Urban and Valuation Aspects of an Illegal Neighborhood: The Case of Campo Sorbo in Ancient Capua

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Abstract. Unplanned urbanization and illegal settlements have, for many years, represented one of the most complex challenges for local administrations in Italy, and they are at the center of strong interest from urban planners. Beyond the legal aspects, these phenomena are seen as sources of territorial disorder and urban imbalance (de Biase, Losco, 2023, p.3). The paper describes sustainable solutions for the regeneration of the settelments illegally built and is divided into five sections, beginning with the definition and quantification of illegal settlements worldwide and in Italy. The extent of this type of settlement highlights the centrality of the issue within the broader challenges of urban regeneration across the globe. Particular focus is placed on the Italian context, examining the regulatory and planning framework in place in the country and in the Campania region. With deep roots in the history of our country, building and urban planning violations have affected numerous municipalities, where entire neighborhoods have sprung up spontaneously and often outside the bounds of legality. The South of Italy, in particular, experiences a state of distress that touches on various aspects, and looking to the future in an effort to improve this condition holds significant meaning, especially at the local level. The social and economic factors driving the expansion of illegal settlements are deeply rooted in the dynamics of exclusion and vulnerability that characterize many areas of Italy. These settlements often arise without building permits, in contexts lacking urban planning and control, and develop without access to essential infrastructures, such as connections to the water supply, sewage systems, and energy services. The focus is on a neighborhood that developed illegally within a municipality in the province of Caserta, an area notably affected by this type of phenomenon. The neighborhood, Campo Sorbo, located in the municipality of Santa Maria Capua Vetere, is analyzed both in terms of urban planning tools and the illegal evolution of its settlements. Campo Sorbo's construction began to take shape in the early 1980s and has since evolved into a true urban settlement. However, it lacks the necessary infrastructure and services, creating a context of marginalization and hardship for its residents.

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The last two sections are aimed at the analysis, classification, and design of both the illegal settlements and the agricultural context in which the neighborhood is located. The analyzed neighborhood, like most illegally established neighborhoods, shows a series of characteristics common to this type of area: there is a lack of efficiency in the urban service network, which requires innovation and improvement; there are issues related to the protection of landscapes, historical heritage, and protected natural areas, which are often poorly managed; there is outdated infrastructure that needs upgrading; and finally, the problem of illegal construction still persists, with unclear procedures for the regularization of unauthorized settlements, even in protected areas. Being aware of these challenges is essential in order to demand and design new solutions. These solutions must be incorporated into municipal urban planning policies to effectively address future challenges and improve the overall situation. (Forte, 2012, p. 17). The project currently being developed as part of the urban planning policies of the municipal administration is set within a broader context of recovery and redevelopment. It includes the implementation of primary urban infrastructure—a fundamental step toward integrating the area into the official urban fabric and improving the living conditions of residents, who have so far been disadvantaged by the absence of essential services such as a water supply system, sewage network, and access to electricity. This study aims to propose comprehensive regeneration strategies by exploring the phenomenon of illegal construction through a detailed analysis of the neighborhood, with particular attention to the urban planning policies adopted by the municipal administration. The goal is to outline a methodological approach that takes into account the ongoing social and urban transformations.

Keywords: Informal settlemets · Illegal settlemets · Multi-criteria evaluation.

1 Illegal Settlments

According to the *World Urbanization Prospects: The 2018 Revision* report published by the United Nations, in 2018, 55% of the world's population lived in urban areas, marking a significant increase from 30% in 1950. Projections indicate that by 2050, this share will reach 68%, highlighting a globally growing trend of urbanization. However, levels of urbanization vary significantly across different regions. The most urbanized areas include North America (82%), Latin America and the Caribbean (81%), Europe (74%), and Oceania (68%). In contrast, Asia and Africa have lower urbanization rates, around 50% and 43% respectively, with Africa remaining the least urbanized region globally (United Nation, 2018). Europe is characterized as a continent in continuous expansion, although there is a prevalence of unplanned urban development, particularly in Eastern and Southern Europe, where informal settlements and illegally constructed buildings—often built without proper permits or in violation of building regulations—are common (Forte, 2015, pp. 153–164).

These critical issues have been widely acknowledged at both international and national levels, leading to the inclusion of urban challenges within sustainable development programs, such as the United Nations' 2030 Agenda and the New Urban Agenda promoted by UN-Habitat. In these contexts, the concept of urban sustainability is interpreted broadly, as outlined by Allen and You (2002), who propose a multidimensional

vision based on five interconnected pillars: economic, social, ecological, physical, and political sustainability (Allen, You, 2002). Particularly relevant is the dimension of physical sustainability, or the sustainability of the built environment, which refers to the ability of urban interventions to improve the livability and functionality of buildings and infrastructure for the entire population, while avoiding negative impacts on the surrounding natural environment. This dimension also includes consideration of the efficiency and resilience of the built environment in supporting local economic development. Although informal settlements and illegal housing are part of the built environment, they represent a dysfunctional and often precarious form of it. Their definition varies depending on the legal, regulatory, and cultural contexts of the countries where the phenomenon occurs. According to the definition provided by UN-Habitat, informal settlements are residential areas where a group of housing units has been constructed on land to which the occupants have no legal claim, or which they occupy illegally or without planning, as well as areas where the dwellings do not comply with current urban planning and building regulations (UN-Habitat, 2015, p.3). According to UN-Habitat's latest report, in 2024, 24.8% of the world's population lives in informal settlements. (https://data.unhabitat.org/pages/housing-slums-and-informal-settlements).

The difference between informal settlements and illegal (or unauthorized) settlements lies primarily in the political approach, as both are illegal phenomena but differ significantly in terms of the ownership of the land on which they are built. Some informal settlements, such as slums, are often located on public land (clearings, buffer zones, etc.) or land expropriated from private owners, while illegal settlements are almost always built on privately owned land, either purchased or directly occupied by builders or the inhabitants themselves. This distinction highlights the issue of public land management and the fight against illegality. The problem of informal settlements, together with the dynamics of illegal construction, has a strong territorial impact with significant effects on both individual and collective well-being (urban sustainability, quality of life, safety, etc.).

In Italy, according to the BES – Equitable and Sustainable Well-Being report (ISTAT, 2022), illegal building constitutes a marginal practice in the northern regions, while it assumes significantly greater relevance in the rest of the country, particularly in the South and in the Islands. In fact, in these areas, the incidence of illegal building is particularly high: 42.1 illegal dwellings are recorded for every 100 authorized in the South and 36.3 in the Islands. The analysis highlights a net increase in illegal dwellings equal to 9.1%, a figure not seen since 2004, and this growth could indicate a possible link between the post-pandemic recovery of residential construction and the expansion of illegal building, suggesting a new phase in the spread of this structural issue, caused by the lack of urban plans and/or the absence of building permits. The Campania Region is the one where the greatest spread of this phenomenon has been recorded (after the Basilicata and Calabria Regions). In fact, it is estimated that the share of illegal building is almost equal to half of those legally built. The provinces in Campania most affected by this issue are: Naples and Caserta, with many small and medium-sized municipalities that have lost their administrative boundaries, while peri-urban areas are frequently transformed for urban uses by landowners, without any official building permit or license. In line with what happens in other European countries, also in Italy the current legislation provides a

plurality of approaches to tackle the problem of illegal settlements, namely: the repressive one, which involves the demolition of illegally built structures; the mitigative one, that is, the confiscation of illegal buildings and their regeneration through a detailed urban plan; and finally, the comprehensive one, which provides for regularization based on the payment of a monetary penalty to obtain a "retroactive building permit" (Forte, 2014, pp. 600–606). The comprehensive approach should be implemented especially in territories like that of Caserta, where the phenomenon affects entire peri-urban areas beyond municipal boundaries, and where residential settlements are characterized by low construction quality, lack of public services, and absence of minimum urban planning standards (de Biase, Forte, De Paola, 2019, pp. 264–271). Of particular concern are the figures provided by the 3rd Report by Legambiente on illegal building, which states that in the province of Caserta, 887 demolition orders for illegal buildings were issued between 2004 and 2022, but only 116 were actually carried out (Legambiente, 2023).

2 Illegal Settlements in Italy

In Italian language dictionaries, the term *abuso* (abuse) is defined as an "excessive, unlawful, or arbitrary use," meaning the improper use of something, often to the detriment of others. In an urban context, the expression *abusivismo edilizio* (illegal building), in common language, refers to the practice of arbitrarily carrying out an activity that is regulated by legal norms (Devoto, Oli, 1966, p.372); It takes shape in the actions of many citizens who carry out construction works in the absence of, or in violation of, existing regulations. The issue of illegal building is highly relevant today, though it does not have recent origins, and it directly or indirectly concerns the protection of Italy's environmental and cultural heritage, quality of life, and citizen safety. The phenomenon may involve "the treatment of a building structure—the single illegal house, the individual eyesore, which has always been too central to the debate and inevitably destined to trigger paralyzing oppositions—to the territorial project in its many dimensions. A territory that has been affected by illegal construction and, as a result, urbanized in a disorderly way, poorly provided with infrastructure, polluted in soil and water, and depleted of its environmental resources" (Curci, Formato, Zanfi, 2017).

Although it is a term that entered the public imagination following the landslide and building chaos in Agrigento in 1966—when the Girgenti hill collapsed under the weight of speculation—it was actually in Fascist-era Rome that illegal construction began to take shape. In 1931, Rome approved a city plan that envisioned an enormous size of 14,500 hectares, and Article 14 of the technical implementation regulations explicitly stated that subdivisions outside the boundaries of the master plan were prohibited unless authorized by the governing authority. This, combined with the regime's official policy against urban migration, the introduction of laws prohibiting Italian emigration abroad or to other municipalities in the Kingdom, and unclear technical regulations, led to the "natural" emergence of entire residential settlements outside the official urban plan boundaries, creating new footholds for further city expansion. When the new city plan was approved in 1965, urban restructuring zones were established precisely to account for illegal construction. It was found that such violations (44 urban areas) occupied about 3,800 hectares and housed over 200,000 people. But after World War II, with the

beginning of the Italian economic boom, the massive migration toward the capital, and the total absence of public policies to regulate it, another 84 illegal boroughs (*borgate*) sprang up. This led to the emergence of the so-called "abuse out of necessity," aimed at solving the housing problems of many workers, who often took part in the construction of illegal housing themselves (Berdini, 2010, pp. 17–29). It was in the wake of the aforementioned collapse—caused by the construction of 8,500 units in violation of planning regulations—that many scholars of the time began to take an interest in the phenomenon, and some political efforts were made to slow its growth and transformation. One of the most determined was the Christian Democrat Fiorentino Sullo, who proposed allowing local authorities to expropriate, in advance, all buildable areas included in urban plans. His reform proposal was the only attempt to counter speculation, but due to the opposition from property owners, Sullo was sidelined within both the government and his own party.

Even though Article 26 of the fundamental law then in force—Law 1150 of 1942—provided for the suspension or demolition of works built without a construction license or in violation of it, these measures were not systematically applied. Therefore, a different solution had to be found, and in March 1985, under Prime Minister Bettino Craxi and Public Works Minister Giovanni Prandini, Law No. 47/85 was passed by Parliament. This marked the first national legislative approach to the issue of illegal building. Before being a law of amnesty and regularization, it represented an attempt at reforming the regulation of urban violations. It made it possible to legalize buildings constructed up until October 1, 1983 (de Biase, Losco, 2023, p.107); more than 4 million applications for regularization were submitted across Italy. The building violations that occurred after the 1985 amnesty then provided ample material for further legalizations, and Laws No. 724/1994 and No. 326/2003 were passed, allowing for the regularization of additional abuses. These laws effectively reversed the goal of combating illegal building (Berdini, 2010, pp. 40–41). From the "natural" illegality of the Fascist era to the "necessity-driven" illegal construction of the economic boom years, up to the outright real estate speculation of today, the phenomenon has taken on increasingly uncontrollable dimensions and influence. It has attracted the interests of criminals, opportunists, and politicians of every party, all at the expense of citizens' well-being and the livability of urban spaces.

Regarding the third building amnesty, provided for by Law No. 326/2003, the Campania Region, then led by President Antonio Bassolino, decided not to implement it. The Regional Council, through a resolution dated September 30, 2003, introduced an absolute ban on the regularization of building violations, establishing that it was not possible to legalize construction works carried out without the necessary permits or in violation of urban planning instruments. However, the Constitutional Court, with ruling No. 199 of 2004, annulled the Region's act, considering it to be in conflict with the constitutional powers of the State. The Campania Region responded with a new Regional Law, No. 10 of 2004, which further restricted the scope of the building amnesty, but this law was also declared unconstitutional by the Constitutional Court in 2006. In the meantime, the deadlines to apply for the amnesty had already expired, and many citizens of Campania were unable to take advantage of the regularization. To this day, the situation of illegal

construction in Campania remains high, partly due to these regulatory obstacles. However, Regional Law 16/2004[1], in Article 23, paragraphs 3, 5, and 7, it sets out important provisions concerning illegal settlements, with the aim of regulating and planning the recovery of such areas, in particular:

> *"3. The Urban Municipal Plan (PUC) identifies the boundaries of unauthorized settlements existing as of December 31, 1993, subject to amnesty pursuant to Law No. 47 of February 28, 1985 (chapters IV and V), and Law No. 724 of December 23, 1994 (article 39), with the purpose of:*
>
> *a) Implementing adequate primary and secondary urban infrastructure;*
>
> *b) Respecting historical, artistic, archaeological, landscape-environmental, and hydrogeological interests;*
>
> *c) Achieving rational territorial and urban integration of these settlements.*
>
> *5. The Urban Municipal Plan (PUC) may condition the implementation of urban and building rehabilitation interventions for unauthorized settlements, delineated pursuant to paragraph 3, on the drafting of specific Urban Implementation Plans (PUA), known as Recovery Plans for Unauthorized Settlements, whose preparation procedure follows the provisions outlined by the implementing regulation referred to in article 43-bis.*
>
> *7. The Urban Municipal Plan (PUC) defines the procedures for urban and building rehabilitation of unauthorized settlements, the mandatory redevelopment interventions, and the related implementation procedures, including coercive measures, also through the establishment of building compartments as provided for in Article 33".*

The delimitation of illegal settlements, although not defined by law in terms of specific criteria, aims to plan projects that ensure proper urbanization, while respecting historical, artistic, archaeological, landscape, and hydrogeological aspects. It also seeks to allow for the rational integration of these settlements into the territory and into urban planning. This approach represents a significant cultural shift, as it acknowledges that illegal construction is not solely a matter of building violations, but also involves urban transformations that must be integrated into the general planning of the PUC (Municipal Urban Plan) and the PUA (Implementation Urban Plan). In this way, the category of *urbanistic illegality* is introduced. If illegal construction is limited to a single building violation, it can be dealt with separately; however, when illegality becomes the norm for territorial expansion, the issue must be addressed at the urban planning level. In such cases, the PRIA (Plan for the Redevelopment of Illegal Settlements) is the regional tool

[1] *With the recent amendment to Regional Law 16/2004 (Law 5/2024), these actions are confirmed in Article 22, paragraph 2-ter, letters m, n, o, q, as follows:*m) In paragraphs 3, 5, and 7, the word "PUC" is replaced with the word "PSU"; n) In paragraph 3, the phrases "abusivi esistenti al 31 dicembre 1993 e oggetto di sanatoria" and "ai sensi della legge 28 febbraio 1985, n. 47, capi IV e V, e ai sensi della legge 23 dicembre 1994, n. 724, articolo 39" are deleted; *o) In paragraph 5, after the words "recupero urbanistico ed edilizio degli insediamenti," the word "abusivi" is deleted; q) In paragraph 7, the word "abusivi" is replaced with the following: "di cui al comma 3".*

required to redevelop the area and the building stock, and to obtain the necessary titles for amnesty (de Biase, Losco, 2023, p.157).

3 Campo Sorbo in Santa Maria Capua Vetere (CE)

This contribution investigates a case study located in Santa Maria Capua Vetere, an Italian municipality in the province of Caserta, in the Campania region, with a population of 32,113. As part of the development of the PTCP (Provincial Territorial Coordination Plan) of Caserta, approved by Provincial Council Resolution No. 26 on April 26, 2012, the issue of illegal construction was examined in relation to its territorial significance. The spontaneous and uncontrolled growth of these settlements is at the root of the extremely low urban quality in the main urban agglomerations of the province. Moreover, this growth has almost always occurred at the expense of land with strong agricultural and rural value, and in some cases, it has compromised ancient and highly valuable crops, typical of the local agricultural landscape. The investigation into illegal construction was carried out through a cartographic analysis of the urban planning of existing settlements, represented in Table B5.2 *Settled Territory. Settlement Types*, extended to the entire province. This document classifies the existing urban fabrics to date into the following categories: historic urban fabric, non-residential urban fabric, recent urban fabric developed in the presence of a Master Plan (PRG), and recent urban fabric developed in the absence of PRG (PTCP Report, 2012, pp. 233–234) (Fig. 1).

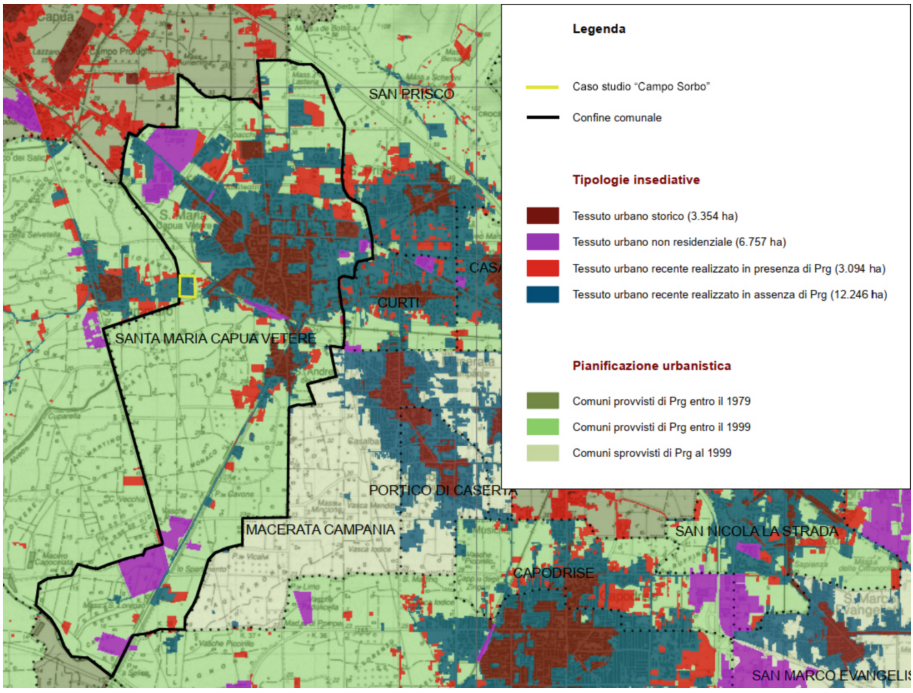

Fig. 1. Zoom on the case study of Table B5.2.2 of the PTCP

The phenomenon of illegal construction in the city of Santa Maria Capua Vetere is characterized by a fragmented distribution across the entire territory. There have been no notable cases of speculative nature; however, many applications for building amnesty were submitted for violations and the construction of small structures, extensions, and changes of use. To gain an indicative understanding of the phenomenon within the municipal area, it is possible to aggregate some recent indicators related to the spontaneous emergence of illegal construction, particularly during the periods of the building amnesty laws (Law 47/85; Law 724/94; Law 326/2003).

Analyzing the applications submitted, we observe that under the first law, Law No. 47/85—which covers a relatively long time span—the number of submitted applications was 1,176, of which 160 were still unresolved as of 2017. For the subsequent amnesties (Law 724/94 and Law 326/03), which cover a nine-year period, the number of applications submitted under Law 724/94 was 420, with 63 still unresolved as of 2017; while for Law 326/03, the number of applications submitted was 132, of which 49 remained unresolved as of 2017. From this analysis, it appears there has been a reduction in the number of applications, and consequently, a considerable decrease in the number of violations committed. In particular, data from the applications show that over 80% refer to violations for residential use, with various types of abuse identified—from very rare cases of new construction to more frequent cases of additions (such as the construction of verandas, upward extensions, enlargements with new rooms), and changes in building use. (Report PUC SMCV, 2023, pp. 115–116).

Table 1. Data on building amnesties Source: Strategic Document Report, Municipal Urban Planning Plan of Santa Maria Capua Vetere, May 2023.

CONDONI EDILIZI – REGULARIZATION OF UNAUTHORIZED CONSTRUCTIONS	
DOMANDE DI CONDONO L. 47/85 (Periodo dal 1942 al 1985)	1176
DOMANDE DI CONDONO L. 47/85 (Periodo dal 1942 al 1985)	420
DOMANDE DI CONDONO L. 47/85 (Periodo dal 1942 al 1985)	132
TOTALE	**1728**

This article aims to analyze the case of "Campo Sorbo," an illegal neighborhood that emerged in the early 1980s in the territory of Santa Maria Capua Vetere. Starting from the current satellite view (Fig. 2), a retrospective analysis was carried out to trace the evolution of the neighborhood, comparing it with the most recent date available from the National Geoportal, which goes back to 1988 (Fig. 3), and we will note that the situation was already present in that year.



Fig. 2. Google Earth View 2025

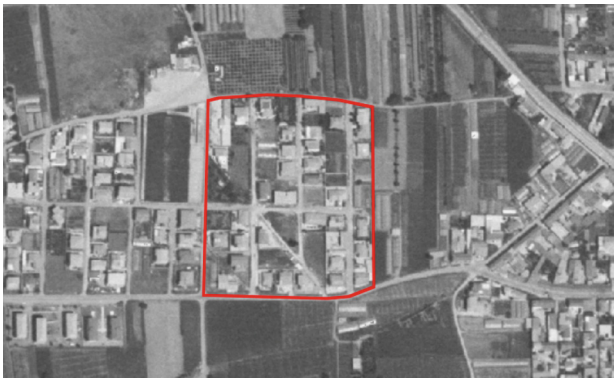

Fig. 3. National Geoportal 1988

Even in the aerial photogrammetry by the Military Geographic Institute dating back to 1984 (Fig. 4), the situation is clear: a built-up neighborhood already exists.

But the old General Master Plan from 1983 (Fig. 5) classified the area under examination as a "Zone C4," that is, new development expansion areas; according to the Technical Implementation Standards of the Master Plan: *"In these areas, any intervention is conditional upon a prior detailed implementation plan or subdivision plan approved through a regional agreement. The minimum area required for such a plan is 8,000 square meters, or the total area of the entire subzone if it is less than 8,000 square meters. This implementation plan shall identify and specify facilities and urbanization works according to the percentage quotas established in the plan's table, in compliance with applicable standards."*

We find it particularly striking that, at the time of the drafting of the 1983 Master Plan, no official buildings were recorded, this could indicate that, during the period in which the municipality lacked urban planning regulations, there was a widespread phenomenon of settlement construction without proper authorization, a hypothesis that seems even more plausible in light of the high number of amnesty applications submitted in 1985. This

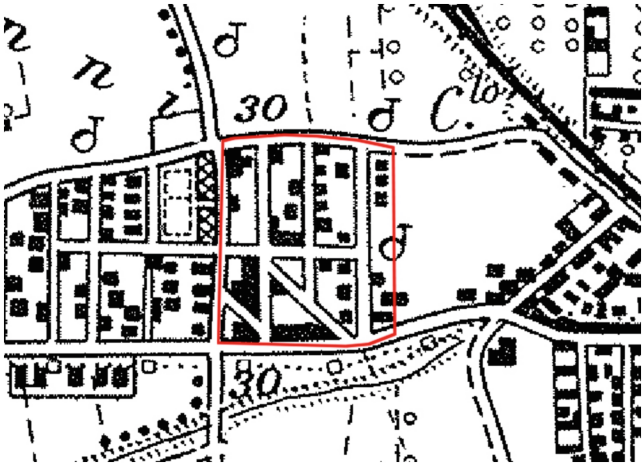

Fig. 4. Programmatic topographic map, IGM 1984

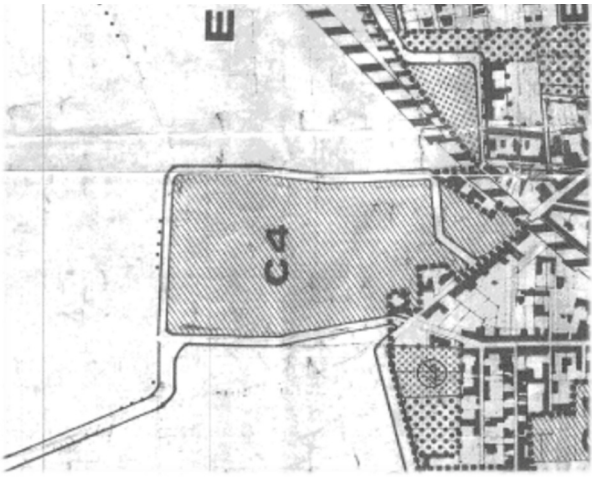

Fig. 5. Zoning map, PRG 1983

prompted us to deepen our analysis by searching for aerial photographs predating 1983. We considered those made available by the National Cartographic Portal which, although not very clear due to a 1:26,000 scale, still allow us to clearly identify the beginning of the neighborhood's development. The 1954 aerial image (Fig. 6) shows no signs of urbanization, while in 1974 (Fig. 7), the road layout begins to emerge, indicating the first signs of unauthorized urban development, accompanied by a few scattered dwellings. It is in the 1981 photo (Fig. 8), however, that the construction of new illegal buildings becomes evident; from this last frame, it is estimated that the built-up land represents about 80% of the currently urbanized area.

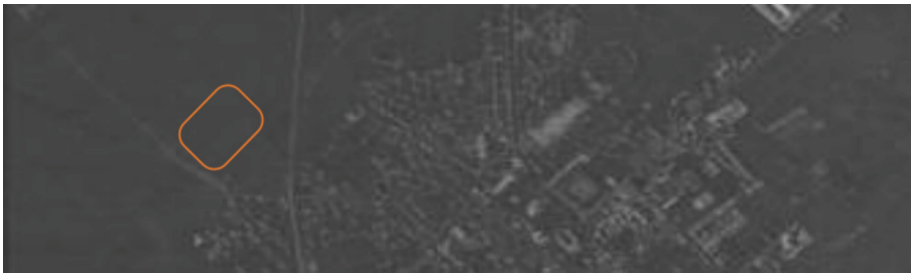

Fig. 6. Aerial view, National Cartographic Geoportal, 1954

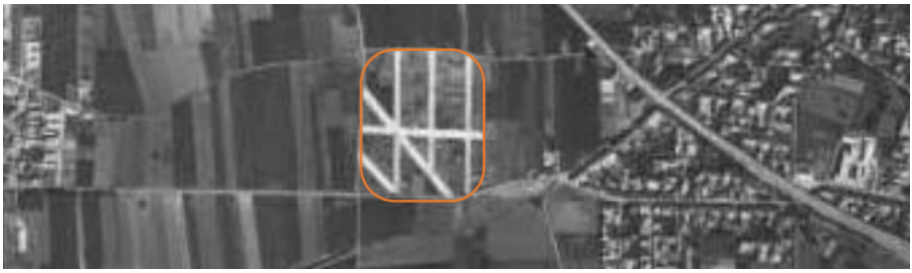

Fig. 7. Aerial view, National Cartographic Geoportal, 1974



Fig. 8. Aerial view, National Cartographic Geoportal, 1981

We can therefore create an accurate mapping of the development of the settlements within the neighborhood (Fig. 9), which allows for a more detailed and comprehensive view of the formal and functional evolution of the various spaces, thus offering a clearer understanding of the urban dynamics and ongoing transformations.

The settlement is located in a peripheral area of the municipality of Santa Maria Capua Vetere, to the west of the historic center. It is bordered by the SP20 road, the boundary with the municipality of San Tammaro, and a railway viaduct. As can be seen from the aerial photogrammetry, in relation to the general urban context, the area is situated in a marginal position with respect to the city's development—both in terms of road connections and building density. It covers a surface area of 50,000 square meters, divided into 56 lots inhabited by 57 households (approximately 200 people).



Fig. 9. Development of the settlements

It includes 36 residential structures (13 single-story single-family homes, 6 multi-story single-family homes, 4 single-story two-family homes, 9 multi-story two-family homes, and 4 multi-story multi-family buildings), 17 undeveloped plots of land, 2 structures used as warehouses, and 1 structure used exclusively for commercial purposes. In the analysis of the current state, an assessment was carried out of the primary[2] and secondary[3] urban infrastructure present in the area, which reveals a situation of absolute deficiency. For the primary urban infrastructure, the situation is as follows: the road network consists solely of dirt tracks, often uneven, and in some sections, bituminous material has been laid. However, this intervention, promoted by the residents, is inconsistent and ineffective, as it lacks an organized project. There is a significant safety hazard for internal circulation

[2] Primary urbanization works are defined (Art. 4, Law of September 29, 1964, no. 847) as follows: Roads serving settlements, including connections to the main road network of building plots; Spaces necessary for stopping and parking vehicles, in relation to settlement characteristics; Pipelines suitable for the collection and discharge of wastewater (black water) and their connections to the main urban network, including wastewater treatment plants; Water network, consisting of pipelines for the distribution of potable water and related works for abstraction, lifting, and accessories, as well as the necessary connection pipelines to the main urban network; Network for the supply and distribution of electricity for domestic and industrial uses, including secondary substations; Domestic fuel gas network and related connection pipelines; Telephone network, including telephone exchanges serving buildings; Public lighting, including networks and systems for illuminating public areas and streets open to public use; Equipped green spaces, areas serving individual buildings maintained as green spaces with trees and possible facilities.

[3] Secondary urbanization works are defined (Art. 44, Law no. 865/1971 and subsequent amendments) as follows: Nurseries; Kindergartens; Compulsory schools; Neighborhood markets; Municipal buildings; Churches and other religious buildings; Neighborhood sports facilities; Social centers and cultural and health facilities; Neighborhood green areas; for which Ministerial Decree 1444/1968 specifies the minimum standards to be respected to ensure the entire population a minimum endowment of urban standards.

within the area and for the safety of residents. Access to the external road network is not regulated by appropriate signage, nor are pedestrian pathways defined, while both horizontal and vertical signage is completely absent. There are no designated parking or stopping areas, and vehicles are left in various places, along the roadside and in front of gates and pedestrian entrances. The public sewer system is non-existent, and each housing unit is equipped with an Imhoff tank for wastewater disposal. There are no drainage works along the road to manage rainwater, which stagnates along the roadway, making it impassable for many months of the year. There are no connections to the main urban network nor to any water treatment facilities.

The potable water supply network is absent, and each housing unit has a well for water procurement. As for the electricity network, it has been granted by the national electricity provider, but along the formerly unauthorized subdivision, there are long, thick cables running on old wooden poles. There is no public lighting network, and street lighting relies on a few scattered spotlights installed by the residents, which do not provide regular or sufficient lighting for the entire area. Furthermore, there is no equipped green space; the road network is also used as a play area for children, a walking path for the elderly, and a refuge for domestic and stray dogs. Moreover, no secondary urban infrastructure has ever been built: for nurseries, kindergartens, and compulsory schools, residents must travel to the historic center of Santa Maria Capua Vetere (1.5–2 km away). For neighborhood markets, they must go either to the market area of the municipality of Santa Maria Capua Vetere (3 km) or to the market area of the municipality of San Tammaro (2 km). The municipal offices of Santa Maria Capua Vetere are located in the "Tribunal area" (1.5 km away). Churches, as well as sports facilities and cultural centers, are mostly located toward the center of Santa Maria Capua Vetere or, alternatively, in the direction of San Tammaro. In the area under consideration, there are no commercial activities, not even for the sale of essential daily goods. There is only a bakery-pizzeria and a car wash. Currently, the area is in a state of degradation due to the lack of essential urban infrastructure, and these deficiencies negatively affect the quality of life in the neighborhood. They contribute to situations of housing and social hardship and limit the functionality of public spaces, making the area deficient in its ability to serve as a place for community gathering and socialization. This also has direct consequences on the surrounding landscape, both in terms of environmental quality and usability of open spaces. Not surprisingly, given the current state of affairs, the municipal administration has included this area within the "Urban Redevelopment Zones" in the Municipal Urban Plan, approved by Municipal Council Resolution No. 126 of December 30, 2023 (Fig. 10), for which Article 63 of the Technical Implementation Standards (NTA) of the current PUC explicitly states:

1. The homogeneous zone identified as "Urban Redevelopment Areas," except as provided by the following article, defines two parts of the city, "Campo Sorbo" and "Cappuccini," characterized by urbanization phenomena requiring detailed implementation planning.

2. In this homogeneous zone, the Urban Municipal Plan (PUC) pursues the following objectives:

- Improving comfort, safety, and quality of the existing urban fabric;

- Enhancing accessibility and internal connections;

- Strengthening the tree-planting system to improve the environmental and landscape quality of the area and, where appropriate, to mitigate the impact of built-up areas.

3. The implementation of interventions in this homogeneous zone is contingent upon the execution of a Recovery Plan, which must first verify the urban legitimacy of existing buildings, and subsequently carry out urban redevelopment that integrates standard areas, suitable road systems, etc., all in compliance with current national and regional legislation. Properties that cannot be regularized according to Article 23, paragraph 6 of Regional Law 16/04 are excluded from the boundaries of the Recovery Plans.

4. The Recovery Plan aims to:

- Integrate and upgrade primary and secondary urbanization works;

- Define the permissible uses and categories of intervention for each existing building;

- Respect historical, artistic, archaeological, landscape, environmental, and hydrographic interests;

- Achieve rational territorial and urban integration of settlements.

5. The Recovery Plan involves identifying standard areas within the perimeter of the plan, designated for equipped green spaces, parking areas, and facilities of common interest.

6. The objective of the Recovery Plan is to outline actions and interventions aimed at the conservation, rehabilitation, and urban reorganization of the settlement, in order to enhance the livability of the area.

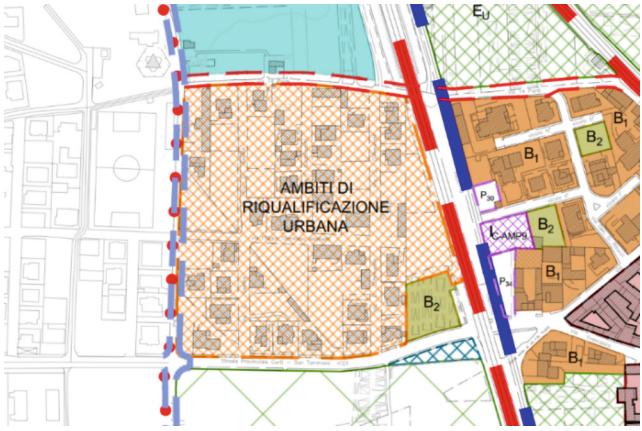

Fig. 10. Stralcio della Zonizzazione del PUC, 2023

7. Regarding the "Cappuccini" Recovery Plan, provisions will be made, in agreement with the Superintendence, for the protection, conservation, and enhancement of archaeological findings identified in the archaeological report.

8. On existing buildings within the areas described in this article, pending approval of the Urban Implementation Plans (PUA), ordinary and extraordinary maintenance interventions are permitted, as well as changes in intended use, exclusively within those allowed in the ATO D2 zone, subject to verification of compliance with urban standards pursuant to Article 5 of Ministerial Decree 1444/68.

4 Land-Use Classification for Urban Agriculture

The neighborhood is still located today in a peri-urban area, surrounded by a vast portion of agricultural land that represents a fundamental resource for the sustainability and development of the area. For this reason, it is extremely important to conduct in-depth studies on the surrounding agricultural territory, in order to promote its improvement and enhancement. Such interventions have also been included in the guidelines of the Provincial Territorial Coordination Plan (PTCP), which promote urban agriculture and the protection of agricultural spaces in the peri-urban fringe, emphasizing the importance of a rational use of these resources and their integration with urban development (PTCP, 2012, p. 125).

To systematically assess the agricultural land within the study area, a land-use-based classification was developed to categorize different land typologies based on their current function and potential for urban agriculture. This classification framework was designed to address the specific challenges of informal urban expansion into agricultural zones while maintaining a focus on the feasibility of reintegrating agricultural activities into the urban fabric. The classification consists of four primary categories: Active Agricultural Land, Abandoned/Degraded Agricultural Land, Mixed-Use Land (Urban-Agricultural Interface), and Built-Up Areas (Encroached Land). These categories were established based on a synthesis of existing urban agriculture and land-use planning literature (FAO, 2007; Simon et al., 2006; Zasada, 2011) and were adapted to suit the localized conditions of a neighbourhood-scale study, where land-use transitions are highly dynamic.The rationale for this classification is twofold. First, it enables a detailed assessment of the study area's agricultural potential by distinguishing between actively cultivated land, deteriorated but recoverable land, and areas where urban expansion has significantly altered the landscape. Second, it serves as a decision-making framework for identifying appropriate urban agriculture interventions, ensuring that recommendations align with each land category's physical and environmental characteristics (see Table 1). Active Agricultural Land consists of plots currently under cultivation, offering the highest potential for agricultural reinforcement or community-led farming initiatives. Abandoned or Degraded Agricultural Land includes areas where farming has ceased, requiring rehabilitation efforts such as soil restoration or improved irrigation. Mixed-Use Land refers to transitional spaces where informal construction coexists with pockets of agricultural activity, presenting opportunities for integrating small-scale urban agriculture through community gardens or agroforestry. Built-Up Areas encompass land fully converted into informal housing, where agricultural interventions would require alternative approaches like rooftop gardening or vertical farming (Zasada, 2011) (Table 3).

Table 2. Classification of the lands with characteristics Source:Author (2025)

Category	Description	Key Characteristics
Active Agricultural Land	Land currently used for farming or food production	Cultivated plots, presence of crops, orchards, or small farms
Abandoned/Degraded Agricultural Land	Previously used for agriculture but now underutilized or degraded	Unmaintained soil, signs of erosion, lack of recent cultivation
Mixed-Use Land (Urban-Agricultural Interface)	Areas where informal settlements and agriculture coexist	Scattered farming within built-up areas, fragmented land use
Built-Up Areas (Encroached Land)	Former agricultural land that is now occupied by illegal/informal buildings	Dense informal housing, little or no open green space

Table 3. Land Suitability classification Source:Author (2025)

UAPI Range	Potential Level	Criteria Considered	Recommended Applications
0.0–0.4	Low Potential	Land availability < 10%, population density < 2,000 people/km^2, road density < 1 km/km^2	Container gardening, vertical farming, microgreens, educational programs, indoor farming
0.4–0.7	Moderate Potential	Land availability 10–30%, population density 2,000 - 5,000 people/km^2, road density 1–3 km/km^2	Community gardens, rooftop farming, small-scale aquaponics, urban orchards, edible landscaping
0.7–1.0	High Potential	Land availability > 30%, population density > 5,000 people/km^2, road density > 3 km/km^2	Large-scale urban farms, agroparks, greenhouses, farm-to-table programs, urban agroforestry

The map (Fig. 11) illustrates the land-use-based classification of the study area. As shown, the Built-Up Areas (Encroached Land) are concentrated in the center of an agricultural zone, leading to further fragmentation of agricultural land. This encroachment reduces the availability of cultivable land, directly threatening local and regional food production (Seto et al., 2011). The expansion of built-up areas into agricultural zones also alters the ecological balance of landscapes, particularly by replacing active agricultural lands (Foley et al., 2005). The transformation of these areas into unplanned urban settlements contributes to soil degradation, habitat fragmentation, and the loss of essential ecosystem services, such as water regulation and soil fertility (Lambin & Meyfroidt, 2011). These impacts are also evident in the category of Abandoned/Degraded

Agricultural Land, where former agricultural plots have deteriorated due to urban pressure and environmental degradation. In the pattern of the built-up area, we observe the presence of unused agricultural interfaces, which are classified as Mixed-Use Land. These areas can be designated for small-scale urban agriculture to benefit the community, thereby integrating built-up spaces with agricultural functions such as agrihoods that integrate agriculture into residential neighborhoods, facilitating food production and preserving green spaces, thereby maintaining the agricultural identity within urban developments(Sangroniz, A. P.,2024).This approach preserves the original use of these areas while maintaining continuity with the agricultural identity of Active Agricultural Land.



Fig. 11. The map of the land use based classification Source:Author (2025)

4.1 Determining Land Suitability Through the Multi-criteria Evaluation (MCE)

This study applies a multi-criteria evaluation (MCE) approach to assess land suitability for urban agriculture, following established frameworks in spatial decision-making (Carver, 1991; Malczewski, 1999; FAO, 2007). The criteria considered include land availability, population density, and road density, which are commonly used indicators in land suitability studies (Chen et al., 2010; Pramanik, 2016). Suitability is classified based on a normalized score ranging from 0.0 to 1.0, with three levels of potential: Low (0.0–0.4), Moderate (0.4–0.7), and High (0.7–1.0) see (Table 2).

The classification thresholds were determined by adapting criteria ranges from urban agriculture and land-use planning studies (FAO, 2007; Pramanik, 2016). Land availability is categorized as low if vacant land is less than 10%, moderate between 10–30%, and high above 30% (Pramanik, 2016). Population density is considered low below 2,000 people/km^2, moderate between 2,000–5,000 people/km^2, and high above 5,000 people/km^2, following urban land-use classifications by the FAO (2007) and United Nations-Habitat (2013). Road density, a key factor for agricultural accessibility, is classified as low below 1 km/km^2, moderate between 1–3 km/km^2, and high above 3 km/km^2, based on urban transport planning studies (Chen et al., 2010; Geurs & van Wee, 2004).

Based on this classification, different urban agriculture strategies are recommended. Low-potential areas (0.0–0.4), characterized by low land availability, sparse population, and weak road networks, are suited for vertical farming, indoor agriculture, and educational programs. Moderate-potential areas (0.4–0.7), where land availability and accessibility are relatively balanced, are ideal for community gardens, rooftop farming, and small-scale aquaponics. High-potential areas (0.7–1.0), which feature abundant land, high population density, and strong road networks, are optimal for large-scale urban farms, agro-parks, greenhouses, and farm-to-table initiatives. This classification aligns with existing urban agriculture studies, ensuring a practical and context-sensitive approach to land reuse (Pramanik, 2016; FAO, 2007).

5 Neighborhood Redevelopment Proposals

"With Determination No. 413 of 10/08/2022 – General Registry No. 1131 of 10/08/2022, the Municipal Administration intends to carry out a market survey for the awarding of a contract concerning THE SOCIAL AND CULTURAL REDEVELOPMENT PLAN FOR DEGRADED URBAN AREAS REFERRED TO IN ART. 1, PARAGRAPHS 431 AND FOLLOWING, OF LAW NO. 190 OF DECEMBER 23, 2014 – REDEVELOPMENT AND RECOVERY PROJECT: 'CAMPO SORBO', with the aim of identifying, in compliance with the principles of non-discrimination, equal treatment, proportionality, transparency, and rotation, the economic operators to be invited to a subsequent negotiated procedure pursuant to Art. 63 of Legislative Decree 50/2016, without prior publication of a call for tenders, in accordance with Art. 1, paragraph 2, letter B) of Decree Law 76/2020, converted into Law No. 120/2020 and subsequently amended by Art. 51 of Decree Law 77/2021, converted into Law No. 108/2021." (https://comune.santa-maria-capua-vetere.ce.it/it/news/1380096) The main objective is to redevelop this area and integrate it into the existing residential context by adding infrastructure and services that can benefit the entire community. The idea is to promote a use of the land that is both sustainable and respectful, aiming to reduce phenomena of social and cultural marginalization, and to prevent the deterioration of buildings, which should be considered not only as part of the landscape but also as safe and healthy places to live.

The goal is for this area to be not only functional for its residents but also to become an integral and shared part of the entire municipal territory. In this regard, the Administration has already initiated works to implement the necessary primary urban infrastructure, and to continue in this direction, this contribution aims to provide guidance developed by the authors, together with students and graduates from the Department of Architecture

and Industrial Design, located in Aversa (CE), at the University of Campania "Luigi Vanvitelli," which are part of the ARPAE[4] project funded by the Campania Region in 2023.

First Design Proposal

As part of a recovery strategy, having assessed the needs and expectations of users, the potential of the area, and the resilience capacity of a context lacking organized urban space, design proposals were developed to support the interventions already planned by the administration.

The first project was developed with the aim of reversing the relationship between pedestrian space and vehicular space by reorganizing the hierarchy of traffic flows through a functionally efficient and flexible distribution of the road section. The transformation process of the internal road network within the area envisions a shared public space, equally accessible to a wide range of users (pedestrians, people with disabilities, children, the elderly, residents and non-residents).

A one-way traffic loop was proposed, characterized by neighborhood streets designed to connect different parts of the settlement. This category specifically includes roads intended to serve, through appropriate complementary road elements, the main urban neighborhood settlements (services, facilities, etc.). All types of traffic are allowed, including the parking of private vehicles, provided it is organized within designated areas, evenly distributed, and equipped with dedicated maneuvering lanes. For direct service to residential settlements, two local roads were designed. These are reserved exclusively for the use of residents of the respective streets: one is two-way, ending in a roundabout to facilitate turning, while the other is one-way.

Several existing vehicular roads have been removed and replaced with pedestrian paths, which are part of a green and eco-sustainable design plan (Figs. 12 and 13).

Indeed, in an era where the environmental emergency has reached such a critical level, it is appropriate to envision a strong alternative strategy, represented by the extensive use of green areas capable of providing real healing for environmental degradation. This kind of remedy, combined with the introduction of urban agriculture, the recovery of rainwater, the use of renewable energy sources, and energy savings, could truly bring about the creation of a new urban ecosystem and represent a real opportunity for the sustainable development of the city. An "urban reforestation," therefore, becomes the guiding design concept. In line with this logic, a "green lung" has been designed at the center of the settlement, within which different areas have been envisioned based on the functionality they are intended to serve. In a composition alternating between shades of greenery, bodies of water, and paved zones, the residential buildings are meant to blend with facilities for sports, social interaction (for both youth and adults), and cultural and educational activities. These structures, in the authors' vision, are to be designed as symbols of the neighborhood's rebirth. For this reason, they will feature an architecture that breaks from the existing built environment, characterized by curved and sinuous

[4] The project "Public Residential Architecture between Naples and Caserta" (ARPAE), funded by the Campania Region in 2023, is coordinated by the Department of Architecture and Industrial Design of the University of Campania "Luigi Vanvitelli." The project aims to study and map public urban areas that have significantly influenced territorial transformation and the history of contemporary architecture, with the goal of promoting their enhancement and regeneration.

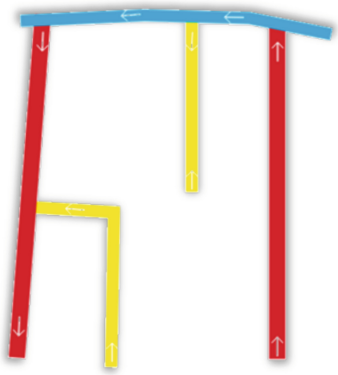

Fig. 12. Hypothesis of vehicular mobility and parking

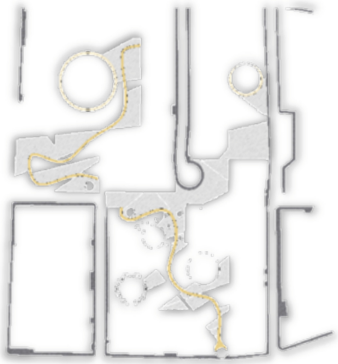

Fig. 13. Hypothesis of pedestrian mobility

lines in contrast with the linearity of the current buildings. This plan involves not only the design and reclamation of existing green areas but also the use of greenery as a true architectural element, both horizontally and vertically. It is a vision that merges new architectural construction with green spaces into a single concept of an urban eco-park. The starting point is the idea of covering and reconnecting the housing units, which are defined by spontaneous, unregulated architecture due to their illegal origins. As a unifying element among the heterogeneous components, a wall structure has been envisioned, taking on various functions and forms depending on its location. It becomes a bench in pedestrian areas, a storage space in residential zones, and a space for technological networks; stylistically, it takes on different colors—some sections tiled, others green, and others left plain white (Figs. 14 and 15).



Fig. 14. Hypothesis of equipped public green spaces for sports

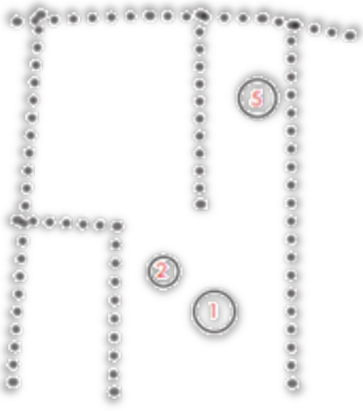

Fig. 15. Hypothesis of common interest facilities

An additional element of sustainable development is the idea of innovative zero-kilometer agriculture, made possible through the introduction of urban gardens, distributed in specially reclaimed areas or even on rooftop gardens of the new architectural structures. The availability of the water needed for both greenery and agriculture can be ensured by the creation of distributed water basins of various sizes, capable of hosting a wide range of biodiversity. Given these design elements, a drastic reduction in the "urban heat island" phenomenon is expected—a condition that creates a microclimate several degrees warmer within urban areas compared to surrounding peripheral zones. Grass surfaces and plants, in fact, provide protection not only from solar radiation but also from extreme temperature fluctuations, helping to ensure an ideal microclimate and resulting in energy savings. The principle of environmental sustainability involves exploring alternatives to traditional construction technologies, envisioning new structures made of load-bearing glulam (glued laminated timber), now a viable option even for multi-story buildings, and the widespread use of green roofs, offering enormous environmental benefits, improved living comfort, and a strong visual impact on the urban landscape. The public lighting system will also be designed with cost and pollution reduction in mind, relying on modern technology powered by a photovoltaic panel system capable of meeting the entire area's public energy needs (Fig. 16).



Fig. 16. Masterplan first design proposal Produced by the graduate student: Michele Iannotta

The current state, therefore, presents a condition of total neglect and degradation, failing to meet the minimum requirements for livability. From this need for transformation, the thesis topic focuses on the proposal of a recovery plan based on ecological sustainability, aiming to provide the area with at least the minimum urban planning standards. The proposed recovery plan aims to achieve these standards by equipping the area

with a 450 m^2 compulsory school, 600 m^2 of facilities for common use, 1,800 m^2 of equipped green spaces, and 1,900 m^2 of public parking areas. Subsequently, from the estimated cost analysis, it is determined that the implementation of the urban redevelopment interventions in the area will require an approximate expenditure of €2,800,000.00.

Second Design Proposal

The second proposal concerns the urban regeneration project of abandoned and degraded green areas near Campo Sorbo, with the aim of revitalizing these spaces, responding to the needs of the community, and promoting connection between the two neighboring municipalities. The planned actions focus on the integration of new public spaces, the adoption of eco-sustainable solutions, and the creation of new services, in order to reduce degradation and improve the quality of life for residents. The site includes several abandoned areas, including the one beneath the railway, which represents one of the key critical points to be redeveloped. The choice to intervene specifically in this area stems from the need to enhance a marginal yet strategic space with the potential to become a gathering point. The project aims to address the site's critical issues through a series of targeted interventions, with the goal of restoring vitality and functionality to the entire area. The introduction of new plants and trees will help improve environmental quality, increase biodiversity, and create a favorable microclimate. To ensure sustainable and efficient lighting, solutions using renewable energy sources—such as solar panels to power public lighting—are planned. New playgrounds, areas for sports equipment, and spaces for social events will be created to meet community needs. New urban furniture, such as benches, waste bins, and decorative elements, will be installed to make the area more welcoming and functional. The currently abandoned area will be cleaned and transformed into a space useful to the community, with the addition of playgrounds and sports facilities. To support this transformation, eco-sustainable parking lots will also be built, featuring permeable surfaces and green solutions. A new sports complex will be built, including two padel courts, a basketball court, and two tennis courts, adjacent to the area that already hosts an 11-a-side football field. Additionally, new locker rooms and bleachers will be constructed to encourage public participation. The new urban parks will be designed to ensure soil permeability, avoiding overloading the sewer system and improving rainwater management. New pedestrian and bicycle paths will be created to promote sustainable mobility and improve connections between the different areas of the project. To further enhance connectivity between the designed areas, new rows of trees will be planted along the main access roads (Fig. 17).

Produced by the students in the course of Methods and Tools of Urban Planning, academic year 2023/24: Crescenzo Maisto, Francesco Mancino, Francesco Giovanni Pezone, Carmine Sgariglia, Zeynep SarikanMasterplan seconda ipotesi progettuale.

In general terms, the project has the potential to serve as a link between the municipalities of Santa Maria Capua Vetere and San Tammaro, promoting integration and connection between these two areas. The sustainable approach and the enhancement of the surrounding environment will contribute to making the area a point of reference for the entire community. It therefore represents a key opportunity to restore vitality and usability to a peripheral area that has long suffered from the lack of adequate services and infrastructure. Through targeted interventions focused on redevelopment and



Fig. 17. Masterplan second design proposal

sustainability, the area will be transformed into a hub for social, cultural, and sports activities, capable of strengthening the ties between the two communities and promoting a greener, more inclusive model of urban development.

Brief Concluding Reflections

Through the integration of these projects, it would be possible to address the various challenges of the neighborhood in a coordinated and synergistic way, such as the recovery of public spaces, building redevelopment, environmental sustainability, and the creation of new opportunities for the community. Moreover, a comprehensive regeneration program would allow for the maximization of available resources and ensure a long-term positive impact, transforming the neighborhood into a model of innovation, inclusiveness, and sustainability.

Attributions

Introduction C.DB.; Paragraph 1 D.M.; Paragraph 2 A.N.; Paragraph 3 C.DB.; Paragraph 4 Z.R.; Paragraph 5 A.N.,; Brief Concluding Reflections C.DB., A.N., Z.R., D.M.

Disclosure of Interests. The authors declare no conflict of interest.

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