Chapter 11
Sustainable Construction Strategies that Guarantee Humanistic, Inclusive, and Technologically Innovative Urban Design

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ABSTRACT

Cities are undergoing a profound transformation driven by technological advances such as artificial intelligence (AI), the Internet of Things (IoT), and digitalisation, which are redefining how people interact with their urban environment. These changes underscore the need to design more sustainable, inclusive, and resilient cities, capable of balancing technological innovation with social well-being and environmental protection. In this context, the chapter offers a comprehensive analysis of emerging urban design paradigms within the framework of smart and sustainable cities. Based on a systematic literature review and a multidisciplinary perspective, it explores the intersections between technology, sustainability and urbanism, with special attention to key issues such as cybersecurity, resilience, and the circular economy. It also identifies innovative strategies, including green and blue infrastructure, humanistic and inclusive urbanism, and hybrid and modular housing. Finally, it proposes actions to foster urban spaces that are resilient, accessible, and aligned with contemporary challenges.

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INTRODUCTION

Technological progress has never been as rapid or pervasive as it is today. From robotics to artificial intelligence, innovation is not only transforming industry and communication, but also reshaping the way we inhabit and design our cities. These advances not only have an irreversible impact on social, economic and territorial organisation, but are also redefining the way in which people interact with their immediate environment. This is forcing cities, buildings and therefore housing to adapt to new demands. In this context, cities, buildings and housing must become key factors in responding to global changes, where the need for indoor comfort has become an essential requirement to ensure the quality of life of citizens.

The necessity for a healthier, more accessible and efficient environment has brought the importance of urban design to the forefront. Smart cities have emerged as a clear example of how technologies can enhance citizens' life quality, integrating advanced infrastructures and providing an interconnected, inclusive, healthy and sustainable urban system. This concept goes beyond urban spaces digitisation; it is about creating ecosystems that harmonise social well-being, economic development and environmental sustainability, (Anthopoulos, 2015).

However, widespread and abusive use of such technologies, for example, those connected to smart grids, transport systems, buildings, or health services, introduces risks that may become serious if not properly addressed. Cybersecurity therefore becomes a cornerstone in cities design and management, ensuring sensitive data protection and urban services reliability,m, (Ma, 2021).

This technological approach must be accompanied by a humanistic conception of the city. In an increasingly digitalised world, cities must be conceived as spaces that promote social inclusion, active citizen participation and respect for diversity. Urban design that takes into account the needs of all people, including the most vulnerable, is essential to ensure that progress does not leave any sector of society behind. This involves creating accessible and adapted spaces, integrating innovative practices and solutions that foster social justice, equity and cohesión, (Costa, 2021).

Sustainable city concept, based on energy efficiency, reduction of polluting emissions and optimisation of natural resource consumption, has also become a central component of contemporary urban design. It aims to create more environmentally friendly places and resilient communities capable of addressing climate change challenges, mass urbanisation and social inequalities. Renewable energy integration, efficient water resources management, sustainable transport promotion and green spaces creation are among key elements of this approach, (Pérez-Cornejo et al., 2023).

Cities future will be defined not only by their capacity to integrate technologies, but also by their ability to balance economic development, environmental

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