

China City Planning Review

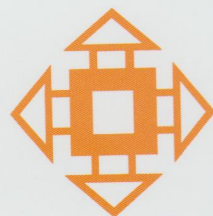
Vol. 26, No.2, 2017

ISSN 1002-8447



城市规划 (英文版)

CN 11-1735/TU ¥ 25.00 € 15.00 \$ 20.00

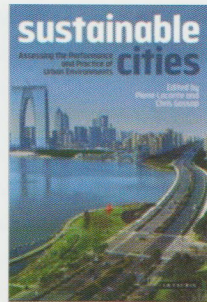


Review on *Sustainable Cities: Assessing the Performance and Practice of Urban Environments*

Chen Yulin, Jiang Yang

Sustainable Cities: Assessing the Performance and Practice of Urban Environments

Authors: Pierre Laconte, Chris Gossop
Year: 2016
Publisher: I. B. Tauris & Co. Ltd
ISBN: 9781784532321 (288 pages, in English)



How to build sustainable cities has always been a common concern to the world for a long period of time. Sustainable development usually includes three dimensions: economy, society, and environment. *Sustainable Cities: Assessing the Performance and Practice of Urban Environments* carries out a relatively systematic discussion from the perspective of environment through a collection of papers from different disciplines on the latest city practices.

The book is a joint work by Pierre Laconte and Chris Gossop. Pierre Laconte is the former President of ISOCARP and the former Secretary-General of IAPT, and now he is the President of Foundation for the Urban Environment. He was a jury member for the “European Green Capital Award” initiated by the EU in 2012 and 13, and also a member of the Lee Kuan Yew World City Award Council. Chris Gossop is the Deputy Director of the Town and Country Planning Association of UK, being in charge of policy issues concerning energy source and environment in the UK and EU. He was also a guest editor of the special issue on low carbon cities of the journal of Cities, and headed the organization of the “Low Carbon Cities” ISOCARP World Conference in 2009.

As a collection of theses, the book is jointly finished by 19 different authors who are top experts in their areas, forming a distinguished and diversified team. Among them, most are scholars from European and American colleges and universities, including a distinguished British urban economist and geographer, Peter Hall (University College London), a famous Canadian eco-economist, William E. Rees (University of British Columbia), a theo-

retical geographer from the US, Jochen Albrecht (City University of New York), a natural geographer of the UK, Ian Douglas (The University of Manchester), and a German planning expert, Elke Pahl-Weber (Technische Universität Berlin). Other authors from science research institutions include a geographic information data expert from the US, Jake Garcia (New York Fund Center), industrial ecologist, Niels Schulz (United Nations Industrial Development Organization), Birgit Georgi (European Environment Agency), and German urban ecologist, Ulrich Heink (Helmholtz Center for Environmental Research). In addition, there are also researchers with rich practice experiences, like German planning expert, Uli Hellwet (the former Director of the Planning and Construction Department of Kassel), professional architect and city designer of the US, Mark Dwyer, green building expert, Kerry J. Mashford (from the UK National Energy Foundation), et al. The list of authors shows that the resolution of a sustainable city inevitably relies on the joint efforts from different disciplines and fields, which demands for constant tests and improvement in practice.

This book is divided into three parts. The first part mainly discusses the three spatial dimensions for assessment of a sustainable urban environment – building, community, and city. ① There are several widely recognized assessment systems for sustainable building, represented by BREEAM (Building Research Establishment Environmental Assessment Method) in Europe and LEED (Leadership in Energy and Environmental Design) in the US. However, the actual energy consumption of many new buildings often fails to reach their designed standard, so the problem of “gap between standard and performance” in the field of energy-saving buildings should be considered seriously. In the meantime, due to a large amount of old and dilapidated buildings, the cost on conducting energy-saving reconstruction is significant (especially to historical buildings), making it a difficult task. Therefore, Kerry J. Mashford suggests enhancing the management on building operations and establishing a building energy consumption monitor and assessment method that is easier and more operable, so as to identify the disparity between the goal and the reality and to accumulate more experiences in practice. In addition, the

provision of real-time and abundant information on energy consumption to building owners, property management companies, and residents, will stimulate people to show more concerns for energy-saving activities. ② At the community dimension, Elke Pahlweber and Sebastian Seelig reviewed several methods used in Germany on certification of German sustainable communities from a critical perspective, including the one used by the German Sustainable Building Council. First of all, they pointed out that most of the tools focus on new development projects and neglect the demand of participation by existing communities and local residents. Secondly, these tools lack a due concern about the sustainability of economic development, so they fail to examine the efficiency of related fiscal expenditures by government during the city construction process. Thirdly, current certification tools can easily be used for market promotion by real estate development projects at the initial phase, which leads to an unclear certification process and the lack of re-assessment on its actual operation effects after the completion of construction. ③ At the city dimension, there is an increasing number of ranking of sustainable cities with quite different results. Birgit Georgi pointed out multiple reasons behind the differentiated results, including different assessment focuses (stressing result or stressing process), different assessment methods (data quantization or qualitative interview), different index weights (formula deduction or expert review), etc. The author is quite inclusive about the situation because she believes that under different particular objectives and restrictive conditions, all city ranking results are reasonable, but at the same time, the process should be open and transparent for monitor and an extensive and systematic clarification of the accessibility, data quality, and using conditions of city index should be conducted.

The second part of the book introduces three perspectives to assess the general systematic city condition – city greenhouse gas emission, ecological footprints in the city, and biological diversity of the city. ① The formulation of a list of city greenhouse gas emission is a fundamental work responding to the global warming. As high as 40 – 80% of greenhouse gas in the world is emitted in the city, and only when the decision-makers clearly understand the quantity distribution and driving elements of greenhouse emission, can they set an efficient emission reduction goal and strategy. In this book, Peter J. Marcotullio et al., reviewed the compilation of a large number of lists before pointing out three major challenges. The first one is the definition of geographical boundary of city space, the second one is the clarification of the scope of greenhouse gas categories, and the third is the selection of a specific method used to formulate the list. Since there is no

unified standard for these three issues mentioned above, the city greenhouse gas emission lists released by different organizations and researchers are significantly different. Generally speaking, the top-down analysis method is more adaptable to cross-cities comparison and study on general rules concerning the relationship between city and energy consumption; and the bottom-up method is more helpful to support the local decision-making and communication and the identification of refined emission reduction categories. ② On the analysis of ecological footprints in the city, the center is to measure and calculate the biological productive land area for maintaining people's resources consumption and wastes absorption in the urban area, which will be compared with the usable biological productive land in the city, so as to reveal that how much human activities will influence the natural biological system. William E. Rees, the author of this chapter, created this method in the 1990s, and he stresses that it is still quite useful today. First of all, the concept of the biological footprint regards the city as a part of the human ecological system, so the scheme designed for sustainable cities should also consider the sustainability of the surrounding area that maintains the city's functions. Secondly, the latest city ecological footprints analysis cases show that almost none of the modern cities is sustainable – for example, in order to realize a truly sustainable development, the high-income cities in North America need to cut down as high as 80% per capita energy consumption and material production – and our current efforts on pushing forward sustainable development (such as green building, mixed energy-driven vehicle, smart growth, etc.) are far from enough. Thirdly, the city's ecological footprint analysis reveals that the sustainability of individual cities depends on the sustainability at higher level (region, country, and world). Due to the public product property of sustainability, local government will come across huge political hindrance when acting altruistically under the economic growth driving environment, so the international cooperation and global collaboration resolutions are unprecedentedly important. ③ On the analysis of biological diversity of a city, Ulrich Heink started with an introduction on three values of biological diversity – use value, inherent value, and existence value, and the urbanization lays complicated influences over the biological diversity in city. On one hand, the heat island effect produced by the built-up area of cities leads to an increase in the number of thermophiles in cities in northern high latitude region. And compared to the countryside, cities can attract more new species. On the other hand, urbanization results in the reduction and the fragment distribution of the quantity of land suitable for wildlife habitat like forestry and wetland, so the existence of certain regional or even state-level species are threatened seriously. Therefore, three

aspects should be considered when assessing a city plan from the perspective of biological diversity in the city: one is to see whether the plan is in favor of protecting local rare and threatened species; two is to see whether it is in favor of maintaining the local natural condition; and three is to see whether it will showcase the cultural, leisure, and aesthetical values of local biological diversity.

The third part of the book reviews several practices in the field of sustainable development in different cities and regions. The chapter attracting the most attentions is surely the one by Peter Hall on sustainable urban transportation – since he unfortunately passed away at the final phase of the edition, it becomes his final work. According to his opinions, deep changes have happened to transportation projects assessment in different countries over the past half century, which is from the simple supply based on demand to coordinated consideration to multiple factors. For example in the UK, the initiation of a transportation project usually considers factors including the fiscal capacity of government, safety, accessibility, fairness, and environmental sustainability. Nevertheless, it is still hard to verify and calculate those indirect project benefits. As the driving effects of the investment of public transportation facilities over the revitalization of economically declined areas have not reached consensus yet, it is difficult to get approval to start a city rail facility construction in the UK. Peter Hall believed that an effective acquisition of the profit gained from land value increment will remedy the huge fund deficiency in city construction. And under the land private ownership system, the tax increment financing mechanism of the US and the community infrastructure levy mechanism that newly appears in the UK will be the direction for future exploration though their current practice results are not ideal. As for the sustainable renovation of historical blocks in the city, Chris Gossop summarized the successful experiences from a project in London's King's Cross area, such as creating a consecutive and high-quality public space network to link up the new and old buildings, repairing the constructions from the Victorian Age to highlight the historical characteristics of the block as a transportation and trade hub, allowing mixed land use to guarantee the 24-hour vitality in the area, providing indemnificatory housing to promote social equality, reducing parking lots in the area to encourage green transportation, designing energy-saving buildings and heat-power joint supply system to reduce the emission of CO₂, etc. Other cases in this part include the renewal of the Manchester Canal in the UK that focuses on water resource management, the protection of the canal area in Amsterdam, the Netherlands that concerns city heritage protection, and the construction of a new zone for the International Architecture Exhibi-

tion in Hamburg, Germany that applies the idea of using recycled resources. Focusing on environment, all these projects achieved a balance to fulfill the demands of sustainable economic and social development in the planning implementation.

Generally speaking, *Sustainable Cities: Assessing the Performance and Practice of Urban Environments* is a masterpiece gathering the wisdoms of well-known experts from different fields concerning sustainable cities. It needs to be particularly pointed out that despite the introduction to frontier concepts and technologies, there are also critiques and reflections over practical applications of these ideas and technologies, which make the direction clearer for future related studies and practices. Another limitation of the book is that since all the authors are from western countries, the assessment tools and practical cases they discussed are all for highly urbanized developed cities, which might not be applicable to developing countries especially areas amid rapid urbanization.

First of all, distinct disparity exists between developing countries and western countries on the city spatial form and urbanization pattern. For example in China, the urbanization pattern features government leadership, large-scale planning, all-round development, obvious spatial discontinuities, etc. (Li et al., 2012), which are not usually seen in the urbanization process of western countries. On city spatial morphology, the population density in cities of developing countries (especially large cities) is generally high, the proportion of production space is significant, the infrastructure is insufficient, the environment is fragile, and the problem of slums is serious. In this case, an indiscriminate imitation of the experiences and standards from western developed cities may fail to realize expected results (Chen and Jiang, 2013). Therefore, developing countries should actively summarize their own experiences in city construction, and enhance the empirical studies on local places, so as to find the path of sustainable city development suitable for their own conditions.

Secondly, developing countries face the challenge of insufficient data when carrying out assessment on sustainable development. In western countries, related assessment tools are required for high result accuracy and creditability, to which the cost is the strict threshold for data, as well as time and other costs in tools application. But in developing countries, due to the ignorance to related data accumulation and the diversified statistical calibers, it is difficult to directly apply existing tools from the West. Therefore, to build up the assessment method and tools on sustainable cities

that are in line with the conditions in developing countries, the balance between the accuracy of the assessment and the feasibility of implementation needs to be found; moreover, these methods and tools should be able to support rapid and high-frequency decision-making on space. In this sense, the recently established Global Platform for Sustainable Cities (GPSC) by the World Bank and the Global Environment Facility can be regarded as a positive attempt. It aims at building up a city sustainability index system and related assessment and diagnosis tools for developing countries. Through quantizing the benefit of urban planning decisions based on geographic spatial data, it guides the investment toward city action plans that are in favor of sustainability (World Bank, 2016). Besides, fully using the big data analysis techniques will also make up the deficiency in official data like statistics year-books.

According to the estimation by the UN, by 2050, as high as 66% of the world's total population will be living in cities. Most of newly rising cities are in developing countries, especially in Asian and African countries (UN, 2014). How to guarantee their development track on a sustainable path is of vital importance. As the view of overall sustainability stressed in the book, the sustainable development of developed cities cannot be separated from the sustainable development of developing countries. On the convention of Habitat III that was held in Kiel in October 2016, the New City Agenda was reviewed and approved, which established a global standard for sustainable city development and laid down a framework foundation for exploration of sustainable urbanization resolutions via international cooperation (UN, 2016). Under the guidance of the New City Agenda, cities should follow the people-oriented value as well as the inherent development laws. With more efforts into developing and using new technologies, more achievements are certainly warranted in the future and the cause of sustainable city development will also open its new chapter. ■

(This work is supported by the National Natural Science Foundation of China (No. 51378278).)

Translated by Qian Fang
Proofread by Tang Yan

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Reviewers

Chen Yulin, PhD, Associate Professor, Department of Urban Planning, School of Architecture, Tsinghua University, Beijing, P. R. China. Email: chenyulin@mails.tsinghua.edu.cn

Jiang Yang, PhD, Director, China Sustainable Transportation Center, Beijing, P. R. China. Email: yangjiang@chinastc.org