Successful Post-Pandemic Cities

Yingqi Wu

Abstract

The novel coronavirus pneumonia outbreak was a significant test of global urban governance capacity and a major rethink for cities to recognize their developmental deficiencies and plan for the future. After successfully combating the pandemic, cities are entering the post-outbreak era, which is both an opportunity and a challenge for development. In the face of increasing urban population and unpredictable disasters, planning and building resilient cities has become an inevitable choice. Therefore, this paper analyses the impact of the pandemic on the city, focuses on how to build a resilient city, puts forward suggestions from four aspects: land use, community building, environmental design, and transport development, and discusses and analyses other challenges facing the city.

Keywords: Resilient City, Post-Pandemic

Introduction

A resilient city is a sustainable operating system for human physical communities. The biological system of urban roads, buildings, infrastructure, communications, and energy, as well as water systems, soils, topography, geology, and other natural systems, is the "resilience" of a city that can accommodate and sustain the pressures of current and future socio-economic, environmental, and technological development. [5] In the context of global urban development trends, the sudden outbreak of the 2020 pandemic triggered an unprecedented crisis, leading to massive unemployment, declining incomes for residents, and shrinking economic growth in cities. This reflects the lack of "elasticity" and "resilience" in contemporary urban planning. Therefore, building resilient cities is now a top priority in sustainable urban development. The New Crown Epidemic is a topic of particular concern to the community. The attributes of the urban built environment are critical in influencing the spread of emerging infectious diseases. This is because cities have a higher risk of epidemiological transmission due to the concentration of high-density and highly mobile populations relative to the countryside. However, in the World Cities Report 2022: Envisioning the Urban Future, published by UN-HABITAT, it was emphasized that the future of humanity will undoubtedly remain urban, that building resilient cities must be at the heart of the end, and that urban areas need to be prepared for an unpredictable future. Therefore, studying and improving the construction and planning of cities has positive implications for resilience to emergencies.

1. Enhancing the resilience and elasticity of land use

Cities are complex systems that grow, develop, and even shrink in response to various forces. Planning is an essential tool for shaping the future of cities, as unplanned human settlements are prone to sprawl, inefficient land use, poor connectivity, and lack of adequate municipal services. Good urban planning is one of the three pillars of sustainable cities, with which cities are likely to realize the optimistic scenarios of the urban future.

Firstly, the rapid activation of the "Xiaotangshan" model by cities across the country in the aftermath of the outbreak demonstrates that it is crucial for urban planning to set aside open space in advance in response to significant public health and safety events. The post-pandemic era needs to focus on the resilience of cities in terms of both on-the-ground and planned open space, optimizing the layout of existing urban land use while strengthening the strength and elasticity of land use through the organic regeneration and development and reuse of the land stock. Renewal and development reuse to enhance the resilience and elasticity of land use. [1] Secondly, the rapid growth of the network economy during the pandemic period and the emergence of new ways of working remotely from home have weakened people's reliance on traditional office space, and fewer and fewer people are working in the city, which means that the demand for office space in the city will decline. This also raises the question of what to do with space no longer needed in cities. Mixed living spaces can be planned in urban cores and employment centers to allow people to avoid long commutes, which will become increasingly common. People need more open spaces and urban green spaces, as nature can provide essential solace and spiritual sustenance at precisely the time when individuals and families need it. [2] The post-pandemic era will require increased public space and higher standards of green design to best use land resources. The ventilation of cities can be improved by creating green and pleasant streets,

and the permeability of public spaces can be improved by increasing the number of pocket parks to regulate the microclimate of neighborhoods.

2. Creating resilient communities

For urban living, prolonged physical isolation creates existential fears due to shortages of goods and largely fails to fulfill what Maslow called the "social needs" of individuals. However, the increasing abundance of leisure and recreational activities due to digital technology requires special attention to be paid to vulnerable groups, such as the elderly and young children, who have little access to smartphones and for whom nearby public spaces are the only places of activity, leading to a range of psychological and physical problems.

The World Cities Report 2022 introduced the "15-minute cities" concept to create walkable, mixed-use, compact neighborhoods. Before accessibility, most cities had a 15-minute structure, so this goal may have been relatively easy to achieve, depending on the extent of disruption caused by urban regeneration, urban highways, disinvestment, and population loss. However, 15-minute cities are difficult to achieve due to the barriers and distribution of transport and zoning regulations in the 20th century, which require national policy support [4].

3. Improving the design of urban living environments

Urban residential environments are changing from high-density agglomeration to low-density. High-density living environments are more likely to cause epidemics to spread in residential areas, so it is necessary to control the plot ratio and greening rate of the neighborhood to ensure a suitable living density. The development of urban agglomerations is changing from single-core to multi-center, breaking the "center-periphery" spatial pattern and forming a grid-based, multi-center spatial layout. In addition, the openness of the living environment should be emphasized, and different architectural design methods should be explored to combine nature with architecture and to leave open spaces in building clusters to form mobile living spaces with indoor and outdoor connections so that urban residents can have better access to outdoor spaces. The quality of the environment can be improved through vertical greening, rooftop greening, or the incorporation of eco-green spaces.

4. Resilient transport development

The epidemic dramatically changed the logic of urban functioning, forcing people to choose safer modes of travel. To reduce human proximity, public transport provision was reduced or even stopped to varying degrees worldwide, and bike sharing played an important role during this period. During the city closure of Wuhan, the traffic sharing rate of Meituan Bicycle reached 56.2%, and the material transfer was delivered by couriers on electric bicycles, which greatly reduced the impact of the epidemic on people's daily lives. In the post-epidemic era, traffic organization should be transformed into sharing, intelligence, and low-carbon, and compared to car travel, slow modes of transport are conducive to the health of residents and the protection of the ecological environment. In addition to publicity initiatives, there is a need to provide residents with safe and comfortable spaces for slow-moving traffic and to design slow-moving streets using humane design methods based on residents' traveling habits.

Despite the impact of the epidemic, urbanization continues. As disasters triggered by global warming and climate change continue to threaten urban development, it is important to target urban encroachment and minimize development outside existing urban boundaries. The need to accommodate more homes, jobs, and services in these urban areas is compounded in the face of unpredictable disasters, necessitating a multifunctional use of space. Dense cities do not necessarily mean crowded and small. Communities can continue to innovate to address seemingly contradictory spatial needs and improve the climate resilience of cities through flexible urban encryption. Of course, abundant public space is also a key focus when creating denser urban spaces. Cities should focus on increasing density but avoid overcrowding. Horticulturists in Malmö, Sweden, suggest that urban encryption may increase the heat island effect, reduce surfaces for mitigating CO2 emissions, prevent porous surfaces, and reduce biodiversity. Tools used in the early stages of planning can define biodiversity, ecosystem services, and social quality and help to set the framework for early design. These tools can provide practical advice, such as suggesting the number of new trees that need to be planted in nearby forests and the status of endemic species and soil quality. Measurable and practical actions can ensure that desired results are achieved in implementation. In response to sea-level rise and flooding, there are various ways to incorporate adaptive features at the building design level, including elevating structures above flood levels, building with waterproof materials, or constructing barriers. At the level of urban planning, many cities are building large-scale infrastructure projects such as seawalls and flood barriers. Some strategies focus more on the environment, including restoring existing protective ecology, which will mitigate the impact of flooding on cities. In China, where most major cities are affected by flooding, the government is pursuing a "sponge cities" strategy, where 80 percent of urban land is required to absorb or reuse 70 percent of rainwater. [3] Responding to heatwaves and droughts, urban drought vulnerability is increasing globally, with strategies ranging

from basic measures such as restricting water use to more sustainable measures such as desalination and water reuse. Other measures are the testing of technologies to control water use and a shift to more drought-tolerant crops in agricultural production, in addition to more holistic water management strategies that cities can implement, taking into account drinking water, rainwater, and wastewater.

Based on the impact of the New Crown epidemic on cities, this paper presents a vision of a successful city of the future from the perspective of resilient city building. Urban resilience planning is centered on providing safer, healthier, and more sustainable cities to cope with sudden urban disasters. People are extremely vulnerable in the face of disasters, and so are cities. This paper provides a case study of the city of Wuhan in four dimensions; however, cities worldwide should aim to build disaster-resilient cities to meet the challenges they may face in the future. As a next step, we can focus on innovative community planning and balancing the relationship between public and use space. I believe that multifunctional, flexible, and transformable spaces will be valued.

References

[1]Andres Duany, Robert Steuteville. “Defining the 15-Minute City.” CNU, 4 Apr. 2023, www.cnu.org/publicsquare/2021/02/08/defining-15-minute-city.

[2]Beatley, Timothy, and Peter Newman. “Biophilic Cities Are Sustainable, Resilient Cities.” MDPI, 5 Aug. 2013, www.mdpi.com/2071-1050/5/8/3328.

[3]Cutieru, Andreea. “How Cities of the Future Can Resist Climate Change.” ArchDaily, 11 Aug. 2021, www.archdaily.cn/cn/966504/wei-lai-cheng-shi-ru-he-di-yu-qi-hou-bian-hua.

[4]YANG Jianqiang, ZHU Yuxi, LIU Fangqi, et al.“ Urban Regeneration Facing the Post-Coronavirus Era.”Journal of Human Settlements in West China,2020:25-30.

[5]Zhou Qi.“Current Status and Reflections on Resilient Cities Evaluation Research.” Urbanization and Land Use,2021:23-27.