

# PLANNING FOR URBAN AGRICULTURE IN CHINA

An exploratory research on urban agriculture from  
the Chinese planning perspective

XI ZHU

2016, WAGENINGEN UNIVERSITY



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<http://www.sbs.com.au/food/recipes/chinese-pork-and-cabbage-dumplings>

# **Planning for Urban Agriculture in China**

**An exploratory research on urban agriculture  
from the Chinese planning perspective**

MSc thesis of the Master Urban Environmental Management, specialization  
Land Use Planning

**Wageningen University**

Droevendaalsesteeg 3  
6708 PB Wageningen  
The Netherlands

Supervision: Prof. Arnold van der Valk, Land Use Planning group

Examination: Prof. Arnold van der Valk, Land Use Planning group

Dr. Wim van der Knaap, Land Use Planning group

Author:

Xi ZHU

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## Summary

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Presently, China is struggling with a series of challenges caused by urban-rural disparity, farmland and resources limitation, food security and safety, and environmental degradation. The general political environment in China also tends to promote urban-rural integrated- and sustainable- development. Against this background, the development of urban agriculture is raising in China, towards a more sustainable-, productive-, technological-, and safe- production.

From planning perspective, on one hand, the importance of planning on urban development and project implementation is increasing. On the other hand, the Chinese planning system can create obstacles on urban agriculture development. Within this contradictive condition, the investigation of this thesis is to explore the approaches to facilitate the development of urban agriculture through the Chinese planning, which is an exploratory research.

This exploratory research elaborates the Chinese planning system and urban agriculture, in order to explore the relations between these two aspects. The case study was selected as the major approach, which was conducted in two urban agriculture projects in Beijing. Interviews were carried out with involved initiators, planners, staffs of the projects, as well as the scholars who research urban agriculture in China. The case study reveals insight in the relations between urban agriculture and the Chinese planning system.

In the Chinese planning system, the efficiency on facilitating the development of urban agriculture is different. The most efficient one is the socio-economic development plan. Conversely, the land use plan and the urban and rural plan have less efficiency and flexibility due to the existing land-use categories and strict political management. However, the site plan has significant contribution, via realizing goals and requirements of urban agriculture into space. For project implementation, the negotiations between initiators and governments are essential to form one project. Moreover, the government has the power to select projects due to the authorities of releasing relevant permits.

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## List of abbreviations

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APA	American Planning Association
BMBS	Beijing Municipal Bureau of Statistics
BMG	Beijing Municipal Government
BMCRA	Beijing Municipal Commission of Rural Affairs
BMCUP	Beijing Municipal Commission of Urban Planning
BMCLR	Beijing Municipal Commission of Land and Resources
BOLUP	Beijing Overall Land Use Plan
BSDP	Beijing Socio-economic Development Plan 2010-2015
BUMP	Beijing Urban Master Plan
CAU	China Agriculture University
CAUFL	CAU Futong Ltd
CPA	City Planning Act
CSA	Community Supported Agriculture
DRC	Development and Reform Commission
EUR	Euro
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
GGTL	Guoren Green Tech Ltd
HDG	Haidian District Government of Beijing
LMA	Land Management Act
LDF	Little Donkey Farm
MCC	Ministry of Construction of the People's Republic of China
MHURD	Ministry of Housing and Urban-Rural Development
NPC	National People's Congress
RMB	Renminbi, Chinese Yuan
RUC	Renmin University of China
SDPUAB	Special Socio-economic Development Plan for Urban Agriculture in Beijing
TDG	Tongzhou District Government
UPPMCC	Urban planning practice management committee of China

# 1. Introduction

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## 1.1 Research Context

China is enjoying numerous achievements and benefits from rapid economic growth, but also struggling with plenty of challenges from that. With accelerated development speed, the urbanization rate of China grows rapidly, jumping from 42.99% to 53.73% between 2005 and 2013 (Table 1.1) (State Statistical Bureau, 2014). As a result, around 17 million people are moving (maybe different word for moving) from rural- to urban areas each year, which is even more than the total population of the Netherlands. Additionally, the urbanization rate is still expected growing, predicting 60% by 2030 (State Statistical Bureau, 2014).

However rural migrants cannot really integrate into urban life, which leads to several social- and economic problems in China since 1980s (Han, 2006). One is the disparity on income and life quality between rural migrants and urban residents. Usually the jobs with intensive workload, bad working condition, and low salaries are occupied by the rural migrants (G. Wang, 2005). Nowadays this problem has extended to the next generation. Moreover, this situation becomes increasingly complicated since more issues (such as psychological issues) are emerging (Lu & Pun, 2014). These issues got the attention from the Chinese authorities. In 2002, the Chinese government put urban-rural integration on national agenda. With 10-year hard working, the focus has shifted from infrastructure construction to land use arrangement, rural migrants, and social security (Ru & Fu, 2011).

**Table 1.1. The national urbanization ratio in China 2005-2013**

Source: Statically yearbook of China 2014 (State Statistical Bureau, 2014)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
National urbanization ratio (%)	42.99	44.34	45.89	46.99	48.34	49.95	51.27	52.57	53.73

With expansion of urban population, constructions, and urban areas, the farmland in China is shrinking accordingly. During 1996 to 2003, around 6.72 million hector (ha) farmland (roughly 5.1% of country's total) was transformed into other land uses (Figure 1.1) (J. Chen, 2007). This was accompanied by increasing challenges on food

security. Currently China only can achieve food self-sufficiency in cereals, dairies, vegetables, and fruits. The balance between demand and supply is very fragile, because of urban sprawl and other issues (e.g. soil- and water pollution) (L. Zhu, 2010). For the same reason, the environment degrades around urban areas (Cai, 2010).

As a result of increasingly worsening environment, the demand on better quality of life from urban residents is growing. More people start to purchase safe-, organic-, ecological food, or they go to rural areas to grow and pick their own food (Cai & Luo, 2004). In 2008, it was estimated that in China rural areas received more than 400 million tourists, accounting for 23% of total number of tourists in that year (H. Guo & Han, 2010). Decades ago, the food industry in China is losing the consumers' trust due to a series of food safety scandals. Since 1992, when the State Council of China considered sustainability as a basic development strategy in China (Zhou & Niu, 2000), livability and sustainability are becoming key elements of future urban development in China (Jim, 2004).

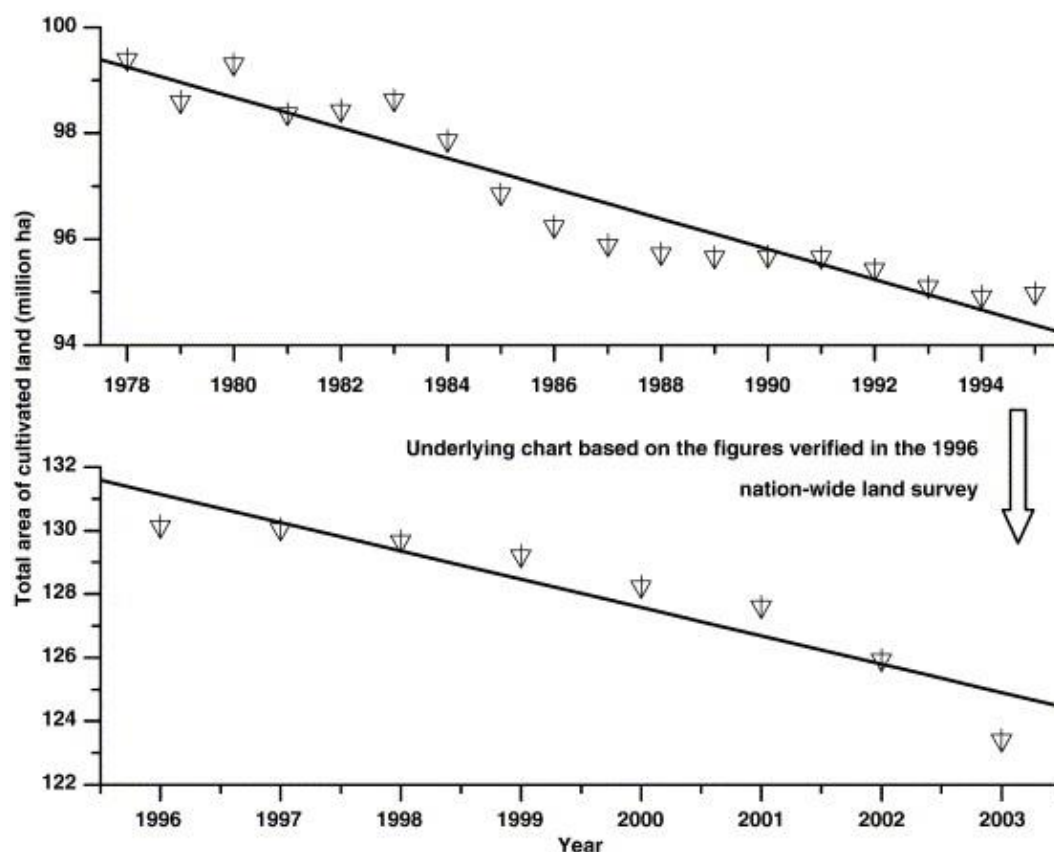


Figure 1.1. Total area of cultivated land

Source: Rapid urbanization in China: A real challenge to soilless protection and food security (J. Chen, 2007)

## 1.2 Problem description

Benefits of urban agriculture (e.g. food security, urban resilience, environment conservation, employment increasing, etc.) could address social-, economical-, and environmental- problems (Howe, Viljoen, & Bohn, 2012; Mougeot, 2000). Its attention increased within different fields of study, including planning. At the beginning of the 21<sup>st</sup> century, Pothukuchi and Kaufman initially introduced the food system into the urban agenda and planning. Moreover, the American Planning Association (APA) has started to carry out several policies related to the food system in order to integrate this (including urban agriculture) into urban planning. Toronto officially put food security on the urban agenda in 2000 and confirmed the role of urban agriculture in urban sprawl prevention (Roberts, 2001). In Tokyo, urban agriculture is accommodated and protected by master plans (Cai & Yang, 2008).

Around 1990s, the concept of urban agriculture was introduced in China, and since then, Chinese scholars have studied and researched it for decades, combining it with the Chinese context (Fang, Wu, & Wang, 2008). Meanwhile, the policies about rural-urban integration and sustainable development contribute to a good political environment for the development of urban agriculture in China. However, unlike the cases described earlier, the outcomes of urban agriculture research in China are limited and mainly focus on the definition, characteristics, and forms of urban agriculture (Ning, Xu, & Xing, 2006). Moreover, there is limited research that is originating from the planning perspective (Ning, et al., 2006). In practice, the Chinese planning can also create obstacles on the development of urban agriculture. For example, one retired people grew food and plants on the roof of his apartment ([Figure 1.2](#)). However, the construction of this roof farm is facing the the situation that might be demolished, due to relevant laws and regulations of Chinese planning (IDyeemedia, 2015). Therefore, it is essential and interesting to investigate urban agriculture from the Chinese planning perspective, in order to avoid similar situations like the case above, and more important, to explore the way to facilitate the development of urban agriculture through planning in Chinese context.





**Figure 1.2. The view of the roof garden**

Source: Should this be demolished? (IDyeemedia, 2015)

### 1.3 Research objective

The objective of this thesis is to explore a way to plan for urban agriculture within the Chinese planning system and context, for the purpose of facilitating the development of urban agriculture in China. In order to fulfill this objective a main research question was formulated.

### 1.4 Research questions

**Main research question:** How can the Chinese planning system facilitate the development of urban agriculture?

This research mainly consists of two parts. The first part focuses on the Chinese planning system and the urban agriculture, which are two essential components of the main research question. The second part focuses on the urban agriculture project implementation within a Chinese context, which is an exploratory research. Then, several sub-research questions are addressed in these two parts.

The **sub-research questions in Part I:**

1. What is the Chinese planning system?
2. What is urban agriculture?
3. What are the relations between the Chinese planning and urban agriculture?

### The **sub-questions in Part II:**

1. What are the motivations of promoting urban agriculture in Beijing?
2. What is the urban agriculture in Beijing?
3. What are the relations between the relevant plans and the urban agriculture in Beijing?

## **1.5 Research Methodology**

### **1.5.1 Research strategy**

In this chapter, the strategy and methods for research and data collection will be explained. As mentioned earlier, the research on urban agriculture from the perspective of Chinese planning is rare. Therefore, in order to sketch out the relations between these two components, this research was determined as an exploratory research. In doing so, reviewing available literature and data, and case study as the qualitative research approach were needed (Creswell, 2009). Furthermore, the case study was chosen as the major approach to obtain an in-depth understanding of the relations between Chinese planning and urban agriculture, and the planning procedures of implementing an urban agriculture project in China. Additionally, triangulation was chosen as the data verification, which will be illustrated following texts.

As the major approach, the case study was conducted in Beijing, during the 15<sup>th</sup> to 25<sup>th</sup> of December 2015. Beijing has the proximities to advanced knowledge, and due to that, Beijing also has the priorities and leading position of piloting and researching new approaches and initiatives, including urban agriculture. For instance, the first Community Supported Agriculture (CSA) was established in Beijing. Hence, there is more accessibility to the relevant literature, document and data than most regions of China. Moreover, the investigation on two urban agriculture projects in Beijing can offer the sight on the relations between the plans and urban agriculture in Beijing, and the planning implementation procedures of urban agriculture projects. Additionally, the accessibility to data, including the availability of relevant literature and documents, and the respondents' willingness to assist has been considered when selecting suitable projects. Based on this research strategy, several data collection methods were selected, which will be illustrated in following paragraphs.

### **1.5.2 Data collection**

The main data collation methods for qualitative research are unstructured interviews, observation, and secondary resources (Kumar, 2014). [Figure 1.3](#) below shows the

major used methods and outcomes in this thesis accordingly. Additionally, Kumar (2014) subdivided the data into primary and secondary data, the former is collected from the first-hand resources and the latter is extracted from the available information.

Interviews	Observation	Literature review	Document study	Mapping and graphing
<ul style="list-style-type: none"> <li>•Perspectives of urban agriculture and planning from experts and stakeholders.</li> <li>•Detailed information of Beijing and chosen projects.</li> </ul>	<ul style="list-style-type: none"> <li>•Missed or hidden information during the interview, literature review, and document study.</li> <li>•Interesting phenomenon happens during the field work.</li> </ul>	<ul style="list-style-type: none"> <li>•Information and theories of current context, the planning system and urban agriculture in China and the West.</li> <li>•Information of Beijing and chosen projects.</li> </ul>	<ul style="list-style-type: none"> <li>•Information of the Chinese planning system.</li> <li>• Information of the plans that relevant to urban agriculture in Beijing.</li> </ul>	<ul style="list-style-type: none"> <li>•Visual information of Beijing and chosen projects.</li> </ul>

**Figure 1.3 The major data collection methods and outcomes**

The primary data can be collected by observation, interview, and questionnaire (Kumar, 2014). Interview was the major primary data collection method in this research, collecting a comprehensive perspective of urban agriculture experts and stakeholders. In order to get enough essential information and keep interview open, different interview questions were listed out before interviews, according to the respondents. Moreover, several interviews were conducted randomly during the fieldwork. Observation was mainly applied during the interviews and fieldwork to find the information that was missed by the respondents. Moreover, the interesting phenomenon could be obtained through observations, which can reveal some clues on what is happening in Beijing. For instance, currently the residents in Beijing increasingly rely on express services, which include delivering food.

The secondary data includes earlier research, government or quasi-government documents, personal records, and mass media (Kumar, 2014). The first two were mainly used in this research due to the accessibility of data. The literature about both Chinese and foreign research on urban agriculture and the planning system contributed on getting a better understanding of the theories of urban agriculture and

the Chinese planning system. Moreover referring to relevant literatures and articles can offer the information about the Chinese current context, planning system, urban agriculture, and chosen cases. Document study mainly focused on governmental documents in China and Beijing, which relate to urban agriculture, urban and rural plans, land use plan, socio-economic development plans, and rural-urban integration etc. This approach contributes to getting a better understanding of the Chinese planning system and the plans that relate to urban agriculture.

### 1.5.3 Triangulation verification

Triangulation is broadly defined as “the combination of methodologies in the study of the same phenomenon.” (Mathison, 1988), which is an approach to data verification. In this thesis, the data for same study might be collected from literature, documents and interview, in order to increase data accuracy.

### 1.6 Reading guide

As mentioned, the main content of this research can be divided into three parts. [Table 1.2](#) shows the division and major contents of each chapter. Moreover, [Figure 1.4](#) shows the research framework.

**Table 1.2 The division and contents of each chapter**

Part	Chapter	Content
<b>I</b>	2	Description of the Chinese urban planning system
	3	The description and benefits of urban agriculture, and the Chinese interpretations of urban agriculture
	4	A theoretical framework of how to plan for urban agriculture through the Chinese planning system
<b>II</b>	5	The urban agriculture in Beijing
	6	Case study of Little Donkey Farm
	7	Case study of Tongzhou International Urban Agriculture Park
	8	Summary of Part II
<b>III</b>	9	Discussion
	10	Conclusion
	11	Recommendations

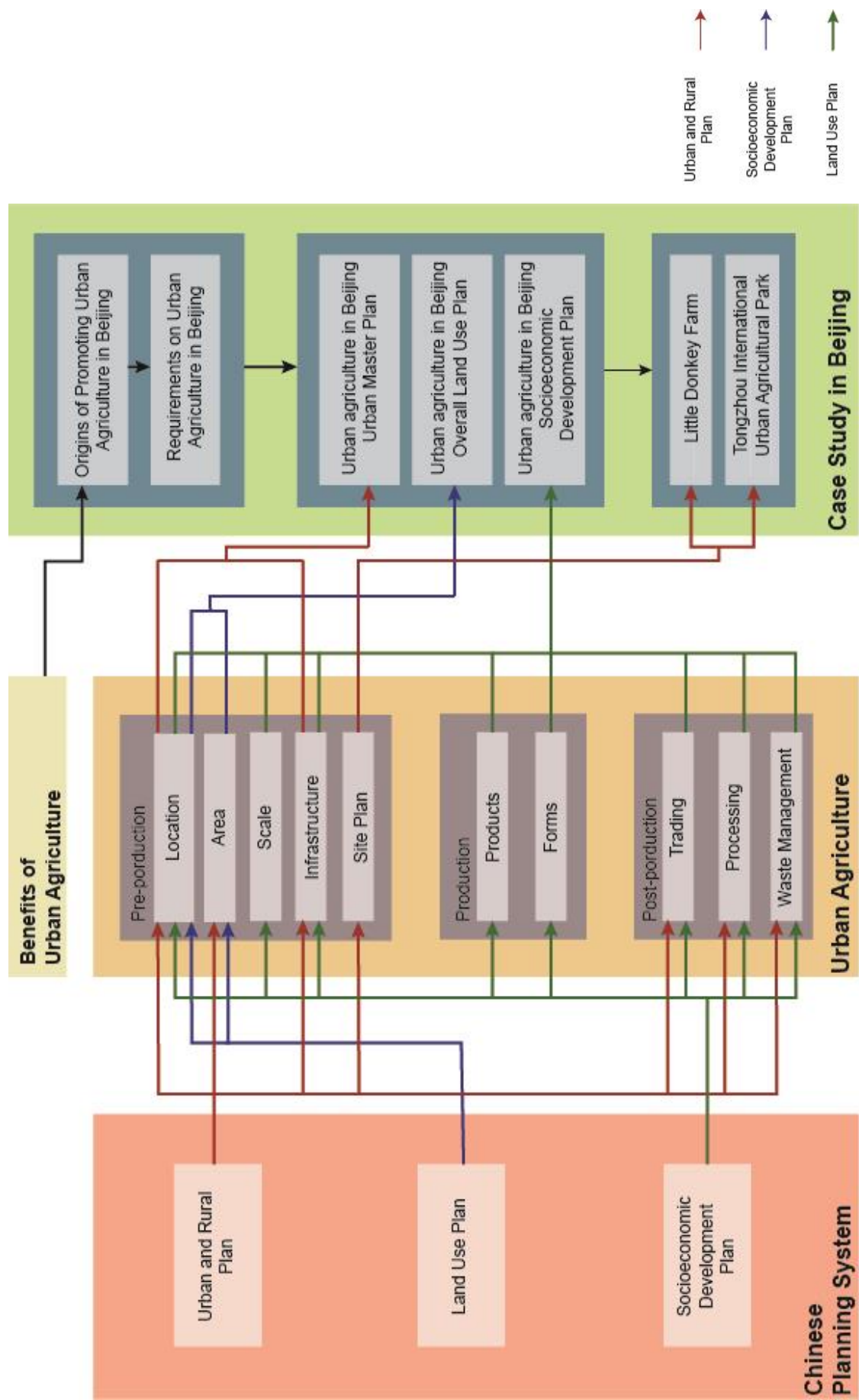
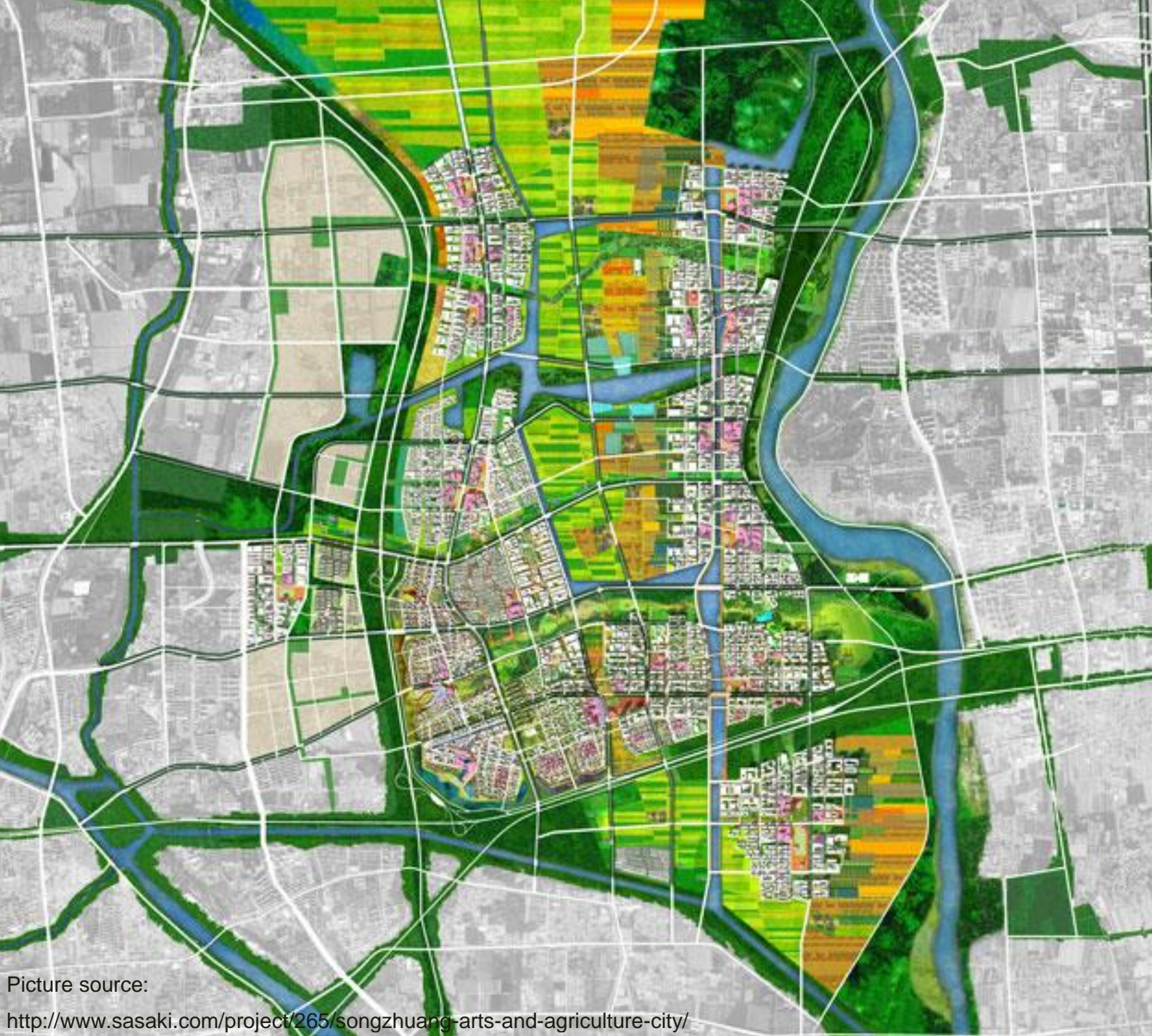


Figure 1.4. Research framework





Picture source:

<http://www.sasaki.com/project/265/songzhuang-arts-and-agriculture-city/>

# PART I

## URBAN AGRICULTURE PLANNING



On one hand, the Chinese planning system creates obstacles to the urban agriculture development in China (e.g. the roof farm case in Beijing). On the other hand, the role of planning (especially the urban and rural plan) on controlling and managing construction and development is increasingly significant, since the Central Government and the State Council proposed to reinforce the management of urban construction through planning URP (Xinhua News Agency, 2016). Within this situation, it is urgent to explore the relations between the Chinese planning system and urban agriculture. Accordingly, the Chinese planning system and urban agriculture are two key elements in this part.

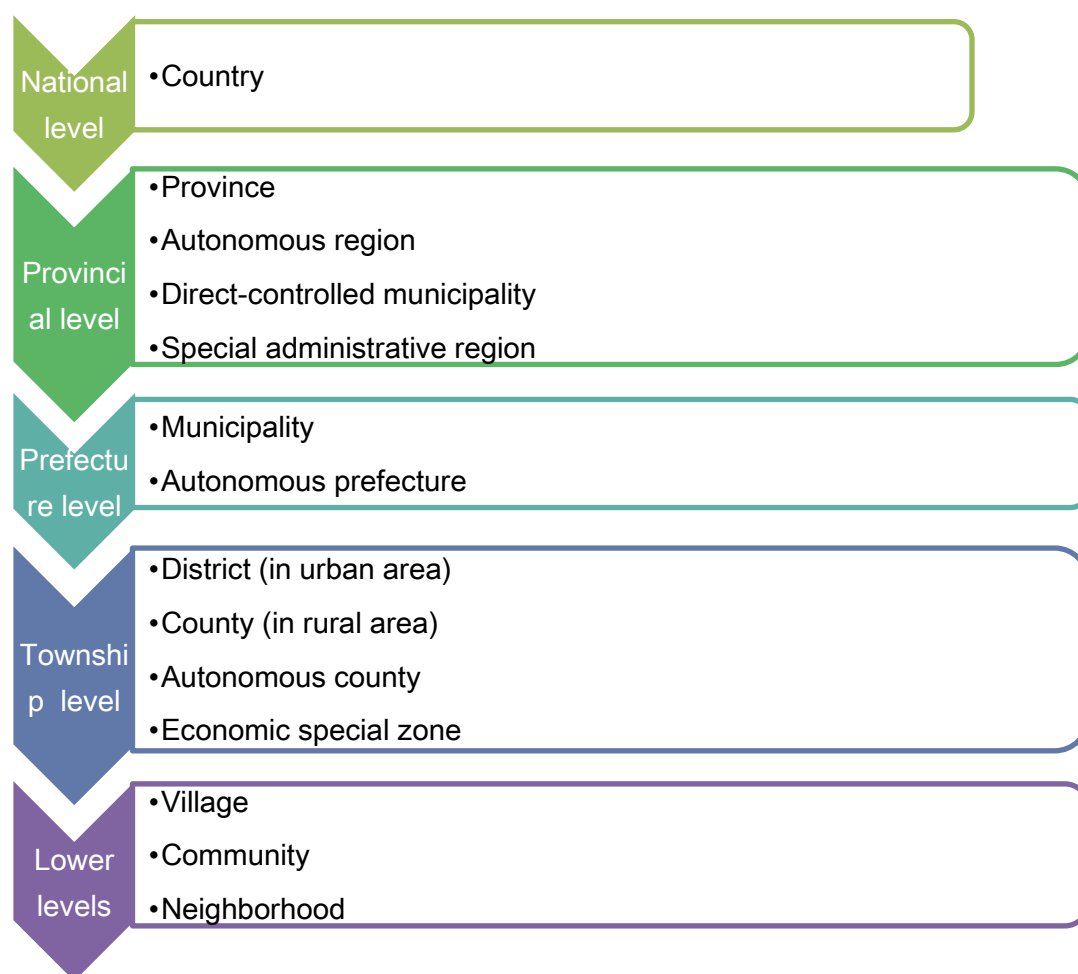
Firstly, this part will start with a description of the Chinese planning system (e.g. what is this system like? and how does this system function?). Secondly, literature review about the urban agriculture from both Chinese and the Western is conducted to explore the elements that can be influenced by the Chinese planning system. Finally, in order to have a better understanding of the Chinese interpretation of urban agriculture, this part also includes an interpretation on benefits of urban agriculture from a developing country perspective.

## 2. The planning system in China

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In order to facilitate the development of urban agriculture in China through planning, it is essential to have a comprehensive overview of the Chinese planning system. This chapter will describe the Chinese planning system, which includes the system's components, the major contents, tasks and the integration among each component. Moreover, for a better understanding, the influential theories of the Chinese planning will be described.

The current Chinese planning system contains three types of plans: socio-economic development plan (known as Five-Year Plan), land use plan, and urban and rural plan ([Table 2.1](#)). It is a hierarchical system based on the Chinese administrative level system, which consists of country, province, prefecture, township, and others such as community and neighborhood ([Figure 2.1](#)). Additionally, each level has different forms, such as in the provincial level there are not only provinces, but also the autonomous regions for minority agglomerations. It is essential to point out that planning is not just a technical discipline but also a governmental duty (W. Wang, 2008; Z. Wu & Li, 2010). It means that planning is not only about arranging spaces and designing physical environments but it also links to national strategies, politics, and the legal system (MCC, 2005; Z. Wu & Li, 2010). Currently, the major authorities of these three plans are the Development and Reform Commission (DRC), the Ministry of Land and Resources, and the Ministry of Housing and Urban-Rural Development (MHURD) (was the Ministry of Construction before March of 2008) respectively.



**Figure 2.1. The current Chinese administrative system**

**Table 2.1. The Chinese planning system**

Source: Urban Planning Practice (UPPMCC, 2011)

	<b>Socio-economic Development Plans</b>	<b>Land Use Plans</b>	<b>Urban and Rural Plans</b>
<b>National level</b>	The Five-Year Plan for National Economic and Social Development	National Land Use Plan	National Urban System Plan
<b>Provincial Level</b>	The Five-Year Plan for Provincial Economic and Social Development	Provincial Land Use Plan	Provincial Urban System Plan
<b>Prefecture Level</b>	The Five-Year Plan for Prefectural Economic and Social Development	Prefectural Land Use Plan	Prefectural Urban and Rural Plan
<b>Township Level</b>		Township Land Use Plan	Township Urban and Rural Plan

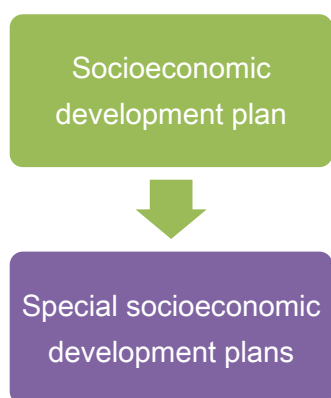
The origin of these three plans is different. In 1953, with the influence from the Soviet Union, the first socio-economic development plan in China was announced and implemented to guide the national development. (Guan & Lin, 2011). Until 2015, China has accomplished 12 socio-economic development plans and each plan reveals distinct characteristics of each development stage of China. Similarly, the concept of land use plan was also copied from the Soviet Union around 1950s (W. Wang, 2008). In 1986, China started to compile the national overall land use plan with the enactment of the Land Management Act (LMA) (Z. Yu & Ma, 2008). Moreover, the concept and theories of modern urban and rural plan in China are considerably influenced by the West (He, 2008). For instance, most planning theories illustrated in the description of urban and rural plan or land use plan are from the Western world. One reason is that since 1978, when economic development became the focus of China, the influential factors behind Chinese urban and rural planning has gradually transformed from Soviet planned economy to market oriented (He, 2008). Then, plenty of theories and concepts of urban and rural plan from the West were introduced and become the mainstream in China, including rationalism, collaborative planning, and sustainable development (Z. Wu & Li, 2010). Generally, even the political and economical environment in China is gradually shifting, the central planned economy still has significant impact on the Chinese planning system (Yeh & Wu, 1999). With this long-term impact, the Chinese planning system remains top-down and hierarchical. Take urban and rural plan as example, the compilation of detailed plan must be based on the master plan. Similarly, the master plan of a town should be based on the one of municipal level, because the administrative level of a town is lower than a municipality (UPPMCC, 2011).

Due to the differences on origin, major authorities, major tasks, and planning periods, these three plans were relatively independent with one another for long time (Yin, 2014). As the results, there are problems on implementing these plans from ministry cooperation, indexes contradiction, and task overlapping, especially from the aspects of setting development goals, space scoping, and technical standards, etc. (Deng, 2013). For instance, the socio-economic development plan focuses on economic and social developments, which requires land to expand. On the other hand, the land use plan focuses on land conservation. Hence, to some extent, these two focuses are contradicted with one another (Yin, 2014).

Within this situation, both the LMA and the City Planning Act (CPA) proposed to integrate these three plans, whereby each plan contains different but comprehensive priorities (Yin, 2014). In general, within same level of administration, the socio-economic plan is the planning basis of the land use plan and the urban and rural plan (W. Wang, 2008; Z. Wu & Li, 2010). Furthermore, the former one can be considered as the guidance to deliver the goals set from the Central Government. Therefore, achieving the goals of the socio-economic development plan is one of the major criteria to value governmental performance. Moreover, the other two plans also can be considered as the approaches to achieve the socio-economic goals for authorities. Generally, there is no specific hierarchal relation between these two plans. However, currently the urban and rural plan plays more important role than the land use plan. Such as Beijing, the master plan (a type of the urban and rural plan) is the planning basis of the overall land use plan (BMG & BMCLR, 2009), which means that the compilation of the overall land use plan in Beijing should base on the relevant contents from the master plan in Beijing. Furthermore, based on the recent documents issued by the State Council, the land use plan is proposed to merge in the urban and rural plan (Xinhua News Agency, 2016).

## 2.1 The socio-economic development plans in China

The socio-economic development plan focuses on overall socio-economic development and goals setting of a region. The major contents of this plan are developmental orientation, long-term goals, productivity distribution, and the ratio of the contribution of each economic sectors, etc. (Yin, 2014). For instance, this plan contains the contents like how much GDP one city is preferred to achieve in next five



years as the development goal, or the contents like how much percentage of GDP the primary industry is preferred to contribute. Within same administrative level, under the socio-economic development plan, there are special socio-economic plans for specific themes (Figure 2.3), such as urban-rural integration or urban agriculture. The themes vary through time and regions. It is essential to mention that this plan does not have the force of law but it is a strategic governmental guidance (Guan & Lin, 2011).

**Figure 2.3. The relationship between the socio-economic development plan and the special socio-economic development plans**

The State Council takes the major responsibility to compile the national socio-economic development plan draft. Afterwards, the National People's Congress (NPC) (the highest authority of China), the draft is discussed, improved, and approved by these representatives. Followed, the approved national socio-economic development plan will be announced by the State Council. Based on the national socio-economic plan, The State Council will distribute the development goals and tasks to each provincial DRC. Then each province can compile the provincial socio-economic plan with the Provincial People's representatives. Referring to this procedure, this plan can be regarded as a carrier to deliver the aspirations from the National (top) to local (down).

## 2.2 The land use plans in China



**Figure 2.4. Chinese land use plan system**

Source: Land Use Planning (W. Wang, 2008)

The land for construction and agriculture is determined by the land use plan. The major task of the Chinese land use plan is academically described as “based on the socio-economic development plan, the territorial plan, and the regional plan to explore the land use system in order to maximize the land-use efficiency. Moreover the consideration of environmental resources conservation and local socio-economic condition is also required.” (W. Wang, 2008). In general, the major contents of the land use plan contain land supply and demand forecasting, and the land arrangement of agricultural, construction, environment, etc. For instance, in the land use plan the total amount of construction land and agriculture land is determined, also the general location of the land is arranged (e.g. [Figure 2.5](#)).

In the same administrative level, there are overall land use plan, detailed land use plan, and special land use plan to construct the Chinese land use plan system (W. Wang, 2008) ([Figure 2.4](#)). Moreover, the former is the plan basis of the last two. The essence of the overall land use plan is a rational arrangement of the national economic sectors from the perspectives of quantity, quality, and location (W. Wang, 2008). The major goal of overall land use plan is to macroscopically control and balance the land use for various economic sectors such as agriculture and industry, thereby to balance the amount constructive and unconstructive land (W. Wang, 2008).



Table 2.2 shows the land-use categories of Chinese land use plan. The detailed land use plan only focus on one specific land use, such as land for transportation or agriculture. On the other hand, the special land use plan is about a specific theme, such as basic farmland and land reclamation. Additionally, the basic farmland is the farmland that should be remained for farming permanently. The land use plan has 15-year planning period, and it will have the force of law when approved (W. Wang, 2008).

海淀区土地利用总体规划(2006-2020年)

### 北京市海淀区土地利用总体规划图

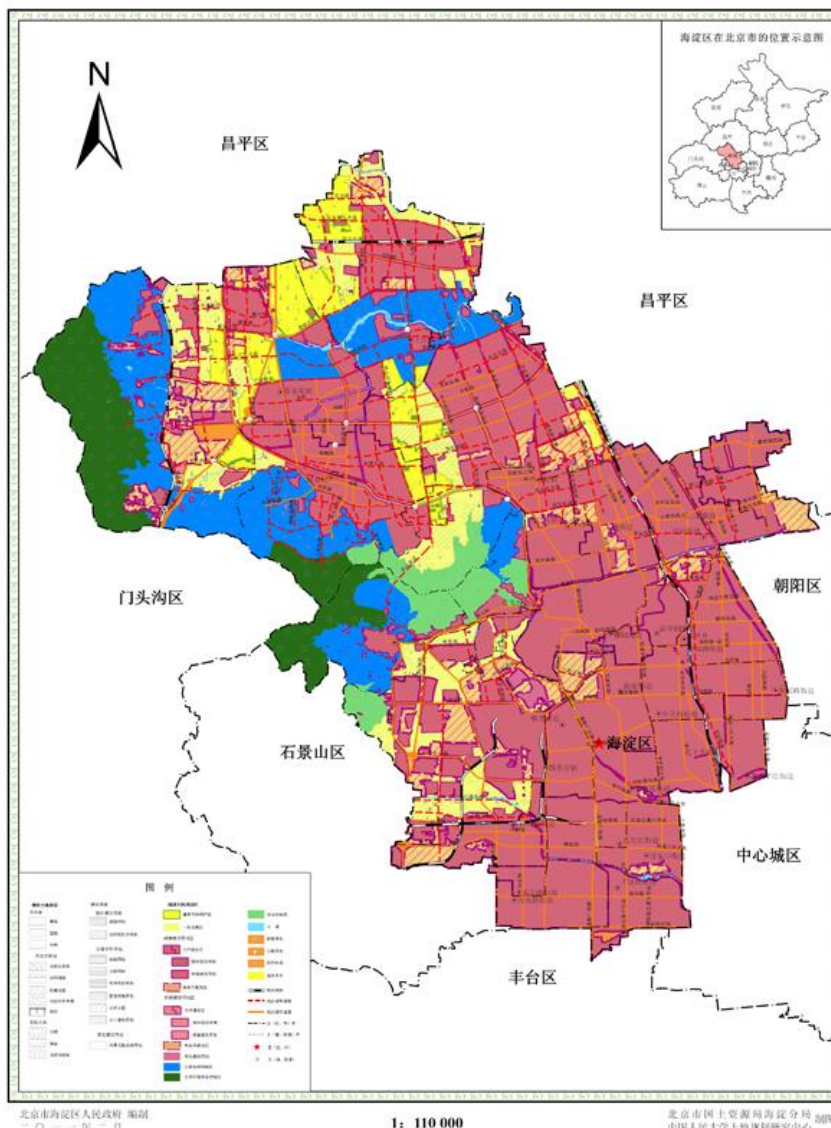


Figure 2.5. The overall land use plan of the Haidian District

Source: The overall land use plan of the Haidian District (HDG & BMCLR Haidian Branch, 2005)

The **pink** areas represent the construction land. The **bright yellow** areas represent basic agriculture land. The **light yellow** areas represent general agriculture land. The **blue** areas represent touristic land. The **dark green** areas represent nature conservation land. The **light green** areas represent green land.

**Table 2.2 The land-use category in land use plan**

Source: Land Use Planning (W. Wang, 2008)

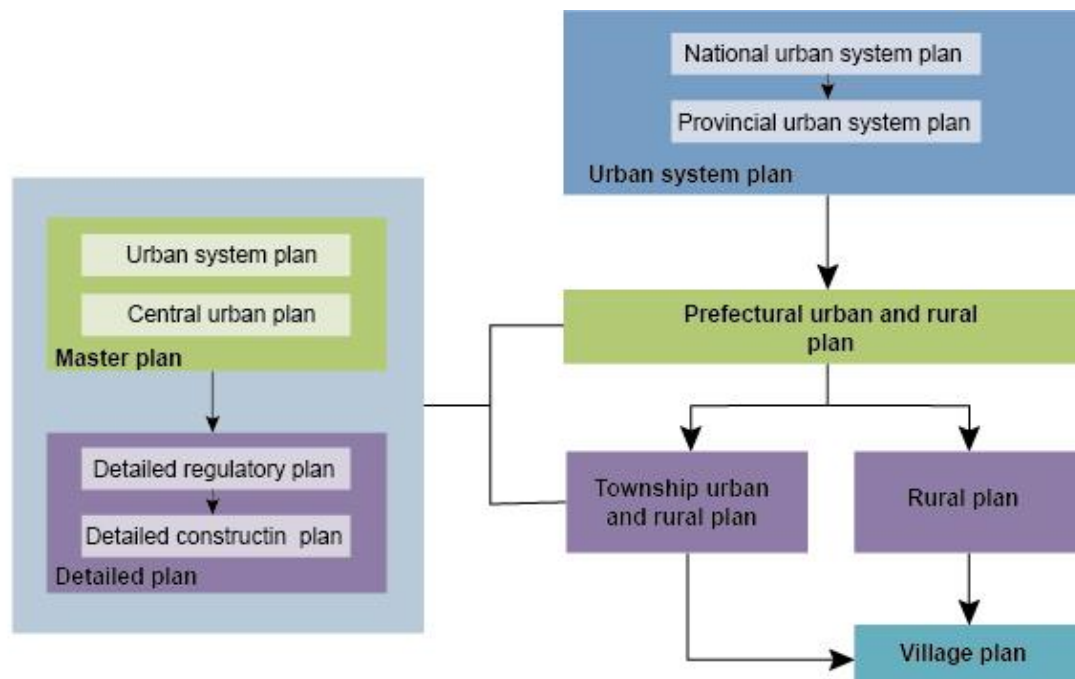
Land use category	Type of land use	Content
<b>Agricultural Land</b>	Farmland	Paddy field, irrigable field, and dry field
	Orchard	
	Forestry	
	Pastureland	
	Others	Facility agriculture field, rural road, pond, irrigation and water conservancy land, and ridge
<b>Construction Land</b>	Urban and Rural Construction Land	Urban land, township land, rural residential land, mining land, and others
	Transportation and Water Conservancy Land	Railway land, road land, civil airport land, harbor land, pipeline land, reservoir land, and hydraulic construction land
	Others	Scenic spot facility land, special land, and salt field
<b>Others</b>	Water Area	River, lake, and intertidal area
	Nature Conservation Land	

### 2.3 Urban and rural plan in China

The common definition of urban and rural plan (namely urban plan before 2008) in China is: a political and technical process concerned with development strategies, industry arrangement, urban land use arrangement, design of urban space and environment, as well as other elements that can guarantee an orderly development of settlements and communities such as the infrastructure system, transportation and environmental protection etc (Z. Wu & Li, 2010). In China, currently the urban and rural plan mainly focuses on the construction land, which is determined by the land use plan.

The current urban and rural plan system in China was established in 1989 with the enactment of the CPA (Z. Wu & Li, 2010). In the CPA, the major tasks of urban and rural plan in China are described as: "... to define the characteristics, designate function, and size of a municipality; to define the goals for economic-, social- and environmental development of a municipality; to prepare rational city plans and carry out constructions to meet the needs of development for socialist modernization." (NPC, 2008). According to the latest version of the CPA enacted in 2008, the Chinese urban- and rural plan contains urban system plan, prefectural urban and rural plan, township urban and rural plan, rural plan, and village plan (NPC, 2008; UPPMCC, 2011) (Figure 2.6). The prefectural and township urban and rural plan contains master plan and detailed plan respectively (NPC, 2008; UPPMCC, 2011). Same as the land use plan, the urban and rural plan also will have the force of law when approved (NPC, 2008; UPPMCC, 2011; Z. Wu & Li, 2010).

In addition, due to the urban system plan focused on national and provincial level, moreover, the rural plan and the village plan focus on rural areas, these plans are not in the scope of this thesis. On the other hand, the urban and rural plans on prefectural and township levels are the main research objects in this thesis. As mentioned, these two levels of urban and rural plans consist of master plan and detailed plan. The following paragraphs will focus on master and detailed plans, in order to have a better understanding on the prefectural and township urban and rural plans.



**Figure 2.6. The Chinese urban and rural planning system**

Source: Urban Planning Practice (UPPMCC, 2011)

### 2.3.1 Master plan



**Figure 2.7. The components of the master plan**

The compulsory contents of the master plan are the characteristics and designate function of a municipality or county, and the arrangement on urban land use, industry, infrastructures and public facilities, and green space, etc. (Z. Wu & Li, 2010).

The master plan consists of two types of plan, urban system plan and central urban plan (Figure 2.7). It is necessary to mention that the major contents of this urban system plan is similar to the urban system plan on national and provincial level, which is to identify the development strategies, set

development orientation, and distribution of resources (MCC, 2005). However, this plan only focuses on the municipal or township administrative area respectively. On the other hand, the central urban plan focuses on the central urban area to arrange urban land use, industry, and public facilities etc. Table 2.3 shows the urban land-use category. Furthermore, it is necessary to point out that the land use for agriculture or urban agriculture is not included in this category. Additionally, the planning period of master plan is 20 years (MCC, 2005; UPPMCC, 2011; Z. Wu & Li, 2010).

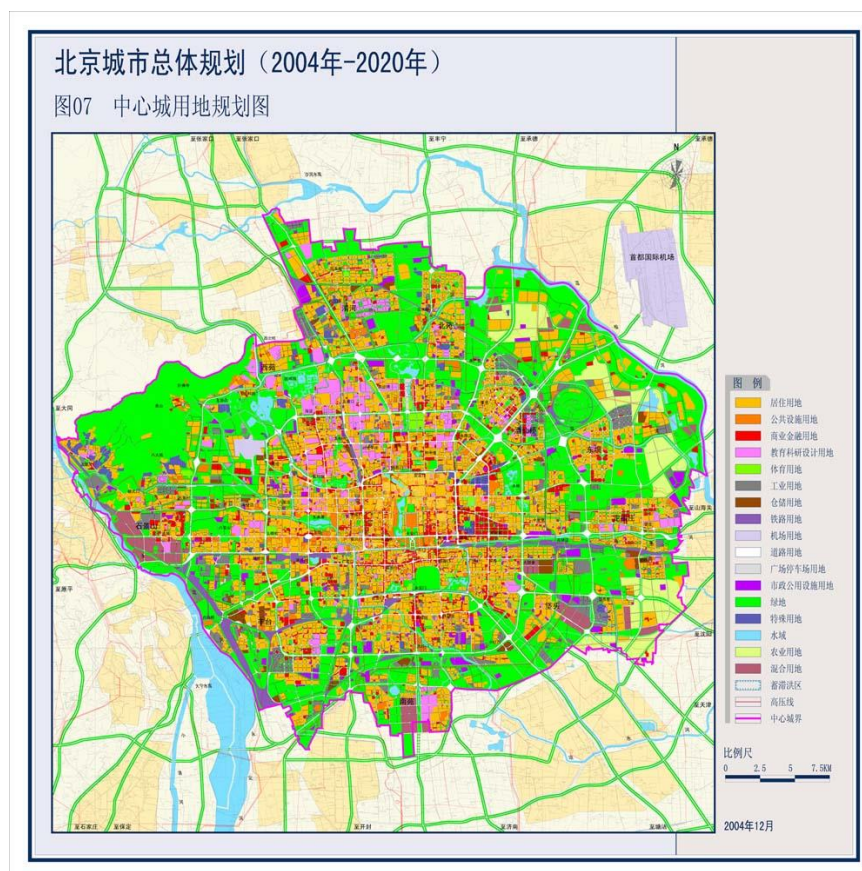
**Table 2.3. The urban land-use category**

Source: The Principles of Urban Planning (Z. Wu & Li, 2010)

Code	Urban land use
R	Residential
A	Administration and public service
B	Commercial and business facilities
M	Industrial
W	Logistics and warehouse
S	Road, street and transportation
U	Municipal utilities
G	Green space and square

For planners, a master plan compilation is a complicated and time-consuming procedure, with the external influences from the politics and governors. Following is a brief description of the essential steps of this procedure. The first thing need to determine in a master plan is the characteristics and designated functions of a

municipality or county. For instance, the characteristics of Beijing is “the capital city of China, the governmental and cultural center of China, world renowned ancient city and modern international city” (BMCUP, 2002). Accordingly, the designate functions of Beijing are determined, including the location of the Central government, of education, of the economy, etc. (BMCUP, 2002). With this procedure, the planners can have a general idea on the proportion of each land use (such as an industrial city might have a higher proportion of industrial land than a touristic city). Then, based on the conditions in and around the city or town, and the relevant policies and the suggestions of governors, planners can determine the general orientation of urban development. Such as in Beijing, preferred developmental orientations are east and south, due to the suitable construction conditions and the linkage with other economic areas (BMCUP, 2002). Afterwards, the planners will estimate the amount of population in next 20 years. With the population and the formulas from certain land-use standards, planners can calculate the total amount within each land use. Planners use this data to arrange the urban land use and compile the map shown as Figure 2.8.



**Figure 2.8. The master plan for central Beijing**

Source: Beijing Urban Master Plan 2004-2020 (BMCUP, 2002)



### 2.3.3 Regulatory plan and site plan



Based on the master plan, the sub-classification of each urban land use, land-use indexes, and physical environment need to be specified in detailed plan level (UPPMCC, 2011). Moreover, there are two types of detailed plan, which are detailed regulatory plan (regulatory plan) and detailed construction plan (site plan) (Figure 2.9).

**Figure 2.9. The components of the detailed plan**

Theoretically, the **regulatory plan** should plan for the entire administrative area of the administrative area. However due to the limitation on funding, currently the regulatory plan mainly focuses on the urban area (Xia & Tian, 2005). Based on the urban land use arrangement in master plan, a more detailed construction land use arrangement is compiled in regulatory plan (Xia & Tian, 2005). It means that the urban land use will be more specific after the regulatory plan. For example, in the regulatory plan, the Commercial and business facilities land (coded B) in master plan could be specified as the land for hotel (coded B14), retailing (coded B11), or restaurant (coded B13) (MHURD, 2011) in the regulatory plan.

There are six aspects that need to be regulated in the regulatory plan to guarantee a rational land use, and control environment capacity of central urban areas (Xia & Tian, 2005). These six aspects are land use, environmental capacity, building construction, urban design guidance, supporting facilities and infrastructures, social practice in a specific area in the city or town (MCC, 2005; Xia & Tian, 2005). Moreover, the major method to regulate these aspects is setting a series of land-use indexes (Table 2.4), based on the local standards. Otherwise, this plan will be considered as irrational and will not be approved (UPPMCC, 2011).

However, same as the master plan, there is no land use for urban agriculture in urban land-use category. Moreover, the regulatory plan has the force of law when approved. Then it is illegal to develop one project that is not fit with the land use. For instance, if the land use for one lot is for retailing, a hotel is not allowed on this lot then. Hence, due to the absence of the land use for agriculture or urban agriculture in the land use categories, the development of urban agriculture is limited in China (PMP, 2015).



**Table 2.4. Controlling system of regulatory plan**

Source: The Principles of Urban Planning (Z. Wu &amp; Li, 2010)

Elements	Indexes
<b>Land Use</b>	<ul style="list-style-type: none"> <li>- Land area</li> <li>- Land boundary</li> <li>- Land function</li> <li>- Compatible urban land use</li> </ul>
<b>Environmental Capacity</b>	<ul style="list-style-type: none"> <li>- Plot ratio</li> <li>- Building density</li> <li>- Population density</li> <li>- Green space ratio</li> </ul>
<b>Building Construction</b>	<ul style="list-style-type: none"> <li>- Building height limit</li> <li>- Building setback</li> <li>- Building interval</li> </ul>
<b>Urban Design Guidance</b>	<ul style="list-style-type: none"> <li>- Building volume</li> <li>- Building form</li> <li>- Building color</li> <li>- Street furniture</li> </ul>
<b>Supporting Facilities and Infrastructures</b>	<ul style="list-style-type: none"> <li>- Infrastructures</li> <li>- Public facilities</li> </ul>
<b>Social Practice</b>	<ul style="list-style-type: none"> <li>- Transportation behaviors</li> <li>- Environmental protection (noise, wastewater, solid waste etc.)</li> </ul>

Similar to the master plan, the compilation of a regulatory plan also needs the estimation of future amount of population to calculate the amount of each land use in this area. Moreover, the built-up area (e.g. the city center) is more complex to compile for planners than the unbuilt area (e.g. a new district for future expanding). For the built-up area, the planners need to conduct several times of fieldwork to have a better understanding of the current situation, such as the boundaries, function (retailing, residential or green spaces etc), and construction intensity (building density or plot ration etc) for each plot (e.g. [Figure 2.10](#)). Then, comparing with the outcomes based on the population estimation and calculation the planners can arrange the land use with the consideration of the index setting. Moreover, the regulatory plan also includes the urban design guidance, giving suggestions and recommendations on the styles, color, size, etc. of the architectures.



**Figure 2.10. The Regulatory plan for the Tongzhou District, area No.1 & 2**

Source: The regulatory plan for the Tongzhou District, area No. 1& 2 (UPDIS, 2011)

The **site plan** is another type of detailed plan, which focuses on physical environment design and construction. As a result, this plan is on project level, and more details are incorporated. Accordingly, the major tasks of this plan include spatial arrangements on buildings, green spaces, landscape design, and arrangements on inner transportation and infrastructures of the site (MCC, 2005). Moreover, the compilations of this plan should base on the relevant regulatory plan. For instance, the regulated plan determines the boundary line of one site, then, it is illegal to cross this line when arranging buildings; or the building density should not overpass the one set by regulatory plan. It is essential to mention that in China every project needs to be approved and to acquire the necessary permits through relevant authorities, and the site plan of one project is the major basis for this procedure (MCC, 2005). In other words, every project needs a site plan.

## 2.4 The Planning theories in China

Before moving to the discussion of planning theories in China, it is essential to introduce few terms, in order to have a better understanding. Faludi (1973) distinguished two types of planning theory: the theory *of* planning and the theory *in* planning. The former one focuses on the form of planning (Faludi, 1973; Tingwei Zhang, 2008). The latter concerns about the contents of planning (Faludi, 1973), with more technical element (Tingwei Zhang, 2008). This research will focus on the theories *of* planning.

Currently, the research on planning theory considerably lags behind the planning practice in China (Duan, 2005; Tingwei Zhang, 2008), which is revealed through considerable phenomenon. For instance, currently the planning education in China mainly focuses on training technical skill (e.g. drawing the maps of plans), instead of teaching planning theories. Moreover, some Chinese literatures of planning theories reveal that some Chinese scholars are not familiar with the planning theories, confusing different types of theories. Most theories that are illustrated in the articles are from the Western world. The reasons that lead to this situation are multiple, but can generalize in two. First, since 1978 when China started to reform and open-up, the Chinese cities developed and sprawled rapidly. Followed by the massive demand on planning (especially urban planning), hence, the major goal of Chinese planning is “getting things done soon” (F. Wu, 2016). Instead, an in-depth and critical discourse on the cases even planning become less essential (F. Wu, 2016). Second, the Western theories cannot entirely fit into the Chinese planning system and practice (Duan, 2005; Tingwei Zhang, 2008). Theories, including planning theories, are not static and not universally applicable (Tingwei Zhang, 2006). Alternatively, theories need to be studied and applied within certain context, including political and temporal aspects (Allmendinger, 2009; Duan, 2005; Tingwei Zhang, 2008). Moreover, there is a big difference between the Western and Eastern cultures. Hence, culture is another aspect need to be concerned when localizing the Western theories (Duan, 2005; Tingwei Zhang, 2008). Generally, the Western theories have to merge and transform into the Chinese temporal, political, and cultural context, otherwise will be forgotten afterwards (Duan, 2005).

However, due to lacking researches, currently there is no well-developed theory for the Chinese planning (Tingwei Zhang, 2008). One pioneer of planning theory research in China, Henian Liang, proposed a scheme (Leung, 2009; Tingwei Zhang, 2008). He claimed that there are three factors can influence on the planning theories in China ([Table 2.5](#)) (Leung, 2009; Tingwei Zhang, 2008). First are the traditional Chinese philosophies, which have significant impact on the Chinese culture, and has influenced on the Chinese political decision-making process over thousands of years (Shang, Ren, & Li, 2008). Second is the practice of socialistic theories in China, which is the theory highly influences on the Chinese politics. As one major part of the national economic plan, the socio-economic development plan is significantly influenced by the interpretations and practices of the socialistic theories in China (Tingwei Zhang, 2008). Thereby, the main contents of the socio-economic

development plan changes with the Chinese socialistic theories practice. Accordingly, the land use plan and the urban and rural plan are influenced as well. Last are the introduced Western theories in China. As two disciplines in China, the studies of modern land use plan and urban and rural plan are stemming from the West (W. Wang, 2008; Z. Wu & Li, 2010). Hence, the Western theories influences on these two plans considerably.

**Table 2.5. Three factors influencing the planning theories in China**

Source: The Planning Theories and Reform in Transitional China (Tingwei Zhang, 2008)

Influential Factors	Traditional Chinese Philosophies	The Practice of Socialistic Theories in China	The Western Theories
Influence	The authority guides and controls the society and economic, with a top-down and bureaucratic decision-making process. The public are educated to comply with the authority. Then the authority certifies their legitimacy of ruling by showing corruption-free governance, by offering stable and rich life to the public.	The authority guides and controls the social and economical activities and sources through a top-down planning system. The socio-economic development plan is the basic approach to guide economic and urban development. The plan compilation process focuses on the Central decisions and guidance, instead of public participation.	The decision-making process is restricted and adjusted through the bottom-up public participation. The procedure of public participation and decision-making are protected by law. On the other hand, due to over-emphasis on public participation, the efficiency will decrease accordingly.

#### 2.4.1 Traditional Chinese Philosophies

Thousand years ago, China experienced a golden age of traditional philosophies. Diverse philosophies bloomed and expressed their own thoughts and opinions on the temporal society and policy. Among all these philosophies, due to some historical issues, the Confucianism played a significant role of Chinese governance as well as urban management (Shang, et al., 2008; Tingwei Zhang, 2008). The Confucianism has several schools; but they also share some common ideas (Shang, et al., 2008).

From the political perspective, the Confucianism emphasizes on a top-down and hierarchical system (Shang, et al., 2008). It means that within this system, each level of authority performs its own duties; each sector plays its own role at its place. It is interesting to mention that during the feudal period, the Confucianism regarded this system as a form of law (Shang, et al., 2008). Breaking the system was equal of breaking law. Therefore, to some extent, the Confucianism was considered as a tool for emperors to centralize their ruling and control on peoples. Accordingly, the power from civil society was very weak (Gu, 2001). As return, through corruption-free governance the authorities offer rich and stable life to peoples (Tingwei Zhang, 2008). Nowadays, the influence of the Confucianism has considerably weakened politically. On the other hand, the philosophy of Confucianism has merged into Chinese life, culture and ethic (Y. Yu, 2010). For instance, Chinese still emphasizes on subordinating individual interests to common benefits (Y. Yu, 2010). Moreover, the current relationship among individuals is still similar to the Confucian hierarchical system (C. Li, 2008). Therefore, the Chinese planning system and planning practice still reveal the traces of the Confucian philosophy (Tingwei Zhang, 2008).

#### **2.4.2 The practice of socialistic theories in China**

Planning applies scientific approaches, embedding in politics (Faludi, 1973). Chinese scholars also describe that planning wanders between engineering sciences and social sciences (K. Wang, 2003). No matter in the West or China, it is significant to know that planning is political. Therefore, it is unavoidable to put planning into the Chinese political context.

Since the People's Republic of China established, the practice of socialistic theories experienced multiple changes. Even the core of socialism (developing social economy to realize common prosperity) remains the same; the interpretation and practice of socialism vary through time (Tingwei Zhang, 2008). Thereby, the policies and planning practice vary accordingly. After decades of chaos, the goal of Chinese socialistic practice returned to economic development in 1978, which was also the year for planning, especially urban planning to revivify, with gaining more attention due to the increasing demand of development (Tingwei Zhang, 2008). The golden age of planning initiates from 1990s when the slogan of "Development is of overriding importance" was proposed by Xiaoping Deng, and became the main theme of socialistic practice. Since then most Chinese cities stepped into a period of rapid development and dramatic urbanism. Within this context, planning played the leading role of development and construction, meanwhile, was regarded as a tool of

government to increase economic development (Tingwei Zhang, 2008). During this time, the economic efficiency of a project was prioritized by planning practice instead of other aspects such as social welfare or environment conservation (Tingwei Zhang, 2008). Since 2003, “building a harmonious society and scientific development” became the theme of socialistic practice. Then social welfare and harmonious development are frequently mentioned in policies; accordingly, they also started to become more important in planning practice (Tingwei Zhang, 2008).

Regarding to the reviewing, planning, as a governmental action, is significantly influenced by the socialistic practice in China (Tingwei Zhang, 2008). The themes and practice of planning vary with the themes and practice of socialism in China (Tingwei Zhang, 2008). Also, each period share some common grounds. The government takes the lead of economic development. It leads to a top-down and hierarchical decision-making system and planning system (Tingwei Zhang, 2008). The Five-Year Plan remained as a product of Chinese socialistic practice to guide and evaluate government actions and performance respectively (Deng, 2013; Tingwei Zhang, 2008). Thereby, the major task of planning and planning practice is to accomplish the political, economic, and construction goals from the government (F. Chen, 2007; Y. Chen, 2001; F. Wu, 2016; Tingwei Zhang, 2008). Moreover, even other aspects, social welfare and environmental conservation, are getting more important, the government still take economic development as priority. Similarly, it also reflects on the Chinese planning themes and practice (Y. Chen, 2001; Tingwei Zhang, 2008).

### **2.4.3 The Western theories**

With the end of the pure-planned-economy period, Chinese planners, especially urban and rural planners and land use planners, gradually started to think the relations between planning practice and socio-economic motivations (Duan, 2005). Then, the Western theories, as existing research outcomes, are introduced into China naturally.

### **Referring and applying the Western theories in Chinese context**

The first approach focuses on referring to the success of the Western theories and trying to apply them into Chinese planning system and practice, with the combination of Chinese context (Duan, 2005). This approach considerably contributes to the Chinese academic development of planning, especially of urban and rural planning, and of land use planning (Duan, 2005). Furthermore, among these theories, the influence from rationalism is particularly significant (K. Wang, 2003; W. Wang, 2008; Z.



Wu & Li, 2010). Referring to the description of the Chinese planning system above, “rational” is a frequently mentioned term. Furthermore, it also a key word in education, textbooks and standards of urban and rural planning, also land use planning. Taking urban and rural planning as example, until now, the main planning compilation procedure follows a rational routine, which contains current situation analysis and defining problem, data collection and analysis, proposing plans and alternatives, systematic assessment on alternatives, and decision-making, moreover, the planning outcomes in China are required to be reasoned and rational (Z. Wu & Li, 2010). There are a series of standards, which are also the results of scientific and rational calculation, experiments, and analysis, to regulate, guide, and control planning procedure and outcomes (MCC, 2005). For instance, the Code of the Urban Residential Areas Planning and Designing is a major national standard that guides planners to compile a residential area site plan, in order to guarantee the basic living environment, rationality, economical efficiency of land use (MCC, 2002). It contains the aspects that link to residential area plan, including unifying terms and their definition, offering formulas and tables to calculate land area of housing, facilities, green spaces, and population, recommending preferred layouts, regulating building interval distance, road width, and etc (MCC, 2002). Meeting the requirements of these standards becomes the first step of planning outcome evaluation (CP, 2016). This shows that the rationalism also affects the political perspective of planning management and regulation (F. Chen, 2007; K. Wang, 2003). On one hand, it leads to significant problems, which are simplifying planning procedures and excluding the majority of stakeholders (Allmendinger, 2009; F. Chen, 2007). On the other hand, it also increases the power and importance of involved stakeholders, including planners (Allmendinger, 2009; F. Chen, 2007; K. Wang, 2003). Within this context, most Chinese planners regard themselves as technical experts with high level in planning procedures; and their major task is to accomplish the goals and requirements from governments or other clients by compile a good plan with nice drawings (F. Chen, 2007; Y. Chen, 2001; K. Wang, 2003; F. Wu, 2016). Furthermore, they think politics is something far away from them (CP, 2016). In other words, most Chinese planners only realize the technical disciplinary side instead of the political or governmental side of planning (F. Chen, 2007).

Thereby, in reality, there are increasing contradictions between the increasing public awareness of democracy and governmental policies (Hao, 2007). Moreover, since 1980s, the theory of participative planning was introduced into the Chinese planning system, especially into urban and rural planning system (Hao, 2007; Sun, 2002). The

National People's Representatives have significant impact on the compilation of the Five-Year Plan. Moreover, a number of urban planners also are practicing this theory with different approaches. Such as the Kashgar's old town reconstruction, the planners actually communicated with all households in that area and designed tailor-made plans for them (Y. Zhu, Wang, & Yang, 2010). Another example is in Shanghai, where has an official website to update the information of the Master Plan for Shanghai 2040 compilation procedures to the public, and people can participate by filling in questionnaires and giving opinions via the website ("Shanghai 2040,"). Furthermore, the public participation is also included into planning process by national regulations. For example, the urban and rural planning regulations requires that gathering the public opinions and publicizing planning outcomes are compulsory phases of planning process (MCC, 2005; UPPMCC, 2011). However, in general, the practice of public participation planning is not doing well in China (Hao, 2007; Hu, 2005; Sun, 2002). The reasons are multiple, and it can refer back to the influences from the Chinese traditional philosophies and the Chinese practice of socialistic theories. Chinese planners are used to the top-down system, and due to the limitation of time and cost, they do not have much chances to consider public opinions (Y. Chen, 2001; Hao, 2007; Sun, 2002). On the other hand, the willingness of the public to participate is low as well (Hu, 2005; Sun, 2002). Moreover, for the people who have participative wiliness, most time there is no clear access for them to participate into the planning process (Hu, 2005). Even the willingness and demand of public participation is increasing, but the major planning and decision-making procedures remain in top-down (Hao, 2007).

### **The pragmatism in Chinese planning practice**

The previous chapter mainly illustrated the expected planning (rational and public participative in recent years) from politic and education perspectives. Referring to the planning practice, especially urban and rural planning, it mainly shows the characteristics of pragmatism, which is totally another story (F. Chen, 2007; Duan, 2005). Even most Chinese planners do not realize that this theory is underlying their planning practice.

As mentioned, since 1978 China stepped into the period of rapid economic development and urban construction, thereby, "getting things done soon" became the main theme of most governments as well as planners (Duan, 2005). Therefore, Chinese planning emphasizes direct and practical approaches to specific problems (Allmendinger, 2009; Duan, 2005; F. Wu, 2016). "Does it work" becomes a major

criterion to evaluate planning outcomes (Duan, 2005), accordingly, how to maximize the clients' benefits become an importance skill for a planner to acquire (Y. Chen, 2001). Furthermore some planners are anti-theory (Allmendinger, 2009; K. Wang, 2003), thinking the technical abilities that can produce visible results such as complicating actual plans, drawing graphs are the actual skills instead of researching or understanding (planning) theories (CP, 2016). This phenomenon also can refer to the Chinese planning education. Taking urban and rural planning as example, the education focuses on the theories *in* planning, the methodologies of physical environments designing and planning, and the knowledge of engineering (Y. Chen, 2001). Land use planning also reveals similar situation (W. Wang, 2008). Furthermore, Duan (2005) criticizes that in Chinese pragmatic planning practice, the technical criterion is tending to replace the value judgment criterion. Most Chinese planners lack the sense of responsibility to chasing for holistic and long-term benefits (Y. Chen, 2001; Duan, 2005).

As Allmendinger (2009) noted in his book, "...It also makes planners more than vulnerable to the charge that they are nothing more than blind operators of the system within they find themselves." (Allmendinger, 2009). Moreover, this can link to what illustrated above, most Chinese planners regard themselves as technical professions, helping clients to accomplish their goals and requirements (F. Chen, 2007; Y. Chen, 2001; K. Wang, 2003; F. Wu, 2016). Just like the metaphor Faludi (1973) used, planners are the servants hired by masters (governments and other clients). As the "professions work in bureaucracies" (Allmendinger, 2009), challenging the existing system is difficult for Chinese planners (Y. Chen, 2001). Therefore, different from the American pragmatic approach, regarding liberal-democratic framework as the basis (Allmendinger, 2009), Chinese planners just prefer to pursue the consensus between governments or other clients through negotiating even compromising (CP, 2016). In other words, in China, most planning activities happen between planners and governments or assigners, and other stakeholders are mainly excluded. As the powerless group within the planning procedures, planner should fully make use of their negotiation skills to induce the assigners into certain direction and to achieve consensus (CP, 2016; Forester, 1988). Moreover, cultural and social influences on pragmatic approach significantly, which sometimes leads to conflicts with rationalism (Allmendinger, 2009). Thereby, the rational political management and regulations of planning become the bottom-line of most Chinese planning practice (Y. Chen, 2001; CP, 2016).

## 2.5 Summary of the Chinese planning system

The Chinese planning system is considerable complex, consisting of the socio-economic development plan, the land use plan, and the urban and rural plan. Due to different origins, there are considerable difficulties and problems during the implementation phase of these plans. Therefore, integrating these three plans is necessary, which means that these three plans should have different but comprehensive focuses and tasks. Currently, the socio-economic development plan focuses on future development by setting relevant development indexes. The land use land puts efforts on balancing the land for construction and agriculture. Moreover, the urban and rural plan focuses on spaces, including setting development orientations and determining land uses.

The Chinese planning system is considerable hierarchical, with the tight connection with the government. The reasons that lead to this situation are the influences from the traditional Chinese culture and the Socialistic theories practices. Moreover, the Western theories have significant impacts on the land use plan and the urban and rural plan. The rationalism influences on these two plans' education and political management system. On the other hand, the Chinese planning practice shows the characteristics of pragmatism. Moreover, due to these cultural, social, and Theoretical influences, the planning system setting, and the political setting, Chinese planners and the public are more powerless than the governments or project investors. Most planners regard them as technical supporters to facilitate their clients to achieve their goals, and the public willingness are less considered during the planning practices.

### 3. Urban agriculture

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Referring the main research question, there are two key elements in this thesis, which are the Chinese planning system and the urban agriculture. This chapter will focus on the urban agriculture, including the definition and the benefits of urban agriculture, the characteristics of the urban agriculture in China.

#### 3.1 Describing urban agriculture

Urban agriculture can be generally defined as all agriculture that happens in and around urban area (Critchley, Bouma, & de Lange, 2011). Originally, the term of “urban agriculture” was only used by scholar and media, and recently has been adopted by official institutes such as the Food and Agricultural Organization (FAO) (Mougeot, 2000). Thereby, the definition of urban agriculture are required to be self-evident and clear (Mougeot, 2000). The FAO defines urban agriculture as “growing of plants and the raising of animals for food and other uses within and around cities and towns, and related activities such as the production and delivery of inputs, and the processing, and marketing of products.” (Van Veenhuizen, 2006; Van Veenhuizen & Danso, 2007). In other words, urban agriculture takes place in inner-urban and suburban areas, and comprises a wide variety of activities. The subdivision of urban agriculture can be intra-urban and peri-urban agriculture (Van Veenhuizen & Danso, 2007). The former one happens in inner urban areas. Usually this type of urban agriculture happens on vacant lands or plots, which are public (e.g. public parks, schools, or hospital), private (e.g. household backyards), or not suitable for construction. Due to the limitation on land area and price, the scale of intra-urban agriculture is relatively smaller than peri-urban agriculture (Van Veenhuizen & Danso, 2007). Peri-urban agriculture happens in suburban areas. It tends to have smaller scale but higher productivity, comparing with rural agriculture (J. Yu, Zhang, & Bai, 1998). Mougeot (2000) claims that the feature of urban agriculture is not only about location but also the aspects that link to urban economy, society, and ecology, such as urban resources (e.g. land, labor, and water, etc), urban condition (e.g. policy, land price, and market, etc), and urban system (e.g. urban food security, poverty, and ecology).

It is essential to point out that the regional discrepancies (such as climate, geographical condition, development condition, and local culture) also influence on urban agriculture (Cai & Yang, 2008; Van Veenhuizen & Danso, 2007), therefore the

interpretations, major function, and forms of urban agriculture shift through space and time (Mougeot, 2000; Van Veenhuizen & Danso, 2007).

After the general definition and classification of urban agriculture, the two models below disassembled urban agriculture in several phases or elements, offering clues of the aspects that can be impacted by the Chinese planning.

Smit et al (2001) claimed that urban agriculture consists of three phases:

- Pre-production – the prerequisite resources, inputs, and services that can guarantee a smooth conduct of urban agricultural activities;
  - Production – the generation of consumable and non-food production;
  - Post-production – the processing, distributing, trading, and recycling of products.
- (Smit, Nasr, & Ratta, 2001)



**Figure 3.1. Six fundamental conceptual elements of urban agriculture**

Source: Urban Agriculture: Definition, Presence, Potentials and Risks (Mougeot, 2000)

Moreover, another model is from Mougeot. He proposed six fundamental conceptual elements of urban agriculture, which are economic activities, production, location, areas, destination, and scale (Mougeot, 2000) (Figure 3.1). Following are detailed illustrations on these elements. Moreover, in order to explore the elements that can be impacted by the Chinese planning system, some interpretations from the Chinese planning perspective will be explained.

**Economic activities** refer to the interactions between agricultural production, processing and trading phases (Mougeot, 2000). Due to geographical proximity and quick resource flow, there are more interrelations of time and space between each phases, comparing to the rural agriculture (Mougeot, 2000).



**Production** comprises consumable and non-food production (Mougeot, 2000). The former one refers to the products that can be consumed by humans and livestock (such as crops, vegetable, fruit, livestock etc.). Moreover, the latter one (such as heat, biogas, fertilizer etc) is getting more important nowadays (Mougeot, 2000).

Currently the **location** is commonly regarded as “in and around” urban areas, and the debate on the geographical scope of this element still exists (Mougeot, 2000). From planning perspective, location is an essential element, which links to price of land, scale of project, proximity to relevant infrastructure, and accessibility to consumers.

The criteria of the **areas** of urban agriculture vary through scholars. It can be on-plot or off-plot, built-up or open-space (Mougeot, 2000). From planning perspective, the official land-use category (such as industrial, residential, economical, or agricultural etc) and the modality of tenure (such as lease, sharing, or commercial transaction etc) are mainly considered.

The major **destinations** of urban agricultural production are self-consumption and some trade (Mougeot, 2000), which can be food processing plants, wholesale markets, supermarkets, or recycling etc from the planning perspective.

**Scale** is about production system, which can be individual/family micro, small and medium enterprises, and large national/transnational undertaking (Mougeot, 2000). It is a result of comprehensive influence of market requirement, stakeholder, cooperation model, and location of urban agriculture.

The models of Smit et al and Mougeot are complementary to one another. Generally, the former one is broader than the latter one. Smit’s model offers a clue to categorize the elements from Mougeot’s model. The pre-production phase includes the elements of location, area, and scale. The elements of products can be included in the production phase. Moreover, post-production phase can link with the element of economic activities and destination.

### 3.2 Benefits of urban agriculture

Following is the illustration on the benefits of urban agriculture, to explain why it is essential for China or other countries to promote urban agriculture. The benefits of urban agriculture are well described in multiple literatures. Due to the differences of

developing and economic conditions, the investigation focused on the perspective of developing countries (including China).

**Food security** tends to be a major motivation to promote urban agriculture, which is an essential part of food source for lower-income groups (Smit, et al., 2001). During wartime and natural disaster, urban agriculture can enhance the availability of food (De Zeeuw, Veenhuizen, & Dubbeling, 2011). Moreover urban agriculture has the ability to offer the products that are not suitable for rural agriculture, especially perishables, because of the proximity to urban consumers (Smit, et al., 2001). Furthermore the accessibility of fresh, healthy, and affordable food also can be increased by urban agriculture (De Zeeuw, et al., 2011).

Relating to food security, **health and nutrition** also are the benefits of urban agriculture. The income and food price have significant impact on households' diet (De Zeeuw, et al., 2011). Due to high food prices some low-income households have to decrease their number of meals or purchase low-price food with less nutritious. Moreover, it leads to increasing number of malnourished, overweight, and obese people (De Zeeuw, et al., 2011). Urban agriculture can help households to decrease expense on food and increase income by producing food and selling surplus products respectively. Due to that, urban agriculture can enhance the nutritional status of households (Mougeot, 2000; Smit, et al., 2001). Moreover, the households' physical status also can be improved by participating urban agricultural activities (Lock & De Zeeuw, 2001).

The contribution of urban agriculture on **urban poverty alleviation** is significant as well. De Zeeuw et al (2011) mentioned that urban agriculture benefits the lower-income groups mainly through three ways. First, urban agricultural food production can reduce the expense on food, which can create more households savings. Second, household can make more money by selling surplus food. Last, becoming agricultural labor is another way to gain their household income (De Zeeuw, et al., 2011; Mougeot, 2000; Smit, et al., 2001).

Increasing the value of land is one of the **economic** benefits of urban agriculture. It can be achieved through adding the value of the land itself, adding the value of the land around the urban agriculture site due to the improved environment, and adding the value of the land that is not fit for construction or hard to make economic output (De Zeeuw, et al., 2011). Furthermore income generation, job creation, and enterprise

development also can be considered as economic benefits (De Zeeuw, et al., 2011; Smit, et al., 2001).

The **livability** of a city can be increased through microclimate modification, and urban agriculture can contribute on improving air quality, increasing humidity, and reducing temperature (Smit, et al., 2001). It is also an approach to green the living environment of a city, and to offer recreation and interaction spaces for urban residents (Smit, et al., 2001). Furthermore, greened urban space by urban agriculture can improve the aesthetics of urban landscape (Lovell, 2010).

Enhancing **sustainability** of a city is another frequently mentioned benefit of urban agriculture. With production, cities can sustain themselves better. Meanwhile, decreasing transportation distance can reduce green house gas emission. Furthermore, because of recycling waste and wastewater, less urban resources are demanded by urban agricultural activates (De Zeeuw, et al., 2011; Lovell, 2010; Smit, et al., 2001). Additional, biodiversity is also a contribution of urban agriculture (Smit, et al., 2001).

### 3.3 Urban agriculture in China

The concept of urban agriculture was introduced in China for addressing the problems and challenges in China (Cai, 2010; Cai & Luo, 2004). Moreover, in order to promote a better development of urban agriculture in China, the Chinese scholars put efforts on defining and characterizing the urban agriculture that fits with the Chinese context (J. Yu, et al., 1998). It leads to the divergence on interpretation and motivations between China and the West, which will be explained in following paragraphs.

The benefits brought by urban agriculture on health and nutrition, livability, and sustainability, are mainly considered in the West. For instance United States, urban agriculture development emphasizes on improving the life quality and physical status of immigrants and citizens (Lovell, 2010). During 1970s, over 10,000 vacant lots in New York City were transformed into community gardens. For New Yorkers urban agriculture is not only about food production but is also about education, community development , improving nutritious and physical status, as well as reusing resources etc (Cohen, Raynolds, & Sanghvi, 2012). Similar story also happens in Canada. As a part of the Toronto Food Strategy, urban agriculture is promoted to deal with the issues that relate to accessibly and affordability of fresh and healthy food,

sustainability of city, community development, and culture heritage etc (Roberts, 2001).

The academic origin of urban agriculture in China is not from the West, but is from Japan (J. Yu, et al., 1998). As a populous country with limited land and water resource, Japan started to research on urban agriculture very early, tracing back to 1930s (J. Yu, et al., 1998). The urban agriculture in Japan was defined as “a special form of agriculture, allocating in the industrial, commercial and residential districts in urban or peri-urban areas.” (Aoshika; & Kondō, 1935). Moreover, it was also characterized to have high productivity and close attachment to urban economy (J. Yu, et al., 1998). Due to the similar situation on population density, resource reserves, and development pattern between China and Japan, the research outcomes of urban agriculture in Japan have instructive influence on that in China (Cai & Yang, 2008).

With the influences from Japan, food security, urban poverty alleviation, economic benefits, sustainability, and livability are the essential points of the Chinese urban agriculture promotion. Currently major Chinese scholars define urban agriculture as “a form of advanced agriculture that is urban-rural integrated and has high production capacity, allocating in urban or peri-urban areas. Cultivation, fisheries, herding, food processing, food transportation etc are included.” (Qiu, Cheng, & Zhu, 2005). This definition reveals a trend that Chinese scholars link urban agriculture with modern technology, intensive production, and considerable profits (Fang, 1999; H. Guo, 2004; J. Yu, 1999). In order to have a better understanding of the Chinese urban agriculture, it was summarized in four characteristics.

Firstly, the interpretation of urban agriculture in China is broader than the West. Instead of defining urban agriculture from spatial perspective mainly, Chinese scholars also focus on economic and temporal perspectives. Urban agriculture in China also is regarded as a part of urban economy, hence, the urban demands have significant impact on the urban agriculture supply and produce (UAE1, 2015). Moreover, there is a trend that Chinese scholars and authorities equate urban agriculture and modern urban agriculture (Fang, et al., 2008). “Modern” is a term refers to time that is after World War II (PMP, 2015). One reason to combine urban agriculture with the term of “modern” is that the urban agriculture in China is required to have intensive production, because of limited land and water resources. Hence, it needs the supports from agricultural facilities, mechanization, and high technology to increase productive of urban agriculture in China.

Secondly, the Chinese urban agriculture practices mainly happen in suburban instead of inner-urban areas. The reasons behind this phenomenon are various. China is in the development phase with high-speed urbanism, which leads to accelerated urban development, rapid urban sprawl, and vague urban boundary (UAE2, 2016). Therefore, there are uncertainties and risks to implement urban agriculture in inner-urban areas or fringes, because the urban agriculture initiators might lose their land due to urban expanding. In practice, most initiators also can get a considerable compensation due to land transfer. In addition, in most cases they have the willingness to accept the compensation and leave (PMP, 2015). As results, the urban agriculture projects move further and further from inner-urban areas. Furthermore, due to the lower land price and development density, suburban areas can offer more and better quality of land and other resources (e.g. water) for initiators to develop urban agriculture. Conversely, intra-urban agriculture currently is initiated by individual hobbies or interests in China (PMP, 2015; UAE1, 2015). The planning can hamper the development of intra-urban agriculture. As mentioned, there is no urban land-use category for urban agriculture or agricultural activities in inner-urban areas. Thus, intra-urban agriculture is illegal in some cases, like the case mentioned, growing food on roof without permission of relevant authorities. Moreover there are some debates on health risks, pollutions, or urban management difficulties of urban agriculture (De Zeeuw, et al., 2011; Smit, et al., 2001). Therefore, the government or authorities' attitudes on intra-urban agriculture in China are considerably neutral, without supporting nor opposing (PMP, 2015; UAE2, 2016).

Thirdly, urban agriculture contributes on accelerating the urban-rural integration in China via decreasing the income and life quality disparity between urban and rural residents. Urban agriculture can also create employment especially for rural immigrants in cities (Cai, 2010). Hence, since urban-rural integration became one national development strategy in China, urban agriculture has been considered as an approach to alleviate urban and rural disparity. Furthermore, it is another reason why the Chinese urban agriculture happens more in suburban areas.

Finally, the target consumers of urban agriculture also are different between China and the West. Compare to the West, the major consumers of urban agriculture in China are from middle and even higher classes (Shi et al., 2011). With more Chinese consumers distrusting the food from wet markets or supermarkets, more initiators see the potential market of urban agriculture, and take organic, ecological, healthy, and

safe food products as selling point (PMP, 2015). They target the customers or consumers who have certain economic capacity. Therefore, compare to the West, high-end products plays an important role in Chinese urban agriculture.

Additionally, it is essential to point out that there is significant geographical discrepancy on climate, landform, developmental level, culture etc in China. Hence, the contents illustrated are general descriptions of urban agriculture in China. When the study moves to local level (e.g. Beijing in this thesis), some local- and special-conditions that will influence urban agriculture also are need to be considered, which will be specified in the case study part.

### 3.4 Summary

To summarize, urban agriculture can be described through three phases from Smit, which are pre-production, production, and post-production. Meanwhile, Mougeot provided another model that consists of six elements, including economic activities, production, location, areas, destination, and scale.

Research on the benefits of urban agriculture from a developing country can reveal clues about the motivations of promoting urban agriculture in China. Moreover, this research can also indicate a further understanding on the special characteristics of the Chinese urban agriculture.

Due to different context between China and the West, the interpretations on urban agriculture also reveal divergences. The urban agriculture in China tends to locate in the peri-urban areas for larger scale and intensive production, aiming at middle-class consumers.



## 4. Planning for urban agriculture in China

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Previous two chapters explained the Chinese planning system and urban agriculture respectively. This chapter, the investigation will focus on exploring the relations between the Chinese planning system and urban agriculture.

A brief review, the socio-economic development plan, land use plan, and urban and rural plan constitute the Chinese planning system, focusing on setting development goals, determining the amount and location of construction and agriculture land, and arranging the construction land uses accordingly.

Referring to the major tasks of each plan and the descriptions of the elements from Mougeot, the **location**, **areas**, **scale**, and **production** can be included. Moreover, from the planning perspective, the destination of products can be interpreted to the locations for **trading** (e.g. supermarket or door-to-door delivery), for **processing** (e.g. the food processing factories).

Furthermore, when thinking from the Chinese planning perspective, more elements also can be explored. **Infrastructure** (e.g. water supply, wastewater management, electricity supply, and heat supply etc) and **site plan** are major contents of Chinese planning, and are essential for the per-production phase of urban agriculture. Moreover, the production phase can also be extended. The **form** of production (e.g. mechanized agriculture or tourism agriculture) is attached to the tasks of Chinese planning. The **waste management** (e.g. composting) can be considered as part of post-production phase.

Figure 4.1 summarizes the findings above. The socio-economic development plan can influence the location, scale, infrastructure, and all the elements of production and post-production. The land use plan has impact on location and area. Moreover, the urban and rural plan can effect on location, area, infrastructure, site plan, and all the elements of post-production.

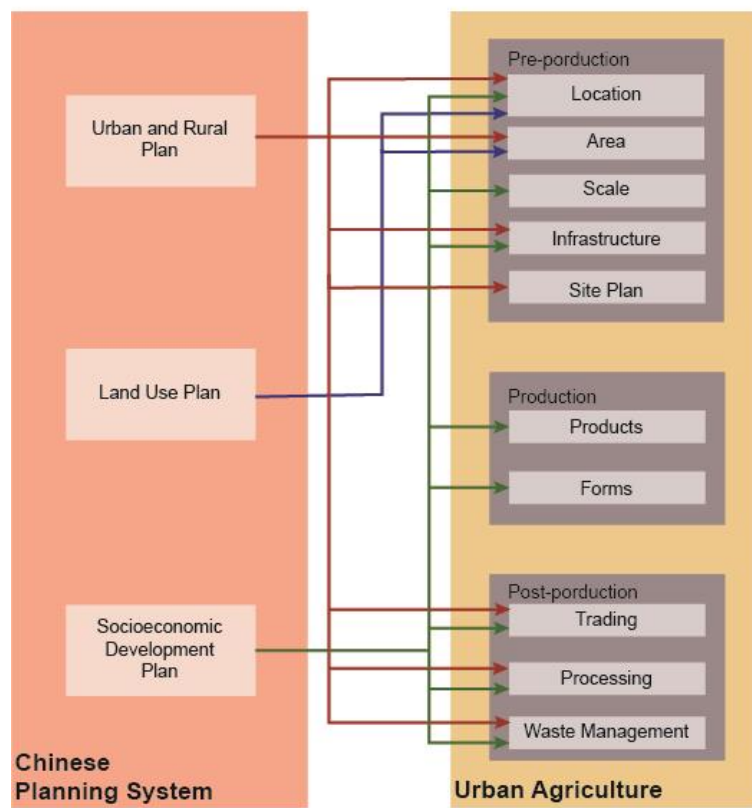
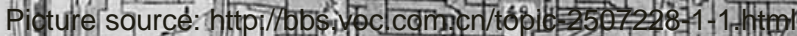


Figure 4.1. Planning for urban agriculture in China



## 42

In this part, the results of the case study in Beijing will be presented. The case studies have three steps. First, the relevant local conditions in Beijing will be illustrated, to have a better understanding of the motivations and expectations of promoting urban agriculture. Second step is an investigation on the plans that are relevant to the urban agriculture in Beijing, obtaining the overall vision of what the expected urban agriculture is like in Beijing. Third, explore how the plans influence on the urban agricultural projects' compilation and realization in Beijing via an in-depth investigation on two urban agricultural projects.

Before starting, a brief introduction on Beijing is necessary as illustrated, Beijing has the priority and leading position on piloting and researching new approaches and initiatives. Hence, in Beijing there are considerable amount of research, projects, and outcomes available for following research and study. Moreover, it is the main reason to choose Beijing as the research subjective.



**Figure 4.2. Beijing in China**

Note: Red spot presents Beijing

Beijing is on the North China Plain (Figure 4.2). In general, the north-west part of Beijing is the mountainous area and the southeast is the flat area, with averagely 850 meters (m) of altitude difference. The total area is 16,410.54 km<sup>2</sup>. The climate in Beijing is typical sub-humid continental monsoon climate with distinct four seasons. It has hot and humid summer, cold and dry winter that is not suitable for most agricultural activities, short spring and autumn.

Beijing has the highest precipitation in Northern China, while the seasonal distribution is uneven mainly in summer time (China Weather, 2013). Until 2014, Beijing has around 21.5 million permanent residents, and roughly 18.6 million of them are urban residents (Beijing Daliy, 2016). Furthermore, it is estimated that the number is still increasing. Beijing is one of the municipalities that are directly under the Central Government (country level). Thus, according to the Chinese administrative system, Beijing Municipality is on the provincial level.

Before the case study, it is necessary to scope the geographical range of the urban agriculture in Beijing. According to the 12<sup>th</sup> Five-Year Special Socio-economic

Development Plan for Urban Agriculture in Beijing (the SDPUAB), the urban agriculture in Beijing is defined as all the agricultural activities happen in the administrative area of Beijing (BMCRA & BMG, 2011).



## 5. The urban agriculture in Beijing

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The starting point of the urban agriculture in Beijing is 2008 when Beijing successfully organized the Olympic Games. Since then, the Beijing Municipal Government (BMG) shifted their focus from economic development and physical construction to social construction, technology innovation, and sustainable development (J. Guo, 2008). Moreover, science 2007 transforming the agriculture in China towards modern and facilitate agriculture had been added in national agenda (Xinhua News, 2007). Within this macro background, urban agriculture was firstly proposed at the period of 11<sup>th</sup> Five-Year (2006-2010). Beside these political motivations, the social and environmental issues below also led to the promotion of the urban agriculture in Beijing.

### 5.1 The origins of the urban agriculture in Beijing and the expectations

There are plenty approaches to contribute on the social-, technical-, and sustainable-development in Beijing, and then it is necessary to know why the BMG decided to promote urban agriculture as one of the approaches. Therefore, this chapter will focus on the social and environmental motivations on promoting urban agriculture in Beijing, which can be summarized in four major issues. Furthermore, these issues and corresponding requirements determine what the urban agriculture is like in Beijing, which will be illustrated in this chapter too.

#### Urban-rural dualistic development

The dualistic development between urban and rural areas is one essential reason to promote urban agriculture in Beijing. Due to long-term dual development of urban and rural areas, Beijing has significant disparity between urban and rural residents. People in rural areas go to urban areas, chasing for higher income and better life quality. It is estimated that Beijing has more than 85% of population live in urban areas. In 2010, the annual income difference between urban and rural residents was 15,811 RMB (around 2,200 EUR) (BMG, 2011). Accordingly, it leads to the decrease of population (labor forces) in small towns and villages, and decreasing investment on social insurance and infrastructures.

The decreasing farmland of farmers is another aspect of this issue. As shown in [Table 5.1](#), The farmlands were decreased 74 km<sup>2</sup> in Beijing between 2006 and 2010, moreover this number is estimated to be 113 km<sup>2</sup> in next decade (BMG & BMCLR,



2009). With the efforts during the 12<sup>th</sup> Five Year, the urban-rural integration policy has made impacts on considerable fields, including urban system plans, industrial integration, and eco-system development etc. Moreover, the annual income of rural residents has increased 9% in 2010 (BMG, 2011). However, compared to the development of urban areas in Beijing there is still a long way to go, and the BMG has high expectation on urban agriculture on improving this situation (BMCRA & BMG, 2011; HDG, 2011).

**Table 5.1. Land-use indexes in Beijing**

Unit: km<sup>2</sup>

Source: Beijing Overall Land Use Plan 2006-202

Land Use Category		2010		2020		2006—2010 Difference		2010—2020 Difference		2006—2020 Difference	
		Area	%	Area	%	Area	%	Area	%	Area	%
<b>Total</b>		16,411	100	16,411	100	0	0	0	0	0	0
<b>Agriculture Land</b>	Total	11,831	72.1	11,904	72.5	776	4.7	63	0.4	849	5.1
	Farmland	2,260	13.8	2,147	13.1	-74	-0.4	-113	-0.7	-187	-1.1
	The rest	9,571	58.3	9,757	59.5	850	5.2	176	1.1	1,036	6.4
<b>Constructio n Land</b>	Total	3,480	21.2	3,817	23.3	250	1.5	337	2.1	587	3.6
	Urban and rural constructi on land	2,520	15.4	2,700	16.5	124	0.8	180	1.1	304	1.9
	The rest	960	5.8	1,117	6.8	126	0.7	157	1	283	1.7
<b>Unused Land</b>		1,100	6.7	690	4.2	-1,026	-6.3	-400	-2.4	-1,436	-8.8

### Limited land and water resources

Beijing has significant shortage on land and water resources. As one of the most populous cities, the population density in Beijing was 1,311 people per km<sup>2</sup> in 2014 (BMBS, 2014) while this number in the Netherlands was roughly 500 people per km<sup>2</sup> (The World Bank, 2016). Moreover, around 70% of the land in Beijing is mountainous area, which is not suitable for cultivation or construction (China Weather, 2013). As results, the reserve land resource is not enough in Beijing. This problem leads to the contradiction between the land demands of urban construction and agricultural development, which makes the urban-rural integration more complex.

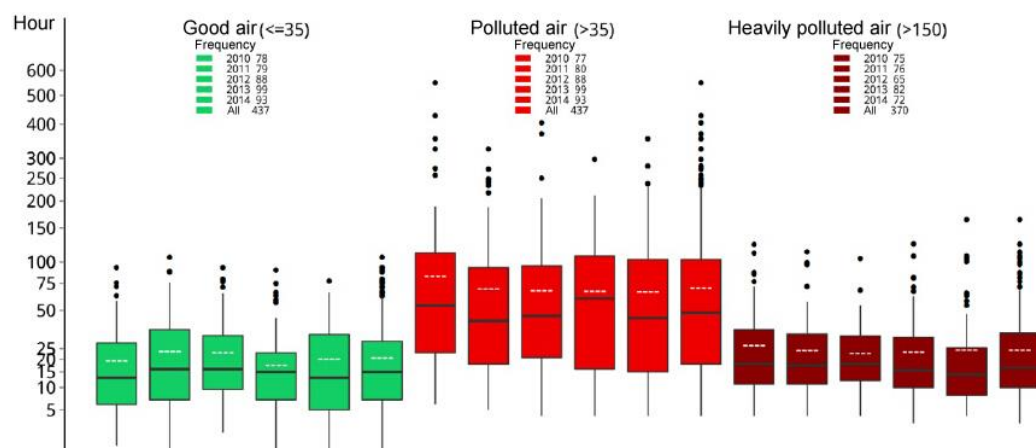
Beijing also has the problems on water shortage. The per capita water resource in Beijing is less than 300 m<sup>3</sup>, which is 1/6 of that of the nation average and 1/25 of world average (BMCRA & BMG, 2011). Hence, how to create more value with less input on land and water as well as other resources is always a challenge for Beijing.

### Environmental degradation

Beijing has serious environmental issues, which is not news anymore. From 2010 to 2014, Beijing experienced 437 days with air pollution, averagely 1.7 times per week and 70 hrs every time (Figure 5.1). It means that the residents in Beijing had to suffer from air pollution roughly 5 days every week (S. Chen, 2015). Despite the influence from wind speed, temperature, and humid, the fossil fuel combustion for transportation and heat supply is also one major reason leads to air pollution in Beijing (S. Chen, 2015). Currently the major heating supply approach for greenhouses in Beijing is combusting coal (PMP, 2015).

Gale and sand blowing are another air issue in Beijing, the days of sand blowing was continuously increasing between 2000-2002 (X. Zhang, Li, Xie, Wang, & Li, 2005). Therefore, a systematic green space that includes agricultural space is highly proposed to improve the air quality (BMCUP, 2002).

Not only the air issues, this city is also struggling with the soil pollution due to incorrect agricultural activities including overusing pesticides and fertilizer etc (X. Li, Lu, & et al, 2006). Some basic farmland in Beijing already has the pollution caused by heavy metal, especially Cadmium (X. Li, et al., 2006).



**Figure 5.1. The number of days with good, polluted, and heavily polluted air in Beijing during 2010-2014**

Note: The green is good, the red is polluted, and the dark red is heavily polluted

The Y-axis is hours and the X-axis is year

Source: Beijing Air Quality Assessment Report 2010-2014 (S. Chen, 2015)

### Food security and safety problems

Similar to most places in China, Beijing is also struggling with the problems from food security and safety. For the consideration of security, Beijing takes food security as an important issue. However due to the limited resources of land and water, as well as weather and nature hazard, food security is a challenge to Beijing (BMCRA & BMG, 2011). Therefore, the BMG proposed that the self-sufficient ration in Beijing should achieve 28% in 2010, and should increase to 35% in next five years (BMCRA & BMG, 2011). Additionally, [Table 5.2](#) shows the expected self-sufficiency percentages of different agricultural products during 2010-2015.

From the public perspective, food safety has been concerned over decades. Due to the large area and complexity of food supply system in Beijing, even in China, the challenge on food safety management is considerably difficult. The distrust from the public is another serious issue. For instance, from the data of sampling, over 97.36% of food in Beijing meets the relevant standard in 2010 (BMG, 2010). However, based on one survey in next year, more than 40% of the respondents in Beijing did not trust the food from markets or supermarkets, showing the food industry was the most distrusted industry in that year (Xinhua News, 2012). Therefore, it is challenging for Beijing to earn the public trust on agriculture and food back now.

**Table 5.2. The goals on food self-sufficiency and food quality in Beijing between 2010-2015**

Unit: percentage

Source: 12<sup>th</sup> Five-Year Special Socio-economic Development Plan for Urban Agriculture in Beijing (BMCRA & BMG, 2011)

Index	2010 (%)	2015 (%)	Increase (%)
<b>Vegetable Self-sufficiency</b>	28	35	25
<b>Pork Self-sufficiency</b>	30	30	---
<b>Egg Self-sufficiency</b>	56	66	17
<b>Milk Self-sufficiency</b>	64	68	6
<b>Poultry Self-sufficiency</b>	62	70	12
<b>Aqua Product Self-sufficiency</b>	12	15	129
<b>Agricultural Product Sampling Percent of Pass</b>	95	98	3
<b>Percentage of Pollution-free Product</b>	41.6	50	20

As mentioned, the development of the urban agriculture in Beijing is the result of the interaction between political requirement the local social- and environmental- issues.

Furthermore, these impacts determined what the urban agriculture in Beijing is like, which can reflect on various plans and policies. Below is a summary on the major expectations on urban agriculture from the BMG after referring to various relevant documents.

### **Urban-rural integration**

Decreasing these disparities is the major goal of promoting the urban agriculture in Beijing. As illustrated, since the disparities on income and life quality between rural and urban residents is getting significant in Beijing, urban agriculture has been proposed as one major approach to improve the urban-rural integration (BMCRA & BMG, 2011).

### **Intensive land use and production**

Intensive land use is one basic principle of the development in China, which also need to reflect on the urban agriculture. Therefore, the urban agriculture in Beijing is expected to have intensive productivity, thereby to alleviate the challenges from the limited resources and the need of urban-rural integration.

Furthermore, this expectation leads to several preferred characteristics of urban agriculture in Beijing. First is (high) technology, which can contribute on improving producing methods, infrastructures, and facilities. Accordingly, the productivity can increase. The agriculture with high technology was required to contribute over 68% of the total production until 2015 (BMCRA & BMG, 2011). Second, innovation is an approach to generate new technologies (such as vertical agriculture) and new business models (such as community supported agriculture (CSA)) to increase the output of urban agriculture. Circular agriculture is relatively new, aiming to reduce the need of resources (BMCRA & BMG, 2011).

### **Multifunction**

Based on the documents, it also reveals that the BMG prefers the urban agriculture with more than one function. During the 11<sup>th</sup> Five Year (2005-2010), four major functions of urban agriculture were determined, which were food production, environment conservation, livability improvement, and demonstration effect (BMCRA & BMG, 2011). Furthermore, these four functions can blend with one and other. For instance, over 4600 km<sup>2</sup> of production land are integrated with other green spaces to build up the green system in Beijing for wind sheltering, sand fixation, and creating agricultural landscape. Furthermore, the urban agriculture in Beijing is encouraged to

not only focus on primary industry but also secondary and tertiary industry, such as integrating agricultural production with food processing industry or rural tourism (BMCRA & BMG, 2011). This approach contributes on increasing the output value of urban agriculture and the income of local rural residents (BMCRA & BMG, 2011).

Some urban agriculture projects in Beijing also have the function of demonstration. Moreover, these projects usually blend with other functions such as production, tourism or education (BMCRA & BMG, 2011). The demonstration projects can stimulate the development of surrounding areas, improving and developing agricultural technologies, or attract more investments on urban agriculture (BMCRA & BMG, 2011). Moreover, with the pressure from the serious food scandals, the demonstration projects are commonly considered as one approach to rebuild the public trust on food safety (Du, Cai, Guo, & Fan, 2012).

## **5.2 Major plans for urban agriculture in Beijing**

The previous chapter pictured what the urban agriculture is like by explaining the reasons of promoting urban agriculture in Beijing and the corresponding expectations on it. This chapter will concentrate on the relevant plans within the planning system, to have a better understanding of the relations between the plans and the urban agriculture in Beijing (e.g. how these expectations reflect on the plans and how urban agriculture is planned by different plans in Beijing).

Generally, there are three relevant plans in the Beijing Municipal level, which are Beijing Urban Master Plan 2006-2020 (BUMP), Beijing Overall Land Use Plan 2006-2020 (BOLUP), and Special Socio-economic Development Plan for urban agriculture in Beijing 2010-2015 (SDPUAB). There is a hierarchical relationship among these three plans (Shown in [Figure 5.2](#)). The BUMP is the highest one to guide the rest of two, and the SDPUAB is the lowest, taking the others as planning basis. These three plans will be illustrated from top to down respectively. Additionally, these plans are the latest versions during the research period.



**Figure 5.2. The relationships among the plans in Beijing**

### **5.2.1 Urban agriculture in Beijing Urban Master Plan 2004-2020**

The BUMP mainly plans for the urban agriculture in Beijing through two perspectives, which are strategy setting and spatial arrangement. The former focuses on guiding the general development of urban agriculture and the latter is an overall spatial arrangement of urban agriculture.

Through the strategic setting, the BUMP defined the characteristics that the urban agriculture in Beijing should have and the development goals. The BUMP requires the urban agriculture in Beijing to be urban-rural integrated, highly productive, and environmental-friendly. Moreover, the BUMP only required the urban agriculture to contribute roughly 1% of the Per Capita Gross Domestic Product (GDP) as the primary industry, while secondary and tertiary industry are 29% and 70% respectively (BMCUP, 2002). Instead, the urban agriculture is encouraged to integrate with other industrial sectors, as one urban-rural integration strategy of Beijing. Via facilitating agricultural development, agricultural structure upgrade, and agricultural technology development (BMCUP, 2002).

In BUMP, urban agriculture also is planned from spatial perspective. According to BUMP, urban agriculture is specifically allocated in the mountainous regions of Beijing, because of the rich natural and touristic resources. Moreover, parts of the plain areas are proposed to develop facility agriculture, touristic agriculture, and agro-products processing industry to increase the added value of agriculture (BMCUP, 2002). In addition, for the consideration of environment conservation, urban agriculture is integrated with the green space system of Beijing. In BUMP urban agricultural farms are considered as a form of the green corridor between regions or functional areas, regarding as an approach to alleviate the environmental issues and increase the



employments of rural immigrants in Beijing (BMCUP, 2002). BUMP also proposes to combine the spatial arrangement of basic farmland with green space and ecological corridor. However, for the central urban area of Beijing, urban agriculture is not involved in its green space system. In other words, urban agriculture is more considered as a part of suburban areas instead of inner-urban areas in BUMP.

Furthermore, the BUMP is a considerable comprehensive plan. It involves all the major essential aspects of the development in Beijing, including the infrastructures, the land for industries (e.g. food processing) or retailing (e.g. wholesale market), transportation system etc. These aspects have indirect but considerable impact on the location, infrastructure, trading, and processing of urban agriculture.

### **5.2.2 Urban agriculture in Beijing Overall Land Use Plan 2006-2020**

The BOLUP plans for urban agriculture mainly through setting land use indexes, conserving and arranging agricultural land, and arranging green space system. In other words, this plan mainly has impacts on the location and area of the urban agriculture in Beijing. Moreover, this plan is an overall plan, focusing on entire Beijing. Hence, the contents about urban agriculture are still general, which can show in the text below. Referring to the relations among relevant plans, the BUMP is one of the planning bases of the BOLUP. Therefore, some contents of BUMP also can reflect on the BOLUP.

As mentioned, one major task of land use plan is to determine the land for construction and agriculture. In Beijing, the compact land use is one major planning principle regarding to the national policy (BMG & BMCLR, 2009). One approach is to specify the boundary of construction land. Thereby, the construction land can be controlled; and the agricultural land can be conserved accordingly. However due to high-speed urban sprawl, lacking research fund, and lagging data updating, it is difficult to set a specific boundary line for construction land (UAE1, 2015). Currently instead of boundary setting, the construction land control mainly depends on index setting. Referring to BOLUP, till 2020 the total area of construction land in Beijing should not exceed 3,817 km<sup>2</sup> ([Table 5.3](#)) (BMG & BMCLR, 2009). On the other hand, in order to fill the limitation from boundary setting, it is significant to comprehensively plan for agricultural land as well. Among agricultural land, farmland and basic farmland are the key points. In BOLUP the total area of agricultural land and basic farmland in Beijing are planned to be around 2,147 km<sup>2</sup> and 1,867 km<sup>2</sup> in 2020 respectively ([Table 5.3](#)). Furthermore, among these basic farmlands, more than 50%

should be allocated in nine centralized basic farmland zones of Beijing (Figure 5.3), in order to guarantee compact land use (BMG & BMCLR, 2009).

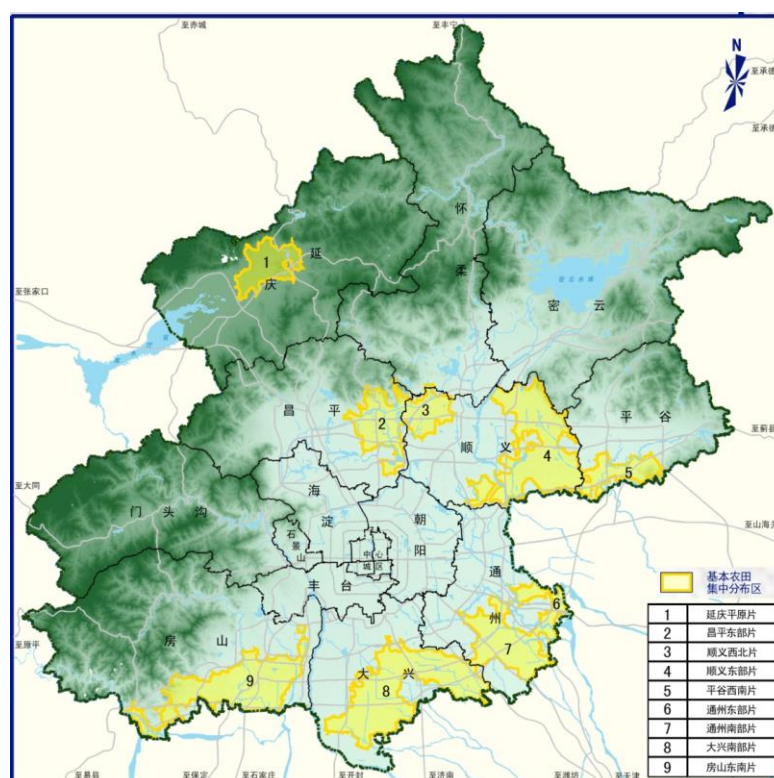
Furthermore, the environmental consideration is also required in the BOLUP. For instance, the nine basic farmland zones are integrated with the green space system and green infrastructure arrangement of Beijing.

**Table 5.3. Major indexes of Beijing Land Use Plan**

Unit: km<sup>2</sup>

Source: Beijing Overall Land Use Plan 2006-2020 (BMG & BMCLR, 2009)

Land Use Plan Index	2005	2010	2020
Total Farmland	2,330	2,260	2,147
Basic Farmland	2,333	1,867	1,867
Construction Land	3,230	3,480	3,817
Newly Added Construction Land	,	273	
Newly Occupied Agriculture Land		213	
Newly Occupied Farmland		133	
Reclaimed Farmland		133	



**Figure 5.3. Nine basic farmland zones in Beijing**

Note: The yellow zones present basic farmland zones

Source: The 12<sup>th</sup> Special Socio-economic

Development Plan for Urban Agriculture in Beijing (BMCRA & BMG, 2011)

### 5.2.3 Urban agriculture in the Special Socio-economic Development Plan for Urban Agriculture in Beijing 2010-2015

The SDPUAB is the most efficient plan to plan for the urban agriculture in Beijing, via specifying the requirements from higher levels of plans and guiding the urban agricultural development directly. In other words, SDPUAB is a regional plan with specialty, only focusing on the urban agriculture planning in Beijing. The SDPUAB mainly plans for the urban agriculture in Beijing by integrating three elements, which are the forms (e.g. seed industry and community gardens), the location (e.g. spatial arrangement), and the production of urban agriculture (e.g. food production, demonstration, and recreation) respectively. In addition, the infrastructure, distribution (e.g. logistic), and products safety management of urban agriculture are also included in this plan.

Based on the BUMP's requirements and guidance, the SDPUAB listed out seven goals for the development of urban agriculture in Beijing, which are enhancing food security, encouraging multi-function projects, integrating industries, conserving environmental, building agro-landscape, and increasing farmers' income (BMCRA & BMG, 2011). Moreover, it is necessary to mention that these goals match with the requirements and expectations on the urban agriculture from the BMG, which has been illustrated above.

Moreover, based on the spatial arrangements from the BUMP and the BOLUP, in this plan, Beijing and its surroundings are divided into 4+1 zones, with the consideration of the economical, environmental, and geographical characteristics (Figure 5.4).

The **intra-urban agriculture zone**, also called urban agriculture moderate development zone, is allocated in Central Beijing, including Dongcheng, Xicheng, and Shijingshan Districts (BMCRA & BMG, 2011). Agricultural parks, community gardens, roof gardens, and vertical agriculture are mainly recommended, with the goals of exploring the educational significance of urban agriculture, improving urban environment, and enriching public life (BMCRA & BMG, 2011).

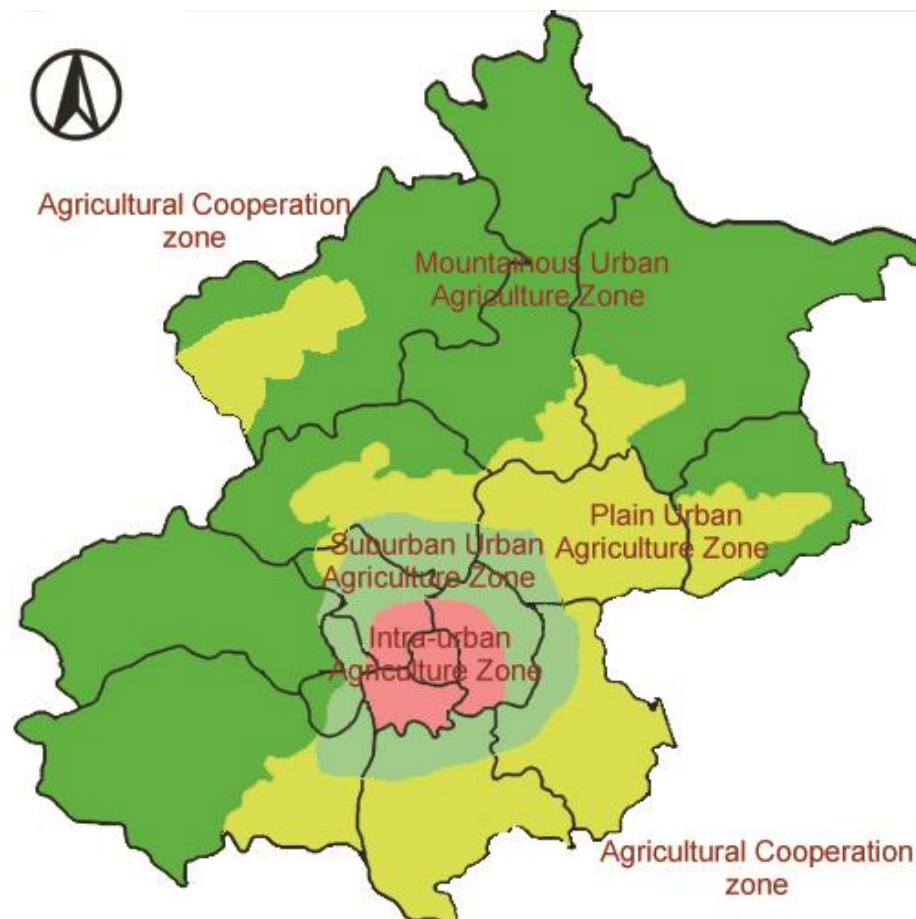
The second zone is **suburban urban agriculture zone**. The districts around the Central Beijing are involved, including Chaoyang, Haidian, Fengtai Districts (BMCRA & BMG, 2011). This zone is considered as a transitional area between agricultural production and urban life. Therefore, agricultural research institutions, demonstration farms, agricultural logistic, and tourism agriculture are mainly proposed in this zone.

The third zone is **plain urban agriculture zone**, which involves Shunyi, Daxing, Tongzhou Districts, as well as the plain area of Fangshan, Pinggu, and Changping Districts (BMCRA & BMG, 2011). Compare to previous zones, this zone has more farmlands and better geographical condition for cultivation. Therefore, this zone is planned as the major food production zone of Beijing, including high-end products. The modern agriculture parks, high-end production bases, facility agriculture, and modern seed industry are the priorities (HDG, 2010).

In **mountainous urban agriculture zone**, the forms of urban agriculture that can demonstrate environmental-friendly production such as organic agriculture and circular agriculture are proposed in this zone. Moreover, organic and fruit products are preferred. Additionally, this zone includes the mountainous area of Fangshan, Changping, Miyun Districts etc (BMCRA & BMG, 2011).

The last one, **agricultural cooperation zone**, is out of the administrative area of Beijing, consisting the neighboring provinces (BMCRA & BMG, 2011). As the major food source of Beijing, this zone has significant impact on the food security in Beijing.

Meanwhile, SDPUAB also plans for the urban agriculture in Beijing via the aspects of infrastructures, distribution (including processing and trading), and products safety management of urban agriculture in Beijing. However, due to the (low) level and major tasks of this plan, most aspects were generally planned through indexes setting or goal setting. For instance, all these aspects are required to upgrade the relevant equipment like the SDPUAB plans for the agricultural infrastructures through requiring to upgrade over 800 km<sup>2</sup> of irrigation system, or through requiring to improve the logistic system (BMCRA & BMG, 2011).



**Figure 5.4. Beijing urban agriculture zone division**

Note: Red presents the intra-urban agriculture zone

Light green presents the suburban urban agriculture zone

Yellow presents the plain urban agriculture zone

Dark green presents the mountainous urban agriculture zone

Source: The 12th Special Socio-economic Development Plan for Urban Agriculture in Beijing (BMCRA & BMG, 2011)

### 5.3 Summary

To summarize, Beijing is suffering from the challenges from urban-rural dualistic development, shortage of water and land resources, environmental pollutions, and food security and safety. Accordingly, when referring to relevant policies and plans in Beijing, urban agriculture are expected to integrate with urban-rural development, to have intensive productivity, and to include different functions.

The investigation on the plans in Beijing municipal level for urban agriculture reveals the relations between urban agriculture and plans in Beijing, such as how the expectations of urban agriculture were required in the plan.

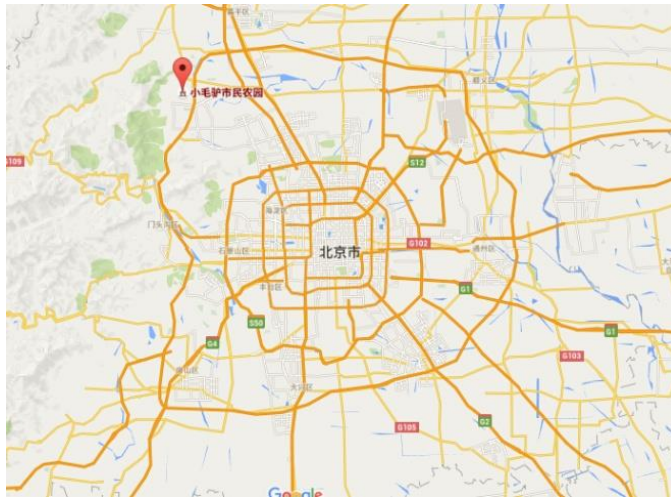
Generally, all illustrated plans are planning for the urban agriculture from entire Beijing. The BUMP and the BOLUP are two comprehensive plans. Therefore, the contents about urban agriculture are general, defining what is the urban agriculture like in Beijing, locating the general land that available for urban agriculture, setting the total area of urban agriculture for conservation, and indirectly arranging the infrastructure, process, or trading of urban agriculture. The SDPUAB is a direct plan for the urban agriculture, taking the BUMP and the BOLUP as planning basis. In this plan, more elements of urban planning can be considered integrally, including location, products, forms, trading, and processing mainly. Moreover, the scale, infrastructure, and waste management of urban agriculture are also included, but are less direct or efficient due to the level or task of this plan.

However, these three plans are on high administrative level. Due to the differences among the districts and initiators, there is a considerable gap from the guidance and requirements of the plans to a specific district or project. For instance, what functions of urban agriculture should be concerned more in one specific district? What should be done to address different functions and flows in one specific project? How do the plans above influence on the decision-making in a district or even lower governments and on a project? In order to answer these questions two cases from two different districts in Beijing were studied and illustrated in following chapters.



## 6. Little Donkey Farm

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**Figure 6.1. Little Donkey Farm in Beijing**

Note: Red spot presents Little Donkey Farm

Source: Google Map

The Little Donkey Farm (Little Donkey) is the first CSA farm in Beijing, allocating in Sujiatuo County, Haidian District, roughly 45km from Central Beijing (Figure 6.1) (Google Map, 2016). The surrounding environment is exceptional in Beijing because of the proximity of Fenghuangling Mountain, which is a popular natural scenic area for local residents. This farm was established through the cooperation among Haidian District Government

(HDG), Renmin University of China (RUC), and Guoren Green Tech Ltd (GGTL). The latter is an enterprise set up and directed by the Rural Development Center of RUC, which is a research institution specializing on urban-rural integration and rural development. Presently, Little Donkey is mainly operated and managed by GGTL.

Below is the implementation procedure of Little Donkey. First, the general situation and relevant plans of the Haidian District will be illustrated, in order to have a better understanding of what urban agriculture project the local government expects with the influences from higher plans. Following is the description of the implementation and cooperation between the initiators and the local government. Then is a study on the site plan, to explore how the expectations from the local government and the initiators are realized via site plan.

### 6.1 Urban agriculture in the Haidian District

The Haidian District has significant dualistic development in urban and rural areas because of the local geographical condition (HDG, 2011). This district is evenly divided into plain and mountainous areas (Figure 6.2). In the plain area, it has remarkable advantages on higher education, scientific research, technology development and business, and intellectual resources. In the higher-education cluster

of the Haidian District, there are 68 universities (including Peking University, Tsinghua University, and RUC etc) and 224 scientific research institutes (including Chinese Academy of Sciences) (HDG, 2010). Meanwhile with the development of Zhongguancun, as known as the Chinese Silicon Valley, this area has well developed urban construction. Conversely, the mountainous area is facing the problems of lagging constructions of facilities (e.g. schools, shopping centers, or hospitals) and infrastructures (e.g. water supply or heat supply). Moreover, the problem of income disparity between the residents in plain and mountainous area is critical as well. Hence, how to reduce the development gap between these two areas is a challenge to the HDG.



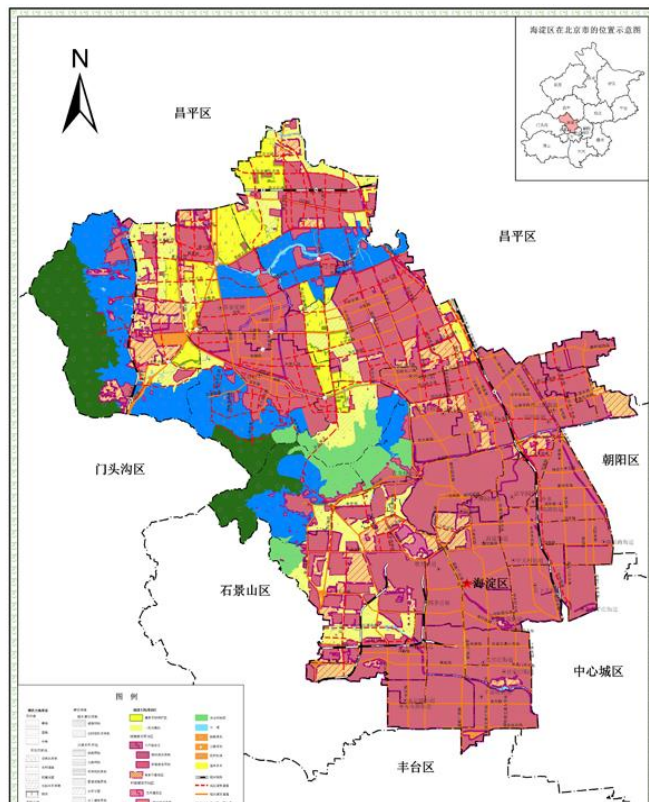
**Figure 6.2. The dual structure of Haidian District**

Note: Yellow area presents the plain area, and blue area presents the mountainous area

Source: Spatial development strategy plan for Haidian District 2004-2020

The Haidian District started to promote urban agriculture during the 11<sup>th</sup> Five Year with the proposition of the 11<sup>th</sup> Beijing Special Socio-economic Plan for Urban Agriculture. Regarding to the conditions of the Haidian District and the requirements from the BUMP promoting local tourism including tourism agriculture is one essential development strategy to increase the income of the households in the mountainous area of the Haidian District (HDG, 2010). Furthermore, environment conservation is also required when promoting local tourism agriculture (HDG, 2010, 2011).

The Haidian Overall Land Use Plan 2006-2020 also reveals similar idea, but from the perspectives of agriculture and construction lands arrangement, and relevant indexes setting. To specify the requirements from the BOLUP, the agricultural land (148,00 km<sup>2</sup> in total) and basic farmland (16,00 km<sup>2</sup>) are mainly proposed to allocate in north (the transition region between plain and mountainous areas) and west (the mountainous areas) of the Haidian District (HDG & BMCLR Haidian Branch, 2005) (Figure 6.3).



**Figure 6.3. Overall Land Use Plan for Haidian District**

Note: Yellow presents agricultural land

Source: Haidian Overall Land Use Plan 2006-2020 (HDG & BMCLR Haidian Branch, 2005)

Furthermore, referring to the SDPUAB, the Haidian District is in the suburban urban agriculture zone, which means that demonstration agriculture, technology agriculture, and tourism agriculture, etc are proposed in this district (BMCRA & BMG, 2011).

To summarize, because of the geographical condition, requirements from the BUMP and the SDPUAB, the Haidian District is urgent to decrease the development gap between the mountainous and the plain areas by promoting tourism agriculture. From the spatial perspective, most agriculture land are allocated on the north and west areas of the Haidian District.

Following is to elaborate how these governmental expectations are realized through the project implementation procedure.

## 6.2 Implementation of the project

The government has considerable impact on forming the goals and positioning one project, because it has the authority to release necessary permits of the project. Little Donkey was established in 2008, which was in the period of starting to promote urban agriculture in Beijing. As just illustrated, with the guidance of relevant plans, the HDG was expecting for the urban agriculture projects that are sustainable, environmental friendly, or profitable.

The story of Little Donkey can trace back to 2003, when a rural college was established, aiming to promote rural development by educating and sharing eco-agricultural knowledge, skills, and methods (e.g. pig fermentation bed) (Little Donkey Farm, 2010). For some reasons this rural college was shut down at 2008, but

some students and teachers stayed and tried to continue what they were doing (Little Donkey Farm, 2013). Around that time, they considered that Beijing even China was facing to the serious problems caused by a series of food scandals, agricultural pollution, water shortage, and urban-rural dualistic development (Little Donkey Farm, 2010). Furthermore, they regarded these problems as an opportunity to start an ecology farm. Then they defined this farm as “A production and education base for citizen participatory and modern ecological agriculture” (Little Donkey Farm, 2010). With this definition, the operation pattern was considered as the combination of ecological agriculture production and CSA (Little Donkey Farm, 2010).

The HDG and Little Donkey had similar ideas and expectations on urban agriculture. Therefore, when the initiators were running for obtaining a land from one government to another, the HDG showed their interest and enthusiasm. Although, the negotiation process was time consuming. Both side spent roughly a year to make the consensus on the principles and goals of this project (Zhao, 2012). For instance, the initiators of Little Donkey want to promote ecological agriculture and CSA, which has relatively low productivity and was a new agriculture model at that moment. However, the government concerned whether this production and business model can be profitable (Zhao, 2012). In the end both side agreed with to emphasize the contribution of Little Donkey on environmental conservation, tourism agriculture, and urban-rural integration (Little Donkey Farm, 2013)

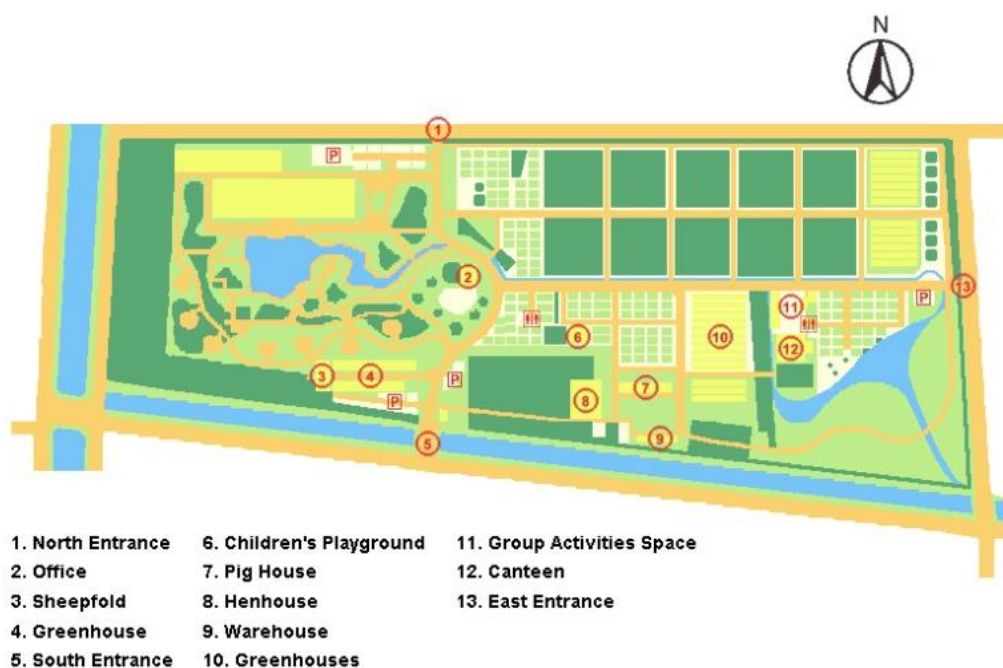
This project now has four goals. First, this farm is an ecological farm, integrating with the functions of demonstrating, researching, educating, and producing. Second, this farm takes CSA as business model, becoming a citizen-participative farm to let citizens can experience rural life and farming, produces food, and educate the knowledge of ecological agriculture, sustainability, food safety, and healthy consumption behavior. Third, this farm is a platform for producers especially farmers to share and learn skills and knowledge about modern ecological agriculture. Last, this farm is a bridge to link producers and consumers, in order to rebuild consumers' trust on food (Little Donkey Farm, 2010).

The HDG helped the initiators find a 2.3 ha abandoned nursery garden in the north-west of the Haidian District, which has been determined to be agriculture land by the BOLUP. Moreover the HDG offered some political support, promising to remit the first three year's land rent and the constructional fee for infrastructure and facility (LDFS1, 2015). At April of 2008, the project of Little Donkey Farm was officially

approved to initiate by the HDG. Then, the initiators started to find planners and landscape architects for the site plan, which will be illustrated in next paragraph. At same year, the plan was permitted and the site construction was finished respectively. The farm was opened to the public in the March of next year. Till 2010, Little Donkey has gradually achieved its goals, becoming a farm that integrates with citizen participation, education, skill training, research, environment conservation, and demonstration (Little Donkey Farm, 2010).

### 6.3 Site plan

Referring to the procedure above, the site plan started after achieving the consensus between the initiators and the HDG. Then, the initiators need a site plan to realize those goals, expectations, and requirements. Therefore, following is the elaboration of the site plan, to see how to put these aspects in space. Furthermore, as a part of the urban and rural plan system, a site plan can plan for what elements of urban agriculture.



**Figure 6.4. Site plan for Little Donkey Farm**

Source: Xiangyou Web (Xiangyou Web)

Yingjun Xie is the major designer of this site plan (Figure 6.4). As an architect who is well known by sustainable rural architectures, he advocates local, recyclable, low-cost building material and passive design strategies to reduce energy consumption. Additionally, passive design strategies use ambient energy (e.g. daylight, solar energy,



natural ventilation) instead of purchased energy (e.g. the energy comes from fossil fuels) to make the living environment comfortable (Autodesk). Several expectations of the project are reflected on this plan, such as the citizen participation, and the environment conservation, which will be elaborated in following texts.

As shown in map, a road from north to south divides the site to two parts. This project aims at the agriculture that citizens can participate; hence, there are considerable leisure facilities for visitors, which mainly locate in the western part. The eastern is the major production part. Due to the CSA business model, the participant citizens can



**Figure 6.5. Group activity space in Little Donkey Farm**

get food through three approaches: growing food by them, trusteeing Little Donkey to grow, and applying for membership delivery service (LDFS1, 2015). Therefore, the production fields in eastern part are divided to the production zones for citizen self-service (Figure 6.6), trustee, and membership delivery. Moreover, instead

of only production areas, the planner also planned considerable spaces and facilities for citizen communication and experiencing, farming education, urban and rural residents connection, and rural life experiencing, which are the goals of the projects as well. Such as shown in Figure 6.5, it is a place for drying the crops and a playground for group activities, and beside it are the facilities for citizens to experience making potteries or learning how to use farming tools.

Environment conservation and sustainability, and relevant education are other goals that significantly reflect on this site plan. In order to reduce the energy consumption for heating, the greenhouses and livestock housing integrate with passive design strategies and sustainable technologies. For instance, the pig fermentation bed can absorb the pig manure. Then, the microbe in the fermentation bed can decompose them, producing heat and fertilizer. Moreover, with proper design, building material, and orientation, these greenhouses and livestock housing do not need extra purchased energy needed for heating, lighting, and ventilating (Little Donkey Farm).



Furthermore, there are several designing approaches to reduce the use of chemical fertilizer and waste output. The planner put several organic waste collection spot in the farm, especially in the self-producing zone (Figure 6.7). With this approach, not only the organic wastes are collected and composed, the citizens are also educated some knowledge. Additionally, with a series of similar approaches, Little Donkey nearly reuses all organic waste, including feces and animal manure (LDFS1, 2015)

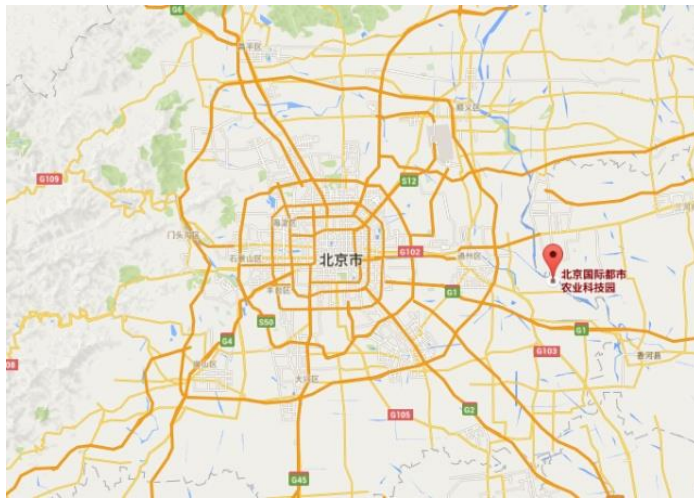


**Figure 6.6. The citizen production area**



**Figure 6.7. The organic production waste collection point**

## 7. Tongzhou International Urban Agriculture Park



**Figure 7.1. Tongzhou International Urban Agriculture Park in Beijing**

Note: The red spot presents Tongzhou International Urban Agriculture Park

Source: Google Map

Following is the elaboration of another case, with similar structure and approach. Tongzhou International Urban Agriculture Park (Tongzhou International) was established in 2008, allocating on the north-east edge of Tongzhou District (Figure 7.1), around 40 km from Central Beijing (Google Map, 2016). The main stakeholders of this project are Tongzhou District Government (TDG), China Agriculture University (CAU), and CAU Futong Ltd (CAUFL), which is an agriculture related enterprise that is established and directed by CAU.

### 7.1 Urban agriculture in the Tongzhou District

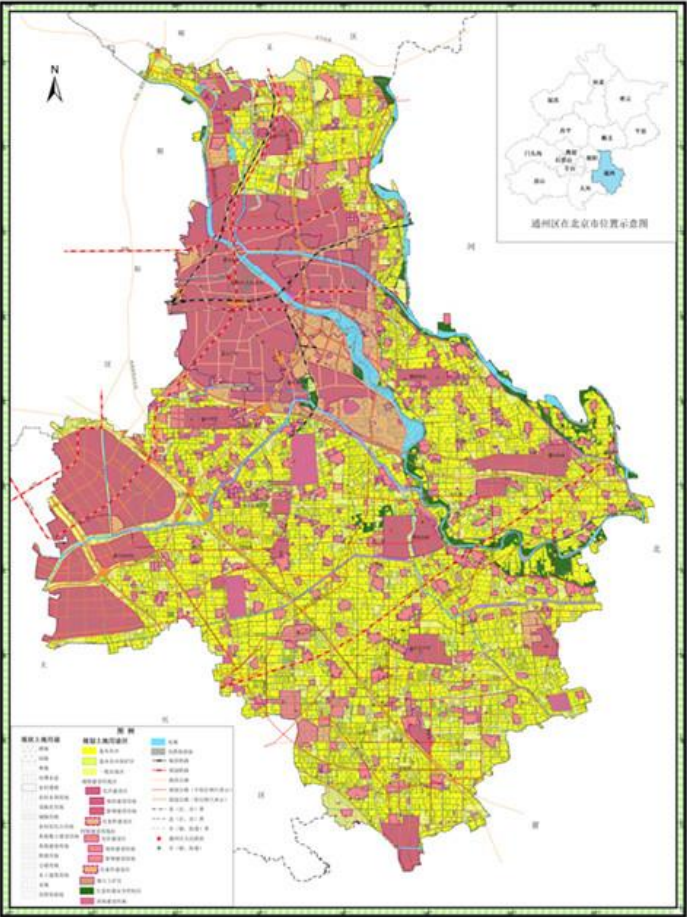
The Tongzhou District is one of the most important and biggest satellite cities of Beijing due to its significant location condition. As a district in east plain area of Beijing, it links Central Beijing (the center of Capital Economic Circle) to Tianjin and Tianjin harbor (the centre of Bohai Sea Economic Circle) (BMCUP Tongzhou Branch, 2005). In addition, based on BUMP, the Tongzhou District is planned to be an area that receives partial functions and population from Central Beijing (BMCUP, 2002). Moreover, new industrial agglomerations (e.g. cultural industry) and facilities (e.g. library, hospital, schools) are also allocated in this district (BMCUP Tongzhou Branch, 2005). Generally, the BUMP defines the Tongzhou District as a regional service center to release the functions and services of Central Beijing, to provide the connection between Beijing with Tianjin.

Regarding to the SDPUAB, the Tongzhou District is in the plain urban agriculture zone, which is the core zone for urban agricultural production and fresh food supply in

Beijing. High-end food production, facility agriculture, technology agriculture, and demonstration agriculture are proposed in this zone (BMCRA & BMG, 2011).

通州区土地利用总体规划（2006-2020年）

通州区土地利用总体规划图



通州区人民政府 编制 二〇一〇年十一月 北京市国土资源局通州分局 制图

**Figure 7.2. Tongzhou Overall Land Use Plan**

Note: The pink presents construction land and the yellow presents agriculture land

Source: Tongzhou Overall Land Use Plan 2006--2020

location of agricultural land and basic farmland. Overall, the agricultural land (330.67 km<sup>2</sup>) and basic farmland (277.33 km<sup>2</sup>) are mainly located in the south-east part of the Tongzhou District (Figure 7.2) (BMCUP Tongzhou Branch, 2005).

To summarize, the Tongzhou District has high development potential regarding to the location and geographical condition. Various new development and functions (e.g. administrative center, cultural industry or facilities) are planned or constructed in this

Based on the higher levels of plans on Beijing municipal level, there are several plans that relevant to urban agriculture on district level. Referring to the Tongzhou Master Urban and Rural Plan 2005-2020 (Tongzhou Master Plan), the Tongzhou District takes urban-rural integration as one development priority, echoing with the higher policies and plans in Beijing (BMCUP Tongzhou Branch, 2005). Therefore, urban agriculture in this district is proposed to integrate urban and rural development. Moreover, it is expected to be industrial-integrated, resource-conserved, and technology-integrated (BMCUP Tongzhou Branch, 2005).

The Tongzhou Overall Land Use Plan 2006-2020 offers specific amount and general

district because of the influences from relevant plans. On the other hand, the local geographical condition also is suitable for urban agriculture and food production. Hence, in order to promote urban-rural integration and balance the land demand between urbanism and agriculture, the local government prefers the urban agriculture projects that have intensive production and integrate other industries. It also reveals the need of the supports from agricultural facilities and technology to increase productivity.

## **7.2 Implementation of the project**

Tongzhou International is directly organized and managed by CAUFL, which is an enterprise that offers services about agricultural parks planning, agricultural facilities designing and construction, and agricultural technology (Tianzhu Zhang). One motivation to initiate Tongzhou International is branding and advertizing their agricultural technologies and facilities, research and education level, and relevant services. The CAUFL was established by CAU and due to this relationship, CAUFL has considerable resources and supports on agricultural knowledge, technology, and staffs from CAU as well as other institutions such as Chinese Academy of Agricultural Sciences (PMP, 2015). After decades of development, the managers of CAUFL decided to widen the range of their clients and to expand business, by running a well-known and profitable urban agricultural park to advertize and administer CAU's and CAUFL's business, research, and technologies (PMP, 2015).

Holding this idea, CAUFL started to find a suitable location for this project through their networks. However, during the interview, the respondent did not want to offer much information about their collaboration and negotiation with the TDG. Therefore, this procedure is not clear. Accordingly, literature review became the main approach to obtain data. Through viewing several documents, the goals of Tongzhou International can be summarized as "a base to produce and demonstrate modern agricultural products, high yield species, and advanced technologies and facilities; a base for scholars and students in CAU to conduct research, education, internship, and start a business; a base to explore production models that can increase the income of producers and farmers." (Tongzhou International). Moreover, when comparing the local government preference and this project positioning, it reveals considerable common points. For instance, both show the significance of agriculture technologies and on urban-rural integration.



In the end, a 15.33-ha land was chosen as the origin of Tongzhou International (PM, 2015). It is interesting to point out that this land is surrounded by construction land (Shown in [Figure 7.2](#)). According to the Tongzhou Master Plan, these construction land are planned as the land for medical health, entertainment and leisure, or administration etc (BMCUP Tongzhou Branch, 2005). This situation leads to considerable obstacles on the future development of Tongzhou International, which will be elaborated in following paragraph (PMP, 2015). The TDG showed their support on the political procedures of land transfer and project approvals. In 2008, after getting the approval and permits from TDG, CAUFL started the site planning process. Initially, Tongzhou International was planned to have two phases of construction. The first phase of construction area is 400 ha, and it will expand to 666.67 ha after second phase construction (PM, 2015).

However, the Tongzhou International did not expand as people planning. As mentioned, initially there were only approximately 15.33 ha transferred land for Tongzhou International. Then the park expanded gradually in following years. However, during that period, the Tongzhou District was confirmed that in 2017, the sub administrative center of Beijing, including the Municipal Building of BMG in the Tongzhou District (House China, 2015). “It is not realistic to transfer such big amount of land (666.67 ha) in surrounding areas for agriculture anymore” (PM, 2015). As results, Tongzhou International could not grow as it planned. Eventually, it expanded to around 75 ha and basically that is the final scale of Tongzhou International (PM, 2015).

Currently, this 75-ha area has embodied the objectives of Tongzhou International, consisting of over hundreds of high agricultural technologies, high-end varieties, and advanced agricultural facilities (Tianzhu Zhang). Moreover, Tongzhou International also becomes a platform to share and advertize the research outcomes of CAU and other institutions. Since 2011 it has received over ten thousand people for visiting, studying and trading (Tianzhu Zhang). Due to high quality products, good reputation, and considerable profits, Tongzhou International has significant demonstration effect on surrounding areas (PM, 2015).

### 7.3 Site plan

As the planner mentioned, clear positioning is the first step of planning (PMP, 2015). The focus of this chapter is to investigate how the positioning above were realized via this site plan.



**Figure 7.3. Site plan for 75-ha area of Tongzhou International Urban Agricultural Park**

Source: Tongzhou International Urban Agricultural Park, Beijing (Tianzhu Zhang)

The site plan for Tongzhou International is designed by the planning department of CAUFL, which is specialized on planning and designing for agricultural parks, villages, and agricultural products processing parks etc. Due to the limitation on land transfer, the existing area of Tongzhou International is the 75-ha area, which was the major study object. Based on the goals and positioning, six major functions were listed out,



**Figure 7.4. The exhibition hall**

which are research and technologies demonstration, pilot and spread modern agriculture production methods and technologies, educating and training students and researchers in CAU, seeding and breeding, leisure and tourism, and motivating surrounding development

(Tongzhou International). Furthermore, these functions were allocated into five zones (Figure 7.3).





**Figure 7.5. Fruit picking garden**

to start advertizing their business. Currently this zone mainly receives the visitors who come for business, workshop, as well as relaxing, sightseeing, and agricultural activities experiencing (TIS, 2015). There are several spaces and facilities for outcome exhibitions (Figure 7.4), fruit and vegetable picking gardens (Figure 7.5), and visitor reception (including a restaurant). Moreover, the residential facilities (housing, canteen, shower etc) for staffs are also built in this zone (Figure 7.6). The new-variety fruit and vegetable facilitated planting zone mainly focuses on producing, in order to increase the profitability (TIS, 2015). Additionally, most products from this zone are high-end, which also fit with the SDPUAB's requirements. The agricultural technology and research zone is the biggest one, functioning research, education, training, production, exhibition, and demonstration. With newly completion of entrance and exhibition building, this zone will be the new image to brand CAUFL and CAU. The



**Figure 7.6. Reception and living area**

As mentioned, the 75-ha area of Tongzhou International was not built at once. Therefore, the CAUFL had to priorities their goals. The initial 15.33 ha land was built to as the zone for agricultural technology and research demonstration, in order

organic manor and civil participatory farm were just finished construction recently, due to the growing demand of high-end products and civil participatory agriculture. Referring to the functional and zoning arrangement of this site plan, it reveals the significance of agriculture

technology demonstration and high-end production. The former one aims to the goal of increasing income and profitable, and the latter one aims at the goal of demonstration and advertisement.

Different focuses on goals and project positioning can lead to the differences on site plans. Compare to Little Donkey, environmental conservation were not highlighted in the positioning of Tongzhou International, which can reflect on the infrastructures and



**Figure 7.7. The boiler for green house heating**

the choice of facilities in this site plan. Such as the heat supply, Tongzhou International takes coal combustion as the major approach to warm up greenhouse, instead of elaborately designing on the orientation of greenhouses. Furthermore, the reasons to take the coal combustion as the major heating supply is saving cost (Figure 7.7) (TIS, 2015). Moreover, still due to the economic benefit consideration, the facilities and space for waste treatment were not included in this site plan. CAUFL provided their explanation. In general, the investment of modern facilities for recycling and reusing resources (such as biogas power generator) is very high. Hence most enterprises are unwilling to do that without any governmental subsidies or cooperation with other enterprises (PMP, 2015).

## 8. Summary of Part II

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To summary, this part focuses on the urban agriculture in Beijing. Through various studies on documents in Beijing, a better understanding of the expectations on urban agriculture in Beijing was obtained. The investigations of two projects reveal the clues of how the governmental requirements, expectations, or preferences are realized via one actual project and how a site plan facilitates on it.

It is a top-down procedure to plan for urban agriculture in Beijing. Moreover, the hierarchy does not only reflect on the relations among plans, but also among governments. The general requirements from higher level of plans will be specified by lower levels of plans. The contents from higher level of government will be specified by lower level of government through plans, integrating with local conditions. In other words, the requirements on urban agriculture from higher levels plans will influence on the local governments' decisions. For urban agriculture, the general location, land use of area, the preferred form and product, and the post-production elements can be planned through the governmental plans.

From project perspective, when compare with the local-governmental requirements on preferred urban agriculture projects and the goals and positioning of studied projects, it shows considerable similarity, which manes that what a project should look like is the consensus achieved between government and initiators. Therefore, negotiation with government is crucial for an urban agriculture project, by directly determining its location, goals, and positioning. Accordingly, the scale, the form, and the following site plan of the project can be influenced. Furthermore, a site plan plays a significant role to realize the projects' goals and positioning in space and reality.





Picture source:  
<http://www.creativechinese.com/?s=chinese+food>

## PART III

### DISCUSSION AND CONCLUSION

## 9. Discussion

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In the previous part, the results of the document study, fieldwork, and interviews were presented. This chapter contains an investigation of the findings across activities, aiming at providing an overview of the relations between the Chinese planning and urban agriculture. Moreover, this chapter also contains the discussion on research limitation.

First is a brief review of the Chinese planning system and urban agriculture to have a better understanding of following discussions.

### **The Chinese planning system**

It is essential to mention that planning is not technical but also political. The planning system of China is a top-down system with the considerably impact from the Chinese administrative system. The planning system consists of three types of plans, which are socio-economic development plan, land use plan, and urban and rural plan. Generally, the socio-economic development plan focuses on development goals by elaborating development indexes and speed. The land use plan focuses on arranging, balancing and guaranteeing the land for agriculture (especially basic farmland) and construction. Moreover, the urban and rural plan concentrates on spatial arrangement, including setting development orientation and construction land uses (Deng, 2013).

### **Urban agriculture**

Commonly, urban agriculture is defined as the agriculture that happens in and around urban areas. Its subdivision is intra-urban and peri-urban agriculture regarding to the location (Van Veenhuizen & Danso, 2007). The former happens in inner-urban areas and the latter is in suburban areas. Furthermore, the regional discrepancies including climate, geographical condition, development condition, and local culture have impact on urban agriculture (Cai & Yang, 2008; Van Veenhuizen & Danso, 2007). Hence, the interpretation, major function, and production system of urban agriculture shift through space and time (Mougeot, 2000; Van Veenhuizen & Danso, 2007). The models from Mougeot and Smits disassemble urban agriculture in different phases and elements respectively. These two models offer clues to explore the relations between the Chinese planning and urban agriculture.

Following are the discussions on these two models from the Chinese planning perspective. Moreover, the findings of the case study in Beijing are referred.

### 9.1 Urban agriculture phases

Smit (2001) categorized the process of urban agriculture into three phases, which are pre-production, production, and post-production.

Generally, the Chinese planning has more impact on the pre-production phases. All types of plan can have impact on it, but from different perspectives. For instance, the urban and rural plan can influence from spatial perspective, determining the areas that suitable for urban agriculture. The impacts from the socio-economic development plan are more descriptive, e.g. describing the goal of infrastructure development.

For production phase, the socio-economic development plan has considerable impact on it, through determining the preferred types of urban agriculture and products. For example, the SDPUAB encourages growing fruits in the mountainous area of Beijing, and growing high-end vegetables in some plain areas.

Both the urban and rural plan and the socio-economic development plan have impact on the post-production phase. Compare to the former one, the impacts from the latter one are more direct and specific, with more consideration on local- or project- scale. Conversely, the urban and rural plan stems from the entire administrative area, influencing urban agriculture via other relevant aspects (e.g. the general location of processing factory or markets).

### 9.2 Urban agriculture elements

Based on Mougeot (2000), there are six fundamental elements of urban agriculture, which are economic activities, production, location, areas, destination, and scale. Furthermore, when thinking from the Chinese planning perspective more elements also can be explored, including Infrastructure, site plan, and form of production. Moreover, the economic activities are out of the scope of planning as well as this research accordingly.

#### **Location**

Location is where the urban agriculture happens, which is commonly regards as “in and around” urban areas. All plans in the Chinese planning system have impact on this element.



The urban and rural plan influences on this element by offering a general-, overall-, and indirect- arrangement on relevant industries or green spaces from the perspective of entire administrative area (e.g. the BUMP). One reason to do so is that there is no land use for urban agriculture in the urban and rural plan.

The contribution of the land use plan on this element can consider from two perspectives. One is to arrange a general- and overall- location of agriculture land and construction land in entire administrative area. Another one is to set the minimum amount of agriculture land for conservation purpose. However, the urban areas in China are composed by construction land; hence the impact from the land use plan is limited.

The socio-economic development plan is the only plan that has narrowed down to the topic of urban agriculture. Therefore, this plan can offer more detailed- and specific- arrangement on preferred locations for urban agriculture. The SDPUAB elaborated 5+1 zones of urban agriculture development in Beijing.

### **Area**

From planning perspective, the official land-use category (e.g. industrial, residential, economical, or green space, etc) is mainly considered as one of the criteria of area. There are two plans in the Chinese planning system that link to land-use, which are the urban and rural plan and the land use plan.

The impact from the urban and rural plan is an overall arrangement by determining the land use for (urban) agriculture or green spaces in entire city. However, as mentioned earlier, there is no specific land use for urban agriculture, hence currently people prefer to integrate urban agriculture with the land use for green spaces.

The land use plan determines the land use for urban agriculture through the overall arrangement of the agriculture land in entire administrative area.

### **Scale**

Scale is about production system, which can be individual/family micro, small and medium enterprises and large national/transnational undertaking. The planning system has considerably little impact on this element. The general descriptions on preferred projects from socio-economic plan can indirectly influence on this element. For instance, usually the government or enterprises have more involvement in a

demonstration agropark project due to high investment, while, farmers, individuals, or families might involve more in tourism agriculture because of less investment.

### **Infrastructure**

Infrastructure refers to the transportation connection, logistic, water supply, electricity supply, and heat supply, etc that an urban agriculture project needs. The urban and rural plan and the socio-economic plan can influence on this element.

The urban and rural plan provides an overall- and spatial- arrangement on infrastructure system (including transportation, water, electricity, and heat) within entire administrative area, which can affect the location of urban agriculture.

The impacts from the socio-economic development plan are more detailed and specific. For instance, instead of focusing on water supply system, the socio-economic development plan concerns on the irrigation system of urban agriculture. Moreover, this plan also contains the requirements on the logistic aspect. However, the contents in this plan are more descriptive with numbers and texts instead maps.

### **Site plan**

Site plan is one of the components of the urban and rural plan. According to CPA, every project needs a site plan as a major reference for relevant permits. Hence, a site plan is essential for an urban agricultural project. Moreover, the requirements and expectations of initiators and governments are realized on space through site plan compilation.

### **Product**

Product consists of consumable and non-food production. The socio-economic plan can contain a general description of preferred products, considering the local condition of certain area.

### **Form**

The form of production (e.g. mechanized agriculture or tourism agriculture) also link to the Chinese planning system, especially the socio-economic plan. The SDPUAB includes a general description on preferred forms of urban agriculture project, concerning the local condition of certain area.

## **Trading**

The trading here refers to the location and approaches for trading, e.g. supermarket, wholesale market, and wet market. Mainly the urban and rural plan allocates this element. The socio-economic plan (e.g. SDPUAB) can offer some descriptive suggestions, such as upgrading the facilities of wholesale markets.

## **Processing**

This element links to the locations that can process the products, such as food processing factories. The urban and rural plan can arrange (industrial) land use for this activity. Moreover, both the urban and rural plan and the socio-economic plan in Beijing reveal the encouragement of integrating urban agriculture with secondary industry.

## **Waste management**

This element is about how to deal with the waste that produced during the urban agriculture activities. The site plan in the urban and rural plan system can arrange the facilities (collection or composting points) for waste on project level. Moreover, the socio-economic plan in Beijing reveals the supports of recycling the agriculture waste.

## **9.3 Project implementation**

The discussion above is based on the contents from relevant literatures, documents, and textbooks, which are something fixed. Hence, it also is essential to study from planning practice perspective, to explore how an urban agriculture project is implemented. Again, the case study in Beijing is referred.

Based on the study on the Chinese planning system and the case studies in Beijing, the urban agriculture implementation procedure reveals hierarchical relations among plans. Moreover, besides plans, the relations among governments are hierarchical too. Therefore, the plans from top to down can be considered as a carrier to deliver the requirements from higher governments to lower governments. The contents of urban agriculture in these plans and governments are specified from top to down, integrating with the local conditions.

In the case of Beijing, the governments on district level play the role of selecting urban agriculture projects. Based on the plans from higher levels, local level, and local conditions, the district government can summarize what the preferred urban agriculture are like in this district. Moreover, these contents reflect on the local plans,

and become the reference to choose projects. When the urban agriculture initiators come to district governments for the land or the necessary permits, there are considerable negotiations happens between the government and initiators. Through the negotiation and the conservation, the goals and positioning of one project will be formed, in order to fit with the preferred urban agriculture in this district. Followed, the censuses achieved between governments and initiators are manly realized through site plans.

Furthermore, besides the government, the changes from higher levels of plans or arrangements also can have impact on projects. Such as the Tongzhou International case, since the BMG decided to build the sub-administrative area in the Tongzhou District, Tongzhou International cannot get more land and expand as planned.

#### **9.4 Discussion on research limitation**

Urban agriculture is a relatively new concept for Chinese society and planning. Therefore, the amount of available literature and other forms of data about urban agriculture in China is imitated. Furthermore, the current research outcomes are considerably broad and exploratory. It leads to the limitation on the depth of understanding urban agriculture in China, especially from planning perspective.

Another limitation is the normalization of available literatures. During the interviews, the respondents offered few relevant documents, however few document are missing the author or year. This leads to the nonstandard reference format.

Case study was the major research strategy. However, due to the time limitation of research, only two cases were conducted. Moreover, the studied cases share same cooperation model, which is university-enterprise-government. It means that with the background of universities, the companies can have considerable accesses to investments, intellectuals, and technologies. Hence, the outcomes of this cooperation model are difficult to cope especially for farmers (PMP, 2015). Thereby, some other cooperation model, such as government-supported or farmers- spontaneous, or other enterprise-initiated projects were not included in this research. Moreover, there are differences through the regions in China. Hence, to some extent, Beijing has particularity.

Interview was the main source of primary data of this research. Nevertheless, it was difficult to find respondents in China, especially government officials due to lacking

contact information, time difference between China and the Netherlands, and Chinese culture. Moreover, during the interviews, some respondents also showed unwillingness to disclose detailed information especially about finance and government. It leads to lacking depth of the research. In addition, there are also biases on objective facts caused by respondents' personal opinions.

Furthermore, the analysis and discussion of this research mainly rely on author's interpretation of literatures, governmental documents, and interview transcriptions. Hence, personal limitation also affects on the conclusions of this research.

## 10. Conclusions

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This chapter will answer the main research question: How can the Chinese planning system facilitate the development of urban agriculture?

Chinese planning is highly link with the governments, when refer to the Chinese planning system and practice. To some extent, planning is one approach for governments to achieve certain political goals. The higher governments' requirements are delivered through various plans; one project is formed by the negotiations between the initiators and the governments. Moreover, the governments are authorized to release relevant approvals or permits that are necessary for every project. Hence, with these powers, the governments play the leading role of Chinese planning and planning practice. Within this context, it is essential for the urban agriculture initiators to find the appropriate approaches, negotiation skills, and the connections with the governments in order to obtain the support from them.

From planning perspective, the Chinese planning system can plan and can facilitate the development of urban agriculture. However, the efficiency and the influence objects are different due to the differences on priorities and contents of each plan in the planning system.

The socio-economic development plan is the most efficient one, reflecting on its guiding effect and flexibility. The elements of location, scale, infrastructure, products, form, trading, processing, and waste management of urban agriculture can be planned by this plan. Due to market demand, the development of urban agriculture requires flexibility when planning for urban agriculture. Moreover, the flexibility of this plan also reflects on the short planning period and no power of law. Hence, the contents of each special plan can vary based on temporal socio-economical development demand. In the case of Beijing, since 11<sup>th</sup> Five Year, BMG and BMCRA started to take urban agriculture as a specific theme of the Socio-economic Plan and make a special plan for it. It means that the special socio-economic plan can plan for urban agriculture development directly and minutely.

The support on urban agriculture development from land use plan is limited due to its major task, which is to balance and arrange the land for construction (mainly in urban areas) and agriculture (mainly in rural areas). Thereby, as one element of urban areas,



land use plan cannot plan for urban agriculture directly and in detail. Moreover, there is no land-use category for agriculture in construction land. Hence, the influence from land use plan on urban areas or urban agriculture is limited.

Urban and rural plan has more complicated system compare to the tow plans above but this thesis only need to focus on master plan and detailed plan. From the perspective of master plan, this plan can plan for urban agriculture through the elements of location, area, and infrastructure by spatial and industrial arrangement. In addition, there is a trend to integrate urban agriculture with urban green space system. However, the contents of urban agriculture in master plan level are considerably board and general. Therefore, only a general future vision and expectation of urban agriculture can be offered. Mast plan has specific land-use category for construction land (urban), while there is no land use for urban agriculture. Therefore, it leads to the illegality of some urban agriculture projects, especially the intra-urban agriculture projects. Due to that, the urban authorities showed low willingness of promoting urban agriculture especially in inner-urban areas (such as the case elaborated at the beginning of the report). Moreover, because of long planning period and legal validity, master plan is also lack of flexibility when planning for urban agriculture.

The regulatory plan mainly focus on central urban areas, due to the absent of urban agriculture in urban land-use category, the supports on urban agriculture from this plan is very limited.

Compare to that, site plan as another type of detailed plan, is commonly regarded as one of the most efficient plans for urban agriculture development. Different from the socio-economic development plan, site plan focuses on project level to realize each urban agriculture projects' goals and expectations to space by designing and arranging physical environment. Moreover, for some non-urban agriculture projects (such as residential areas or parks), site plan is also an approach to embed urban agriculture into urban space (PMP, 2015).

All in all, in the Chinese planning system, socio-economic plan is the most efficient one for urban agriculture development due to its flexibility and guiding effect. Moreover, referring to its major contents and priorities, it can have the influence of most elements of urban agriculture through offering developing guidance. However, within this top-down planning system, it is difficult for planners or urban agriculture initiators to participate into and make influence on the compilation of this guiding plan.

The political level to the authorities to compile this plan is too high to let the most planners or initiated to participate. For instance, the National Socio-economic Development is compiled through the cooperation between the State Council and the NPC, which is the highest authority of China. Thereby, the other efficient plan, site plan, becomes their main battlefield to promote the development of urban agriculture. This plan is on project level, focusing on spatial and physical arrangement, which is the major term of reference for most Chinese planners. During the implementation phase, all the goals and requirements about urban agriculture in these three plans (especially the socio-economic plan) influence on governmental decisions on urban agriculture. It reflects on urban agriculture project selection, project evaluation, and support from government. The socio-economic is one of the criteria of evaluate governmental performance. Therefore, whether the project meets the requirements or facilitates to achieve the goals from the socio-economic development plan becomes one important consideration for most government. For instance, in Beijing, the socio-economic development plan shows low interests on promoting urban agriculture in central city, thereby, there are considerable few urban agricultural projects in the Central Beijing.

Compare to the socio-economic development plan and the site plan, rest types of plans have considerable limitations on flexibility due to the fixed land use categories, long planning period. However, these plans play the significant role on determining the characteristics and focuses of urban agriculture projects due to the top-down influence.

## 11. Recommendations

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In the upcoming future, with the increasing demand for healthy and safe food, with the increasing need to integrate urban and rural areas, and with the transforming of Chinese planning system and role of planners, the urban agriculture will become more and more important. Most governments show the willingness and interests to promote the development of urban agriculture. Therefore, against to this background, it will reveal an uptrend of the urban agriculture development in China. In order to facilitate a better development of the urban agriculture, few recommendations are listed from the perspective of different stakeholders.

For initiators, the governments are essential on projects implementation and realization. In order to maximize the supports from the governments, knowing what the governments expected are important. Besides the continuously negotiations with the governments, some in-depth studies on relevant plans and policies are other approaches to achieve this goal at beginning. Of course, the information from the policies and plans are relatively superficial, but it is a considerable starting point to initiate the connection and to acquire the preference of the governments.

From the planning perspective, besides fully making use of the plans that are efficient for urban agriculture, it is also important for the other plans to be more flexible. For instance, for agriculture land, only 5% of land in one project is allowed for construction (W. Wang, 2008). This rule limits the development of the construction of greenhouses. Then it limits the development of facility agriculture, which is one type of urban agriculture that is highly promoted by government.

For future study, the research on urban agriculture from the Chinese planning perspective is just starting up. This thesis is relatively broad, outlining an overview of the relations and the interactions between planning and urban agriculture. Therefore, there are considerable perspectives to deepen the research.

- From planning system perspective, some plans lack of flexibility on planning for urban agriculture, Then, it is interesting to explore how to increase the flexibility in order to promote the development of urban agriculture.
- Besides looking from the entire planning system, focusing on one plan is also necessary, in order to have an in-depth investigation and understanding.

- Furthermore, the Chinese planning system in China is transforming, revealing a trend to merge land use plan in urban and rural plan. Since then, it is necessary to explore the influences on urban agriculture development that caused by this change and corresponding strategies.
- From the urban agriculture perspective, the development of intra-urban agriculture is limited in China for multiple reasons. Hence, how to promote the intra-urban agriculture through planning is also an interesting topic.
- The regions in China are considerable different, what are the differences and concerns when planning urban agriculture in other Chinese regions?

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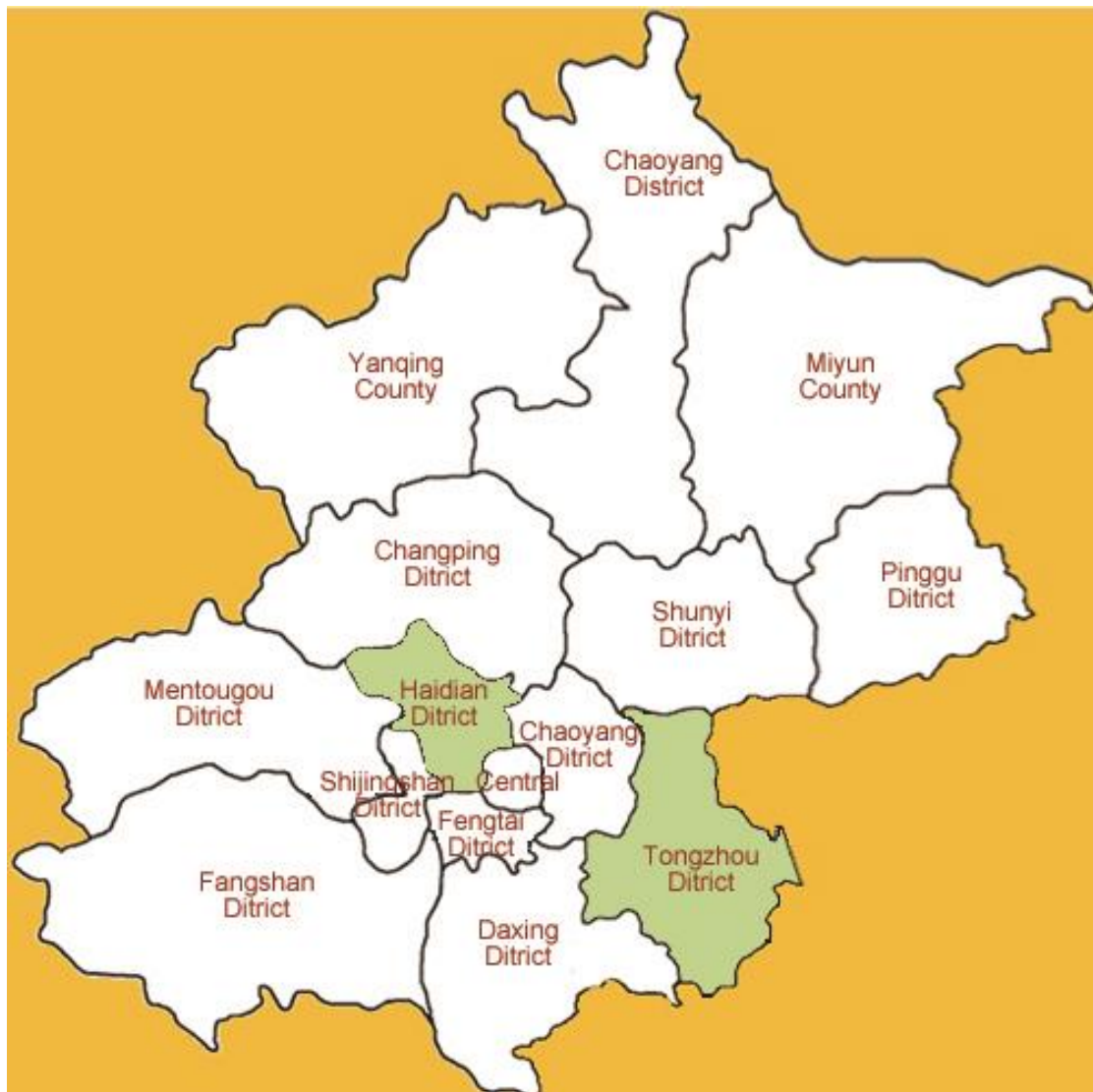
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## Appendixes

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### Appendix A: Administrative area division in Beijing



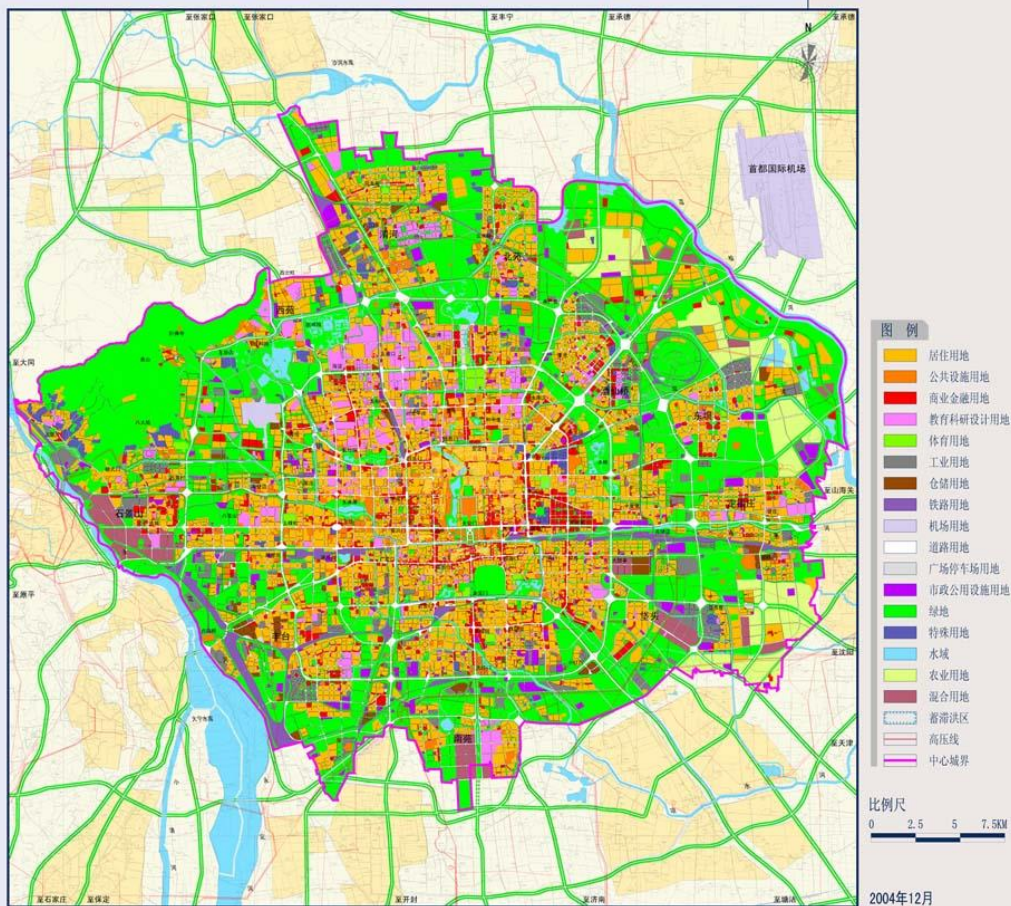
The districts marked in green are where the studied cases locate in.



## Appendix B: The master plan for central Beijing

### 北京城市总体规划（2004年-2020年）

图07 中心城用地规划图



### Legend

Residential area	Square and parking
Administration and public service	Infrastructure
Commercial and business facilities	Green space
Education and research	Special land use
Sports	Water body
Industrial	Agriculture
Logistics and warehouse	Multifunction
Railway	Power line
Airport	Central urban area boundary
Road	



## Appendix C: The Regulatory plan for the Tongzhou District, area No.1 & 2



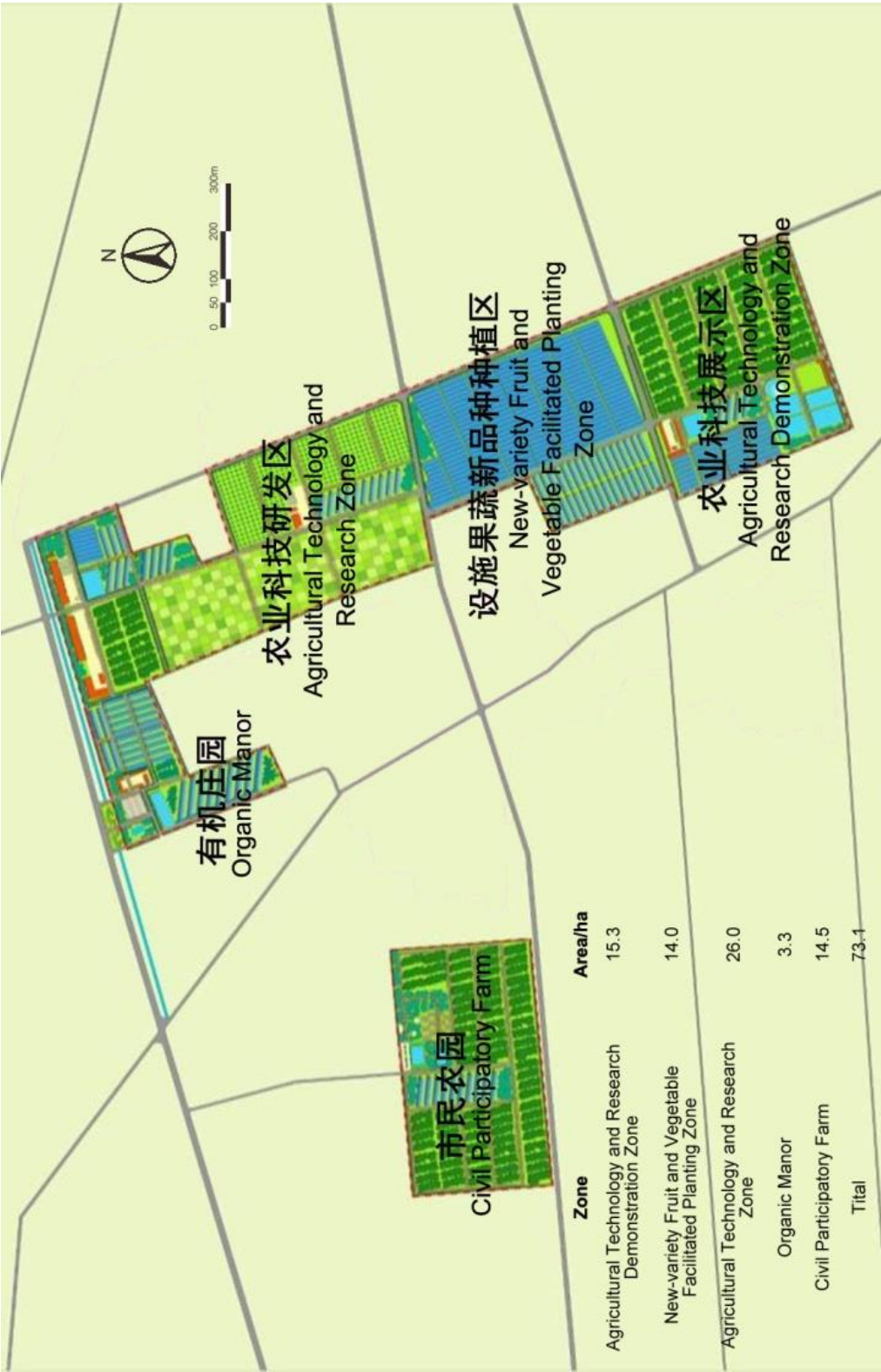
### Legend

	Metro and metro station		Environmental sanitation facilities
	Red line		Administrative land
	Railway and railway station		Hotel
	Powerline corridor		Retailing
	Waterbody		Library
	Residential land I		Hospital
	Residential land II		Higher education
	Roadside green space		SOHO
	Green buffer		Military land
	Residential facilities		Infrastructure

Appendix D: Site Plan for Little Donkey Farm



Appendix E: Site Plan for 75-ha area of Little Donkey Farm



## Appendix F: Interview

### Appendix F1: Interviewees

Organizations	Interviewees-expertise
Chinese Academy of Sciences	Urban agriculture expert (In text: UAE1)
South China University of Technology	Urban agriculture expert (In text: UAE2)
Little Donkey Farm	Staff (LDFS1)
Little Donkey Farm	Staff (LDFS2)
Tongzhou International Urban Agriculture Park	Staff (TIS)
China Agriculture University Futong Ltd	Project manager and planner (PMP)
China Agriculture University Futong Ltd	Project member (PM)
Yunnan Urban and Rural Planning and Designing Institute	Chinese planner (CP)

### Appendix F2: Interview questions

#### Questions for urban agriculture expert from Chinese Academy of Sciences

1. What is your own definition of urban agriculture? And how do you think about the definition of urban agriculture which is defined by RUAF?
2. I found that in China, there are various definitions and interpretations of urban agriculture among different scholars. Why it happens?
3. I also found that the mainstream definition and interpretation of urban agriculture in China is very different from the Western countries. What are the reasons lead to this situation? (Due to the different levels on economy development? The difference on land resource or there are some other reasons as well?)
4. As we know that the urban agriculture practices in China mainly happen in peri-urban urban areas instead of inner-urban areas. What are the reasons you think behind this phenomenon?
5. How do you think about the role of urban planners on facilitating the development of Chinese urban agriculture on master, regulatory and site plan level respectively? And which level of plan is the most efficient one and why?
6. In your opinion, what are the difficulties and key points of implementing urban agricultural projects?  
The last two questions are more for person interest.
7. I realized that there are debate on the difference and definition of peri-urban agriculture and rural urban agriculture. How do you consider the difference and connection between them?

8. Why the modern technique plays such important role in Chinese urban agriculture projects?

### **Questions for the urban agriculture expert from South China University of Technology**

1. What is your own definition on urban agriculture? And how do you think about the definition of urban agriculture which is defined by RUAF?
2. I found that the mainstream definition and interpretation of urban agriculture in China is very different from the Western countries. What are the reasons lead to this situation? (Due to the different levels on economy development? The difference on land resource or there are some other reasons as well?)
3. As we know that the urban agriculture practices in China mainly happen in peri-urban urban areas instead of intra-urban areas. What are the reasons you think behind this phenomenon?
4. How do you think about the role of urban planners on facilitating the development of Chinese urban agriculture on master, regulatory and site plan level respectively? And which level of plan you think is the most efficient one and why?
5. In your opinion, what are the difficulties and key points of implementing urban agricultural projects?
6. I heard some voices that the Chinese government have little willing to promote intra-urban agriculture. Do you know what the reasons behind it are?
7. Why the modern technique plays such important role in Chinese urban agriculture projects?

### **Questions for selected project stakeholders**

1. First of all, I would like to know about how you understand urban agriculture and how you define it.
2. What is the background of the initiating this program?
3. What were the influence and requirements from the higher plans (the master plan and regulatory plan) on this project?
4. When you did the site plan, how do you consider about and deal with the function arrangement, flow organization and the connection surrounding areas?
5. What about the supporting infrastructures? And how did you deal with the solid waste?
6. Did you consider about the circular agriculture in the site plan? If so did you arrange some special facilities in the site?
7. How did you do with the public participative?
8. In general, from your working experience, how do the master plan and regulatory plan influence on the urban agriculture?
9. Last question is about your opinion on the development of urban agriculture in China. (Does it have a very fast development currently? What kind of urban agriculture is the well-accept in China? Can inter-urban areas have urban agriculture in China? And do you think through urban planning is an efficient way

to promote urban agriculture in China?)

**Questions for Chinese planner**

1. How do you think about the planning theories?
2. When you and your assigners have different opinions on one project, what would you do? Listen to your assigners or hold your ground?
3. Do you try to take relevant policies and higher levels of plans in consideration when planning Chinese projects?
4. Do you have opportunities to involve the stakeholders you think that are necessary? If so, how did you make it?
5. In China, how do people evaluate the outcome of one project?