5.6

URBAN MASTER PLANNING
IN CHINA

A case study of policy and practice in Hua County

Guanzeng Zhang, Baoyu Wang and Xinyan Jiang

Introduction

The preparation of plans is a key part of any planning system, although the nature and character of these plans vary with each planning system. Some of the more structural aspects of plan making – such as the principle of survey-analysis-plan – cut across these different systems. Yet the detailed aspects of plan making are context-specific and these will imply a particular series of plan making and research methods. Some of the methods used in plan making in practice resemble methods that will be familiar to those engaged in academic research, comprising surveys, interviews, focus groups and analysis of a multitude of secondary data sources, including census information and demographic surveys. These methods are, however, adapted and applied with a different purpose, with plans seeking to establish clear strategies for action by a range of stakeholders over varying time frames. This chapter highlights some of the specific methods used in plan making in China, focusing on the preparation of strategic master plans (Qian and Wong, 2012). A key argument put forward in the chapter is that there is a need for plan-making methods to evolve from their traditional characteristics in order to address both some of the challenges facing Chinese cities and some of the weaknesses of established methods of plan making.

The prevailing method of urban planning in China is blueprint planning. This form of planning is based on government statistics about population, land-use index and related local regulations. The physical planning methodology embodied in blueprint planning is often complemented by SWOT analysis methodology to provide a better understanding of the physical and social background for planning projects. There are several factors that make it an urgent task to renew and update expertise in planning methods used in practice, including: rapid economic growth and consequent large-scale population flows; the sharp increase in the number of private cars and the increasing mileage undertaken on highways and high-speed railways; the need to reduce pollution without losing competitiveness; and finally the demand for more sustainable and socially inclusive urban planning (Song, 2007, 2009; Zhao, 2011; Qian, 2013). This chapter starts with a brief description of the evolution of the planning system in China, before using an example of a master plan to better understand these
blueprint planning methodologies and the key issues they address. This case study, together with the authors’ experience, identifies some future directions for changes to the planning system in China.

**Planning policy in China**

China has one of the earliest and longest traditions of urban planning of any country in the world (Guo, 2005). The capitals of Zhou Dynasty – West Zhou from the eleventh to the eighth century BC and East Zhou from the eighth to the third century BC – were built according to strict regulations and designs founded on an etiquette society and deeply rooted in ancient Chinese philosophy and social ethics. All the East Asian countries, including China, inherited these principles in the following two thousand years and developed various urban patterns with strong cultural similarity (see Steinhardt, 1999; Wu, 2013). These similarities can be seen in the cities of Japan, Korea and Vietnam.

The earliest planning theories and methodologies in China were characterized by:

- **Balance**: an emphasis on harmony between man and nature, which was the key factor determining the siting and the size of cities;
- **Stability**: the adoption of a strict and orderly urban layout to ensure the prolonged political stability of a hierarchical society, as exemplified by the axial, symmetrical structure of Beijing;
- **Aesthetic value**: a conception of urban beauty as a whole, with no especially prominent or peculiarly shaped structures permitted to be built inside the city;
- **Everlasting**: significant attention to long-term strategy and sustainable development. Consequently, many Chinese cities, and to a certain extent also traditional Japanese and Korean cities, have been flourishing for more than one thousand to two thousand years.

Since the establishment of the People’s Republic of China in 1949, urban planning has experienced many setbacks and reversals, including the strong influence from the Soviet Union in the 1950s and serious economic crisis in the 1960s. The promulgation of the *City Planning Law of the People’s Republic of China* in 1989 set off a new upsurge in urban planning and large-scale urban construction. All planning in mainland China over the past twenty years has been based on this law and implemented accordingly. This urban planning law regulated planning procedure, the approval process and the related legal safeguard. The administrative arrangements in China include four levels: the state level (Ministry of Housing and Urban-Rural Construction); the provincial level (Department of Housing and Urban-Rural Development); the prefecture-city level (Urban and Rural Planning Bureau); and the county level (County Urban and Rural Planning Bureau). The administrative department in charge of city planning under the State Council is the highest organ to formulate, conduct and approve the urban planning system in terms of the whole country and all the provinces. The planning of provincial capitals, municipalities directly under the Central Government or appointed by the State Council is formulated by the related municipalities, approved by the State Council. Planning of other cities is approved by higher levels of government.

In China, urban planning consists of several elements: urban system planning; urban/town master planning; detailed regulatory planning, which was first adopted in the 1980s; and detailed construction planning. The planning area of the urban planning system is defined according to the administrative region, and the planning period is normally twenty years. Urban/town master planning is formulated on the basis of the urban planning system of each respective region,
and is also valid for twenty years, although an amendment is often made every five years, with some exceptions made for some important events. This master planning focuses on the strategic development of the city and the integral structure of urban space.

Detailed regulatory or construction planning is the final planning phase in order to implement the intentions of the master plan with concrete design alternatives. However, detailed regulatory or construction planning seems to trigger confrontations between planning administration and developers/construction organizations during preparation and implementation stages. While higher province- and state-level administrative departments have the legal powers to issue the permission for construction projects—including Construction Project Site Submission, Construction Land Use Planning Permit, and Construction Project Planning Permit—many developers, either having a local government background or being driven by economic benefits, often do not control the scale or the floor area ratio of their construction projects in compliance with the regulations. This is especially the case in smaller cities, where governments often come to terms with developers in the interests of economic development. The still-evolving legal system also creates opportunities for developers to promote irregular and unauthorized development. Consequently, many plans and permissions simply become empty words. Understanding the methodological options regarding map making, regulatory options and interaction of different departmental agencies involved in master planning in China will help to understand and develop new approaches to research design and methodology. These new approaches have the potential to advance the Chinese planning system to a new level that reduces confrontation between organizations and increases certainty when implementing plans.

The master plan of a medium-sized city: Hua County

Introduction

According to the Urban-Rural Planning Law of China, the Draft of the 12th Five-Year Plan (2011–2015) of Hua County Government and other related regulations, the strategic planning of Hua County is worked out on the basis of SWOT analysis, the forecasting of population and economic growth, the optimized framework of urban spatial structure and the proposed temporal development. Hua County is a provincially administered municipality in Henan Province of China. The present population of the county is 1,271,207, of which 192,925 are based in the central area; there are twenty-two small towns, the total area is 1780.96 km², and this county features high-quality green farm products and a rich labour force (see Figure 5.6.1).

The planning process is initiated with the application of a SWOT analysis methodology and eight thematic studies covering: regional development strategy; distribution of industries; industrial organization structure; selection of economic models; population size; comprehensive transportation system; ecosystem and greening; and, finally, urban identity and culture. These studies clearly state the conceptual basis for planning of the city, combined with the practical, physical and socio-economic characteristics of this city. The conceptual master plan is subsequently developed in order to implement the agreed strategy.

SWOT analysis

The SWOT analysis compares and contrasts the strengths, weaknesses, opportunities and threats against a set of criteria that are based on the nature of county-level cities, the urban system and urbanization level, the size of the urban centre and the development orientation of Hua County. The analysis conducted as part of this exercise includes the existence of different
clusters, sub-centres, axes and the size of population, etc. Land use patterns are the most important factor in the master plan, which will balance the relation between urbanized areas and rural areas, and between industrial areas and agricultural areas, as well as between the central districts and the suburbs, so as to create a harmonious integration of urban streets and spaces in both the new and the old centres. It also aims to realize a smooth transition from the old district to

Figure 5.6.1 Location of Hua County among metropolises in East China.
the new ones. Finally, all the planning methods will correspond to the practical needs of Hua County, such as the spatial structure, infrastructure, heritage preservation and the reservation of land for future use.

The main conclusions of the SWOT analysis point to the following: Hua County is located at the edge of the Central Plain City Group of Henan Province (nine main cities with Luoyang-Zhengzhou-Kaifeng as the central axis), which means that Hua County is far away from the developed regions, with rather weak secondary and tertiary industries. The urbanized area and size of the population are also considerably small. Up to 2009, the urbanization level was only 25.6 per cent, lower than the average of Henan Province (37.7 per cent) and the national average (46.6 per cent). Besides, Hua County is encircled by four main highways which form a type, with Hua County approximately in the middle, and transport conditions are not very good. As a result, the degree of agglomeration in Hua County is rather low and the power to effectively promote and deliver urbanization in the surrounding areas is not sufficient.

Environmental conditions are fully considered in the master plan, with an analysis of the geographical location and urban spatial structure. Also, any obstacles to the development and potential of the city are summarized as the basis for planning, including the natural resources, the regional conditions, the present and the expected political and economic position of Hua County in Henan Province. In summary, the master plan needs to make it very clear what goal is to be achieved from both macroscopic and microcosmic angles. Since the ecosystem of Hua County is rather fragile, to preserve and expand the green area is considered key to bringing forth a new scene for the city. Therefore, the spatial structure needs to provide coordination between the natural and built environments, focusing especially on highways, the high-speed rail network and airport.

Though invested with comparatively poor natural resources, Hua County is one of the richest agricultural counties in China and boasts a number one position in grain yield for eighteen years running in Henan Province. Also, Hua County has ample labour force and the potential for fruit and vegetable production. What is more, the planned development axis between Zhengzhou City as the capital of Henan Province and Jinan City as the capital of Shandong Province will pass through this city. This is a key factor in developing favourable conditions for attracting the transfer of industries from the coastal cities, which is one of China’s macro-policies for the development of hinterland areas. For this reason, Hua County has been promoted by the Henan government to a higher administrative level – *provincial county* – and will as a consequence enjoy more favourable policies, more financial support and the benefits of an independent local treasury (Figure 5.6.2).

**Planning concepts**

The master plan determines the strategic goal and the supporting means for a city, which requires an overall understanding of the regional resources through a process of regional analysis, regional positioning and master planning, and a platform of urban development upon which the spatial structure and layout of a city are drawn. This master plan sets out the need for Hua County to break through the cramped structure of the old administrative centre, to form a fully extended structure with an east-west axis connecting the city with one of the main state north-south arteries – namely, the Daqing-Guangzhou highway. The spatial development strategy includes two main directions of development: the eastward development of Hua County in order establish closer connections with the Beijing-Tianjin economic zone by developing new service industries; and westward development designed to merge into the Central Plain City Group of Henan Province.
Hua County needs to take positive actions to achieve this goal, including, for example: attracting the transferred industries from the east coastline cities (encompassing food processing, garment processing and related industries); providing support industries for larger cities like Beijing and Tianjin (in electronic information, machinery and equipment manufacturing industries); promoting local and traditional industries (like food-processing and sheet metal, etc.); and enhancing the attractiveness of cultural tourism and holiday leisure industries for the surrounding groups of larger cities. In the end, Hua County will capitalize on its advantages in agricultural production and farming, and fulfil its role as a backyard garden and kitchen for cities of the northern part of Henan Province of China.

Another concept to be used in the master plan is concentric zone theory. The plan aims to solve problems related to the spatial structure, transport network, the balance of land uses and the development of new towns and new industrial zones. Concentric zone theory is used in the plan to respond to and solve these existing problems by dividing Hua County into three ring areas: a core layer, a compact layer and a radiation layer. The first ring area is to define the centre and development axis, and reorganize the inner structure of the old city downtown. The second and the third ring areas will form a rational road system, increase the highway density and improve the grade of the existing roads. All three ring areas are directly related to the balance of land use between the central town and rural area, between different industries (including agriculture and services), and between the built environment and the natural landscape. Especially in the old city downtown, new residential areas and industrial zones are planned to increase the urban density, given that, at present, there is only one town in every 82.5 km². Through improving the municipal infrastructure and reserving areas for future development, this plan is to construct two important bases: first, to support the production of high-quality agricultural products and enable the emerging base of the food industry in China; and, second, to realize a smooth transition from the old urban structure to the new one.

Figure 5.6.2 Location analysis of Hua County.
The master plan process

The first step in the planning process is to make a forecast of the population. In 2009, the population in Hua County was 1,271,207, with a population density of 714/km² and an urbanization level of about 31.5 per cent, both some 6 per cent lower than the average of Henan Province. Using the methodologies of element regression, integrative growth and economic law, the total population of Hua County is planned by 2015 to reach 1,350,000, and up to 1.5 million by 2030. As for the urbanisation level, through trend extrapolation and calculation methodologies, it is planned to be 40 per cent by 2015 with the urban population of 540,000, and about 60 per cent with an urban population of 900,000 by 2030. By that time, all the data will be close to the average level of Henan Province. A further prediction of population change identified that there were 177,926 people in the central area in 2009, with this expected to increase to 270,000 in 2015 and 580,000 in 2030. The present built-up scale is 20.8 km² with 208 m² per capita, and in 2030 it will be 65 km² with 112 m² per capita (see Figure 5.6.3).

The second step is to adjust the spatial structure. Using the concepts of module space and group development, a core area and three ring areas are planned. This plan is made on the basis of Hua County development and its present conditions. Historically, Hua County was built along a branch of the Great Canal with a typical grid structure. After 1949, following the establishment of the People’s Republic of China, the city wall was knocked down and the area stretched both east and west. This resulted in Hua County adopting an olive shape. Then, in the 1990s, the city
area was further expanded to a size four times its previous size (see Figure 5.6.4). These significant physical changes to the spatial structure create a fundamental problem. Since the old city centre is located in the north-western part of the county, very close to the neighbouring county, making it difficult to promote the economic growth of the whole county area, and also leaves no space for further development (see Figure 5.6.3).

In the master plan, the new core area forms a dual-nuclei structure made up of Old City Downtown and Liugu Town. Liugu is the second largest town in Hua County, with a population in 2009 of 75,435. Liugu grew very rapidly in the recent years due to the planned high-speed railway between Henan Province’s capital of Zhengzhou and Shandong Province’s capital, Jinan. Liugu will become the gateway of Hua County, open to the surrounding larger city groups. Liugu Town is also close to Daqing-Guangzhou Highway (the State 7918 Project, an important N-S artery), that helps to lay a foundation for local logistics and industrial development. In the plan, a rapid urban transportation corridor is planned to link the two towns, and will take the BRT model for future intra-city commuting. To strengthen the agglomeration of the twin-town structure, the industrial land is planned to increase to 22.57 per cent of the total area, public facilities to 15.27 per cent and land for roads and squares to 17.12 per cent. The significant growth anticipated in the master plan will effectively reduce the smaller villages that are dotted in the centre of the city and greatly hinder the urbanization process of Hua County (see Figure 5.6.5).

In China, especially in the hinterland, resource and labour-intensive industries always become the main impetus for the growth of local cities. In the plan, the core of the strategy is based on the development of food-processing and service industries and founded on the concept of local urbanization and the advantages of agricultural production. As a consequence the second ring area in the master plan is planned as a compact zone. This second ring area will contain six central towns for the development of commerce, organic agriculture and tourism. The main function of this is to produce a compact city area with functional districts, with an eco-corridor developed based on the natural waterways and creeks. The third ring area is the radiation layer in the master plan and contains thirteen towns. The main industry within the third ring is still agriculture, non-staple food production and food processing. This third circle will maintain the economic stability and natural landscape of Hua County, but with a higher urbanization level (see Figure 5.6.6).
Figure 5.6.5  Urban system planning in Hua County.

Figure 5.6.6  Three ring areas of towns and highway planning.
A new road system is planned to support the development of the three zones. At present, there are six provincial highways in Hua County with an operational coverage of 178.87 km, as well as 1,014.17 km of rural roads. The road densities are 70.1 and 56.9 respectively, and both are about 50 per cent of the average in Henan Province. In order to support the development of the new road system, road development directions are first defined. These appear just like a human hand stretching five fingers from the central downtown to every corner of Hua County. The five main traffic corridors will link ten important towns and villages with the objective of providing more convenient routes for traffic. There is already a planned urban rapid transport corridor between the two cores of the Old City Downtown and Liugu Town, which will form a major section of the east axis (see Figure 5.6.7).

**Strategic planning for the urban centre**

There are now approximately 177,926 people living in the built area of the Old City Downtown, an area of approximately 20.8 km². Nevertheless the layout of the downtown area is rather confused without a clear division of functions and a rational space structure (such as the urban centre villages, insufficient green land and poor supporting infrastructure). In the plan, the new administrative centre will contain two corridors: the central urban corridor and the green corridor, and four functional zones: the old city centre, the new residential area, the industrial zone and the logistics zone. The built area is approximately 20.8 km², with a land use of 208 m² per capita (see Figure 5.6.8). The long-term planning of the area to 2030 anticipates a land use of...
112 m² per capita and an expansion of the total central area to 65 km². This expected growth needs to be accommodated in a proper urban pattern and structure. The new urban centre will make full use of the natural waterways and creeks to form a county site with agricultural uses. The central urban corridor and the east-west green corridor will provide citizens with the benefit of better working and leisure opportunities that the county has to offer.

All land is developed based on the principle of rational and economic use. Residential areas in the Old City Downtown and the New Town Area will be sheltered from unwanted uses, and traffic as public transport and walking are advocated in the plan. Environmental protection is also identified in the plan as particularly important. In addition, the plan states that the surrounding areas of the administrative centre will form six important bases for environmentally friendly industries, logistics, markets, convention and exhibition facilities and office buildings. The land use is to be rational and the scale of construction is strictly controlled (see Figure 5.6.9).

**Green corridor planning**

In modern cities, people increasingly expect a relaxed pace of life and to establish a close connection with nature through the use of green spaces. In the master plan, the water system – which includes Hua County’s main rivers, the Wei River and Dagong River – is utilized to support the development of the ecological system in the centre. The planned *Urban Central Corridor* will represent the planning concept of “low rhythm and happy urban life”. A series of parks will be constructed on a north-south alignment: a forest park, a sports ground, a leisure
zone, a waterfront park, a food and beverage culture park, a wheat production exhibit centre and fruit and vegetable eco-gardens. All of these facilities will adopt the traditional technologies inherited from Chinese classic gardens, aiming to improve the natural landscape of the city and citizens’ quality of life. Along the green corridor, local trees and plants, including peach, pear, date, pomegranate and willow trees, will form a special landscape with strong local flavour. The corridor adopts an important ecological protection principle and will present different features with changes in the seasons. A protective green belt along rivers and main roads will take more than 65 per cent of the land to increase the provision of green space designed to improve the quality of urban life. Together with the green heart, the new urban area will represent a better living, working and leisure environment (see Figure 5.6.9).

**Development sequence**

Finally, a temporal development plan is proposed, with the goal of providing a list of significant projects to be completed in a short and intermediate period. Therefore, all the planning projects will be implemented according to a strict time sequence. In the short-term plan for the period 2010–2020, the construction of the Dual-Nuclei Core Area will commence first, including the renewal of the Old City Downtown, the expansion of the new residential area and the land arrangement for the two corridors, but the urban construction scale must be controlled within 60 km². Priority will be given to service facilities, municipal infrastructure and the comprehensive land use for road and greenbelt construction. The finger-type axis of roads and the functional ring areas will be key developments in this early phase. In the short term, the Old City
Downtown will be regulated and rearranged and, at the same time, the new centre of Liugu Town will be expanded to the size needed and the rapid traffic corridor on the east axis will be constructed. For the long-term plan, over the period 2020–2030, the finger-type road system will be completed to support the development of the third ring area and other towns’ outer adjacent areas in order to promote the connection with other city groups and, even further afield, with the Beijing-Tianjin metropolis (see Figure 5.6.10).

This form of planning is defined as conceptual master planning, which places emphasis mainly on the strategic and spatial structure, and consequently the urban spatial structure is rather idealized in its presentation. In the following master plan, some parts will be further adjusted according to the practical situation of Hua County, including the integrated land use plan (see Figure 5.6.11).

**Conclusion: balancing the fast-evolving reality with the demands for planning**

Past exercises in urban planning in China have unfortunately encountered several significant problems, some of which relate closely to the methods traditionally applied in plan making in China. These problems can be summarized as follows:

- The excessive speed and rapidity of the expansion of cities and towns (see Duonfang, 2006; Logan, 2002) have been caused by the impractically high indexes of urban land and population established by some local officials. For example, the total planned urban population of all the cities in China would have been two billion by the end of 2010,
but the total population of China was only about 1.3 billion. Similarly, the city and town areas increased by about 60 per cent between 2000 and 2010, which exceeds the growth of the population by a significant margin.

- The contents of plans are often changed at will by some local authorities. Normally, a newly empowered official, especially the chief executive, will change the direction and content of the plans made by the former official in spite of the validity of laws. Leaders at a higher level also frequently intervene in planning within their jurisdiction, thus making planning a product of individual will.

- Some plans are not made on a scientific basis, despite the identification of real conditions and needs. Some cities, particularly small and medium-sized ones, have adopted through experiment and blind imitation the same patterns of urban sprawl by extending suburbs and building ring roads, in the “One Image for All Cities” phenomenon.

The Urban and Rural Planning Law of the People’s Republic of China was established in October 2007, and it was the first time that urban planning and rural planning were expounded in one law. This law aimed at solving the state of confusion in urban planning and rural planning which caused a significant wastage of land resources and duplicate construction of similar projects. Yet the law failed to solve problems such as large-scale population movement, the urbanisation of rural areas and irrational energy distribution (see also the chapters in Wu, 2007, for an account of these problems arising from intense urbanisation). This law was made to promote the coordinated development of cities and villages and, at the same time, to set strict standards for planning procedures, making the preparation of plans more transparent and open. It also
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promoted public participation and scrutiny in the preparation of plans in the hope that urban and rural planning would become more scientific and effective in its operation.

Six years have now passed since the implementation of the *Urban and Rural Planning Law*. The planning mechanisms for addressing large-scale development and significant migration of population have improved, yet many problems still remain unresolved. For historic reasons, complex and complicated patterns of land ownership and rights over real estate continue to hinder the preparation and implementation of efficient and effective plans (Ma and Wu, 2005; Wu et al., 2007). What is more, earlier urban planning episodes were considered primarily as technical exercises, and consequently political, economic and social concerns were often neglected as part of these. But now, concern for citizens’ well-being (Qian, 2013) occupies a prominent position and is supported by the new government’s commitment to planning. This requires the government and planning departments to pay more attention to the sustainable development of a city, and to the social stability and unity directly related to the interests of the masses. For urban planners, their task is not simply to follow the instructions of the officials, as they historically did in the past (see also Leaf, 2005). They now instead have to consider how to eliminate the interference of local officials as far as is possible, particularly that created by those who regard urban planning as a means of facilitating their vanity projects in support of good, administrative performance. This will be nevertheless be a long-term and insistent target for urban planners.

Another important issue in contemporary urban planning is urban regeneration and conservation. In the past thirty years, large-scale urban construction projects have caused great damage to the traditional features and the spatial pattern of many Chinese cities. Many of these cities have lost much of their cultural and historic characteristics, and newly developed, built-up urban

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*Figure 5.6.12*  Land use plan.
areas often seem to be copies of one or two famous models, with a resulting lack of character and distinction. Many local governments are now aware of the importance of conserving the historic built environment and preserving their heritage. Yet a significant number of local governments have adopted this as an opportunity to stimulate local tourism, and their so-called conservation planning and protection constitute no more than a new era of destruction. The rapid disappearance of traditional streets and lanes, such as Hutong in Beijing and Linong in Shanghai, is testament to the ongoing and continued destruction of built heritage.

In summary, the rapid increase in population and energy demand and supply, and the resultant land resource shortage are still the main issues that need to be addressed in urban planning, especially in large-scale, developing countries such as China (Ma and Wu, 2005). These issues present many methodological challenges for plan-making practice, particularly if such plan making is to deliver on the twin objectives of greater transparency and a more robust, scientific approach to planning. There is scope for innovation and experimentation with a variety of plan-making methods, with the aim of better addressing the challenges continuing to face Chinese cities.

Notes

1 The lowest in the administrative hierarchy of China: (1) central government, (2) provincial capital city, (3) prefecture-level city and (4) county-level city.
2 This concept is described as the emphasis on the relation between urban center and the surrounding non-agricultural areas.
3 These methods are described as the consideration of variable factors that influence urban population and economic growth in Hua County.

References