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Planning for sustainable cities? A comparative content analysis of the master plans of eco, low-carbon and conventional new towns in China

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ABSTRACT

Of all sustainable city concepts, eco-cities and low-carbon cities have received a national endorsement in China, with such pilot towns under construction nationwide. However, the performance of eco and low-carbon cities in China has long been heatedly debated, with many negative arguments delineating them as profit-seeking and image-building projects simply capped with impressive names. In reality, while some projects have not fulfilled expectations, most are still at the first stage of construction, so it is too early to regard eco and low-carbon cities as a failure. In this paper, the question of how eco and low-carbon new towns differ from conventional ones in their social, environmental and economic characteristics is posed. Compared to conventional new town plans, the eco and low-carbon city plans incorporate more of a focus on sustainability principles. We examine such perceptions by comparing the master plans of eco, low-carbon and conventional new towns in various aspects ranging from general principles to specific design. The analysis indicates the master plans of the three groups of new towns vary in different ways. The eco-cities and low-carbon cities reflect two trends to promote urban sustainability. The eco new towns are more concerned with the promotion of a sustainable way of life, with its planning focus evenly distributed among all aspects. They particularly stress the creation of an aesthetically pleasing livable environment. In contrast, low-carbon new towns are concerned with the promotion of a sustainable way of production, with an uneven emphasis on the economic sectors such as industrial integration and transformation. However, the master plans only reveal how eco/low-carbon cities are originally intended to differ from non-eco/low-carbon-cities when they start and more comprehensive studies are needed for it to be possible to predict where they will go in the future.

1. Introduction

Since their early days, eco and low-carbon cities in China have been burdened with expectations of solving the environmental problems (Chang & Sheppard, 2013). Some cases, particularly the flagship projects, have been intensively studied by academia and highlighted in policy discourse (Chang, Leitner, & Sheppard, 2016). Eco and low-carbon cities are much the results of "policy mobility" (or "policy transfer"), a learning and borrowing process in which policy tools are dissembled in exporting countries and reassembled in importing countries. This has been considered by the central government of China as a shortcut to improving environmental and ecological quality (Dolowitz & Marsh, 1996; Rose, 1993). In fact, most flagship projects are jointly developed by the Chinese local/central governments and foreign governments/business partners. However, although it is certainly laudable to present the sustainable cities emerging from these projects as a panacea for environmental degradation, the realization is less so. The performance of eco and low-carbon new towns has long been heatedly debated, with many negative arguments delineating them as profit-seeking and image-building new town developments simply capped with impressive names (Miao & Lang, 2015; Pow & Neo, 2015). It is too early to regard them as a failure, however, as many projects are still in the construction stage.

Since it is too early to judge the outcomes and performance of these eco and low-carbon cities, their master plans provide useful information, revealing how they differ from ordinary development projects in the early stages. As the master plan prescribes and underpins all subsequent developments, a summary of the characteristics of their master plans will shed light on the differences

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between eco-cities, low-carbon cities and conventional cases in their subsequent stages, indicating the extent to which these projects are image-building and profit-making projects. In effect, it would be premature to argue that the projects provide a capitalist "spatial fix" or "sustainability fix" at the current stage (Harvey, 2001, 2007).[1] However, it might be argued that sustainable principles are integrated into the plans, whereas their effects remain to be seen in the future. Prior to the discourse analysis, it needs to be highlighted that the conventional perspective assumes that eco-cities and low-carbon cities incorporate more sustainable planning principles. That is, they particularly promote green economic sectors, spotlight the design of green landscapes and emphasis on greener transportation. This assumption is tested in the study by providing an answer to the question: How do eco-cities and low-carbon cities differ from non-eco/low-carbon cities in their very early stages of development?

The following section discusses the current literature on eco-city and low-carbon city development in China. Also, literature on content analysis and its application to the master plans is introduced in this section. A framework is also proposed, showing the factors that may influence the future realization of the master plans. Twelve master plans (four of eco-cities, four of low-carbon cities and four of conventional new towns) are selected for content analysis in section three along with a summary of the data processing methods. In section four, the results of the discourse analysis is illustrated in figures, tables and charts to reveal the differences between eco/low-carbon and conventional new towns at the planning stage. Concluding remarks are provided in section five.

2. Theoretical framing: eco/low-carbon cities and content analysis

The eco-city and low-carbon cities have been gradually growing in salience in academic and policy discourse since the 1990s (Fu & Zhang, 2017; de Jong, Joss, Schraven, Zhan, & Weijnen, 2015). Research into eco-cities was initiated by the 1985 report: Our Common Future. However, eco-city and low-carbon city practice in China did not gain momentum until the turn of the new century, with the massive construction of eco and low-carbon cities in the country. Meanwhile, research into eco/low-carbon cities reached a peak in the first decade of the new millennium. As a result, several case studies in China have been made, with the Tianjin Sino-Singapore Eco-city, Dongtan eco-city in Shanghai and Caofeidian in Tangshan attracting the most attention. These studies provide insightful criticisms on their construction and operation (Hult, 2013; Joss & Molella, 2013; Qiang, 2009; de Jong et al., 2016). The majority of the case studies conclude that the projects have failed, at least partially, to fulfill a more sustainable urban future. Nevertheless, as mentioned already, their construction was carried out less than a decade ago and it is too early to judge their performance. Therefore, studying the master plans of these projects is more germane in assessing their likely social and economic outcomes.

As a result, we need to select the cases that fare well in their implementation as the target of our content analysis since it is meaningless to analyze the plans of those that have been abandoned. But first we need to know what is the relationship between the master plans and the operation of these projects and what factors may influence the performance of the new town development projects. This is the gap between the master plans and reality. These issues have been extensively studied by researchers. Although the purpose of this paper is to analyze the differences between the master plans of conventional and "sustainable" new towns, it should be made clear that the differences in planning do not necessarily prescribe an environmentally friendlier future for the new towns. The criticisms on these projects are far from groundless (de Jong, Wang, & Yu, 2013; de Jong, Yu, Chen, Wang, & Weijnen, 2013). The planning of eco-cities and low carbon cities is one thing but its realization is another, requiring precise and subtle coordinating mechanisms between various participants in the construction and operation stages. Fig. 1 is a conceptual framework of the relationship between the master plans and the actual reality of the new towns.

The implementation of the master plans, as shown in Fig. 1, is a very complicated process involving various stakeholders (Flynn, Yu, Feindt, & Chen, 2016). Even if the master plans of eco and low-carbon cities aim to provide a more sustainable future, much work is still needed for this to be realized. The suggested framework is a typical model for the eco and low-carbon city projects in China, although not applicable to each individual case. Most cases, especially joint projects involving foreign investors, adopt a similar development model (de Jong, 2013). The master plan plays a pivotal role in the overall operation of the project and lays the foundation for the regulations and rules in the operation stage.

In general, the implementation of the master plans is divided into three distinctive stages. The making of the master plan is usually the result of a governmental initiative for new town development (Liu, Zhou, Wennersten, & Frostell, 2014). This might either be a model project set up by the central government or direct cooperation between local governments and foreign partners. The master plans made at this stage prescribe the subsequent development details and operating models (Li & Qiu, 2015). In order to realize the plans, professional evaluation and local government departments serve as the basic regulating and monitoring body. Actually, (green) building institutes and policies have been well-integrated in the development of these "sustainable" new towns (Zuo & Zhao, 2014; Zuo et al., 2015, 2017). Development companies, often invested by the government and foreign partners, is responsible for the overall development. The professional evaluation institutes, the various departments of local governments and development corporations all play significant roles in the operation of eco-cities and the realization of the master plans (Yu, 2014).

The operation stage is the most complex, as many different parties are involved at this level and many efficient mechanisms are required for their interactions with the higher level regulating and monitoring bodies. In some cases, good interaction mechanisms between the various parties might presage a real sustainable future for these projects, but the outcome is still to be evaluated in the coming years and more practical studies are needed (de Jong, 2013). Operation and performance are also closely related to the outside environment. In China, political support from a higher level is crucial in attracting resources for the development of the "sustainable" new towns. Personnel changes at a higher level sometimes have a severe influence on the operation of the projects. In addition, many projects are faced with ferocious competition from surrounding regions, which causes great difficulties in attracting sufficient investment to promote the industries. In short, the realization of the master plans depends heavily on the cooperative mechanisms between the various parties involved as well a supportive outside environment (Caprotti, 2014a, 2014b; Chang et al., 2016).

Intensive studies of various factors influencing these new town developing projects help fill the gap between the original master

[1] David Harvey uses the word "spatial fix" to define urban space, meaning that this space is created as a "fix" for surplus capitalist production. He uses the metaphor "a drug addict needs to get a fix" to explain what the "spatial fix" means here. In a world addicted to capitalist production, new urban space, eco-cities for instance, need to be created so that surplus capital can find a vent to be released for a new round of capitalist production.