

# **Sustainable Urban Development and the Chinese Eco-City**

**Concepts, Strategies, Policies and Assessments**

May Hald





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July 2009



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**Title**

Sustainable Urban Development and Chinese Eco-City:  
Concepts, Strategies, Policies and Assessments

**Publication Type and Number**

FNI Report 5/2009

**Pages**

84

**Author**

May Hald

**ISBN**

978-82-7613-558-9-print version  
978-82-7613-559-6-online version

**Project**

**ISSN**

1504-9744

**Abstract**

The need for sustainable urban planning and development reached an important point in 2007, when half of the world's population was defined as living in cities. This need is especially true for a country like China, where an unprecedented urban-rural migration has been taking place since 1978. Such a mass movement has posed many sustainability challenges for Chinese cities; for example, China is home to 16 of the 20 most polluted cities in the world. Now China's leaders are attempting to use the country's transition to a market economy and integration into the global economy to advance environmental and social issues, also on an urban level. One way the country is confronting urban growth and sustainability challenges is through an eco-city development approach. The eco-city concept is relatively new in China, and is being used in cities such as Tianjin and Dongtan near Shanghai. Whether eco-cities address the main problems associated with urban development and sustainability, however, rests on a broader, more fundamental planning approach that would streamline the goals and priorities of a large number of stakeholders, focus on existing city problems and look at small-scale eco- initiatives for answers, and thus remains in question.

**Key Words**

Sustainable urban development, Chinese eco-cities, Dongtan, sustainable urban planning, China's urbanization, governance and urban development, Huangbaiyu, Rizhao, Tianjin, fuzzy planning, urban challenges in China, eco-communities, sustainable city

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## Acknowledgements

This report is based on my Master's thesis in Culture, Environment and Sustainability at the University of Oslo's Center for Development and Environment (SUM) and was submitted to the university in June, 2009.

This work would not have been possible without the support of The Fridtjof Nansen Institute (FNI). FNI provided not only financial backing but also an outstanding research environment to work in. I feel very lucky to have had the opportunity to be a part of such an exceptional group of researchers. I'd like to thank everyone at FNI, particularly Gørild Heggelund, Inga Fritzen Buan and Pål Skedsmo. I would also like to thank SUM at the University of Oslo for offering an interdisciplinary arena for research and for promoting scholarly work on issues pertaining to sustainable development.

Fieldwork was made possible with the help of Zat Liu, translator extraordinaire; Michael Karlson, a University of Copenhagen anthropologist who happened to be conducting fieldwork in Shanghai and on Chongming Island at the same time that I was there; The Nordic Center at Fudan University in Shanghai, who provided contacts and support; and FNI, who partially funded the research trip.

I would like to thank my thesis advisor, Harald Bøckman, for providing excellent guidance, feedback and encouragement throughout the writing process. I would also like to thank Cindy Hall for taking the time to read this work and provide insights for improvement. Finally, thank you to my wonderful and supportive family and friends in the U.S., Norway, Singapore and China.



## 1 Introduction

Since 1978, China has been experiencing the greatest rural-urban migration in the history of the world, and its urban population rate has doubled, from 18 percent of total population in 1978 to 36 percent in 2000 and to nearly 38 percent in 2001 (China Statistical Bureau 2002). The urban population share was 40.5 percent in 2005 and is expected to reach nearly 50 percent by 2015 (United Nations 2006). China is currently in the midst of a very rapid urbanization process and the Chinese government has made urbanization a developmental priority.

As China transitions towards a more market-oriented economy, Chinese cities are changing. The changes involve a complex reshuffling of people, materials, capital and space in cities and this is leading to a mixed-use economy. Urbanization is also taking its toll on China's environment and as such, China is putting the concept of sustainable cities on its agenda and searching for novel ways to expand and develop urban areas while conserving natural resources and taking into consideration the socio-economic implications of urban expansion. How to manage China's great diversity and physical restructuring while building livable cities is a formidable challenge for China's leaders. This transition is a multi-faceted process involving market formation, state intervention and spatial restructuring.

Eco-city development has emerged as a way to address sustainability issues in the context of cities. An eco-city is a type of city construction that takes into consideration ecological requirements combined with socio-economic conditions. Eco-cities demonstrate that urban growth and development can be a sustainable process and that the concept of sustainable development can be applied in an urban setting. Sustainable development is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. The eco-city concept has been proliferating around the world in places such as Abu Dhabi, the UK and the rest of Europe and 20 are being planned across China alone. Both eco-city and sustainable development in an urban context will be widely discussed throughout the report and will be defined and explained in detail in Chapter 6.

The purpose of this report is to examine urban development in China, the challenges associated with it and how concepts such as sustainable development in an urban context and eco-cities resonate with these challenges. I discuss the dynamics and processes behind the eco-city building approach in China using the examples of Dongtan and Tianjin eco-cities and the eco-constructions in Huangbaiyu and Rizhao. Eco-cities introduce a type of urban transformation of place that responds to societal, economic and environmental pressures, and in the cases presented here, are being built through a combination of government and private enterprise action.

Alongside the central government, local governments, civil society and the private sector have emerged as significant partners in urban management. In developing countries and transition economies' urban environmental management, these partnerships are increasingly active in project

design and implementation. With an increasing number of stakeholders involved in the process, goals and priorities for cities become more difficult to define. This report discusses the roles of these counterparts in the context of the Chinese eco-city and in the context of urban development and sustainability in order to have a better understanding of the dynamics behind the eco-city development approach.

## 1.1 Layout Overview

Chapter 2 opens with a discussion on the significance of urbanization today and what the term *urban* means in the context of China. The way China has been categorizing cities and measuring urban population has changed over the years and differs from Western perspectives of ‘city’ and ‘urban’. Chapter 2 also discusses some of the general problems related to urban development. Sustainable development in an urban setting is discussed in the context of Lewis Mumford and concepts associated with ‘fuzzy’ planning such as sustainability and eco-city are also introduced in Chapter 2. This is followed by a section on the theoretical framework for observing urban development and the city through the works of David Harvey and James C. Scott. Chapter 3 examines China’s urbanization from both a historical and current perspective. Urban growth occurring at the speed and magnitude of China’s could not come without problems and Chapter 4 examines some of the main challenges related to China’s urbanization. Because one of the biggest challenges related to China’s urban transition is the state’s capacity to manage this process and the structure of governance, Chapter 5 examines governance and urban development in China. This chapter also explains certain processes taking place in China today and how they affect urban development.

It might be possible to address some of the most pressing challenges related to urbanization using the concept of sustainable development in an urban context and by developing cities through an eco-city development approach. Chapter 6 details the concepts of sustainable urban development and the eco-city and discusses these concepts in terms of China’s political system. One of the main eco-city projects in China during the past several years has taken place in Dongtan. Dongtan is currently a large area of mostly agricultural land located on Chongming Island, an island next to the city of Shanghai. Dongtan, along with the other eco-city and eco-constructions mentioned, will be the focus of Chapters 7 and 8. These two chapters also provide an assessment of this type of city development in the context of the theoretical framework introduced in Chapter 3. Chapters 7 and 8 provide details on the plans of Dongtan, Huangbaiyu, Rizhao and Tianjin and in some cases, how the projects have fared; they also discuss the stakeholders involved in the building processes and provide a comparison of the different eco-constructions. Chapter 8 is followed by the conclusion, which summarizes the main points and assessments made in the report.

The chapters in this report add to the understanding of China’s urban transition and the eco-city building approach by providing a close-up look at the process through which change is occurring and the social and spatial outcomes that have resulted so far. This is done through academic research and the use of two different theoretical frameworks. The frame-

works analyze city space, sustainability and how and why certain spatial outcomes have been the product of the planning processes exemplified here, which involves many stakeholders. Supplementing this research is fieldwork, which was conducted in 2008. Fieldwork enabled me to examine the way theories and practical experiences pertaining to sustainable urban development interact. It was an opportunity for observation and discussion in a Chinese urban and eco-city development setting.

## **1.2 Research Methods, Literature and Theoretical Approaches**

The initial purpose of fieldwork in Shanghai and the surrounding areas from November to December 2008 was to explore Dongtan Eco-City located on the island of Chongming near Shanghai. By obtaining a better understanding of concepts such as how Dongtan Eco-City was being built, the processes and decisions behind the way it was being constructed, who this construction was affecting and their views of the eco-city building approach, I felt I would be better prepared to analyze the processes involved in eco-city building and what type of effects this would have on challenges regarding to urban development.

Prior to my departure there were several articles alluding to problems with the development of Dongtan, such as exceedingly delayed project construction and general lack of progress. The Internet site belonging to Ethical Corporation was particularly helpful in reporting on Dongtan. Ethical Corporation is a UK-based magazine that encourages debate and discussion on responsible business through publishing, conferences and independent research and advisory work ([www.ethicalcorp.com](http://www.ethicalcorp.com)). They started writing about Dongtan in 2007, calling it a 'dodgy eco Potemkin project'. Fieldwork in Shanghai and on Chongming Island allowed me to examine to what extent such claims were true and if it was true, why it was happening. This objective contributes to my first research question: *What are the dynamics behind eco-city development in China*. It seemed reasonable to assume that there were competing and conflicting forces involved in the building of Dongtan. This is something that could be further examined by going to the building site and talking to the developers behind the construction. The second research question is: *To what extent does this type of city construction (i.e. eco-city) address the problems associated with urban development and sustainability in China*. Another objective of the fieldwork was to observe the challenges related to rapid urbanization in China and find out how those involved in eco-city projects believe those problems can be addressed, whether through eco-city construction or through other means. Fieldwork allowed for the opportunity to experience the conditions of some of China's cities first-hand such as air quality, waste management, transportation and infrastructure.

Additionally, The World Urban Forum, established by the United Nations, was held in Nanjing in November of 2008. This forum was created to examine rapid urbanization and its impact on communities, cities, economies and policies and provided the opportunity to talk with professors and other experts on urban development, see exhibits on this

topic and attend presentations dedicated to the challenges related to urban development. Because the forum focuses on the problems urbanization brings to a particular area and what can be done to improve conditions, my attendance facilitated preliminary insights and familiarization with the question of whether eco-cities, or to what extent eco-cities address the problems associated with urbanization in China.

When I first saw the site at Dongtan in November 2008, I realized that the focus of my paper would have to change. There was nothing even alluding to an eco-city construction at the Dongtan site. None of the residents I spoke with on Chongming Island had heard of the eco-city project. Discussions with those involved in the project lead me to believe that Dongtan might still be built, despite being exceedingly delayed. Because of this, the focus of this report became less about Dongtan Eco-City and more about the concept of the eco-city in China and the challenges this type of city construction might pose for a county in transition such as China. It was obvious in my talks with those involved in the process that stakeholder participation created unpredictable challenges. Despite China's authoritarian state and the power of coercion, many distinctive parties were involved in this development; the conditions created a need to balance several priorities that did not always resonate with the priorities of the government planners involved.

Because my focus became more about the process rather than one eco-city construction, I decided to examine three additional eco-constructions in China to provide a scenario for comparison. They include the eco-village of Huangbaiyu, the city of Rizhao and the eco-city currently being developed in the city of Tianjin. Research pertaining to these areas does not include fieldwork. Because fieldwork was conducted in Shanghai and the surrounding areas, and since the initial focus of the report was Dongtan Eco-City, this work places weight on processes occurring in Shanghai and Dongtan. While Shanghai is neither a typical city in China, nor a typical city of a developing country, it cannot be isolated from the rest of China. Its future is integrally related to the conditions of life elsewhere in China. For detailed information about fieldwork conducted in Shanghai and surrounding areas, please refer to the appendix.

In an attempt to analyze the challenges related to urban development in China, what is being done to address the problems and how an eco-city building approach might be a good solution and step in the right direction for Chinese cities, I felt it was important to understand the concept of city in China, how cities are viewed, how they have developed and what influences have affected their progress. The decisions and policies of the Chinese government play a significant role in the way Chinese cities have functioned and grown and will continue to do so. This report examines China's urbanization and some of the most pressing issues related to Chinese cities and explains the role of governance in an urban development process. The reason for this background is that it provides a foundation for understanding eco-city building in China.

Several books and authors have been very important in the research done in this report. John Friedmann's *China's Urban Transition* (2005) has been significant in understanding China's urbanization. Friedmann

specializes in sustainable international development and processes related to urbanization. Papers and policy recommendations provided by China Council for International Cooperation (CCICED) were helpful in understanding the challenges of an urbanizing China. CCICED is a non-profit international advisory body focusing on the study of environment and sustainable development issues in China and providing policy recommendations to Chinese government leaders and policy makers at all levels. Fulong Wu and Kenneth Lieberthal's research have been significant in understanding Chinese politics and how the state functions in terms of urban management and development, especially Lieberthal's *Governing China: From Revolution to Reform* (2003). While China's changing urban development processes and urban landscapes have received extensive research attention in recent years, the governing of Chinese cities is relatively under-researched. Fulong Wu's research on urban governance in China was helpful in this area.

In understanding the concept of sustainability and how it can be applied to cities, the work of Lewis Mumford was inspiring and revealing. Mumford was a historian who studied cities and urban architecture. Mumford was critical of urban sprawl and argued that the structure of modern cities was partially responsible for many of the social problems in city spaces. Mumford's work is interesting in its foresight. He exposes what might become urban problems and correctly predicted many of the problems that have arisen in cities today, often due to policies, or lack of policies when it comes to urban development. He argued that urban planning should emphasize an organic relationship between people and their living spaces, and he did this before concepts such as sustainable and eco-cities were ever on the agenda.

Also important to this work were ideas presented by Gert de Roo and Geoff Porter in the book *Fuzzy Planning: The Role of Actors in a Fuzzy Governance Environment*. The idea of 'fuzzy' planning comes into the discourse on sustainable development in an urban setting and the Chinese eco-city. The notion of fuzzy planning is especially significant when it comes to concepts such as sustainability and eco-city. Sustainability and eco-city have emerged as valuable concepts when it comes to city planning initiatives. At the same time, those involved in the planning process often differ in their understanding of what these concepts are. As a result, it has become difficult for decision-makers to develop their goals in line with the roles, motivation, perception and behavior of the various actors involved. It is reasonable to assume that actor motives, perceptions and contributions in the development of Dongtan often clashed, resulting, in part, to the failure or delay of the eco-city construction. In addition to this, China has state control over many of the companies involved in such projects. With private companies also involved, the line between national and corporate interests is blurred. This is another aspect that has implications for goals and priorities when it comes to eco-city construction and urban development and its associated sustainability issues.

Along with fieldwork and academic research, theoretical tools have been used to gain a better understanding of city, space and development and stakeholders involved in urbanization processes. The theories used here provide an analytical framework to view the eco-city building processes

occurring in China and the concept of sustainability and urban space. The next two paragraphs provide a brief overview of the theoretical framework used; they will be further examined in subsequent chapters.

Human geographer David Harvey emphasizes the importance of analyzing capitalism, class conflict, and the unequal distribution of resources in the assessment of urban life, space, structure, and change and as such, provides a context for understanding spatial practices. In this report, Harvey provides a way of thinking about the rendering of space and the processes that are occurring in an environment of power relations such as political and economic power. For a China in transition, power relations are becoming blurred and this has an effect on urban development and sustainable development challenges in an urban context.

Political scientist and anthropologist James C. Scott emphasizes a way of viewing city planning and development by examining the failure of some of the great utopian social engineering schemes of the twentieth century. Scott discusses high-modernist plans that are backed by an authoritarian power in places where a civil society is lacking. Viewing Dongtan and other eco-city projects using this framework provides a way of understanding why some projects might not be developed as planned or why some projects might not be the success story that some might expect.

## 2 The New Urban Revolution

The purpose of this chapter is to explain the concept of 'urban' and introduce the theoretical framework and how this is applied in an urban and Chinese setting. This chapter also introduces some of the main challenges related to urban development. Urbanized societies represent a new and fundamental step in man's social evolution. Although towns and cities have existed for thousands of years, the wholesale transition to urban location and urban living is very recent in origin. According to the United Nations (UN), in the second half of the twentieth century, the urban population of the world increased nearly fourfold, from 732 million in 1950 to 2.8 billion in 2000 and to more than 3.2 billion in 2006 (UN Population Division 2006). The year 2007 marked a turning point in human history: for the first time, half of the world's population was living in cities (The Cities Alliance 2007). As such, urban landscapes will constitute the future environment for most of the world's population. Nearly all of the world's population growth in the coming generation will be in cities in low- and medium-income nations such as China and India. An increased understanding of the urbanization process and of the effects of urbanization at multiple scales is vital in ensuring human well-being.

Definitions of 'urban' vary internationally. There are many indicators of urban that are widely used to differentiate between urban and non-urban areas such as population size, population density, number and range of services available and employment profiles. Basic distinctions can be drawn between towns and metropolises, and between cities and megalopolises. However, as one goes down the scale from the largest urban agglomeration to the smallest town, it is difficult to identify break points and terminology that are universally accepted (Clark 1996). Urbanization is not merely the growth of cities. Total population is composed of both the urban and rural populations. As such, cities can grow without being classified as urbanization if the rural population grows at an equal or greater rate (*ibid.*). According to definitions provided by the UN, urban populations can be identified using at least three different ideas: the number of people living within the jurisdictional boundaries of a city; those living in areas with a high density of residential structures (urban agglomeration); and those linked by direct economic ties to a city center (metropolitan area). When worldwide projections related to urbanization are made by the UN, data is provided by nations with different meanings of urban, with more than two dozen nations not documenting their definitions at all (UN Population Division 2006). Despite this, the data is widely used and continues to provide a telling gauge of urban development around the world.

Although indicators can identify differences of degree, they do not provide a definition of 'what is urban' (Hall 1998, 19-20). While indicators can provide an interesting partition, they are unable to isolate and identify that which is unique to urban areas. Sociologist Manuel Castells said, 'A city is what a historical society decides a city will be. 'Urban' is the social meaning assigned to a particular spatial form by a historically defined society' (1983, 302). This statement disregards comparisons and creates a more abstract view of the city that focuses more on qualitative

aspects such as experiences and relations of people in a certain area as opposed to quantitative aspects of what defines a city such as population total.

‘Urban’ is a term that gives us meaning and provides a spatial focus for exploring a particular phenomenon. For the general purposes of this report, urban will be that which relates to cities, towns and city living and urbanization will refer to a shift in the proportion of total population that demographers classify as urban as opposed to rural. These terms provide a somewhat different representation when placed in the context of China. The notion of what constitutes a city in China is different to that of the West. This goes back to imperial rule before the 20<sup>th</sup> century when the foundation of Chinese cities was based on the needs of the administrative system of government (Shiwen 2008). This will be examined in more detail in subsequent chapters.

From 1964 to 1982, the official measure of urban population in China was ‘city and town’ population, which is the aggregate of all non-agricultural population in the designated cities and towns. The 1982 census used a different methodology, which defined urban population as all non-county population in all districts of cities, irrespective of agricultural or non-agricultural status. The 1990 censuses used a more complex system due to the growing concern with the large proportion of agricultural population entering the urban count (for details see Kirby 1994, Kojima 1995).

Cities are classified into three groups according to their administrative status: county level, prefecture level and central municipalities. Cities must be officially assigned. To be assigned city status, several criteria play a role including political-administrative status, economic development, openness and total population of the area. Local authorities are eager to upgrade to city status as upgrading is accompanied by greater autonomy, political power and access to resources. There are five classifications of Chinese cities categorized according to size: super large (over 2 million); very large (1-2 million); large (0.5-1 million); medium (0.2-0.5 million) and small (less than 0.2 million) (DfID 2004).

Urban in China refers to both spatial and a demographic categories. Spatially, Chinese municipalities are divided into urban districts and rural counties. Demographically, population is classified by residential registration into agricultural and non-agricultural. The spatial and demographic divisions overlap but only to a limited extent (*ibid.*).

There are certain factors that affect the count of urban population in China and factors influencing the population total: definitions of urban places, boundaries, household registration, and urban floating population (Zhang and Zhao 1998). Because the official criteria for urban designation and documentation and different estimates of urban population differs in China, the meaning of ‘urban’ can be different from the generally accepted meaning of the term. For example, while China’s mega-cities have been growing at very rapid rates, increased urbanization rates have sometimes been the result of reclassification. As a result, migration statistics related to China can, at times, be misleading (*ibid.*).

Discussions around the enormity of China's urban growth have been increasing due to the trends seen in not only China but around the world. Scholars have argued that this is the 'urban century' and predict that within two decades nearly 60 percent of the world's people will be urban dwellers. China alone is predicted to be more than 70 percent urban by 2050 (UN-Habitat). These predictions were made before the current economic crisis and this event could have an impact on urban forecasting. In China, growth has halted and migrants living in cities in China are having a hard time finding work. As reported by LaFraniere for The New York Times (2009), the government announced that more than one in seven rural migrant workers had been laid off or was unable to find work in February of 2009. About 20 million of the total estimated 130 million migrant workers have been forced to return to rural areas because of a lack of work, according to a survey conducted by the Agriculture Ministry that was cited at a briefing.

While the state of the world's economy will have an effect on the state of China's urban transition, urbanization will continue. The government has adopted a pro-urban approach to economic development, shifting from a state-directed process under a planned economy to a state-guided process within a market system. Administrative reclassification is converting predominantly rural settlements to cities, and in-migration is occurring at rapid rates. The financial crisis might put a small dent in urbanization rates; however, in the long run, these rates will continue to increase as long as the Chinese government continues to have a pro-urban approach to economic development.

## 2.1 Urban Challenges

This section discusses some of the prevalent challenges often produced by urban development. Challenges such as these will be discussed in the context of China in subsequent chapters. While urbanization might be linked to economic and social development, this often occurs alongside environmental degradation. This issue was addressed by Lewis Mumford. He was an early advocate of the idea of garden cities and sought to respond to the problems of the overcrowded industrial city by promoting the decentralization of the population so as to achieve a better balance between urban and rural areas (1961). Garden cities were a vision from Ebenezer Howard, who authored *Garden Cities of To-morrow* in 1898 where the idea was to combine the best features of urban life (opportunities, places of culture and dynamism) with that of the 'country' (land, fresh air, bountiful water). Howard was fearful of the consequences associated with old cities and the social conflicts and miseries they embodied.

Mumford saw the need for change in the way development was taking place in the twentieth century. He sought 'the development of a more organic world picture, which shall do justice to all the dimensions of living organisms and human personalities' (1961, 567). He was concerned about the balance between environment, human culture and welfare in the context of urban development. Mumford also recognized early on the outcome of the interstate highway system in the U.S. and advocated against it by arguing that it would lead to more traffic congestion

and an inefficient system that would leave residents no alternative to the use of a car (1964). China is at risk of entering into the same dilemma, where dependence on cars and roads becomes the norm.

Urbanization and city living can pose many problems. According to Cities Alliance, a global coalition of cities and development partners committed to contributing to successful approaches to poverty reduction in cities, unconstrained urbanization can produce problems such as unemployment, shortage of shelter, water, power and other necessities (2007). Cities are subjected to traffic congestion, environmental catastrophes, marginalized communities and diminished quality of life for the poor. They are often the place of social unrest. They are often places of extreme poverty and areas where alienation, religious extremism and other sources of local and global insecurity run prevalent. Urban problems are especially severe in less developed areas where a lack of clean water and sanitation results in millions of deaths. While air quality has improved significantly in many European and American cities in recent years, it has become far worse in other cities in the developing world.

A successful city, according to David Satterthwaite, has to meet three goals: provide a healthy living and working environment for inhabitants; furnish safe water, sanitary conditions, rubbish collection and disposal, drains, paved roads and other essential infrastructure for health and economic development; and remain in an ecologically-balanced relationship with local and global ecosystems (1997). Material processes and practices that shape the basis for the reproduction of social life are formed around these basic needs. Requirements such as these are fundamental for a city to function, and while they may seem straightforward, many cities in less developed areas lack many or all of these necessities. These requirements are also central in the sustainability agenda (Sorensen 2004).

As the United Nations Centre for Human Settlement (UNCHS) emphasized in its Habitat Report (1986), human settlement is not simply housing, or for that matter, merely the physical structure of a city, town or village, but an integrated combination of all human activity processes including residence, work, education, health, culture, leisure, etc., as well as the structures needed to support them. Sustainable human settlement development should ensure economic growth, employment opportunities and social progress in harmony with the environment (UNCHS 1996). According to Cities Alliance (2007):

A successful city should offer investors security, infrastructure (including water and energy) and efficiency. It should also put the needs of its citizens at the forefront of all its planning activities. A successful city recognizes its natural assets, its citizens and its environment and builds on these to ensure the best possible returns. (1-2)

Urbanization poses many challenges. Cities and towns are seriously affected by overcrowding, environmental degradation, under-employment, social disruption and inadequate housing infrastructure and services. Cities also contribute to problems regarding the environment and the social condition. The origin of many global environmental problems related to the pattern of production and consumption, waste, air and water pollution is cities (Ooi 2005, 13).

Mumford observed and wrote about many of the challenges mentioned above early. He identified the unsustainability of urban development trends, the inability of private sector forces to deal with these problems and the need for thoughtful planning of better alternatives. In 1967, he wrote about the growing urban populations as lacking ‘the most elementary facilities for urban living, even sunlight and fresh air, to say nothing of the means to a more vivid social life’ (2000, 18). He observed urban development trends as ‘a general miscarriage and defeat of civilized effort’ and wanted to see improvement based on ‘more essential human values than the will-to-power and the will-to-profits’ (ibid., 18).

## 2.2 A Framework for Examining Urban Change

Urbanism was generally understood as a way of life associated with residence in an urban area. This changed in the 1970’s when geographer David Harvey rethought the relationship between power, space and urban form, revealing cities as spatial expressions and manifestations of social relations based on power, particularly economic power (1978). Urbanism became more than just a city and was analyzed as a complex idea that consisted of more than just a way of life in a particular setting. Implications for urban development were reviewed in relation to urban livelihood systems and the challenge to ensure fundamentals such as adequate shelter and living environments for the growing number of urban dwellers (Beall 2000).

The urban landscape has to be *produced* and a large number of actors are involved in this production: architects, designers, builders, property developers and construction workers, among others. There are similarly a large number of actors less directly engaged in the actual production of the city that play an important role such as investors in the built environment (Hall 2006, 15). Karl Marx believed that the urban environment is socially produced. Marxist thought is that capital accumulation is the logic that organizes and structures the production of the urban built environment. Harvey takes a similar viewpoint. Harvey views cities as a class phenomenon. They have arisen through geographical and social concentrations of a surplus product since surpluses are extracted from somewhere and from somebody, while the control over their disbursement typically lies in a few hands. This general situation persists under capitalism, of course; but since urbanization depends on the mobilization of a surplus product, an intimate connection emerges between the development of capitalism and urbanization (Harvey 2008).

Harvey’s contribution to the study of urbanism involves the linking of city formation processes to the larger historical movement of industrial capitalism. He provides a platform in a political economy of space under capitalism and develops the work of Marx, expanding on Marx’s paradigm of capitalist accumulation to include the production of space in the production and reproduction of social life (ibid.). As Harvey explores space and the urban form, his work serves as a means for analyzing the production of the urban environment as a social landscape in which the spaces of reproduction are shaped by class struggle and conflict. Harvey investigates production and use of the physical and social landscape of the city; he believes it is shaped and formed within urban processes of

capital accumulation. Space and the city are understood as a contested social process that is shaped by and shaping human practices and power relations. Harvey asks a crucial, bottom-line question in the spatial politics discourse 'In whose image and to whose benefit is space to be shaped?' (1989, 177).

Harvey also believes that political influence and policy implications directly affect ideas on the environment, population and resources (1997). He stresses the idea that the city is built to be used. The urban landscape serves a variety of sectors such as residential, commercial, industrial, retail or leisure. The city is produced and regulated but, as Harvey points out, it is also consumed. The composition of these groups of consumers and their needs, wants, tastes and ability to consume will fundamentally affect what is built for them (1989, 77). Harvey argues that spatial relations of capitalism are not neutral; he also argues that alternatives to the domination and command of space by free market global capital do exist. He offers hope that in struggles against the inequities of the distinctions and dominant universality of capitalism's structuring of the spaces and places of labor, life and leisure, there is the potential for new social and spatial forms and relations to develop (1997).

He points to the possibilities of transforming urban landscapes by enlightened and radicalized architects, planners and designers in a more positive and perhaps utopian direction. In an interview with Sustainable Cities, a database providing knowledge and inspiration on the sustainable planning of cities and best-practice cases, Harvey said, 'The organization of production systems relates to the organization of social and technical divisions of labor as well as to technologies. This system is driven by a political economic system in which the coercive laws of competition and market valuations hold priority of place. The production of space and the built environment, as well as decisions regarding which goods and services should be produced under which labor processes are fundamental to the transformation of nature into urban life. Experiments with new production and reproduction systems are vital in the search for more sustainable forms of urbanization' (Sustainable Cities 2008).

Another perspective on urban development and the management of space comes from James C. Scott, who writes about the failures of high-modernist, authoritarian state planning to accommodate local-tacit knowledge that doesn't easily fit within bureaucratic systems (1998). Scott argues that any centrally managed social plan must recognize the importance of local customs and practical knowledge if it hopes to succeed. He discusses this in the context of the cities of Brasilia, Canberra and Islamabad, among others, and their role as administrative capitals:

Here at the center of state power, in a completely new setting, with a population consisting largely of state employees who have to reside there, the state can virtually stipulate the success of its planning grid. The fact that the business of the city is state administration already vastly simplifies the task of planning. Authorities do not have to contend with pre-existing commercial and cultural centers. And because the authorities control the instruments of zoning, employment, housing, wage levels and physical layout, they can bend the environment to the city. These urban planners

backed by state power are rather like tailors who are not only free to invent whatever suit of clothes they wish but also free to trim the customer so that he fits the measure. (145-146)

Scott explores the failure of bureaucratic management to cope with social-ecological diversity in an urban context. By developing a city in the way Scott describes, by seeing the city through the eyes of the state as opposed to the local people and customs present there, the city will ultimately be a failure. By developing cities the way Scott describes, the local knowledge inherent in society is ignored and local initiatives are blocked. Scott believes that cities belong to its inhabitants and represent a heterogeneous, multilayered society with diversified functions and structures. The ideas presented by Scott can be applied to a Chinese setting where an authoritarian regime might be able to impose authoritarian state planning to city development. Using some of Scott's ideas, can be argued that it might be less complicated to build an eco-city in China, where there is a strong state power and a relatively weak civil society. At the same time, as will be described in further detail in Chapter 5, conventional divisions of power are being transformed in China. Participation and marketization have had an effect on China's development.

One argument against Scott is that he does not take into account the successes of high-modernism and selectively chooses his examples to fit his case and point. The city state of Singapore could be an example of a high-modernism success story. Prudent land use planning has enabled Singapore to enjoy strong economic growth and social cohesion. Big city problems require the rationality of planning and governance. At the same time, the success of these efforts depends on the support of people and their organized actions at the community level.

### **2.3 East Meets West?**

Some of the theoretical perspectives on urban and spatial analysis have been limited to the West and moving and applying them to the East can, in some cases, be problematic. Development in the East has differed from that of the West. According to John Friedmann, China and urbanization in China must be understood on its own terms and a foreign observer might have a limited perspective on Chinese civilization. There is a reluctance of many scholars of China to generalize. Friedmann argues that China cannot be fitted neatly into the narrative of any grand theory. Developments in China are happening very fast and China's unique civilization deserves to be understood on its own terms. It can be expected that China will develop in ways and directions that are not part of the Western repertoire of experience (2005).

Despite East-West differences, the theoretical aspects explored in this report are relevant in many settings around the world and are not exclusive to the Western experience. The questions they raise are still broad and their applicability free from the confinements that certain other Western theories might pose. In addition to this, there has been a strong Marxist-Leninist influence as a result of Mao's China. This ideology and the initial (1950-60) practical help of Soviet Russia was great inspiration to China during the years 1949-78 and creates an element that can ease the

application of Western theory, some of which is based on Marx, in a Chinese setting. Also facilitating the use of Western theory in an Eastern setting is the use of more than one theory in the exploration of concepts such as urban development, sustainability and eco-cities in China. This acknowledges an assessment that is more broad and encompassing. The use of more than one theory allows for the inclusion of several ways of viewing a particular phenomenon and makes the use of theories somewhat less constricting.

When it comes to policy practices in the East and West it has been argued that urban policy transfer between Western and Eastern cities is increasingly inappropriate because urbanization in the East and West has developed and is continuing to develop in different ways (Marcotullio 2004). At the same time, putting China's processes in a theoretical framework provided by thinkers such as Harvey and Scott contributes to the understanding of processes and events and for the purposes of this report, helps to explain observations related to Chinese urban development.

Many scholars choose to view China's urbanization through the perspective of globalization. Cities such as Shanghai and Beijing are both located in China and are Chinese cities. At the same time, they can also be classified as world cities, or global cities that are control and command points for interlinked global economies and cultures. Some argue that urbanization and modernization, through industrialization and economic growth supported and strengthened by universal education that emphasizes the learning of modern science and technology can blur the culture lines and create a certain amount of cultural sterilization (Wang 1995).

Viewing China in this way can have its drawbacks. According to Friedmann (2005),

Adopting globalization as the analytical framework for the study of cities tends to privilege outside forces to the neglect of internal visions, historical trajectories and endogenous capabilities. It also places emphasis on economics to the exclusion of socio-cultural and political variables. In China's case, it is not always easy to tell what is 'inside' and what is 'outside'. So-called foreign investments come often from Hong Kong and Taiwan, places whose actual status as 'foreign' territories is moot. (xvi)

The argument is not that globalization has 'westernized' the Chinese city; rather, the global world has had a strong influence on many cities, including China's, and the idea of globalization makes it easier to compare Chinese 'international' cities with those of the West. It also facilitates the use of theories that have emerged from the Western urban experience in China. It is in world cities that emergent forms of urbanization and new models of urban form are often created and a parallel can be drawn between world cities like London and Shanghai in this context; hence, the use of theories emerging from the West can find an interesting position in an Eastern setting.

Cultural sterilization might facilitate the application of Western theories to a Chinese setting. Although it seems that urbanization and modernization occur with elements of local culture present, some might argue other-

wise in certain cases. For example, many of China's cities have been losing their valuable historical and cultural sites due to the development of modern high-rises, etc. Globalization and modernization are inevitable components to joining the new world economy, and while there may be elements of cultural sterilization, gentrification and greed at play in China, it is not 'westernized' as many might claim, rather it is modernized to fit a particular culture.

Historically, urbanization has been a vital instrument for achieving economic growth and social development. Some scholars link globalization and urbanization, referring to this as the global cities phenomenon and arguing that globalization is important in the developmental process. This has been written about by scholars such as Saskia Sassen and Manuel Castells. Other urban scholars such as Aprodicio Laquian argue that in most Asian countries, very large cities have closer linkages to the nation-state, as opposed to urban centers in other parts of the world (2005).

While the Chinese city may predominantly function within the context of the Chinese economic and political context, global cities and globalization have a tremendous amount of influence. While this report will not investigate globalization in the context of Chinese cities, globalization is mentioned because it smoothes the transition of Western urban thought and analysis to the East. In China, global interconnectedness is something that is mediated through trade and other business linkages, overseas study, tourism, telecommunications and kinship ties. Such activities create sites for global-local interaction, most especially in major urban centers (Heikkila 2008).

This chapter has introduced the concept of *urban* and some of the common challenges pertaining to this concept. It has also presented a framework for examining urban change and how this can be applied to a Far East, or Chinese setting and the problems such an application might pose. The subsequent chapter explores the specific situation of China's urban setting. It discusses how cities in China have developed and progressed and examines how and why Chinese cities have developed in their own distinctive way.



### 3 Overview of China's Urbanization

China's urban transition is unique in its history. This chapter will provide a foundation for understanding China's multiple urbanization processes since the reform and will highlight some of the most pressing problems China faces today due to urban development and recent changes in the urban landscape. This background facilitates in the understanding of ideas, decisions and actions made pertaining to urban development and its associated sustainability issues, eco-city planning and how and why this has become an area of focus in urban China. It also provides a backdrop to understanding how the urban condition has been perceived in China and consequently, how urban development has taken place.

An urban transition involves many facets that need to be considered in order to have a better understanding of how and why these changes are taking place, what individual or groups of individuals are making the decisions and what effect these changes have on particular groups of people or the city/area as a whole. In understanding China's urban condition, it is important to distinguish between the different aspects that are in a continuous state of flux in a multifaceted transformation of place. Friedmann proposes five dimensions of this multidimensional construct of the urban in a Chinese setting. The following paragraph provides an overview of these dimensions. They will be discussed in more detail throughout the report.

The first dimension is administrative urbanization. In China, towns and cities are defined administratively and urban residents and non-urban residents are identified as such by a residence permit. Those with city residence permits might receive certain entitlements, such as subsidized food and housing. The central government has tried to limit the number of urban residence permits but has been only partially successful. This system will be discussed in more detail in subsequent sections. The second dimension is economic urbanization. With an increase in the secondary and tertiary sectors (such as manufacturing and trades and services) and a decrease in the primary sector (such as agricultural activities), urbanization brings about structural changes. There is usually higher productivity per worker across all sectors and there may be a growing segment of the population receiving a portion of their income from rents. Economic urbanization is often accompanied by an expanding radius of transactions, extending from local to regional, to national and global (2005, 36-38).

The third dimension is physical urbanization. Streets are paved, public spaces are beautified and housing increasingly takes the form of multi-story apartment buildings. There are also factory buildings, shopping complexes, hotels, new and improved schools, etc. In addition to these changes, excessive damage to the environment has also become prominent in many parts of China. Fourth is socio-cultural urbanization. Everyday life is transformed. Newcomers come to the city and work in local factories, construction and various other jobs. Because they are from different communities with different customs and languages, their presence may give rise to new forms of social tension. A more complex

social stratification of peasant life is taking form. There are also new forms of individual and household consumption and uses of leisure. The fifth and last dimension of urban is political urbanization. The government has been forced to decentralize decision-making power to local authorities. They are not elected but they must act in the name of local populations and in their interests. New structures of power emerge with strong linkages between local officials and business elites. Power must now be shared (*ibid.*).

### 3.1 Historical Sketch

The longest and largest continuous urban cultural tradition is that of China (Southall 1988, 4). Today, China is the most populous country and it is the country with the largest number of urban dwellers. Chinese cities are both numerous and large. China's urban history is very different from the European experience. In Europe, cities were often city-states; China's cities, on the other hand, never developed institutions of self-governance. China's cities were generally seats of imperial power rather than powers in their own right (Friedmann 2005). Urbanization in China began almost 4000 years ago (Ebrey 1996). Archaeological records suggest urban settlements during the late Shang Dynasty (circa 1600 BC), but more reliable information, as well as a proliferation of cities, date from the Zhou era (circa 1045-256 BC) (Friedmann 2005). Urban population began to grow during the Qin (221-206 BC) and Han dynasties (202 BC-AD 220). By the time of the Southern Song era (12<sup>th</sup> century), 10-13 percent of the Chinese population lived in cities. Kaifeng, the Song capital, had a population of almost 1 million people (Bairoch 1991). Towards the end of the Ming dynasty (16<sup>th</sup> century), major centers such as Beijing and Nanjing housed almost 1 million people and several cities had populations of half a million or more. Life in the urban centers at this time was lively and varied (Mote 1999).

The absolute number of urban dwellers rose in the late 19<sup>th</sup> century due to an accelerated population growth in the 18<sup>th</sup> and early 19<sup>th</sup> centuries. However, the urban share of China's population had fallen to 6.0-7.5 percent around this time (Bairoch 1991). The industrializing countries of Europe had pulled ahead and urbanization rates in Europe were at 29 percent. The gap between Western Europe and China continued to widen around 1949 when the communist regime came into control (Yusuf and Nabeshima 2008).

Historically, Chinese cities were founded where primary government was, and the size of a city was entirely dependent on the classification of the government. When a city was built, administration offices and city walls were built first, with the government offices being at the center of the city. Wealthy merchant families and administrative officials of the imperial court were placed in close proximity to the center. People with skills became part of the city. The Chinese city was first and foremost an administrative center on which consumption depended and it belonged to wealthy citizens such as administrative officers, merchant traders and noblemen and their extended families; it was strictly controlled behind its walls (Shiwen 2008, 23).

### 3.2 Mao's Vision of the City

Important policies and events that affected urban development and space during the Mao era came about due to influences such as Soviet-style planning where basic needs would be collectively provided and the idea that cities should be engines of production rather than sites of consumption. The rural commune system instituted in the late 1950s allowed resources to be transferred to urban-based industrialization. Urbanization was restrained and social infrastructure was held to the barest minimum at this time. The *danwei* system, or organized work units, was established and migration of rural labor to cities was restricted (Friedmann 2005, 11).

There were several major policy initiatives that helped to restrain urban growth. This report will highlight three of these initiatives. First, the *hukou* system, a household registration system, was gradually instituted in the 1950s, fixing a person's residence to his or her native place. Second, the one-child policy was established where fertility rates were controlled from the 1970s by the Communist Party and the government bureaucracy (Yusuf and Nabeshima 2008). Third, beginning in 1957 and continuing through the decade of the Cultural Revolution, attempts were made to ship out millions of urbanites to the countryside. During the early 1960s more than 20 million urban residents were sent or returned to the countryside for economic reasons. Another 30 million were 'rusticated' during the decade of the Cultural Revolution from 1966 to 1976 (Chan 1994).

From the early 1950s, China's cities were largely free of the telltale signs of urban poverty characteristic of cities in both core and peripheral regions. This continued for three decades. Poverty existed but there was an absence of squatter housing, beggars and chronic unemployed residents in the 1960s and 1970s. With restrictive policies such as those mentioned above, China was able to eliminate many of the visible manifestations of poverty in urban areas (Cheng and Selden 1994).

The new socialist city acquired a new look and feel. In 1949, the vision of the future was inspired by the Soviet Union: to be modern was to be urban, industrial and with production socialized. Under Mao, cities were essentially machines for maximizing output that would be centrally managed by an official cadre. Leisure activities were collectively organized. A civil society, which had been quite active prior to Mao, had no chance of flourishing. If there was a sign of any activities resembling a civil society, it was suppressed. People became passive subjects of the state (Friedmann 2005, 15). The look of the city was a uniform, drab urban environment. Many cities adopted the dour, grey architecture of the Soviet era and wide roads and work-unit apartment blocks were constructed. Those who favored urban planning that provided some protection of China's historical heritage were often denounced for their bourgeois and feudal thinking (Saich 2004). Smokestack factories became a common site in many cities under Mao and little consideration was taken to zoning possibilities or the protection of green areas. Another policy during this time was the promotion of small-scale industry, The Great Leap Forward from 1958-59. Mao favored rapid exploitation of resources to build up a heavy industrial base. He also favored a below-cost pricing policy for water, coal and other inputs (ibid.).

### 3.3 Post-Mao Urban Reform

Maoist policies resulted in uniform, grey urban development and environmental degradation, the post-Mao era and economic reforms introduced since 1978 have also had a significant impact on urban and rural landscapes (Saich 2004, 12-15). The launching of economic reforms in 1979 was accompanied by the relaxation of strict controls on internal migration. The focus of the CCP policy shifted from class struggle to economic development. Special economic zones (SEZ) were created in the early 1980s in order to jump start the Chinese economy. Several of these zones have developed into booming industrial and commercial cities that represent modernity and progress to Chinese citizens and to the world. Along with this and relaxed *hukou* regulations, the government reformed the state-owned enterprises (SOEs). Policy shifts such as these have contributed in creating new incentives at the micro-level in order to increase efficiency and production. The CCP has also tried to transfer the development pressure confronted by the central state to lower levels of the state apparatus through reforms initiated inside the state (Wu 2002).

In 1984, the Chinese government authorized a comprehensive set of directives for reform in the economic structure. This urban reform called for a major overhaul of China's SOEs in urban areas. Because of inherent defects in state-owned urban enterprises, such as lack of distinction between governmental functions and enterprise managements and rigid bureaucratic control of the state over the enterprises, one main priority of the urban reform initiative was to invigorate the SOEs by separating the ownership from the operational functions (Wang 1995).

The reform resulted in a rapid increase in output and improved efficiency. Unfortunately, however, decentralization and decontrol under urban reform did not diminish the growth of bureaucratic power and prerogatives. The reform in the urban areas yielded conflicting trends. Party cadres had become a privileged class and the reform brought resistance against the introduction of market mechanisms from the cadres who felt their role as planners and supervisors threatened. At the same time, bureaucrats in the cadre system had both information and power and were in the position to take advantage of a new market system by becoming bureaucrat-entrepreneurs (ibid.).

While urban reform led to an increase in output and increased efficiency, it also resulted in an overheated economy. In 1985 there was a 23 percent growth rate in the first quarter. Many local authorities invested in fixed assets such as machinery and plants and this led to the reinstatement of administrative controls over credits and money supply as well as new regulations to monitor authorities' investments. Inflation was also a problem around this time due to the effects of price decontrol. Food prices rose as much as 37 percent in 1985. The inflation rate was at least 20 percent for retail goods in urban areas. Authorities had to create price ceilings for many raw materials such as oil, gas and timber. Another problem that came as a result of the reforming of the SOEs was unemployment. At the end of the 1990s, unemployment began to increase significantly. Approximately 20 million SOE employees became unemployed as enterprises restructured, merged or declared bankruptcy. Jobs for life have been replaced by performance-based labor contracts (ibid.).

While China's official unemployment rate has remained at between two to five percent for the last two decades, it is critical to note that the official unemployment statistics only include urban residents who have registered as unemployed, and do not include migrant workers or those left unemployed in the countryside. According to the State Statistical Bureau, unemployment only refers to urban residents who 1) possess non-agricultural residence cards; 2) are within a certain age range (16 to retirement age); 3) are able and willing to work; 4) have registered with the local labour bureau for employment (China Labor Statistical Yearbook 2006). Because of this highly restrictive definition, many jobless people, such as those 'laid-off' from SOEs are not included because although they have no job they retain an 'employment relationship' with their former employer (China Labor Bulletin 2007).

### **3.4 China's Present Urbanization Patterns**

Between 1980 and 2000, 268 million Chinese entered into the urban domain, mainly through migration from rural areas (Yusuf and Nabeshima 2008, 1). There are three major changes which have facilitated and encouraged urban population growth in China. First, strict controls over urban growth were loosened. This has occurred in several ways, but a major outcome has been net in-migration of population in all cities. Second, coastal areas and SEZs received favorable treatment and have since been viewed as centers of national development and regions of growth, and have benefitted from preferential fiscal and administrative policies. Third, foreign direct investment (FDI) has played an important role in fuelling economic growth, especially in coastal cities (Zhang 2002). During the period from 1978 to 2000, China became the second largest recipient of FDI in the world behind the U.S. (DfID 2004). The Chinese government now encourages urban growth as a means for encouraging economic development and minimizing economic disparities within the country (Raufer 2007).

Many scholars argue that markets are the single most important causal factor driving urbanization in China today. Land, labor and other resources are being allocated increasingly in accordance with market imperatives. Massive demographic dislocations that give rise to urbanization phenomena are manifestations of market forces. One outcome of the introduction of markets to China has been economic development broadly construed in terms of rising wages, increased living standards and enhanced opportunities for social and economic mobility. Economic development acts as a kind of intermediate input into urbanization, as income and accumulated wealth affect lifestyle choices and the gradual transition from a production to a consumption orientation (Heikkila 2007).

The dominant finding is that economic growth is the causal link to urbanization. Urbanization, income and FDI have all tended to grow together. The population growth in cities does not necessarily induce economic growth to take place. The effect is the opposite, with migration being caused by urban economic growth (DfID 2004). While some argue that China's urbanization patterns have closely resembled those in other cities with a free market economy (Ding 2003), others believe that China's emerging spatial order is rather distinctive and that Chinese urban transition does not imply convergence (Wu and Ma 2005).

The benefits of a new urban modernity, a result of the reforms, can be seen in a more varied urban environment where the gradual release, first on rural markets and later for rural produce to be sold in cities has led to a much more diverse urban street-life. Those who have benefitted from the reform include not only private entrepreneurs, those involved in the new economy, the managerial elites and the politically well connected but also migrants who might be vendors, hawkers and traders. Official figures state that the incidence of absolute poverty has dropped from 250 million at the start of the reforms to 28 million by 2002 (Saich 2004, 16-19).

The following chapter will examine some of the most pressing problems related to urban development in China today. The numerous problems show that China's urban development is taking place with little or no consideration to sustainable development in an urban context. Poor urban planning and management can have a negative impact on society, the environment and on the urban economy. As discussed in the next chapter, urban development in China has taken its toll on areas such as social progress, resource management, economic development, transportation and cultural heritage.

## 4 Challenges for a Sustainable Urban China

Urban growth at the speed and magnitude of China's could not come entirely without problems, even if it were extraordinarily well organized. Friedmann has listed the main challenges in China's urban transition to include 1) the need to develop effective systems of governance for the growing urban regions that can legally, fiscally and technically provide the institutional frameworks to manage the urban transition, 2) the need to take account of sustainability in the management of this transition and 3) planning should become a more open and participatory process than it is at present, capable of harnessing the energies of organized civil societies, particularly of excluded sectors of the population (1997). Discussions about sustainable cities in East Asia resonate with Friedmann's ideas. They focus on how to improve environmental quality, manage processes of rapid urban growth, encourage public participation and share the benefits of economic prosperity (Sorensen 2004).

Some of the main problems regarding sustainable development in the context of Chinese cities include deficient natural resources, environmental degradation, inadequate urban infrastructure, gaps in regional development and the effects of these problems on the marginalized population. Many of the problems Chinese cities face are a direct consequence of government planning policies (CCICED 2005). This chapter will highlight some of the main problems related to China's urban development.

### 4.1 Migrant Workers and the Urban Poor

The influx of migrants has had a number of positive and negative effects in China. The migration of young working-age people to cities has promoted growth by enhancing the labor supply and by injecting an additional dose of entrepreneurship and dynamism into the urban labor market (Bloom and Williamson 1998). Parts of the wages are often sent home to rural areas and as a result, migrants have helped to significantly increase the living standards in some of the poorest rural areas, bringing them closer to urban levels. Results such as this help outweigh some of the problems associated with migration (Yusuf and Nabeshima 2008).

A large majority of poor in China are rural inhabitants, mostly from remote areas. Until the mid-1990s urban poverty in China was regarded as a minor affliction confined to a small minority but has since emerged as a major social issue and is now seen as a threat to social stability. While there are discrepancies as to what constitutes urban and where to draw the poverty line, The Ministry of Civil Affairs (MOCA) estimates the number of urban poor to be 14 million. The inclusion of millions of migrants would raise this number significantly. Also, given the wide variation in provincial poverty line, the use of a single poverty line for whole China will present a distorted picture of the urban poverty, exaggerating the poverty rate in the interior provinces and under-stating the rates in the coastal provinces (Hussain 2003).

The increase in China's urban population from 191 million in 1980 to 562 million in 2005 has called for massive investment in urban housing and infrastructure. China has primarily been able to absorb more than 370 million people in its cities without the proliferation of urban slums, although sewerage and waste disposal services have struggled to keep up with the demand. The relatively smooth transition has been made possible by the availability of investment funds intermediated by the banking system, strides made by the construction sector, acceptable growth in regulatory capacity in urban centers and the role of capital generated through high domestic savings (Yusuf and Nabeshima 2008).

The rapid in-migration of rural workers and other people without access to many of the urban rights has worsened the existing inequalities and engendered a hierarchy of citizenship (Chen 2001). Most terms referring to the group of people without urban residency have a negative connotation. Urban Chinese refer to them as a floating population or blind drifters, while urban bureaucrats refer to them as a temporary population. The harmful consequence of this type of labelling is the idea that these people are not a part of the local community; because they do not belong, one is not inclined to trust them in the same way one would trust a long-term citizen. In addition to this, some consider them more dangerous and many urbanites rarely have personal encounters with migrants (Friedmann 2005, 63-64). Their working conditions are also a cause for concern. Migrants are often forced to accept the more dangerous, dirty and difficult jobs with less than adequate working conditions. Migrants are often separated from the non-migrant urban dwellers. They live a frugal lifestyle, often in enclaves in the cities (*ibid.*, 72). They are at risk of becoming part of the urban poor. Migrants also face less healthy living conditions and poor quality housing. Many cities have moved heavily polluting industries to areas where many poor migrants live and the polluted water and air in these areas have a negative effect on their health. Urban housing for rural migrants often lacks basic amenities and is of lower quality than the average for urban residents in the same income category (Wang, YP 2003).

Many of China's older urban residents find that the Mao years were more secure. There was basic healthcare and the streets were safe. Some see the results of the reforms as a loss of security, rising crime and declining personal safety; they criticize the new inequalities of the current policies and call for a return to stricter discipline, party control and central state planning (Saich 2004, 16-19).

## **4.2 City Space, Land and the Built Environment**

Population densities in the big cities in highly developed economic regions in China remains high. For instance, the population density in the vicinity of Chenghuang Temple in downtown Shanghai is 80,000 persons per square kilometer, while some parts of urban Tianjin densities are over 50,000 to 60,000 persons per square kilometer. The floating population aggravates such a situation (Chan and Yao 1999). For comparison, the population density of urban New York City and Tokyo in the late 90s was 9,109 and 15,600 persons per square kilometer, respectively (Yeung and Lo 1998). High density combined with haphazard development has implications when it comes to disaster resiliency.

Urban and peri-urban activities have taken over the agricultural land in many large cities and city suburbs. A substantial amount of agricultural land in the suburbs is being left inactive. Peasants have been switching to non-agricultural undertakings or turning to the manufacturing and services sectors for better job opportunities (Ash and Edmonds, 1998). The expansion of development zones drives peasants off the ground and transforms the pattern of land-use and in some cases, peasants have abandoned arable land. About 28,000 economic development zones remain throughout China; together they occupy some 10,000km<sup>2</sup> of land. Between 1991 and 1998, 65,000 *mu* in Shanghai and 34,000 *mu* in Tianjin were reduced from arable land area (Chan and Yao 1999). *Mu* is a Chinese unit of measurement for area where one *mu* = 0.165 acres.

Urban land demand in China is increasing while the severe shortage of urban land is greater than ever. In 2005, the average cultivated land per capita was only 1.41 *mu*, already approaching the lower limit of guaranteeing food supply security. The supply and demand conflict of city-town land use is especially critical in the eastern coastal region. Despite these shortages, China's land use mode is often crude, with low land use efficiency. For example, the increase in land use for urban construction is greater than the rate of urban population increase. Also inefficient is urban land use structure and layout. The main indicators are insufficient land for public service facilities, infrastructure and ecological environment, whereas industrial land use in cities is proportionally high. A land use structure such as this leads to the depletion of urban afforested land and transportation space; effects of this include traffic congestion, green project land shortage and urban heat island effects (CCICED 2005).

While there has always been some appreciation of cultural and architectural heritage in China, the last few decades has seen societies become increasingly aware of the significance of urban historic structures and sites. In the 1950s and 1960s, the prevailing attitude was that 'old' was bad and 'new' was superior (Benton-Short and Short 2008, 229). This attitude is prevalent in a modernizing China. In the market-oriented redevelopment in many Chinese cities, old traditional housing styles are being demolished and replaced by new modern high rises; along with this, the lively rhythm and vibrant street life is also disappearing.

An example of historical culture disappearing in the name of progress comes from the city of Kunming in Yunnan Province, which was host to the International Flower Exhibition in the late 1990s. Development and demolition took place due to the exhibition, and new buildings were erected, representing the future and modernity. As a result, many of the charming old lanes around the Cuihu lake area were obliterated and communities were simultaneously destroyed in the process (Saich 2004, 15). Chinese street life has been significant in Chinese culture as an important public space that cultivated folk culture, local culture and the vitality of cities (Wang, D 2003); with the demolishing of areas such as this, the charm and character of a city are often lost as well.

According to news reports from Xinhua, certain Chinese officials have recently been lamenting the loss of historical architecture and cultural sites due to rapid urbanization. As reported by Doran (2007) for China

Daily newspaper, Qiu Baoxing, vice-minister of construction, has publicly complained about some of the local officials' actions related to urban development and construction: 'Some local officials seem to be altering the appearance of cities with the determination of "moving the mountain and altering the water course"', he told a news briefing on the sidelines of an international conference on urban culture and city planning. 'They are totally unaware of the value of cultural heritage'.

Many cities in China have, in the last decade, seen many of the historic centers replaced by skyscraper business districts or commodity housing. This physical restructuring of city-centers, which includes a relocation of its original population to the fringes of the city and a destruction of much of the previously existing built heritage, is a typical characteristic of the current planning policy. Consequences of this type of policy, where built heritage and public urban space are neglected, include the creation of a banal urban landscape, a loss of urban identity and a decreasing life quality for the average urban citizen (Feiner and Salmerón 2005, 191-193).

In China, given the poor living conditions in the central areas of the city, urban redevelopment has improved the quality of the built environment; however, the demolition of old areas has destroyed the historical space fabric and building styles. The relationship between historical preservation, the improvement of the quality of housing and maintaining these projects as financially viable in real-estate terms has become tense. Residents of the old areas (such as courtyard housing) know that it is not realistic to romanticize life in traditional housing. Many of these spaces are extremely overcrowded and living conditions are very poor. Social interaction among residents is also changing with the fast pace of modern life. Residents have become less integrated and socialized, despite being in a shared living environment. Many migrants or 'non-locals' live in housing such as this because the price of low-quality private rentals is lower than that of new commodity housing, especially in accessible locations (Ma and Wu 2005). At the same time, once demolished, cultural and historical buildings cannot be replaced.

### **4.3 Urban Infrastructure**

While the development of new urban infrastructure has improved roads and public facilities in certain areas, many cities are putting enormous investments in a car-based infrastructure. This strong promotion of a car-based transportation system has laid the foundation for urban sprawl. The transportation policy focuses more on a car-based infrastructure and neglects mass transit and non-motorized transportation. There is a risk of China becoming dependent on car-based transportation (Feiner and Salmerón 2005, 192).

Sprawl, environmental damage, air degradation and severe traffic congestion have become problematic. China's demand and need for efficient transport systems are enormous. Road building in China has been expanding by 12 percent per annum in recent years. Substantial road building was undertaken in all large Chinese cities during the 1990s when investment for road infrastructure doubled in most large cities. The vehicle population has been increasing by more than 15 percent per

annum, mainly in urban areas (Paaswell 1999). It is projected that China will have seventy million motorcycles, thirty million trucks and one hundred million cars by 2015 (Yin and Wang 2000).

Public transportation also faces obstacles in China. While many large cities have started allowing partial privatization of public buses, passenger flows have increased slowly and have even decreased in a few cities. In 1996, Beijing was the first municipality to adopt special public transport lanes and this model has been replicated in many other cities. Still, in many Chinese cities, public buses continue to be the transport mode of last resort (Brennan-Galvin 2002).

According to reporting by Bradsher (2009) for The New York Times, at least 15 cities are building subway lines and a dozen more are planning them due to Beijing's pushing of local and provincial governments to step up their infrastructure spending to offset lost revenue from slumping exports due to the global financial crisis. However, real estate developers continue to build sprawling new suburbs, which undermines the benefits of a mass transit boom. China surpassed the United States in total vehicle sales for the first time in January 2009.

Throughout the 1980s, Shanghai spent 5-8 percent of its GDP on urban infrastructure investment. In a big push to develop the city, it spent 11-14 percent of GDP in the 1990s, including the development of Pudong. Pudong is a district in Shanghai that since the 1990s and its SEZ status has emerged as China's financial and commercial hub. This percentage is now decreasing in Shanghai. Both Beijing and Tianjin spend more than 10 percent of their GDP on urban infrastructure (Yusuf and Nabeshima 2006).

Despite these investments, basic urban infrastructure is often lacking; this is reflected in shortages in transportation infrastructure, traffic problems, urban water distribution and sewage and gas supply networks that have difficulties keeping up with demand. Also problematic is the poor and outdated operational management approaches, instruments and concepts related to infrastructure facility; this is brought on by matters such as lack of and poor planning and bad design. For example, many cities built wastewater treatment plants, however, did not build the necessary pipe network for collecting the wastewater. As a result of poor planning, urban streets often go through multiple disruptions when laying and burying various kinds of wires and pipelines. The design, construction and maintenance of infrastructure influence energy use by the transport, water and sanitation sectors. It is a critical part of urban development strategy (CCICED 2005).

#### **4.4 Environmental Degredation and the City**

Urban development and industrialization in China have been detrimental to the environment. This is especially true for the coastal regions, where economic reforms were first initiated (Hills and Man 1998). Figures from the World Bank state that China has 16 of the world's 20 most polluted cities (UN-Habitat 2008). This is mainly due to high coal use and motorization. In 1997, the World Bank published a report called *Clear Water*,

*Blue Skies: China's Environment in the New Century.* This report suggested that the cost of environmental pollution and degradation in China was equivalent to 8-12% of GDP annually. Many of the statistics related to this article involve economic losses due to lack of natural resources or issues such as desertification, floods and droughts. Pollution control of air, water, solid waste, soil, noise and hazardous chemical substances is not at its optimal level. Air and water quality in Chinese cities is actually worsening, according to a report from the Environmental Protection Administration. According to the agency's 2007 survey, just 38 percent of 585 cities monitored enjoyed air quality that reached minimal national standards, down from 45 percent in a 2005 survey (MEP 2007). The problem of air pollution is especially acute for northern cities, larger cities and cities in coal mining regions. Urban air pollution in China is mainly particle pollution, SO<sub>2</sub> pollution and automobile exhaust fumes. China has become the country with the highest level of SO<sub>2</sub> discharge and the world's third most problematic acid rain region following North America and Europe (UN-Habitat 2008).

With growing cities, the Chinese government established a policy that public transport should be the country's main mode of transportation. Unfortunately, because of the large capital investment and foreign exchange required, authorities at the State Planning Committee were cautious in approving large-scale mass transit projects. Only Beijing, Guangzhou, Shanghai and Tianjin currently have metros. Highway infrastructure was developed and continues to receive priority. With more and more people buying cars in China, the streets of many cities are suffering from severe traffic congestions, resulting in serious air pollution problems. A major issue related to this is urban sprawl. With the increase in privately owned vehicles there is simultaneously a great pressure on land development to decentralize and move both housing and businesses to suburban rings (Paaswell 1999). In the process, in large Chinese urban centers, agricultural land is lost as it is converted to urban areas. This push for motorization is creating a demand for suburbanization in urban areas that will only grow in time (Brennan-Galvin 2002).

China's urban solid wastes are also a challenge for sustainable urban development. The main problems are driven by continuously increasing amounts as well as increasing impacts of hazardous wastes on the environment. About two thirds of Chinese cities are overwhelmed by their garbage problem as much of the garbage is simply buried or left in the open in the suburbs and along rivers. This causes a series of problems including water pollution, water quality decline and the spread of infectious diseases. The portion of untreated hazardous wastes entering the environment is high. In 2004, the hazardous waste discharge was 9.63 million tons while the centralized treatment rate of hazardous substances in 155 cities was zero (CCICED 2005).

Many of the problems related to the environmental degradation have a worse effect on the marginalized population versus the non-marginalized segment of society. In many Chinese cities, heavily polluting industries are being placed outside the city to the peri-urban areas. This shift is to areas where large numbers of poor live, especially migrants. As a result, the marginalized population bears the consequences of water and air pol-

lution and the resulting implications for health and well being. Urbanization itself affects the people who live in the peri-urban and rural areas through the loss of agricultural land. This is in addition to the environmental aspects such as health and safety conditions in factories, construction sites and other forms of employment. Poverty can create and accelerate the emergence of many environmental problems and at the same time, environmental problems can broaden and deepen the impacts of poverty (DfID 2004).

#### **4.5 Lack of Natural Resources**

Chinese cities face a general shortage of natural resource supply, coupled with a generally low efficiency in urban resource utilization and loss of access to some resources due to pollution and environmental damage. Urban water supply is a major issue as China is a country with a severe water shortage. Among the 661 cities, about 420 or more are short of water, with 114 in severe shortage. Some northern cities are forced to restrict water supply. Water shortage due to lack of resources is further magnified by pollution, over-tapping of aquifers and wasteful use. With urbanization, Chinese cities face the three-fold pressures of water resource shortage, wastewater treatment and aquatic environmental management (CCICED 2005).

Chinese sustainable urban development faces a major challenge when it comes to energy shortage, environmental pollution and low efficiency in energy use. There is an insufficient supply versus high demand for good quality energy, especially that of petroleum and electricity. Industry, rising urban populations and an increasing quality of urban life all contribute to the growing demand for clean and superior energy. For example, during 2003-2005, China experienced a vast power shortage across the country. In more than 20 provinces, cities were forced to switch off power supply on a rotational basis to restrict the use of electricity. Additionally, China's dependence on foreign oil is rising. In 2004, China imported a net 120 million tons of crude oil, 34.8% more than the year before. The increase in energy consumption is coupled with low efficiency energy use. Presently, the overall energy use efficiency in China is around 33%, 10 percentage points lower than that of developed countries. There is also a dependency on coal, which creates great pressures on the environment (ibid.).

Cities are part of a national structure, subject to central government, strengthened or omitted by regional and national infrastructure, budgetary policies, development priorities and decentralization policies. For China to meet the urban challenges it faces today and the challenges to come, appropriate management frameworks should be available, through which cities can apply innovative approaches suitable for their local circumstances (Cities Alliance 2007).

China is becoming a world power, and its major cities are becoming world cities. China's urban transition faces many challenges with several dimensions. The action and policy strategies responding to the urban challenges discussed in this chapter will result in urban transformations and a variety of distinctive and new social and spatial outcomes will

unfold. The purpose of the next chapter is to explore China's political system and how the central government functions vis-à-vis the local government. In recent years, changes have been occurring in areas such as environmental governance and civil society. These areas have an effect on urban development and sustainability and are also discussed in the context of China's governance in the next chapter.

## 5 Governance and Urban Development

A major problem related to China's urban transition is the state's capacity to manage urban change and the structure of governance. Urban management and governance systems generally develop alongside urban growth. Urbanization in China has been so rapid that systems of municipal government, urban infrastructure, educational establishments and civil society organization have had difficulties in keeping up. Due to concerns related to urbanization, China has been witnessing many changes in areas such as central government power vis-à-vis the municipal government, government organizations, non-political organizations and civil society. The purpose of this chapter is to get a better understanding of China's political system and how this system functions in terms of urban development.

Local governments are important in city planning and development and responsible for community decision-making. They are also important actors in their local economies. Some examples of government power in cities include the power to pass legislation, to plan and design transportation systems, the power to ensure strong and robust local economic development patterns, the power to address land tenure and land rights in the city and the power to develop creative financing tools for mobilizing investment towards sustainability. They have the power to encourage participation and engage with citizens and local organizations (Cities Alliance 2007). They build and maintain infrastructure that is essential for economic activity, and set standards, regulations, taxes and fees that determine the parameters for economic development. Local governments procure large numbers of services and products and can influence markets for goods and services such as environmental, economic and social services (Roseland 2005, 191-193).

In China today, there is a transition from central planning to a market-oriented system. Mega-urban region officials are appointed by the central government and are expected to mainly execute centrally set policies and programs. Mayors of big cities such as Beijing, Shanghai and Tianjin primarily exercise authority delegated to them. At the same time, even in these centralized systems, the magnitude and complexity of issues involved in mega-urban region governance has necessitated more leeway and some degree of discretionary power has been granted local officials in recent years. In a city such as Shanghai, officials often have networks of allies and supporters in the central government that enable them to make important decisions on their own, giving them more freedom to manoeuvre. Mayors of big Chinese cities are now able to make autonomous decisions. For example, they can approve projects costing \$50 million or less without first clearing them with Beijing (Laquian 2005, 113).

### 5.1 Governance and Politics in China

The constitution of China describes the country as 'a socialist state under the people's democratic dictatorship led by the working class and based on an alliance of workers and peasants'. The Chinese Communist Party (CCP) has a monopoly on formal power and legitimizes the proscription

of meaningful opposition. While there are non-communist parties (there are eight other political parties in China that accept the established system), they have no real power and are allowed to function only if they abide by the rules set forth by the CCP. If interests are independent and non-political, there is more latitude than there was during Mao's regime; however, most social organizations and professional or occupational associations serve as a means of communication for party policy (Wang 1995).

One way of understanding communist politics is bureaucratic politics, where the party's absolute authority is challenged by specialized bureaucratic organizations in a modern society. Technocrats can effectively bargain with the party by withholding crucial information for decision making and as a result, the party becomes a mediator between competing bureaucratic interests. With the market reform, many bureaucratic functions such as housing have been marketized or socialized (Tang 2005, 19-22).

While it is an authoritarian system, as suggested by Lieberthal, authority is fragmented, both horizontally and vertically through the system. The result of this is a bargaining or negotiated system, where local governments and institutions need to build a consensus among an array of pertinent officials to resolve matters. According to Lieberthal, Chinese policy making is characterized by an enormous amount of discussion and bargaining among officials to bring the right people on board. The bargaining is often wide ranging, complex and fragile and may involve personnel assignments, funds, access to goods and markets, projects or policy (2004, 191).

One problem with this type of system is the difficulty leaders have in obtaining accurate information. Most data are reported level by level up the national administration, and typically officials at each level have incentives to introduce biases and distortions. The reforms have greatly improved this situation and the quality and quantity of information available to top leaders has been enhanced due to the advocacy of democratic centralism, formal meeting systems, elaborate document systems, experimentation with think tanks and increasingly aggressive media reporting (ibid., 191-197).

Another view of China's political system is through the concept of corporatism or as a left-wing corporatist state. In the ideal corporatist system, at the national level, the state recognizes one and only one organization (such as a labor union, a business association, a farmers' association) as the sole representative of the sectoral interests of the individuals, enterprises or institutions that comprise that organization's assigned constituency. An active state will also often help to organize the relations between the various sectoral organizations. While corporatism is usually depicted as counterpoised to democratic pluralism and free market forces, it does not define a political system; rather, it can describe a broad variety of political arrangements under different types of governments (Unger and Chan 1994). The Communist leadership of the Soviet Union had built corporatist structures into the framework of the Soviet state and the Chinese borrowed this model when Mao came into power. In concept, it

was about a harmony of interests in a socialist state. Leaders, management, workers were all united in the mission to establish a prosperous socialism. In practice, however, under both Stalin and Mao, while directives came down through the structure, constituent opinion and demands were not allowed to filter up (*ibid.*).

During the 1980s, the Chinese state moved to free up the economy and relax controls over society. To facilitate this, in addition to the proto-corporatist organization already in place, a large number of new organizations were created to serve as corporatist intermediaries and agents. Some scholars have compared the emergence of associations in China as the rise of a civil society. This is an interesting comparison. A civil society focuses on an intermediary level of associations and on the 'space' that they help to create. At the same time, a civil society placed in the context of Deng Xiaoping's China assumes too much independence. There were organizations standing between state and society and while this can be viewed as a type of civil society, the control of the Chinese state makes state corporatism a more accurate description for this type of framework (*ibid.*). While China's system today is closer to a bureaucratic-capitalist model with weak corporatist elements, corporatism provides an appealing framework for understanding China's political system because it expands the scope to include a broader range of political systems. Its use of peak associations goes beyond bureaucratic organizations and includes other types of social groups. This allows for the exploration of how interests are articulated by describing the interaction between the state and newly emerging social interests (Tang 2005).

## 5.2 Environmental Governance

Since the late 1970s, state-driven environmental laws and programs have made a more serious impact, especially during the 1990s. However, China's strategy and approach to tackling the growing environmental side effects of modernization is currently far from stable. It is still developing and transforming, along with the general transition of China's economy and state (Mol 2006). The environmental state in China is undergoing a process of political modernization, in which traditional hierarchical lines and conventional divisions of power are being transformed. The direction of the reforms includes greater decentralization and flexibility and a shift away from a rigid, hierarchical, command-and-control system of environmental governance. This has resulted in a weak central environmental protection bureaucracy.

China's leaders provide administrative and legal guidance but devolve far greater authority to provincial and local officials. They utilize campaigns to implement large-scale initiatives of nationwide importance. However, there is not a strong central apparatus to serve as advocate, monitor and enforcer of environmental protection. As a result of this, one scenario might be that a local official is confronted with a choice between upholding environmental protection laws and supporting a polluting factory employing thousands of residents. The official will usually choose the latter and find that environmental protection is a drag on the local economy (Economy 2005, 92). Despite this, China has achieved some success in establishing institutions and norms to protect the environment. In the

last three decades, China has transformed from a country with no environmental protection apparatus, no environmental legal system and only the smallest environmentally-educated elite to one in which numerous bureaucracies are engaged in protecting the environment, the legal infrastructure focuses on nearly all aspects of the environment and there is an ongoing environmental education effort throughout society (*ibid.*, 217-218). China's leadership has realized that there are broader social and economic costs of environmental failure.

China has developed an extensive range of environmental cooperative activities focused on policy reform. Many of these efforts target China's energy sector, including plans to develop new strategies and laws at the national level, as well as local initiatives, such as developing energy efficiency building codes in Chongqing. The state is cooperating with foreign governments, international governmental organizations, international non-governmental organizations and multinationals. Major new infrastructure projects like the Three Gorges Dam and the West-East natural gas pipeline (from Xinjiang to Shanghai) are also aimed at reducing China's long-term reliance on coal. China also started banning lead from its gasoline in 2001 (*Economy* 2005).

Management of environmental protection is shared by many agencies and other actors, depending on the issue. Large-scale water pollution problems might involve the Ministry of Water Resources while the Ministry of Construction handles water and sewage treatment. Involvement in the full range of environmental protection activities, including law drafting, monitoring, enforcement, environmental impact assessments and research is The Ministry of Environmental Protection (MEP), formerly State Environmental Protection Administration (SEPA) and its local bureaus. The rise of SEPA within the bureaucratic hierarchy of China's state apparatus reflected the rise in the importance of environmental protection within the Chinese government (*ibid.*, 106-107).

With its transition to a market economy, market-based policy approaches to a cleaner environment have also been explored. Chinese environmental protection officials have stated that they will increasingly rely on financial incentives and the market rather than simply fines and the court system to improve the environmental situation (*ibid.*, 193-194). Beijing is also giving environmental issues higher budgetary support. The Tenth Five-Year Plan (2001-2005) stipulates spending approximately 1.3 percent of GDP annually on environmental projects, as compared with expenditures of 0.93 percent in the Ninth Five-Year Plan (1996-2000) and 0.73 percent in the Eighth Five-Year Plan (1991-1995) (*Lieberthal* 2004, 282).

### **5.3 Local Urban Governance**

A new urban governance has been built through economic decentralization during market-oriented reform. The major change is the shift from a system based on the Party, the central state, household registration and state work-units to one led by the local state. The power of the local state has been further extended to the grassroots level in response to the increasing complexity of society (Wu p. 157). Chinese urban policy is deter-

mined by the country's executive, which is made up of provinces, municipalities and autonomous regions. Municipalities are part of the organizations system of a city, but have the same power as a province. Provinces and autonomous regions are composed of cities and autonomous prefectures, consisting of counties and county-level cities. There are districts in the municipality and the prefecture-level cities as well. Representing each of these for urban development are planning bureaus at local city levels (city government), with provincial secretaries (provincial government) and state ministries (central government) at the national level of representation (Shiwen 2008).

In China, there has been a long history of tension between the center and the local state, so that Chinese bureaucrats have developed a skill in making decisions based on what higher officials would not oppose rather than what they would allow. This is called 'looking for holes' or 'piercing into holes' (zuan kongzi). There is a Chinese idiom, 'on the top there is policy, at the bottom there are counter strategies' (*shang you zhengce xia you duice*). Now and throughout history, central and south China has had a special advantage because of its remoteness from the central government (Hsing 1996). This is one factor that has contributed to the regional differences in China's development process.

Local government has gained more discretion to arrange investment and to promote local growth (Wu et al. 2007, 115). A city such as Shanghai, which is under the direct jurisdiction of the central government, enjoys tremendous support from the authorities in Beijing. The central government has delegated to Shanghai officials the authority to identify, appraise, approve, finance and execute very large projects (up to \$30 million). The Chinese Constitution was revised to allow local officials to sell land or lease it for long periods to foreign investors. Officials were given the power to deal with state enterprises, with direct authority to hire and fire officials and breaking the 'iron rice bowl' of workers. Iron rice bowl is a term used to refer to an occupation with guaranteed job security, steady income and benefits. Shanghai officials were authorized to reorganize the banking system and were allowed to borrow funds from local and international sources, with the sovereign guarantee of the central government. The unification of authority and power in the Shanghai Municipality has been one of the main reasons for the rapid development of the city and region (Laquian 2005).

Some might argue that the concentration of so much power in a unified structure such as the Shanghai municipality would result in unfair procedures. However, as noted by Laquian, there are a number of factors that serve as countervailing forces to prevent this. As mentioned above, there is a type of 'bureaucratic bargaining approach', in which officials enter into negotiations and strike mutually advantageous bargains in order to find optimal solutions to questions of turf, authority and power. According to Laquian, bureaucratic decision-making in Shanghai is not a hierarchical process where orders are given from the top and those at the bottom follow. While top officials tend to negotiate and bargain to achieve their means, no one official has all the power in the system (ibid., 107).

Another aspect of Chinese politics is *guanxi*, where top city officials use their personal connections and influence to achieve their means. This mechanism is called ‘clientelist approach’ and is another way to keep arbitrary power in check. Every political culture has its way of resolving political conflict and it often involves ‘rules of the game’ particular to that culture, making decision making possible. While the Chinese don’t have a process that includes formal governance structures and processes such as periodic elections, competing political parties, referenda and other mechanisms common in democratic systems, they have a system that has accomplished many goals (ibid., 107-108).

Under the old corporatist model, organizations such as work units, neighbourhood committees, women’s federations, youth organizations and the like functioned as channels of information and mobilization mechanisms. A key aspect of today’s pressing urban development and sustainability issues is the role these structures will play, and to what extent participation and marketization will be sought in urban governance.

#### **5.4 Governance and Urban Sustainability**

Fulong Wu et al. argue that the role of the government in urban redevelopment in China cannot be generalized. Local government support is crucial in urban redevelopment and market-oriented approaches and as long as the project can improve the city image or generate revenues, the government is actively involved. However, the government has retreated from its social responsibility in urban redevelopment and the consequence of this is the most dilapidated areas either not being redeveloped or being relentlessly demolished. The absence of social objectives in urban redevelopment creates such a dilemma (2007, 261-262).

As cities grow, governance dilemmas develop and most cities experience a contradiction between the goals of sustainability and the goals related to development. Additionally, management of cities becomes increasingly difficult as the number of stakeholders rise. Improved urban governance includes a complex balance, mainly between municipal and urban district planning. Municipalities have substantial powers in regulating local development and urban districts have also gained important functions for organizing urban development. Conflicts between the municipality and districts are common (ibid., 126). While encouraging policy coordination is a significant challenge, in the case of China, another challenge is the level of political transparency and accountability; there is not always a democratic process involving an informed constituency or civil society making decisions.

In China, cities can access the national political administrative hierarchy at any bureaucratic rank, depending on their size and importance. The reforms have increasingly made cities the key level of organization for the economy. Cities have more independent power on important urban issues such as health insurance and pensions, with each city making the key decisions on how to take the national principles and turn them into actual programs within its jurisdiction (Lieberthal 2004, 180-182).

Cities and county seats have been carefully planned. Using a master plan and zoning system, the location of housing and industry, public infrastructure and the seats of the government are carefully selected. However, this approach only focuses on the local level of selected urban areas and the overwhelming majority of the territory, often a densely populated countryside, does not benefit much from the planning. Construction projects such as housing, roads or factories do not need to be approved by the various specialized government authorities. The impact of projects is not assessed and no efforts are made to coordinate their location. Projects only need the approval of the Economic Planning Commission and as such, there is no spatial planning in its proper sense (Feiner and Salmerón 2005).

There is an absence of a spatial planning law in the constitutional framework of China. While there are many laws and regulations that have something to do with spatial planning, the laws are very fragmented and ineffective. On the national, provincial and municipal levels, there are administrative units for urban planning, for social, economic and environmental issues and for infrastructure planning. What is lacking, however, is a coordination instrument that obligates the different stakeholders to cooperate. Spatial planning is significant because it coordinates space-relevant factors on the local, regional and national levels, and manages the mediation between actors from different backgrounds. This coordination is especially important in high density areas – and for the case of China, where many provinces not only have extremely high population densities but also emerging industries and services and a developing countryside, a comprehensive planning approach is crucial (*ibid.*, 192).

Severe housing shortages and people not using the city center are two problems China's urban redevelopment is facing. The development has been focusing on optimizing space from the market point of view. City centers and underdeveloped central areas have been highlighted because they can generate a big profit through urban redevelopment. Along with the progress of the real-estate market, the driving force has shifted urban redevelopment from welfare provision to profit making and the result is that economic parameters are becoming overwhelmingly dominant in the operation of land development while social issues are put in the background. Often, local governments form important partnerships with the private sector and new urban spaces are created by moving existing residents through residential relocation, changing demographic profiles (Wu et al. 2007, 251-262).

China's urban governance has seen trends in the relationship between state and market, the trend in the rise of the corporate paradigm as a model of state practice. In China, local states enter into joint ventures with foreign investors via nonmarket allocations of land to state-owned enterprises. Financing is done at the local level creating a new state-based entrepreneurial class (Roy 2002). As written by Zhu (1999):

Urban land reforms have become an implicit program to nurture local enterprises and developers, a means of fostering local government-enterprise coalitions and an instrument to strengthen local government's position in local development. During the systematic transition toward a socialist market economy, booming

Chinese cities are formulating informal local 'urban regimes' to compete for local growth by capitalizing on financial gains derived from a dual market of urban land and property development. (419)

David Harvey viewed the types of relationships that existed between the market and state at the urban level and has described it as a shift from managerialism to entrepreneurialism, where city managers become entrepreneurs (1987). In a system where the line between state and market is blurred, socio-spatial inequalities are likely to proliferate. This will be discussed in more detail in the next two chapters.

Chinese urban growth reveals the complexities and contradictions that arise in a partially marketized system. The close relationship between municipal government and the development industry means that the industry is not completely competitive (Leaf 1995). All land is state owned and developers are dependent on municipalities releasing land; this gives the government strong control over land use but in practice the local state's weak planning capacity and desire for revenue and foreign investment undermine this power (Logan 2008, 15). Again, such marketized rituals of state power can create discrepancies such as inequalities across regions and within metropolitan areas.

China has engaged in legal, economic and societal changes the past three decades. For example, China's environmental legislation is becoming increasingly progressive. At the same time, there are many problems when it comes to enforcement at different levels. At the provincial level, the lack of robust enforcement means that neither public authorities nor private entities are provided with sufficient incentives to act. Incentives for compliance are missing and this is made worse by lack of awareness among both industry and authorities regarding the benefits of integrating sustainable technologies and services into industry and the need to protect the environment and conserve energy. There are also challenges due to issues such as lawmaking ambiguity, the unavailability of notice and comment rulemaking, gradual implementation of laws, agency disharmony and overlap and the lack of technical infrastructure for compliance (Ferris and Zhang 2005).

## **5.5 An Emerging Civil Society?**

The nature of state-society relations and the role which civil society contributes to public policy decision-making is assumed to have a considerable impact on the production of urban form and on the spatial changes within the city (Douglass et al. 2008). One distinctive feature of China's reform has been the expansion of social organizations and civilian not-for-profit institutions. By the end of 2006, China had some 192,000 registered social organizations. In addition, enterprises, social groups and individuals have set up about 700,000 not-for-profit institutions to provide social services. Although the number of organizations is growing, there is very little evidence to date that civil society groups are becoming more active in urban governance (Laquian 2005, 127).

In China, hopes are increasingly pinned to the development of civil society as the means for articulating societal needs beyond what is imagined

or understood by the state. This is seen as particularly critical for those groups of urban society who are excluded or marginalized from the mainstream of urban society, such as migrant workers and the farmers on the edges of China's cities. Such a conceptualization can be problematic in a Chinese setting because of the restricted potential for the articulation of a non-state civil society and because of the segmented and multi-tiered nature of the state (Leaf and Anderson 2008, 139). In China, like in the West, the private sphere is embedded within a public or political sphere and public and private are inevitably in tension. In China however, unlike the West, the Communist Party has pre-empted the public sphere and as a result, lacks a counterpart to the private sphere. For most Chinese today, a civil society means the pursuit of material interests and personal hobbies. Proper use of leisure time under Mao included collective activities such as organized meetings. Today, people are free to buy TVs, refrigerators, air conditioners and computers and can use their time as they please. More publications are appearing and intellectual life is flourishing in urban China. As long as the party-state is not directly challenged, an ever-widening range of opinions can be publicly discussed (Friedmann 2005, 92).

Friedmann argues that the concept of civil society is embedded in a liberal democracy and is both a social and political concept. He believes that the civil society discourse in China is very different from that elsewhere and that the common models of civil society in the West are inapplicable to China. His idea is that this is because of the different intellectual/religious heritage of China, where the Confucian tradition sees a vertically integrated society intertwined with the institutions of the state, and the private is encompassed under the public with little independent status (2005b, 139).

The Chinese government is ambivalent towards the development of the NGO (non-government organization) sector. The framework for development remains highly restrictive and the state prefers that the sector be dominated by organizations in which the government plays a strong role. At the same time, due to decentralization, increased burdens and new vulnerable populations in urban areas have emerged – most local governments lack the financial capacity to provide the same level of public services it provided in the past. The lack of state funding has led to efforts to develop service providers that can mobilize local resources and partner with NGOs and local communities. The role of NGO contribution is becoming more and more appreciated in China (Saich 2004, 198-202).

The government organized NGOs (GONGO) are another sector currently in development in China, especially within the environmental sphere. GONGOs in China are quite diverse in terms of political independence and strength, but they are distinctive from the government and NGOs in that they straddle and sometimes bridge the worlds of governmental agencies and NGOs. Although they were creations of the state, some research suggests that environmental GONGOs are pursuing organizational goals beyond the state's original expectations and that the extensive networks and partnerships with international organizations have enabled many GONGOs to gain a certain degree of autonomy from the state. GONGOs are serving both the state and civil society and are assisting

government agencies by acting as policy consultants, service providers, or communication facilitators with international organizations (Wu 2003).

The work of NGOs and GONGOs in recent years is very promising. These groups bring issues pertaining to sustainability to the table and help educate urban residents. While emphasizing issues pertaining to sustainability may help encourage more livable cities in China, at this point it seems that eco-city development and urban development that take sustainability into account are more likely to occur as an outcome of state actions rather than through the strength of societal forces. Despite the emerging role of the organizations discussed here, civil society in China remains undeveloped and has been unable to match the role played by civil society institutions and actors in other countries, such as setting an environmental agenda and pushing itself towards the center of political and economic decision-making (Mol 2006). In the case of environmental concerns, reforms to date have not changed the system to the extent that pressures from below will shape the environmental issues on the national agenda (Economy 2005, 288). However, these groups are helping to push many of China's central issues beyond the limits of its formal institutions.

## 6 Sustainable Urban Development and the Chinese Eco-City

This chapter examines sustainable development and sustainable development in an urban and eco-city context. How or to what extent sustainable development can be applied in an urban context is also discussed. Several definitions are included for both sustainability and eco-city and the two concepts are compared and contrasted. Some of the efforts China has made in recent years pertaining to sustainable development are also introduced. As mentioned in the introduction, these concepts can be problematic when it comes to planning because the notions and concepts that underpin planning theory and practice are indistinct by nature and can often lead to false hopes and disappointing outcomes to planning initiatives. This will be further discussed and illustrated in the next two chapters.

### 6.1 Sustainable Urban Development

The concept of sustainability became widely fashionable after the UN's World Commission on Environment and Development published the Brundtland Report, *Our Common Future* in 1987. Sustainable development was defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (The World Bank Group). Sustainability also seeks to connect the three Es of environment, economy and equity. Sustainable development is a field viewed as not only a physical and biological challenge but also in a broader social and economic context (Ruud 2006, 137). It can be conceptually broken into three constituent parts: environmental sustainability, economic sustainability and social-political sustainability. The UN 2005 World Summit Outcome Document refers to the 'interdependent and mutually reinforcing pillars' of sustainable development as economic and social development and environmental protection (The World Bank Group). The concept includes ideas about inter-generational equity, social justice and environmental awareness. It also implies that a global perspective is necessary and that cross-boundary impacts should be considered. Sustainable development is achieved through interactive social, economic, political and environmental processes and policies and considers patterns of development and their environmental, social and economic impacts (Pugh 2000, 206).

With the persistent definitional ambiguities associated with sustainable development, many studies (over 500 efforts) (Parris and Kates 2003) have been devoted to developing quantitative indicators of sustainable development. Because of the ambiguity of the term, the plurality of purpose in characterizing and measuring sustainable development and the confusion of terminology, data and methods of measurement, no indicator sets have been universally accepted (*ibid.*). This poses a challenge to those studying sustainability and will be discussed further in the next chapter using the concept of fuzzy planning in a Chinese eco-city and sustainable urban development context. Despite its ambiguities, sustainable development is a compelling indicator that helps focus the debate on the realities of where and how we now live.

At the United Nation Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, top leaders from 179 countries came to the consensus argument calling for global sustainability. This meeting, known as the Earth Summit, came to endorse a document called Agenda 21 in which the concept of sustainable development was firmly recognized by the world community. In pursuing the UNCED mission, the Chinese government established the State Council Environment Commission (SCEC) in 1992. The Commission materialized China's Agenda 21 as the official guidance document for social and economic development in China. With the UNCED Agenda 21 functioning as a blueprint, China's Agenda 21 placed great emphasis on the sustainable development of human settlement and introduced urban construction as an integral component to sustainable human settlement. The scale and progress of urbanization and management of human settlement, improvement of the environment of human settlement and sustainability of the construction industry were all significant issues included in the agenda. A framework for China's urbanization and sustainable human settlement came to fruition (Economy 2005).

As mentioned in the introduction, The China Council for International Cooperation on Environment and Development (CCICED) is a high-level non-government advisory board established in Beijing in 1992 to 'further strengthen cooperation and exchange between China and the international community in the field of environment and development'. CCICED held their annual general meeting in November 2005 in Beijing to discuss the theme of sustainable urbanization and establish policy recommendations pertaining to sustainable urban development. The focus was the promotion of urban centers that are viable from an economic, environmental and social perspective, which would contribute to and facilitate sustainable urbanization. Recommendations included: plan scientifically for sustainable urbanization through policy settling, implementation and enforcement; transform China's urban areas into resource-saving cities and towns; significantly accelerate efforts to control environmental impacts of cities, continuously improving urban environments; and provide public information and allow for participation for sustainable urbanization (CCICED 2005).

## **6.2 Applying Sustainability to Cities**

The poverty, congestion, pollution and many other problems of megacities and their surrounding regions have raised questions about the sustainability of large urban agglomerations. Production and consumption patterns raise the question of whether cities can continue to grow without adversely affecting the lives of the future generations that will live in them. Some researchers argue that big cities are ecologically unsustainable by their very nature while others argue that big cities are advantageous, especially in the developing world due to efficiencies such as labor specialization, management capabilities and infrastructure efficiencies that are conducive to positive development.

In many respects, cities are efficient forms of human settlements for the delivery of water, power, sanitation and other infrastructure-based needs. Features such as high density, compact urban form, mixed use and high

transit use are associated with many cities. To a great extent, much of the strain on sustainability in China is due to the size of the total population rather than to the urban-rural shares. It is not cities that are unsustainable, rather the lifestyles that might be associated with them such as air-conditioned home and offices, high per capita car-use in low density areas, etc. Cities are not the problem in terms of sustainability; it is the kinds of cities developed that are the problem. This is where policy intervention becomes important (Heikkila 2007). Subsequent to the 1987 Brundtland Report, an enormous outpouring of research and thinking emerged on the sustainability of cities in developed countries. Interestingly, governments and the EU, not urban planners or researchers, took an early lead in articulating a vision of sustainable urban form (Sorensen 2004, 7).

According to Herbert Girardet, 'a sustainable city enables all its citizens to meet their own need and to enhance their well-being, without degrading the natural world or the lives of other people, now or in the future'. (2004, 6). Girardet's definition resonates that of the UN. It encompasses time (now or in the future), the environment, the prosperity of people and advancement (enhance well-being). The definition takes the concept of sustainability and relates it to the city.

Another broad conception of sustainability as it applies to cities focuses on the balance between natural, artificial and cultural elements which makes for a determined quality of life (Fernandes 1998, 3). Like sustainable development, the idea of sustainable cities places the need to close the gap between the poor and the privileged, both within and between societies, at the forefront. The biophysical systems vital to life appear strained by existing demands and the improvement of standards of living across the social and geopolitical spectrum can be met only if transformations in the way resources are used occurs (Clark 2002).

It has been emphasized that the goal when it comes to sustainability and urban development should not be a sustainable city; rather, cities that contribute to sustainable development goals within their boundaries, in the region around them and globally. By focusing merely on sustainable cities, achieving ecological sustainability within increasingly isolated 'eco-regions' or 'bio-regions' becomes the goal and the real goals of sustainability are often lost. The goals of sustainable development are the meeting of human needs within all cities (and rural areas) with a level of resource use and waster generation within each region and within the nation and the planet that is compatible with ecological sustainability (Hardoy et al. 2001, 360). It is difficult to single out particular cities and concentrate on individual city performance; perhaps more important in terms of sustainable development are the local, national and international frameworks needed that can contribute to sustainable development goals worldwide (ibid.).

As with sustainable development, sustainable city is a concept that is difficult to translate at the operational level. However, attempts have been made to develop characterizations of sustainable cities or sustainable urban development (see Elkin et al., 1991). Such descriptions usually include principles that sustainable urban form should adhere to. For exam-

ple, Elkin et al. state that, 'sustainable urban development must aim to produce a city that is 'user-friendly' and resourceful, in terms not only of its form and energy-efficiency, but also its function, as a place for living' (1991, 12). According to Katie Williams et al., it appears that there are a variety of urban forms that are more sustainable than others, namely compactness (in various forms), mix of uses and interconnected street layouts, a strong public transportation network, environmental controls and high standards of urban management (2000). Views regarding the sustainability of cities are divided. While some believe that cities can never be sustainable, others believe that cities can do a great deal to be managed in more sustainable ways (ibid). Chinese cities face a particular challenge because their development cycle has been compressed and accelerated.

### 6.3 Eco-City Concept

What is an eco-city and does it differ from a sustainable city? Rodney R. White describes the eco-city as 'a city that provides an acceptable standard of living for its human occupants without depleting the ecosystems and biochemical cycles on which it depends'; he believes it to be the most durable kind of settlement that humans can build (2002, 3). This definition seems less balanced when compared to sustainable city, which, if taking the term sustainable as it has been defined here, focuses not only on the environment, but also the broader social and economic context.

Rüdiger Wittig describes an eco-city by taking the characteristics of a city (high building density, high waste pollution, high levels of trade and commerce, a concentration of many diverse industries, etc.), and compares the differences of these characteristics with the characteristics of a natural ecosystem (their main energy sources, the composition of their surfaces and vertical structures, the direction of energy and material flows, methods of waste disposal, etc.). In this definition, an eco-city is one that minimizes these differences and the result of that would be a reduced ecological footprint of the city (2007).

Wittig also points out that the eco-city is highly influenced by socio-economic conditions and the attitudes of the population, thus including concepts pertaining to sustainability in his description of an eco-city. According to Wittig, only cities that have established a common vision for local sustainable development with input from a wide variety of members and sectors (stakeholders) of the local community can be considered sustainable. Ecological requirements combined with socio-economic conditions are what create an eco-city (ibid., 29-32).

Richard Register has been tracking many of the dilemmas cities face and has written extensively on the eco-city building approach. While tracking the dilemmas, he has also highlighted the opportunities that exist in the building and developing of cities. Register's view is that while eco-cities are not all virtuous, they bring about a new way of thinking of cities that is healthier for nature and society (2002, 176). His idea of the eco-city is a proposal for a fundamentally new approach to building and living in cities, towns and villages that is based on solid principles from history and with an assessment of the future (ibid., 15).

Some of the specific principles he encourages and deems most important in the city building process include building the city like a living system on a three-dimensional, integral and complex model as opposed to a flat, uniform and simple one; make the city's function fit with the patterns of evolution and be sustainable; follow the builder's sequence by starting with the foundation and a land use pattern that supports the healthy anatomy of the whole city; reverse the transportation hierarchy; and build soils and enhance biodiversity (ibid., 175).

According to Jan Kunz, the idea of ecological cities has its origins in the 1980s, when it was discussed by German scholars as an environmentally, socially and economically responsible city (2006). This resonates with the concept of sustainability. The discussions were linked to the debate concerning ecological responsibility, which had intensified since the 1960s. The first eco-city concepts focused primarily on urban metabolism, i.e. circles of energy, water, wastes and emissions, as well as the protection of the environment in an urban context (ibid).

In arguing for the building of ecological cities, White (2002, 11) defines this as the most durable kind of settlement that humans are capable of building and a city which provides an acceptable standard of living without depleting the ecosystems or biogeochemical cycles on which it depends. The objective of sustainable urban development is to minimize any negative long-term impacts that are connected to the exchange between humans and nature and the interactions associated with this. It can be said that the eco-city concept offers more guidance than practical direction about how to proceed in a specific context or situation. Like the concept of sustainability, eco-cities are located in a field of tensions between maintaining or creating an acceptable standard of living for all people on one hand, and the capacity of the environment to fulfill the needs of present and future generations. Conflict areas are characterized by the environmental imperative, economic demands, social needs and institutional interests. The tensions can be traced back to deviating values, objectives and the policies of the actors involved in the planning process (Kunz 2006).

The ultimate objective of both eco-city and sustainable city is to improve the urban condition and create livable cities. Where problems often arise is managing priorities when it comes to the building of eco-cities. Developers might prioritize the economic development aspect of an eco-city whereas a government employee might want to focus on the social dimension of development. Citizens or prospective residents of an eco-city might prioritize the environmental perspective associated with this type of city building. Although it is a balancing of all these dimensions that is advocated by the concepts of eco-city and sustainable city, the people involved such as developers, architects, citizens or prospective citizens, government officials, etc., all have different ideas of how to achieve this balance. The approach to sustainable urban development is mostly process-oriented and pragmatic. This contrasts to the eco-city approach, which is more visionary and therefore also significant in the creative thought process essential in the development of scenarios for future sustainable urban management (Devuyt 2001, 44).

Mark Roseland provides a comparison of the orientation, focus and means for those involved in eco-city building (2001). There are disparate ideas and varying focus when it comes to eco-city development. While this list might be somewhat different for China, it provides a way of understanding the eco-city concept and the processes associated with it. The following paragraph discusses what individuals might be involved in eco-city development along with what their goals and priorities might entail.

Individuals that are likely to be involved in the process include designers such as architects, planners, consultants and related professionals; practitioners such as politicians, local government professionals, citizens and community organizations; visionaries such as agriculturists, economists, architects, planning theorists and appropriate technologists; and activists such as writers, community activists, social ecologists and various environmentalists. The designers focus on new developments through the means of reducing sprawl and design to encourage the revival of public life. The practitioner focuses on existing settlements and municipalities through local initiatives to create local sustainable development action strategies. The visionaries' focus is communities of association and interest, as well as of place. They use the means of reducing resource waste, promoting energy efficiency, encouraging local food production and fostering the creation of on-site jobs and neighbourhood stores to revitalize communities and eliminate wasteful commuting. The activists' focus is human-scale, sustainable settlements based on ecological balance, community self-reliance and participatory democracy. Their means of achieving this include decentralized, grass roots cooperative development (ibid., 95).

Of the examples listed above, some are more relevant than others to the circumstances facing any particular community or set of communities. For example, in the case of China, the activist group is not particularly strong or present. The following chapter, along with Chapter 8, will provide an illustration of the concepts and ideas discussed here in the context of China's eco-city developments.

## **7 Dongtan Eco-City and Other Chinese Eco-City Projects**

Many eco-cities (as well as eco-communities, eco-villages and eco-towns) have been materializing in different parts of China. Some are small projects while others, like Dongtan, are grand in scale. As discussed in Chapter 5 and 6, the central government is taking a more proactive role in terms of sustainable urban development and the environment with groups such as CCICED and the MEP. The concept of eco-city development is embraced because it addresses particular issues related urban development and the environment. At the same time, it seems that there has been little follow-up to see if projects have actually been completed or what learning came out of a particular project. It might be beneficial in future eco-city developments to have an assessment of what strengths, weaknesses and opportunities that have resulted from past eco-city projects. If the government is going to encourage this type of development, it would be useful if they offered guidelines. At the same time, this is a new type of building process at its infancy and perhaps Beijing is waiting to see how some of the projects in the works fare before becoming too involved in the process.

Eco-city building has been receiving attention and projects at different stages abound in China. Local government officials are applauded when they express interest in eco-city building for their area. It is reasonable to assume that the central government likes this type of development because with eco-city initiatives, China creates the impression of pioneer in environmental protection and city development and establishes an impression of global leadership when it comes to new, innovative and environmentally sound urbanization. With the enormous amount of media coverage on eco-city initiatives, western construction companies, architects, planners and environmental technology and consulting firms have praised Beijing's initiatives with the hope that their companies might be a part of this market – and its potential 1.3 billion customers. It seems to be something that local government officials, private and state-owned enterprises in China and abroad want to be a part of.

This chapter will focus on Dongtan Eco-City and discusses additional eco-city, or eco-construction projects in China. There is focus on Dongtan and Shanghai because they were sites where fieldwork was carried out and most of the information pertaining to Dongtan and Chongming Island are from fieldwork interviews conducted in 2008. This information was gathered through discussions, a presentation from employees working on the project and several hand-outs with information about Dongtan and Chongming Island. The additional projects discussed in this report, Huangbaiyu, Rizhao and Tianjin, were not visited; however, an interview was conducted in Shanghai with a government official involved in the Tianjin Eco-City development. The project illustrations are followed by an assessment of this type of development in Chapter 8. The assessment incorporates the theoretical framework introduced in Chapter 2 and examines the Chinese eco-city development efforts in light of Mumford's view of the city and how the efforts have been affected by concepts associated with fuzzy planning.

## 7.1 Dongtan Eco-City

Dongtan is located on the Eastern tip of Chongming Island. Chongming Island is China's third largest island and the world's largest alluvial island. The total area of the island is 1225 square kilometers and is located at the mouth of the Yangtze River, in close proximity to Shanghai. With an estimated population of 700,000 the Island became one of the administrative regions of Shanghai's municipal government in 1958. Road traffic from Shanghai to the Island is in planning stages. As part of their long term development plan for Chongming Island, the Shanghai Municipal Government is constructing a bridge and tunnel linking the Island with the Shanghai mainland; it is set to be complete in 2009. Today there are passenger boats departing from Shanghai ports to Chongming Island that take anywhere from 40 minutes to three hours, depending on what type of boat and whether leaving from the city center or port areas. The Hu-Chong-Su tunnel bridge will shorten the journey from Shanghai to Dongtan to about one hour.

Chongming's natural wetland ecosystems along the coastline provide important habitats for many wildlife species and there are 2-3 million migratory winter birds living there in spring and autumn. The east wetlands of Chongming are located at the midpoint of the route of Asia-Australia bird migration, a habitat where migratory fish species of the Yangtze complete their life cycles, and a place rich in species of aquatic animals of economic importance.

According to the master plan for development of Chongming, population will be controlled and there will be a coordinated balanced development between urban and rural areas. Focus has been placed on ecologically sound development and a harmonious (socialist) society. Part of the overall development plan of Chongming Island as stated by the official website is:

To stick to the guiding principle of scientific developing ideology and the requirement to construct harmonious socialist society. Oriented to the overall goal of construction of modernized ecological island zone, great effort will be made to implement the strategy of invigorating the county through science and education development.

The plans for Dongtan Eco-City were developed by Arup, an international design, engineering and business consultancy with headquarters in London. Arup has been operating in China for more than 30 years and nearly a quarter of their worldwide staff of 10,000 are based in Hong Kong and China. Arup's work in mainland China includes sports venues, hotels, offices, airports, libraries, power stations, bridges, highways and railways. In August 2005, Arup was contracted by the Shanghai Industrial Investment (Holding) Co. to design and masterplan the Dongtan Eco-City. Dongtan was planned to be a city of three villages that meet to form a city center.

Shanghai Industrial Investment (Holding) Co., Ltd. (SIIC) is an SOE fully funded by the Shanghai Municipality. It owns many listed companies and direct subsidiary groups in China and other countries and operates

much like any private company undertaking commercial deals. With nine overseas regional headquarters, SIIC has established a global business network and is actively trying to develop innovative science and technology strategies. SIIC has established core business units including medicine, real estate, international business and Dongtan. They are active in real estate developments in urban Shanghai. They appear to be involved in a wide range of activities including infrastructure facilities, information technology, financial investment, hotel and tourism, consumer products, commercial retail and auto parts. For Shanghai, SIIC has become an important conglomerate and key player in overseas activities.

As explained by Peter Head, a director of Arup overseeing Dongtan's development, 'Shanghai wanted to develop Chongming Island. The Beijing government was concerned by this as it presented a threat to the wetland and ecology of the island' (Castle 2008). In an effort to protect the wetlands on the island's east coast, the central government signalled to Shanghai municipality that it would not release the land if the development plan did not focus on sustainability (ibid).

## **7.2 Arup and SIIC: Planning Dongtan**

The relationship between Arup and SIIC and the relationship between the UK and China have been crucial for the development of Dongtan. Arup and SIIC had similar visions for how Dongtan would be planned; the UK and China, in their efforts to focus on climate change, have been willing to invest large amounts of money to sustainable development projects. The plans for Dongtan included many qualities that resonate with the concept of sustainable development; they will be discussed in more detail in later sections.

The signing ceremony between Arup and SIIC took place at Downing Street during a state visit of the President, Hu Jintao. The British Prime Minister visited Shanghai on January 19, 2008 where Peter Head presented the masterplan to Gordon Brown at the Shanghai Urban Planning Exhibition Center. A long-term strategic partnership was agreed upon to develop the funding model for eco-cities in China. On the same trip, Brown and Chinese premier Wen Jiabao agreed to boost trade by 50 percent by 2010 and Brown also offered China £50 million to help the country tackle climate change (Castle 2008).

Arup produced a masterplan along with sustainability guidelines for Dongtan that included key aspects related to ecological management of wetlands, energy, resource and waste management, buildings, transport and sustainability. In terms of ecological management of wetlands, the plans aimed to have a 'buffer zone' between the city and the mudflats, returning agricultural land to a wetland state. 40% of the land area of the site was dedicated to urban areas and the city's design aims to prevent pollutants (light, sound, emissions and water discharges) from reaching the wetlands.

In the plans, energy demand in Dongtan would not add to the level of greenhouse gases in the atmosphere. Energy in the form of electricity, heat and fuel was to be provided entirely by renewable means. In build-

ings, this was to be achieved by specifying high thermal performance and using energy efficient equipment and mechanisms to encourage energy conservation. Transport energy demand was to be reduced by eliminating the need for motorized journeys and judicious choice of energy efficient vehicles. Energy supply was to be supported via a local grid and electricity and heat supplied by four different means: a combined heat and power plant running on biomass in the form of rice husks, which are the waste product of local rice mills; a wind farm; biogas extracted from the treatment of municipal solid waste and sewage; and photovoltaic cells and micro wind turbines.

In resource and waste management, the aim was to collect 100% of all waste within the city and to recover up to 90% of collected waste. Waste would be considered a resource to be recycled or used as biomass for energy production. There was no landfill planned and human sewage was to be processed for energy recovery, irrigation and composting.

The buildings were to be a combination of traditional and innovative building technologies that would reduce the energy requirements of the buildings by 70%. Public transport with reduced air and noise pollution would enable the buildings to be naturally ventilated, reducing the demand on energy. Green roofs were also a part of the plan. They would improve insulation and water filtration and provide potential storage for irrigation and waste disposal.

The masterplan tried to create a city inked by a combination of bicycle paths, pedestrian routes and varied modes of public transportation including buses and water taxis. Canals, lakes and marinas were part of the city plan. Technologies such as solar powered water taxis and hydrogen fuel-cell buses were explored. Visitors would park their cars outside the city and use public transportation within the city.

Arup and SIIC recognized that sustainability included social, economic and environmental factors. The city was designed so that all housing would be within seven minutes walk of public transportation and easy access to the social infrastructure such as hospitals, schools and work. SIICs intention was that employment would be possible for the majority of people who live in Dongtan across all social and economic demographics. The hope was that effective policy incentives would attract companies to Dongtan. According to plans, the eco-city would accommodate up to 500,000 people by 2050.

As collaborators of Arup, SIIC had a similar vision for Dongtan. SIIC views the city as 'the carriers of human civilization' with several fundamental components including environment, politics, culture, natural resources, society and economy. Because of their concern for recent trends and problems associated with urbanization in China, combined with a view on the importance of sustainability in China and around the world, SIIC's aim with Dongtan was to set up a sustainable, resource efficient, culturally rich city environment and change the way a city influences nature and society.

SIICs eco-city methodology highlighted a balance in economy, resources, society and environmental development. These factors resonate well with the idea of sustainable development as recognized by Arup. SIIC recognized the challenges of sustainable development and building a city in this manner. Some stakeholders involved in the project were in pursuit of GDP growth and short-term benefits, ignoring or placing less focus on long-term benefits. They also recognized the limitations of sustainable development seeing it as a long-term exploration lacking a mature methodology of measurement. There were also challenges from regulations and policies.

According to Head, Arup initiated their sustainable development work on the project with a workshop involving their client, stakeholders and professionals in order to establish the ambitions of the scheme including running the city on renewable energy, recycle and reuse waste water and protect the wetlands by returning agricultural land to a wetland state to create a buffer between the city and the mud flats, to name a few. Arup also claims that the masterplan was influenced by the island's social and cultural history. This was apparently achieved by researching its earlier development and following relatively recent farming and irrigation channels. Arup realized that for the city to work, the landscape design must resonate culturally. In planning the housing in its urban context, Arup also studied the local street pattern and the way people live in Shanghai, their use of squares, alleys and streets. They reviewed the orientation of buildings and carried out a detailed study of the orientation of the site.

In discussions, Dongtan project members indicated that no peasants were being displaced from the development. They also mentioned that residents had been consulted and were aware of what was happening. However, after visiting the island, it seems that very few residents knew about the development and no one knew of any details. None of the residents interviewed knew about Dongtan Eco-City; they discussed 'development' on the island in very broad terms but did not know of an 'eco-city' or what such a construction would entail. Perhaps Arup and SIIC's interviews were conducted elsewhere on the island. The notion of residents not being displaced seemed to hold as the area for the site did not consist of homes or neighborhoods, rather unoccupied land.

It was also mentioned that although intentions to build with the island's social and cultural history in mind, the analysis was being done by Arup. The research involved an analysis of city-living, space and building orientation in Shanghai and the people involved in this process were not Chinese, nor were they educated in Chinese culture and history; in fact, according to SIIC, many people involved on this aspect of the project had a limited understanding of Chinese culture and history. Because of this, the resulting evaluations might not have been sufficient in meeting the needs of the people residing on the island in terms of socio-cultural aspects, the use of city space and the microclimate in developing the overall land use.

### 7.3 Various Stakeholders

In a private presentation on Dongtan given by SIIC during fieldwork, several stakeholders were mentioned as involved in phases of the project aside from SIIC and Arup. Global consulting company Monitor Group is one company mentioned by SIIC. In an article written by Dr. Thierry Delmarcelle, Managing Director of Monitor Group in Beijing and Li Guanghai, Principal with Monitor Group Beijing, the consultants highlighted the economic benefits of Dongtan. As stated in this article available on their website, ‘when completed, Dongtan will create enormous financial returns for SIIC, such as real estate price premium, as well as long-term reputation benefits’.

Sustainable Development Capital LLP (SDCL) is another company that was involved in the project. SDCL is a multi-disciplinary investment banking firm providing services for professional investors only, working with financial institutions, governments, developers and corporates on large scale sustainable development projects. Part of SDCL’s proficiency is building financial structures to make projects such as Dongtan viable. The global property and construction company Rider Levett Bucknall, known as Levett & Bailey before the 2007 merger, was also involved in the Dongtan project along with commercial real estate company CB Richard Ellis, HSBC and Jones Lang LaSalle.

Local developers on Chongming Island also took a keen interest in the Dongtan Eco-City project. A discussion with a real-estate developer on Chongming hinted at his concern and priority in raising Dongtan’s profitability rather than ensuring sustainable development, and that the expensive eco-housing that might be built in connection with the eco-city will bring China’s wealthy elite to the island and increase the value of the land in certain areas. This is counter to the statements from both Peter Head and SIIC who claim that in order to be sustainable the city will need to be socially sustainable as well, meaning affordable housing and a population that includes a wide range of demographics. The plans for Dongtan resonate with these statements. The priorities of the local developer are another example of mismatched prerogatives of those involved or potentially involved in the project.

How much involvement and what stake these companies had in Dongtan are unknown. However, it is reasonable to assume that an increasing number of stakeholders, whose main interest might be different from those of SIIC (such as financial returns, profits, press coverage or additional opportunities brought on by such a project) increases the chances of disagreements and delays the process. In a field interview with SIIC, people involved in Dongtan said there were disagreements between companies more focused on reaping the financial benefits of the project and others who were more concerned about building a sustainable city in terms of social/cultural sustainability, ecologic/environmental sustainability. When asked about the ideal Dongtan or ideal eco-city, there seemed to be differences in viewpoints in terms of the analysis, emphasis and strategy of the eco-city. In the interview, SIIC stated that their main concern was social and environmental sustainability whereas, according to one, Arup was more concerned about economic sustainability. Due to

the amount of press coverage of Dongtan towards the end of 2008, Arup was not available for an interview.

There was also discussion around Dongtan becoming a quaint green suburb of Shanghai, or a type of vacation place for Shanghai's wealthier residents. With all the speculation surrounding Dongtan, land prices in the area have increased. Regardless of whether the project gets off the ground or not, SIIC, who owns the land, can most likely make a financial profit from the land. Arup has also benefitted from the hype and speculation of Dongtan. Arup received contracts to work on not only additional eco-city projects in China but also several other projects including the City of Dreams Casino in Macau and the Rem Koolhaas-designed CCTV Tower in Beijing (Ethical Corp Online).

#### **7.4 All the Hype**

At the time of this writing, Dongtan has not been built and very little progress has been made in its development. There have been many problems and set-backs. Dongtan was a project that received tremendous amounts of press coverage. Former Mayor of London Ken Livingstone praised Dongtan as pioneering work leading to a more sustainable future. According to a press release from Arup the mayor stated that 'Global warming was created in the west, but it is increasingly to the east to which we look for a solution. Shanghai's Dongtan sustainable-city project is breathtaking in scale and ambition and if it works it will be a beacon to the world on how to achieve a low-carbon future'. (Arup Online). With prominent names such as Tony Blair and Hu Jintao helping to launch the project in 2005 and with Gordon Brown, in early 2008, pledging that it would be the model for similar towns in Britain, Dongtan received a great deal of attention. It is reasonable to assume that part of this hype was a strategic way for Arup to advertise by demonstrating their engineering and development expertise in order to commission more projects in a booming China.

Also mentioned in the fieldwork interview and confirmed by media reports, another key player in Dongtan's evolution is former Shanghai Communist Party leader, Chen Liangyu, who was able to bring the land on Chongming Island where Dongtan was to be developed into the hands of SIIC. He also lent his prestige to the project. In a fieldwork related interview with a Shanghainese NGO, Mr. Chen was referred to as a real-estate fanatic. In 2006, he was fired from his position for property-related corruption, was later convicted and is now under house arrest. Dongtan lost a key supporter and the way big land deals are done in China has been changed (The Economist 2009).

Many people following the project have come to conclusions as to why Dongtan might not be built or is exceedingly delayed. Some claim it was too grand a project. Others point to the fact that the process was not locally driven and relied on foreign design, program management and certification. There also seems to be information pointing to significant conflicts between the city of Shanghai, SIIC and Arup. At this stage, with little or no political support, it seems that Dongtan will not realize its full potential as an eco-city.

## 7.5 Huangbaiyu

Huangbaiyu is a small village located in the mountains of Northeast China in Liaoning Province that in 2003 became the location for the China-U.S. Center for Sustainable Development's 'demonstration village'. Huangbaiyu, similar to Dongtan yet much smaller in scale, was to be a model that would show how to promote sustainable development in a village setting. Unfortunately, the results of the project have not gone as planned.

The project was led by American architect William McDonough, co-author of *Cradle to Cradle*, a book that encourages the transformation of human industry through ecologically intelligent design, and Deng Nan, the daughter of Deng Xiaoping. The main goal of the village was to cut energy costs by building new houses out of hay and pressed earth bricks and incorporating full southern exposure, complete insulation, rooftop solar panels, radiant heat floors and pipes for bringing in cooking gas produced by a nearby methane-from-biomass plant. The village's 370 households would be centralized so that farm plots could be consolidated and additional land made available for either farming or other development. International companies such as BP and BASF donated materials. New houses were to cost 3,600 USD, a manageable price for Huangbaiyu's peasant-farmers.

Of the first 42 houses that were completed in late 2006, only three used eco-friendly bricks and only one house had solar panels. None faced south and the new eco-dwellings had garages, although not a single villager in Huangbaiyu is anywhere close to being able to afford a car. Costs exceeded expectations and government subsidies did not come as planned. As a result, house prices soared to 20,000 USD, a sum the villagers could not afford. Villagers did not want to move to the village center because living a distance from their farmland reduced their land plots. No urban employment had been created. The villagers complained that they had never been consulted in the planning of Huangbaiyu (May 2007, French 2009).

One interesting aspect of Huangbaiyu, which is similar to the Dongtan project, is the difficulties that arise when partnerships between governments, developers, and various stakeholders such as NGOs might not have the same priorities. While they might have similar goals such as a successful sustainable development project that uses environmentally friendly technology and encourages social equity, some might prioritize aspects such as the politically correct ideology that such a project encourages or the attention, wealth or power such a project can garner differently from others.

Huangbaiyu also suffered from not including specific standards set according to the local situation and a system of accountability to the population being served. This relates to Scott's view of the dangers of not accommodating local-tacit knowledge to the planning of space. As mentioned in the opening chapters, Scott highlights the significance of recognizing the importance of local customs, local needs and practical knowledge associated with a particular area. This will be discussed in fur-

ther detail in following sections. Huangbaiyu exemplifies the notion that local community participation is crucial. While villagers agreed that energy-efficient houses would be nice, they felt that problems such as health care, education and care of the elderly were more urgent (May 2007, French 2009). A main failure of Huangbaiyu was that it was not suited to the local conditions. The project was meant to improve the quality of life for 1,529 villagers by optimizing land use and demonstrating village forms of alternative energy and green building practices. Instead, self-sufficient farmers were asked to trade in their old houses and land for new eco-dwellings that had less land attached, no room for raising animals or storing grain and were several kilometers from the farming plots; unsurprisingly, they were unwilling to do this.

William McDonough + Partners, the American design firm of 46 architects, planners, designers, and support staff recognized the failure of the development of Huangbaiyu. As stated on their website:

The outcome has been a disappointment and has occasioned much internal reflection (and external scrutiny). The project at Huangbaiyu yielded many lessons learned for everyone involved. First and foremost, it taught the importance of managing expectations from the outset on pioneering projects. Because of the ambitious and unique nature of Huangbaiyu, unrealistically high expectations were built up by Bill McDonough, the Center, William McDonough + Partners, and other stakeholders; these expectations were echoed and amplified in the media. In a milieu where 'economic development' and 'sustainable development' are terms used synonymously, villagers began to expect more involvement by the Center's members in job creation and economic stimulation. Hopes soared with each visit by senior Chinese officials and foreign representatives, and the full impact of this (and its amplification in the media) was not clearly understood at the time.

The statement made by William McDonough + Partners on their website demonstrates central points made in this report related to the problems of sustainable development of space and cities in China and eco-city, or eco-construction building methods. Terms such as economic development and sustainable development were not clearly defined. As mentioned, the concept of sustainable development is often unclear. There was a significant amount of media attention, which also created expectations on the project. Expectations ended up unmet.

## 7.6 Rizhao

Rizhao is a coastal city on the Shandong Peninsula in northern China with a population of nearly three million. The city is relatively small by Chinese standards, and the income level is slightly below average compared to other cities in the region. In Chinese, Rizhao City means 'city of sunshine'. As opposed to building an eco-city, Rizhao decided to convert as much as possible of the city's energy consumption to solar power through subsidies and cheap technology. 99 percent of households in the central districts use solar water heaters and most traffic signals, street lights and park illumination are powered by photovoltaic solar cells. In the suburbs and villages, over 30 percent of households use solar water heaters and over 6000 households have solar cooking facilities. This

achievement was made possible by three key factors: a government policy that encourages solar energy use and financially supports research and development, local solar panel industries that seized the opportunity and improved their products and the strong political will of the city's leadership to adopt it (Bai 2007).

The Shandong provincial government provided subsidies and funded the research and development activities of the solar water heater industry. They also put in place regulations and provided public education to ensure residents would adopt the new technology. The city mandates all new buildings to incorporate solar panels and oversees the construction process for proper installation. They also raised awareness by holding seminars and running public advertisements on television. This project demonstrates the importance of government initiative and support. Government buildings and the homes of city leaders were the first to have panels installed and some government bodies and businesses provided free installation for employees. Rizhao's leaders saw that an enhanced environment would help the city's social, economic and cultural development in the long run (ibid., 109).

The results have been a reduction in the use of coal and an improved environmental quality of the city. Rizhao has been listed in the top 10 cities in China for air quality. Additional benefits include an increase in the amount of foreign direct investment, an improved tourist industry and the opportunity to host a series of domestic and international water sports events (ibid., 108-109). This was done without the help of an eco-city branding campaign or the use of foreign engineers and shows that subsidies and cheap technology can come a long way in addressing pressing issues related to sustainable urban development. According to reporting by Guo (2008) for China Daily Newspaper, in the last few years, Rizhao has been granted many honorable titles, including China's Outstanding Tourism City, National Model City of Environmental Protection, Environmentally friendly National Model City, and National Garden City.

## 7.7 Tianjin

Tianjin is a leading industrial center and its proximity to Beijing has most recently been a constructive reinforcement for collaborative ventures and efficient specialization (Yusuf and Wu 1997, 89.) According to statistics from the National Bureau of Statistics of China, the 2006 year-end population of Tianjin was 10.8 million. Tianjin faces many of the same problems as other cities in China. Lack of housing, air pollution and traffic congestion are some of the most serious. There is an inappropriate mix of industry and residential housing in some parts of the city and many of the problems the city is facing such as water pollution, industrial pollution and traffic blockage are due to the way the land is being used. Another problem is that water resources have been decreasing due to water conservation projects upstream on the Haihe River and a long drought. Currently, local water resources per capita are only 160m<sup>3</sup>, 1/15<sup>th</sup> of the national average (Krause et al. 1997).

Like Dongtan, Tianjin aims to be a model for other cities facing similar urban challenges. According to the Tianjin Eco-City website, Tianjin

aims to build an economically thriving, environmentally friendly, socially harmonious and resource-efficient city. The key concept underpinning the planning and development of the Sino-Singapore Tianjin Eco-city is the 'three harmonies' - man living in harmony with man, now and for future generations; man living in harmony with economic activities; and man living in harmony with the environment. Key features of the city include nine key aspects: energy efficiency and use of clean, renewable energy; green buildings; ecologically friendly in terms of existing wetlands and biodiversity preservation; water management; waste management; economic vibrancy; social harmony and heritage preservation. Also noted on the website are aims somewhat unrelated to the eco-city goals and initiatives: 'The project will also help to further broaden and deepen the PRC-Singapore partnership, and provide a new platform for engagement between the leaders, officials and businessmen of both countries'.

While Dongtan represents a central-government approved urban greening development project led by the private sector, Tianjin represents transnational public-public collaboration between two developmental states. The success of Tianjin remains to be seen. The start-up phase of the project (3 sq km) is expected to be complete within the next three to five years. The entire 30 sq km should be completed in ten to fifteen years. Upon completion, the population size has been projected to reach 350,000 (*ibid.*).

Tianjin has several Singaporean organizations involved in the project such as the Singaporean Housing and Development Board, the Singaporean Building and Construction Authority, the Ministry of National Development and the Urban Redevelopment Authority. Property developer Keppel Corporation is also involved in the project. Commitment of the Chinese and Singaporean governments in the Tianjin project is excellent and there is multiple government coordination with private companies most active in the implementation phase. In a fieldwork interview with the consul-general of Singapore in Shanghai, emphasis was not placed on cutting-edge technological solutions in developing the eco-city; rather, focus was placed on feasible and functioning solutions that were manageable in terms of costs. Tianjin planners believe that companies involved in the project will see high returns in terms of publicity and media and hope to bring on companies (in an international bidding process) that do not merely focus on making a quick and large return on their investment.

As reported by Watts (2009) for an article in *The Guardian*, the success of Tianjin 'will depend on finding the right mixture of economics, user-friendliness and environmental concerns'. In the same article, Liang Benfan, a professor of urban development at the Chinese Academy of Social Sciences, said: 'its good people are discussing this, but they are too focused on technology. There's not much thought about nature and local culture'. It remains to be seen whether this becomes a point of contention in the Tianjin project.

With the Chinese projects exemplified here, it seems the focus of eco-cities and eco-constructions is more about bringing environmentally friendly technology to cities, which is a very positive outcome. At the same time, if planners want to think in terms of sustainable cities, more consideration will have to be taken to the socio-cultural aspect of sustain-

ability. This idea is related to the concepts introduced by Scott. Scott was describing the negative results of state development when combined with the ideology of high modernism (a term Scott borrows from Harvey) and this can be applied in a Chinese eco-city setting. Scott saw three existing elements that contributed to the failure of, for example, city developments: first is the aspiration to the administrative ordering of nature and society; second is the unrestrained use of the power of the modern state as an instrument for achieving designs; and third is a weakened or prostrate civil society that lacks the capacity to resist these plans (Scott 1998, 88-89). While these elements exist, to some extent, in China, China is undergoing a transition. As discussed in Chapter 5, the power of the central government is no longer unrestrained as it might once have been; there are countervailing powers in existence and although China's civil society might be weak relative to other countries in the West, it plays a role in today's China and is emerging as an additional counteraction.

Economic reforms have agitated the foundation of China's socialist governance. This is another topic that was discussed in Chapter 5. Forces released by economic reform and the open-door policy have created new conditions of urban governance (Wu 2002). This will be discussed in more detail in the next chapter in the context of the entrepreneurial eco-city. The following chapter continues to assess the Chinese eco-city using concepts discussed throughout this report using the examples of Dongtan, Huangbaiyu, Rizhao and Tianjin.

## 8 Assessments of the Chinese Eco-City

In trying to bring together the concept of the eco-city and the problems pertaining to sustainability that come with urban development, Mark Roseland has argued that a collection of apparently disconnected ideas about urban planning, transportation, public health, housing, energy, economic development, natural habitats, public participation, and social justice all hang upon a single framework that is called 'eco-city' (2001). There is a lack of synthesis in what constitutes an eco-city and the components of the eco-city. The difficulties Dongtan experienced are not only due to the use of a single framework with disparate objectives but also the reality of developing a city during a time when China's land policy is in transition. The difficulties of the vagueness of the eco-city and sustainable city concepts combined government processes and policies in a China in transition created difficult hurdles for Dongtan's progress.

Eco-cities are on the agenda during an era of a land policy in transition. Through the remising of state land-use rights, private enterprises and overseas companies can invest in the construction of the city, enabling city planning to meet the demands from various sectors and enhance development of the city. With economic globalization, Chinese cities have become the target of global capital (Shiwen 2008). Eco-cities were planned as a way of addressing the social and environmental problems resulting from the focus on speed of economic growth of cities. Dongtan, however, is an example of an eco-city with good intentions that encountered disruptions due to stakeholder differences and inexperienced city planners struggling in a system that is in transition. In a China in reform, development practices such as the eco-city experienced the difficult balance between capitalism and socialism. In the interview with SIIC, employees mentioned that Arup is a private consultancy firm and according to them, this fact alone made 100% sustainability difficult. A statement such as this indicates disagreements in terms of sustainability and priorities between the government-run SIIC and privately owned Arup. Theories which consider the concepts, strategies and policies related to the eco-city building approach in terms of the socio-cultural, economic and environmental aspects of sustainability, help to explain the difficulties that were encountered in this example.

For Dongtan to go from concept to practice has been difficult also because there is relatively little guidance for this type of city development. It is only recently that there has been a growing interest in the practical application of the eco-city idea at the local level. The last few years have seen some literature supporting the practical application of eco-city ideas; however, this literature reflects an overwhelming variety of orientations and terminology. Authors include architects, academics and activists and terminology includes concepts such as 'neo-traditional town planning', 'pedestrian pockets', 're-urbanization', 'post-industrial suburbs', and 'sustainable cities' (Roseland 2001, 93). Arup and SIIC developed their concept of an eco-city, which in many areas seemed to resonate with sustainable development in an urban setting. The implementation of such integrated sustainable urban planning and design concepts would have been extraordinary also because eco-cities are not a tried and true method

of city development. It is a new way of building and developing cities. The idea of building an eco-city or sustainable city is not new in itself, but the plans for Dongtan were revolutionary in that they brought many new ideas into one single city plan. It seems the problems culminated during the implementation phase. Implementing Dongtan as an eco-city was made more difficult with the lack of guidance on bringing many of the eco-city concepts to realization; this might be especially true for Dongtan since concepts and plans were extremely ambitious.

Of the bigger eco-city initiatives discussed here, Dongtan and Tianjin have both had the goal of being showcase eco-cities. One significant feature of both eco-cities is the mere idea of being a template, which if successful, can be replicated elsewhere in China or the world. A positive outcome of this is the transfer of good technology and know-how. It becomes an amalgamation of ideas and new technologies from different countries such as the UK, Singapore, China and the U.S. At the same time, by focusing on being a showcase, ideas about sustainability can be lost because the goal in such a situation is becoming a model as opposed to addressing significant challenges related to sustainable urban development.

### **8.1 Eco-cities and Theoretical Approaches**

Harvey discusses the tendencies of capital in the built environment, along with the role of political struggle and the social and political forces in a particular city that have an effect on capital and investment. It is the dynamics between these forces that are significant in the context of the Chinese eco-city. Harvey also articulates the role of social and political struggle in shaping urban processes (1988).

In the case of urban development and projects such as Dongtan, the new social and economic interests outside the bureaucratic system are transformed into political interests. Harvey has argued that urban spatial patterns have, in part, been determined by the organization of the state and the dynamics of political competition. Part of this argument is the state's dependence on private investment for public revenues. Harvey wrote, 'The successful urban region is one that evolves the right mix of lifestyles and cultural, social and political forms to fit with the dynamics of capital accumulation'. (1985, 158). When assessed in the context of Dongtan and eco-cities in China, this idea reminds us that in Harvey's view, the state and political competition will be less important than the needs of capital.

One reason why Dongtan's progress stalled might be, in part, due to lack of capital. According to research done by Paul French at Ethical Corporation, one of two reasons why Dongtan has failed is that both SIIC and Arup thought the other would be paying for the development. Although capital would be raised, it seemed that neither organization was willing to pay the bill in the end. It might also have been the case that disagreements ensued in how to cover, or share the costs (2009). The second reason French believes that Dongtan might not be built or is exceedingly delayed is the eventual lack of government support. As mentioned in reports from the Economist, Dongtan was supported by former Shanghai

Communist Party leader, Chen Liangyu. Mr. Chen was fired in 2006 for property-related corruption. He was later convicted and is under house arrest and his downfall has tainted the entire project. Since this event, new politicians have distanced themselves from projects such as Dongtan (ibid.).

In his discussion on housing and urbanization, Harvey believed that consumer preferences were produced systematically rather than arising spontaneously. In his study of the housing market in Baltimore in the 1970s, he concluded that, 'Financial institutions and government manage the urbanization process to achieve economic growth, economic stability and to defuse social discontent. If these aims are to be realized, then new modes of consumption and new social wants and needs will have to be produced'. (Harvey 1983, 352). Aspects of this conclusion can be applied in the eco-city development approach. It might be that eco-city living emerges as a new type of urbanization where the social wants and needs of society are related to low-carbon, environmentally friendly living. This could result in its own distinctive community where techniques of persuasion are used to convince of the virtues of 'right' and 'smart' living.

Harvey also believed that the processes he had studied could be generalized to all advanced capitalistic nations although the particular manifestations of these processes could not (ibid.). The relevance of Harvey's arguments in the context of China and China's eco-cities can be somewhat distorted. It can be argued that China is not an advanced capitalistic nation. Also, with Harvey's approach it can be difficult to distinguish the evidence for the causes of urban change from evidence about urban changes themselves. Harvey's view stresses an economic account of a process and takes less consideration to the social character of specific places and these impacts on processes of change. The catalyst for eco-city development in China stemmed from societal needs – it was the needs of the society that brought about this building approach and a goal of this development was sustainability in an urban context, with sustainability involving a balance of societal, economic and environmental needs. With sustainability, it might be less relevant to discuss the capitalistic society. Although sustainability has the factor of economic sustainability, it is more about a balance in development. It can be argued that Harvey is more relevant when examining the process itself, rather than why this type of city development was chosen and how it brings about change to the urban landscape.

Scott (1998) focuses on the actions of the state in urban development rather than on the capitalist economy. Viewing the development of Huangbaiyu through ideas that Scott has written about in *Seeing Like a State* provides a perspective that resonates with this report. Although Huangbaiyu was not a centrally-planned social-engineering project like those that Scott writes about, aspects of this type of building approach were included in the Huangbaiyu development. One of Scott's key arguments is that the local, practical knowledge possessed by the individuals living in a particular area is important and that any system that functions at all must create and maintain a space for those individuals to use their local, practical knowledge. The idea of moving humans and their lives and building a territory in a certain way decided upon by a person or per-

sons (such as in Scott's argument, the bureaucratic planner and in the case of Huangbaiyu, the bureaucrat combined with an American architect with support from various organizations) to create their idea of utopia makes little sense in an eco-city and sustainable city context.

Scott brings up an example from Tanzania, where Julius Nyerere attempted to move rural inhabitants to villages from 1973 to 1976. As Scott views this:

Peasants were... shifted to poor soils on high ground... moved to [houses near] all-weather roads where the land was unfamiliar or unsuitable for crops... village living placed cultivators far from their fields, thus thwarting crop watching and pest control... [Bureaucratic] insistence that they had a monopoly on useful knowledge and that they impose this knowledge set the stage for disaster (246-247).

This is illustrated by the outcomes of Huangbaiyu and demonstrates the importance of facilitating intercultural exchange at the grass roots, civil society and political levels.

## **8.2 Fuzzy Planning and Stakeholder Priorities**

During the fieldwork interview with SIIC, concern was expressed regarding the concept of eco-city. The SIIC employees working on Dongtan were concerned that the term eco-city would become saturated. It was their opinion that this had already happened with the concept of sustainability development and they did not want the same thing happening to eco-city. They both have broad appeal but little specificity. According to Kunz, while there is often no clearly defined goal, the process itself is the aim (2006). However, this creates problems from a planning and implementation perspective.

The eco-city and sustainability are both examples of concepts that seem to grasp intentions in planning relatively well; however as demonstrated by some of the examples in this report, their complexity and lack of precise description pose many problems. This problem is exacerbated by the number of people involved in the planning process. Geoff Porter and Gert de Roo argue that concepts such as compact city and sustainability are notions that are well intended but meant to be understood in general terms. This means that each concept is open to interpretation, depending on an individual's position. They also lack clear tools for implementation (2007, 9-10). The same arguments can be applied to the concept of eco-city. Unless there is one clear definition accepted by all, there will be multiple interpretations, which will add to the uncertainty of a particular urban planning situation. As a result, notions such as these must be scrutinized and supported by facts and arguments (*ibid.*).

By bringing in additional stakeholders, Scott's arguments pertaining to authoritarian high modernism does not have the same effect. In certain respects, these examples show a range of parties that attempt to make the decisions as opposed to solely the state having the decision-making power. The state shares power in its attempt to improve cities with architects, consultants, investors and various other parties. As mentioned in

Chapter 2, an authoritarian regime such as China's might be able to impose authoritarian state planning to city development and demand eco-city developments. However, as discussed in Chapter 5, China's central government has lost some control and its dominance at the national level is being decentralized. This is exemplified in local governments asserting more power and an open-door policy that has allowed the participation of foreign capital in urban development. Also, when combined with the notion of fuzzy planning, Scott's arguments are not as strong. Fuzzy can also be ascribed to governance in this illustration because for a China in transition, the roles and responsibilities that planning authorities are expected to take are no longer straightforward as these are related to the activities of a wide range of parties including other than governmental bodies (Martens 2007, 46).

There are several stakeholders and participants involved in the eco-city projects examined here. The following sections provide examples of some of the different and conflicting priorities, ideas and expectations pertaining to this type of development. The Chinese central government, local governments and municipalities, developers, architects, residents of Chongming, organizations, companies and in the case of Tianjin the Singaporean government are all examples of stakeholders involved in some of these project. This can create a difficult situation because not everyone is going to have the same priorities in terms of sustainable urban development. Conflicts of interest have proven problematic for Dongtan Eco-City. Examples of interests and priorities are, for China, the goal of showing the world how far they have gotten in terms of green technological development. Local officials are often concerned about their status and promotion possibilities. Companies such as Arup are concerned about getting a foot in the door in the Chinese eco-city market and investors and private companies prioritize profitability. While residents of areas such as Chongming might be somewhat concerned about a better living environment, those interviewed during fieldwork talked more about increased land value due to construction of the bridge and tunnel to Chongming, as well as additional real-estate development on Chongming increasing the value of their properties. The following paragraphs provide examples of where priorities for local officials or the central government might lie and potential reasons for this.

Arup received benefits in the Dongtan project such as large amounts of press coverage during the project's planning phases; this might have led to proposals and projects from other Chinese cities to create similar developments in other parts of the country or in other countries. The local population on Chongming Island might have benefitted from the development of Dongtan as well. In fieldwork interviews on the island there was discussion around the real-estate and property prices increasing due to easier access from Shanghai with the bridge and tunnel construction. However, the bridge and tunnel were built independently of Dongtan. Some local residents might view the increasing number of people and tourists on their island as a negative consequence of Dongtan's plans while others would welcome additional activity on their island. In discussions with residents, most were mainly concerned with acquiring more wealth. They believed this would occur with additional developments on their island whether the focus was tourist activity, ecological cities, or

additional city development. There was mention of tourist activity with the notion that Chongming Island would be a clean, environmentally friendly tourist destination with high quality organic food products produced on the island.

### *The Entrepreneurial Eco-City*

There is a growing trend toward greater urban entrepreneurialism, more intense interurban competition and the conscious promotion of place-specific development strategies (Harvey 1989). This trend has an effect on the priorities of the local official. An entrepreneurial city is one where there is direct involvement in business by profit-seeking and individual state bureaux and their subordinate agencies (Duckett 1998). Cities have to take a more entrepreneurial stance in order to remain at the top of a region and enhance their attractiveness so as to acquire capital, residents and visitors. This is an area Harvey has examined in the context of an urban setting and urban governance in advanced capitalism. Harvey discusses entrepreneurial behavior and capitalism in terms of its potential for a city (1989). Dongtan is an example of a more utopian direction for city that might have attracted business ventures from companies focused on sustainability or companies in need of a more environmentally friendly profile.

Entrepreneurial city strategies are found to be actively pursued in post-socialist cities. In China, because of factors such as globalization and a shift to a more market-oriented society, there has been a shift from a system based on party-state, household registration and state work-units to one led by the local state. Local governments are engaged in the promotion of their own areas by providing external investors with various incentive schemes and partnerships (Wu 2002). The idea of an entrepreneurial city strategy is one that can be associated with eco-cities, especially Dongtan and Tianjin, which are being built in close proximity to big cities that have been important in terms of globalization, FDI and economic development in China. In the building of Dongtan, a state-owned company such as SIIC was involved in entrepreneurial activities. These activities are not described as corrupt or rent-seeking but they can be described as entrepreneurial in their nature. This might be a response to the adjustments occurring in Chinese governance capacities. For example, SIIC owned the land at Dongtan and land, rather than fiscal investment, can be used as an initial input from local government. By using land leasing as an instrument, the development corporations stimulate land development. Entrepreneurial behaviour at the local level can work with city spaces in clearly defined boundaries and can venture into more innovative experimental measures in creating their spaces; if successful, such efforts can be further extended to other places (ibid.).

### *Longest, Tallest, Fastest, First*

In China, there is an intricate dialectical relationship between modernity and national identity and the struggle between nation and modernity often takes place in the cities. Inherent to the search for national identity has been the quest for international recognition. International recognition and approval have been of particular importance to China and are gained by

those who can prove their modernity (Esherick 2000). China claimed that Dongtan would be *the world's first eco-city*. It seems that the Chinese government has been focused on superlatives to demonstrate the country's advanced status, perhaps a goal of the central government to prove China's improving international status. Some examples of these superlatives include the fastest passenger train in operation: the Shanghai Maglev train at 432 kilometers per hour; the highest cellular tower: Mt. Everest, 6,500 meters; and the longest ocean-crossing bridge: Hangzhou Bay Bridge, joining Shanghai and Ningbo, 36 kilometers long (Yuann and Inch 2008, 24). China's superlatives are a result of the country's gadarene rush to prove their status and the eco-city boom became a part of this movement. This type of thinking affects how the Chinese government might prioritize certain processes and development. While Dongtan did not end up as the world's first eco-city, the aim and focus to attain such a status existed and was widely discussed in media reports.

### *The New Great Leap Forward?*

Another priority for China has been to 'leapfrog past limitations and accelerate sustainable development' (ibid., 91). China is willing and able to invest in previously untried environmental technologies and ideas that can be harder to implement in the more sceptical and public-inquiry-prone west. While China is willing to try out new technologies, it is also, in many cases, in the position to not have to deal with the fixed costs of infrastructure that is already out-of-date in the new millennium. China can leap over these technologies and go directly to the most modern, cheapest, fastest method. In developing cities, China might have the opportunity to leap over past construction and development techniques and build using eco-city methods.

An example of China leapfrogging is in telephone use. With no existing infrastructure in place in the countryside, China had the choice to go with the latest fiber-optic cables instead of copper wire, or skip the wiring entirely and go to mobile communications. They opted for the more technologically advanced mobile communications (ibid., 91-93). China's electric cars are another example of leapfrogging. China has a goal of becoming a leading producer of hybrid and all-electric vehicles within three years, and the world leader in electric cars and buses after that. China is behind the United States, Japan and other countries when it comes to making gas-powered vehicles, but by skipping the current technology, China can get a jump on the next. In the building and development of new and existing cities, China might be more prone to use the eco-city approach, or implement certain concepts related to this approach in order to build cities using a more advanced and future-looking methodology. Eco-cities, towns and villages might be another example of the trend in China to skip existing building norms in urban development to a way that would cut energy costs and use the most advanced principles of urban planning where renewable energy resources, water conservation techniques and habitat preservation practices are the norm.

### 8.3 Sustainability, Urban Challenges and the Eco-City

Mumford saw the physical design and the economic functions of cities as secondary to their relationship to the natural environment and to the cultural values of human community. Dongtan's pursuit was to bring about a balance between these components. As stated by Mumford in 1937, 'Social facts are primary [in the concept of the city], and the physical organization of a city, its industries and its markets, its lines of communication and traffic, must be subservient to its social needs'. (2003, 29). Mumford prioritized socio-cultural needs in the formation of space as opposed to the economic and capital accumulation aspects that affect the way space is built. He saw a need to focus on these aspects to create livable cities. He saw a connection between mankind and nature in terms of a city space and the role of urban design and technologies to the evolutionary transformation of society. One focus of Dongtan Eco-City was the building of a city and neighborhoods as cultural centers that were livable and sustainable in the face of unbalanced, market-driven urbanization and industrialization. This is a concept that Mumford advocated. His idea was that cities should be built for their use value and not be reduced to their market value. Mumford's views represent the urban version of humanistic environmentalism (2003).

Somewhat lost in the process and dynamics of a China in transition and concepts related to sustainability and eco-cities are the challenges and consequences of urban development. Does an eco-city building approach in China address the main challenges the country is facing in terms of urbanization and sustainable urban development? Some of the main challenges discussed in this report in cities like Shanghai and Tianjin include housing problems, water and air quality, waste disposal and traffic congestion. There is also the problem of inequality and the fact that many of the urban issues discussed affect migrant workers and the urban poor to a greater extent than they affect other segments of the population.

Eco-cities do address the urban problems such as those stated above. For example, Dongtan's designs eliminated the need for motorized journeys and water and air quality would be improved due to energy being provided entirely by renewable means. Dongtan also planned for all housing to be within walking distance of public transportation and within easy access of social infrastructure facilities such as hospitals and schools. Another aspect of the plan was that jobs would be available to people across all social and economic demographics. The Huangbaiyu and Rizhao projects meant to tackle problems related to energy in order to improve the environmental quality of the areas. Tianjin, like Dongtan, aims to address several urban issues at once such as energy efficiency, water and waste management, economic vibrancy and social harmony. There is a need to develop new approaches to urban planning to help achieve truly sustainable cities on a world-wide basis and Dongtan and Tianjin are examples of such an attempt. At the same time, the eco-cities of Tianjin and Dongtan do not address the specific issues that the cities of Shanghai and Tianjin are facing. Both eco-cities are new developments. Because eco-city projects do not address the idea of improving the old and already existing cities, the question becomes, how can Shanghai become a more sustainable city, or continue its development in a more sustainable way?

Developing an eco-city next to Shanghai does not make Shanghai more sustainable. While it is possible for ideas created in the Dongtan project to be adopted in Shanghai, eco-cities such as Dongtan and Tianjin are sustainable cities located next to unsustainable cities that are facing many difficult urban problems. Rizhao, on the other hand, provides an example of a more pragmatic and successful approach to one specific problem that the area was facing, namely that of energy consumption.

Friedmann has stated that when addressing the worst problems that are linked to urban development, more emphasis should be placed on sustainable human development and not just the environment. Ultimately, the creation of sustainable environments will not depend only upon a technological fix but upon adopting policies of human development (1997). It seems that the focus of eco-cities has been on environmental deterioration; while some importance has been placed on human development and various social aspects (especially in Dongtan), it seems that overall, the eco-city approach highlights the importance of the growth of cities and the resulting environmental problems, as opposed to the failure of management and policies and the social and human development issues that exist.

## 9 Conclusion

A Chinese government supporting fresh and innovative thinking about cities can be considered a very positive achievement. The eco-city projects try to address the link between urban policy and social equality. Projects such as Dongtan suggest ways to begin reversing some of the negative consequences and challenges related to urbanization. Chinese eco-cities have inspired a broad, international debate on many of the existing tensions in Chinese cities and this alone is an accomplishment. The concepts of eco-city and sustainable city could become a frame of reference for public policy in China. The design of an eco-city or sustainable city will depend on an operating set of values. As we have seen in the case of Dongtan, decisions and priorities made by communities, organizations, companies, individuals and the government all have an effect on the outcome. To create the Chinese eco-city, communities, NGOs and local public agencies need to operate synergistically and with the government and other stakeholders. Goals and priorities need to be defined and agreed upon at an early stage so that expectations can be met and to diminish a fuzzy, uncertain planning environment.

China's political system and how it functions vis-à-vis cities such as Shanghai are in transition. A China in transition and a government operating in a transition has many drawbacks involving both planned and market growth. What looks market-driven is often similar to rigid government zoning and aggressive non-collaborative development. Perhaps an eco-city like Dongtan would have been easier to build in an era where entrepreneurial cities and aspects such as profitability were not part of the picture. At the same time, for this to be accomplished, you would need a government that places eco-city at the forefront of their plans.

Eco-cities have the potential to address many of the problems associated with urban development, as does the concept of sustainable development in an urban setting. Achieving greater sustainability in cities requires an in-depth understanding of the impacts of different urban forms on travel patterns, social conditions, environmental quality, and of their capacities to deliver future benefits. At the same time, projects such as Dongtan and Tianjin seem very grand. By focusing on being a showcase projects and China's first eco-city, the plans seem less effective when compared to more modest efforts to make existing urban infrastructure more efficient. Instead of focusing on grand-scale green eco-city projects that generate media attention, a better way of achieving a harmonious urban development model would be less rapid development and increased efforts in social developments such as investment in low-income housing, community services and public transportation and infrastructure. Rizhao is a good example of such a success story, where focus was placed on one area, goals and priorities were in-line and effort was made by all parties involved to reach this goal. Large scale projects have faced problems such as a large number of stakeholders with differing priorities that need consideration. Larger projects might also face difficulties in implementation capacities. Dongtan tried to achieve many things at once. Perhaps fragments of the master plan can be used elsewhere or at Dongtan in the future, where single problems pertaining to urbanization can be addressed using ideas from Dongtan.

People have pointed to poor policy initiatives and planning as a culprit for why Dongtan might not be built, or is exceedingly delayed. The management of how Dongtan, part of a city initiative project, was to be built was made increasingly complex with the large number of stakeholders. Another concern regarding the eco-city building approach is the focus on energy and environment as opposed to the important social and economic challenges that exist when it comes to urban development. Sustainable city development, compared to eco-city, is a more all-encompassing approach that focuses on the socio-cultural and economic factors, in addition to the environment. The success of the city rests not only upon a balancing of these factors; it also depends on the balancing of priorities and powers between the many parties involved in urban development. Sustainability and eco-city's vague and varied definitions have been a weakness when it comes to actual planning and implementation. The vague and varied definitions coupled with a building process that involves several stakeholders with different sustainability priorities and agendas create a difficult landscape to accomplish everything for everyone.

The idea of building an eco-city adjacent to a city such as Shanghai, which has not seemed to focused on incorporating building tactics that include energy saving solutions, or a socio-cultural focus, does not seem like the best way to address the most pressing challenges associated with urban development. While building cities as eco-cities is a positive and exciting step, the conditions affecting existing cities must not be forgotten.

As mentioned, Harvey points to the fact that political influence and policy implications directly affect ideas on the environment, population and resources and discusses the possibilities of transforming urban landscapes by persons of influence in a positive manner. Eco-cities and sustainable cities in China are examples of spaces that can be viewed as social processes that are shaping the transition China is going through. The building approach is having an effect on the human practices and power relations occurring in China. Ultimately, the question of who benefits and who suffers from these processes remains. Perhaps there has been some benefit in all the discussion around Dongtan and Chinese eco-cities because these discussions brought the eco-city development approach to the forefront of creating added sustainability when it comes to city living and that would be a positive outcome in itself.



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## Appendix

This appendix provides detailed information on fieldwork conducted in Shanghai, China and surrounding areas from November to December 2008. Qualitative interviews and informal discussions were conducted during this period. Qualitative interviewing allowed for open-ended questions and the opportunity to probe the respondents. Due to the broad range of interviewees, the expectation was that relevant factors would be many and varied and that responses would reflect these variations.

Nearly all the informants asked to remain anonymous and therefore, names and interview transcripts are not disclosed. Certain sensitive issues are still subject to restrictions and censorship in China and a project such as Dongtan, which received a large amount of media attention and then failed to build as planned, seemed to be a sensitive issue with those at SIIC. The fact that Arup was unwilling to talk to me is also telling of the sensitive nature around the project. Uncertainty in the project plans is another factor that created a somewhat sensitive interviewing environment. Interviews were conducted in English when the respondent spoke English. Interviews on Chongming Island were conducted with the help of a translator. Although I have some knowledge of Chinese, my knowledge is very basic and is limited to standard Mandarin Chinese. Shanghainese is not mutually intelligible with other Chinese dialects.

I chose not to use a tape recorder during interviews and discussions. Using one seemed somewhat more formal and imposing than just talking to people and taking notes. Notes were taken during the interviews and typed and organized immediately after. To those with whom I spoke, I introduced myself as a student from the University of Oslo writing a paper on Dongtan Eco-City, urban development and sustainability in China. I came into contact with my interviewees through various sources. Being half Chinese Singaporean, I have family and friends in East and Southeast Asia. I have a cousin working as a government official in Singapore and an uncle working as a consultant in Shanghai. My cousin was able to put me in touch with a Singaporean government official in China and my uncle in Shanghai put me in touch with an author and consultant working in Shanghai. I also have a Chinese friend from Beijing who works as an architect in New York. She was able to put me in touch with people at SIIC and Arup. Despite a contact at Arup, I was not able to interview with anyone in the Arup Shanghai office. Before leaving for Shanghai I did research using the Internet to find NGOs involved in social progress and environmental efforts in China. Many of the NGOs in China are located in Beijing but I was lucky to find several in Shanghai as well. I contacted the NGOs via e-mail and two of the NGOs I came in contact with were happy to talk to me.

The interviews at Chongming Island were more informal. I travelled to Chongming Island with a translator and former resident of the island and an anthropologist from the University of Copenhagen (Michael) who was studying Chinese perceptions of sustainable development. We walked around several small sites and towns on Chongming Island and talked to people in the area. People were interested in talking to us, perhaps be-

cause Michael and I are Western (or in my case, half-Western). People tried to get our attention by waving and saying hello. Chongming Island, unlike the city of Shanghai, is less exposed to tourists and Western visitors and this might, in some cases, have contributed to the residents' willingness to talk to us, as well as their curiosity and proactive approach in engaging us in conversation.

The World Urban Forum interviews were also informal. I was able to talk to people after attending presentations. There were also presentation-booths throughout the conference center where people involved in specific projects answered questions related to the projects they had worked on. This allowed for an open environment that encouraged discourse. The tables on the following pages provide additional information regarding my informants and highlight the main topics covered in the discussions.

*Interviews in Shanghai*

<b>INFORMANT</b>	<b>DISCUSSION</b>
Current resident of Shanghai and former resident of Chongming Island (lived on Chongming Island for 14 years)	<ul style="list-style-type: none"> <li>• Dongtan Eco-City</li> <li>• Chongming's development and sustainability</li> <li>• Residents' sentiments</li> </ul>
Strategy consultant and author in Shanghai with a focus on economics, history and developmental economics	<ul style="list-style-type: none"> <li>• Trends of future China</li> <li>• Key environmental, economic and social problems in China, present and future</li> <li>• Urban development and sustainability</li> </ul>
Three employees at Shanghai Industrial Investment (Holding) Co. (SIIC)	<ul style="list-style-type: none"> <li>• Dongtan Eco-City including planning, implementation, challenges, Arup and various stakeholders</li> <li>• Eco-city initiatives elsewhere</li> </ul>
NGO in Shanghai focused on political education, international understanding and development-policy cooperation	<ul style="list-style-type: none"> <li>• Regionalism in China</li> <li>• Policies and the implementation of policy guidelines, regulations and laws</li> </ul>
NGO in Shanghai focused on environmental concerns through environmental education	<ul style="list-style-type: none"> <li>• Environmental problems in China</li> <li>• What can be done through environmental education</li> </ul>
Singapore Consul-General in Shanghai working on the Tianjin Eco-City project	<ul style="list-style-type: none"> <li>• Tianjin Eco-City including planning, implementation, challenges, in comparison to Dongtan, government backing from Singapore and China and what this means for Tianjin</li> </ul>

*Interviews on Chongming Island*

<b>INFORMANT</b>	<b>DISCUSSION</b>
Three elderly ladies at eco-village of Yingdong, all in their 60's	<ul style="list-style-type: none"> <li>• Their sentiments regarding development on Chongming Island</li> <li>• Views and opinions of eco-village and eco-city; what does it mean to live in an eco-village</li> </ul>
Visitors at Jiaotong University's organic farm  Two couples; the men claimed to be local Chongming officials and developers on the island	<ul style="list-style-type: none"> <li>• The meaning of organic</li> <li>• Chongming's development and their opinions and assessments of the changes occurring on the island</li> </ul>
Local farmer and his wife, in their 70's and lifelong residents of Chongming Island	<ul style="list-style-type: none"> <li>• Their opinions concerning Chongming's development</li> <li>• Discussion of their everyday lives and a comparison of life today vs. how life was during Mao's era</li> </ul>
Teenager from Chongming Island, 15 years old	<ul style="list-style-type: none"> <li>• Living in the country vs. living in the city</li> <li>• His view of Chongming's future</li> </ul>
<p>Note: Other places visited on Chongming Island include the Dongtan Bird Reservation, Qianjing village, the new bridge linking Chongming to Shanghai (it was under construction at the time and had not yet opened), Jiaotong University's organic farm and the village of Chenjiazhen.</p>	

*World Urban Forum*

<b>INFORMANT</b>	<b>DISCUSSION</b>
Associate Professor at the College of Architecture and Urban Planning at Tongji University in Shanghai	<ul style="list-style-type: none"> <li>• Obstacles planners, architects and other stakeholders encounter, in particular from municipal government</li> <li>• Case study on the city of Jinze (Chintse) on the outskirts of Shanghai</li> <li>• Opinions of Dongtan</li> </ul>
Professor from the School of Architecture and Built Environment at the University of Newcastle in Australia	<ul style="list-style-type: none"> <li>• Sustainable solutions in cities</li> <li>• Urban design</li> <li>• Opinions of Dongtan and Tianjin</li> </ul>
<p>Note: The World Urban Forum was held in Nanjing 3-6 November 2008. This was the fourth session of this UN organized forum. The main purpose of the forum is to examine the pressing issues related to rapid urbanization and its impact on communities, cities, economies and policies.</p> <p>I attended the presentation held by UNESCO entitled <i>Building Up Education Towards Sustainable Urban Development</i>. Presentations and talks focused on managing urban water challenges in China, sanitation issues, flood risks and the vulnerability of the urban poor and education and multicultural city building.</p>	

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