

Editorial

A Commentary on Sustainably Built Environments and Urban Growth Management

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Received: 22 October 2018; Accepted: 23 October 2018; Published: 26 October 2018



Abstract: The concept of urban growth management first emerged in the United States in the 1950s. Its goal was to solve problems stemming from urban sprawl by applying integrated planning, management, and regulation, and to adjust to different development trends in different spaces and times. From the viewpoint of the studies on the link between sustainably built environments, urban growth management, and their interactions, this special issue includes theoretical and empirical studies on sustainable built environment planning and design, sustainable growth management strategies, and other related emerging topics, such as intelligent use of information and communication technologies (ICT) to sustainably build environments, as well as smart cities research with big data, data mining, cloud computing, and internet of things (IOT) ideas.

Keywords: urban growth management; sustainable built environment; quality of life (QoL); smart city & big data

1. Background and Literature Review

During the 21st century, numerous urban developments have gradually deviated from their original urban plans, resulting in the spread of urban sprawl and uncontrolled land development. These effects have produced a number of urban problems, such as serious air pollution, poor environment quality, congestion, and inappropriate land development with low urban density, all of which have negatively affected the quality of life (QoL). The growth management concept was first adopted in the United States to solve problems associated with urban sprawl. Contemporary city planners can use multi-objective growth management methods to simultaneously achieve urban development and QoL. In 2010, the EU failed to meet its Lisbon Strategy goals and subsequently adopted a new strategy called Europe 2020, in which it introduced three essential growth constructs: smart, sustainable, and inclusive growth. The EU also asserts that urban development can improve QoL if the concept of development is replaced with the concept of growth [1–3].

Urban development has deviated from its original planned scope, and the resulting urban sprawl and land overuse have generated various problems. The Lisbon Strategy, initiated in 2000, was intended to make the EU the most competitive economy in the world by 2010. Its main targets were (1) labor participation above 70%, (2) research and development (R&D) expenditure above 3% of the GDP, and (3) an average economic growth rate above 3%. However, the EU did not achieve these three targets. After the failure of the Lisbon Strategy, the then-president of the EU, Manuel Barroso, proposed the Europe 2020 strategy based on essential concepts like smart, sustainable, and inclusive growth [2,3]. How to guide urban development toward growth and increase QoL is thus the central question of the present study. Past studies have argued that growth management is achieved by imposing rigorous guidance and control on regional development in order to ensure improved QoL. As described by Timothy Chapin, four emerging waves of growth management policy in the United States have been evolving since the 1950s [4]. Chapin asserted that growth management policy has focused on control in

the past, but should focus on smart and sustainable growth in the future. However, cities are complex systems affected by society, as well as the economy, environment, and culture. Traditional urban development in the decades since World War II has faced numerous problems, such as long-distance transportation, inefficient services, air quality deterioration, land use fragmentation, and inadequate city images. These problems have had negative effects on QoL [5]. As to the livability and sustainability of cities, urban planning and its relevant transportation deploying have a particularly profound and positive effect [6], and are crucial to the quality of life to urban residents at the same time.

Although rapid socioeconomic development has accelerated urbanization and suburbanization, it has also placed a sizeable burden on the sustainability of resource use and city livability. To create a humanized and sustainable living environment, Jane Jacobs advocated the concept of human-scale, livable communities in the 1960s, and the World Commission on Environment and Development proposed the concept of sustainable development in *Our Common Future* in 1987. Urban planning and activities have a profound effect on the livability and sustainability of a city [7].

It is worth noting that various scientific innovations in the urban development field are flourishing, especially between cutting-edge technologies and their emerging requirements. Often these cutting-edge technologies claim that they could promote the sustainability and livability of the city, or even make the city, society, or environment smarter. For example, Ahmad and Mehmood [8] suggested that future cities will be further driven by developments in information and communication technology, and that logistics will play a critical role in future cities, due to the increasingly micro-dynamic nature of socioeconomic and globalised production and consumption patterns. Naim and Rashid [9] also reflected that the ICT-based and industry-driven approaches maybe are not the only solutions for urbanization and future city designs. Based on the above insightful rethinking and reflecting, we thus realize that the common ground and means of ICT-based or industry-driven approaches often tend to directly achieve sustainability or livability through innovative technologies, mechanisms, or intelligent systems [7].

2. Important Issues for Sustainably Built Environments and Urban Growth Management

During the past decade, there has been an increasing interest in the link between the sustainably built environment and urban growth management in the field of urban studies. This interest is motivated by the possibility that urban development planning and design principles associated with the built environment can be used to manage individual activities and improve the quality of urban life. Sustainably built environments are relatively important to urban growth management that deals with environmental problems, housing issues, and community well-being. Nowadays, the sustainable built environment planning in most cities has come to a turning point, as the traffic and population growing has become a serious concern and put tremendous pressure on both the environment and people in these cities. It is therefore important to find ways or new lifestyles, such as compact transit-oriented development (TOD) formulations for cities that are more flexible, inclusive, and sustainable. Furthermore, for sustainable built environment and urban growth management, not only the growth management principles (including smart growth, sustainable growth, and inclusive growth) should be taken into account, but the innovative/smart planning strategies like mixed use design, green transport, and new urbanism are utilized in planning a sustainably built environment to prevent urban sprawl. On the other hand, a number of built environment attributes, measured both objectively and subjectively, were related to levels of physical activity, including walking, cycling, driving, etc. The priorities for built environment planning were arranged according to their different weights. Thus, the priorities in resource allocation were clearly defined, thereby preventing poor resource management and waste, which will be importantly addressed in this special issue.

Basic standards for the living environment have long been established, excepting adjustments responding to the rapidly aging society. In 1961, the World Health Organization (WHO) recommended that the fundamentals of a healthy residential environment include effective fulfillment of human needs and harmony with local factors, such as climate, geography, and social practice, as well as customs

and traditions, which may be summarized into four key characteristics: safety, health, convenience, and comfort [10].

It is regrettable that administrative subdivisions established by the relevant government units seem not to employ evidence-based governance or consult any objective analytical results based on urban big data; these units appear particularly concerned with whether governance conforms to the agenda and regulations promulgated by the central government. Therefore, it is necessary for us to assist the relevant government agencies in constructing a scientific, quantitative, and objective planning framework to replace the existing outdated planning philosophy, in order to correct the prominent shortcomings of past operations planned solely in accordance with the qualitative judgment and decision-making of official units or planners. The primary goal is to explore or extract big data to improve final decision-making, as well as future strategies, especially in the situation of new urban datasets generating rapidly in the near future [11]. Based on the previous discussion, the numerous datasets and design techniques generated by the decision matrix computing and the grey prediction model involved in this study may also be considered big data [12].

Nowadays people are aware that cities around the globe are being redesigned to become more smart and sustainable. Despite fruitful research progress in sustainability for cities individually, not too much research has been made by integrating the two themes of “smart” and “sustainable” together. Against this background, it is possible to state that there has been growing research that has been systematically investigating sustainable and smart cities, as well as the specific roles planning, development, and management play in those cities’ sustained success in the near future. In this special issue, we hope to aim to gather diverse views and report progress towards both smart and sustainable cities under the consideration of urban growth management principles. The main objective of this special issue is to compile and present the cutting edge work of researchers who focus on joined-up thinking regarding studying a sustainably built environment within the urban growth management concept. By doing so, we believe this special issue on “Sustainable Built Environment and Urban Growth Management” contributes to the knowledge pool in this important area, as well as provides new evidences driven from state-of-the-art and state-of-the-practice research.

The issues about the sustainably built environment and urban growth management raise the common paradigm of the future urban development framework. For example, the urban green belt release has led to urban growth within the associated regions and cities, resulting in an increase in the temperature and the accumulation of pollutants in the atmosphere [13]. Also, the distortion and key factors for specific sites to assess urban sprawl and propose a preliminary course of action for peri-urban growth management is discussed [14]. Furthermore, monitoring and quantifying land use and cover changes (LUCC) have been identified as one of the main causes of biodiversity loss and deforestation in the world. LUCC are also essential to achieve proper land management [15]. Achieving sustainability requires the strengthening of resilience. One paper tries to quantify the susceptibility, vulnerability, and the response and recovery behavior of complex systems for multiple threat scenarios. That approach allows the evaluation of complete urban surroundings and enables a quantitative comparison with other development plans or cities [16]. In addition, one research forecasts the development scale of various buildings in future urban blocks, in order to provide an effective approach to estimate the carbon dioxide generated by the traffic volume [17].

3. Concluding Remarks and Research Directions

The special issue generates new insights by investigating the growth management principles that have emerged firstly to confront negative urban influence. Numerous developed countries failed to achieve their initial development strategy goals and soon afterwards implemented more specific and essential strategies of three innovative growth constructions: smart growth, sustainable growth, and inclusive growth. Following various innovative growth constructions or management principles, contemporary urban agents, including practical planners or official decision units, will be able to pursue urban sustainable development and growth, as well as QoL simultaneously.

In light of sustainable built environment and urban growth management-related matters discussed by the contributors of the special issue, we believe that research frameworks, technical requirements, and findings here not only provide new insights into the functioning of current growth constructions or management principles, but will be used as feasible and important directions for practical planners or official decision agents, in order to facilitate urban sustainability and QoL in the end.

Funding: This research received no external funding.

Acknowledgments: The editor wishes to thank the contributed authors of the special issue papers for accepting my cordial invitation and submitting, as well as revising their manuscripts within a short time frame. The editor also thanks the reviewers for their thorough and timely valuable review comments, and the journal's Assistant Editor, Elaine Li, for inviting me to serve as the Guest Editor of this Special Issue.

Conflicts of Interest: The author declares no conflicts of interest.

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