dormitory area), vacant land
Manente V., Caputo S., Lupia F., Pulighe G., Hernández-Garcia J. (2025)	Bogotá, Colombia	*UPA in general*	gentle slope, access to water resources, brownfields, vacant land, coherent land use designation (e.g. public parks), accessibility of the area, accessibility to public transit, proximity to public services, need for urban quality improvement
Maseko Z.T.M. (2026)	Esikhaleni Township, South Africa	*UPA in general*	access to water resources, proximity to residential area, vacant land, unmet food system needs
Morán-Alonso N., Viedma-Guiard A., Simón-Rojo M., Córdoba-Hernández R. (2025)	Madrid, Spain	*UPA in general*	adequate temperature, adequate precipitation level, gentle slope, adequate soil charactersitics, access to water resources, absence of hydrogeological risk, coherent land use designation
Naazie G.K., Agyemang I., Tampah-Naah A.M. (2024)	Ghana	*UPA in general*	access to water resources, adequate soil characteristics, proximity to distribution channels, adequate precipitation level, adequate temperature, sunlight availability
Newell J.P., Foster A., Borgman M., Meerow S. (2022)	Detroit, Michigan	*UPA in general*	(to maximize ES) lack of urban green, unmet food system needs, vacant land
Pace Ricci J.M., Conrad E. (2018)	Malta	community gardens	accessibility of the area, adequate soil characteristics, access to water resources, gentle slopes, proximity to residential area, accessibility to public transit

Pencharz P., Verburg P., Chopin P. (2026)	Europe	*UPA in general*	proximity to residential area, proximity to other urban green spaces, low land access cost, high population density, coherent land use designation (few industrial sites)
Rahimi E., Jung C. (2024)	*international*	*UPA in general*	adequate precipitation level, adequate temperature, adequate soil characteristics, gentle slope, sunlight availability, presence of pollinators
Richter I., Neef N.E., Moghayedi A., Owoade F.M., Kapanji-Kakoma K., Sheena F., Ewon K. (2025)	Nigeria and South Africa and Zambia	*UPA in general*	lack of job opportunities, unmet food system needs, area not subject to risk of diseases
Rojas-Pardo L., Pilarova T., Ibrahim K., Van Damme P., Verner V. (2026)	Bogotá, Colombia	home garden	targeted household income level, need for urban quality improvement
Ruggeri G., Mazzocchi C., Corsi S. (2016)	Milano, Italy	*UPA in general*	vacant land, accessibility of the area, proximity to public services, access to water resources, enough distance from pollutant sources, adequate soil characteristics, targeted household income level
Sardeshpande M., Bangira T., Azong Cho M., Matongera T.N., Mabhaudhi T. (2025)	Durban, South Africa	peri-urban agroforestr	gentle slope, adequate soil characteristics, vacant land, secure land tenure, enough distance from pollutant sources, access to water resources, accessibility of the area, proximity to distribution channels, adequate site size, proximity to residential areas
Sonneveld B.G.J.S., Houessou M.D., van den Boom G.J.M., Aoudji A. (2021)	Benin	community gardens	adequate soil characteristics, proximity to other cultivated areas, sufficient distance from ecologically sensitive areas, proximity to residential areas, high population density, accessibility of the area, access to water resource, secure land tenure, coherent land use designation
Sylla M., Hagemann N., Szewrański S. (2020)	Wroclaw, Poland	*UPA in general*	adequate soil characteristics, adequate precipitation level, adequate temperature, sunlight availability, low urbanization pressure, sufficient distance from ecologically sensitive areas
Thapa B., Banerjee A., Wilson J., Hamlin S. (2021)	City of Indianapolis, Indiana	*UPA in general*	vacant land, targeted household income level, accessibility of the area, unmet food system needs, low education rate, unmet food system needs, high population density
Wang X., Zhang X. (2023)	Qingdao, China	rooftop farming	gentle slopes, absence of strong winds, enough load capacity, sunlight availability, absence of historical or protected buildings, accessibility of the area, access to water and electricity resources
Yap C. (2019)	Sevilla, Spain	community gardens	rural cultural heritage, vacant land, strong social infrastructure