FROM QUANTITATIVE TO QUALITATIVE SERVICES: HOW TO PROMOTE INTEGRATED PLANNING FOR THE REVISION OF THE SERVICE PLAN OF MANTUA, MUNICIPALITY IN ITALY

DOI: 10.26341/issn.2241-4010-2025-11a-6-K02179

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Abstract
Traditionally, Italian municipalities assessed public services through metric measurements regulated by decrees establishing urban planning standards, since 1968.
However, in the 21st century, a paradigm shift occurred, moving from a quantitative to a qualitative approach in planning, focusing on service quality, citizen well-being, and urban sustainability. This change was formalized by regional laws that introduced plans like Service Plans and promoted experiments for more sustainable and resilient cities.

During the pandemic it was highlighted the need to reassess the urban complexity of cities to better meet community needs. In this context, "proximity" emerged as a key strategy to create dynamic cities with diversified functions and services accessible to all. This shift in urban planning calls for municipalities to revise their planning tools using a holistic, multidisciplinary approach, ensuring more responsive cities to evolve into social and environmental challenges.

In this regard, the Municipality of Mantua initiated a revision process with our operational contribution for the PGT, its urban planning tool, experimenting with three iterative intervention methods:

1. *Re-reading the availability of proximity services and facilities in Mantua through critical analysis and the creation of multi-characteristic sheets to map their distribution across the territory, which is currently fragmented.*
2. *Re-defining the traditional subdivision of the territory into administrative units, transforming them into "urban proximity systems", autonomous and heterogeneous units with distinct identities and public services.*
3. *Re-thinking an urban strategy that organizes the territory along two main spines: one urban, fostering interactions between functions and services, and one natural, integrating the landscape through green connections.*

This experimental initiative demonstrates how an integrated planning approach can foster a polycentric urban vision, enhancing quality of life and the environment in line with sustainability and resilience principles.

Key words: *integrated planning, qualitative services, community needs, sustainable approach,* proximity urban strategy

1. From quantitative measures to qualitative services: the transformation within Italian Urban law

The transition from quantitative services, defined in the territory through urban planning standards, to qualitative services, which emphasize aspects related to quality of life, is a complex process that over the years has required a thorough revision of the regulatory and

legislative framework of our country, as well as a cultural and managerial shift in territorial governance by the local authorities.

In this long process of regulatory evolution, this paper aims to identify and highlight only some of the urban planning laws that have helped guide the development, growth, and planning of the territory towards a new paradigm, one increasingly focused on the qualitative rather than the quantitative aspects of services. Below, it is possible to observe how urban planning has had to address various needs over the years and translate them into regulations, some of which are still used to govern territorial discipline.

Indeed, although urban planning was already regulated by a series of laws that had addressed the issue of planning the built city and its expansion, it was the National Urban Planning Law No. 1150 of 17 August, 1942, one of the longest-standing in the view of national legislation, that marked a turning point in the approach to this discipline in Italy, as it introduced, for the first time, an organic planning of cities. Its purpose was to guide and coordinate the urban planning activities of each territory, as well as the development and layout of built-up areas. Furthermore, it aimed to ensure an urban order that would meet the needs of industrial development, while also creating a healthier and more functional urban environment, by establishing the rules for the city's expansion (Mazzeo & Calenda, 2011).

The approval of the National Urban Planning Law thus introduced the possibility for all municipalities to adopt a PRG (General Regulatory Plan), making it a requirement only for a limited number of them. This instrument defined the physical and functional structure of the entire territory and included functional zoning, infrastructure networks, and various areas for the development of public facilities. The law, therefore, laid the foundation for a potential rational governance of the territory and the management of its construction activities.

However, this law did not achieve the expected impact, as the wartime events delayed its implementation for at least a decade. The damage caused by the war became progressively evident, and the need to rebuild the war-damaged settlements led to the introduction of new regulations for the reconstruction of cities.

It was only towards the second half of the 1960s, following several catastrophic events such as the landslide in Agrigento, the floods in Florence, and the exceptional high tide in Venice, that the debate on the severity of the urban and building situation in urban centres was revived. The need for an urban planning reform aimed at "rebalancing" the development of cities, which had until that point grown predominantly according to quantitative criteria, became evident.

Awaiting a necessary reform of the National Urban Planning Law, Law No. 765 of September 1, 1967, was approved. This law modified the important law of 1942, with the aim of limiting construction in municipalities lacking urban planning tools, such as the PRG, while encouraging the development of plans for territorial regulation. The most important innovation of this law was the introduction of the definition of "urban planning standards" that is, the determination of the minimum amounts of public or publicly accessible spaces, expressed in square meters per inhabitant, that must be reserved in planning documents (Law 765/1967).

Subsequently, these standards were defined in quantitative terms by Interministerial Decree No. 1444 of April 4, 1968, which implemented the measures outlined in Law No. 765/1967. They were set at a minimum of 18 m² per inhabitant for residential settlements, distributed as follows: 9 m² for public green spaces, 4.5 m² for education, 2.5 m² for parking, and 2 m² for facilities of common interest. Moreover, the decree addressed the need, considering the simultaneous requirement for municipalities to adopt a General Regulatory Plan, to manage urban growth while ensuring a balanced relationship between private and public settlements. To this end, it introduced the six "homogeneous territorial zones," which

divide the territory for the regulation and monitoring of the application of urban planning standards, defining different building regulations for each of them (DM 1444/1968).

The unified path of Italian urban planning legislation, which had been very clear up to that point, ended in the 1970s when it was decided to apply the constitutional provision that assigned administrative and legislative competence in urban planning matters to the Regions, rather than exclusively to the State, within the framework of the principles of national legislation. This transfer of urban planning competences from the State to the Regions is highlighted by Presidential Decree No. 616 of July 24, 1977. This decree led to a gradual fragmentation and regulatory divergence within our country, as the Regions began to diversify their urban planning policies for territorial regulation. This transitional period represents the emergence of an increasing autonomy of the Regions in managing urban planning policies, in response to new development needs and a renewed approach to planning (DPR 616/1977).

The first significant and evident break between national and regional legislation occurred between 1990 and 2001, when the experiments of these years, in addition to diverging from the indications of national legislation, clearly showed a lack of a system of rules shared by all. This process of regulatory differentiation undergoes further acceleration in 2001, when the constitutional reform of Title V was approved through Constitutional Law No. 3 of October 10, 2001, which further modifies and complicates the relationships between local and central administrations (Mazzeo & Calenda, 2011).

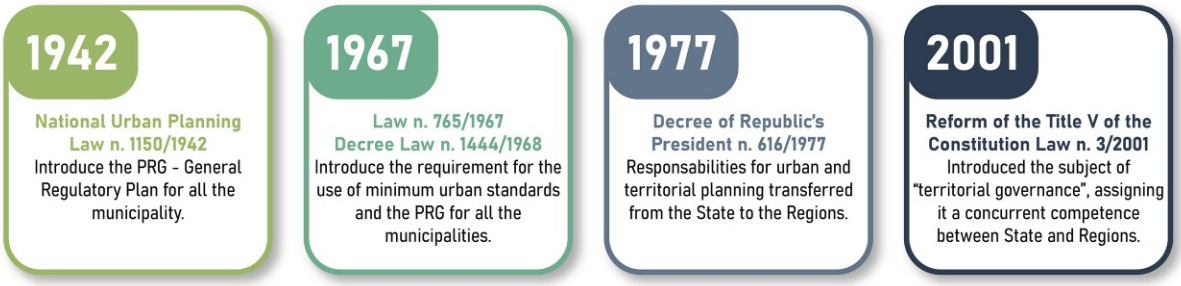
In this reform, "Territorial Governance", which includes urban planning regulations, is inserted among the subjects of "concurrent legislation" between the Region and the State. The definition of territorial governance encompasses everything related to land use and the location of facilities or activities, falling under the concurrent legislative authority of regions with ordinary statutes. Thus, it includes not only urban planning and construction but also other aspects of territorial management (Barbieri, 2023). With the introduction of the concept of "Territorial Governance," it is argued that territory becomes the reference point for regulation aimed at satisfying differentiated interests that cannot be encompassed within the traditional land use regulations specific to urban planning. The field of territorial governance relates to the regulation of land uses, as does the original urban planning, but it "expands the perspective" to include various public interests that deserve special care and protection, which fall within different areas and fields of regulation (Urbani, 2015).

Starting from this concept of territory, in 2005, Parliament had reached a unified draft of urban planning reform that, if approved, could have become the main guiding regulation for the entire country. In this draft, the definition of Territorial Governance was as follows: “A set of activities related to knowledge, evaluation, regulation, planning, localization, and implementation of interventions, as well as supervision and control, aimed at pursuing the protection and enhancement of the territory, regulating its uses and transformations, and managing mobility in relation to territorial development objectives” (Mazzeo & Calenda, 2011).

This reform of Title V resulted in a paradigm shift in the history of urban planning: whereas before the regulations focused on quantitative parameters and predefined urban planning standards that determined the physical and spatial distribution across the territory, with the introduction of the concept of "Government of the Territory", planning is now seen as a process that seeks to sustainably manage territorial development. It also focuses on the creation of sustainable, accessible, and inclusive urban spaces, improving the well-being and quality of life of citizens. Defining high-quality public services, shifting the focus from the quantity specified in Interministerial Decree No. 1444/1968, represents a necessity to address and meet the needs of citizens, develop social cohesion, foster a sense of security and belonging to the local community, and ultimately enhance the legitimacy and effectiveness of public action within a constantly evolving context (see Figure 1).

Although the first generation of regional laws only raised the quantitative threshold set by Interministerial Decree No. 1444/1968, a new phase of legislation began that attempted to translate territorial governance into regional legislation, without the creation of a new National Law for all the territory.

Figure 1: The evolution of the Italian Urban Law. Source: Author



1.1 The evolution of Urban Law in Lombardy Region

As previously highlighted, following the revision of Title V of the Constitution, a phase began in 2001 marked by the introduction of a series of new regional laws incorporating the term "Government of the Territory" in their titles. The principles underlying these regulations are unified in intention, yet they are structured and organized in different ways. This variation arises from the absence, in the previous years, of a reform to the National Urban Planning Law, particularly regarding the general and common provisions related to territorial governance. This lack of reform limited effective coordination between the various Regions. This is evident in the fact that each Region replaced the previous PRG (General Regulatory Plan) with a new planning tool at different times, which took on various names.

Under the same definition, therefore, a series of different tools have been generated, revealing a substantial dichotomy between the regions still rooted in the traditional urban planning of the National Urban Planning Law No. 1150/1942, and the regions that have instead followed the reformist model of recent years (Mantini, 2015).

In this change of direction, a significant path is that of the Lombardy Region, which, as early as 2001, approved a Regional Law (No. 1 of January 15, 2001) that introduced, for the first time, the document of the Service Plan as a mandatory component of the General Regulatory Plan, for the implementation of a concrete public service policy. This plan represents the tool of transition from quantitative standards to qualitative criteria, enabling the maintenance and development of society and community. In this regard, urban standards have been rethought, shifting to a more coherent and integrated public service plan for the city, assessed in terms of its actual feasibility. The objective was not only to meet demand in quantitative terms, but also to serve the territory qualitatively by providing services that enhance urban quality and sustainability (Regional Law 1/2001). The Lombardy Region, therefore, is a region that immediately understands the need for this shift in paradigm from quantitative to qualitative and incorporates this provision into the Service Plan, as well as into the reform of the "Government of the Territory" for territorial development.

Subsequently, Regional Law No. 12 of March 11, 2005, "Law for the Government of the Territory," in implementation of Article 117 of the Constitution, defines the regulations for territorial governance in Lombardy, specifying the forms and methods of exercising the competences assigned to the Region and local authorities. It also emphasizes the importance for municipalities to adopt a Service Plan. With this law, indeed, the Region promotes the objectives of reducing land consumption, urban and territorial regeneration, and

environmental sustainability within urban planning tools, with reference to the conservation of territorial, environmental, and energy resources. This law also introduces several important changes to urban planning regulations:

- It regulates the "Service Plan" as one of the three fundamental documents that must make up the PGT, the Territorial Governance Plan;
- It abolished the previous regional regulations, marking the definitive shift from a "quantitative" approach to a "qualitative" one.

The Territorial Governance Plan (PGT) represents the evolving planning tool of the General Regulatory Plan, serving the same function of enabling municipalities to define the urban planning of their territory. The PGT is structured into three main documents:

- The Plan Document;
- The Service Plan;
- The Rules Plan.

The Plan Document defines a reference framework for the economic and social development of the territory, as well as a knowledge framework of the municipal territory, reflecting the transformations that have occurred. It identifies the objectives for development, improvement, and conservation that hold strategic value for territorial policy.

The Service Plan, on the other hand, is included as a necessary document to ensure a comprehensive provision of areas for public facilities and public interest, potential areas for public housing and green spaces, ecological corridors, and the green system connecting rural and built-up areas, as well as between road infrastructure and urbanized areas. It also ensures a rational distribution of these areas across the municipal territory, supporting the functions established and planned. Through the Service Plan, to meet the needs expressed by the users of services across the entire territory, it is possible to prioritize the evaluation of the facilities serving the functions established in the municipal area, also considering factors of quality, usability, and accessibility. In cases of identified insufficiency or inadequacy of these facilities, the plan assesses the need for development and integration of existing services and outlines the implementation methods.

The Rules Plan, finally, defines within the entire municipal territory the areas of consolidated urban settlement, regulates land use, and identifies the areas and buildings subject to higher-level protections. It thus establishes the regulatory aspects and quality elements of the built and consolidated city (Regional Law 12/2005).

Although these urban planning laws had been approved years earlier, it is only with the beginning of the second decade that Lombardy began to focus on a more integrated and strategic management of the territory, starting with the drafting of the first "Territorial Governance Plans", which replaced the previous urban planning tools. These plans were approved for all municipalities in Lombardy, establishing rules for urban and territorial planning, with a focus on issues such as quality of life, environment, mobility, energy efficiency, land and service management. It should be noted that the reason of this change was also linked to the increasingly evident need to respond to progressively complex challenges, such as urban growth, climate change, and the controlled management of resources and land.

The PGT, from the beginning, has been recognized as a tool capable of governing the complex phenomena occurring in the territory, also responding to new urban needs. However, more than 20 years after the approval of the law, a revision and redefinition of the issues and needs are now required, as the urban challenges faced by contemporary cities have highlighted numerous criticalities, vulnerabilities, and fragilities within the territories, revealing the real need for a rethink in terms of inclusion, sustainability, and resilience.

Therefore, this reconsideration can promote an alternative vision of the city, one that is more effective and capable of renewing and enhancing its role within a constantly evolving

context. Such transformation must be governed through urban planning tools capable of connecting traditional policies with innovative actions and paradigms that find expression in already tested forms, such as sustainability, resilience, proximity, and various potential strategies for urban regeneration. Many municipal administrations, in response to these new urban needs and a renewed interest in urban planning, have begun working towards improving their urban planning tools by initiating a series of collaborations to revise their urban planning instruments, starting with the themes and issues that must be addressed to reassess the urban complexity of contemporary cities.

2. The new needs of contemporary cities into urban planning tools

Cities were originally designed to foster community life, relationships, economic growth, and innovation (Carta, 2019). They were cities of proximity, where services were easily accessible for everyone near their houses. However, as cities developed in the 21st century with increasingly functional territorial divisions, the idea of a "human-scale" city was replaced by the "city of distances." Manzini (2021) claims that cities in the last century were designed for efficiency and specialization, requiring people to move between functional zones, creating continuous mobility. This model, dominant in 20th century urban planning, began facing crises by the century's end due to environmental pollution, traffic congestion, reduced quality of life, and citizens' detachment from their communities. Events like the pandemic and other challenges have intensified these issues, prompting a deeper reflection on the limitations of this model for future urban planning. The two years marked by the pandemic, indeed, acted as an accelerator of the effects induced by multiple global crises (energy, economic-financial, environmental, and climate) that affected countries around the world in different ways, but created similar conditions of risk and uncertainty. The extensive and profound consequences that began to be observed in the territory highlighted its vulnerabilities and urban fragilities. Furthermore, the inhibition of movement to reach various functional locations and key activities emptied the cities and prompted many urban planners and academics to envision a dimension that would recover the concept of urban proximity, attributing new meanings to a tradition of work on the neighbourhood scale, which has already been widely experimented with in the past (Gabellini, 2024).

Proximity has deep roots in urban planning, with past planners shaping the national and international debate for years. Within our research project, we aligned the starting point of our reflection with the introduction of the concept of "The Neighborhood Unit", theorized by Clarence Perry in 1929. In his idea, the city is understood as a system of interrelated autonomous units characterized by: size, which revolves around the school as a recurring parameter for defining the space needed for the citizens' neighbourhood life; boundaries, defined by major communication roads, but also by more natural internal networks; open spaces, parks, and recreational areas; areas for services and neighbourhood shops (Pavia, 2022).

A few years later, in 1944, Patrick Abercrombie began rethinking urban planning in London within the framework of the "County of London Plan" (1943) and the "Greater London Plan" (1944). Through these two plans, the urban planner aimed to combat urban sprawl in England after World War II by creating distinct, self-sufficient communities connected by an efficient infrastructure network. Inspired by Ebenezer Howard's concept of the "Garden City," Abercrombie proposed the reorganization of the city through decentralization, thereby reducing the population density in central London and promoting the creation of more balanced urban centres. To address this need, the city was divided into four zones: the Inner Urban Ring, the Suburban Ring, the Green Belt, and the Outer Ring. Abercrombie conceived, based on this concept, satellite cities that were independent but

connected to London through a network of infrastructure, services, and appropriate spaces, improving quality of life and reducing traffic congestion. What Abercrombie proposed, therefore, was a model that emphasized the need to promote an efficient system of roads and infrastructure capable of connecting different parts of the city (Abercrombie, 1944).

Around 40 years after Abercrombie, the New Urbanism movement emerged in response to the problems caused by uncontrolled urban sprawl and the separation of residences, commerce, and public spaces in the suburbs. Its goal was to combat urban sprawl by promoting compact, high-density, mixed-use development, improving environmental, economic, and social quality. New Urbanism advocates for the creation of human-scaled neighbourhoods with services accessible by walking or cycling (CNU, 2021). Furthermore, since the Charter of the New Urbanism was ratified in 1996, it has influenced urban planning by emphasizing how neighbourhoods should reflect the unique identity of each place and the growing need for environmental sustainability (CNU, 2024), with functions and services that promote the creation of vibrant communities. The idea behind New Urbanism, therefore, starts from the characteristics of the place and the community; as a result, this movement does not aim to promote a model that can be replicated across all areas, but rather encourages the idea of selecting where to apply it, which approach to use, and how to make interventions sustainable for both the territory and the community.

In the same years, in 1990, many of these principles began to spread in the United Kingdom as well, thanks to the Urban Task Force, founded in 1999 under the leadership of Richard Rogers. In its final report, titled "Toward an Urban Renaissance," the Task Force proposed a vision for urban regeneration in declining English cities, focusing on high-quality public spaces, density, and mixed uses to improve liveability and the quality of cities. Their model envisioned the creation of compact cities, where car use was limited, and green spaces were increasingly accessible and easy to reach. The work of the Urban Task Force raised awareness about the importance of integrated urban planning, focusing on urban regeneration, improving mobility, enhancing accessibility to public spaces, and promoting equitable urban and social development. From their model, the need to integrate anthropic and natural elements for urban regeneration emerges, ensuring that every citizen has access to vibrant and safe communities, with essential services accessible on foot, by bicycle, or via public transport (Urban Task Force, 1999).

In the twentieth century, the idea of a compact "human-scaled" city, where services are nearby and there is a functional mix of services, was replaced by models based on the "cities of distances" previously described. It was revived only in 2015, when, within the context of the ongoing transformation of European cities and beyond, the concept of the "15-minute city" was introduced by urban planner Carlos Moreno. Moreno (2021) refers to a city in which all essential services and functions necessary for human life, such as living, working, shopping, healthcare, learning, and leisure, are located within 15 minutes walking or cycling distance from one's house. During the pandemic period, this idea of the city gained value and recognition in national and international debates, evolving from a complementary urban condition in strategic planning to becoming a fundamental and constitutive element of the new urban paradigm for city planning (see Figure 2).

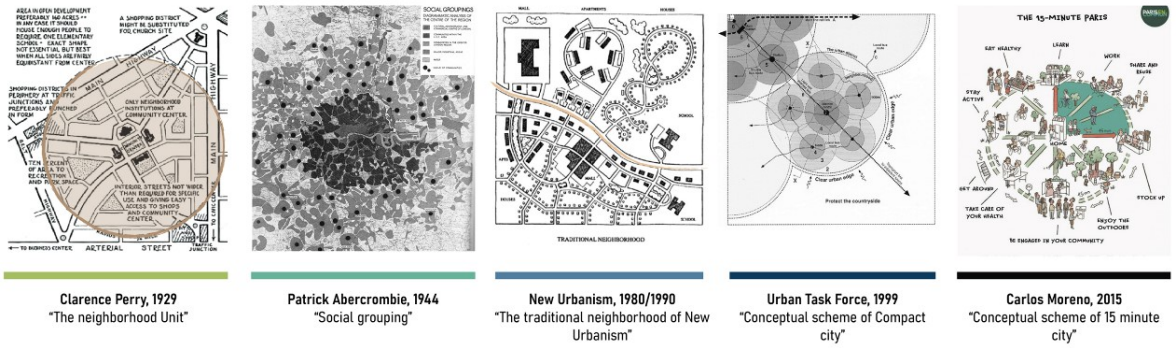


Figure 2: The evolution of proximity concept into urban schemes. Source: Author

Acknowledging the driving force of this concept of the city and the long-term reflections that have allowed for a better disciplinary contextualization, there is now a gradual shift away from the strict notion of the "15-minute city" toward a more dynamic idea of the city - one based on proximity, which is not limited solely to theoretical and temporal aspects. Reflecting on the city in terms of proximity means considering the added value of attempting to "ground" and experiment with an urban strategy that can take root within planning as a foundational tool for territorial development. It involves analyzing the characteristics of the territory, reinterpreting its complexity and urban needs, and implementing strategies that practically respond to the continuous challenges of contemporary cities within planning instruments.

From this perspective, an important need emerges for all municipal administrations: ensuring that their urban planning tools could address these new urban challenges in a sustainable and resilient way. For this reason, many cities have recently undertaken the process of revising their planning instruments, though they have encountered the significant complexity that urban planning practices and processes entail.

3. An iterative method for the revision of urban planning tools. The experimentation through the PGT of Mantua

Today, revising an urban plan means setting a dynamic and complex process that requires an integrated and multidisciplinary vision because it must address numerous challenges: managing urbanization, attempting climate change, promoting social equity, advancing sustainable mobility, and fostering collaboration among stakeholders while considering the needs of different communities from a sustainable development perspective (Giaimo, 2024). From this arises the need to experiment with new urban concepts and paradigms that can counter planning tools that are exclusively regulatory and non-generative, overly focused on quantitative aspects and not oriented toward describing qualitative ones.

Based on these new insights and needs, the Municipality of Mantua has also initiated the revision process of its urban planning instrument, the Territorial Governance Plan (PGT), approved in 2012. In this revision process, the municipal administration has been supported by our research laboratory at the Politecnico di Milano, the Unesco Research Lab - Mantova Campus, to foster collaborations that combine diverse know-how and technical skills to define a tool capable of responding to various urban needs.

The underlying goal of this collaboration is to experiment with an integrated planning approach based on key concepts that can be rediscovered within the discipline but have faded over time; rethinking an instrument in terms of proximity and sustainability, for example, represents one of the potential challenges that the administration has decided to pursue in this revision.

The agreed-upon approach for this long process of revisiting multidisciplinary themes and issues is based on a reiterative method. This iterative and progressive approach means that the revision process occurs through successive phases, each of them must improve upon the previous one. It is not a linear sequence but involves the continuous repetition and refinement of analyses and strategies in response to emerging conditions. Every verb referring to this reiterative method is composed of the functional morpheme “ri” placed at the beginning of a lexeme to modify or better specify its meaning (Losco, 2015). This morpheme refers to the possibility of “repeating x times” and represents an iterative value that expresses an action or process carried out repeatedly, thereby ensuring greater flexibility and the ability to dynamically respond to emerging challenges and needs.

Urban planning, in its continuous redefinition of territorial governance processes, has often employed this morpheme to indicate new solution perspectives in response to the periodic crises of urban transformation, with the aim of modifying the paradigms and reference meanings for many interventions (Losco, 2015).

In the revision process of the Mantua Municipality’s PGT, this reiterative method was experimented with by articulating the long path into three progressive phases:

- **Re-reading** the characteristics and peculiarities of the territory and population through a critical analysis of the availability of proximity services in the Mantuan territory, by drafting multi-characteristic sheets.
- **Re-defining** the traditional configuration of the territory into administrative neighbourhoods, to move towards new urban geographies characterized by autonomous and heterogeneous units, named "Proximity Systems".
- **Re-thinking** planning based on an urban strategy that organizes the territory along two main axes: an urban one, which promotes interactions between mobility and proximity services, and a natural one that integrates the landscape through the creation of green connections within urban settlements.

Each of these phases represented an important advancement step in our research, allowing us to gain greater insights into the territory and the strategies that can be introduced for the city's future planning.

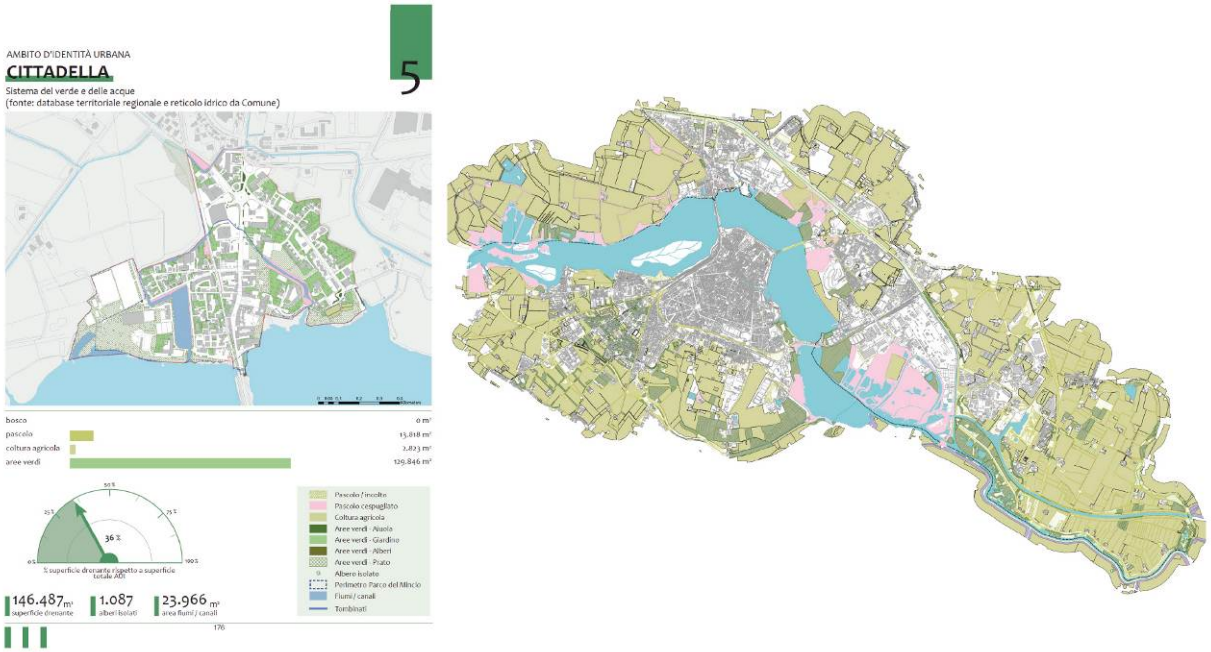
4.1. Re-reading the territorial characteristics to construct a knowledge-based, analytical, and interpretive framework

Through an analytical framework established in the initial phase of "re-reading the territory", the sociodemographic profiles of the population and the provision of public services in terms of proximity were examined. The demographic analysis, covering the period from 2019 to 2024, aimed to highlight how population composition, distribution, and structure have changed, revealing fragility and social vulnerability. Vulnerability, as described by Ranci (2007), refers to social and economic transformations that lead to insecurity across various social classes. The analysis focused on the most vulnerable categories, aiming to reduce exposure to risks and promote resilience, strengthening individuals' capacity to face adversity (ISTAT, 2020). The investigation, now conducted over six consecutive years, has revealed a heterogeneous and dynamic territory, with a positive trend in population growth, demonstrating internal dynamism and offering insights into the evolution of the settlement.

Alongside the socioeconomic analysis, the distribution of public services across each administrative neighbourhood was examined both quantitatively and qualitatively. The goal was to assess whether existing facilities and public spaces could support an urban proximity strategy. Rather than focusing solely on their size, the aim was to recognize the role these services could play in reorganizing the city to manage future transformations. This involved evaluating the facilities mapped in the municipal Service Plan, considering their quality,

consistency, and contribution to urban well-being. The analysis of services produced six thematic maps for each of the eighteen administrative neighbourhoods examined, which highlight: the analysis of public services; the analysis of the characteristics and densities of the settlement system; the review of intangible services of social and proximity value; the analysis of mobility and urban accessibility; the system of green spaces and waters; and the elements of urban characterization (Borini, 2024). The produced sheets allow for both an individual and a continuous reading across the entire territory of the presence or absence of relevant characteristics and peculiarities that must be considered for the revision of the Service Plan, drafted based on the concept of qualitative proximity services that are increasingly accessible and reachable by all through various forms of mobility (see Figure 3).

Figure 3: Example of the "Green and water system" sheet and overall vision for the entire territory. Source: Author



4.2. Re-defining the organization of the territory through the definition of "Proximity Systems"

The initial re-reading of territorial characteristics reveals a fragmented view of the municipality, showing the need to move beyond traditional sector-based, dimensional, and administrative divisions into neighbourhoods. These divisions no longer adequately represent the socioeconomic heterogeneity and public services endowment of modern cities.

Although initially conceived as fundamental urban units, intended to constitute both an integral part of the consolidated city and urban centralities endowed with functional autonomy, over time neighbourhoods have progressively finished to reflect that original concept. They have increasingly become peripheral areas lacking their own identity and authority and are more and more considered within urban planning instruments solely as an administrative function of the territory.

In urban planning, territories are divided into these administrative neighbourhoods to facilitate the management and development of smaller city sections. However, these areas are often defined by rigid boundaries, typically marked by large infrastructures or main services, limiting connections with surrounding areas. They lack the flexibility to adapt their functions

and structures to new urban challenges. One key challenge is the need for greater proximity and sustainability, characterized by more primary services, green spaces, slow mobility, and an improved quality of life.

Working on the proximity strategy, therefore, requires an internal urban reorganization that attempts to address the issue of overcoming the center-periphery dichotomy, based on a system of diffuse centralities capable of rebalancing the urban potential of each individual neighbourhood. This concept of neighbourhood must be understood in a broader and more flexible sense to adapt to the multiplicity of elements needed to create connections between the city, the territory, and nature (Capestro, 2012). The redesign of the overall organizational structure of the territory evolved from an initial attempt to reconfigure only the geographic limits of administrative neighbourhoods, by defining the "Urban Identity Areas".

These areas reinterpreted the administrative neighbourhood units, defining spatial entities with social, cultural, and economic homogeneity. While recalling historical neighbourhoods, they introduced more fluid boundaries, addressing new needs. Proximity, in this vision, is not just a principle for isolated areas but an integrated strategy connecting urban and natural elements across the territory. The initial goal of this new subdivision was to overcome the static concept of neighbourhoods and reinterpret them based on urban issues. However, the "Urban Identity Areas" proved inadequate in describing dynamic, functionally autonomous centres. By recalling traditional neighbourhood boundaries, they failed to address the territory's needs or create connections beyond those limits. This highlighted that integrating proximity as an urban strategy requires not just new spatial divisions but a rethinking of the role these areas play in fostering proximity and sustainability issues.

This planning approach moves away from the static, fragmented city model, proposing an interconnected system of centralities that defines a polycentric vision. Proximity finds new expression in this polycentric urban model, which contrasts with the monocentric model, where a single large center dominates services, employment, and production. In contrast, polycentrism seeks an urban structure with multiple important centres that ensure a balanced functioning of the territory. These centralities need not be identical; instead, through differentiated functions and varying settlement weights, they form a system of functional hubs (Rauhut, 2016). Polycentrism, therefore, represents a network of connections among centralities that, when linked, create dynamic zones within the territory.

Based on this idea of polycentrism, we attempted to identify "Proximity Systems", that are areas substantially heterogeneous with respect to their spatial, morphological, social, cultural, and economic characteristics. These systems function both autonomously - ensuring the interweaving of various proximity networks - and in synergy with other systems present in the territory. Proximity systems represent centralities that, regardless of their spatial and geometric configuration, can activate territorial dynamics, creating functional relationships among the different area, overlapping, and adapting to needs of a continuously evolving city.

They are conceived as open systems toward a plurality of urban networks that structure themselves within the territory. They are composed of functional nodes defined by the presence of historical identities and ancient settlement nuclei, collective and social public services, and gathering places for people, which are distinguished by their ability to generate connections with the other surrounding elements and systems (Borini, 2024). These are urban organization models based on both functional and relational continuity in the territory, dictated by the presence of autonomous and independent entities that define a new urban polycentrism, definitively moving away from the monocentric model that for years has characterized the city - periphery dichotomy (Rauhut, 2016).

Through the definition of "Proximity Systems", it is possible to observe the urban geographies of the territory in their differences and complexities, approximating functional boundaries for centralities that define networked relationships and flows. In the Mantuan

territory, 14 proximity systems have been identified to reinterpret the centralities and highlight its intrinsic and extrinsic characteristics. The intrinsic characteristics refer to the constitutive elements of the individual systems, such as spatial structure, the functions they perform, population density, mobility, and accessibility to primary services. The extrinsic characteristics, on the other hand, emphasize the relationships these systems establish with the surrounding systems by considering the physical, social, and economic connections that enable urban integration. The presence or absence of these characteristics allows for a distinction among the proximity systems, articulated as follows:

1. **Urban**. These are characterized by their own functional and relational autonomy, being equipped with urban centralities that offer a variety of primary and essential services. They are systems that include central areas for the development of the territory, possessing a certain urban dynamism and attractiveness even externally. The aim is to achieve improvements in proximity by proposing planning policies that should consolidate functional self-sufficiency, increase accessibility to public services, and foster connections with nearby centralities.
2. **Periurban**. These are areas located at the margins of urban areas, in a transitional zone between urban and rural territory. They are areas not completely urbanized and not entirely rural, which are dislocated from the main services. Being located far from centres, they possess little functional autonomy and do not guarantee self-sufficient internal dynamism. They represent systems still in the development phase and awaiting new strategies, highly attractive in terms of planning to promote a possible more controlled and balanced expansion of the city.

Working on peri-urban systems in terms of proximity means attempting to experiment with specific approaches for each area of the territory that intend to guarantee integration among the various urban and residential functions, ecological needs, and the development of different infrastructures.

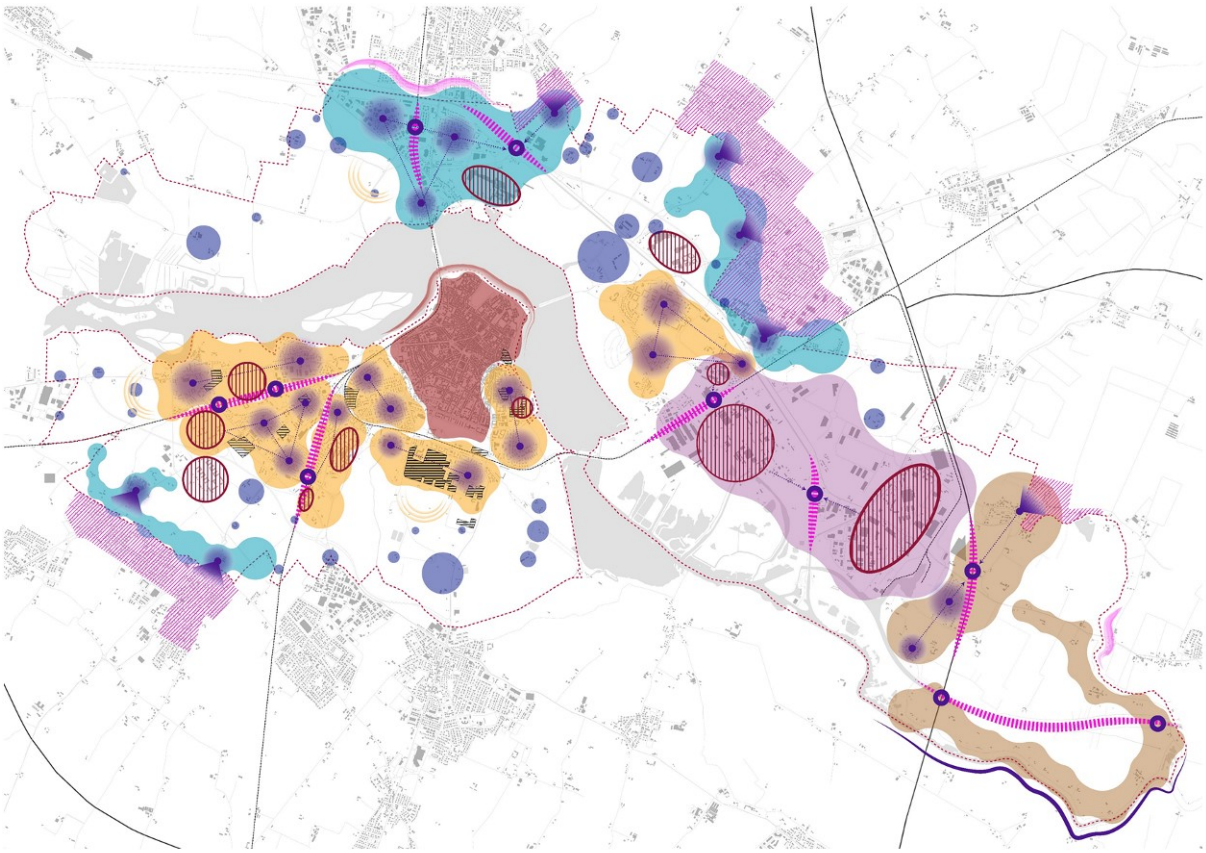
3. **Border**. These are systems that do not possess their own functional autonomy, as they represent predominantly residential, commercial, or productive areas that develop in continuity with neighbouring municipalities and, therefore, do not require the presence of proximity services. They are located near municipal boundaries and gravitate towards close municipalities. Their main issue is the lack of urban centralities with strong functional identity, which does not allow for system autonomy and defines a fragmented development along the border. For these areas, it is necessary to adopt a different, integrated, and inter-municipal proximity strategy that allows for improved connections and ensures the integration of functions and services through policies shared with neighbouring municipalities.

These three articulations of proximity systems describe most of the municipal territory and allow for the orientation of proximity design in three different work directions. In addition to these systems, there are three more categories of elements that cannot be considered “systems” because they refer to very different portions of the territory, each of which has intrinsic characteristics that must necessarily be considered individually. Reference is made to:

1. **Industrial/Production Clusters**. These clusters indicate sectoral and geographic concentrations of companies, defining portions of territory that are predominantly mono-functional. These areas, heavily infrastructure, are dedicated to specific production activities and must integrate, in their development projects, the creation of sustainable and resilient ecosystems. Such an approach is crucial to promote the decarbonization of the industrial sector. To achieve this goal, sustainability strategies must be adopted to steer industrial development toward increasingly sustainable models that lead to a green, low-impact transition.

2. **Diffused Settlements**. These are residential aggregates that are distributed in a scattered manner throughout the territory. They define concentrations of individual elements that do not have their own functional autonomy in the territory and for which proximity strategies cannot be envisaged, as they do not contribute to integrating any urban dynamics. However, for these, it is possible to strengthen the connection systems and the network of links among the different dispersed settlement aggregates so as not to isolate them within the territory.
3. **Historic Center**. This represents an extremely delicate territorial area endowed with its own urban identity and high historical and testimonial value. It must be treated separately from other parts of the territory as it already exhibits its own internal dynamism and urban proximity in which everything can be easily reached, although it still requires improvement. Indeed, historic centres need an urban proximity strategy that develops their economy and, above all, implements a requalification and innovation of the commercial network and services for the socioeconomic relaunch of the inner urban areas (see Figure 4).

Figure 4: Different characterization of "Proximity Systems" into the territory and their description



The definition of proximity systems and their subsequent differentiation and classification within the territory constituted the first tangible result that allowed us to direct our research toward new models of urban planning to be experimented with and implemented. Indeed, these systems were considered in the subsequent phases as study models to experiment with, on which to attempt to establish proximity strategies and actions that allow cities to be planned based on new urban and community needs.

4.4. Re-thinking urban planning based on the "proximity urban strategy"

To assess whether the proximity systems, previously defined and described, can truly represent the new urban geography of the Mantuan territory in a polycentric vision, it's essential to experiment with proximity strategies that integrate urban sustainability and resilience. This marks the first phase of operational verification, based on theoretical and analytical insights. The goal is to propose a strategic-structural planning approach that assesses the applicability of proximity. For proximity to drive sustainable urban regeneration and ecological transition, it's crucial to establish an urban framework guiding new planning. Starting with the proximity systems, the aim is to slowly redefine existing urban structures through integrated planning of urban and natural elements.

This urban framework articulated into two main axes: one infrastructural, focused on slow mobility and public services, and one natural, connecting the green and blue infrastructures of the territory. These axes serve as foundational structures that provide stability to proximity systems, guiding the development of proximity actions and strategies.

To date, primary and secondary roads are the main transport infrastructures, enabling long-distance movement between functional proximities (Manzini, 2021). The dominance of cars has pushed pedestrians and cyclists into smaller portions of the road, creating potentially dangerous conditions. These groups often lack continuous routes, as paths are interrupted and insufficient for safe use. As transport infrastructures expand to accommodate cars, they become more energy-consuming, polluting, and unsafe. Meanwhile, public space for pedestrians has decreased, impacting safety, air quality, and contributing to environmental, social, and aesthetic issues in modern cities.

The definition of a slow mobility axis, connecting multiple functional nodes through a diversified network, is crucial for promoting a more sustainable, proximity-oriented city. The challenge in urban areas is to improve accessibility by shifting away from car-dependent transportation and encouraging alternative modes of transport, fostering sustainable practices. These strategies often also involve urban planning tools already in use, such as the "Biciplan", which organizes and regulates development. The Biciplan is a tool that sets the objectives, strategies, and actions necessary to promote the development of all aspects related to cycling, thus intensifying the use of the bicycle as a means of transport for various activities in the city (MIT, 2018).

This tool, adopted by the Municipality of Mantua in 2014, has guided us in identifying the optimal paths, both existing and planned, to form the slow mobility axis. These paths need to be developed, expanded, connected, or enhanced to create a continuous slow mobility network across the territory. Specifically, for Mantua, an important hub for interregional cycle paths, the axis must be divided into two routes: one with a landscape character, due to the city's cultural and natural significance, including lakes that define a slow mobility cultural route; and one with an urban character, extending within the city to ensure a continuous network connecting with neighbouring municipalities' main infrastructures.

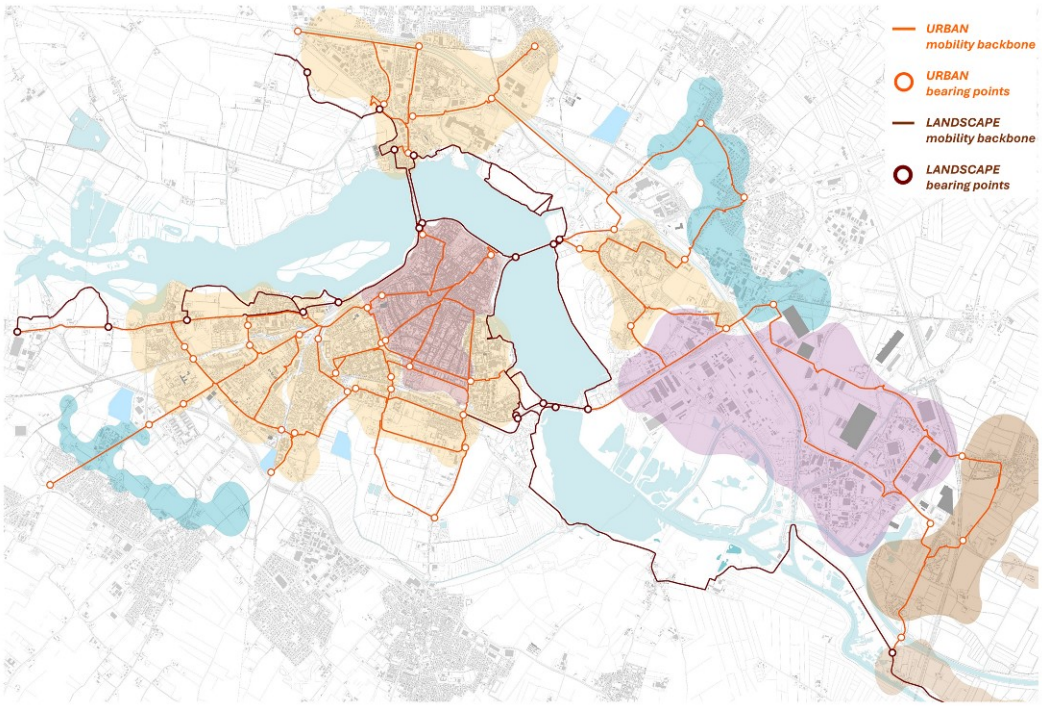
While in the case of the landscape routes almost all the paths are on their own right-of-way and are separated from vehicular traffic, in the urban settlement one can find both dedicated routes and shared ones, which must be rethought also in relation to improved natural quality. It follows, therefore, that the slow mobility axis is significant to ensure that all citizens can live and enjoy open and public spaces as a common good through a network of connections that allows access to different proximities (see Figure 5).

For the slow mobility axis to be effective, it must not be seen merely as a continuous linear infrastructure but as a dynamic element that integrates the places and public spaces it passes through, strengthening their connection to the surrounding context. The axis acts as a mediator, expanding or contracting like a diaphragm to link spaces with different

characteristics. The identification of priority cycling and pedestrian routes along the axis has been determined in relation to the strategic centralities in the territory, focusing on their functional reintegration into the urban system and organizing existing or planned urban and proximity facilities within public or publicly accessible private spaces.

Therefore, the slow mobility axis plays a strategic role in urban planning by promoting sustainable mobility that reduces traffic congestion and regulates vehicular flows, which affect environmental quality and urban safety. Enhancing accessibility and intramodality among proximity systems through intermodal mobility offers an opportunity to transform cities by systematizing both existing and planned physical infrastructures, along with the services distributed among them. This approach creates a cohesive framework within the territory, improving urban dynamics and sustainability.

Figure 5: The slow mobility backbone inside the urban territory. Source: Author



A second, more natural axis overlays the mobility axis, aimed at improving urban and environmental quality of life. It recognizes the need to promote green spaces to counteract biodiversity loss and enhance resilience and sustainability, addressing issues like land consumption, pollution, and traffic congestion. Redefining the relationship with nature is a key challenge for contemporary cities. Nature plays a crucial role in reshaping parts of established cities and is essential for their future development. Integrating nature into urban areas requires structured development based on existing or potential natural elements, fostering a harmonious relationship between nature and the city.

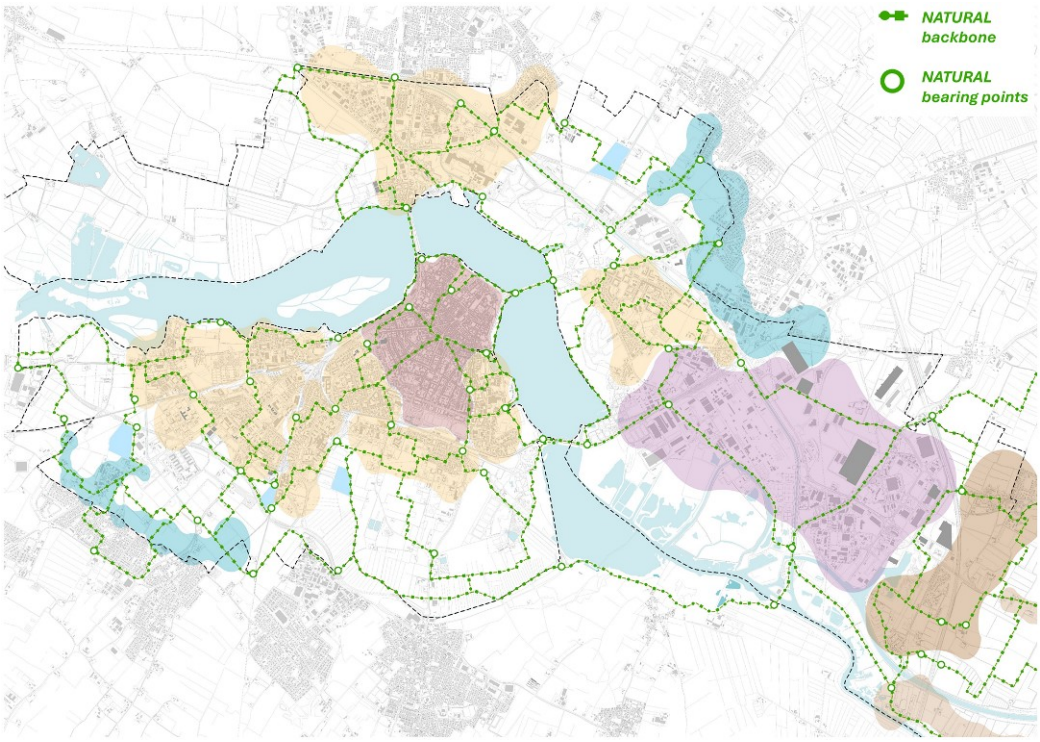
This reflection emphasizes the need to structure the project within proximity systems along a natural axis, which may sometimes overlap with the mobility axis. The strategy focuses on strengthening the environmental system's protection, both within and beyond urban areas, and enhancing the continuity of green spaces. The goal is to identify areas with significant natural characteristics, enhancing the ecological and environmental heritage defined by the Municipal, Provincial, and Regional Ecological Network, using these areas as the foundation for the natural axis. The natural axis acts as a guiding principle in urban design for a proximity city, promoting green actions that improve quality of life, community well-

being, and economic sustainability. Thus, the natural axis does not have solely an ecological purpose within the consolidated urban fabric but plays a collective, aesthetic, and social role; it is about green spaces that allow the city to breathe and guarantee a continuous connection among the various natural elements of the territory. In the vision of urban development in terms of environmental sustainability, we still consider a dual direction of work.

The first of an ecological and environmental nature, aims to promote the presence of natural areas for biodiversity, wetlands, and blue infrastructures, which allow the city to move in a more ecological direction starting from the definition of the municipal ecological network. This network is developed especially into rural and non-urban areas, allowing ecological connections with areas even outside the municipal border of Mantua. This first direction of work is applied within one of the documents of the Service Plan, the Municipal Ecological Network, but does not represent the focus of our research.

The second axis of a social-natural nature offers people the opportunity to enjoy natural spaces by improving access to parks and green areas and creating green pathways that promote slow mobility and support mental and physical well-being (Mansur et al., 2022). The natural axis is not seen as a simple linear infrastructure, but as a network of spaces and green areas with varying natural values that enhance the city's liveability. Multifunctional solutions based on nature, like Nature-Based Solutions (NBs), are prioritized. These include permeable surfaces, green roofs, riparian forests, Sustainable Drainage Systems (SDs), rainwater gardens, and wetlands, all of which help improve urban resilience and promote sustainable development by increasing soil permeability (ICLEI, 2017) (see Figure 6).

Figure 6: The natural backbone inside the urban territory. Source: Author



Rooting the proximity project in the territory through the overlap of urban and natural axes highlights the need for continuous coordination among the territory's various elements. In some areas, these elements intersect, while in others, they follow separate paths. This process requires a radical shift in territorial planning, as existing urban structures must be rethought in terms of sustainable mobility, natural spaces, and integration among different elements of the territory. This change cannot be immediate but must evolve gradually.

As highlighted in the text, while the focus is on axes, the goal is to create an urban framework with multiple analytical layers that capture key elements of the territory, such as services, infrastructure, functional nodes, and green spaces. These elements are then assigned a role in the transition to integrated planning. Experimenting these two axes, which complement each other in terms of proximity, sustainability, and resilience, must occur within urban planning tools like the Service Plan. This shift moves from a quantitative approach, based on urban standards, to a qualitative one that anticipates strategic functions in each proximity system, addressing the actual needs of the territory and its communities.
The next phase, focused on application, involves a detailed assessment of each axis within the individual proximity systems. This phase will aim to define strategies and concrete actions to enhance existing services and facilities and design the integration of additional strategies to strengthen proximity as an urban planning approach.

5. Conclusion: The role of proximity for rethinking qualitative urban planning for sustainable and resilient cities

In relation to the various issues and needs that have emerged in this research, particularly regarding how to address the numerous urban challenges affecting contemporary cities, the necessity of experimenting with the proximity strategy in urban planning has been highlighted. This strategy considers a progressively more sustainable and resilient development of the territory.

In this sense, as already emphasized in the paper, proximity requires a paradigm shift that must necessarily be considered in this phase of reviewing urban planning tools and policies. This is essential to enable municipal administrations to experiment with and innovate new urban strategies that no longer trust solely in a quantitative measurement of phenomena and service standards to be added to the territory. Instead, these strategies promote high-quality services that can be evaluated based on their ability to trigger change towards greater sustainability, improved urban quality of life, and a better environment.

Rethinking planning tools in this direction, integrating proximity and sustainability, reshapes both the content that must be highlighted in urban projects and the final objectives to be achieved through the plan revision (Bonfantini, 2023). It means planning cities that better respond to citizens' needs, that are more flexible in finding efficient solutions to urgent challenges, and that can quickly adapt to continuous and sudden changes, becoming increasingly resilient and sustainable.

Following this approach, prioritizing quality over quantity becomes essential for interpreting a constantly evolving territory, where measuring its effects and the multiple characteristics that define it is becoming increasingly complex.

References

Abercrombie, P. (1944) “Greater London Plan”, University of London Press, London. ISBN: 9780261669697

Barbieri, C. A. (2023). Governo del Territorio. Online. *Urbanistica Informazioni*, 307(1). Available from: http://www.urbanisticainformazioni.it/Governo-del-territorio.html (Accessed: 15 March 2025)

Bonfantini, B. (2023). Milano nel piano: città di quartieri e d’urbanistica paratattica. Online. *Urbanistica Informazioni*, 300 (6).

Available from: http://www.urbanisticainformazioni.it/Milano-nel-piano-citta-di-quartieri-e-d-urbanistica-paratattica.html

(Accessed: 15 March 2025)

Borini, M. (2024). "Re-read the urban complexity into planning tools through the definition of urban proximity systems. The case study of Mantova", Proceedings of the 6th International Conference on Changing Cities VI, Department of Mediterranean Studies, Aegean University, Rhodes 24-28 June 2024, Greece

Capestro, A. (2012) "Progettando città. Riflessioni sul metodo della Progettazione Urbana", Firenze University Press, Florence. ISBN: 9788866552703

Carta, M. (2019). Nuovi paradigmi per una diversa urbanistica. Commento al libro di Gabriele Pasqui. Online. *Casa della cultura*. Available from: https://www.casadellacultura.it/851/nuovi-paradigmi-per-una-diversa-urbanistica (Accessed: 15 March 2025)

Congress for the New Urbanism (CNU) (2021). What is New Urbanism?. Online. Available from: https://www.cnu.org/resources/what-new-urbanism (Accessed: 10 March 2025)

Congress for the New Urbanism (CNU) (2024). The Charter of the New Urbanism. *Online*. Available from: https://www.cnu.org/who-we-are/charter-new-urbanism (Accessed: 10 March 2025)

Gabellini, P. (2024) "Avvicinarsi all'urbanistica. Approaching Urbanism", Planum Publisher, Rome-Milan. ISBN: 9788899237394

Giaimo, C. (2024). Ri-pianificare la città. Online. *Urbanistica Informazioni*, 314(2). Available from: http://www.urbanisticainformazioni.it/Ri-pianificare-la-citta.html (Accessed: 10 March 2025)

ICLEI - Local Governments for Sustainability (2017). Nature-based solutions for sustainable urban development. Online. *Global Platform for Sustainable Cities*. Available from: https://www.thegpsc.org/sites/gpsc/files/iclei_nature_based_solutions_eng_0.pdf (Accessed: 10 March 2025)

Istituto Nazionale di Statistica (ISTAT) (2020). Le misure della vulnerabilità: un'applicazione a diversi ambiti territoriali. Online. *Annual Report*.

Available from: https://www.istat.it/it/files/2020/12/Le-misure-della-vulnerabilita.pdf (Accessed: 20 March 2025)

Losco, G. (2015). Prefazione. R…come ri-generazione. in: D'Onofrio, R. & Talia, M. (2015) "La rigenerazione urbana alla prova". Franco Angeli, Milan. ISBN: 9788891709608

Mansur, A. V., McDonald, R. I., Güneralp, B., Kim, H., Puppim de Oliveira, J. A., Callaghan, C. T., Hamel, P., Kuiper, J. I., Wolff, M., Liebelt V., Martins, I. S., Elmqvist, T., Pereira, H. M. (2022). Nature Futures for the urban century: Integrating multiple values into urban management. *Environmental Science and Policy*, 11, pp. 46-56

Mantini, P. (2015). Principi e politiche del governo del territorio nella prospettiva della riforma costituzionale. *Il Nuovo Diritto Amministrativo*, 4, pp. 6-24

Manzini, E. (2021) "Abitare la prossimità. Idee per la città dei 15 minuti", Egea S.p.a., Milan. ISBN: 9788823838208

Mazzeo, G., Calenda, C. (2011). Normativa: Evoluzione della normativa urbanistica. La Frammentazione dopo l'omogeneità. *TeMA-Journal of Land, Use, Mobility and Environment*, 4(1), pp. 87-90

Ministero delle Infrastrutture e dei trasporti (MIT) (2018). Linee guida per la redazione e l'attuazione del "Biciplan". Legge 2/2018, art. 6. Available from: https://www.mit.gov.it/sites/default/files/media/documentazione/2020-10/Linee%20guida.pdf (Accessed: 20 March 2025)

Moreno, C. (2024) "La città dei 15 minuti. Per una cultura democratica", ADD Editor, Turin. ISBN: 9788867834525

Pavia, R. (2022). Modernità della città di prossimità. Clarence Perry and Lewis Mumford, Online, *Urbanistica Informazioni*, 305(5).

Available from: http://www.urbanisticainformazioni.it/Modernita-della-citta-di-prossimita-Clarence-Perry-e-Lewis-Mumford.html (Accessed: 25 March 2025)

Ranci, C. (2007). Tra vecchie e nuove disuguaglianze: la vulnerabilità nella società dell'incertezza. *La Rivista delle Politiche Sociali*, 4, pp. 111-127.

Rauhut, D. (2016) "Polycentricity: A Critical Discussion", Proceeding of 56th Congress of the European Regional Science Association, Vienna 23-26 August 2016, Austria

Urban Task Force (1999) "Towards an Urban Renaissance. Final Report of the Urban Task Force", Routledge, London. ISBN: 978-1138136908

Urbani, P. (2015). Nozione ed evoluzione della disciplina urbanistica. Statuto conformativo della proprietà privata. Le nuove forme di pianificazione nella legislazione regionale. Vincoli conformativi ed espropriativi. Online. *Pausania-Rivista di Diritto Urbanistico.* Available from: https://www.giustizia-amministrativa.it/documents/20142/20159011/Urbani_PNozione_ed_evoluzione_della.pdf/652c01d3-10fa-1b80-c249-bcd6b6fe0217?t=1647448178000 (Accessed: 25 March 2025)

Law references

Law 765/1967 "Modifiche ed integrazioni alla legge urbanistica 17 agosto 1942, n.1150". 6 August 1977. Online. Available from: https://www.gazzettaufficiale.it/eli/id/1967/08/31/067U0765/sg (Accessed: 20 March 2025)

Interministerial Decree (DM) n. 1444/1968 "Limiti inderogabili di densità edilizia, di altezza, di distanza fra i fabbricati e rapporti massimi tra gli spazi destinati agli insediamenti residenziali e produttivi e spazi pubblici o riservati alle attività collettive, al verde pubblico o a parcheggi, da osservare ai fini della formazione dei nuovi strumenti urbanistici o della revisione di quelli esistenti, ai sensi dell'art. 17 della legge n. 765 del 1967". 2nd April 1968. Online. Available from: https://www.gazzettaufficiale.it/eli/id/1968/04/16/1288Q004/sg (Accessed: 20 March 2025)

Decree of the President of the Republic (DPR) n. 616/1977 "Attuazione della delega di cui all'art. 1 della L. 22 luglio 1975, n. 382". 29 August 1977. Online. Available from: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.del.presidente.della.repubblica:1977-07-24;616!vig= (Accessed: 20 March 2025)

Regional Law n. 1/2001 "Disciplina dei mutamenti di destinazione d'uso di immobili e norme per la dotazione di aree per attrezzature pubbliche e di uso pubblico". 15 January 2001. Online. Available from: https://www.consultazioniburl.servizirl.it/pdf/2001/02031.pdf (Accessed: 20 March 2025)

Regional Law n. 12/2005 "Legge per il Governo del Territorio". 11 March 2005. Online. Available from: https://normelombardia.consiglio.regione.lombardia.it/normelombardia/accessibile/main.aspx?view=showsum&iddoc=lr002005031100012 (Accessed: 20 March 2025)