

低碳生态城市规划方法

Eco-low Carbon Urban Planning Methodology

采访 Interviewed by / 田乐 Tina TIAN, 涂先明 Xianming TU
整理 Edited by / 刘琴博 Qinbo LIU
翻译 Translated by / 涂先明 Xianming TU



马克·休伊特 Mark HEWLETT

阿特金斯亚太区低碳和可持续发展董事
Associate for Low Carbon and Sustainability, Asia Pacific, Atkins

日前,阿特金斯与中国城市科学联合会合作编制了《低碳生态城市规划方法》,请您大致介绍一下它的编制背景。

马克·休伊特(以下简称休伊特):此项目由英国外交与联邦事务部繁荣基金资助,中国住房与城乡建设部协同资助,我们于一年前开始,与英国外交与联邦事务部和中国住房与城乡建设部紧密合作,着手低碳生态城市规划方法的研究。

中国城市化的特征和速度在全球来说都是独一无二的,其以乡村人口大量涌入城市这一现象为代表。而且,中国持续的经济增长使得这种城市化过程不断加速。中央政府近期出台的一系列举措表明了中国对于新型的城镇化发展的日益重视——这不仅涉及如何构建一种更高质量的建成环境,也包括如何与自然和谐发展。中国可持续城市化的举措成为《十二五规划》中重要的组成部分,强调了能源与资源的有效利用,减少温室气体排放以及环境保护的重要性。

我认为目前关键的问题在于,随着对于新型

摘要 / 随着对于新型城镇化的不断认识,我们迫切需要一种新的城市规划方法。这种新的规划方法需要将低碳生态视为首要和核心目标,并强调(技术、流程、概念上的)整合,理解地方文脉,在与自然和谐的宜人尺度上进行发展,营造场所感,并通过绿色信贷倡议推动经济的低碳生态发展。在这一背景下编制的《低碳生态城市规划方法》是一种具有策略性和统领性的导则,其核心在于提供一种清晰的框架,一种实用的、步骤性的城市规划方法。

关键词 / 低碳生态; 城市规划; 导则; 新型城镇化; 中国

Abstract / There is an increasing realization that the new type of urbanization requires a new type of urban planning. The new type of urban planning puts eco-low carbon objectives front and center, with strong emphasis on integration (technical, process and conceptual), understanding local context, human scale development in harmony with nature, strong place making, and partnering to finance eco-low carbon development through green credit initiatives. In this context, the *Eco-low Carbon Urban Planning Methodology* is necessarily quite strategic and high-level. The core emphasis is on providing a clear framework and a practical, step by step approach.

Key words / Eco-low Carbon; Urban Planning; Methodology; New Urbanization; China

城镇化认识的不断加强,我们迫切需要一种新的城市规划方法。这种新的规划方法需要将生态低碳视为首要和核心目标,并强调(技术、流程、概念上的)整合,理解地方文脉,在与自然和谐的宜人尺度上进行发展,营造强烈的场所感,并通过绿色信贷倡议推动经济的生态低碳发展。

不同的地域文化、地理环境、气候条件,使得中国各地的环境千差万别。这一点在中国的城市规划中越来越被意识到。在相当长的一段时间之前,城市规划的方法是根植于当地环境之中的。但是随着现代规划方法的演变,一些内容已渐渐遗失。对于阿特金斯而言,在我们所开展的任何规划项目中,都将当地文脉视为我们工作的一个核心要素。一个成功的规划需要充分考虑不同的经济阶段、社会环境、地理特征以及地方文化。

同样重要的是,我们需要设立一种能够将融资与新型可持续城镇化结合起来的机制。在这种新型城镇化的背景之下,项目融资将不再能够通过某一组织的一己之力来完成。因此,在整个项目的开发融资中,绿色信贷措施应该越来越被予以重视。

Recently, ATKINS and China Society for Urban Studies (CSUS) have developed the *Eco-low Carbon Urban Planning Methodology*. Could you please generally introduce its background?

Mark HEWLETT (HEWLETT hereafter): The Eco-low Carbon (ELC) Urban Planning Methodology has been prepared with funding from the UK's Foreign and Commonwealth Office (FCO) Prosperity Fund, and co-funded by China's Ministry of Housing and Urban Rural Development (MOHURD). We started developing the ELC urban planning guidance approximately one year ago, working closely with MOHURD and the FCO.

Obviously, the actual character and pace of Chinese urbanization is unique globally, representing movement of very substantial numbers of people from rural to urban areas. China's continuing economic development is accelerating urbanization. Recent central government initiatives indicate an increasing emphasis on what is termed a new type of urbanization in China. The new type of urbanization is partly about a higher quality built environment, and also about developing in harmony with nature. China's emerging sustainable urbanization initiative forms a key component of the government's *Twelfth Five Year Plan*, which places strong emphasis on energy and resource efficiency, reducing greenhouse gas emissions and environmental protection.

So I think the key thing now is that there is an increasing realization that the new type of urbanization requires a new type of urban planning. The new type of urban planning puts ELC objectives front and center, with strong emphasis on integration (technical, process and conceptual), understanding local context, human scale development in harmony with nature, strong place making, and partnering to finance ELC development through green credit initiatives.

China has an incredible diversity of local conditions, with so many different local cultures, geographies,

and climatic conditions. This is now becoming an increasing focus in urban planning in China. Probably in the more distant past, approaches based on local conditions were more integrated in urban planning. But with the evolution of modern urban planning some of these things were lost sight of. For Atkins local context forms a key element of our urban planning everywhere we work. Successful urban planning requires taking full account of different economic stages, social conditions, geographies and other local conditions.

Equally important, I think, are issues of how we create the mechanisms to bring together the finance needed for the new sustainable urbanization. It is no longer the case that one particular organization can manage the complete picture of project finance. Attention is also turning to the increasing role of green credit initiatives in overall development project financing.

I think the key question is understanding the positive benefits of ELC approaches and that increasingly there is a need to bring together the various components in a broad framework. Traditional planning tends to place strong focus on quite specific aspects of development. With ELC planning, taking in a more rounded, bigger picture helps in understanding different possibilities. I think in terms of some issues in China, there are definitely opportunities to try to link not just economic benefits, but the total benefits of urban development, including the quality of development, and the overall effects on the ecology and environment. And obviously the effects will be different in different locations in China. China has so many different local conditions, and different cultures and contexts, which are key to successful urban planning and taking the focus beyond just economic development. Economic development of course is very important, but successful, future proofed cities require a broader, more holistic approach.

The *ELC Urban Planning Methodology* does not attempt to cover all the diverse local conditions in China. It is necessarily quite strategic and high-level.

我认为关键问题是，我们需要理解低碳生态城市规划的积极效益，而且越来越有必要将城市发展的方方面面整合在一个大的框架之下。传统的城市规划方法往往只关注发展的某些方面，而低碳生态规划则强调从更加全面、宏观的角度来理解各种可能性。谈到中国面临的这些问题，我坚信有很多机遇将经济效益，与城市发展的总体效益——这包括发展的质量，以及发展对于生态和环境的全部影响——连接起来。很显然，中国不同地区的发展所带来的影响也各异。中国拥有如此千差万别的地方环境和地域文脉，当地城市规划成功与否需要考虑这些地方特色，而不仅仅是经济发展。经济发展固然重要，但成功的、面向未来的城市需要的是一种视野更广阔、考虑更全面的发展途径。

《低碳生态城市规划方法》并不试图涵盖中国所有的地方环境，它是一种具有高度策略性和统领性的导则，其核心在于提供一个清晰的框架，一种实用的、步骤性的城市规划方法。

相较于低碳生态发展，中国中央政府更关注于向开发商和地方政府传播生态文明的理念。这也反映在我们的项目中。两三年前，中国更关注为低碳生态的项目和城市制定指标体系。例如，在5年内实现降低20%能耗的目标。但这仅仅是一个目标而已。现在，关注点开始逐渐转向实现这些目标所需要的途径，以及其中所涉及的具体步骤，即我们要做什么才能实现这些目标。

建立指标体系能够帮助我们确立低碳生态规划的总体目标，但在中国，尚缺乏切实可行的途径和方法来指导城市规划师实现这些目标。《低碳生态城市规划方法》旨在填补这一空白。基于国际最佳实践，它为中国的城市规划“量身定制”了一套清晰、实用的生态低碳城市规划方法。它被编制为一种操作指南，以对日常的城市规划工作进行实际的、“落地的”指导。

您能评述一下中国在低碳城市规划方面所进行的实践吗？

休伊特： 如果要用一个词来评价中国迅速发展的低碳城市规划实践，我想应该是“喜忧参半”。尽管

中国低碳生态城市建设示范项目的名单不断增加，但大多缺乏低碳生态规划的理论与方法，过分强调以绿色技术来应对城市问题，且在实施中还面临着技术和财政问题。

目前中国的法定规划体系和规划实践方式，对有效地整合低碳生态策略与城市规划带来了诸多障碍。在《低碳生态城市规划方法》中，我们将导则整合进中国的城市规划体系中。在城市规划过程中的每个阶段——从最初的分析到最后的实施——低碳生态规划步骤都与传统的总体规划和设计步骤相契合。因此，低碳生态规划不是传统规划的附加品，而是拓展了整个规划过程，使之成为其中一个有机的组成部分。“低碳生态规划”成为“好的规划”的代名词。随着在城市规划的最早阶段就采用低碳生态途径和方法，人们会逐渐意识到在落实政府所制定的新型城镇化规划的愿景中，城市规划所发挥的核心作用。

请问以能效/低碳为出发点的规划方法与以生态效益为出发点的规划之间有何区别？

休伊特： 前者更关注建筑与基础设施。这包括与气候相适应的建筑形式，紧凑型、高密度和综合型利用开发，以公共交通和非机动车为导向的交通，以及低碳基础设施。后者则更关注开放空间和水体，或是保护或强化生态。它关乎如何创造生活、工作与娱乐的空间，以推动一种更健康的生活方式。它强调通过优化多功能、多效益的途径来创建包括水体在内的绿色空间。这些功能通常都是低碳的（例如，利用绿色空间以供步行、骑自行车、可再生能源生产）。同时，绿色空间在缓解城市热岛效应、改善户外环境的舒适度方面也扮演着重要角色。但是，这两个方面在生态低碳规划中应该整合起来，不能割裂来看。否则，我们将错失掉这个能为未来带来显著效益的大好机遇。

请问在能源规划中，依据项目尺度和能源利用方式的不同，所采取的策略有何不同？

休伊特： 在小尺度层面上，我们往往会更加关注单

The core emphasis is on providing a clear framework and a practical, step by step approach.

In disseminating the concept of ecological civilization the central government is encouraging developers and local governments to focus more on ELC development. And that is reflected in our projects as well. Two or three years ago in China, the focus was more on establishing indicator systems in the fields of ELC project and city development. For example, reduction in energy consumption by 20% within five years. But that is just a target. Attention is now increasingly shifting to the methods and approaches needed to achieve targets and the specific steps involved. What should we do to achieve the target?

While indicator systems are important in helping to define and determine overall ELC planning goals, there is currently little guidance for urban planners, in terms of practical approaches and methods, on the means of achieving ELC goals in China. The *ELC Urban Planning Methodology* is aimed at addressing this gap. It provides a clear, practical methodology for ELC urban planning which sets out approaches and methods tailored for Chinese urban planning based on international best practice. It is designed for hands-on use as an everyday working tool in a practical, “on the ground” urban planning setting.

Could you please comment the practice of eco-low carbon urban planning in China?

HEWLETT: Evaluation of emerging experience from China’s growing list of ELC city demonstration projects indicates a mixed picture, with lack of ELC planning theory and methods and over emphasis on green technologies being commonly cited issues, together with both technical and financial issues in implementation.

The current legal urban planning system and planning practice in China present a number of significant barriers to effective ELC integrated urban

planning. The Methodology has been designed to be fully integrated with the Chinese urban planning system. At each stage in the planning process, from initial analyses through to implementation, ELC planning steps have been specified which can be integrated with conventional master planning and design steps. ELC urban planning is thus not viewed as an add-on to conventional planning. It represents a broadening of the planning process as a whole, in which ELC planning becomes an integral component. Increasingly, “ELC planning” is becoming synonymous simply with “good planning”. The central role of urban planning, with “front loading” of ELC approaches and methods from the earliest stages of the urban planning process, is increasingly recognized as vital in implementing the vision of the government’s new national urbanization plan.

What is the essential difference between the urban planning approaches that consider energy-efficient consumption and low-carbon as the starting point, and the approaches giving priorities to ecological benefits?

HEWLETT: The former is focused primarily on buildings and infrastructure. This includes climate responsive built form, compact, higher density and mixed-use development, as well as transit oriented and non-motorized transport and low carbon utility infrastructure. The latter focuses more on open space and water bodies. However, this is about more than just protecting / enhancing ecology. It is about creating great places to live, work and play, which promote a healthy lifestyle. The emphasis is on optimizing multi-function, multi-benefit approaches to green space, including areas of water bodies. Functions can also be low carbon (for example, green space used for walking, cycling, and renewable energy). Green space also play a large role in reduction of urban heat island (UHI) effects and enhancing outdoor thermal comfort. However, these two elements of ELC urban planning should be fully

体建筑或成组的建筑。而在大尺度层面上，更多将建筑置于所处的基础设施的背景之中来考虑。在建筑尺度可以采取以下三种策略：1）通过主动与被动设计来减少能源需求；2）提高建筑内部系统（水暖电系统、暖通空调系统）的运行效率；3）采用可再生能源系统。在大尺度上，关键点在于如何布设一系列复杂的能源基础设施，以及如何将这些基础设施彼此间相互整合、与以建筑为重心的措施相互整合，并与包括交通在内的其他类型的基础设施相互整合。

建筑的形态、紧凑度、密度、布局、朝向，以及建筑室外热环境和热岛效应（由建筑能耗引发，同时也会对其产生影响）均会对建筑的耗能产生重要影响。从这个层面来说，建筑之间的空间与建筑本身同等重要——当然，利用绿色空间来生产可再生能源也是一个重要的方面。通过对能源（及其他）基础设施的设计和管理来实现最佳的低碳效益（或使得该效益可与其他效益相平衡），已逐渐成为智能技术（一种新兴的重要使能技术）中的一项研究领域。土地利用类型是影响能源消耗的另一个关键因素。对不同的能源来源进行配置以满足全天的需求也是能源规划的重要方面。共享型基础设施（通常采用智能技术）逐渐被视为一种能够使能源需求和生产更加高效、平衡的途径。

能源规划并不仅仅是关于建筑与能源基础设施。工业生产中的能耗也是一个关注的焦点——当然，这同时也是促进生态工业规划途径发展的动因。机动车交通也是能源消耗大户。城市规划在土地利用的空间配置、混合程度、密度与交通网络的分布（尤其是公共交通）等领域都扮演着重要角色。

目前大多数的低碳策略更适宜于新城建设，那么应该如何对高度城市化地区的能源消耗模式/格局进行改善？

休伊特：相较于在规划和设计新的项目时将低碳生态的方法考虑进来，对已建成环境的改造往往更加困难，且花费更加高昂。这也是我们需要在项目初始就引入低碳生态的城市规划方法的原因所在。城区中那些“硬连线”式的、浪费型高能耗发展模式所带来的风险在城市规划领域越来越受到重视。

对已建成环境进行改造的关键问题是将花费与运营的效益联系起来。方法之一是通过能源服务公司来提供能效改善资金，或者投资当地的电厂，并以共享节能所带来的效益或在终端用户的收益中分一杯羹来作为回报。另一种更直接的方式是促使消费者要么减少能耗，要么自行生产能源，或者两者兼而有之。对可再生能源进行“电网回购”即是一个非常典型的例子。**LAF**



1. 长沙梅溪湖低碳规划
1. Meixi Lake Low Carbon Plan, Changsha

integrated throughout the planning process and cannot be looked at separately, as without this opportunities for further substantial benefits can often be overlooked.

In energy planning, what focuses and approaches will be employed in terms of the different scales and uses of projects / buildings?

HEWLETT: At smaller scales the focus is more on single buildings or groups of buildings. At larger scales it is more appropriate to consider buildings in the context of the infrastructure that serves them. Building scale approaches are focused more on 1) passive and active design to reduce demand; 2) in-building systems [Mechanical, Electrical and Plumbing (MEP) systems, Heating, Ventilation and Air Conditioning (HVAC) systems] to increase efficiency; 3) building mounted renewable energy systems. At larger scales, the focus is more on planning for the complex array of energy infrastructure options, and how these can be integrated with 1) each other; 2) building focused measures; 3) other types of infrastructure, including transport.

The form, compactness, density, layout and orientation of buildings can very significantly influence building energy performance, as well outdoor thermal comfort and UHI effects (which also affect, and are affected by, building energy). The spaces between buildings are as important as the buildings themselves in this context. And of course the use of green spaces for renewable energy is also a factor. Increasingly, designing and managing energy (and other) infrastructure to optimize low carbon benefits (or balancing these with other benefits) is becoming a domain of smart technology, which is emerging as a key enabling technology. Land use type is a critical determinant of energy consumption, and the load profile throughout the day from different sources can be a key factor in energy planning. Increasingly, approaches which share infrastructure (often using smart technology) are seen as the means by which

energy demand and production capacity can be more effectively and efficiently balanced.

Energy planning is not just about buildings and energy infrastructure. Energy consumption in industrial processes is a major focus, of course, which has led to the development of eco-industrial planning approaches. Motorized transport is a key energy consumer. Land use spatial configuration, mix, densities and transport network distribution (particularly transit) are all areas where urban planning plays a strong role.

Most current low-carbon urban planning strategies are more appropriate to be adopted in new city / town construction, while how to improve the energy consumption mode / pattern in highly urbanized areas?

HEWLETT: Retrofitting already constructed development for ELC benefits is usually more difficult, takes longer and is much more expensive, than incorporating ELC approaches in the planning and design of new development. This is why getting in early in the process, and integrating, are key. The risks of “hard wiring” wasteful, higher energy consuming development within urban areas are an increasing focus of urban planning.

The key to retrofitting is to ensure capital costs can be linked with operational benefits. One way to do this is through use of energy services companies (ESCOs), which can be used to finance energy efficiency improvements or local generation plants in return for a share of the energy saving benefits or a proportion of the end user tariff revenues. Another is to provide direct incentives to consumers to either reduce energy consumption, produce their own energy or both. Feed-in-Tariffs are a well-known example of this for the latter, for electrical renewables. **LAF**