# Scenarios for a Post-Pandemic City: urban planning strategies and challenges of making "Milan 15-minutes city"

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**Abstract**

This Covid-19 pandemic has imposed extreme impacts on many developed world global cities, especially those with high population densities and high levels of connectivity. Many cities are therefore experiencing a moment of global rethinking. In a few decades, we have gone from an idea of extreme density and the gentrification of cities to completely different proposals, such as the 'the 15-minutes city' concept where all services can be reached in a short distance. Within this context, the current paper aims to provide an overview of this concept and its application in the case of Milan by conducting desk research and analysing the official reports and documents. This paper discusses that the core idea of the 15-minute city is not new; the strategies can be traced back to different approaches to neighbourhood planning in the past century. In Milan, the municipality's '2020 Adaptation Strategy' proposed guidelines for sustainable transportation and self-sufficient neighbourhoods.

*Keywords:* 15 minutes cities; urban planning; sustainable mobility

## 1. Introduction: Exploring immediate impacts of the pandemic on cities

The Covid-19 outbreak occurred in an era where cities were already experiencing various processes of changes, considering emerging potentials and new challenges, such as climate change, digital transformation, sustainable mobility, regeneration of degraded areas, redefinition of public spaces, social inclusion, and integration policies. However, the immediate crisis caused by the pandemic has had significant impacts on people's lives in general. Therefore, it has imposed rapid changes on spaces of living, working, leisure and travelling, whether private or public (see Honey-Rosés et al. 2020). Therefore, fear of crowds, social distancing, teleworking, and lockdown restrictions on commuting have changed the ways of living in general and the structure and configuration of cities. The first changes were rapid, such as restricted travelling, dividers in supermarkets, signs on floors or balconies converted into spaces for social interactions. Living under the current pandemic restrictions, neighbourhoods are gaining increasing attention due to the importance of this spatial unit to satisfy the essential needs and services of its residents.

This still-ongoing pandemic has impacted many developed world cities, especially those with high population densities and high levels of connectivity. European cities such as Milan, Paris, London, Madrid, and Barcelona, among others, have experienced significant outbreaks. Florida et al. (2020) discuss the potential impacts of the pandemic on cities; this study introduces four main forces that may lead to long-lasting transformations: (i) social scarring; (ii) the imposed ways of working, shopping, and residence during lockdown; (iii) the necessity to secure the built environment against the future health and climate emergencies; (iv) changes to urban built form, real estate, design, and streetscapes. The consequences of this critical era highlight a series of new key issues, which can only be overcome by implementing innovative strategies to reinvent and adapt some traditional functions to the new situation. Some fundamental aspects will be necessary to consider from now on. First, greater attention to the environment and the quality of life in general, followed by more intense innovative technologies. Another important goal to be achieved in a short time concerns the reworking of individual and public transport from a smart mobility perspective that ensures efficient monitoring of movement flows. The health crisis has imposed a change of mentality, a cultural leap on planners, institutions, and citizens. In other words, it is a collective and inevitable process that has digital resilience at its centre because only through broader use of new technologies will our cities in the future be less fragile and able to react to traumas and difficulties to resist shocks. From a design perspective, city planners and designers should consider tactical urbanism as short-term and low-cost actions for long-term and practical changes, mainly citizen-led (within a neighbourhood community) but can also be initiated by government entities (Pfeiferm 2014).

Many cities are experiencing a moment of global rethinking. In a few decades, we have gone from an idea of extreme density and the gentrification of cities to completely different proposals, such as the 'the 15-minutes city' concept where all services can be reached in a short distance. Within this context, this paper aims to provide an overview of this concept and its discussion and application in the case of Milan by conducting desk research and analysing the official reports and documents. This paper is therefore structured in five main sections: the introduction is followed by a review of the literature on the origins and current challenges related to the concept of the 15-minutes city. The third section describes new urban models for what we call the X-Minute City, where X varies from 1 to 1000 minutes. Section four focuses on the case of Milan and discusses some of the pandemic adaption strategies introduced by the municipality. The final section discusses the necessity to rethink the design of our cities with a focus on neighbourhoods and seriously considering the strategies and guidelines provided in the vision for the "15-minutes" city.

## 2. The 15-minutes city: origins and current challenges

The current Pandemic is transforming and will transform both physical and social functions of space in our cities. Many local administrators, architects and urban planners are already looking for new design suggestions capable of guiding the urban development of the near future. One of the proposals that immediately caught public attention is the '15 minutes city', coined by the French scientist and university professor Carlos Moreno and then applied by the mayor of Paris, Anne Hidalgo. This idea was introduced in other cities such as Milan in the "Milan 2020 Adaptation Strategy" document. Based on this concept, each neighbourhood should provide the fundamental services and main

functions for working, supplying, caring, learning and leisure within a 15-minutes slow mobility distance (e.g. walking and cycling)

The idea behind the 15-minute city can be traced back to the movements such as New Urbanism, Transit-Oriented Development and Smart growth, which have been used over the past decades to describe schemes related to Neo-traditional principles (Furuseth, 1997). All these concepts are, in fact, rooted in the "neighbourhood unit" concept introduced by the American planner Clarence Perry in the early 1900s (Perry, 1929). In the United States, in the period following the First World War, numerous sociologists affirmed the need to reconstitute "primary groups", understood as aggregations of families that formed the basis of the social organization, in close relationship with their territory, in a socially deteriorated communities in large American cities. This could happen by restructuring the suburbs of large cities according to "neighbourhood groups", capable of restoring the historical sense of solidarity and mutual social control found in village communities (Patricios 2002). The opportunity to translate these ideas into concrete achievements was presented in 1922 by the Russell Sage Foundation, promoting the New York Regional Plan. Accordingly, Perry modelled the Forest Hill Gardens neighbourhood, designed by Frederick Law Olmsted, and summarized the characteristics in six principles he expressed in 1929, in the seventh volume of the New York Regional Plan, with the "neighbourhood unity formula".

The six principles included dimensions, boundaries, open spaces, institutional places, local shops, the internal road system. Perry proposed an ideal dimension for the neighbourhood unit based on successive approximations, mediating between the school's users (1,000-1,600 students), a reasonable walking distance and a suburban residential density (80–95 people per hectare). He finally opted for an area of about 60 hectares, in which a circle of 400 meters in radius could be inscribed and which would house about 6,000 inhabitants. It also adopted a green standard of 16 square meters per inhabitant, divided as follows: 3 square meters (19%) for children's playgrounds, 5.5 square meters (34%) for similar equipment for children, 2.25 square meters (14%) to tennis courts, as many to public gardens and finally 3 square meters (19%) for small green areas and variously equipped spaces. The shared facilities included an elementary school, a library, a community centre, and a church. Finally, according to a norm widely accepted, there was a retail store for every 100 residents.

The neighbourhood unit model inspired urban planning theories and many post-war British and American cities (Patricios, 2002a; Duany et al. 2009). Following Perry's study, the neighbourhood unit concept was renewed by Andrés Martin Duany and Elizabeth Plater-Zyberk, founders of New Urbanism. In addition, Douglas Farr, in 2007, presented the idea of a sustainable neighbourhood. More recently, it seems that the new "15-minutes city" concept tends to adjust Perry's principles of "neighbourhood unit" to the contemporary world, borrowed from Howard's idea of the Garden City, which, in the light of the current need for sustainable and urban green, it is less utopian than in the past. The "15-minutes city" is, therefore, an approach to urban design that aims to improve the quality of life by creating inclusive neighbourhoods where a resident's basic needs can be reached in 15 minutes on foot, bicycle, or public transport. One of the key aims is to build a more accessible city and improve the 'walkability' of the neighbourhoods. On this matter, many scholars have discussed the relationship between the built environment, walkability, health, and quality of life (Lovasi et al. 2011).

The key theorist behind the vision "15-minutes City" (originally known as "la ville du quart d'heure") is Carlos Moreno; he launched this experimentation in the French capital in collaboration with the municipal administration. He aimed to rethink the "new relationship between citizens and the *rhythm of life* in *cities*" and reduce the presence of cars on the streets (Whittle 2020). To create a better urban organization, this new vision of urban living tends to develop self-sufficient communities within each neighbourhood, where essential goods and services are found within a short walk or ride from home. Regarding the growing number of teleworkers and the emergence of hybrid-working (flexible working), the proposed solution is to consider dispersed office spaces and new workplaces and where it is possible to create neighbourhood or condominium coworking centres (see Mariotti et al. 2021). As for the increase of public spaces, the approach is to reorganise the activities established in existing infrastructures (such as stadiums, libraries, etc.), diversifying them by time and space. Green open spaces are increased by making better use of the open spaces of schools, offices, residential complexes, and universities, especially during the weekends. In this way, sociality among the residents is favoured, the quality of life in the neighbourhood is improved, congestion and pollution in the most central urban areas are alleviated, and commuting phenomena are reduced.

Moreno had already created the "digital and sustainable city" concept as a precursor of smart cities in 2008 to develop later "liveable cities". He was one of the pioneers. In numerous interviews, Carlos Moreno stated that "the quality of life is the true intelligence of a city" (Moreno, 2019). This researcher's attention to deserted cities during the lockdown results from a new look, which allowed him to highlight the importance of green spaces, neighbourhood relations, proximity trade anywhere in the world. For Moreno, the city found itself "connected" thanks to the relationships between its inhabitants, finally freed from the "métro-boulot-dodo" routine. A new look, therefore, rests on proximity, time and quality of life. Proximity in which the private residence connects in a fluid and continuous way with the public space and various activities and services. For Moreno (2020a), the "city of the quarter of an hour" represents the synthesis of his studies. It brings together three key concepts of his research: "chrono-urbanism" (the analysis of what the city offers its inhabitants about the use of their lifetimes), the "chronotope" (the close link between space and time) and "topophilia" (the sense of attachment to a place). According to this theory, each inhabitant must have five essential services within a radius of 15 minutes from the residence: work, health and well-being (access to healthcare services, wellness, sports ...), supply of essential goods (food and non-food), education and culture. Moreno states that to create a city of 15 minutes, it is necessary to "deconstruct the city" or, more specifically, to mix as many different uses as possible (Moreno, 2020b). This process stands in sharp contrast to the urban planning of recent decades, based on zoning, which divided the city into functional zones (residential areas, central business districts, shopping malls, etc.). In contrast, the "15-minutes city" supports the flexibility of urban spaces: schoolyards, parks, civic structures that can have multiple uses and provide a range of different services at different times (e.g., a school that can have other functions during the weekends).

In January 2020, Anne Hidalgo, mayor of the city of Paris, based her electoral programme on the key concept of "city of the quarter of an hour", understood as the "condicio sine qua non" of the ecological transformation of the city. To move around without using the car or even public transport, the mayor of Paris proposes the challenge of "100% cycle" streets, lined with plants and wide pavements. All this was accompanied by urban agriculture development, thanks mainly to cultivating unused land on the Seine.

Paris is a great place to experience the 15-minute city, as it is a dense city measuring just six miles in diameter, with a history celebrated as a place for strolls and street cafes.

The French proposal is not the first and only case to offer proximity and socialization solutions to address the issues of city liveability. Stockholm has formalized an urban planning program that includes the "1-Minute-City" model, which combines the Parisian city of 15 minutes with the concept of a pedestrian area. The project is based on a vision: to make every street liveable, ecological, and clean, eliminating cars to make room for citizens and their interactions. The aim is to plan and design on the human scale, where parking areas are transformed into urban living spaces with amenities. In order to encourage light and sustainable mobility, special grids are installed to park bicycles and electric scooters (O'Sullivan 2021).

Another interesting example is Barcelona. Since 2013, the city has planned the so-called Superblocks; cycling and pedestrian "urban islands" that constitute the place of neighbourhood life with two main characteristics: absence of cars (and therefore traffic and pollution) and diffusion of greenery (with parks and common areas managed by the community). It is therefore considered a promising urban model and a public health strategy, which creates a cleaner and greener city with more public spaces (Mueller 2020).

## 3. New urban models for an X-Minute City

The French proposal for a 15-minutes City is not the first and only case to offer proximity and socialization solutions to address the issues of the city's liveability. Other cities have also introduced innovative models to address urban planning issues: the compact city, the superblocks, the 15-minute city, the car-free city, or a combination of these. Concepts similar to the 15-minute city have emerged worldwide: from 1-Minute Cities to 1,000-Minute Cities. This model offers a more holistic approach to local urban development that goes beyond eliminating cars in the city and focuses on housing, facilities, proximity to work, multifunctional use of space, and a change from globalism to localism. This concept is based on five fundamental principles: connection, community, locality, health and growth. By giving people and their needs a primary role, all designers must consider the psychological effects of being adequately connected through services, green spaces and opportunities to move on foot actively. Below, we introduce some cases and briefly outline the key characteristics.

### i.   The 1-minute city –Stockholm

The Swedish transport innovation agency Vinnova has launched a modular system called Street Moves to "inhabit" the streets: reducing distances is only a means; the aim is to build realities capable of rebuilding the sense of community. The goal is to transform car parks into usable spaces for people, with benches, picnic tables, racks for bikes and scooters, flower boxes and other street furniture. The project plans to furnish the streets in strategic points, in front of schools, gyms, or street food venues, to make them more welcoming, limiting the surface occupied by cars, which suffocates the cities by taking away space for people.

Such "pop-up lounges" are emerging in many Swedish cities as part of an urban experiment known as the "city of a minute". The aim is to understand how every street can be transformed into a healthy, sustainable and vibrant place by 2030. In September 2020, prototypes were installed in four different central areas of Stockholm. In each of these areas, students from local schools participated in the design of the modules. The pilot project has produced positive results, detecting 400% more citizens who spend time

on the street. Street Moves shows what streets might look like if pedestrians and bicycles were given priority. The idea is that residents participate in planning the layout of their streets so that cities better meet the needs of their community, with the aim that: "Every street in Sweden is healthy, sustainable and vibrant by 2030".

### ii.    The 5 minutes' city – Copenhagen

The district called "five minutes to everything" was born in Copenhagen. The Danish architect, Jan Gehl, promoted public spaces' activation, connection, and vivification in Copenhagen. Gehl argues that architecture is the interaction between form and life, focusing first on people. His approach sees the many parts that make up a neighbourhood, therefore, considering the spaces that connect them. His practice believes that all aspects of a neighbourhood have the same importance, are not in competition and have the common goal of improving people's lives. (Gehl, 2012). With the intention to promote liveability and sustainability, the Nordhavn area was designed as a "5-minute neighbourhood" that allows you to reach shops, institutions, workplaces, cultural facilities and public transport within 5 minutes on foot from any point. Public spaces play a fundamental role: a network of squares, parks, walkways and garden streets have been created. The quays that line the canals and the sea have pedestrian paths, cycle paths and squares. Shops, institutions, workplaces, cultural facilities, public transport are accessible within a 5-minute walk from anywhere in the neighbourhood. The area will be served by an elevated metro and a cycle network that will create a green artery. The high track serves as a cover for the cycle highway to stay dry in all weather conditions.

### iii.   The 5 minutes' city – Superblocks Barcelona

Barcelona has established the "superblocks", superillas in Spanish, to respond to the need to have portions of the city free from cars, noise, and pollution. Each Barcelona superb block comprises nine blocks (3x3) of local traffic streets: a scheme that clears over 70% of the surface previously occupied by cars, reducing noise, improving air quality and providing the public space needed to install tables from picnics, play areas and trees. Like many other big cities, Barcelona struggles with poor air quality and high temperatures; just think that there can be up to eight degrees more in the centre than in the surrounding areas. For this reason, the results achieved with the transformation of residential districts do not go unnoticed: flower beds and trees have replaced concrete and asphalt in many places. Green space doubled, and $NO_2$ emissions fell by 24%. 80% of the area was cleared for pedestrians and cyclists, and consequently, bicycle traffic increased by 30%, while car traffic decreased by 26%. In addition, the "neighbourhood deceleration" and the more relaxed atmosphere have had a positive effect on the local economy. Small shops and businesses have increased by 30% in the superblocks. Overall, the quality of life has improved. In this way, each "superilles" becomes a "green" town, where citizens can reach all services within a 5-minute walk from home.

### iv.   The 15 minutes' city – Ottawa

Ottawa is one of the first Canadian cities to explicitly include the 15-minute city in their planning documents. In its new official plan for 2021, Ottawa has introduced innovative policies for territorial governance through the implementation of "Five big moves": targets for reducing greenhouse gas emissions, urban and community planning, climate, energy and public health. Ottawa is a valuable case study to understand better the concepts of the 15-minute city within a North American context. Similar to the direction of cities like Paris, Ottawa emphasizes integrating the idea of the 15-Minute City into established

communities, thus bringing these concepts into the evolution of pre-existing neighbourhoods. A successful 15-minute neighbourhood should ideally consist of a diverse mix of land uses, including residences, services, schools, shops, workplaces, parks, and green spaces. The project ensures that residents make more than 50% of their journeys on foot, by bicycle, public transport, or carpooling.

### v. The 15 minutes city – New York

A project is underway in New York City to design spaces especially for the circulation of pedestrians and cyclists. The next step will be to reclaim the streets and use them as open-air classrooms, polling centres, and outdoor activities. The project is based on the principle that the streets should be adaptable as the city itself. The New York City Department of Transportation looks to the city's 9,656km of roads as critical assets that could be used for more than just moving and parking cars. A transformation is already underway in this sense: in the last seven years, 644 km of cycle paths, seven fast bus lines and 70 squares have been created throughout the city, recovering 73 hectares of former road space. The basic idea is to rethink the urban system's organisation to concentrate the inhabitants' basic needs within 15 minutes on foot or by bicycle. In this way, in addition to drastically reducing the pollution emissions deriving from vehicular traffic, it would also result in a clear improvement in the quality of life.

### vi. The 20 minutes' city – Portland

The idea of the 20-minute city originated in Portland, Oregon (USA), where the Portland Plan wants 90% of citizens to have everything; they need 20 minutes away by 2030. Subsequently, the project was also extended elsewhere, as with the Plan Melbourne 2017-2050 in Australia under the name of 20-minute neighbourhoods. The two plans have in common the metropolitan planning strategy to manage the growth and change of cities in the coming decades, with particular attention to incorporating the concept of 20-minute neighbourhoods into significant infrastructure projects.

The Portland Plan initiative ties in with the Oregon city climate plan. This plan provides that by 2030 90% of the inhabitants will easily reach from home, on foot or by bicycle, any necessary service in a few minutes. The Portland Plan focused on reducing carbon emissions and ensuring education, health, and equity benefit. The Portland Office of Sustainable Development has decided that one of the best ways to reduce greenhouse gas emissions is to promote what it calls the "20-minute neighbourhood."

Since 1993, when Portland became the first major city in the United States to adopt a plan to prevent global warming, the city has made significant progress in reducing damage to the environment. The improvement relates to increasing use of light rail transport, increased bicycle commuting, and housing and shops in pedestrianized districts. The city offers $ 30 a month in "Bike & Walk Bucks" as an incentive for city employees to travel by bicycle, on foot, or by other non-motorized means. To understand how Portland's 20-minute neighbourhood concept might be applied, the Bureau of Planning and Sustainability analysed Portland neighbourhoods concerning three factors: distance, destinations and density. From the superimposition of the three factors, the areas with neighbourhood characteristics of 20 minutes emerge.

### vii. The 20 minutes' city – Melbourne

A thirty-year program was established in Melbourne, from 2017 to 2050, to make the city transit towards the dimension of "twenty minutes' neighbourhood". The

neighbourhood is all about "living locally", giving people the ability to meet most of their daily needs within a 20-minute walk from home.
   The program identified the following characteristics of a 20-minute neighbourhood:
   • be safe, accessible and well connected for pedestrians and cyclists,
   • offer high-quality public spaces and open spaces,
   • provide services and destinations that support local life
   • Facilitate access to quality public transport that connects people to higher-level jobs and services
   • facilitate local economies.
Melbourne chose the 20-minute distance because research has shown that this is the maximum time people can walk to access daily needs. The places we live in have a direct impact on our health. Creating well-designed pedestrian neighbourhoods connected through a mix of land uses, housing types and access to quality public transport makes it possible to create healthier and more liveable communities.

*viii.    The 20 minutes' city - The 2 km-city – Genoa*
   Genoa is also introducing innovative urban planning, according to a model defined as a "city of 2 km". The restyling program started with the recovery of the Silos Granario Hennebique, which will have commercial and cultural destinations, to bring the heart of territorial regeneration to the historic centre, between the incentive for sustainable mobility the defence of the shops. This new vision of the city comes at a delicate moment, characterized by the need to restart and - at the same time - by the awareness that the usual social and urban dynamics will necessarily have to change. The challenge now is to make these changes effective regarding civic renewal and environmental sustainability.

*ix.    The 30-minute city – Sydney*
   In the wake of the 15-Minute City, the Greater Sydney Commission, the planning agency for the Sydney region, invented the term 30-Minute City. The commission developed this concept as a central element of its urban development plan for 40 years. Unlike Paris, where the goal is to strengthen neighbourhood life, Sydney planners endeavour to improve connectivity between the three major metropolitan centres - Western Parkland City, Central River City and Eastern Harbor City – so each residence can reach their nearest subway using public transportation or walking within thirty minutes. In concrete political terms, the city is investing additional money to increase the frequency of public transport connections and the percentage of residents working in strategic centres.

*x.    The 1000-Minute City – Turin*
   As part of Utopian Hours, the international festival dedicated to city-making in Turin in October 2021 offered a provocative vision of a city of 1000 minutes. In this view, the concept of urbanity goes beyond physical structures. In a highly connected and internationalized world, it could be argued that the city has no limits. The city's spirit is where the sense of urbanity lies, which could be anywhere. The temporal aspect of the city is emphasized, which is no longer a centre where people live together, but a polycentric structure of dispersed but well-connected citizens.

### 4. Covid-19 Pandemic Adaptation Strategies: The case of Milan
   In Italy, the Lombardy Region was one of the first regions in Europe that were dramatically hit by the Covid-19 outbreak; lockdown restrictions were then applied in several months in 2020: many were forced to stay within the borders of their

neighbourhood. Accordingly, the Municipality of Milan considers the sanitary emergency an opportunity to redesign the city spaces and urban rhythms. Hence, it has outlined some strategies to adopt neighbourhoods to the "new normal". The municipal administration published the "Milan 2020 Adaptation Strategy" document in May 2020, and it is open to public contribution. The municipality aims to develop strategies to confront the so-called "Phase 2", represented by the radical changes in the ways of living imposed by the sanitary restriction, social distancing, and proximity measures. The document was drawn up at the end of an open call, which incorporated part of the 2,967 contributions received from citizens.

In this document, references are made to a new project for the "15-minutes city", which aims at the strategic reorganization of the times and spaces of the city and has the following objectives: the redefinition of the use of streets and public spaces, the increase in cycling and walking, the rediscovery of the neighbourhood dimension, to experience the city differently, without the fear of creating crowds. Likewise, the original concept discussed in the previous section, this programme envisages creating a city where all inhabitants can meet most of their needs thanks to services located at a short distance from their homes. Giving back streets to the public is also envisaged, permanently reallocating more streets for pedestrians and cyclists and prioritising green roofs and permeable pavements. It is worth mentioning that such strategies and projects were examined and implemented in Milan before the pandemic. For example, the project 'open piazza in every neighbourhood' was promoted by the municipality in 2018; for urban regeneration and sustainable mobility and to enhance public space: new public spaces instead of redundant roads or intersections, through the implementation of light, fast and economic interventions on an experimental basis (tactical urban design). By 2019, with the collaboration of citizens, 65 open piazzas intervention proposals were received and are currently in the co-design phase.

Such strategies are needed to reduce the risks of extreme heat, drought, and floods and improve liveability and health. As for the spatial dimension, the neighbourhoods are reorganized to design a city that can offer accessible services for all. For example, a special intention is given local shops instead of shopping districts and large malls. The temporal dimension concerns building a time plan for the city. Desynchronization must respond to the health crisis and a new lifestyle in urban areas. The idea that working and living can share the same spaces is also a way to rethink the flows: maintaining flexible and remote working and time-shifting and avoiding crowding in public transport. In the concept of a more liveable city, this need is a desirable horizon beyond the emergency. Reconsidering the dimension of the neighbourhood, corresponding to the city reachable in 15 minutes on foot, was among the main themes introduced. To implement this project is necessary to have all essential proximity services available within small distances. Henceforth, the following strategies should be applied to make neighbourhoods truly liveable:

- Strengthening public services with a view to proximity, balancing the differences between neighbourhoods and reducing travel.
- Expansion of the temporal spaces where public and private services are provided.
- Promoting digitalisation, collaboration, and inclusion at the neighbourhood scale.
- Creating and improving local healthcare services.
- Promoting home deliveries through local and neighbourhood bases commercial networks.

- Improving the security equipment of public offices and the management of access through reservations.
- Redesigning the services developed about the best experiences of other urban realities.

Scenari Immobiliari has created a ranking of the districts of Milan concerning the reachability of certain services within a radius of 15 minutes. The ranking sees the peripheral areas at the bottom (except for greenery) and rewards the semi-central neighbourhoods[1] (Valtolina, 2020). This geography confirms territorial inequality and, in many respects, mirrors the geography of real estate prices. The study, however, does not concern the hinterland, that is, the areas where commuting exists for an hour or more. In this research, the city areas are compared on eight themes (schools, health, mobility, greenery, cultural offer, sport, etc.). The result rewards Porta Lodovica, followed by Bicocca and Città Studi and, to a lesser extent, San Siro and Bisceglie. The Isola district has the maximum accessibility to public transport, the Ticinese to kindergartens and Chinatown to the cultural facilities. The "Ventidue Marzo" area has many neighbourhood shops. Porta Lodovica and Bruzzano excel for health services, sports activities that characterize San Siro, and Pagano contains quality properties. From the real estate point of view, Comasina and Quarto Oggiaro are the most convenient areas.

By weighing, through an algorithm, the geographic indicators considered (proximity to vehicles, health facilities, schools and universities, green spaces, sports facilities, museums, etc.), the district with the most services within a 15-minute on foot it turns out to be Porta Vigentina-Porta Lodovica. This residential area has a high average quality of properties, including Bocconi University, numerous public and private medical facilities, supermarkets, and neighbourhood shops. The Città Studi and Bicocca districts, also driven by university environments, have clinics, hospitals, cultural spaces, and well-made apartments. The Sarpi area follows, with an excellent cultural offer and widespread tram connections, San Siro, for public transport and sports and leisure facilities and the commercial areas of Buenos Aires, De Angeli-Monte Rosa, Ventidue Marzo, Porta Romana and Corso Magenta, all areas along the ring road, halfway between the centre and the periphery. On the other hand, peripheral areas are relatively poorly served: from Crescenzago-Cascina Gobba to Forlanini, from Ponte Lambro to Rogoredo, from Boffalora to Muggiano, Quinto Romano, and Figino up to Roserio, above all due to the scarcity of schools and leisure facilities, even if inserted in greener territories. Most of the city territory appears already included in a branched service network, showing potential even in the most challenging neighbourhoods such as San Siro. This research indicates that the higher-ranked neighbourhoods are located between the centre and the periphery. Thanks to the numerous cultural events, the areas of Nolo and Affori also fall within well-served neighbourhoods.

As for the land price and real estate values, the most redeveloped areas are Arona-Lausanne, Filzi-Gioia, Lima-Morgagni and Corso Vercelli, where prices have increased by more than 20 per cent in the last five years. The research also looks at the long term, with particular attention to the areas undergoing major redevelopment: Scalo Romana, Santa Giulia, Rubattino, Bovisa, Mind-Cascina Merlata and Bisceglie. Thanks to more modern residential services, these neighbourhoods will change the city, with schools under construction and housing agreements dedicated to students and the elderly. The neighbourhoods with a growing appeal are Niguarda, Gorla, Adriano and Bicocca in the

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[1] https://milano.corriere.it/notizie/cronaca/20_ottobre_02/0203-milano-acorriere-web-milano-cdcdce98-047a-11eb-952f-bb62f0bc5655.shtml

north, Giambellino and Lorenteggio in the south, Ortica and Lambrate in the east, Farini and Bovisa in the north-west.

This study shows that the Sarpi district has various environmental, accessibility and functionality issues; furthermore, the neighbourhoods need different spaces. Corso Sempione represents a real opportunity, and therefore, the pedestrianization project aims to mitigate these problems by reducing traffic and increasing green areas. This intervention determines a decrease in atmospheric and acoustic pollution. The neighbourhood represents an ideal environment to create meeting spaces and place different services available to citizens. The proposed redevelopment intervention has led the Sarpi district towards an organization of areas that favours the concept of a 15-minute city. The proximity of many services (primarily related to sports, art, and open-air markets) and the greater accessibility and connection between the various parts of the neighbourhood and between the neighbourhoods themselves help build a sense of community. This favours the birth of social and cultural identity locally, supporting integration and collaboration between citizens.

The Sarpi neighbourhood project consists of four sections: accessibility, sport and relax, food and rt, through a seam in the urban but above all social fabric. The element of continuity is the cycle path, which represents the connecting element of the different blocks, each one characterized by a theme. Therefore, the aim is to encourage soft mobility through pedestrian and cycle paths. The project includes activities that have always been a reason for inclusion, socialization and team spirits such as sports or artistic movements such as swimming, basketball and street art. Finally, a restaurant area is planned.

An analysis of the Isola district shows that in fifteen minutes, it is possible to reach a wide range of services: functions related to culture, sport, health, and green spaces in the northern and southern parts. The district is optimally connected to other city areas through the underground, tram, and bus lines. Immediately outside the district's boundaries is the railway station which allows connections even on a larger scale than the urban one. The new Porta Nuova project constitutes an attractive pole within the district, generating an exchange of flows with the city.

The project focused on the northern area of the neighbourhood. It contained four themes: redeveloping parks, enhancing connections, enhancing social inclusion services, and creating new spaces for sport and recreational activities. From the analysis of the Isola neighbourhood, there is a breakdown between the north area, mainly residential, and the southern region, which houses the services, commercial spaces and attractive poles, such as the "Biblioteca degli Alberi" and Piazza Gae Aulenti, where congestion effects are created. In order to reduce the social gatherings in the south of Isola during the pandemic and resolve the disintegration, it is proposed to redevelop three green areas in the north of the district, creating public spaces for residents and the community. By enhancing the connections, particularly the cycle-pedestrian paths, a path is created that connects the green areas with the former Scalo Farini project and the south of the district, reducing the current disintegration. Creating new spaces for the community and associations is proposed to enhance services, including a multipurpose centre dedicated to social inclusion and a sports centre dedicated to sports and recreation.

## 5. Conclusion: Planning and designing the post-Covid city

The Covid-19 catastrophe has taught us that social resilience and urban regeneration must be built starting from a new idea of living in urban spaces. Urban planning and design schemes such as the "15-minutes city" is the alternative to the "specialized" city and implies a different system of mobility, an innovative approach to the rules of the destinations of use, another relationship between the green infrastructure and the road infrastructure. It aims to create cities on a human scale, where doing things appears simple and living there conveys a feeling of comfort. It is worth underlining that this concept is not entirely new; many cities (such as Barcelona) have already applied some of these strategies.

The theme of mobility is central, in trine with climate change and health. In contemporary literature, among the post-Covid emergencies, the immediate implementation of eco-sustainable systems, such as cycle and pedestrian routes, emerges (Fucigna 2020; Ricci 2020). It is also necessary to redesign public mobility: management of flows, transport and city timetables, security and organization systems to avoid gatherings, to respond to a different type of sociality but also a different production structure, still to be imagined.

Planning and designing the cities of the future must look at the spatial communities and neighbourhoods that compose them. All areas must guarantee their residents the necessary services, which can be reached on foot or by bicycle within a few minutes. All neighbourhoods should encourage active mobility, include housing of different types, provide affordable housing, build schools, hospitals, retail shops and ensure access to sports and recreational facilities. The core principles of the 15-minute city concept are connection, community, location, health, and growth. The city of proximity requires careful planning at the neighbourhood level, giving each district the characteristics it needs to improve the quality of life of its inhabitants. It is necessary to search for a new planning capacity, adaptive and less bureaucratic, respond to contingent needs, and work concretely on the full realization of the functional mix of the neighbourhoods.

To implement this proposal, especially in the case of Milan (Italy), simplified territorial planning and, above all, a general rethinking of the location of some collective functions, both public and private, is necessary. It is essential to reuse abandoned buildings to offer adequate spaces for culture, new forms of entrepreneurship and strengthen public health safeguards. It is not a question of creating closed, gated, and disconnected communities but restoring dignity to the different neighbourhoods that make up the city. It is necessary to create a single urban area composed of differentiated districts, connected by sustainable mobility networks, and equipped with public and collective green spaces for a polycentric and safe system of resilient urban communities.

There is already compelling evidence that the 15-minute city can work. Replacing long commute and car journeys with bicycles would reduce vehicle emissions, increase residents' health, and free up roads and parking spaces for other uses. In general, most trips to the city are short. Research on the driving habits of US families found that nearly 60% of their one-way trips are less than six miles (9.6 km), and 75% of all trips are ten miles or less. Strong Towns, a US-based planning and defence group, has drawn up a list of actions American cities could take to achieve these goals, which serve as good advice for any metropolis. To build a 15-minute city, Strong Towns recommends multiple neighbourhood schools, better access to food, better access to housing and more housing, better walkability. The C40 Mayors Agenda for a Green and Just Recovery published on 15 July 2020 by C40 Cities, an international network of cities focused on fighting climate change and promoting sustainable development, also supports the idea of the 15-minute

city. Starting from the belief that cities are the "engines of recovery", it is stated that investing in their resilience is the best way to avoid economic disaster. Proposal C40 suggests that following such a model would help global cities deliver on the document's promise of equal access to jobs and urban services for all and rebuild areas economically affected by the pandemic.

In the Covid era, where closures and transit shifts have caused city dwellers to reorient their lives and rediscover their immediate neighbourhoods, the 15-minute city could be the perfect solution. For years, consumer megatrends have supported local shopping and food, supporting neighbourhood businesses, urbanisation, and car-free lifestyles. Seen in this light, the city of proximity is not a radical turning point but a model for a lifestyle many already aspire to have. The utopia benefits the city, making life easier in peripheral areas and small towns.

In the metropolitan area of Milan, even before Covid-19, a robust process of re-centralization had spread. There was a strong demand for social and environmental quality, which struggled to find adequate answers, both for an outdated regulatory apparatus, and for increasingly bureaucratized planning processes and the scale of territorial planning that was not always optimal. A significant rethinking is needed on some public and collective functions to integrate residential neighbourhoods with services, greenery, offices, and factories. These functions, traditionally, have never crossed the boundaries of the central city; instead, they could generate metropolitan polarities even in the hinterland and in those areas already served by public transport. All with a mix of functions that would make it possible to increase the quality of life in the peripheral areas, relieve congestion (and therefore pollution) in the central city, and reduce commuting phenomena.

Nevertheless, the goal of the 15-minutes city is ambitious and challenging to achieve, given the rigidity of the acquired rights and the real estate system, as well as the deeply ingrained habits: however, with the persistence of the emergency from the Covid-19 outbreak, which has led to rediscovering the value of the proximity economy, and on the other hand, it has made evident the pathologies inherent in the "normality" of the past, perhaps it is easier to achieve. Beyond appearances, the aim of the project is not to rebuild a "village" in the city with some roads closed to traffic, but to reduce as much as possible one of the most dangerous habits of our "normality": total dependence on the use of mechanized means of transport for any human activity.

Beyond the fundamental environmental reasons, the idea of the city of 15 minutes proposes a vision of a city with an excellent need for identity and sociality. However, for this to be true, it is also necessary to discuss how the city of 15 minutes is the place of short networks of daily life and the territory in which short walking distances connect with long ones, cultural or study. The city of proximity can become the contemporary expression of a cosmopolitan localism, which we have talked about for many years and could now perhaps begin to realize. The ongoing pandemic has raised the awareness to provide resilient methods for planning and designing future territory and to recognise that we need integrated planning at the metropolitan level, capable of finding a balance between core urban and the peripheral regions (small towns and rural areas).

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