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IRGN 486: Social and Economic Development of China

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Sustainable Urban Planning and Growth in China

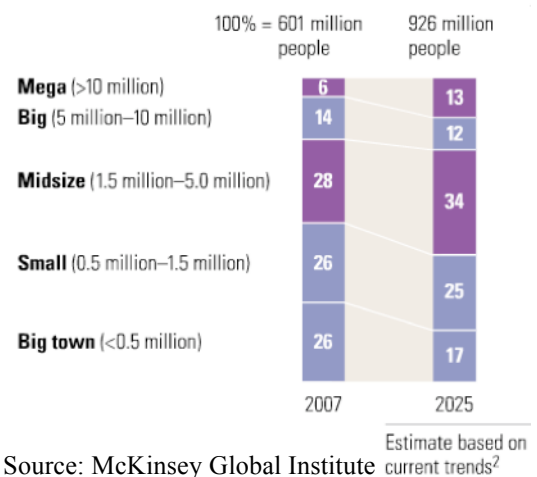
Abstract

The Chinese government has formulated an Urban and Rural Planning Act aimed at improving people's living environments by harmonizing urban and rural spatial layout. While the government recognizes the important role of sustainable development in future planning, this paper reveals that various deficient urban growth patterns exist in Chinese cities that undermine China's ability to build a sustainable urban future.

Introduction

Over the past thirty years, rapid economic growth in China has incited unprecedented urbanization. China's urban population grew from 17.9% in 1978 to 43.9% in 2006, suggesting that there are between 10 and 15 million people migrating to urban areas each year.¹ It is expected that 62% of the Chinese population will be living in urban areas by 2025. To accommodate for an additional 350 million people moving to urban areas would require the building of 50 more cities the size of Shanghai.² As shown in Figure 1, mega and midsize city populations

Figure 1: Distribution of China's population by city size, %



¹ China Statistical Yearbook for Cities

² United Nations. 2007. *State of the world population 2007: Unleashing the potential of urban growth*. New York: United Nations Population Fund. Pg. 13.

are projected to grow the fastest over the next 20 years. Sensing the strong urgency for rapid urban development, the Chinese government has been hastily pursuing construction and expansion projects without adequate planning, monitoring, and evaluation. Rapid urban development without strategic planning not only hurts China's economic and social interests but also presents severe environmental implications. China's growing transportation use and subsequent vehicular emissions are the predominant source of air pollution, which according to the World Health Organization kills 656,000 Chinese citizens each year.³ Furthermore, it is estimated that to accommodate for China's projected urbanization for 2025, energy demand will more than double and demand for water will increase by 70 to 100%.⁴ In response to increasing depletion of natural resources and international pressure to uphold environmental standards, the Chinese government has admittedly made sustainable development a top priority in urban planning by incorporating "scientific outlook on development" in its political agenda.⁵ Nonetheless, some of the most pressing problems that arise in cities around the world when municipalities fail to properly accommodate large influx of people, such as urban sprawl, massive slums, pollution, and traffic gridlock, are confronting China's urban planning officials. As China continues to engage in extravagant urban spatial expansion at the expense of rural land, its lack of strategic planning will threaten the country's ability to maintain economic growth and achieve a harmonious society. This paper: 1) evaluates China's urban growth in terms of

³ "Chinese Air Pollution Deadliest in World, Report Says." *Daily Nature and Science News and Headlines / National Geographic News*. 05 Dec. 2009. <<http://news.nationalgeographic.com/news/2007/07/070709-china-pollution.html>>.

⁴ "Meeting the challenges of China's growing cities - McKinsey Quarterly - Economic Studies - Country Reports." *Articles by McKinsey Quarterly: Online Business Journal of McKinsey & Company*. Web. 01 Dec. 2009. <https://www.mckinseyquarterly.com/Meeting_the_challenges_of_Chinas_growing_cities_2152>

⁵ "Hu Jintao proposes Scientific Outlook on Development for tackling China's immediate woes, challenges." 01 Dec. 2009. <http://news.xinhuanet.com/english/2007-10/15/content_6883135.htm>.

sustainable development, particularly smart growth; 2) examines problematic growth patterns and urban planning deficiencies.

What is Smart Growth?

The concept of smart growth originated from the discourse on sustainable development during the 1980s. According to the Brundtland Report from the World Commission on Environment and Development, “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁶ Smart growth reinforces the concept of sustainable development by identifying “a common ground where developers, environmentalists, public officials, citizens, and others can all find acceptable ways to accommodate growth.”⁷ In essence, smart growth is a land-use strategy that promotes compact communities characterized by mixed-use development, pedestrian-oriented design, and participatory decision-making procedures. By encouraging compact development, smart growth seeks several environmental and economic benefits, including conservation of open spaces and reduction of infrastructure costs. In addition, smart growth promotes development patterns that combine employment, commercial, and residential uses to foster distinctive communities with a range of housing, transportation, and retail choices. Lastly, smart growth emphasizes inclusive decision making.

Is China Growing Smart?

To determine whether China is growing *smart* requires an evaluation of China’s urban development in the context of the four basic aspects of smart growth: compact growth, mixed use development, transportation options, and fair decision making.

⁶ "Our Common Future, Chapter 2: Towards Sustainable Development - A/42/427 Annex, Chapter 2 - UN Documents: Gathering a body of global agreements." A/RES/3/217 A - *Universal Declaration of Human Rights* - UN Documents Cooperation Circles. 02 Dec. 2009. <<http://www.un-documents.net/ocf-02.htm#1>>.

⁷ Pawlukiewicz, Michael. “What is Smart Growth?” *Urban Land*. June 1998. P. 6-7.

Compact Growth and the Preservation of Cultivated Land

Although it can be argued that China is growing smart because its cities have high urban densities and are characterized by intensively mixed land uses by international standards, China faces continuing decrease in arable land as densities in Chinese cities fall due to increasing demands for nonarable from rapid urbanization, industrial development, and economic growth. According to the Ministry of Land and Resources, between 1987 and 2000, a total of nearly 10 million hectares of cropland area were converted into urban built-up area, forests and pastures, and horticultural lands, or destroyed.⁸ For a land-scarce country like China, rapid rural to urban land conversion critically affects farmers and places pressure on long-term food security of the world.⁹ It has been estimated that in the last decade, some 1.5 million farmers lost their cultivated land each year.¹⁰ The following table shows changes in population density and boundary expansion in major Chinese cities over the period from 1996 to 2000. With the exception of Dalian, the population densities in all of the major Chinese cities have been decreasing while urban boundaries have been expanding.

Table 1: Percentage change of total population, density and built-up area of major Chinese cities (1996-2000)

Cities	SH	BJ	TJ	GZ	CQ	NJ	CD	DL	HZ	SZ
Population	16.9	18.6	7.2	29.0	40.0	22.8	14.2	10.9	50.1	34.5
Pop. Density	-12.4	-25.8	-5.4	-35.8	-3.9	-3.3	-30.9	7.6	-30.6	-7.6
Built-up area	33.5	59.8	13.4	100.8	45.7	26.9	65.2	3.1	116.2	45.5

Source: Statistical Yearbook of Chinese Cities, 1997 and 2001.

SH- Shanghai; BJ- Beijing; TJ- Tianjing; GZ- Guangzhou; CQ- Chongqing; NJ- Nanjing; CD- Chengdu; DL- Dalian; HZ- Hangzhou; SZ- Shenzhen

⁸ Ministry of Land and Resources. 1997-2005. *Annual report of land resources*. Beijing: Ministry of Land and Resources.

⁹ Zhang, T. W. (2000). Land market forces and government's role in sprawl—the case of China. *Cities*, 123–135.

¹⁰ Chang, Roger. “Are Farmland Preservation Policies Intelligent Enough to Protect Arable Land in China?” *Smart Urban Growth for China*. 2009.

In a study on the correlation between Chinese cities' compactness and agglomerated environmental performance, Haiyan Chen reveals that urban compactness of 45 core Chinese cities, as measured by net population density, indeed improves accessibility of services, reduces per capita domestic energy consumption, and promotes infrastructure efficiency and use of public transport.¹¹ This study also suggests that higher population density in urban cities may also aggravate certain negative environmental externalities, such as air pollution, noise, and loss of green space. Thus, it is unclear what density value is optimal for Chinese cities. Nonetheless, it is unequivocal that decreasing land density is contributing to encroachment on arable land.

Mixed Use Development

While it is difficult to quantify the mixed uses of land in Chinese cities, there is a notable trend of homogeneous land use in districts across China. Single-use districts, such as bedroom communities (where land is dominated by residential use), industrial districts (where land is designed for industry), and college cities (where land is restricted to educational use), can have profound negative effects on commuting costs, environmental quality, and other aspects of the quality of life.¹² Thus, there is a need for planners to recognize the multidimensional benefits of mixed land use.

Transportation Options

In addition to mixed land use, smart growth emphasizes multimodal transportation system or transit-oriented development. While the percentage of trips taken by walking and bicycling is higher in Chinese cities than in the cities of any other major country in the world (table 2), car ownership in China is on the rise, which can lead to further urban sprawl.

¹¹ Chen, Yaiyan.Jia, Beisi. Lau, S.S.Y. "Sustainable urban form for Chinese compact cities: Challenges of a rapid urbanized economy." *Habitat International*, Volume 32, Issue 1, March 2008, Pages 28-40.

Habitat International, Volume 32, Issue 1, March 2008, Pages 28-40

¹² Song, Yan. Pan, Xiaohong. "Toward Better Plans to Guide Smart Development in Chinese Cities." Pg. 212.

Table 2: Mode of Transportation by Cities

Cities	Year	Walking and Cycling	Public Transit	Private Car	Other
Beijing	1995	61.5	30.1	4.1	4.3
Shanghai	1995	77.9	15.1	2.8	4.3
American Cities	1990	4.5	10.6	84.9	-
European Cities	1990	5.0	15.3	79.7	-

Source: Kenworthy and Hu¹³

In addition, while walking and biking have been the primary means of transportation in Chinese cities, their shares have decreased over the years (table 3). The shares of public transit use in major Chinese cities (except Nanjing) have also decreased. Both trends indicate behavioral shifts due to increasing car ownership and expanding road and boundary infrastructure.

Table 3: The Modal Split in Selected Large Chinese Cities (percentage)

City	Year	Walk	Bicycle	Public Transit	Commuter bus of employers	Private automobile	Taxi	Motor cycle	Other
Beijing	2000	-	38	27	23		9	-	3
	1986	-	58	32	5		1	-	4
Shanghai	1999	30.74	39.01	15.16	15.09		NA	NA	NA
	1995	30.11	41.18	17.42	11.29		NA	NA	NA
	1986	41	31	24	4				
Guangzhou	1998	41.92	21.47	17.09	1.41	-	0.72	10.35	-
	1984	39.1	34.05	19.37	9.61	0.87	0.27	0.37	-
Nanjing	2002	23.23	43.79	24.74	0.95	0.42	1.01	2.85	3.12
	2001	26.5	41	24.4	3.1		1	2.7	1.3
	1999	23.57	40.95	20.95	5.68		1.71	5.24	1.89
	1997	25.45	57.91	8.19	4.51		0.92	2.16	0.68
	1986	33.1	44.1	19.2	2.5		0.1	0.3	0.7

Source: Peng, Zhong-Ren¹⁴

¹³ Kenworthy, J., and G. Hu. 2000. Threat to global survival? A case study of land use and transportation patterns in Chinese cities. <http://www.istp.murdoch.edu.au/ISTP/casestudies/Case_Studies_Asia/china/chinese.html>

Fair Decision Making

Because smart growth encompasses multiple goals (economic growth, efficient design, multimode transportation, mixed land use, sustainable environment), stakeholder involvement and public participation are crucial to ensuring an effective planning process. In China, public participation has never been a feature of the development process. In terms of urban planning, the fairness of the land conversion process is especially dubious. Urban land allocation is determined by a combination of administrative and market mechanisms that present profitable opportunities for government officials and private enterprises and ignore residential input and environmental impact. Thus, public participation can act as a safeguard to protect the rights and interests of landowners and land users and to prevent abuses by different levels of government.

Deficient Urban Growth Patterns

Several problematic urban patterns have emerged in China in the past decade that contradict the principles of smart growth and impair China's ability to develop a sustainable urban future. The rapid establishment of dispersed industrial zones creates inefficient urban spatial structures. Over scaled land development of singular use communities threatens the protection of arable land. The rise of urban villages demonstrates problematic incentives underlying local land management. The pattern of leapfrog development further worsens urban sprawl. Over time, these urban patterns will accumulate irreversible ecological degradation and require costly adjustments.

Sporadic Industrial Zones and Employment Concentrations within a Metropolitan Area

The ubiquitous establishment of various zones within a metropolitan area is reducing labor mobility and potential gains from agglomeration economies. In 2004, there were 6,886 zones of

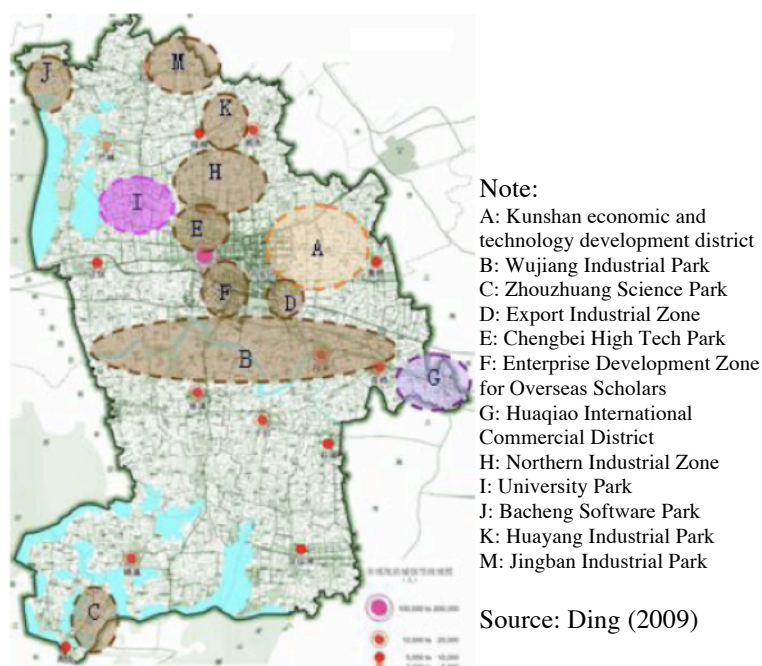
¹⁴ Peng, Zhong-Ren. "Urban Transportation Strategies in Chinese Cities and Their Impacts on the Urban Poor" Accessed December 6, 2009. <www.wilsoncenter.org/topics/docs/Edit6Peng_Delhi.doc>

all types across China, accounting for a third of total built-up areas of all cities and towns.¹⁵ The large-scale establishment of zones is fueled by interest to promote economic growth. In reality, these zones have extremely high development costs and often remain idle after they're built because there are so many urban activities of the same kind within a metropolitan area.

Furthermore, local governments offer incentives to attract investments into these zones by low-cost access to land rights for industrial uses. Not only does such distortion imply that the government have to find revenues elsewhere to offset low land leases, rapid development of industrial zones are often established at urban fringes and thus encroach upon arable land. In particular, widespread Special Economic Zones (SEZs) have created dispersed employment concentrations. While SEZs have enjoyed extreme economic success, their dispersed spatial arrangement have reduced employment density, which creates economic returns to scale and facilitates growth.¹⁶ Thus,

despite the intention to drive economic growth, the spatial dispersion of SEZs lowers overall employment opportunity and industrial output. As illustrated in Figure 1, the medium-sized city of Kushan with a population of

Figure 1: Land use and locations of various zones in Kunshan city



¹⁵ Cao, D. 2004. "China cancels 4,800 development zones." China Daily, August 24. <http://www.chinadaily.com.cn/english/doc/2004-08/24/content_368120.htm>

¹⁶ Ding, Chengri. 2009. "Policy and Planning Challenges to Promote Efficient Urban Spatial Development during the Emerging Rapid Transformation in China." *Sustainability* 1, no. 3: 384-408.

600,000 with hukou contains twelve SEZs spread over 921 square kilometers of overall territory and providing employment for a floating population of 1.4 million. While SEZs creates concentrations of jobs for low-income migrant workers, there is little integration of labor markets in the city (Ding 390). Clearly, current institutional arrangements encourage local governments to be motivated by economic growth, leading to dis-coordinated spatial patterns and inefficient planning that disregards potential negative externalities on transportation and housing.

Over Scaled Land Development

The over-clustering of homogenous land use may be impressive in sight but its increasing scale has led to enormous costs that exceed its positive returns from scale. The development of college cities or university towns exemplifies the trend of over scaled land development in China.

University towns are clusters of multiple universities in a concentrated geographic region.

Typically, a university town contains ten universities and housing for 200,000- 400,000 students.

In a study assessing the preliminary utility of university towns, it is found that the “opportunity costs of physical separation within universities may well exceed any gains from clustering different universities” (Ding 394). Thus, while such clusters effectively promote intellectual resource sharing within a university, their spatial structure create physical barriers for communication outside the community and even for resource sharing among universities within a cluster. Furthermore, because of their isolated locations, it is unclear whether these university towns actually create positive spillover effects on the local economy, as they were intended to do. Moreover, with anticipation of increasing demand for higher education, the compactness of the clusters does not allow any university to expand in the future. Thus, the development of over-scaled singular land use, while impressive in scale, does not add much value to function and purpose.

Urban Villages in Cities

The rise of urban villages, coined by Chengri Ding as “whack-a-mole development,” occurs when urban built-up areas encroach into rural areas. Rent-seeking rural households thus respond by redeveloping their dwellings into modern structures to maximize space on their residential lots. As a result, the haphazard transformation of rural housing units creates overcrowded structures with poor provision of utilities, urban infrastructure, and services. The subsequent high density of such housing structure makes any future attempt for redevelopment extremely expensive. The pattern of urban villages highlights problems underlying incentives of land planning and requisition. Among the stakeholders involved in land use planning, there is an absence of coordination to enforce protection of arable land.

Leapfrog Development and Urban Sprawl

The concept of urban sprawl refers to inefficient or excessive urban land expansion that results in “loss of farmland, increases in transportation cost and distance, increases in automobile use and dependence, increases in the tax burden for provision of public services and infrastructure, worsening air and environmental quality, increases in energy consumption, and the development of social segregation.”¹⁷ Leapfrog development often induces the negative consequences of urban sprawl. At a micro-level, an example of leapfrog development is the illegal transaction between farmers and planners for land conversion. Because of requirements for protection of arable land, urban built-up areas have to “leapfrog” basic farmland districts or acquire land from peasants illegally to combine urban and rural uses of land, which results in greater spending on transportation. At a macro-level, large-scale development zones, as described previously,

¹⁷ *Growing Smart Legislative Guidebook: Model Statutes for Planning and Management of Change*, Phase I interim edition. American Planning Association: Chicago, IL, USA, 1997.

illustrate the negative impacts of leapfrog development.¹⁸ The abundance of various zones often creates the image of “twin cities” for many cities with an old city and a new development zone.¹⁹ Such dual-centric structure is inefficient because it creates unnecessary commuting and increases costs of urban infrastructure and services. As figure 1 (the land use in Kunshan city) shows, to achieve mixed-land development, industrial land is spread out to seven industrial and economic concentration areas with many residential units are adjacent to these zones. Though development sites may appear to be efficient and resourceful due to their high densities and compactness of land use, spatial separation from city centers and urban built-up areas results in fragmented city labor markets and increasing transportation cost.

Fragmented Urban Planning System

The fragmented nature of China’s planning system is fundamentally responsible for poorly developed urban spatial patterns in China. Fragmentation is reflected in four aspects: 1) disintegration in content of various plans; 2) internal conflicts arising from hierarchy of approval process; 3) mismatch of planning horizons; 4) absence of monitoring and evaluation.

Overview of China’s Urban Planning System

Among a wide range of plans in China’s planning system, the four sets of plans that are most important to urban planning are economic and social development plans, comprehensive land use plans, urban development plans, and transportation plans. First, the National Economic and Social Development Plan, a five-year plan, establishes long-term development goals for the China, covering areas economic reform, development strategy, national modernization, and social development. All levels of local government, except townships, also develop a

¹⁸ Deng, F. Frederic; Huang, Youqin. “Uneven land reform and urban sprawl in China: the case of Beijing” *Progress in Planning*, Volume 61, Issue 3, April 2004, Pages 211-236.

¹⁹ Deng, F., Li, B., Zhang, Z., 1994. Urban land use and land price in Xiamen city after economic reform. *Urban Problems* 4, 19–23.

complementary development plan every time the five-year plan is formed. Thus, at both national and local levels, these plans have decisive influence on capital investment projects, budgetary decisions, and overall development direction. The second type of urban plan, land use planning, is administered by the Ministry of Land Resources, which establishes a national comprehensive land use plan to appropriate quotas for different land use types for the entire country. The national-level quotas are then distributed to the province-level, which decides how the quotas will be divided among the lower local levels. Within a land use plan's approved quota, a city or county government can allocate for individual construction projects or infrastructural projects based on applications. This policy requires, under the enforcement of provincial governments, those who convert cultivated land to compensate for loss of cultivated land by reclaiming equal amount of cultivated land or paying a fee. However, this policy has been ineffective at achieving preservation goals. The third type of plans, urban plans, are prepared first by the master plan and then by the detailed plan. The Urban and Rural Planning Act, established in 2007, is a recent master plan aimed at promoting urban and rural spatial integration. The new law places emphasis on preventing officials from constructing "achievement projects" or "image projects" in the process of urban-rural integration.²⁰ It "acknowledges the detailed planning of the layout of cities, towns and villages, specifies classifications and contents of planning and formulations, implementation, amendments and supervisory bodies and procedures for planning at different levels."²¹ Lastly, transportation planning in China consists of regional transportation, aimed at building intercity connections through different transportation modes, and urban transportation planning, which addresses road networks, public transportation, transportation management, and

²⁰ "China Establishes New Law to Promote Urban-Rural Integration." *CRIENGLISH*. 04 Dec. 2009. <<http://english.cri.cn/4426/2007/10/31/191@289567.htm>>.

²¹ "Beijing This Month- Guide to New Laws and Regulations." *Beijing This Month- Beijing This Month*. 04 Dec. 2009. <<http://www.btmbeijing.com/contents/en/business/2007-11/law/newlawsandregulations>>.

transportation logistics at a more local level.

Disintegration in Content

Effective urban development requires integrated planning and management. The current institutional arrangements in many Chinese cities fail to coordinate between economic development, land demand forecast, infrastructure provision, and integration of land use and transportation. Instead of cohesive planning, physical planning is regularly promoted with economic development as the primary goal, revealing ideological legacy of the centrally planned economy. The disintegration among the four aforementioned plans reveals conflicts inherent in China's urban planning system. These plans often conflict with one another in their prescribed purpose. For example, the economic development plan deals with capital projects without consideration of location whereas the urban plan determines zoning without consideration of costs or benefit of land use. The urban plan conflicts with the land use plan by seeking to expand urban land use for economic growth while the land use plan seeks to protect arable land by discouraging land conversion. Furthermore, overall planning focuses on design without practical consideration of land markets, cost and affordability of the end design, economic efficiency, and social equity.

Conflicts from Hierarchy of Plan Approval

The hierarchical approval and implementation system, which was effective in the planned economy, has made it difficult for local governments to implement allocated quotas or local assignments. China's top-down development approach fails to take full account of the development pressures generated in a market-oriented economy, such as internal competition for land use among cities. Furthermore, the National Economic and Social Development Plan, which sets the overall development vision for the entire country, underrepresents local interests and

fails to consider spatial implications for land use plans, urban plans, and transportation plans.

The gap between the vision of government planners and actual needs of local communities can be attributed to the system's hierarchical structure of administration and approval procedures.

For instance, while the socioeconomic plan, drafted by the National Development and Reform Commission, is approved by the People's Congress at the same level of government, the land use master plan and urban master plan are drafted and approved at different levels of government.

Given that local governments ultimately have implementation authority, the approval of land use and urban master plans by higher-level authorities create conflicts between levels of governments with different interests and incentives. As a result, approved plans do not reflect growth objectives or local constraints. Furthermore, regarding land development, the hierarchical structure of planning creates unwarranted consequences. The land quota system incentivizes local officials to request as much land as possible without consideration of land use efficiency and actual demand. To carry out ambitious growth objectives, city governments use urban plan revisions as a tool to circumvent strict land use control. Without systematic consideration of zoning and other environmental externalities for urban activities, the fragmented planning system and subsequent behavior change have led to chaotic development patterns (as described in previous sections).

Mismatch of Planning Horizons

The planning horizons of the socioeconomic plan, land use plan, and urban plan differ from one another. The socioeconomic plan horizon is 5 years whereas the land use plan and urban plan horizons are between 10 and 20 years. Given that the land use and urban plans are drawn from the 5-year plan, inconsistent time horizons and inception dates pose a natural challenge for planning. As a result, the frequent revision of land use and urban plans suggest the difficulty of

integrating the three plans. In addition, the time and resources spent by city developers on plan revisions and subsequent mobilization of resources have taken a toll on efficiency in urban development.

Absence of Monitoring and Evaluation

Evaluation and monitoring play an insignificant role in China's urban planning process. Due to the lack of money and expertise, evaluations are not very common in China. Of the evaluations that are performed, much focus is placed on evaluation of alternative plans rather than on finished projects. Government and developers typically carry out evaluations internally without involvement of external evaluators. Thus, personal bias and organizational politics may affect evaluations. Furthermore, because of the rapid demand of urban plans, government planners do not have time to improve flawed or outdated practices.²² However, with the socioeconomic reforms and the improvement of information systems, increasing attention has been paid to evaluation and monitoring in planning policy making during the last ten years.²³ Monitoring also plays a small role in the urban planning management process. Monitoring is normally carried out after the construction has started, often after damage has already occurred (Chen 7). However, some progress has been made by a monitor program held by the Ministry of Housing and Urban-Rural Development in 2006 to have retired planners or planning officials identify problems in plan implementation and provide timely solutions. A case study on the development of an evaluation framework of Xuzhou's urban master plan reveals that planning efficiency improves with more open information (Chen 16). Thus, the establishment of monitoring mechanism in the

²² Sun, S.W. (2002) 'The practice and effectiveness of urban planning', *Planner* **16**(2): 78–82. Zhou, Y. (2003) 'Theories and measures of evaluation in urban planning', *Urban Planning Forum* **144**: 15–27

²³ Chen, Xiaoyan. "Monitoring and Evaluation in Chian's Urban Planning System: A Case Study of Xuzhou." UN Habitat. Global Report on Human Settlements in 2009.
<<http://www.unhabitat.org/downloads/docs/GRHS2009CaseStudyChapter09Xuzhou.pdf>>

Chinese planning system can ensure efficient development and sustainable growth patterns. It is expected that evaluation and monitoring will play increasingly important roles in improving planning procedures and management.

Conclusion

China's rapid urbanization poses serious challenges for urban planners. The emergence of several deficient urban growth patterns suggest that China can no longer afford to make economic growth the sole priority for every urban development plan and must consider other social and institutional factors affecting urban spatial structure, such as environmental and ecological protection, affordable housing, consumer markets, public infrastructure, and local government financing. While some urban growth patterns, like urban villages, are avoidable, other spatial patterns have irreversible impact on the environment and may require costly future adjustments. Therefore, to efficiently manage the various factors influencing land use, Chinese urban planners must establish institutional measures that enforce a system of monitoring and evaluation. Improved oversight also needs to foster coordination among various levels of government and promote public participation.