Eco-cities, governance and sustainable lifestyles: The case of the Sino-Singapore Tianjin Eco-City

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ABSTRACT

In this paper we argue that to analyse the eco-development process we need to explore it as a whole, from design, through delivery and then to how these developments influence the behaviour of the people who live and work in eco-developments. At each stage of the development process it is important to analyse and understand what key actors understand by the term 'eco' (resource efficiency of land and materials), how they understand the institutional, economic, social and communicative mechanisms to effectively produce 'eco' developments and 'green economy', and what learning opportunities exist to promote positive ecological and competitiveness ideas. Perhaps, because so little is known, the greatest need of all is to analyse how the new residents of eco-cities are living their lives and whether or not they are more environmentally friendly than before. In this paper we provide empirical data on those who have moved to the most profile eco-development in China, the Sino-Singapore Tianjin Eco-City. The data reveals that whilst the habits of some residents are sympathetic to the environment, other parts of their lifestyle — linked to comfort and convenience — are not. Moreover, the aspirations of the residents for an increasingly middle class lifestyle mean that resource use could be even higher in the future. This is a highly significant finding both for those engaged in academic debates on eco-development and for policy makers and practitioners involved in the development of eco-cities.

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1. Introduction: cities and sustainability

As a result of global and regional processes of urbanisation, cities are becoming ever more important to a growing number of people, and as cities grow their influence over their hinterlands continues to expand. In the newly industrialising countries in particular cities are at the fulcrum of the potentialities and tensions between economic, sustainable and well-being development. Key functions of cities relate to economic, social and environmental dimensions. According to Ravetz (2000, p. 9) the environmental function is to "*reduce environmental impact and resource use to 'sustainable' levels, and enhance environmental quality and safety*"; the economic function is to "*enhance long term resilience, competitiveness, employment, and equitable distribution of resources*" and the

social function is to "*enhance health, education, security, cohesion, diversity and quality of life*'". Each of these functions is dependent on the others for its successful realisation, linking poverty alleviation to growth and environmental agendas. Whilst sustained progress on any one of these functions is demanding, that of the environment has proved to be particularly problematic. There is, thus, growing global interest in efforts to better integrate environmental and social features into urban development processes.

Being the focus of demographic and economic growth, cities now host the majority of the human population. In developing country cities, much population growth and in-migration has created settlements that are characterised by spatial concentrations of poverty and environmental degradation. Simultaneously a new global middle class is emerging which through rising purchasing power is moving toward a more energy and ecologically intensive lifestyle. Ecology and environmentalism of the poor and the affluent (Desgupta, 2004; Gagdil & Ramachandra, 2007; Martinez-Alier, 2002) have become a double challenge for urban governance. Access to environmental quality and resources is becoming a new

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divide between poor and wealthy city dwellers (Gagdil & Ramachandra, 2007). At the same time, cities are the main locus of social and ecological innovation. From an ecological perspective the relationship between cities and sustainability consists of two paradoxical elements. On the one hand, cities accumulate wealth, are often the sources of technology and innovation (Nas & Veenma, 1998, p. 3). However, on the other hand, cities are "*parasitic by nature, skimming off agricultural surpluses and other resources from all over the world, often without full compensation for the natural and social damage inflicted*" (Nas & Veenma, 1998, p. 3). So, "*the struggle to reduce the scope of the ecological crisis is […] played out in the city, which is the greatest source of air, water, noise and soil pollution*" (Girard, Forte, Carreta, De Torro, & Fabiana, 2003, p. 4). In more technical terms, cities are not closed systems. They are part of wider, often global economic and material flows (Mol, Spaargaren, & Buttel, 2006).

In order to explore the extent to which eco-cities may be able to overcome the tensions between economic, social and environmental imperatives the paper is divided into seven sections. In Section 2 below we examine how development in China is increasingly influenced by environmental factors. Section 3 examines the changing nature of governance in China. In the following section (Section 4), we analyse how more environmentally friendly lifestyles may interact with the technological innovations that are at the heart of eco-city development in China. Section 5 explains our approach to data collection in the Sino-Singapore Tianjin Eco-City (SSTEC), and in the Section 6 our key findings are reported. Finally, in Section 7 we offer our concluding thoughts on the most appropriate framework to analyse the eco-development process.

2. Cities and development: the case of China

In any analysis of cities and development, China deserves special attention. It has 20% of the global population, has gone through a period of rapid economic growth, makes a large and ever growing contribution to global demand for resources (and contribution to greenhouse gas emissions), and has a large number of major cities that are growing rapidly in wealth and population (Lang & Miao, 2013). The Chinese context, therefore, provides a basis for exploring how acute environmental challenges (such as mitigation and adaptation to climate change, water availability and quality, air pollution and human waste) can be addressed at the same time as facilitating urban growth and regional economic development.

Integrating environmental concerns into development in China is a major governance challenge. China had entered the transition from a planned to a more market oriented economy, launched by Deng Xiaoping in 1979, as one of the least eco-efficient economies. Since then, the development of environmental governance, while being significant, has been lagging behind the ecological implications of growth in Chinese production and consumption, and was marked by merely reactive regulation and selective implementation (Liu, Zhang, & Bi, 2012; Mol, 2006). The effectiveness of environmental policies has been undermined by a lack of environmental institutions, under-resourced regulators and other pressures for growth and modernisation (Liu, Viney, & Holt, 2004). Recent years have seen the spread of new economic, voluntary and informational instruments, a larger role for civil society, and moves towards a more pro-active, integrative and upstream approach (He, Lu, Mol, & Beckers, 2012). Chinese consumers have recently fared well in commercial market research exercises comparing the environmental orientation of different cultures (e.g. the 2012 National Geographic and GlobeScan '*Greendex*', or the 2012 *DuPont China Green Living Survey*). However, although environmentally harmonious Taoist principles are sometimes proposed as a basis for engaging Chinese consumers in sustainable living, some expert observers note that they have a highly instrumental view of the environment as existing for the benefit of the populace (Harris, 2006). In policy circles, consumption, has continued to be viewed as a motor for economic growth rather than a means of promoting more environmentally orientated approaches to production or lifestyles. At a strategic level there is commitment to sustainability as the principle for future development, as for example, in 2008, when the People's Congress adopted the concept of the "two-oriented society". In the context of complex local practices however, there are a series of tensions. These tensions can be found between growth and environmental protection, consumption and quality of life (e.g. pollution, water scarcity), and between more traditional and emerging patterns of governance that seek to deliver a greener economy and more sustainable lifestyles. In this context, eco-city and circular economy schemes have become the focus of attempts to integrate environmental concerns into urban development (Caprotti, 2014; De Jong, Yu, Chen, Wang, & Weijnen, 2013). As national model projects, they indicate a shift towards environmental institutions that encourage social and organisational learning, with a larger role for the planning and environmental professions (not only state planners), stakeholders and quality-oriented investors (Baeumler, Ijjasz-Vasquez, & Mehndiratta, 2012).

Analysing eco-development in the Sino-Singapore Tianjin Eco-City provides a basis for exploring how acute environmental challenges can be addressed at the same time as facilitating urban growth and regional economic development. How environmental challenges may be turned into creative forms of sustainable urban governance is discussed in the following section. Below we briefly outline the characteristics of an eco-city.

Over the last few years, Chinese central government has increasingly acknowledged the sustainability challenge and launched important policies and legislation. In the current Chinese urban context, debates about the eco-city are becoming ever more prominent (Yu, 2012). For instance, at every International Forum for Planning and Development (organised by the Ministry of Housing and Urban–Rural Development) since 2009 there has been a plethora of presentations on eco-cities. At the conference, from both proponents of individual cities, and from those within the Ministry, there is a sense that the eco-city is a novel, and increasingly prominent, form of development. Despite the rather narrow image that may be conjured up by the phrase 'eco-city' amongst the practitioner and policy community, it has a much wider meaning embracing social issues. Nevertheless, there remains a poor understanding of the links between technology and behaviour (Shove, 2003) or more generally between the role of context and infrastructural environment on actual behaviour. The outcomes of our research illustrate this phenomenon. Accordingly, there is little understanding how the experiences in the model developments can be used for scaling-up and scaling-out of this strategic approach to developing a green economy.

So, what is meant by an eco-city? An eco-city is not straightforward to define. It includes new development and retro-fitting of existing urban areas. Nevertheless, at a normative level an eco-city should be a development that seeks to:

- *reduce environmental impacts*, such as by reducing energy use, promoting renewable forms of energy over coal, gas or oil, reduce the consumption of water
- *enhance environmental quality*, for instance, by encouraging public transport, cycling and walking over the car to improve air quality
- *protect environmental assets and the resource base*, for example, new development should not be on agricultural land, and will be of high density to improve the efficiency of land use