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65 STRATEGIES AND POLICIES TO FACE THE CHALLENGES OF THE PANDEMIC AT THE REGIONAL AND MUNICIPAL LEVEL: THE CASE OF MATOSINHOS

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Abstract: The research reported in this article shows how the covid-19 pandemic brought about a set of social, economic, cultural and territorial vulnerabilities and risks, challenging traditional forms of planning and governance, and highlighting the growing importance of effective policies to respond to these vulnerabilities and risks, and to promote local and regional communities' quality of life.

A bibliographical review is therefore carried out on how societies have faced epidemic situations throughout history and how they have responded to them in terms of planning and governance processes. The case study, applied to the municipality of Matosinhos (Portugal), is then presented. The methodology followed consisted of conducting surveys and interviews in order to identify the greatest vulnerabilities felt by people and households at the domestic, professional, study and consumption levels, arising from the pandemic situation and the restrictions to which they were legally subjected. The analysis of the results of the surveys and interviews supported the identification of major economic, social, environmental, territorial and cultural vulnerabilities and risks.

Then, concrete proposals are made for strategies and policies for regional and municipal action towards the resolution of the problems that have arisen, pursuing UN sustainability goals, resorting to new information and communication technologies, the smart cities approach, and urbanism tactical and participatory instruments.

Keywords: Pandemics; Resilience; Smart Cities; Sustainability; Vulnerabilities

ESTRATÉGIAS E POLÍTICAS PARA ENFRENTAR OS DESAFIOS DA PANDEMIA A NÍVEL REGIONAL E MUNICIPAL: O CASO DOS MATOSINHOS

Resumo: A investigação relatada neste artigo mostra como a pandemia covid-19 trouxe um conjunto de vulnerabilidades e riscos sociais, económicos, culturais e territoriais, desafiando formas tradicionais de planeamento e governância, e realçando a importância crescente de políticas eficazes para responder a estas vulnerabilidades e riscos, e para promover a qualidade de vida das comunidades locais e regionais.

Por conseguinte, é efetuada uma revisão bibliográfica sobre a forma como as sociedades enfrentaram situações epidémicas ao longo da história e como responderam a essas situações em termos de planeamento e processos de governância. É apresentado o estudo de caso Matosinhos (Portugal). A metodologia seguida consistiu na realização de inquéritos e entrevistas a fim de identificar as maiores vulnerabilidades sentidas pelas pessoas e famílias a nível doméstico, profissional, de estudo e de consumo, decorrentes da situação pandémica e das restrições a que foram legalmente sujeitas. A análise dos resultados dos inquéritos e entrevistas apoiou a identificação das principais vulnerabilidades e riscos económicos, sociais, ambientais, territoriais e culturais.

Seguidamente são feitas propostas concretas de estratégias e políticas de ação regional e municipal para a resolução dos problemas que surgiram, perseguindo os objetivos de sustentabilidade das Nações Unidas, recorrendo às novas tecnologias de informação e comunicação, à abordagem das cidades inteligentes, e aos instrumentos táticos e participativos do urbanismo.

Palavras-chave: Pandemia; Resiliência; Cidades Inteligentes; Sustentabilidade; Vulnerabilidades

1. INTRODUCTION

The research question around which this article is structured consists in identifying which urban planning policies and interventions to pursue to address risk situations generated by the covid-19 epidemic, given the vulnerabilities that it triggered.

In terms of a general framework, urban systems are subject to risks, which may be grouped into natural; technological; and economic, geopolitical, and social risks (Figure 1).

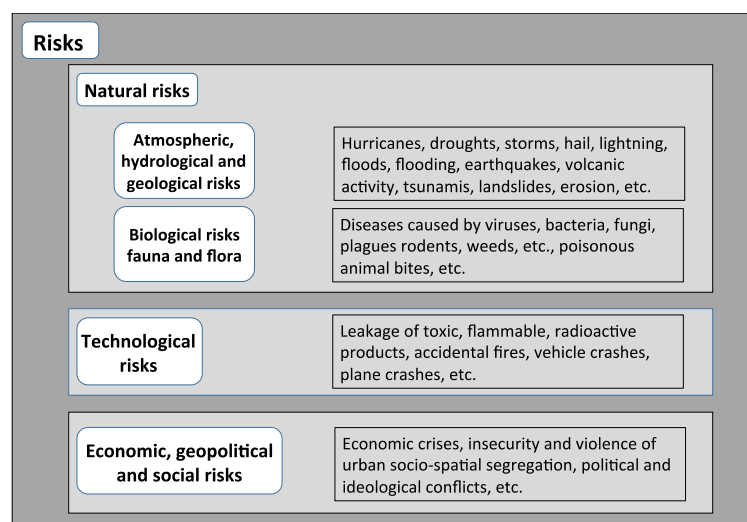


Figure 1. Risk categories

Source: Paumgartten, 2018, adapted.

The concept of vulnerability closely relates to the concept of risk and, like the latter, has a social definition. That concept considers, on the one hand, the possibility of exposure to risk (be it natural, technological, economic or geopolitical) and, on the other hand, the consideration of the consequences that it can exert in social terms (Figure 2).

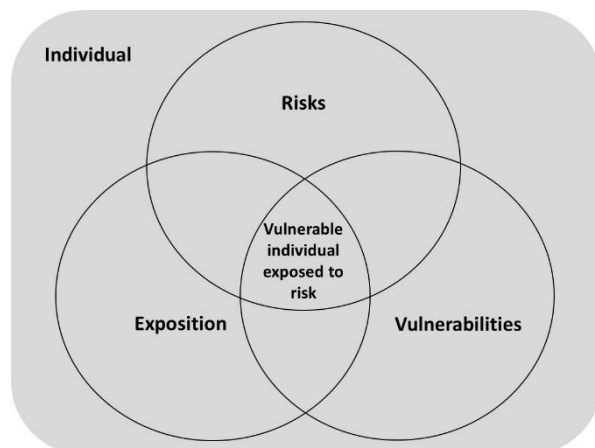


Figure 2. Analysis of the relationship of the individual with risks and vulnerabilities

Thus, the vulnerability consists of the set of characteristics that potentially increase the susceptibility of a given risk to exert adverse consequences on society. It depends, on the one hand, on the perception of risk, and, on the other, on the ability to predict its negative consequences and adopt concrete measures to protect communities against them. Thus, efforts should envisage the social group or groups subject to risks. This triggers planning interventions, in order to anticipate prevention measures (before the occurrence of the risk and to face its imminence), and to reinforce mitigation measures (after its occurrence).

2. STRENGTHENING URBAN RESILIENCE

Strengthening urban resilience is one of the most effective ways to face vulnerabilities. This resilience is the ability of the urban system and its population to resume normal development after suffering a major disruption. The Habitat III (UN-Habitat, 2015) refers to aspirational resilience, which concerns how individuals, communities or businesses cope with risks, and operational resilience, which is how they take advantage of opportunities to develop and transform themselves. Resilience can, thus, cross organizational, spatial, physical, and functional perspectives against natural, technological, economic, social, and political risks (Figure 3).

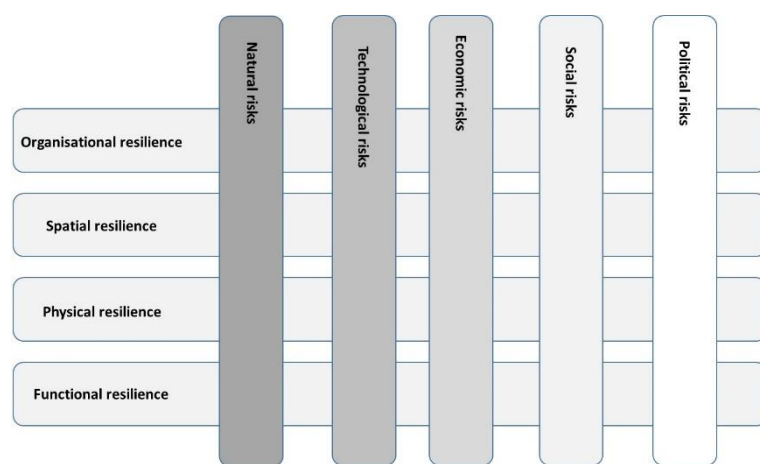


Figure 3. Analysis of resilience in the face of risks

Source: UN-Habitat, 2015, adapted.

Urban areas are complex and dynamic systems that face risks and challenges to which they have to adapt in a continuous, integrated, and holistic way. This requires the intervention and interaction amongst different knowledge fields, such as urban planning, biology, sociology, and psychology, among others.

The Rockefeller Foundation supports the "100 Resilient Cities" program, which emphasizes that the future sustainability of cities presupposes that, in face of challenges, they are able to create place-based, inclusive, integrated, risk-aware, and forward-looking solutions.

In order to face risks (climate change, infrastructure collapse, terrorist attacks, technological accidents or epidemics), and to strengthen urban resilience (i.e. economic sustainability and social and territorial cohesion), the European Commission has elected five priorities for intervention:

- A smarter Europe - through innovation, digitization, economic transformation, and support for small and medium-sized enterprises
- A greener Europe - by reducing carbon emissions, implementing the Paris agreement, and investing in energy transition, renewable energy and fighting against climate change
- A more connected Europe - through strategic transport and digital networks
- A more social Europe, based on the European Pillar of Social Rights - capable of supporting quality employment, education, skills, social inclusion, and access to health care
- A Europe closer to the citizens - supporting local and sustainable development strategies in the countries that belong to the European Union.

3. IMPLICATIONS OF HISTORICAL EPIDEMICS FOR URBAN PLANNING

It is important to learn from the examples of the past to render cities more resilient in the future. These concerns particularly respect the public health and urban planning, recognizing that there is a strong historical relationship between them.

The bubonic plague of the 14th century enabled cleaning up cities and their cramped and miserable neighbourhoods, and developing quarantine facilities, as well as creating public spaces larger and more orderly. This led to the development of wide, straight streets, green parks, and urban squares, based on the idea that the proper design of the urban environment can physically remove the sources of disease and contribute to a healthier behaviour of its inhabitants.

The cholera, influenza, and typhoid fever in London in the 19th century led to a reform of sanitation systems (cleaning, drainage, and ventilation, to improve the health of workers) and water supply. A striking example is the Victoria Embankment, with 2 km of gardens and spacious avenues along the Thames River (Figure 4).

The Modernist Architecture movement emerged as a response to the tuberculosis outbreak. It led to the construction of sanatoriums that specialized in the treatment of tuberculosis, which influenced architecture and urbanism especially between the 1920s and 1930s of the 20th century (Yuko, 2018). Buildings' architectural design was characterized by the purity of forms and rigid geometries, including large windows, balconies, apartment surfaces that did not accumulate dust, and white paintings that conveyed the feeling of cleanliness and disguised waste and stains. These features sought to create environments appropriate for the physical, nervous and moral cure of the disease, which was proliferating in overcrowded cities (Budds, 2020; Yuko, 2020).

Le Corbusier, the best-known architect of the modernist movement, sought to free residents from the dirt and diseases of the city, promoting greater contact with nature. His designs highlighted these concerns with cleanliness, light and air, which are essential aspects for human health (Carr, 2014; Budds, 2020). A good example of the aesthetics he advocated is present in Villa Savoye (Figure 6), which conveys a white and clean image, longed after the great mortality of the First World War. In his book *The City of Tomorrow*, Le Corbusier argues "Hygiene and moral health depend on the configuration of cities. Without hygiene and moral health, the social cell atrophies" (Le Corbusier, 1987: 86).



Figure 6. Le Corbusier's Villa Savoye project

Source: Le Corbusier, 1987.

While diseases trigger vulnerabilities in the urban system, they are also drivers of change, generating new ways of planning and designing. Increasingly, health and disease interlink in urban environments, and an effective response requires: (i) understanding how diseases emerge and spread; (ii) how diseases relate to the physical, spatial, economic, social and ecological changes caused by urbanization; and (iii) realising how emerging urban landscapes can themselves play a role in containing potential outbreaks.

The relationship throughout history between public health and urban planning is clear, and understanding their interrelationship is critical for building cities more resilient (Keil et al., 2020).

4. HOW CAN SMART CITIES DEAL WITH THE PANDEMIS?

The coronavirus epidemic allows us to understand better how this type of risk impact cities, and to identify the measures and policies needed to prevent and/or mitigate its effects on the population.

The consequences generated by the health crisis enable policy makers to rethink urban systems, concerning how they interact with globalization, and how the quick technological changes (in production, distribution, and consumption) impact on the development of cities (namely on the quality of urban life in terms of housing, economy, culture, and social and environmental conditions) (Giffinger et al, 2007).

The solutions proposed by smart cities - which seek to reinforce cities' efficiency and sustainability – potentially foster greater urban resilience in such critical times (Tan, 2020). "A smart and sustainable city is an innovative city that uses ICT and other means to improve quality of life, efficiency of urban functioning and services, and competitiveness, ensuring that it meets the needs of present and future generations with respect to economic, social and environmental, as well as cultural aspects" (UNECE, 2021). The concept of smart cities is more widespread in the field of technology, but a balance should be sought between digital transformation and quality of life, within a sustainable framework.

Smart cities seek to increase the competitiveness of local communities through innovation, while promoting the quality of life of their citizens through better public services and a cleaner environment (Appio et al., 2019). They can, thus, be understood as "smart communities," which are collaborative ecosystems that facilitate innovation by creating links amongst citizens, government, business and educational institutions (Appio et al., 2019).

In the coming years, smart cities will have to be able to adopt different proximity and distance architectures, according to adaptability patterns, to respond more fully to various needs and challenges.

5. CASE STUDY

5.1. Brief characterization of the city of Matosinhos

Matosinhos is a city located on the northern coast of Portugal, which belongs to the Porto Metropolitan Area (AMP). It covers an area of 62,4 km² and has a population of about 175 478 inhabitants (AMP, 2021) (Figure 7).

Matosinhos is a region in full development, having become a relevant tourist spot. It has implemented plans for the expansion of the city, and adopted balanced housing and mobility policies. It integrates organizational and social solutions with technology, which is quite visible in the fact that it is the first technological free zone in Portugal (CEIIA). This stance contributes to a vision of the future through the implementation of smart, resilient, accessible, participatory, and connected neighbourhoods.

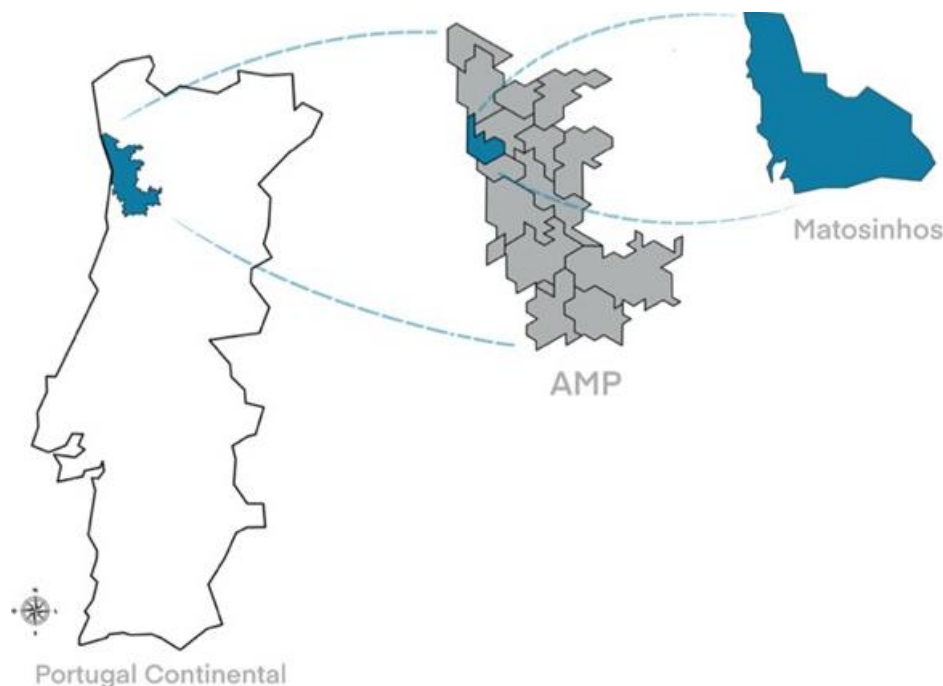


Figure 7. Location of Matosinhos municipality

In order to achieve a better development, recovery and resilience response for challenges in the near future, Matosinhos articulates several planning instruments, namely the Activity and Recovery Plan 2021, the Matosinhos Social Development Plan 2021-2024, the Mobility and Transport Plan, and the Municipal Master Plan. These are guided transversally by the National Recovery and Resilience Plan, the Cohesion Policy 2021 - 2027 and the Sustainable Development Agenda 2023.

In response to the vulnerability situations in the municipality, and their worsening due to the covid-19 pandemic, the Municipality proposed a plan of activities and a budget in which it contemplates six strategic axes, which are:

Axis 1 - Resilience: To ensure the resilience and protection of people and property, through a Municipal Commission for Civil Protection, directed mainly at risks and acting in the context of social and urban vulnerabilities of the municipality.

Axis 2 - Social Cohesion: To promote social intervention with people in situations of socio-economic fragility, where strategies and actions aim to improve the well-being and quality of life of residents. Interventions in the following areas stand out: Childhood and Youth, Qualification and Employment, Social Support, Health, Disability and/or Incapacity, Citizenship and Equality.

Axis 3 - Economy: To support economic activities, promoting tourism and attracting national and EU funding for municipal projects relevant to smart, sustainable and inclusive growth.

Axis 4 - Right to the City: To integrate urban management and planning to create a coherent and balanced territorial development, ensuring the correct occupation of the land, through housing and transport policies, guaranteeing full access to fundamental human rights to the entire population.

Axis 5 - Efficient Use of Resources: To raise population's awareness of climate change through environmental education and the creation of new green spaces integrated into the urban space to improve the quality of life of the population and the environment in general.

Axis 6 - Governance: To promote a participatory, accountable, transparent and dynamic governance model, where communication with the citizen is trustworthy; and to ensure a sustainable and resilient development through technological solutions and simple and inclusive digital services for citizens.

The municipality intends to affirm itself as a resilient and sustainable city, directly linked to the implementation of integrated policies, which meet the individuality of the territory, taking into account its population's characteristics and fragilities. The six axes proposed by the Matosinhos City Council aim to build a social and territorial balance in the municipality. This case study aims at supporting this strategy.

5.2. Characterization of the sample

An analysis regarding the perception of vulnerabilities in Matosinhos resulting from covid-19 was conducted through surveys and interviews with the population. These aimed at understanding the social and urban aspects faced by the residents, and identify their problems, their exposure to risks, and their vulnerabilities.

Sixty surveys and twelve interviews were responded by residents of Matosinhos: 58% of the sample were women, 27% were between 25 and 34 years old, 37% between 35 and 44 years old, 27% between 45 and 54 years old, and 9% between 55 and 64 years old. With regard to the type of household in the sample, 8% of the respondents lived alone, 25% belonged to households with 2 people, 21% with 3, 25% with 4, and 21% with 5 or more people. As for the professional profile, 8% were unemployed, 12% were civil servants, 4% were retired, 17% were employees in large companies, 38% were employees in small and medium-sized companies, and 21% were self-employed.

5.3. Analysis of results

In relation to the answers obtained, 37% of the respondents reported having suffered slight negative economic impacts during the pandemic, 29% suffered severe negative impacts, 13% suffered moderate negative impacts, and 21% suffered no impact at all.

Comparison of the household incomes before and after the pandemic revealed a considerable decline, as the percentages of households' lower incomes after the pandemic are substantially more representative than those of higher incomes (Figure 8).

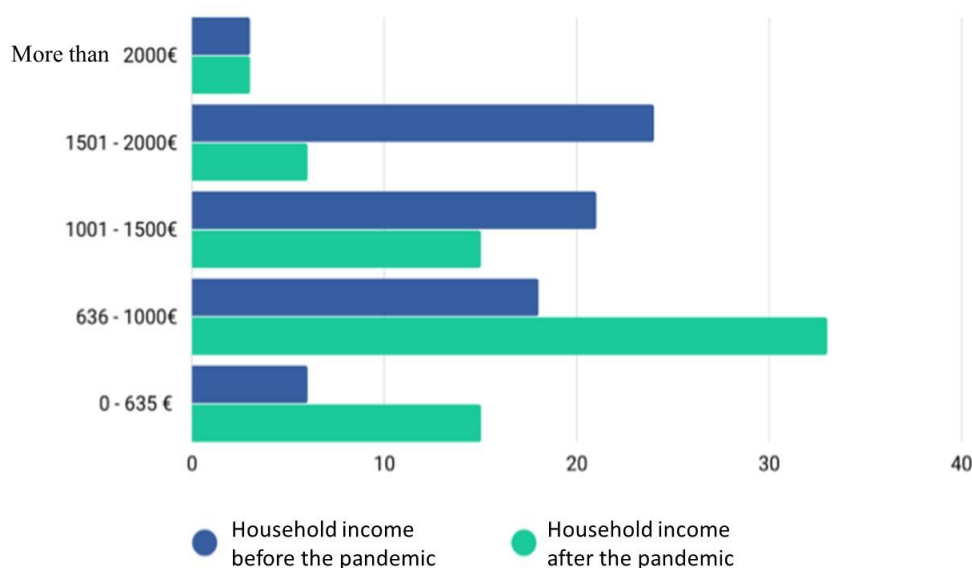


Figure 8. Household incomes before and after a covid-19 pandemic

As for concerns about the consequences of the pandemic, the results obtained reveal very high impacts on unemployment, loss of income, access to health, education and services, and reconciliation between personal and professional life (Figure 9).

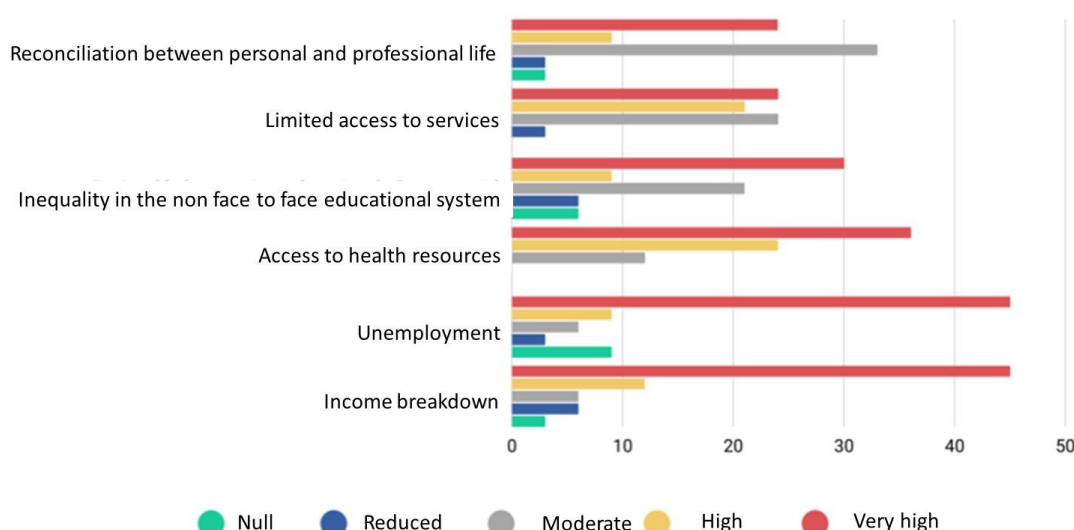


Figure 9. Concern about the impacts of the covid-19 pandemic

Finally, the aspects perceived by respondents that urged to be implemented or improved in Matosinhos refer to green areas (29%), infrastructure and urban mobility (20%), housing support (17%), commerce and services (14%), employment (8%), security (6%), and health system (6%).

The diagnosis presented above shows that the typologies with greater vulnerabilities in Matosinhos are women, children and young people, the elderly, large families, and people with low education and low labour activity. Although these factors can be considered individually, they usually correlate to one another, forming a network of mutual dependencies, which further increases exposure to vulnerabilities. In these cases it is essential to implement integrated policies that simultaneously promote economic, social and territorial cohesion.

6. DISCUSSION AND CONCLUSIONS

Although the survey exposes factors from the social and economic sphere, these directly reflect in the urban sphere, in issues such as housing, accessibility and mobility. This has become more visible in the last months of the crisis, where, for example, travel and commuting behaviours considerably changed. Thus, vulnerability encompasses several dimensions, and produce interconnected impacts. Such vulnerabilities result from a combination of individual, family, social and economic conditions, affecting the living conditions of the community. The new challenges and changes caused by the covid-19 pandemic increased cities' exposure to risks and vulnerabilities, testing the resilience of communities and territories, which requires knowledge and organization to ensure the safety and well-being of individuals.

Urban interventions can cope with adversity in different ways. They can help to plan new housing estates or promote accessibility and mobility, as well as contribute to reducing segregation, exclusion and social inequalities.

New approaches to urban planning to fight the consequences of the pandemic are required to tackle sound social issues such as inequality, poverty, lack of housing, and access to transportation. It is, thus, necessary to re-plan cities based on new approaches to public spaces, and to basic services such as education and health, with new mobility and accessibility rationales. Preserving the well-being and quality of life of a population is fundamental to building a resilient community.

7. RECOMMENDATIONS FOR THE FUTURE

Cities in the post-covid era will acquire new characteristics. Because of the emergency and chaos generated by the pandemic, the way people live, how they use public spaces, and resort to services have been profoundly altered. These changes create new planning opportunities that increase the quality of life and the well-being of individuals and communities.

Cities need to be inclusive, offering equal and/or balanced opportunities. Using long-term strategies and international agendas, such as the Sustainable Development Goals, as the basis for national and regional public policies, helps to move toward new urban development, and to a better use resources for regeneration, innovation, and inclusion.

Tactical urbanism can play a key role especially in public spaces in different urban agglomerations of the municipality, promoting green areas and living spaces in more distant regions, and correcting accessibility and connectivity gaps between existing urban infrastructures. It thus has the potential to promote changes in users' behaviour towards urban space.

Therefore, all these aspects, together with the strategies already proposed by the municipality, can project in the future an integrated city that satisfies the population and the territory, through a swift and collaborative governance, contemplating the global commitments of resilience and sustainable development. While much of the responsibility lies

with the government, the involvement of citizens in the post-pandemic recovery phase is critical to achieving successful outcomes.

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