

**THE DEVELOPMENT STRATEGIES OF HIGH SPEED
RAILWAY NEW TOWNS IN CHINA: WUXI EAST NEW
TOWN**

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Abstract

Since the first high speed railway came into operation in 2008, China has stepped into a new era of rapid development based on efficient transport connections and a strong economic engine. Subsequently, an unprecedented urban extension campaign of ‘High Speed Railway New Town’ emerged and has attracted immense attention. Local governments have demonstrated great ambitions on urban development around high speed rail stations and shown huge enthusiasm for its potential. A great many cities with connection to high speed rail have set up grand plan and design for the so called ‘High Speed Rail New Town’. Although authorities tend to put great confidence in HSR construction and station area development, the process is, in fact, by no means easy. It is a rather tortuous and complicated process, full of fierce debate, conflicts of interest and ambiguous impact.

The major objective of this thesis is to investigate the current development strategies of high speed railway new towns in China in relation to their node value and place value, with the ultimate intention to provide guidelines for the rational development process for this new type of urban settlement. A specific case, Wuxi East New Town, as the earliest constructed ‘High Speed Railway New Town’ in China with the fastest development speed at present, was selected and critically explored to show the current development picture and evaluate its strength and weakness. Due to the uniqueness and the initial development stage of ‘High Speed Railway New Town’ in China, comprehensive lessons from international experience in new town development and urban development around high speed railway stations were critically studied. Hence, synthesising existing literature and knowledge related to China's HSR New Town and relating this to international experience is an important and original contribution to the research.

Keywords: high speed railway new town, node value, place value, development strategy

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Part I Introduction and Methodology

Chapter 1 Introduction

Chapter 1 begins to unfold an unprecedented urban extension phenomenon occurring in China at present and explains the origin of the research. In section one, it tries to provoke the readers' interests by generalizing the research background. Then, in section two, it tries to explicitly define the major research objective and primary research question that needs to be answered. Thirdly, the research structure will be presented via text and diagram to show a holistic picture of the research. Finally, the key terminology, node value and place value will be clearly defined to pave the foundation for further research.

1.1 Background

Colin Clark's verdict (1957) on transport as 'the maker and breaker of cities' has been infused with a new meaning in the second half of the 20th century with the advent of high speed railway (HSR), marking 'the second railway age' (Banister and Hall, 1993) and bringing an unprecedented shrinkage of time and space (Spiekermann and Wegener, 1994).

The high speed rail era began with the inauguration of the Tokaido line in Japan in 1964 and was then followed by the French TGV in 1981. From then on, the new mode of transportation has expanded significantly all over the world (Garmendia et al., 2012). According to statistics from UIC (2011), there were 17,166 km of high speed lines in operation globally by the end of 2011, and by 2025, taking into account plans and lines in the process of construction, there will be 42,322 km in 23 different countries. The enhancement of accessibility has *"opened up new possibilities for*

those cities connected to the lines and has often revitalised the role of railway stations”
(Garmendia et al., 2012, p.26).

China, as the new member of the HSR family, will undoubtedly play an important role in the global HSR development. During the fast modernisation and urbanisation process, the Chinese HSR network has developed at an unprecedented scale and speed. By 2020, the overall network is expected to reach 18,000 km, connecting all the provincial cities and other cities with a population of over half a million, amounting to more than half of the overall length of rails in the world (Zhang et al., 2010; Chen, 2012). The aim of Chinese HSR development is therefore widespread and planned to be ambitious at multiple scales.

At the national level, HSR lays the foundation not only for mega-city spatial formation, but also, it is possible for the coastal economic zones to develop high value-added services and meanwhile encourage low-value industries to relocate to the western part of China. At the regional scale, in parallel with HSR development, the planned mega-city regions (MCRs) are anticipated to become the primary engines promoting the social-economic growth of China (Chen, 2012). Functionally, a wide range of city centres and sub-centres will be well integrated in a hierarchical order and will form a complex network beyond the fixed administrative boundaries (Hall and Pain, 2006). In 2007, the National Development and Reform Commission (NDRC) announced ten designated MCRs, including three around the coastal economic zones and seven in the hinterland. MCRs strategy will intensify flows of economy, information, labour and technology, which to some extent will engender spill-over effects on regional development. Furthermore, Wang et al. (2009) have argued that the improvement of transport conditions would prompt local governments to optimise their development policies, which would possibly overcome the administrative limitation.

At the urban scale, ‘High Speed Railway New Town’ (HSR New Town), a newborn concept, has been developed in many cities of China, regardless of their scales and economic conditions. In general, HSR new towns refer to certain areas which surround the HSR stations, combining the advantages of transportation, investment, policy and technology, and aiming to perform a relatively independent function by assisting the future development of the old city (Yuan, 2011). Taking the Beijing-Shanghai high-speed line as an example, there are 16 out of 24 new towns along the line in the process of planning and construction (Li & Chen, 2011). The planning and construction of the ‘HSR New Town’, to a great extent, has become a campaign which sweeps the whole nation. As a unique product in the wake of the widespread high speed railway, it has attracted immense attention from the public, and is enjoying a huge following by local governments in China. The ‘HSR New Town’, without any precedent in the world, on the one hand reflects purely Chinese characteristics in the fast urbanisation process, but on the other hand hugely lacks the proper guidelines for its development, which calls for urgent research. This research is noticeably scarce at present.

1.2 Research Aim

The major objective of this study is to investigate the current development strategies of high speed railway new towns in China, and to establish the optimal development strategies and guide the rational development process for this new type of urban settlement. To attain that goal, a number of specific objectives should be achieved as follows:

Step I: To acquire comprehensive literature of international and China’s new town development and try to understand the key issues and problems in this complicated process.

Step II: To discuss urban development around the high speed railway station, an analytic framework is established to evaluate the node value and place value of

international high speed railway station areas.

Step III: Critically examine the current development strategies of Chinese HSR new towns based on a selected case study.

Step IV: Deliver recommendations for appropriate development strategies for high speed railway new towns in China by learning suitable experiences from international new town development and international high speed railway station area development. Achieving the aforementioned research objectives will contribute collectively to answering the primary research question:

What are the current development strategies of Chinese HSR new towns and how are they conceived in relation to node value and place value?

1.3 Thesis Structure

The thesis is structured in four major parts: part I---introduction and research methodology, part II---understanding of international new town development and exploration of international high speed railway related development, Part III---China's HSR new town development analysis, and part IV---conclusion (Table 1.1). Part one is the introduction of the research in which the research background, research objectives and the primary research question are outlined. Then, for the research methodology chapter, two primary methodologies, literature review and case study are comprehensively understood and applied to the overall research. In part two, first of all, key issues of the new town development in western countries will be studied, such as the evolution process and the main character. Additionally, as the origin of modern new town movement, the UK experience will be explored deeply to provide a more comprehensive understanding of new town development. Then, international high speed railway related development will be explored and a specific analytic framework is applied consistently to the exploration. In the third part, based on the analytic framework, China's HSR new town development strategy will be analysed and a selected case study of China, Wuxi East New Town, is critically and deeply

explored to get a better understanding of the current development strategies of the China's 'HSR New Town'. Finally, in part four, conclusions in the thesis are drawn and suggestions for how to guide an appropriate HSR New Town of China will be provided. Additionally, the limitations of the thesis and possible future studies will be explained.

By and large, due to the initial stage of HSR New Town development in China, the thesis spends considerable time on studying the international experience of new town development and urban development around high speed railway stations so as to acquire valuable experiences and lessons. Furthermore, since the 'HSR New Town' is a brand new urban phenomenon originating in China, there is no previous experience across the world. Hence, a separated study on new town development and high speed railway station related development is conducted to evaluate and understand experiences from the two fields. Ultimately, in the conclusion part, general suggestions for the proper HSR New Town development of China are strongly based on the combination of experiences from the two fields. Basically, synthesising existing literature and knowledge related to China's HSR New Town and relating this to international experience is an important and original contribution to the research.

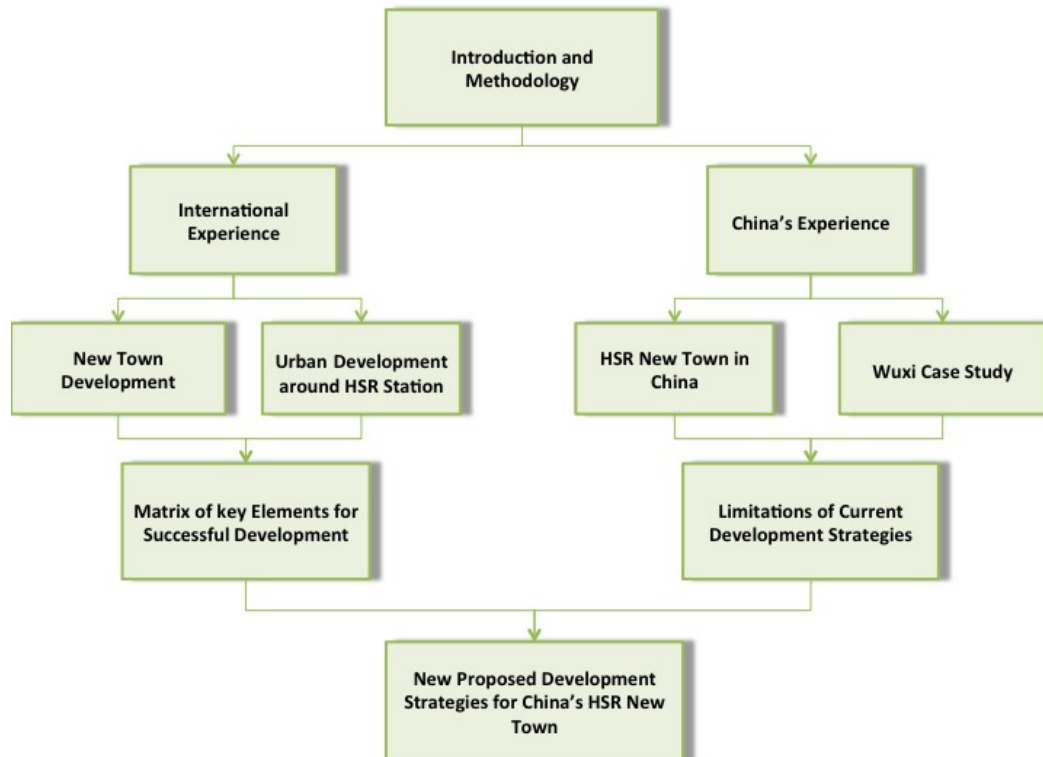


Table 1.1 Thesis Structure

1.4 Terminology

In contemporary cities, public transportation nodes and the surrounding areas appear to be one of the very few places where the participants in its increasingly heterogeneous communities still physically meet (Bertolini, 1996). Although the intense flows of people do have huge potential to interact, it does not necessarily imply the certainty of human interaction unless the right conditions are met. That means, *“the transportation node can not be considered separately from its urban surroundings---or the place of activities”* (Bertolini, 1999, p.201). Bertolini (1996) identified two components of station areas: station areas are key ‘nodes’ in heterogeneous transportation networks, in addition, they are also a “place”, an often dense and diverse assemblage of uses and forms. In Bertolini’s model of the railway station, the station’s value as a node is highly related to its value as a place. He pointed out that *“the realisation of the potential for physical human interaction at and around public transportation nodes is the essence of the strategy for public transport-*

oriented development” (Bertolini, 1999, p.201). Hence, in this respect, location and accessibility becomes the top issues for the transportation node. *“For optimum profit from the HSR integration, access by secondary transport modes has to be enhanced. In many cities, the HSR connection is therefore a powerful impulse for improvement of, among other things, the municipal and regional public-transport systems”* (Berg and Pol, 1998, p.153). However, location and accessibility do not only mean how much time, how easily and how many destinations can be reached from an area, it also appears to be a place of activities which can be performed in an area (Bertolini, 1999). In this broader connotation, an accessible area refers to one where different people can reach, but also to one where different people can do diverse things in various spaces. It is both an accessible node and an accessible place. More specifically, *“a public transportation node and its surroundings are part of a system of both competing and complementary nodes and places....They are all the transportation nodes belonging to a particular transportation network”* (Bertolini, 1999, p.201).

Therefore, the study tries to explore the international and Chinese high speed railway related experiences from two perspectives as mentioned above, namely ‘node value’ and ‘place value’ (Table 1.2). Specifically, node value refers to the location of station within a connected network and the relationship between each other. Secondly, to what extent the station could be accessible by public. In terms of place value, it refers to the urban functions of station area, the activity it could create, the diverse actors it involves and potential impact it might have. Secondly, since all activities would happen in certain urban places, the spatial organization would have huge impact on public activities. Therefore, the spatial organization would be another key issue for creating place value.

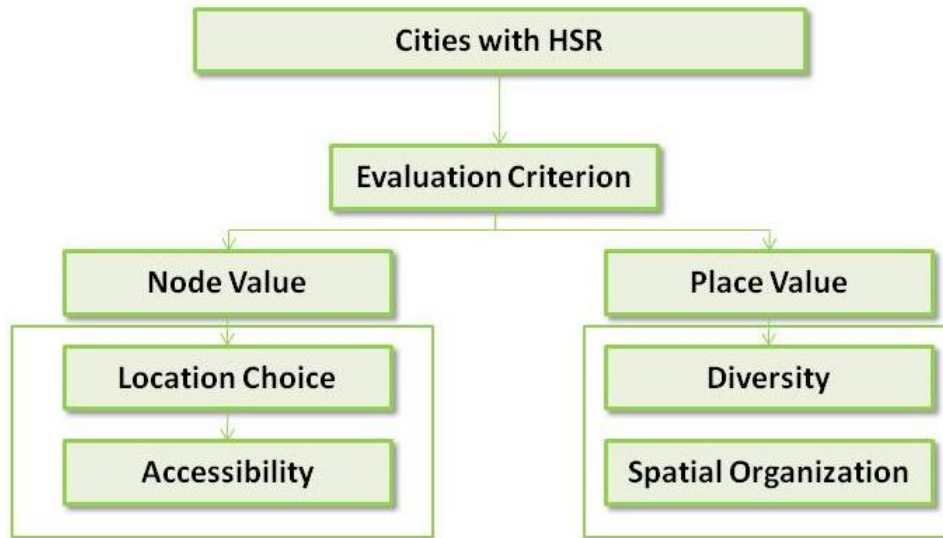


Table 1.2 Analytical Framework

1.4.1 Node Value

1) Location Choice

Berg & Pol (1998b, p.10) stated that, “the HSR station area can develop as a spatial-economic gravity centre and main junction of passenger transport flows of an urban region”. Hence, the choice of location plays an important factor of urban development. A favourable choice could draw more public and private investors to boost the development while a wrong choice might create a “locked-in” situation which can only be corrected with high costs (Berg & Pol, 1998b; Pol, 2002). Basically, the typology of location would comprise three: central location, peripheral location

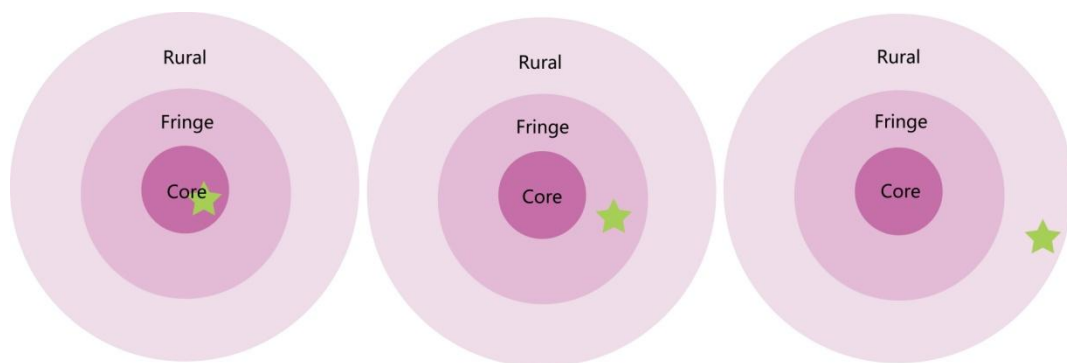


Figure 1.1 Types of Location Choice

and rural location (Figure 1.1).

The first kind of station is closely connected with urban activity and with a population centre. An HSR station in such a location would stimulate a further concentration of high-grade activities and encourage population flow into the inner city. This might, on the one hand, promote the image of the city centre, but on the other hand might cause access difficulties. Besides, the development potential of central location appears to be relatively limited due to the availability of space.

At a peripheral station, more land would be available to the developers which might enable them to exploit the station area to a larger extent. A further advantage would be that this kind of station tends to be compatible with overall city planning. A peripheral location could assist the suburbanisation of economic activities, facilitate decongestion of the inner city and help speed up spatial and industrial optimization (Berg & Pol, 1998a). However, the peripheral station would require a large amount of investment to develop the secondary public transport services which are often underdeveloped but it offers good accessibility for cars.

The rural location, in most cases, especially in developing countries which are experiencing relatively fast urbanisation, plays as an effective catalyst for new urban growth pole or even a new town. To a large extent, it is intended to become a new city gateway and prosperous area. However, because of the weak infrastructure foundation and relatively rich natural resources that it has at the same time, the development of a rural station demands a comprehensive plan and clear development framework for preliminary, intermediate and far-reaching phases. And also, the connection between a rural station and the central area seems to be the key problem that needs to be considered. Otherwise, the rural station would become an isolated transport node which stays far away from the whole urban development framework.

2) Accessibility

In a bid to stimulate the benefits of connection to the HSR network, it is desirable for an urban region to be linked to adequate complementary transport. *“The more modes meet at the nodal point, the more attractive the station area will be, provided the nuisance for the environment is kept to the minimum”* (Pol, 2002, p.33). Measures to optimise complementary transport can comprise strategies for the improvement of collective secondary public transport, connection with air transport and regional HSR lines, and access by car.

From a broader perspective, although it is believed that the HSR would divert a large number of passengers from the airplane, the relationship between HSR and airplanes is not always competitive (Givoni & Banister, 2006). In other words, HSR could collaborate closely with the city's or region's airport to create a more seamless and smooth service for passengers. This integration will profoundly enhance the appeal of both the station area itself and the entire urban region. In addition, the attractiveness of the airport might increase through the HSR connection. Besides, it is desirable for an urban region to be linked to a multitude of HSR lines, the more lines converge in an urban region, the more passenger flow and activities potential the transport system would bring, then the more vibrant the station area is. Therefore, compared with the integration of complementary transport with the city, the integration of airport and HSR services appears to be an even more crucial elements in a city's accessibility. Ease of access is an important determinant of the improvement of a city's status.

With regard to car accessibility to the HSR station, even though it seems not environmentally-friendly to the whole station area, sufficient connecting road infrastructure and parking facilities are still needed, especially for business travelers. Without car access, the station area appears difficult to develop economically and effectively. In order to keep the environmental nuisance to the minimum, it is better to

lay out road infrastructure and parking facilities underground as much as possible (Pol, 2002).

1.4.2 Place Value

1) Diversity

Due to the increased accessibility and traffic flow, a concentration of socio-economic activities may arise in and around the HSR station area. This trend, to some extent, would considerably stimulate the new economic gravity formation in a city, but also might cause industry movement to the urban region which would lead to a draining effect (Berg & Pol, 1998b). Therefore, how to strike a harmonious and complementary relationship between the station area and other urban regions appears to be a crucial issue. A relatively comprehensive and clear orientation for land use of the station area on the one hand, would help to promote urban industry transformation and local economic value. On the other hand, it would enhance the appeal and attractiveness of the station area.

Among the place value of HSR station area, to realise a multifunctional distribution of land use is highly demanded. A mix of land use in an urban area could not only make the whole station area more vibrant, but also improve the efficient use of transport infrastructure (Berg & Pol, 1998b). Otherwise, mono-functional areas consisting exclusively of offices or residential buildings, which have no coherence with the surrounding urban region, may result in one-way traffic during peak hours (Pol, 2002). This could lead to areas becoming empty and unsafe at certain times of the day and an isolated, inefficiently utilised urban transport island.

From a more spiritual perspective, a relatively multifunctional station area may also stimulate various personal experiences, and furthermore, help to mould a unique local character. The more people will be willing to make use of the diverse functions and

public facilities, then, the more people may be attracted to the station area which would significantly encourage more developers to settle and invest in it. Although multifunctional land use is a favourable development policy for the HSR station area, to highlight the area theme and character among all the functions is still determinant for the station image even city image. That means, to exploit and reflect the urban uniqueness as much as possible through planning procedure becomes an important aspiration to be pursued (Pol, 2002). In general, the realisation of the multifunctional station area is, in fact, by no means easy. It is a rather tortuous and complicated process, full of fierce debate, conflicts of interest and ambiguous outcomes. For some cases, although conceived with good expectation in the initial stage, the final result turns out to be deviated and even disappointing. Therefore, the diversity, not only refers to the urban function, but also indicates the various key elements in the development process of station area development such as the urban context, actors involved, diverse impact and conflicts, etc. It could be, to a great extent perceived as a diversity of factors which collectively lead to the final performance of a station area.

2) Spatial Organization

With regard to the spatial organization of areas that surround the HSR transportation node, Schütz (1998, quoted in Pol, 2003) put forward a “three development zones” modal based on a number of case studies. The three development zones are distinguished as primary, secondary and tertiary, which are, respectively, a zone that is five to ten minutes’ travel from the station (800m) with a very high building density, a zone that can be reached within 15 minutes from the station (1500m) with relatively high building density, and a zone more than 15 minutes’ travel from the station (over 1500m) with modest density. This model, to a large extent, could be regarded as a relatively ideal development modal which lacks the adaptability to different types of HSR station, and in reality, more spatial models could be seen in the station area which responses to the local character in different way.

And for the spatial organization around the station area, various arrangements of the elements might result in different spatial organization models. For a redevelopment project around the central location, original urban condition, to a large extent, paves the way for future development, hence, how to integrate a new-built area with existing area seems quite important. During the process, some existing infrastructure and facilities often become annoying barriers for developers, therefore, to settle the complexity of surrounding area and reorganize the space is considered to be a big challenge. For periphery and rural location choice, the planning intention at the preliminary stage lays the foundation for the whole project, during the process, although many complicated issues in central station redevelopment might not exist, the utilisation and optimization of surrounding natural resources appears to be essential to the project, As a matter of fact, making good use of natural resources could contribute a lot to the project's uniqueness and attractiveness.

Generally speaking, the spatial organization of an HSR station is hugely based on city's scale, existing urban condition and role of station area in urban system. The specific typology of spatial organization will rely on the cases analysed in the following sections.

Chapter 2 Research Methodology

Chapter 2 discusses the research methodology adopted in the thesis to achieve the primary objective---to investigate the current development strategies of high speed railway new towns in China, and to establish the optimal development strategies and guide the rational development process for this new type of urban settlement. The related research methodology is explained in two sections. The first section is to understand the literature review and the application of the method to the study. The second section explores the case study methodology and tries to adapt the theory to the specific Chinese context.

2.1 Literature Review

The literature review is a thorough, objective summary and critical analysis of available research and non-research literature, aimed at bringing the researcher up-to-date literature on a topic and meanwhile to provide the basis for future research in the area (Cronin et al., 2008). Hart (1998, p.1) claimed that *“a review of the literature is important because without it you will not acquire an understanding of your topic, of what has already been done on it, how it has been researched, and what the key issues are”*.

Basically, there are two types of literature review, one is the traditional or narrative literature review, the other is the systematic literature review (Cronin et al., 2008). The first type of review draws conclusions from a large volume of literature in the relevant subject and it aims at providing a comprehensive background for understanding current knowledge and highlighting the significance of new research. The second type of review is to provide a complete list of all the published and unpublished studies which are most relevant with a specific subject. It appears to be a

more rigorous approach to review literature and to critically evaluate and synthesize all the literature on a topic.

The literature review process, according to Cronin et al. (2008), Hart (1998), Oliver (2012) and Ridley (2012), could be divided into four steps. That is selecting a review topic, searching relevant literature, analysing and organizing the literature, and finally writing the review. The first step is to select a proper topic, in general, to have enough literature is the key issue when selecting and then, to focus topic would be more appropriate for a review than a broad topic due to its word limits (Cronin et al., 2008). The second step is to search the relevant literature from a wide range of resources. The research needs to be familiar with different ways of access. Nowadays, the most common tool for searching is computers and electronic databases which appear to be easier and faster than a manual search (Younger, 2004). When using relevant databases, keyword searches are the most popular method to identify literature (Ely & Scott, 2007). The third step is to analyse and organize the literature. This step seems essential when facing a large volume of information. Reading the abstract or summary of an article would help the researcher to get a grip of what it is about and decide whether it is worthwhile for further reading (Lei, 2014; Cronin et al., 2008). And then, an initial classification could be made according to the type of source such as primary source, usually a report by the original researchers, secondary source, summary by somebody other than the original researcher, conceptual/theoretical papers, concerned with analysis of theories or concepts associated with the topic, or anecdotal/opinion/clinical, usually case studies (Colling, 2003). On top of that, researchers could also classify the literature based on the needs of the study. Furthermore, a short summary of each article, which might include the key thoughts and critiques, would facilitate a better understanding for researchers and pave a good foundation for the final writing (Oliver, 2012; Cronin et al., 2008). The last step is to structure and write the review in a clear and consistent way. The structure of the

literature could be arranged by the use of subdivisions such as headings and sub-headings. This would help the review to have a coherent structure and enable the readers to absorb the information more easily (Oliver, 2012).

In terms of this research study, it aims at exploring the development strategies of high speed railway new towns in China which is a brand new urban phenomenon. Hence, a comprehensive traditional literature review needs to be conducted from both the 'new town' field and the 'urban development around high speed railway stations' field since there has been no existing literature about the 'high speed railway new town'. Specifically, the new town development review consists of two parts, the international and the Chinese experience, with conclusions about the strength and weakness of each. Then, a review about the urban development around high speed railway stations in developed countries will be made, with conclusions and lessons which could lay the foundation for the further research about the China's high speed railway new towns. During the process, an analytical framework consisting of node value and place value has been adopted. In a word, the literature review in this research provides a fundamental support for the analysis of the development strategies of China's high speed railway new towns, and moreover, it offers enormously valuable experience for the optimal development model of this newly occurred urban extension phenomenon in China. The literature review has been done with a logical and objective manner. When starting to write the review, several key issues have been focused on. The first one is to be critical about the literature in a proper writing style and not offend the writer. Secondly, it is essential to insert all types of references and quotations with an acceptable style and make sure all of them are accurate (Oliver, 2012; Cronin et al., 2008; Colling, 2003).

2.2 Case Study

2.2.1 The Definition of Case Study

As a good method of trying to study a particular situation in the real world, the case study has been widely used in psychology, political science, business, education, nursing, anthropology, ecology and particularly in the social science field (Shuttleworth, 2008; Yin, 2009). In terms of specific definitions and understanding of the case study, Bromley (1990, p.302) pointed out that a case study is a

“systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest”.

Yin (2009, p.18) stated that:

“a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.

Undoubtedly, the case study is a good methodology when a practical, in-depth investigation is needed (Feagin et al., 1991). Compared with other research methods such as experiment, survey, history, archival analysis, etc., the method of case study, on the one hand, appears to be a comprehensive research strategy comprising an all-encompassing method with the logic of design incorporating specific approaches to data collection and to data analysis, helping researchers to explore more authentic, more contextualized interpretation of the phenomenon and it can be studied from multiple participants and using multiple levels of analysis (Yin, 1994; Stoecker, 1991). On the other hand, it might be sometimes be criticized as being subjective and biased rather than objective, furthermore, it might be hard to generalize conclusions from a single case to wider contexts due to its limited view of organizational process and temporal phenomenon (Bhattacharjee, 2012). Therefore, case study is a difficult research method which requires high standard of research skills from the researcher

and careful prior preparation. Basically, there are several key issues which are particularly important. First and foremost is to decide whether the case study would be the right method for the research. In a bid to answer that question, clarifying the nature of research questions appears to be essential. Since the case study is appropriate for studying the ‘in-depth’ and complex social phenomenon that involves multiple participants and interacting events, Wuxi East New Town, as a large scale urban complex and a typical representative of the China’s widespread ‘High Speed Railway New Town’ campaign, it contains a wide range of interesting relevant issues calling for study. Basically, the specific research questions for the case study are (Table 2.1):

1. What are the primary development strategies towards the node value and place value of Wuxi East New Town and what are the primary driving forces behind them? 2. How does local government consider the role of new HSR location within a wider urban context? 3. How does local government consider the selection of suitable urban functions for the new town? 4. What is the overall spatial form intention of Wuxi East new town and what types of urban spaces are given priority? 5. What is the institutional organization model for the development of an HSR new town? 6. To what extent does government policy have an effect on the final outcome? What is the main deviation between planning and implementation in node value and place value and what are the main driving forces behind this phenomenon? 7. How do government officials and planners consider the relationship between HSR new town & old city and HSR new town & other new towns? How do government officials and planners consider the relationship between an HSR new town and other HSR new towns in nearby cities? What are the main advantages of Wuxi East new town? 8. To what extent could the development of node value and place value of Wuxi East new town promote the overall urban development of Wuxi? What might be the potential positive effects and the negative effects?

Table 2.1 Research Questions of the Case Study

All of the research questions of the case study would ultimately contribute to the primary research question of the thesis, namely to explore the current development strategies of high speed railway new towns in China and the driving force behind the

strategies, then to propose the rational and optimal development strategies for this new type of urban settlement. To achieve the above-mentioned goals, the focus should be on the development process rather than the effects or other outcomes, particularly concentrating on the development strategies in the node value and place value. Meanwhile, this will also take into account the social & economic context and urban & regional network which might have an impact on the specific strategies.

2.2.2 Selection of Case

Basically, there are two types of design for case studies, namely single-case and multiple-case. The single-case design might be more suitable at the outset of theory generation and under circumstances where the case could represent a critical test of existing theory, an extreme or unusual circumstance, or a common case could serve a revelatory or longitudinal purpose (Yin, 2009; Bhattacharjee, 2012). The multiple-case design, which is considered to be more compelling and more robust but more time-consuming, might be more appropriate for theory testing and for developing richer interpretations of social phenomena (Bhattacharjee, 2012).

With regard to the thesis, it fits for single case design with revelatory purpose. This is because, first of all, as a brand new urban phenomenon in China, the planning for high speed railway new towns began to occur with the advent of the high speed railway since 2008, hence, the majority of the HSR new towns are still in the process of planning or remain on the political agenda. Although lots of general information could be gathered on the website, very few new towns have been put into operation. The Wuxi East New Town, established in 2009, would be one of the earliest HSR new towns being put into practice in China and more importantly, it underwent relatively smooth development, experiencing particularly highly intensive construction during the first four years. Until now, nearly all planning job have been finished and one third of construction has been accomplished. Hence, the Wuxi East New Town, to a

great extent, could be regarded as an epitome of current prevalent HSR new town campaign in China and play a revelatory role. Secondly, Wuxi, as an economically prosperous and geographically important city of Jiangsu province and a middle sized city of China, the experiences and lessons of development strategies of the Wuxi East New Town, to a certain extent could be inferred as a reference to other cities of higher or lower level, particularly for cities with similar level and background. Thirdly, after the investigation of High Speed Railway New Town supervision group from central government in 2014, the Wuxi East New Town has obtained a great reputation and been widely recognized by both officials and public. Therefore, at present, it could well represent a role model of an HSR new town for other cities to learn and imitate. From this perspective, it seems more essential to explore its development strategies, and analyse its advantage and disadvantage, so as to set up an objective and unbiased attitude towards the case. Lastly, the organization of the Wuxi East New Town has been formally established and the Commission of Wuxi HSR New Town Business District is the chief executive organization to take charge of the urban development around the new station. Furthermore, a wide range of information could be obtained from various resources which far outweighs other cases. Therefore, based on the advantages of the development maturity, representativeness, reputation and organization, the Wuxi East New Town is selected as the single case study in the thesis.

2.2.3 Units of Analysis

Based on the single-case design and multiple-case design, each could be divided further into two groups, these are the single-case holistic designs, single case embedded designs, multiple case holistic designs and multiple embedded designs (Yin, 2009). This research is a single case study using multiple embedded units of analysis design. Units of analysis in case design are the accurate definition of what is to be studied in answering the thesis's empirical question (Yin, 2009). It provides a more

complex design which enables extensive analysis and enhances the insights of the single case (Hadi, 2013; Yin, 2009).

The analysis of case study evidence is one of the least developed and most difficult aspects of doing case studies (Yin, 2009). Without a clear analytic framework in advance, it might put the case study in jeopardy. Basically, the general strategy for analysis comprises two types, one is theoretical proposition and another is descriptive framework (Yin, 2009). In this research, the latter type would be selected because, at the moment, it seems difficult to set a theoretical orientation guiding the case study in advance. In addition, the investigator wants to explore questions at different levels as broadly as possible, so setting a prepared proposition might restrict the research scope. Since for a HSR new town both hugely relates to knowledge of urban development around the station and independent new town development, it is actually too complicated and contains various elements to explore. Given this condition, more focus should be made when conducting an in-depth case study. The descriptive framework turns out to be more suitable for the research because this comprises a wide range of previous observations and analyses that may guide the investigation and accentuate key points. A specific theoretical framework is taking place including node value and place value. The two values, indicating sub-units at different levels also constitute the units of analysis. While the overall data from the unit of analysis aims to reveal the current development strategies of Wuxi HSR new town, in order to explore it more deeply and systematically, sub-units are largely required to minimize the chances of misrepresentation and put the case into a larger context. Specifically, the node and place value are set up to explore the development strategies of location, accessibility, diversity and spatial organization.

2.2.4 Data Collection

Thirdly, the case study has to be conducted with specific data collection methods. In

principle, case study evidence mainly includes six types, namely documentation, archival records, interviews, direct observations, participant-observation and physical artefacts (Yin, 2009). As the various sources are highly complementary, all evidence would be of interest to the researcher, albeit varying in relevance and reliability (Knight & Ruddock, 2008, Lei, 2014). Hence, a good case study should use multiple sources of evidence to improve the overall quality and the reliability of the case (Yin, 2009). In this research, three of them will be used, that is the documentation, direct observation and interviews.

1) Documentation

Documentations are always playing an important role in data collection of case study, and several key issues should be concerned during the process. First of all, due to the large volume of materials available through various resources, selecting and reading relevant data and particularly what appears central, and trying to corroborate and augment evidence from other sources would be quite essential. Secondly, although relevant documents could play an integral role in data collection when doing case studies, over-reliance on them might have huge potential to mislead investigators because any document is written for specific purpose and specific audience. Therefore, the best way to cope with them is to stay as a vicarious observer and try to identify one's own objectives and specific written conditions when reviewing (Yin, 2009). Thirdly, try to collect documents through a wide range of resources. Basically, these could be personal documents such as letters, memoranda, e-mail, diaries; or written reports such as agendas, announcements, minutes of meetings, administrative documents; or newspapers, articles in mass media. Furthermore, during the field work, local libraries and other document centres could also be used to complement document collection (Yin, 2009; Lei, 2014).

In terms of this research, since the high speed railway new towns of China are still in

the initial stage and no completely-constructed case exists so far, the documentation review, to a higher degree, lays the foundation for the research and provides a better understanding of the background about the case. With regard to the Wuxi East New Town, as the large-scale urban development is typically a long process and requires the support of a broad-based coalition of all interest groups (Hadi, 2013), the review would collect documents from a wide range of resources. There are firstly the planning documentation of the overall city and the East New Town area, particularly documents relevant to the node value and place value; then, newspapers, articles and comments from mass media and official websites; thirdly, relevant policy documents, government reports, minutes of meetings; fourthly, academic journals and press clippings. The primary aim of the method is to comprehensively understand the planning intention about the Wuxi East New Town and build up a comprehensive knowledge of it, then try to explore the problems during the planning and construction process, paving the way for further on field work. The documentation could be obtained from local planning institutions and public libraries as well as online resources.

2) Observation

The method of observation is most closely related with the case study process, and through the process, some relevant behaviors and environmental conditions will be available for observation. Gillham (2000, p.45) pointed out that observation has three main elements which are *“watching what people do, listening to what they say, and sometimes asking them clarifying questions”*. Meanwhile, he defines the observation into two types. One is detached/structured: observing from outside, and the other is participant: being involved. These are similar to Yin’s (2009) definition of observation as participant observation and direct observation. Participant observation requires the researcher not only being a passive observer, but taking a role within the fieldwork situation and to participate positively. The participation would enable the researcher

have distinct opportunity to perceive reality from someone ‘inside’ and to produce an accurate explanation of a phenomenon. However, at the same time it also imposes great challenge for the researcher such as the access permit, and the potential biases produced (Yin, 2009). For direct observation, it indicates a more detached perspective which requires the researchers to observe and record what they see and hear and minimize the potential biases (Proverbs & Gameson, 2008). The direct observations can range from formal to casual data collection activities (Yin, 2009). It could involve various forms such as observations of meetings, classrooms, factory work, etc. Less formally, it might be made through a field visit, including those occasions during which other evidence, such as from interviews.

In this research, the less formal way of direct observation would be adopted. It mainly involves first of all, attending meetings in the Commission of Wuxi East New Town Business District, to observe the daily organization of the commission, the relations between different sectors and various arguments among the decision-making process, and, more importantly, to critically understand the driving force behind the relationship and existing contradictions. The whole observation process took place in the planning office of the Commission of Wuxi East New Town Business District. Then, field visits have been made to observe three key issues. The first issue is the transfer service within the new HSR station and the accessibility of the new station area. In this way, the general transport organization of the HSR station & station area could be understood. Secondly, to observe the current construction situation of the HSR new town with comparison to the original planning, so as to assess the divergence and add new dimensions for understanding either the context or the phenomenon being studied. Thirdly, to observe the general urban quality of the new town and talk to local people in order to anticipate the potential effects of the new town on the local environment and understand the opinions from residents living there. The less formal observations would be recorded by taking photographs at the site to

help the observer to understand the important case characteristics (Dabbs, 1982).

3) Interviews

Interview is considered to be one of the most important sources of case study information and an essential source for guided conversations rather than structural queries (Yin, 2009; Oppenheim, 1992). During the interviews, researchers need to maximise the amount of evidence he/she can collect from the interviewee and hence increase the possibility of receiving an answer to the research questions (Remenyi, 2011). According to types of interviews, Flick (2009) classified them into five types, the focused interview, the semi-standardised interview, the problem-centred interview, the expert interview and the ethnographic interview. Yin (2009) claimed three types of interviews as prolonged interviews, shorter interviews and survey interviews. The prolonged interviews usually take place over two hours or more to explore interviewees' insights, explanations and interpretations to certain phenomenon with a broader and open-ended nature. The shorter case study interviews would be more focused and taking shorter time, around 1 hour. In this type of interview, a conversational manner would be adopted and researchers would be more likely to follow a case study protocol (Yin, 2009). The survey interview, along with a survey with structured questionnaire, could be used to produce quantitative data. And this type of interview often deals with a group of people related to the case study such as an organization including a survey of workers and managers (Yin, 2009). On the whole, interview is a challenge for researchers and high quality of interviewing is a skill which can only be obtained through practice rather than books or lectures. A researcher who conducts the interviews needs to be outgoing and have good communication skills (Remenyi, 2011).

Basically, there are several key issues that need to be concerned about when conducting interviews. First of all, a sample size should be decided in advance. It

might be difficult to establish certain numeric guidelines to how many interviews should be conducted. Opinions vary from different scholars. According to Mason (2010, p.8), *“the proper sample sizes were 20 and 30 (followed by 40, 10 and 25)”*, and he also suggests that *“studies utilizing multiples of 10 as their sample is the most important finding from his analysis”*. Betaux (1981, p.35) suggests that *“15 is the smallest sample size for all qualitative research”*. However, other scholars might not agree with this since Jette et al. (2003) and Lee et al. (2002) consider that the number of participants could be reduced in chosen topics or when more than one research method is used. Therefore, there are no certain conclusions about the sample size and it would be decided on a case by case basis. The second issue that requires concern is the approach to reach the most appropriate people. Sometimes it might turn out to be quite time consuming, so the best way is to use indirect routes, such as individuals or an organizations which could help researchers to obtain access to the right people (Remenyi, 2011). Thirdly, before conducting interviews, a proper interview protocol should be prepared to help the researchers to follow their own inquiries. Fourthly, when conducting interviews, an unbiased, friendly and non-threatening manner appears to be quite essential. The primary aim of the researcher is to allow interviewees to answer according to their own opinions and values, therefore, they should avoid leading questions and probe effectively to stimulate the informant to produce more information. This is a big challenge for researchers (Herman & Bentley, 1993). A good interview, on the one hand should have a basic structure, and on the other hand should give the informant more room to expand on their answers and provide information that he or she considers is important (Bernard, 1995). Lastly, it is necessary to choose the proper recording device. Usually, the audiotapes could provide a more accurate record than taking notes. However, sometimes, audiotapes should not be used when interviewees refuse the permission or the researcher would be distracted during the interview (Yin, 2009).

In this research, interview conduct is required to explore ‘why’ current development strategies occurred as they did and secondly, to explain ‘how’ the particular process occurred, which can lead to a deep understanding of the current situation. The interviews will provide insightful information for the research from various perspectives based on the interviewees’ different social roles. This is a focused shorter interview with semi-structured question list and open-ended questions, in which an interviewee is interviewed for a short period of time, 40 minutes to 90 minutes. And the interviews will be open-ended and assume a conversational manner and will follow a certain set of protocols. The subtotal number of interviewees is 20 who could be divided into five categories (Table 2.2):

Designers (3): representatives of urban master planning and planning of Wuxi East new town

Government Officials (2): representatives of government sectors who are in charge of the overall urban development and particularly the Wuxi East new town development

Planning Officers (9): representatives of the Commission of Wuxi HSR New Town Business District who directly take responsibility for the HSR new town construction

Academics (3): representative of experts in the urban planning field who are not directly involved in Wuxi East new town planning

Member of the Public (3): residents who live in the Wuxi East New Town and have personal attitudes towards the development of the new town

Category	Position	Code
Designers	Principal Urban Designer for Wuxi East new town Business District	DG 1
	Senior Urban Designer for Wuxi East new town Business District	DG 2
	Senior Urban Designer for Wuxi East new town Business District	DG 3
Government Officials	Top Government Officer in Wuxi municipal government	GO 1
	Secretary for Mayor in Wuxi municipal	GO 2

	government	
Planning Officers	Planning Officer of Wuxi East New Town Business District	PO 1
	Top Planning Officer of Planning Office	PO 2
	Planning Officer in charge of new town project examination	PO 3
	Planning Officer in charge of project examination	PO 4
	Planning Officer in charge of project examination	PO 5
	Planning Officer in charge of project examination	PO 6
	Planning Officer in charge of project design	PO 7
	Planning Officer in charge of project design	PO 8
	Planning Officer in charge of project design	PO 9
Academics	Professor from Southeast University	AC 1
	Professor from Southeast University	AC 2
	Researcher from Planning Institution	AC 3
Member of the Public	Taxi Driver	MP 1
	Retailer	MP 2
	Retired Worker	MP 3

Table 2.2 Category of Interviewees

The protocols for interviewees are different due to their different social roles, however, the primary aim is to answer the research questions of the case study. For designers, government officials and planning officers, due to their direct involvement in the development of the Wuxi East New Town, questions are set up according to two criteria, node value and place value, but in effect, the protocol for each interviewee would be adjusted according to their specific working roles. For academics, since they are not directly related to the case, general questions about the development of high speed railway new towns in China are expected to be answered. For member of the public, due to their various backgrounds, academic questions would not be suitable for them, hence, questions closely related with their personal experience would be set

up. The interview process is originally planned to be recorded by phone recording with complementary note-taking. However, most interviewees rejected the recording requirement particularly for government officials, planning officers and designers. Therefore, note-taking has become the primary recording tool for interviews.

Interview Protocol for Designers, Government Officials and Planning Officers

General Questions

1. Could you please briefly elaborate the nature of your involvement in the project?
2. In your opinion, what is the main objective of the project?
3. In preparation for the project, did you visit or study other projects which provided ideas or inspiration for the project? If so, which other projects did you visit or study? Which aspects of these projects do you like in particular?
4. Which aspects are, in your opinion, the most important issues with respect to the realisation of the project? Over which of these issues do you have direct influence?
5. In your opinion, generally speaking, to what extent do you think the HSR new town will succeed? Why?
6. Which specific measurements do you adopt to compensate for those affected people during the construction of the project?

Questions about Node Value

1. In your opinion, what does node value mean for a HSR new town?
2. Which points do you think are of great importance with regard to the development of node value for the project?
3. In this project, what do you think of the location choice? What is the advantage and disadvantage of the choice?
4. What kind of measurements do you adopt to promote the node value of the project? And which measurements do you think are particularly worthwhile to highlight?

Questions about Place Value

1. In your opinion, what does place value mean for a HSR new town?
2. Which points do you think are of great importance with regard to the development of place value for the project?
3. What kind of measurements do you adopt to promote the place value of the project? And which measurements do you think are particularly worthwhile to highlight?

4. Do you have influence over these measurements being present or not in the project?
5. Which of other actors do you expect to be involved in this?
6. What kind of measurements do you adopt to balance the industry relationship between the HSR new town and other urban regions? What kind of uniqueness will HSR new town possess?
7. What kind of population do you think will benefit most from the HSR new town?
8. Have you ever worried that urban economies and labour would be drained away to other cities? What kind of measurements do you think are essential to stop the trend?

Interview Protocol for Academics

1. What do you think of the prevalent trend for planning and construction of HSR new towns at the moment?
2. In your opinion, what is the significance for doing so?
3. Do you think it is essential or just another superficial campaign?
4. Do you have any suggestions for this kind of phenomenon?

Interview Protocol for Member of the Public

1. What do you think of the current development of the Wuxi East New Town?
2. What are your favourite aspects and least favourite aspects of the new town?
3. What kind of changes have you experienced in the wake of the Wuxi East New Town construction?

2.3 Chapter Summary

In this study, literature review and case study would be adopted as the primary research methodology. First of all, through a comprehensive literature review, a deep understanding of new town development in western countries and China has been acquired which paves the foundation for further research about the HSR new town development in China. Then, a systematic framework is adopted to analyse the international high speed railway station area development. Secondly, the case study method will be used to deeply understand an example of the HSR new town in China.

During the process, not only are the history, urban context and regional background carefully reviewed on the basis of documentation, more importantly, on-site observation and interviews will be conducted to establish a more rigorous and comprehensive understanding of the development strategies of the HSR new town.

Part II International Experience

Chapter 3 International New Town Development

Chapter 3 focuses on the literature review of international new town development. In general, it includes two primary parts. In the first part, key issues of new town development will be discussed to acquire a comprehensive understanding of new town development. Then, in the second part, as the origin of modern new town movement, the British experience will be reviewed, in which the evolution process, delivery mechanism, master plan, social communities and the general appraisal of new town will be critically explored and put forward. On the whole, to comprehensively and critically understand the strength and weakness of the international new town development would be beneficial to provide valuable advice for the HSR new towns in China.

3.1 Key Issues of New Town Development

3.1.1 Introduction

There have been, throughout the world, a large number of planned schemes called ‘new towns’, or in some cases ‘new communities’ or ‘new cities’ since the rise of civilization (Golany, 1978; Merlin, 1980). Many examples are traceable to ancient times such as the new urban settlements of Babylonis; Meheno-Daro of the Indus Valley; Kahun of Egypt; Melitus, Olynthus, and Periene of Greece; the large number of new towns built during the Medieval period; and the many imaginatively-designed new towns of the Renaissance were all created for various reasons (Gaborit, 2010). Golany (1978) claims that these ‘new towns’ are evidence of humanity striving for perfection in life.

Therefore, the new towns concept is not a new one (Schaffer, 1970). Although the new towns concept and the construction of them have occurred since the beginning of urban settlement, only during the 20th century did the realisation of the concept become a worldwide phenomenon, when Ebenezer Howard proposed the idea of ‘Garden City’ in 1898. The ‘new towns’ with which this literature review is concerned are those that in the twentieth century have been purposefully founded, planned and developed, first in Great Britain and subsequently in other countries. These were established for a number of reasons, however, many share the common goal of solving an urban crisis and, through social, economic, and political factors, improving the quality of life for society (Golany, 1976; Osborn and Whittick, 1977; Golany, 1978).

3.1.2 The Evolution of New Town Concept

Since Ebenezer Howard first advanced the idea of “garden city” in 1898, which provided the prototype for modern new towns, the new town campaign of the 20th century began its journey. Although the concept of new towns has some basic definitions, it still has experienced some changes at different periods.

In terms of the basic definition of new town, it has been discussed at length by many different scholars. By and large, in spite of various definitions, there are several apparent characteristics to be found in the basic new towns concept:

- new;
- well-planned;
- balanced settlements;
- situated beyond existing built up urban areas.

New towns, at a large extent, could be interpreted as a ‘growth centre’ and ‘subsidiary centre within a city region’ and be an effective alternative aimed at settling the overpopulated and congested problems of urban areas after the Second World War in

the circumstance of baby boom and a rapid industrialization (Gaborit, 2010). Furthermore, it offers a new concept of lifestyle with a green and healthy environment (Nozeman, 1990, p.149; Reijndorp, 2007). In addition, De Klerk (2007) pointed out that a new town, in effect, is very much related to the 'reform' in urban, social and administrative aspects. It represents the substantial progress in urban planning and profoundly relieves the urban burden, promising a high quality life for new residents at the same time.

Nowadays, the evolution of the new town concept emerged as a response to urban crisis in the new era and adaptation to changing circumstances (Gaborit, 2006; Keijzer, 1999). Throughout the 1990s and the 2000s, North American and European countries have become increasingly concerned with the development of 'sustainable cities and communities', and published a series of urban policy initiatives and blueprints for this purpose (Urban Task Force, 1999; ODPM, 2003, 2005; Ercan, 2011). The notion of 'sustainability' is fundamentally to ensure the upward direction of social progress. It can be considered as a remedy to cope with the persistent growth of environmental pollution and resource depletion, and to achieve economic vitality, social equity and ecological integrity in cities (Alexander, 2009; Ercan, 2011). Compared with the new towns from the Second World War to the 1970s which belonged to an age of mechanical reason, the sustainable communities aim to cure complex, multi-dimensional urban problems in the ecological mindset (Barton, 2000; Lafferty, 2001; Pugh, 2001; Agyeman, 2005; Alexander, 2009). Similarly, in 2007, the UK government launched the 'Eco Town' program which intends to create ten new communities with around 25,000 people in each to address the housing shortage problems and reduce carbon dioxide emissions by 80% below 1990 levels by 2050. In addition, a programme of 'New Garden Cities' proposed by the coalition government in Britain in 2012 also reflected a similar idea of creating new homes through larger scale development following the principles of 'Garden Cities' and the plan evoked

heated discussions in England, Scotland and Wales (Town and Country Planning Association, 2014).

Today, with the widespread use of information and communication technology, the mobility of people has increased enormously which means their activities are no longer restricted in a city and could take place on a much larger scale (Keijzer, 1999). Hall and Ward (2014) suggested that systematic efforts should be made to create new urban nodes in new transport links. From this perspective, the Swedish new town model would be employed in which various public facilities such as shopping, services and entertainment are strongly concentrated around the interchange stations, with relatively high density apartment around the nodes, and with single family houses placed outside a radius of approximately 1km with efficient bus links. This transport corridor, which is based on new town development, could be regarded as the linear version of Howard's Social City. Within these public transport corridors, especially rail, light rail or high speed rail, new communities with mixed-use and walking-scale units (population: 20,000-30,000) would be developed and further grouped into linear or rectangular units up to 200,000-250,000. In addition, existing towns along the corridors can also be expanded (Hall & Ward, 2014). The Thames Gateway Plan is a recent example to show the combination of modern transport and urban development. Along the 64km corridor based on the new high speed link from London to the Channel Tunnel, concentration of providing environmental jobs and creating new carbon-neutral urban development would be intended to transform the Thames Gateway region and relieve the huge demand for housing in the south-east region. The Thames Gateway is a cluster of cities, towns and villages, where none of them is isolated but networked together (The Thames Gateway, 2014). From this point, it is clear that the development of new towns or expansion of existing towns nowadays is no longer isolated or an individual urban development project but, to a greater extent, it indicated the close cooperation with public transport links,

meanwhile coupled with new technologies so as to achieve fluent flows and eco goals. All in all, the primary tendency of new town developments in this new century is moving towards more compact urban development concentrated on good public transport links which could lead to greater sustainability and help to mitigate traffic congestion and the level of pollution (Deputy Prime Minister and the First Secretary of State, 2002; Morocco, 1999). In such a networking society, new town needs to redefine its own role and respond actively with other parts. More importantly, regional planning would become increasingly essential for restructuring a balanced, efficient and diversifying network in response to a constantly challenging and volatile world.

In conclusion, the concept of new town has changed gradually as time goes by. From the initial garden city idea at the end of the 19th century to the new town campaign after the Second World War, and up to the sustainable community and the transport based model in the 21st century, new towns in the new century have to cope with much more complicated challenges such as environmental sustainability, cultural diversity, efficient transportation connections, economic development and social cohesion, rather than just relieving overspill in congested urban areas.

3.1.3 Character of New Town

There are, according to the concept and the purpose outlined in the previous section, three key issues that constitute the backbone of new towns, namely site and size, self-containment, and balance. As an effective antidote to urban crisis, new towns should be located in a proper site with a reasonable size, and be developed as a self-contained and balanced community for both living and working (Perloff & Sandberg, 1972).

1) Site and size

When considering the development of a new town, the first and foremost issue coming into mind is the choice of location. The term 'new town', as mentioned before is an area without any urban concentrations. Therefore, it should be situated outside of

existing urban areas, either close to or far away. Since the location, to a great extent paves the foundation for further development, the process is by no means easy but very complicated, and a wide range of issues have to be taken into consideration. From the physical perspective, the topography of the site and resources such as water, oil, coal, gas, etc., available land, assessment of natural disasters such as volcano, flood, landslide, etc., landscape, and access to a variety of transportation networks should be seriously explored and considered. From the social and political perspective, the preservation of natural beauty and historic interest, noise and pollution, the availability of facilities, and the market for industrial development and housing, are all crucial to the overall strategy of regional development and must be investigated broadly and meanwhile deeply (Golany, 1976). Therefore, the development of a new town, to a great extent, could be viewed as a key part of regional change both economically and socially rather than a process of self-growth.

In terms of typology of location, two categories could be observed: one is situated close to the urban area while another is in a rural area. In northern Europe, many new towns could be classified as the first type as they are placed along radial lines served by public transport. For example, the new towns of Stockholm are clustered stations along urban metro lines, and the Copenhagen 'finger plan' demonstrates a similar type as well as the Helsinki new town. French new towns were also situated at the fringe of major cities so as to attract more people and business (Merlin, 1969; Gaborit, 2010). This type of location hugely improves the connection between new town and parent city by limiting commuting times. And furthermore, it indicates a more compact, continuous and sustainable way of new town development. The second type of location, far away from urban areas can be seen mostly in Western Europe such as UK, Germany, the Netherlands, etc. In the UK, new towns should be located sufficiently far from the parent city. They should be at least 40km from London and 20km from other metropolises, and between them a green belt would be preserved (Osborn &

Whittick, 1977). In the Netherlands, similar choices were seen. This type of new town tends to be larger than the first type and more independent, both in economy and society since it can hardly rely on the facilities of urban areas. However, the prevalent low-density development pattern has been criticized as anti-urbanism and an over-dependence on automobile has turned out to be unsustainable and impedes the financial feasibility of public transport.

In terms of size, there has always been dispute about the topic, and no definite agreement has been achieved yet. Basically, there are major two viewpoints: maximalist and minimalist (Golany, 1976). In the maximalist's mind, a larger new town will be more capable of providing sufficient population to foster community spirit and ensure a satisfactory balance and diversity of employment (Osborn & Whittick, 1977; Merlin, 1969). This is because without a certain size, some firms were reluctant to locate themselves in small or medium sized units which have not gained any reputation and are relatively cut off from the world of information, ideas and business (Merlin, 1969). Cervero (1995) claimed that towns with a population of 150,000 to 300,000 could offer an adequate choice in terms of social, cultural, educational and other facilities, as well as a wider range of jobs. On the other hand, the minimalist argued that a small new town allows more effective social interaction and provides a more pleasant urbanism which strengthens local identity. In spite of the dispute, there has been apparent tendency towards enlargement of new town size. For instance, the optimum size set for English new towns has increased from 60,000 persons in Stevenage (1946) to the 250,000 of Milton Keynes (1967). In the early 1950s, the proposed population for most new towns was around 30,000 to 50,000 while the target in the 1960s has changed to around 200,000 to 250,000. Some economists claim that *"a new town with regional function should have a population somewhere between 100,000 to 200,000"* (Baranov, 1967, p.209). Miller (1997) pointed out that size is related to the location. While new towns closer to existing

large cities could be smaller to supply daily need, new towns in remote areas would require a larger size for a certain degree of self-containment. On the whole, different new towns have their own optimal scale and vary from each other. Therefore no definite conclusion can be determined unless a full range of elements such as cultural, social, functional and economic ones have been explored comprehensively.

2) Self-Containment

Until the latter part of the twentieth century, it was felt that the main feature that distinguished new towns from the ordinary suburban sprawl lies in the intention for or achievement of 'self-containment'. Gye and Jeon (2004) classified self-containment elements into enough employment, infrastructure convenience and decent environment. Self-contained new towns would therefore be regarded as those in which the residents can live pleasant lives, and satisfy their daily needs within the town rather than by travel to other areas. These areas would be fully provided with a full range of facilities for day-to-day use (Park et al., 2011).

However, in reality, it seems difficult to realise completely self-containment (Lee and Ahn, 2005). The British new towns' experience has shown that in spite of extraordinary balance controls over the industrial growth rate and the provision of housing, the eight London new towns still have to suffer a large amount of commuting for work, both in and out of the new towns. According to some studies in Britain, even when the number of job opportunities in the new town equals the number of employees, a considerable in-and-out commuters still exist between the new town and the region (Ogilvy, 1968; Merlin, 1971). In Cumbernauld, 44% of employed residents still left the new town to work and the number in Harlow was 20% (Cullingworth, 1999; Merlin, 1969). It would appear that the commuting to work must be accepted as the necessary price paid since it offers many advantages of greater industrial stability, superior employment possibilities, and a higher standard of living (Cullingworth,

1999). For employers, a welcome mobility is offered and meanwhile, the prospect of diverse, better job opportunities are opened up in front of the employees (Robinson, 1972, Kafkoulas, 2009). Therefore, the absolutely complete realisation of self-containment in a new town seems unrealistic, and moreover, in terms of social balance for a community, there seems to be no point in insisting on the closure principle for employment, especially in the automobile-dominated and public-transit oriented era. Taking Stockholm new towns as an example, the distance between new towns and the centre is much less and the small size of the new towns makes them less attractive to business concerns. Therefore, the sustainability lies hugely in the strong rail transit rather than in any kind of self-containment. Most new town workers are imported from the outside and the good public transportation connection has enabled Stockholm's new towns to be the regional mobility 'success stories' despite their lack of self-containment (Cervero, 1995). In Paris, although a balance was being sought between employment and population, alternatives were still provided for inhabitants. Moreover, the modest interchange of human resources and information, to a large extent, could be considered as the positive elements for economic and social stability.

Nonetheless, the relative self-containment is still a desirable objective for most new towns, especially for people who are less mobile and willing to live close to work. In order to achieve this aim, the regional context should be viewed comprehensively since the commuting can be highly connected with the towns and cities in the surrounding areas, and with the mother city from where a large number of new town residents will probably come. Hence, *"the concept of self-containment should be applied, as it were, on a regional basis"* (Robinson, 1972, p.45). And also, the mix of diversified industries and the reasonable balance control of both industrial and population growth are still regarded as an effective way to the realisation of self-containment (Malandi, 2005; Alexander, 2009; Hui & Lam, 2005).

3) Balance

Some meanings of the word, balance, have been subsumed in the discussion of self-containment. A town would not be self-contained without the balance between the population and the facilities (Thomas & Cresswell, 1973). Yet, the idea of a balanced new town is much more complex than that of self-containment, though the origins of the town concepts are partly intertwined (Golany, 1976).

Essentially, the objective of balance has always been a major one for the new towns and was largely seen “*in terms of class composition, both of the town as a whole and of its various neighbourhoods*” (Thomas & Cresswell, 1973, p.34). Reviewing the new towns’ experience across the world, one of the problems which is quite common among all new towns is social imbalance, indicated by a disproportion of sexual and age groups in a new town’s population structure, and the ratios of different social classes in terms of their income, skill and race (Golany, 1976, Alexander, 2009). Most new towns across the world, except those in Israel, absorb mainly a middle-income population. Thus, the problems among low-income groups remain unsolved in the national program. Taking British new towns as an example, for various reasons, only a very small part of new town populations are from low-income groups (Alexander, 2009). Another reason that might lead to this phenomenon is that low-income populations are reluctant to move to new places fearing that their position and social lives would be jeopardized. On the other hand, skilled people show much more mobility than that of low-income groups (Advisory Commission on Intergovernmental Relations, 1968). Meanwhile, evidence in 1991 showed that the new town had a relatively low attractiveness to higher education, senior executives and potential community leaders because senior people in industry did not care for a pioneering life on top of their work and were unwilling to commute (Cullingworth, 1999).

Due to the different national background and new town development period, the focus in developed countries should be on ‘balance’ rather than in developing countries which are still going through the process of urbanisation and industrialization, and mainly concentrate on issues about spatial system and economic efficiency (Shachar, 1972). For developed countries, like Western Europe and the United States, new towns appear to be an effective means for *“equalizing housing and employment, for integrate population groups of different ethnic and income backgrounds in a physical framework that would encourage social interrelationships, and for improving the quality of life through use of an efficient land-use pattern and imaginatively and attractively designed housing and public areas”* (Shachar, 1972, p.44). And furthermore, in the 21st century, new towns could be largely regarded as sustainable communities which mainly focus on ‘environmental balance’ due to the severe environmental deterioration (Power, 2004; Ercan, 2011).

To achieve this balanced goal, first of all, *‘heterogeneity is considered as one important way which might lead to harmonious relations and interaction and enrich people’s lives’* (Herbert, 1961, p.177). In such a community, the existence of a homogeneous group could also be provided on the basis of communal factors such as religious beliefs and ethnic origins rather than income (Herbert, 1961; Cullingworth, 1999; Alexander, 2009).

Then, since a new town is constituted by people of different ages, the satisfaction level of their needs, to some extent, decides whether or not a new town can be called ‘balanced’. The age group could be mainly divided into four categories, namely children, teen-agers, adult and elderly. Among those, children, teen-agers and elderly would deserve more concerns. For children, more play-ground spaces and medical services must be provided sufficiently. For teen-agers, recreational facilities are needed to support their social life, according to the study of early new towns of

London, because of the lack of facilities, most teen-agers had to go to London every evening for social life, and this trend, prompted them to find jobs there and leave new town (Golany, 1976; Cullingworth, 1999). For elderly people, the proximity to social and medical services, the inseparate location and the support for an urban atmosphere and amenities are regarded as the key elements. Given the condition of sufficient provision of various facilities for different age groups, the balanced population structure could be highly expected, which would largely contribute to the whole balance of a new town.

Thirdly, 'neighbourhood' seems to be a good planning way to help achieve a balanced community (Alexander, 2009). The social mixing of the neighbourhoods was mainly based on the existence of certain facilities which could be attractive to all classes and by which social segregation could be considerably avoided. With regard to certain facilities, the community centre, neighbourhood shopping centre and neighbourhood schools are all good examples of effective public facilities which would provide a meeting place for all classes (Thomas & Cresswell, 1973; Hall & Porterfield, 2001; Alexander, 2009).

In the end, some ecological techniques seem to be essential for the sake of energy saving and thus achieve environmental sustainability and ecological balance (Alexander, 2009; Ercan, 2011; Keeton, 2011).

3.2 British Experience

Although there have been many well-built new towns throughout the ages across the whole world, new towns of Britain still play a vital and pioneering role in the new town development history. First started in 1946, they rapidly attracted enormous international interest due to their success of professional planning.

On the whole, just as Lewis Mumford said in his 1946 introduction to Howard's book, Howard paid much less interest in physical forms than in social reforms. The keynote of garden cities would be local management and self-government, which depicted a third socio-economic system superior both to Victorian capitalism and to bureaucratic centralized socialism. Howard's revolutionary idea for 'Garden City' not only aims at creating a good

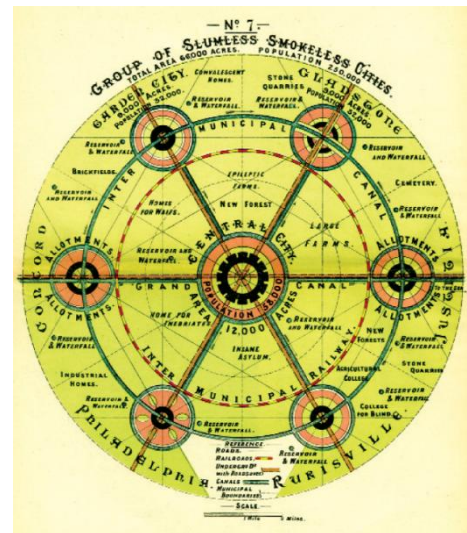


Figure 3.2 Social City Diagram (Town and Country Planning, 2014)

planned city physically, more importantly, he is longing for giving the community residents a permanent welfare (pensions, healthcare and education) and sufficient supply of a wide range of public services. Once the planned limit of population (32,000 people) had been reached, a new city would be set up a short distance away, followed by another and another. Ultimately, a network of 'Social Cities' (Figure 3.2) would be formed with each connected by excellent public transport (Town and Country Planning Association, 2014). Only a few months after the publication of Howard's book, the Garden Cities Association (later to become the Town and Country Planning Association) was set up and it subsequently had an immense impact on British and overseas planners which resulted in a global 'Garden Cities' movement. Experiments in the USA in the 1930s, such as Radburn, Greenbelt and others, are obviously directly related to its influence (Merlin, 1980). In the UK, Howard put the garden city theory into practice by creating two experimental garden cities, Letchworth in 1903 and Welwyn in 1922 which happened to be in the same county of Hertfordshire, north of London's countryside. Unfortunately, despite the favourable built environment and public realm, due to the First World War and the Great Depression, the basic pillar of the 'Garden City', namely retaining all surpluses (sale

of leasehold property and profit from various enterprises) for community welfare and public facilities, has been hugely undermined through speculative interference and weak cash flow. Furthermore, Welwyn Garden City, following Patrick Abercrombie's 1944 Greater London Plan, was designated a New Town which meant a loss of financial control for the Garden City company since the profit would be paid back to HM Treasury rather than being reinvested in the Garden City (Town and Country Planning Association, 2014). Therefore, in effect, the realisation of 'Garden City' was far from reaching the original vision of Howard's since the philanthropy will was vulnerable financially, the idealistic social resolution, ultimately, led to a dilution of that vision (Town and Country Planning Association, 2015a).

2) From Garden Cities to New Towns

After the First World War, due to the demand for 'Homes Fit for Returned Heroes', local authorities expanded public housing programs within their own boundaries. These were seemingly based on 'Garden Cities Lines' but turned out to be no more than sprawling commuter suburbs in the end (Town and Country Planning Association, 2014). By the late 1930s, agreement had been reached widely by government that both the Garden Cities and the inter-war public housing programs were not delivering sufficient homes, and fast built, large scale new towns were demanded urgently. Consequently, in 1937, the Barlow Commission, headed by Sir Montague Barlow, was appointed by the British government to investigate the severe urban problems and make further solutions. The influential Barlow Committee Report, presented in January 1940, suggested a policy of decentralization or dispersal in order to release pressure on congested urban areas (Merlin, 1980). Following the Barlow Committee Report, the Greater London Plan of 1944, proposed by Patrick Abercrombie, having absorbed the essence of previous theoretical groundwork, played a pivotal role in regional planning history and also pointed out the right direction for the postwar development of London. The plan was intended to control the rampant expansion of

London through the establishment of ‘green belt’ around the city, then, to create new towns outside the Greater London area to accommodate the overspill of population while expanding certain existing towns for the same purpose (Merlin, 1980; Ward, 1993). As a result, the New Towns Act came into being in 1946 which marked the beginning of the new towns era in Britain (Ward, 1993). From 1946 to 1970, 32 new towns have been constructed in total consisting of three generations.

3) New Towns Evolution Afterwards

The political and economic climate changed radically in the 1970s and 1980s. In 1976, it was announced that the funds would be spent on inner-city renewal rather than building up new towns outside (Ward, 1993; Gossop, 2006). During the next few decades, many new towns experienced severe deterioration in terms of physical condition and working opportunities which triggered the refurbishment programmes in the 1980s and 1990s. Then, in a bid to adapt to a changing urban crisis, the ‘Sustainable Communities Plan’ was published by the Labour Government in 2003 aiming at providing people with high quality of life and good environment. Also, the ‘Eco-Towns Initiative’ and ‘New Garden Cities’ were raised to drive the development of new environmental infrastructure such as zero-carbon energy systems (Alexander, 2009). Until now, there have been four eco towns being progressed and North West Bicester has already begun its construction in January, 2014. Its primary intention is to create vibrant and sustainable neighbourhoods where people can afford to live, sufficient jobs are supplied, children can play outdoors safely, wildlife can thrive and a strong community spirit would be established (North West Bicester, 2015). Generally speaking, ‘sustainability’ has become one of the few subjects at the top of political agendas for new urban development in the UK (Keeton, 2011).

3.2.2 The Delivery Mechanism

The success of a new town, to a great extent, depends on its delivery mechanism. If there is no efficient and well-organized implementation system, new town vision

could only remain as drawing on a drawing board.

The first and foremost issue of delivery system is the legislation. The New Towns Act 1946, followed closely the suggestions of the Reith Committee, proposed the establishment of a powerful and nationalized corporation, the New Town Development Corporation, to take charge of all necessary issues to bring the town into operation (Town and Country Planning Association, 2014), regulating the site selection for new towns and the structure and authority of the Development Corporation.

The second key element of delivery system is the organization. For every new town in the UK, the Development Corporation, appointed by the Ministry of Town and Country Planning or the Secretary of State for Scotland was central to the delivery of all new towns. It played an overwhelmingly dominant role for acquiring land, building houses, factories, commercial property and various public services and caring for new town citizens, it acted as the ‘engine’ for new town approach and was accountable to the Minister (Town and Country Planning Association, 2015a; Town and Country Planning Association, 2014; Osborn & Whittick, 1977). Usually, it was made up of, first of all, a chairman, a Board, a general manager and complementary staff. However, after the mid-1970s, full time staff were reduced “*as much work was out-sourced in response to central government policy*” (Town and Country Planning Association, 2014, p.12). Then, with regard to the central government, as the initiator of the new town program and the major external partner, it appointed the Development Corporations, provided the majority of funding and closely scrutinized the process and showed strong commitment to its development (Cullingworth, 1979; Phelps, 1997; Delafons, 1997). Annual budgets for new towns had to be agreed between the sponsoring central government department and HM Treasury. The HM Treasury, as the lender of loans for new towns, imposed very strict scrutiny of all

spending in new towns while the Ministry of Housing, together with local government or Department of the Environment, were in charge of land use planning. Furthermore, the Board was required to report annually to the Minister. Therefore, the new town program, in effect, is a top-down governance with expert-led style (Buxton, 1987). Lastly, some other agencies also took the responsibility for different issues of new town development. For instance, nationalized public corporations would be in charge of electricity and railways and reported to the relevant central ministries. The gas supply was supplied by regional boards, in some cases, water supply was in the hands of private companies, public transport was supplied by various operators and hospital was provided by regional hospital boards which were appointed by the health ministry.

In conclusion, the Development Corporation had a very strong and determined leadership and had to cope with other agencies adjusting their programs to new town requirements, much of the success in the delivering system, could be attributed to the top-down leadership (Schaffer, 1970; Phelps, 1997). The core powers of the Development Corporations are that they had the authority to compulsory purchase land at current-use value, to borrow money from HM Treasury and other sources, to prepare a master plan, to deal with planning permission for development, to manage housing, to collaborate with other agencies and market new towns in the UK even overseas (Town and Country Planning Association, 2015). The concentration of powers enabled the Development Corporations have a high level of autonomy which made them very effective and quick delivery instruments. However, later, due to their public nature, the Development Corporations were vulnerable to the changing national policy. They were wound up a long time before they had achieved their original target (Town and Country Planning Association, 2015a).

3.2.3 Master Plan

The development of new towns in the UK, following the tradition of the Garden City,

was guided by a masterplan to achieve a socially and economically balanced community. Although the specific plan for each new town differs, there are broad common design principles that come through all new towns.

First of all, a high degree of zoning and segregation of land use ensures the separation of residential areas, industrial areas and central commercial areas. Basically, since the initial aim of a new town is to provide pleasant environment for people to live and work, industrial areas were placed on the outskirts of the town to avoid air pollution and traffic interference of industry, yet with public transports link with other parts (Merlin, 1971; Town and Country Planning Association, 2014). Although the industrial zones were put on fringe sites, they were not ignored and by contrast, far more capital was spent on manufacturing than other public facilities such as churches, theatre, town halls, etc. Consequently, the design for industrial firms reached a high standard.

Secondly, the majority of the town area is dominated by low-density houses in 'neighbourhood units' with populations of 5000-10,000, with the supply of at least one primary school, a secondary centre and other public facilities help to create a sense of community and enable residents have easy access to key facilities. The housing was predominantly occupied by two storey houses with rear garden and garage attached, and surrounded by large amount of landscape or green spaces between neighbourhood units so as to counter the overcrowded conditions of the inner-city slum. This prevalent design principle, rooted in Howard's Garden City vision with preference for people pursuing green spaces, on the one hand, realised the dreams of the middle class who enjoy living in such a spacious house with pleasant surroundings. On the other hand, this large area low density led to a monotonous feel spreading across the whole town and meant a severe lack of 'belonging' and local identity and absence of urbanity in architecture. Moreover, low density also means the

radiation area for public facilities are small and public transport would be impossible without heavy subsidy (Potter, 1997; Department for Communities and Local Government, 2006).

Thirdly, as one key element continuing the Garden City essence, a network of green space, parks and stretches of greenery, corridors along transport, private gardens and green countryside were provided. And it has been significantly regarded as an improvement on the old city and fulfils the expectation of the public towards the new towns. However, at the same time, the extensive green spaces have created an unsafe environment for residents and unpredictable expenditure in maintenance and landscape modification to address the safety problems, this is too high a price in terms of density and lack of urbanism (Scott, 1991; Department for Communities and Local Government, 2006).

Then, in terms of the transport system, the innovative concept of the Radburn Model, inherited from America, completely separated pedestrian from vehicles. Under this design principle, the front of houses are only accessible on foot while the rear of the house is reserved for cars. Though in theory, it would reduce the risk of traffic accidents while being “*aesthetically pleasant*” (Osborn & Whittick, 1963, p.126), in practice it was a failure because children tended to play in car access space and moreover, the pedestrian road led to the lack of surveillance, making them unsafe and vulnerable to crime. Therefore, there was overwhelming dissatisfaction among residents and it led to a ‘closed-in’ feeling (Evans, 1972; Gardiner, 2004; Bennett, 2005; Alexander, 2009; Pitt, 1972; Stott et al., 2009). The rapidly increasing ownership of the car has further moulded the car-based urban structure and the design of the second and third generation new town. The car-based urbanism means the inevitable traffic jam, poor public transport (impossible to achieve in a financially viable way), local air pollution, climate change and huge energy consumption

(Alexander, 2009; Hobson, 1999). Moreover, the lack of human scale in road design directly resulted in 'nowhere place'.

Lastly, as the key area of the new town, the role of centres at different levels cannot be neglected. In principle, diverse functions such as shops, administrative services, educational establishments, cultural and leisure facilities are brought together into the main centre while basic facilities like stores, primary schools and some amenities would be established in the secondary centre of neighbourhood units (Merlin, 1969). Some observers thought the provision of public facilities in the secondary centre might have a negative effect on the development of its main centre (Osborn & Whittick, 1977). By and large, although there is a great desire to create vibrant day-to-day urban activities in the centre, the provision of community facilities was often no more than a hut and experienced long delays due to the financial difficulties (Pitt, 1972). The absence of facilities particularly youth facilities resulted in a scarcity of local anticipation and community sense. Moreover, the popularity of television by the late 1950s which enabled people to entertain in their own homes exacerbated the phenomenon (Brooke & Taylor, 1972). The main town centre, although planned to accommodate a wide range of functions, were dominated by commercial facilities, which, to a great extent meant the life of centre would be governed by the opening time of the shops and customers (Merlin, 1971). Furthermore, the centre tended to be occupied by large volume shopping malls with separation of pedestrians from other traffic, which not only meant the lack of human scale, dull street activities and an unsafe environment, but also meant the structure of the towns fundamentally lacked adaptability and flexibility (Alexander, 2009; House of Commons, 2002).

3.2.4 Social Communities

The success of a new town, to a great extent is not determined by physical plan and built form, but by the quality of community spirit and sense of belonging. Community

could be subjectively regarded as people living in a geographical area with a shared interests towards the place and public facilities, then a sense of belonging would be created through the involvement of the individual in an extensive social network and trust could be established with each other. From this perspective, although the new town could provide a more spacious living environment and open spaces, the social communities development seems not always well developed and is inferior to parent cities. At the outset of planning, social development or community facilities such as recreational and cultural activities have not received sufficient attention and, except in some cases, a few staff would appointed to be responsible for the social issues, yet they were to fluctuate over the years (Brooke & Taylor, 1972). Fortunately, the situation began to change in later new towns, and many efforts were made to create the social communities.

First of all, the establishment of social development departments in many development corporations emerged to encourage a sense of belonging and attachment (Aldridge, 1979; Stott et al., 2009). Local offices were often located in a house within a new neighbourhood, to explore the needs and opinions of residents. In addition, neighbourhood councils and neighbourhood associations were also set up to provide opportunities for residents to participate in decision-making (Department for Communities and Local Government, 2006). For instance, in the initial stage of Milton Keynes, questionnaires have been distributed to existing residents to enable them have access to information and participation in the new town planning process (Town and Country Planning Association, 2014). On top of that, other voluntary organizations were also considered to be essential to achieve the social integration and cohesion such as local churches. Since building new churches turned to be a heavy burden for new towns, inter-religious churches were usually adopted (Lock, 2007; Gray, 1999). At that time, women tended to be more involved in communities as many of them were not in full time work (Department for Communities and Local

Government, 2006). Secondly, efforts were made for facilitating the creation of communities through the mix of housing type. Initially, the majority of housing in new towns was public housing for rent which thus failed to attract the middle classes. In later new towns, the shift towards a mix of homes and tenure occurred which tended to increase the social diversity. For instance, the Milton Keynes was planned for a 50:50 split between private houses and rental houses. This transformation enabled Milton Keynes become more inclusive for more affluent groups such as executives and overseas employers rather than merely blue-collar workers. However, the result might not be as positive as expected since the lack of housing for elderly people and ethnic minority groups, to a certain extent prevented the creation of a genuine 'integrated communities' (MacGuire, 1977). Thirdly, efforts were made to offer a high level of information about the in-coming population and pre-existing population, especially in terms of demographics, and then provided flexible infrastructure choices for residents. Furthermore, this enabled them to participate in the later planning phases and promoted public discussion (Orlans, 1952; Gold & Ward, 1994). Consequently, through a series of specific efforts, the feeling of involvement for community members was indeed enhanced (Department for Communities and Local Government, 2006).

However, despite all the above mentioned efforts, neither planners and other professionals welcomed social development officers, nor were there sufficient funds to support them (Brooke & Taylor, 1972; Stott et al., 2009). Community concerns, to a great extent became the mouthpieces for local authorities and the Development Corporations put effectiveness as the top priority all the time (Department for Communities and Local Government, 2006). The development corporations in Harlow, Cwmbran, Stevenage and Welwyn Garden City expressed their intention to limit the spending on community facilities. The consequence is that the social plan hardly leaves the drawing board (Aldridge, 1979). Moreover, in the consumer society,

business is everything, the community or social development often turns out to be fragmented and the social contract is disregarded (Clarke, 2008). Therefore, although British new towns might have relatively achieved their goals in providing a pleasant environment for people and have generated jobs, their social roles are lagging behind.

3.2.5 Appraisal

The new towns, as the progressive communities in the UK urban planning history and *“perhaps the greatest single creation of planned urbanism ever undertaken anywhere”* (Hall & Ward, 2014, p.2), have been going through over half century and have been commented on by many scholars. In terms of the overall performance of the new town program, it shows both positive and negative aspects.

In the social and economic aspect, the new towns created a large number of houses which now have contributed to 2.7 million population and 1,198,623 households, 4.5% of the UK's overall households. Moreover, 23.5% households in new towns are socially rented which is 5.3% higher than the average index of UK, indicating the positive role of the new town in providing affordable homes and enabling them to benefit hugely from improved housing conditions away from the older crowded urban areas (Alexander, 2009; Town and Country Planning Association, 2014; Gossop, 2006). Furthermore, according to the statistics from the relevant survey, the number of people living in new towns feeling ‘good health’ is in line with the UK average, and for some cases, the health condition is better than the UK average (Town and Country Planning Association, 2014). New Towns of Britain, sometimes, were accused of having harmed social and economic conditions in the inner cities, but data suggested that the inner-city's problems of poverty and social exclusion were not seriously exacerbated by them (Cullingworth, 1999). The employment growth of new towns has not been at the expense of that in the conurbations, and new towns should not be culpable for the problems of inner cities such as poverty and social exclusion.

Moreover, the economic decline in urban areas could be hugely attributed to the lack of space for physical expansion rather than the distraction of new towns. For example, in nearly 1.2 million manufacturing jobs lost in London and other conurbations during the 1960s to 1970s, only one-tenth of those went to new towns while only half of the one-tenth number was due to the new town policy and the others could be attributable to the urban-rural shift. And the decline of conurbations continued even after jobs lost to new towns were added back. Dennis (1978) also found that between 1966 to 1974, only 7% of manufacturing jobs in London were attracted to new towns. Therefore, relevant analysis concluded that the new town program merely had a small impact on the employment decline in the conurbations (Department for Communities and Local Government, 2006). Regarding the impact of new towns on regional economic growth, although they offered particularly nice environments, they were not the only places in the regions to which new industries could or did move (Cullingworth, 1999). Meanwhile, in return, the regional economic condition would hugely affect the new town development while with favourable macro-economic conditions such as low interest rates, low inflation and sufficient job opportunities, new towns are much easier places to achieve financial surplus (Department for Communities and Local Government, 2006). Meanwhile, the new town economy is also vulnerable to recession. For instance, the level of unemployment in the new towns was higher than other areas in 1981 due to the severe economic crisis. Since two-thirds of a new town's jobs are in industry, some of them such as Corby and Peterlee, built specifically to serve particular industries, have suffered as those industries have declined. Only new towns around London were relatively successful in transforming towards office development as the growth in manufacturing that sustained them in the early days fell away (Bennett, 2005). Hence, new towns appear to be responsive to both recession and boom in the regional and national economy, and the economic impact of new towns on inner cities and at regional levels were less significant than most people have thought. And since the previously dominant industry of

manufacturing declined consistently since the 1970s, new towns began to realise their overly high dependence on a single industry and made great efforts to change towards high-technology industries. Until 1989, more than half of the high tech employment was in new towns.

In terms of physical aspect, the living standards in the New Towns were undoubtedly favoured (Wannop, 1999; Gossop, 2006). Despite the early and occasional shortages of some social facilities, the standards of roads, houses and public infrastructure were higher than commonly achieved in either council or private areas of new development (Wannop, 1999; Kafkoulas, 2009). Particularly, the green belts have, to a great extent achieved their purposes of preventing sprawl (Town and Country Planning Association, 2014).

With regard to the management, obviously, the new town program cannot be achieved without an effective delivery system. The high degree of autonomy of the New Town Development Corporation at an early stage, the strong commitment by central government particularly the agricultural values policy and the positive participation of private investors collectively contributed to the quick and effective new town program. Furthermore, the massive public funding for a long-term and public involvement, to a great extent guaranteed the smooth development of new town. Although in some aspects, the delivery system appeared to be unstable and defective, the overall system, could be regarded as the primary guarantee for new town development.

The weakness of New Towns, first of all, is that the relatively low-density development which has led to the overdependence on automobiles and the dwindling of public transport. According to the 2011 Census, 45% of journeys to work in new towns rely on car driving or van which is 6.5% higher than the UK average (Town and Country Planning Association, 2014). Then, a lack of various public facilities and

sense of belonging could be regarded as the main cause of the absence of a spontaneous social life. In the economic field, the insufficient tertiary employment (especially in office jobs) shows a serious lack of balance, which results in the increase in commuting to London and elsewhere (Merlin, 1971; Alexander, 2009). Furthermore, at present, most new towns urgently demand the regeneration of the town centre, renewal of the estate and more construction of housing. The New Towns need to reinvent themselves in the 21 century.

3.3 Chapter Summary

The New Town movement, beginning in the early 20st century, has played a pivotal role in the world urbanisation process. From the previous garden city, sustainable communities, to current eco towns and new garden cities, the New Town concept has evolved gradually in the wake of different urbanisation periods. Nowadays, the role of new towns has become more diversified. Besides the traditional decentralization function, they tend to be more focusing on sustainability and moreover they would act as new economic focal points in a wider connected network. They have become more active at regional level and more interdependent with other urban areas. In terms of British new town development, it provides valuable experiences in many aspects. In the delivery aspect, an effective organization system needs to be established; in the physical aspect, new towns have proven to be successful in housing provision and environmental improvement although they still have problems of low-intensity, lack of urbanism and over-dependence on the automobile; in terms of concerns for social communities, although many efforts have been made, the spirit of communities still appears to be insufficient; lastly, despite many criticisms of the New Town's negative effect on the economic decline of the old city, the real impact seem to be limited. On the whole, the comprehensive review of international new town development would be helpful to understand the essence of a new town. This understanding would provide valuable experiences and lessons for Chinese HSR new town development.

The key findings from international new town development can be summarised into a new Matrix (Table 3.1), which indicates the key lessons can be learned.

Site and Size	Self-containment	Balance	Delivery Mechanism	Master Plan	Social Communities
• Consideration about topography of the site and resources • Fluent transportation connection • Preservation of natural beauty and historic interest • Availability of facilities • Market for industrial development and housing • Integral part of regional planning • Enlargement of size	• Enough employment • Infrastructure convenience • Decent environment • No absolutely complete realisation of self-containment	• Balance of sexual groups and age • Various facilities for different age groups • Neighborhood establishment • Ecological balance	• Legislation • Effective organization • Cooperation between different institutions • Long-term commitment • Sufficient funding system	• A high degree of zoning and segregation of land use • A network of green space • Diverse functions • Safe environment • Sustainable approach	• Diverse community facilities and cultural activities • Create community spirit and sense of belonging • Establishment of social department • Mix of housing type • High level of information transparency

Table 3.1 Key findings from International New Town Development

Chapter 4 International High Speed Railway Related

Development

Chapter 4 opens a wide picture of international high speed railway related development. It mainly includes four sections. In the first section, relationship between transport and urban development will be reviewed so as to pave a foundation for further research. Then, the high speed railway will be introduced including the definition, origin, development evolution and the relationship with urban development. Thirdly, international experience about urban development around the high speed railway station will be deeply and critically analysed based on the framework consisting of node value and place value. Lastly, the key elements for positive impact of high speed railway on urban development will be put forward.

4.1 Transport and Urban Development

In the 21st century, the most striking fact about growth in the world is the urban sprawl which has considerably pushed cities further and further out (Glaeser and Kahn, 2003). From a historical perspective, while many factors may have assisted the urban sprawl such as government policies and economic growth, it ultimately has one dominant cause: transport development. Since the emergence of the city, its spatial transformation has accurately reflected the corresponding improvement of transport technologies. Glaeser and Kahn (2003) have pointed out that cities have always been shaped by transport development. Generally, the process could be divided into four phases.

4.1.1 Transport and Spatial Transformation

Walking and Horse Drawn Carriage Era (1800-1890)

Before 1850, walking was a ubiquitous means of transport for ordinary inhabitants. With the growth of wealth for a small number of people and the use of domesticated animals increased, horse drawn carriage became a fundamental element in transport (Anas et al., 1998). At that time, cities tended to be small, compact and self-enclosed due to the poorly developed, time consuming public transport. Hence, the vast majority of rich and poor alike were restricted to the city centre.

Electric streetcar Era (1890-1920)

In 1888, the first electric streetcar route turned up in the state of Virginia USA. After 1890, the horse drawn carriage was completely replaced by electric streetcars, which doubled the average transport speed and enabled a vast number of upper and middle income citizens to move further out (Anas et al., 1998). This tremendous innovation of transport significantly gave rise to the first huge spatial transformation of urban form. Cities grew up at a fast pace along electric streetcar routes, which, to some extent triggered the development of commercial patterns (Duranton and Turner, 2011; Yang, 2006). The migration and formation of urban functional patterns further contributed to what is now known as ‘radial urban form’ which marked the main characteristic of the ‘nineteenth century city’ (Anas et al., 1998; Garrison, 2003; Duranton and Turner, 2012).

Automobile Era (1920-1945)

The automobile, the most magnificent innovation of the 20th century, has had a more profound effect on urban form than anything before. With the advent of assembly-line production of the Model T Ford in 1908, the automobile, which was at first restricted to upper-class families, broadened its coverage among middle-class families (Anas et al., 1998). Compared with other transport means, the automobile provides convenience, flexibility, privacy and speed which aided the public to get rid of over-

dependence on urban rail transit. As a consequence, population decentralization and urban sprawl emerged. Before World War II, radial roads have already gone through the city centre and reached outermost regions of metropolitan areas. After the War, in a bid to pursue a more decent lifestyle and convenient environment, the middle and upper-classes tended to move towards suburban areas. This trend, to some extent, resulted in massive suburbanisation and meanwhile caused long-lasting painful central city deterioration (Anas et al., 1998; Duranton and Turner, 2012).

Comprehensive High Speed Transport Era (Since 1950s)

Since the 1950s, the rapid growth of motorways has considerably strengthened the bond between city centre and suburban areas, which has triggered massive decentralization of population and jobs (Yang, 2006). Cities which used to be dense and compact began to sprawl, consequently formed some other development cores around motorway corridors. Then, the advent of inter-city rail transport gradually became one of the major factors alleviating the traffic burden due to its ability to carry vast numbers of passengers, to save land and to provide short travel time. The inter-city rail lines are usually considered to be the main urban development axes which not only boost the along-line agglomeration but also inspire new sub-centres of cities. Hence, a multicentre city is closely connected as a network due to the modern rail system. Then, after the first High-speed train came into being in Japan in 1964, cities around a certain region became even more highly related, and urban agglomeration at a relatively large scale emerged (Duranton and Turner, 2012).

4.1.2 The Role of Transport System in Urban Development

Despite the fact that urban forms have been hugely shaped and promoted by transport development, there has always been a fierce debate about the link between transport and urban development especially in the area of economic development. However, until now, no explicit conclusion has been drawn and the question about whether transport is a sufficient condition for economic development or whether it is a consequence of development is still unanswerable. In the meantime, a large amount of

empirical research based on different cases has shown that there is no definite causality between transport and economic development although apparent growth could be seen in many cases in the wake of transport investment. It has been suggested that the accessibility changes are relatively small especially in dense urban network, and at most, the transport is only one of the complicated stimuli rather than the decisive factor. Empirical evidence suggests that the investment in transport may give a short-term relief to urban congestion, but growth will only take place in places where local economies are already vibrant.

The benefits of major infrastructure investment such as classic rail or high speed railway will only be realised by the integration of various factors, “*rail infrastructure on its own cannot make much of a difference*” (Independent Transport Commission, 2017, p.27). Other factors such as skilled labour, suitable sites, availability of government grants and a pleasant environment are all more important than transport (Banister, 1995). Generally speaking, the development of the rail system provides a catalyst for other investments and development. But implanting a station or constructing a rail line is rarely enough to create an attractive place or improve the urban development where none previously existed. Therefore, to establish a smooth and close connection between transport infrastructure and land use planning is essential to achieve greater urban improvement. For instance, at Milton Keynes, land use planning and transport planning worked together to create a new town with a pleasant living environment and convenient access to London and north to Birmingham via a classic rail line. The organization, the Milton Keynes Development Corporation has played a key role during the planning process. Another example shows a very different situation. The growth around East Midlands Parkway remains below predicted levels since its opening in 2009; compared with the 743,000 predicted, only 300,000 passengers used the station every year. A range of reasons could be given to explain this situation such as the distance from centres of population, the inconvenient pattern of train services, the poor local transport connections and the

lack of electrification. Basically, a new rail station or service would enable the urban growth or renewal of a place where the local authority has a broad view of the development potential and can commit to linking different agencies together in order to deliver a coherent and coordinated transport system, integrated with local development planning (Independent Transport Commission, 2017).

4.2 International High Speed Railway Development

4.2.1 Definition and Origin

Modern High Speed Railway (HSR), following the first railway age in the early 19th century, ushered in the ‘second railway age’ of the second half of the 20th century (Banister and Hall, 1993). At present, it has been proven to be a safe, comfortable, and efficient transportation mode. Apparently, it has not only revitalised railway transport but also has become a symbol of modern society (Arduin and Ni, 2005).

According to the International Union of Railways (UIC) and European Union, the definition of modern high speed railway (HSR) comprises two different types of lines: *“newly built high-speed lines at a speed generally equal to or greater than 250 km/h; specially upgraded conventional lines at a speed of 200 km/h.”*

The main reason for the construction of HSR may lie in increasing route capacity which would include two aspects, direct and indirect. The direct increase in capacity offered is due to *“the higher frequency, higher speed and the most up-to-date signaling systems that allow relatively short headway between trains without compromising safety, and due to the use of long trains with high seat capacities”* (Givoni, 2006, p.600). The indirect increase in capacity is due to the extra capacity freed on the conventional network for freight use and other regional passenger services. In this respect, the HSR, to a large extent, could be regarded as an effective supplement for existing railways.

The second reason for introducing the HSR services is to reduce travel time which

would bring about substantial economic profit (Givoni, 2006). Taking Japan as the example, the economic value caused by time savings would reach approximately 3.7 billion euro per year (Okada, 2007). However, the HSR does not always guarantee time saving since it is affected not only by average speed, and also by the number of stops and the different speed restrictions along the route. Therefore, *“HSRs that have a very high maximum operating speed might still achieve a relatively low average speed and limited travel time savings due to the above”* (Givoni, 2006, p.600).

4.2.2 Development Evolution

After the earliest HSR, Shinkansen came into being in 1964, the HSR enjoyed a huge following among many countries, generally speaking, international HSR development has experienced three phases (Liu, 2011).

First Phase (1960s-1980s)

During the preliminary phase, the advent of Shinkansen in Japan marked the beginning of the HSR era, then, followed by France's TGV in 1981, Italy's Pendolino tilting train in 1988 (Vickerman, 1997). At that time, the total high-speed train length amounted to 3000km approximately, among which Shinkansen was undoubtedly the most influential, it made a great success in many areas such as technique, management and finance.

Second Phase (1980s-mid-1990s)

During this period, Japan's high-speed train network had been almost completed after several other extensions were constructed and formed a relatively comprehensive high-speed train network across the nation (Sands, 1993). In addition, several other countries joined the HSR family: Germany's ICE in 1991, Spain's AVE in 1992, Belgium's HSL in 1994, Eurostar linking France and England through the Channel Tunnel began in 1994 which remarkably opened up a new era for international HSR links. Moreover, the proposal for a European HSR network emerged in a report of the Community of European Railways (1990) and it laid the groundwork for what became the European Community's proposed Trans-European Network for HSR (Vickerman, 1994; Ross, 1994).

Third Phase (Since mid-1990s)

Up to now, there have been over twenty countries all over the world involved in the widespread wave of ‘Railway renaissance’. North America’s first high-speed train started service in 2000, after that, other Asian countries followed: South Korea’s KTX began in 2004, Taiwan’s High-Speed Rail opened in 2005, China’s High Speed Rail started in 2008 (Givoni, 2006; Liu, 2011). Generally speaking, high-speed trains were operated in almost every economically prosperous country across the world. Moreover, at the same time, plenty of countries are in the process of planning for the high speed railway, such as India, Thailand, Brazil, South Africa, Saudi Arabia, etc. At present, China, France, Germany, Italy, Japan and Spain are the top six countries which have the most extensive high speed rail systems across the world. And when exploring their common ground of these countries, the first and foremost should be that all the countries are having a relatively high population density (Figure 4.1), and then, sufficient economic growth is another guarantee for the successful implementation. Some scholars have predicted that the 21st century will surely be the HSR era (Liu, 2011).

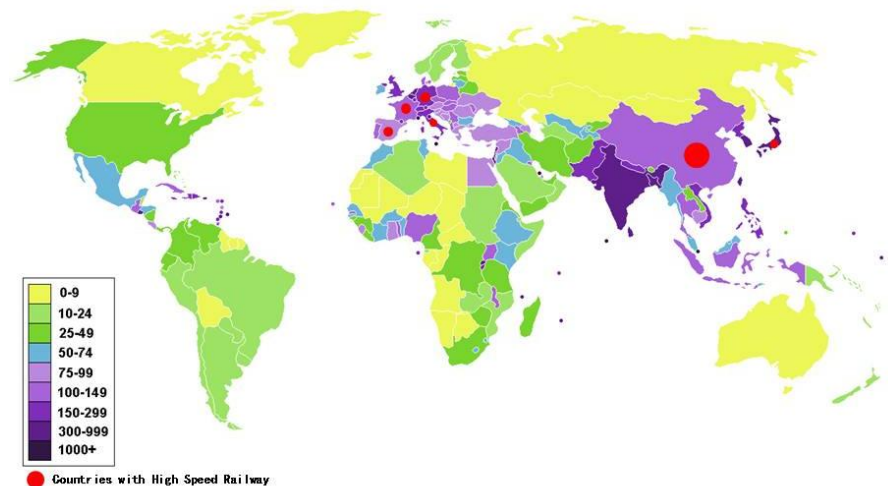


Figure 4.1 Population Density of Countries (person/km²) (Compiled by Author)

4.2.3 High Speed Railway and Urban Development

High speed railway, as the most significant transport innovation of the 20th century, still shows ambiguous impact on urban development and the direct effect is hard to measure and quantify (Bristow and Nellthorp, 2000; Hall & Banister, 1995; Amos et al., 2010). However, in spite of the ambiguity, it is still imperative to review the changes that have happened with the advent of HSR, not least the changes in the most important aspects for urban development such as population, employment and industry.

1) Impact on Population and Employment

With the connection by HSR, people at different places could have much easier access to another city with shorter time and comfortable journey experience. The direct time cost reduction would to a great extent promote population flow between cities. In Japan, according to the relevant analysis, between the mid-1970s and the mid-1990s, cities with a connection by Shinkansen experienced an average population growth of about 32% compared with the 12% increase of the national average (Hood, 2010). Similarly, Haynes (1997) found out that cities with HSR stations showed a 22% higher growth of population on Tokaido Shinkansen compared to locations without a station along the same line. Meanwhile, the development of expressways played a complementary role of HSR to boost population growth (Table 4.1). Brotchie (1991) pointed out that the urban population along the HSR witnessed a remarkable growth

	Increase in population	Decrease in population
With Shinkansen station		
• With expressway	17	10
• Without expressway	2	4
• Total	19	14
Without Shinkansen station		
• With expressway	13	16
• Without expressway	3	39
• Total	16	55

Table 4.1 Change in Population by Presence of Station and Expressway (in number of cities) (Nakamura & Ueda, 1989; Haynes, 1997)

within the first 10 years. However, the population growth is not automatic and unconditional. It has been claimed that this remarkable growth tends to emerge in

cities with an information exchange industry, access to higher education and expressway access. From the national perspective, major cities like Tokyo, Osaka and Nagoya had the most significant population gain (Nakamura & Ueda, 1989; Albalade & Bel, 2012). Furthermore, it seems clear that the population increase emerged when all of Japan was growing economically, and during decades of economic and demographic stagnation, no such direct correlation seems to exist anymore (Albalade & Bel, 2012). Moreover, the route and stations were selected based on expectations of population growth, therefore, the real impact of Shinkansen on population is hard to determine (Haynes, 1997; Huang & Sussman, 2011).

In addition to population increase, the constant population commuting between cities also emerged with the advent of HSR. For example, in France, as a result of the TGV, there is a tendency for people who work in Paris to live in nearby cities with a better environment and reasonable property price. The statistics show that the number of commuters increased between Vendôme and Paris since the travel time was reduced from two hours and twenty minutes to forty-two minutes (Nyfer, 1999). The similar commuting was also observed between Paris and Lyon, and in Lille, even international commuting occurred as some people would choose to live in Lille and work in London, Paris or Brussels. On the whole, although HSR indeed accelerates the population flow between cities, this does not contribute to regional balance or decentralization of mega-cities. On the contrary, what seems clear is that the population concentration or population commuting favoured the enormous migration from periphery areas to main central areas or at least views central cities as one of their commuting destinations. Therefore, huge disparity in work opportunities would be fueled by this trend (Albalade & Bel, 2012).

Accordingly, following the population flow, employment growth also, to a large extent exaggerates the regional disparity rather than narrowing it. In case of Japan, Hirota (1984) found that the employment growth rates in the retail, construction,

industrial and wholesale sectors were 16-34 percent higher in cities with a Shinkansen station than in cities without a Shinkansen station. Amano and Nakagwa (1990) found a 26% higher growth of employment in cities with Shinkansen stations compared to cities without stations. However, these apparent changes does not happen uniformly in all cities with connection by Shinkansen, but particularly favour cities with a greater base of business services, banking services, real estate and higher education. In contrast, cities with an industrial base have had much more difficulty in making use of the Shinkansen (Albalade & Bel, 2012). Along Japan's first Shinkansen, Tokaido Line, it was found out that in 2006/2005, within 5 km of the 17 Shinkansen stations, the two station areas in Central Tokyo are both regionally and nationally dominant job centres, followed by some secondary cities such as Shin-Osaka, Nagoya and Kyoto. By contrast, in some intermediate cities like Atami, Gifu-Hashima and Maibara, job markets around the station areas were quite limited (Murakami & Cervero, 2010) (Figure 4.2). It means Shinkansen strengthened the economic primacy of central cities such as Tokyo and Osaka at the expense of many intermediate cities also served by HSR (Cervero & Bernick, 1996). More recently, through the observation for Tokyo-Osaka Line, Cervero (2009) found out that the jobs rather than residents are more affected by Shinkansen and the employers have mostly concentrated around the HSR

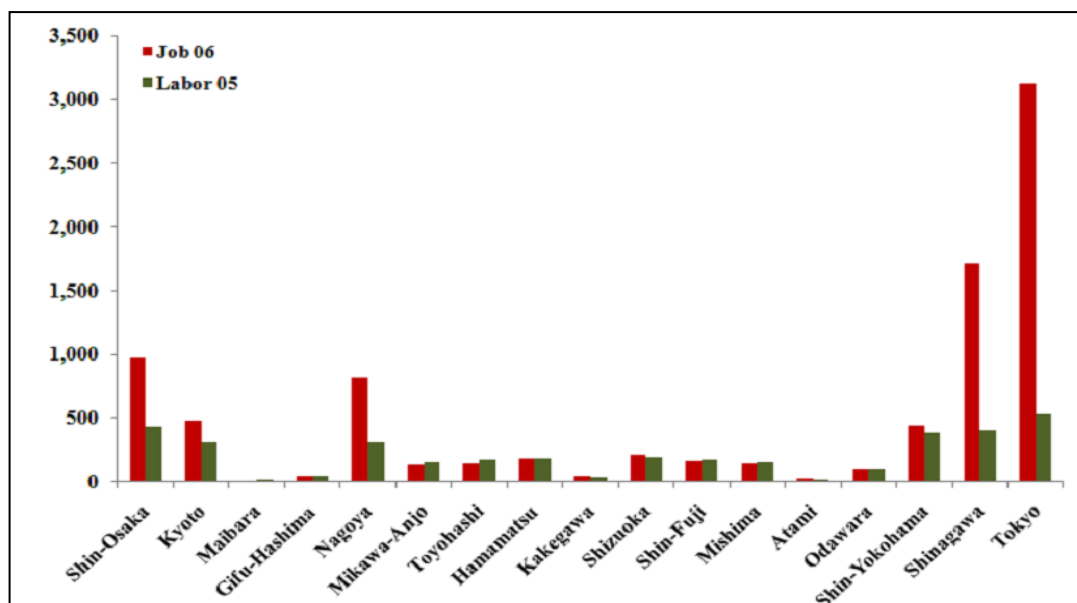


Figure 4.2 Distributions of Jobs and Workers across the 17 Developed Shinkansen Stations, 2006/2005 (Murakami & Cervero, 2010)

stations in both Tokyo and Osaka.

In France, TGV seems to have limited ability for creation of employment but tends to promote the relocation of companies and retain existing companies. For the TGV Atlantique line, Bazin et al. (2006, quoted in Albalade & Bel, 2012) found that the phenomenon of employment growth was unrelated with the HSR line. The study of cities of Tours, Le Mans, Vendome and cities along Sud-Est line showed an apparent relocation of companies to the proximity of TGV stations (Albalade & Bel, 2012; Mannone, 1997). In Lyon, more firms were attracted from competing cities like Grenoble, Geneva and other surrounding areas. As a result, the new TGV station Part Dieu developed into the second business centre of France, the office space increased by 43% between 1983 and 1990 (Haynes, 1997). In the UK, although it has just stepped into the HSR family and the total serving area seems quite small, an obvious effect can be seen. Preston and Wall (2008) observed that Ashford, a small city along the HS1 line, outperformed its surrounding areas in terms of employment growth. However, for some cities, the relocation has a detrimental effect on local employment. For instance, in Le Mans, a high decrease in employment emerged because a certain number of branch-offices were not needed anymore and closed (Nyfer, 1999). Moreover, for smaller cities, it seems to be more difficult for them to attract firms. In Le Creusot, merely two firms opened around the station area after 6 years of TGV connection, and the same thing happened in Vendome (Plassard, 1992; Albalade & Bel, 2012).

Therefore, based on international experiences, there is the apparent tendency that cities with greater employment are found in regions and cities with greater employment creation and good economic background. The cities with less creation of employment are situated in less dynamic regions.

2) Impact on Industry

With respect to the impact of the HSR service on specific industries, the industrial and

agricultural sector seems largely irrelevant with the HSR (Albalade & Bel, 2010), whereas services and tourism sectors seem to be substantially affected by it, although not all the impacts can be counted as positive.

In Japan, service related industries tend to concentrate in major cities, as a result, Tokyo and Shinagawa station area have become the dominant finance, business and information centre while Shin-Osaka and Nagoya formed regional business clusters (Murakami & Cervero, 2010) (Figure 4.3). However, another study showed that the service concentration in major cities has also resulted in the fall of employment in Nagayo, according to relevant statistics, the fall in Nagayo was approximately 30% from 1955 to 1970 (Plaud, 1977).

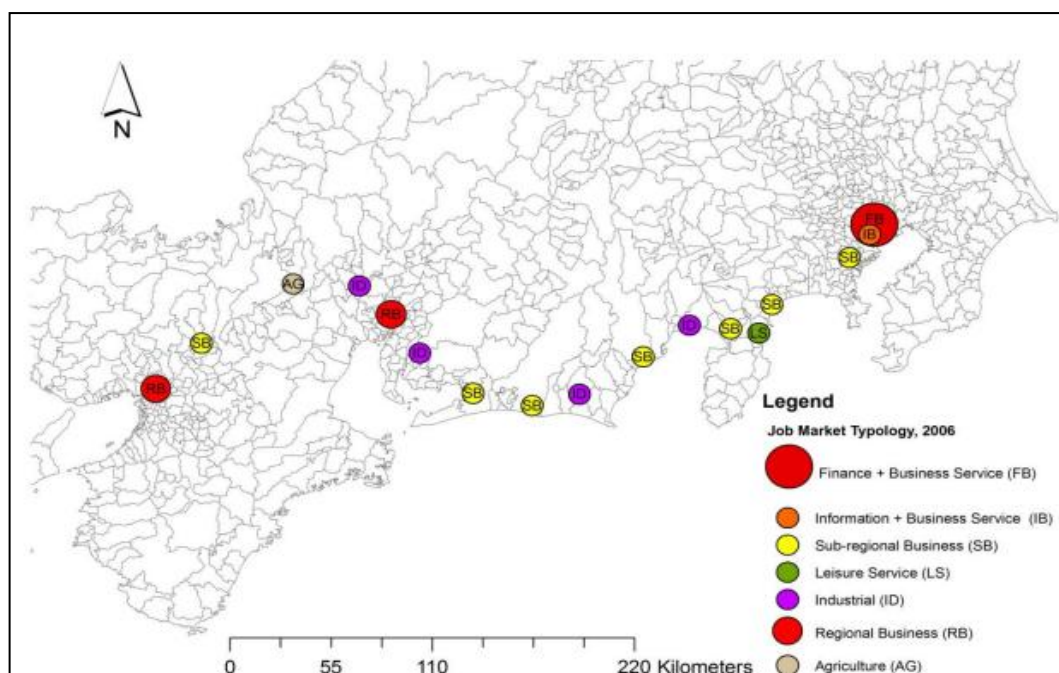


Figure 4.3 A Typology of Job Markets in 5km of the 17 Shinkansen Stations, 2006 (Murakami & Cervero, 2010)

In France, in spite of a relatively considerable development in industry, the disparity between cities and the phenomenon of territorial polarization appears to be clear. The Paris-Rhone/Alps line is a good example. Trains travel to Paris increased by 144% while in the opposite direction it grew by only 54%. Likewise, the journeys made to

business, consulting and advertising increased much more for trips originating in Paris compared with that originating in Le Mans, Tour, or Vendome. Thus the centralization of service activities in major nodes is promoted whereas the greater imbalance of economic potential between the principal city and small cities enlarged (Klein, 1997). The small and medium-size cities could be, to a larger extent, the main victims of HSR connection, as their activities may be absorbed by more important, dynamic nodes (Haynes, 1997). For instance, in Le Creusot and Haute-Picardie cases, although both station areas were expected to become local activity centres through a series of developments, in effect this has not happened due to the low level of train service and the lack of existing business activity (Harman, 2006).

With regard to the impact of HSR on business location decisions, the role of HSR seems quite negligible. A survey conducted by Mannone (1995, 1997) showed that between 1981 and 1994, one third of firms located in Dijon (the capital of Bourgogne, France) admitted that HSR was a factor in their location decision, but only 4 companies out of 663 claimed it was a decisive element in their location choice. Similar results were also found in Valence and Avignon. Consequently, it is claimed that the HSR has no impact on the accelerated industrial concentration and the administrative or economic decentralization from Paris (Marti, 2000). For entrepreneurs, the local investment environment, preferential policies and economic potential seems to be more important than the transport preference in their location choice. Nevertheless, the high-speed rail is still believed to have a remarkable effect on the attractiveness of locations, not least at the intraregional level. And for locations intending to attract international offices, a high-speed train connection is of great importance (Williger, 2008).

Therefore, not all places served by high speed railway could benefit economically. Places served by low frequency services, possessing relatively weak service sector foundation or not seeking to move towards the direction favoured by city planners

would hardly gain any significant improvement on economical activities. And in many cases, the cities would even have to face the draining effects since the improved access may induce economic activities to move to other junctions in the network (Berg & Pol, 1998b). In other words, there is a risk that most of the profit HSR may bring would tend to be concentrated in already developed cities in terms of economy and with an already important position in the regional railway network at the same time (Berg & Pol, 1998a; Gutierrez, 2001; Lopez et al., 2008).

In the tourism industry, the role of HSR seems important but at the same time could be ambiguous. On the one hand, it could generate a large number of movements particularly in business tourism and spending on entertainment. For example, the opening of HSR led to significant tourism development in Le Mans and Lyon although the growth, at the same time was also the result of an effective promotion and communication strategy (Masson & Petiot, 2009). On the other hand it decreases the number of overnight stays which might hugely restructure the hotel and catering industry. Generally speaking, the HSR has huge potential to facilitate business tourism and urban tourism, but the effects are selective and conditioned by existing tourism resources (Masson & Petiot, 2009). In other words, the advent of HSR strengthens the value to already known and popular tourist destinations but is not strong enough to promote the development of little-valued tourist spots (Albalade & Bel, 2012). Many projects promoting little-known destinations with the arrival of HSR have failed. For instance, the project to create a golf course in Vendome was abandoned, and organization of visits to the castles of Loire region and vineyards of Dijon region were also canceled (Albalade & Bel, 2012). For periphery cities, there is even the risk that the attractiveness declines due to the fiercer spatial competition between cities. Komoro is a good example to show the adverse effects. The city was previously a popular destination for tourists in early spring for cherry blossom visit and the peak visiting population was around 1.9 million per year prior to the the Hokuriku Shinkansen. However, the figure fell to 1.4 million within four years of

Shinkansen opening, obviously, not being on a main line to Tokyo has resulted in the loss of public consciousness (Hood, 2010). Therefore, for cities confronted with an increased competition due to the new transport development, to invest in a different tourism product might be an important solution and to a certain extent could limit the concentration of the tourism activities (Masson & Petiot, 2009). Furthermore, the positive effects are not only dependent on a previous tourism potential but also based on effective public policies and private participation. Only through proper local strategies can the tourism be boosted and improved (Masson & Petiot, 2009; Albalade & Bel, 2012).

In conclusion, there is no agreement on whether the HSR services will have a regional and urban economic impact, and moreover, there seems to be disagreement on whether overall the impacts are positive or negative. *“Transport infrastructure can in some cases be a necessary, although it is never a sufficient, condition for economic growth”* (Berg and Pol, 1998b, p.4). This is in accord with the conclusion that *“transport investment acts as a complement to other more important underlying conditions, which must also be met if further economic development is to take place”* (Banister and Berechman, 2000, p.318). However, it is still widely believed that *“it is better to be a node on the HSR network than to be bypassed by it”* (Givoni, 2006, p.606).

4.3 High Speed Railway Station Areas Development

4.3.1 Node value

1) Location Choice

Although the location choice for high speed railway station varies for each city, there have been some common criteria for the selection. First of all, the potential cost is among the top issues needs to be considered. For most cities, building a brand new station would be a heavy financial burden upon local government due to the high

investment not only for the station construction, but also for transportation connection between the new station with other urban areas and the urban development surrounding the station. Therefore, a large number of high speed railway stations, in Japan, France and Germany, were put into the existing station through a series of station enlargement and renovation. This measurement, to a great extent, makes the best use of current infrastructure resources meanwhile it reduces the overall cost to a relatively acceptable level for local government. At the same time, considering the time cost and environmental cost also appears to be important. In France, some new lines do not traverse major built up areas in order to have few stopping stations to ensure minimum elapsed time and avoid the conflicts with dense urban area and established communities. Therefore, the cost, not only financially, but also environmentally and concerns with time efficiency would be key issues when deciding the location of a station (Thompson, 1993).

Secondly, no matter where will the potential station be located, the secondary transport connection would be the most important thing with policy agenda. Basically, location with better public transport link would be more preferable for local government because for high speed railway, time is the key competitive power compared with other transport modes. Not only the time saved by the high speed railway matters, but also the smooth secondary transport connection means a lot for passengers. For new stations, in particular, the connection with the old station and city centre appears to be essential. For instance, the new TGV station of Lille is close to the existing station which would allow smooth connection with the dense local and regional traffic. The comprehensive hubs such as Charles-de Gaulle and Massy airport offer a high degree of interchangeability of various transportation modes. This seamless integration with local and regional transportation system appears to be crucial, since it could not only maximise the vitality of the station but also stimulate a wide range of urban activities (Huang & Morgan, 2011). On the contrary, stations with limited public transportation link might fail to attract potential urban activities

and merely remain as a transportation node, such as Le Creusot, the station was located 8km from the city centre and an industrial cluster was planned next to the station, however, due to the poor link with other urban areas, the cluster never took off (Padilla, et al., 2014).

Thirdly, from a broader perspective, to locate a high speed railway station in areas with relatively good development potential, or require urban regeneration, or has larger service catchment appears to be essential not only for the station itself, but also be beneficial for the whole city or a region. Since building a station alone is far short of boosting urban development, its catalyst role for local development has to be optimised with the combination of careful planning, strong political leadership and sufficient financial support (Vickerman, 1996). Although for most cases, areas in or adjacent to old city would promote the urban regeneration or possess larger development potential, in some cases, countryside might also have good access to local market and could serve a wider coverage. For example, the Picardy regional station in France was put in sparsely populated countryside but close to the intersection of the A1 and the projected A29 motorways. Hence, it could serve several towns in central Picardy such as Amiens and Cambrai so as to enlarge the service area (Thompson, 1993). In a word, no matter of the specific location, station in areas with explicit development plans on government agenda or have larger service coverage would be a win-win situation for both the transportation hub and local development.

In conclusion, location in different urban areas has its own advantages and disadvantages (Table 4.2). Specifically, the central station has a huge potential for attracting urban activities and is easily accessible for passengers, however, it might impose negative effect on residential areas and cause chaos around the station area. On the contrary, the rural station, on the one hand has plenty of inexpensive land for further development and turns out to be easy for planners to work with, on the other hand, its public transportation link might be quite limited, and moreover, the attraction

for potential clients might be relatively small. Between central and rural station, the peripheral station appears to be moderated in every aspect since it possesses both available space and larger attraction for clients, also, it is easier for passengers to arrive (Menendez et al., 2002). In general, whatever the location choice is, the final choice, to a great extent could be regarded as the compromise of various concerns and would bring the largest benefit for passengers and urban development. During the decision process, it requires a wide range of participation from different sectors and furthermore, it needs to be put into a larger picture of local development agenda rather than restricted within transportation development agenda. The most important issue is, the construction or renovation of a station does not mark the end of the task, it significantly requires a consistent support for its secondary transportation connection with other key hubs and urban areas, and for the further development or regeneration of the surrounding areas.

	Central Location	Peripheral Location	Rural Location
Accessibility	very good for public but poor for car	relatively poor for public but relatively good for car	poor for public but good for car
Economic and Population Concentration	very concentrated	moderate	weak
Potential land for Development	very small	relatively large	very large
Flexibility of Space	very low	high	very high
Acquisition of Land for Construction	very difficult	relatively easy	easy
Construction Cost	very high	relatively low	low

Table 4.2 Character of Different Types of Location

2) Accessibility

Optimising the internal and external accessibility has become one of the pivotal strategies for governments to give their urban conurbations a competitive boost (Bruinsma, 2009). A good connection not only means significant time saving which could enable more efficient exchange of a wide range of elements such as information, labour, capital, etc., but more importantly, it would bring unprecedented opportunities for cities to achieve further development, not least around the transportation node area. Before analyzing the accessibility of specific cases, there is a need to classify various accessibility modes according to their different characters and coverage area. As the public transportation system has achieved a relatively mature level in many developed countries, it has played a pivotal role in carrying passengers to different destinations from a HSR station. Basically, the public transportation modes could be divided into 8 types, each type of mode has its own character and all of them collectively contribute to the accessibility of a station (Table 4.3).

Transportation	Character
Inter-City Rail	long distance, large coverage area
Intra-City Rail	short distance, enlarges and extends the coverage area of HSR
Metro	short distance, large carrying ability, dense station layout, fast speed, punctual
Tram	punctual, dense station layout, relatively smaller coverage area and smaller carrying ability
Inter-City Bus	long distance, large coverage area, relatively slower speed
Intra-City Bus	low cost, various routes, most dense station layout
Coach	special route such as airport bus, sight-seeing bus, shuttle bus between fixed area
Airplane	longest distance, largest coverage area, smallest number, very few airports include HSR service

Table 4.3 Character of Different Transportation Modes

(1) Hierarchical Accessibility System

According to the statistics from international experience, it is believed that two factors

are closely related with the accessibility hierarchy of HSR stations, namely the urban scale and the location of the station.

Urban Scale

In cities with larger populations such as Tokyo, Nagoya, Paris, Berlin, the passenger flow is quite large which demands diversified public transportation with a large service area. Basically, three types of public transportation are most common in this kind of city, namely train, metro and bus. Among those, at least one type of mass rail transit like metro or intra-city train is in operation due to its fast speed, punctuality and larger coverage range. And regarding the bus system, different types of bus such as night bus, sight-seeing bus, shuttle bus, etc. constitute a highly efficient public bus system which could carry passengers to and from train stations and provide a complementary service to the railway systems (Ma, 2011). In addition, larger cities tend to have direct link with their airports to offer an interconnected transport network. Taking Tokoyo station as the example, apart from its own metro station, within a radius of 1km, 12 stations providing 9 different routes could lead to various destinations including airport. Beside these, there are also adequate parking spaces for private cars, taxis and bikes in the surrounding area.

Cities with smaller populations, by contrast, show a big difference compared with large cities. First of all, due to the population scale and economic conditions, the passenger frequency is relatively low. Hence, public transport with large carrying ability like metro, light rail and other intra-city train are most likely excluded, with bus lines providing the main service for customers. Secondly, the number of lines each transfer mode could provide seems to be quite limited, hence, other private transport modes such as taxis and cars become complementary to the public transfer system (Table 4.4).

Station	City	Population	Rail (Lines)			Bus (Types)
			Inter-City	Intra-City	Metro	
Tokoyo	Tokoyo	8,480,000	10	2	1	7
Nagoya	Aichi prefecture, Nagoya	2,220,000	5	4	3	5
Kyoto	Kyoto prefecture, Kyoto	1,470,000	4	1	1	6
Hakata	Fukuoka prefecture, Fukuoka	1,400,000	2	1	1	4
Hiroshima	Hiroshima prefecture, Hiroshima	1,150,000	2	1	4	6
Kokura	Fukuoka prefecture, Kitakyushu	9,90,000	2	1	1	6
Hamamatsu	Shizuoka prefecture, Hamamatsu	800,000	1	1	0	6
Shizuoka	Shizuoka prefecture, Shizuoka	700,000	1	1	0	4
Okayama	Okayama prefecture, Okayama	670,000	4	1	0	5
Himeji	Hyogo Prefecture, Himeji	480,000	4	0	0	4
Fukuyama	Hiroshima prefecture, Fukuyama	420,000	2	0	0	5
Toyohashi	Aichi prefecture, Toyohashi	370,000	4	1	0	4
Odawara	Kanagawa prefecture, Odawara	200,000	4	0	0	5
Tokuyama	Yamaguchi Prefecture, Shunan	150,000	1	0	0	3
Kakegawa	Shizuoka prefecture, Kakegawa	120,000	2	0	0	3
Mihara	Hiroshima prefecture, Mihara	100,000	2	0	0	4

Table 4.4 Transfer Way of Japan's Stations according to Urban Population (Ma, 2011)

Location of Station

As well as the size of the urban population, the location of the station still has a great impact on the variety of transfer modes. Basically, a station situated in an urban centre would demand various transfer modes to carry the large passenger flow, and by contrast, a station on urban fringe or suburb may have less connection with public transport due to the relatively smaller number of passengers (Table 4.5, Table 4.6).

Central Station

Taking France as the example, for most big cities, the stations are put in the urban centres to provide service to the original passenger flow. Furthermore, the station is regarded as the important urban node to connect with the intra-city transport network and inter-city network. Hence, the transfer modes of the this kind of station are quite diversified including high-speed railway, ordinary railway, long distance bus connecting with other cities, and different types of intra-city transportation such as urban rail transit, bus, car, and bicycle. Among all the modes, urban rail transit still remains the most popular one, rail services like metro, intra-city express line, tram could meet the demand for the transfer of a large amount of passengers. In Euralille station, it is provided with a metro with two routes and trams in two directions which run at a high frequency (every 90 seconds at peak time) and effectively connect the station with other elements and. In addition, it also possesses two large car parks to accommodate 1,300 cars (Hall, 2014). Central stations of Japan, to a large extent, show the similar character to France. In Japan, stations situated at the urban core are mainly based on existing station, during the development process, the transfer mode tends to mature. Regarding urban rail transit, at least two types of rail lines and a large number of bus lines provide comprehensive support for customers. And in medium and small cities, bus lines are most frequently used and meanwhile, taxis, private cars and bikes also carry a certain amount of passengers.

Peripheral or Rural Location

Stations in peripheral urban areas or in suburbs, in most cases, merely connect with limited public bus lines instead of introducing urban rail transit due to the small passenger flow. Compared with central stations relying largely on public transport, the transfer mode of this kind of station consists of private car and taxi mainly. Since



Figure 4.4 Avignon



Figure 4.5 Valence

there tends to be a large amount of land in the fringe area, parking space around the station is adequate. For instance, the station of Avignon (Figure 4.4) along the Mediterranean line is located in a suburban area which is far away from the old city. The transfer mode of the station mainly relies on ordinary bus, long distance bus, taxi and private car, consequently, there are 3 parking places and 1 reserved parking place outside the station. Similarly, the station of Valence (Figure 4.5) also presents the same characteristics. In Japan, the peripheral stations are usually constructed to stimulate typical projects and most of them are newly built. Therefore, due to the limited connection with urban centres in terms of activity and economy, visitors to this kind of station tend to be less, and as a result, the transfer mode mainly relies on limited bus lines and ordinary rail lines with relatively slow speed and small service coverage in most cases. Large parking areas are still quite common around the station and provide enough space for private cars and taxis.

Location	Station	Rail		Bus (Lines)
		Rail (Types)	Metro and Tram (Lines)	
Central	Paris-Gare de Lyon	6	2	20

	Lyon-Part-Dieu	2	4	15
	Lille Europe	2	4	7
	Marseille-St-Charles	3	3	16
Peripheral or Rural	Vendome	1	0	3
	St. Pierre des Corps	3	0	2
	Calais-Frethun	1	0	0
	Aix- en- Provence	3	0	5

Table 4.5 Transfer Facilities of France's Stations according to Different Location (Ma, 2011)

Location	Station	Rail (Lines)		Bus (Types)
		Inter-City	Intra-City	
Central	Himeji	4	0	4
	Odawara	4	0	5
	Fukuyama	2	0	5
	Toyohashi	4	1	4
Peripheral or Rural	Nishi-Akashi	1	0	3
	Shin-Shimonoseki	1	0	3
	Shin-Fuji	0	0	4
	Shin-Kurashiki	1	0	2

Table 4.6 Transfer Way of Japan's Stations according to Different Location (Ma, 2011)

(2) Multimodal Transfer System

From the experience of Japan, France and Germany, it is clear that the transfer modes these countries have provided are quite diversified. Japan has an advanced railway system to provide service for a large number of customers. In the area of urban mass transit, various types such as metro, tram, light rail, monorail, suburb express line, etc. are adopted based on the particular situation of different cities. These types of urban mass transit are similar in speed and carrying ability but, most of them cost less than the most popular form of urban mass transit, metro. Taking Germany as the example, due to the limited population of many cities, it is too costly for them to construct a metro, hence, suburban express lines and trams are often adopted as the important transfer mode and have been popular among tourists because of their security,

efficiency and speed (Ma, 2011). With regard to the public bus system, except for ordinary services like long distance bus and intra-city bus, various types of buses are also put into operation. For example, the tourism bus for sightseeing, a free shuttle bus commuting between fixed destinations, an airport shuttle bus connecting train station and airport terminal, an express bus running on the highway and a night bus operating only during the middle of the night have already become popular components of a bus system. The wide range of buses, to a large extent, complements the blind zone which ordinary buses rarely cover, and furthermore, enhance the flexibility of choices and times for customers.

(3) The Important Role of Urban Rail Transit

Among all the transfer modes, urban rail transit, absolutely occupies the most important role because of its advantage of speed, punctuality, carrying ability and comfort. In addition, since the widespread air pollution is becoming severe, transportation with low energy consumption has answered the demand for sustainability, for low carbon emissions, and for an environmentally friendly future for cities. Hence, the urban rail transit has been put on priority by the governors of many big cities. At present, many cities particularly in big cities with a connection by high speed railway have developed rail transit like metro, light rail, tram, and clearly, they have played a great role interacting as a transfer system with high speed railway.

Metro	Population	Start Year	Length (km)	Number of Stations
Tokyo	27,270,000	1927	230	217
Paris	9,600,000	1900	315	438
Osaka	2,700,000	1933	120	102
London	6,700,000	1863	408	270
Seoul	8,920,000	1971	250	260

Table 4.7 Metro System of Metropolis (Li, 2009)

When looking at a metropolis like Paris, Tokyo, London, etc, they all possess a comprehensive and highly efficient metro system and complementary rail transit (Table 4.7). In Paris, urban rail transit take up 70% of public transport, and in Tokoyo, it carries 80% of passenger flow. For some smaller cities, less costly urban rail transit such as light rail, monorail or tram may be more suitable (Li, 2009).

Summary

As the analysis mentioned before, the urban population and the location of station would have a great impact on the accessibility of station, and at the same time, the accessibility of a station, to a certain extent, would also have a great effect on urban development around the station and even beyond it. Basically, stations with relatively good accessibility would be the

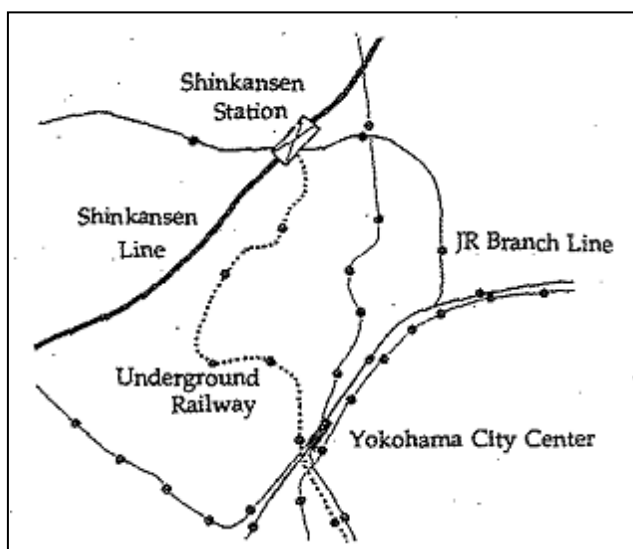


Figure 4.6 Shin-Yokohama Station Map (Amano and Nakagawa, 1990)

precondition for further urban development. For example, Shin-Yokohama station is located in northern Yokohama which is 7km from the urban centre (Figure 4.6). At the beginning, there was little construction around the station and only one ordinary railway connected it with urban centre, the journey taking about 30 minutes. However, the station area has changed a lot since the operation of the metro which shortening the commuting time from station to urban centre to 12 minutes. Accordingly, the number of passengers doubled, the station area was developed gradually and now the station area has become a prosperous urban sub centre (Sands, 1993). Therefore, the accessibility of a station, although not sufficient to boost local development, it would be essential for the increase of passengers and bring benefit for attracting urban

activities, these issues, to a great extent could pave a relatively good foundation for local development.

4.3.2 Place Value

1) Diversity

Despite initially optimistic expectations with the advent of high speed railway, the development of station area is by no means easy but a rather tortuous and complicated process which is filled with fierce debate, conflicts of interest and ambiguous outcomes. It is no wonder that, although there are a few so called ‘success stories’, widespread difficulties and growing disillusion also exist (Bertolini, 1996).

a) Diversity of Interest

The development of HSR and station areas in developed countries, based on the empirical analysis of the past and present, is by no means a smooth and simple job. On the contrary, it is a convoluted process full of conflicts, setbacks and uncertainty and is becoming increasingly complex due to the wide range of participants on different scales and at different government levels (Trip, 2007). During the process, various political and economic issues will occur as well as accompanying changes in goals, programme and phasing. A good organization system demands the effective integration of a large number of actors who, while being mutually dependent, harbour diverse intentions (Majoer & Schuiling, 2008).

Basically, there are four categories of actors. The first and foremost ones are government actors including authorities at local, regional and national level and railway companies. Among those, local government is normally the most influential actor in the station area development and functions as the connector of other actors. However, the primary and frequent weak spot is a financial shortage which requires local government to seek dependency on private investors (Pol, 2002).

The second category of actors are private investors such as banks, financial firms and

real estate developers who normally could be regarded as the main financial resource in the process of HSR-related projects since the feasibility of many projects hugely depends on private funding rather than public funding.

The third category consists of various non-governmental organizations like historic preservation league, environmental protection organizations, academic forums, and last but not least are the citizens who would be indirectly or directly affected by the project. Each category of actors represents different priorities in the rail mega-project development. Government actors might emphasize public interest goals such as adequate and effective transport infrastructure, a balanced mix of urban activities, the creation of employment and a livable environment. Private investors might focus on the specific annual and long-term return on their investment in real estate and the most profitable, commercially viable solution. Non-governmental organizations might focus their attention on wider issues such as the impact of the project on emissions and noise, to what extent the historic buildings and landscape would be affected, subsequent social redistribution and the expense of other social resources. Citizens might care about the nuisance produced by the development process rather than the ultimate improvement of transport connections and the area in long term (Peters, 2009; Pol, 2002).

It is clear that the coordination of actors is indispensable and hence, in many cases, public-private partnership is found to be necessary and advantageous, since this enables the sharing of risks and expenses. In practice, the coordination task is often assigned to an independent project-oriented organization which is usually public. It takes responsibility for the decision-making process including planning, development and construction (Trip, 2007). The complicated process, which includes cooperation, discussion and even disagreement between various actors, helps to strike a balance between conflicting interests and reduce conflicts to the full extent. Nowadays, with the advent of the information society, a more diversified information sharing and

exchange form has emerged. During the planning period, not only face-to-face and physical meetings would be arranged, media and internet have also played an essential role. Online platforms such as twitter, facebook and various kinds of web forums are put into use as an effective bond between local authorities and citizens. Furthermore, democratic innovation has also attracted public attention and largely ended the stalemate between the population and the supporters of the project. For example, in Utrecht, a referendum was announced to offer a choice between two schemes, one comprised a compact development with a large volume of real estate around the station while another involved a more extensive construction of public space (Learning Cities Platform, 2012). In the end, the latter one convinced the majority of the population and hugely promoted the process of the project. More importantly, the referendum incorporated different parties in a realistic and transparent way (Majoer & Schuiling, 2008; Terra, 2007). In the King's Cross project, great efforts have been made on social care through the construction of a large number of social houses, patient conversation with the public and monitoring on the impact of existing public spaces on users, especially on children (Bishop, 2012).

However, in effect, goodwill is by no means easy to achieve and the decision-making party is often criticised for being dominated by public-private elites with international consultancy agencies and 'trophy' architects (Majoer & Schuiling, 2008). They argue that although citizens and non-governmental organizations are given opportunities for participating in the planning process through workshops, forums and other forms of exchange, the most significant negotiations still take place behind closed doors and that the government has repeatedly misled the public by overestimating profits and underestimating negative impacts. Furthermore, the government tends to obscure sensitive aspects of a project by means of rhetoric or blurred explanation. The competitive environment encourages short-term profit pursued by private actors prevailing over long term return such as urban quality. Therefore, the HSR-related project, to a certain extent, could be characterized by elite-driven, economic profit-

oriented priorities which override the seemingly democratic process (Peters, 2009; Peters & Novy, 2012).

b) Diversity of Impacts

Most HSR station area development projects boast their commitment to creating a mixed-use area to provide diversified urban activities and boost the local economy. In practice, due to the huge cost of transport, land reclamation and construction in the process, the importance of economic return overwhelmingly outweighs the mixed use promise. Consequently, office buildings turn out to dominate most proposals since profit can be obtained in short term (Bertolini, 1996). However, things do not always work as expected. Specifically, the profit can be earned only through office rent and income tax on enterprises. These two elements considerably depend on occupancy rate and the performance of the enterprises. The reality is that in many cases the occupancy rate seems lower than originally expected because it is hugely affected by capricious financial markets. Moreover, the intention to attract international companies often results in the convergence of regional and local firms. That means although in many cases, the office rent has experienced apparent growth and a certain number of job opportunities have been created, inadequate rates of occupancy and the moderate performance of local companies limit the overall economic development of the station area. With respect to social impact, the station area development, oriented towards growth and competition rather than socially progressive ends, has experienced a certain degree of gentrification (Peters & Novy, 2012). The result is a regressive distribution of benefits, displacing millions of households and destroying communities. Hence, a large number of low-income classes are forced to move to inferior urban areas (Castells, 1978; Fainstein et al., 1986; Gans, 1991; Harloe, 1995; Hall, 2002; Logan & Molotch, 2007; Orueta & Fainstein, 2008). The limited expenditure on social welfare means that low-income classes must depend wholly on trickle-down effects to gain from new development (Fainstein, 2009).

Although in most cases, the ultimate benefit is less than expected, the advent of HSR

and station area development is still considered to be a boost for accessibility and local development as long as authorities respond actively to it and make their efforts to absorb various opinions from different actors and the public. On the whole, the role that HSR mega projects play in urban development is somewhat ambiguous and cannot be determined across the board but must be examined on a case-by-case basis within particular cities, at least, we can see that they play an emblematic role in promoting local development. At the same time, they clearly stimulate significant changes, such as the creation of job opportunities and the improvement of the urban environment.

c) Diversity of Urban Functions

Although the development around a station area appears to vary according to different cases, there are several functions which seems quite common and popular around stations, namely offices, commerce and leisure (Table 4.8). As seen from the table, the three functions are present at almost all stations as analysed. With regard to the reason, in spite of the initial planning orientation of governors, the development of industry is closely related with the requirement of tourists.

From the perspective of travel distance, the tourist group could be classified into three types, namely the short distance group (less than 1 hour), the medium distance group (around 2 hours) and the long distance group (more than 3 hours) (Harman, 2006).

Since one of the main purposes of a station area is to provide service to the tourists, it is essential to understand the different requirements of different tourist groups.

For the short distance group, the primary market would be the commuters traveling between nearby cities daily or weekly for working or study purposes. Considering the cost of high speed railway, the majority of them might be the white-collars or golden-collars with relatively higher income. Hence, except some business related function, modern housing with the proximity of the station would be the biggest requirement for those daily commuters. And also, sufficient complementary public facilities such

as education institution, medical care, supermarkets which are closely related with daily life would be highly demanded. For the medium distance group, since the 2 hours' travel time enables them to commute within one day, some of them might be also the business man making a return trip for a day's activities such as meeting, conference and negotiation. Meanwhile, some of the travellers might be tourists who go for a sight-seeing trip and leisure visit, hence, the requirement of this group may be focused on offices, leisure and some services related with tourism. Regarding the last category, the long distance group, since the relatively long travel time makes them unable to return within one day, most of them might be the tourists or business people going for a trip of several days. Therefore, the main functions they require might be leisure, commerce and hotel (Table 4.9).

Station	Offices	Commerce	Finance	Exhibition	Leisure	Housing	Park
Euralille	•	•	•	•	•	•	•
Zuidas	•	•	•		•	•	•
Frankfurt (Main) Hauptba hnhof	•	•	•				
Brussels	•	•	•		•	•	
Lyon Part- Dieu	•	•	•		•		
London King's Cross	•	•			•	•	
Grenoble	•	•	•				
Cordoba	•	•		•	•	•	•
Shin- Osaka	•	•			•	•	
Coln	•	•		•	•	•	
Zaragoza	•	•		•	•	•	•

Shinjuku	●	●	●		●	●	●
Kyoto		●	●		●	●	●

Table 4.8 Main Urban Functions of Station Areas

Different Commuting Distance	Time Requirement	Purpose	Potential Function
Short Distance Commuting	<1 Hour	Work, Live, Study	Housing, Education, Offices
Medium Distance Commuting	2 Hours	Business, Travel	Business, Offices, Exhibition, Hotel, Commerce, Leisure, Finance
Long Distance Commuting	>3 Hours	Travel, Business	Leisure, Travel Information, Commerce, Restaurant, Hotel

Table 4.9 Main Function Required by Different Tourist Group

d) The Adoption of High Technology and Climate Sensitive Approach

With the advent of the information society and knowledge-based economy, information dissemination and knowledge sharing is becoming more and more important, and IT related products are stepping into everyday life at an amazing speed. In most urban areas particularly metropolitan areas, residents are covered in a large-scale information web which enables everyone to get required information as soon as possible and this convenience, distinguishes urban life from remote life obviously. Therefore, the traditional urban space, to a great extent, not only represents a physical area for face-to-face meeting, but more importantly, it takes the responsibility for information sharing and exchange. The high speed railway station area, as the convergence of a large number of passengers and urban activities, surely would become the potential urban gateway and representative of urban image. The injection

of high-technology into the station area development planning, although full of uncertainty and risk, could sufficiently show an advanced planning intention and indicate the future development trend. Then, as no single urban development project can avoid the disturbance of local residents and local environment, sustainable approaches adopted in construction, to a certain extent could somewhat compensate for the negative impact. In recent station area projects, especially in advanced countries, more strict environmental measurements are imposed on developers meanwhile accompanied with rigid monitoring.

e) Flexibility

As the complexity of most station area development projects are overwhelming and the time span would be long and unpredictable, from the start of the initial plans and the final realisation, many elements such as political context, economic situation and organizational model are consistently changing. Therefore, a feasible and reasonable plan would be the one which allows high level of unexpected things rather than determine everything in advance. In other words, to retain the flexibility has become an important criterion when conceiving a plan. One effective way to increase the flexibility is to divide a large scale area into several sub-projects to give them certain level of independence. The development of each would not have huge impact on the others which to a great extent would reduce the whole risk of a plan. For example, in the Utrecht project, the municipality decided to adopt a so-called structuurplan in which individual projects could be approved one by one. As well as this, the municipality continued to retain flexibility by adopting the so-called ‘stamp zoning plans’ which covered only a small patch of land (Buijze, 2013). In the King’s Cross station area project, the absence of a strong plan opened up high possibility of a flexible plan because proposals could be amended easily and new proposals came in while redundant proposals withdrawn (Bertolini & Spit, 1998).

When there is still debate about flexibility on a large scale, the flexibility on smaller scales such as the architecture itself reaches more consensus between different actors.

In the Zaragoza project, after the Expo 2008, many architectures were preserved and reused for a wide range of uses, such as offices, restaurants, recreational activities and research & education (Krause, 2010). In Zuidas project, every storey in the adaptable buildings would have a flexible floor plan and mainly made of prefab which could be disassembled. This simple and smart construction also means roughly 50% less environmental impact. In addition, ceiling height in all buildings must be at least 3.3 metres which allows the basic condition for transformation (City of Amsterdam, 2011).

All in all, flexibility, from the whole development area to a single building, is gradually paid more and more attention by authorities and planners although sometimes it somewhat contradicts with the so-called certainty. However, in the longer term, the certain level of flexibility would have a positive impact on project development and provide more convenience for management.

2) Spatial Organization

As the transportation hub of a city, high speed railway station areas tend to attract various urban functions within a certain area. Therefore, a wide range of urban activities would concentrate around the station thereby forming different spatial model. Based on the analysis of international cases, the spatial organization could be generalized into two types, namely the node model and the network model.

a) Form

(1) Node model

The node model is most frequently adopted by stations located in an old city where the available land is quite limited or by stations in medium-to-small cities whose position in the HSR network is less important and there is no intention for large

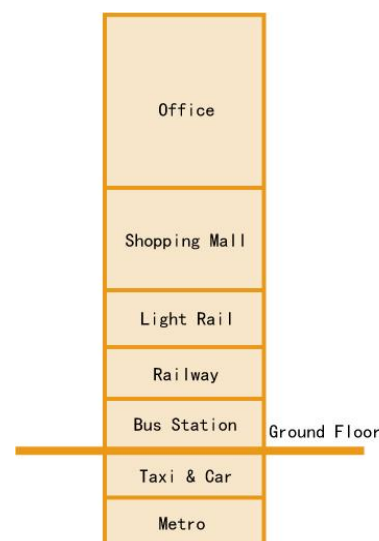


Figure 4.7 Node Model

scale development around station area. Generally, in this type of model, the key function of the station, namely the transportation hub and other urban functions such as leisure, offices, commerce, etc would be piled vertically in a building complex which tends to become a promising comprehensive hub (Figure 4.7). Normally, the building complex would possess the character of big volume, large gross area, diversified functions and a good utilisation of underground space. In Japan, the node model is quite common since its relatively limited land resource.

Kyoto Station

Kyoto, renowned as a historical city situated in the central part of the island of Honshu, has a very prosperous tourism industry and is considered to be the most popular city in Japan. The high speed railway station of Kyoto, a building complex with plot ratio of 6.2 (16 stories overground and 3 stories underground) and 237689m² built up area (Zhu, 2010), constructed in 1997, gathers a wide range of functions such as department store,



Figure 4.8 Kyoto Station (Ando, 2010)

museum, five-star hotel, theatre, cinema, shopping mall, cultural centre, government facilities and a three dimensional car park. In addition, the public spaces are built on a large scale, such as a grand open ceiling space in the centre, a station concourse with an aerial hallway and various commercial facilities that share a large open space (Ando, 2010). Among all of them, the transportation function only takes up 5%. All in all, the development of the building complex not only marks the station as an important transportation hub, but also a marvelous place for people to relax, shop and have fun (Figure 4.8).

(2) Network Model

The network model, essentially stems from the node model and gradually extends to a

further area. In general, this type of station could be divided into two sub-types in terms of different network form. One is the decentered network in which a highly

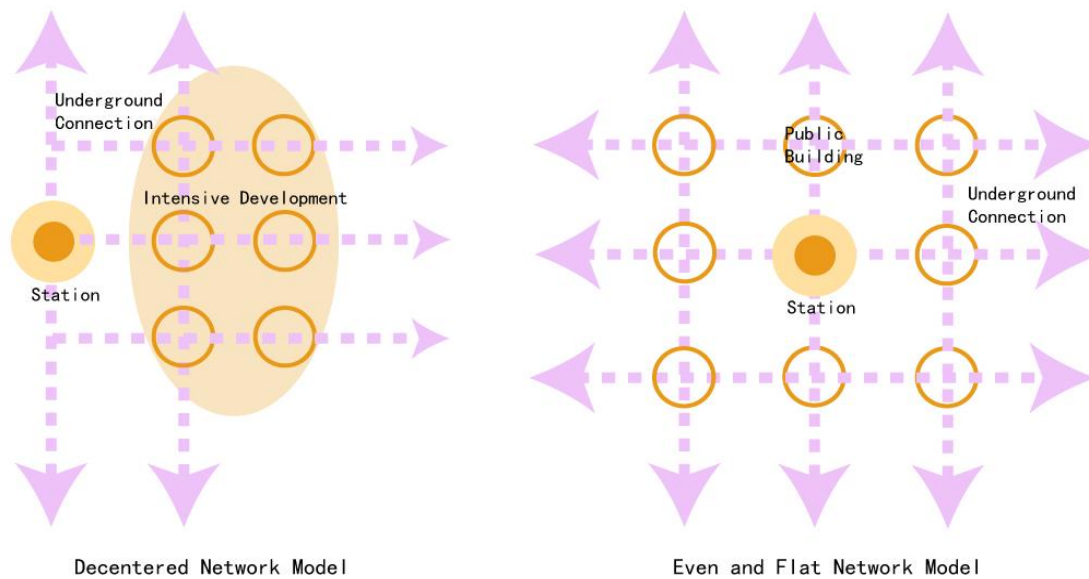


Figure 4.9 Network Model

intensive development tends to concentrate on one side of the station. The other is a flat and even network which shows no distinct difference between the station area and surrounding areas (Figure 4.9). On the whole, the decentered network model would be seen quite often in high-profile cities which have a key position in the HSR network and possess a good economic situation. Many historic cities like Rome, Florence, Venice, etc. would be most likely to develop a flat and even network form.

Intensive and Decentreed Network

The classic model raised by Schutz (1998) points out that ‘three development zones’ would emerge around the station. Based on the model, ideally, the station area would appear to be a pattern of concentric circles. However, the practical cases show that there is an apparent trend that in many cities, the major urban functions would mainly concentrate on one side of the station (Figure 4.10). The various urban functions would be accommodated within a large number of buildings. Furthermore, these buildings, sometimes would be connected by well organized underground walkways or overhead walkways, and in the end become urban centres or sub centres with high-

end industries like business, commerce, offices, etc.

In terms of the motivation which leads to the spatial phenomenon, there are some objective factors that may have an effect on the area form such as land availability and geographic conditions. From a subjective perspective, the most important factor that results in the trend may be highly related with the economic concentration effect. In fact, a large amount of urban activities gathering around one side would hugely avoid



Figure 4.10 Cities of Intensive and Decentreed Network Model

the big physical barrier caused by the station and the railway line, and then that would be much easier for the economic activities to be integrated within a whole network and gain from each other. Therefore, the one side development form appears to be more efficient compared with the concentric circle form.

Flat and Even Network

Although the advent of HSR could bring huge potential for urban development which could be seen from the urban spatial context, not all cities with HSR have experienced spatial transformation around station area. This phenomenon can be seen particularly in many old cities with high historic value. For example, in Rome, Venice and Florence (Figure 4.11), the stations are located in the central city which is enclosed by a large number of historic buildings. As a result, the spatial context around the station appears to completely merge with the surrounding areas and shows a relatively cohesive relationship. Furthermore, due to the demand for the protection of the

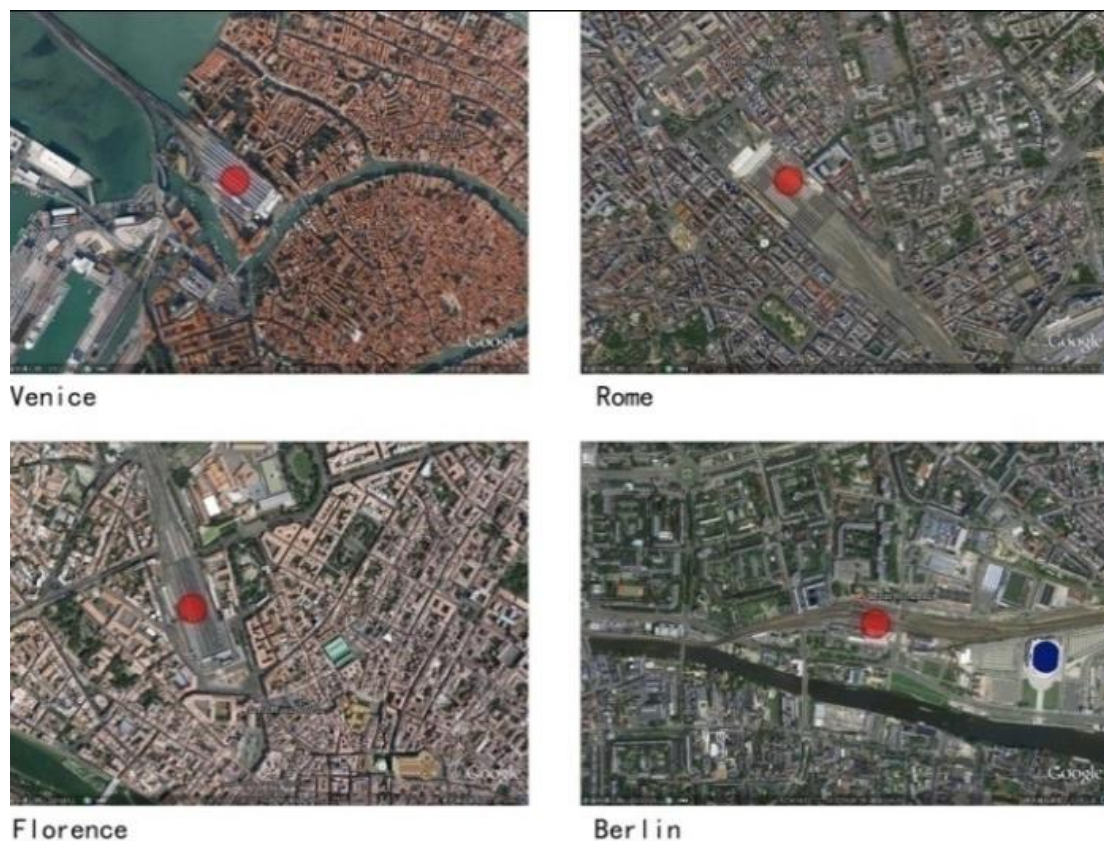


Figure 4.11 Cities of Flat and Even Network Model

historic centre and limited land resources, the development around the station appears to be quite restricted compared with the highly intensive decentered network model, and to a large extent, the relatively even and flat network contributes a lot to the continuity of urban context.

b) Urban Quality

The huge challenge in integrating the project into the environment might reflect various issues such as complicated schemes of land ownership, existing historic buildings, soil and water contamination, balance between efficient transportation organization and high urban quality creation, unpredictable and constantly changing elements during the long time span, etc. As a consequence, despite the claims by developers of urban vitality creation, the actual spatial performance of many projects has not been very compelling, particularly in new peripheral station areas (Majoor & Schuiling, 2008). Profit-oriented priority can often produce a landscape dominated by a cluster of bulky, indifferent buildings that do not encourage urbanity. Moreover, the consistent argument about financial risk for both public and private participants can destroy the original intention for public space development, resulting in purely functional, privatized, controlled areas of elite consumption, spatially separated and hardly 'urban' (Majoor & Schuiling, 2008).

For instance, in London Stratford international station area, despite the commercially successful Westfield centre, the big volume inward looking shopping mall physically separated the international station and old station and there has been no clear route through. Ultimately, a fractured piece of city and an uninspiring place has been left (Independent Transport Commission, 2014).

In Zuidas project, although is expected to become a world-class business location and generate substantial economic growth in the near future, the government still has great ambition to create a livable, people-oriented urban sub-centre to represent a new as

well as the traditional image of Amsterdam. Therefore, through small blocks and rigid-grid spatial planning, it is clear that planners are inspired by a 'Manhattan style' and also reflect the traditional context of Amsterdam. However, some skeptics consider the grid is more convenient for Zuidas to become an office location rather than a mixed-use area. In addition, the modern image of Zuidas will lack a physical and visual connection with the central city and contrast with the history and culture, thereby failing to create a 'feel like Amsterdam' (Trip, 2008). With regard to the key sub-project of the Dock, from an urban design perspective, it is suggested that it will increase the integrity of the whole area and hugely reduce the air pollution and noise which would contribute an improvement of urban environmental quality. On the other hand, it will also hamper the flexibility of the whole project since the Zuidas is a rather loose framework including various smaller projects. The construction of Dock would add a very inflexible aspect to the project (Bruinsma, 2008). Hence, the mega construction of Dock, although it has been approved by most partners, still has many unpredictable elements. Furthermore, since the dock model is with high financial risk, great pressure would be exerted on developers to maximise profits through sacrificing a mixed housing programme for different income groups and other social and cultural facilities. Local government and developers may, therefore, be forced to act in a very business-like manner to reduce the financial pressures (Majoer & Schuiling, 2008).

The assessment of the Euralille project from the urban design perspective, to a large extent causes much dispute. On the one hand, architect Rem Koolhaas has made great efforts to give the station area a big facelift through construction of contemporary looking buildings. Through the ambitious planning and construction, the urban image and reputation of Lille as a modern city has been raised and more importantly, it seems that the station area complements existing centre rather than threatening its position (Bertolini, 2000; Trip, 2007). However, the drastic interventions in the old city, according to critics, could be seen as a 'beautiful scar' tearing the urban fabric and tending to be formal rather than social, focusing on image rather than urban life

and therefore creating a barrier between the inner city of Lille and the neighbourhoods beyond (Dovey, 1998; Trip, 2008). Although there has been large public investment to ensure the diversity of functions and to provide platforms for various urban activities, in fact, Euralille, does not have such multiplex forms of life. In fact, the term ‘contemporary mono-functional’ would suit the station area better since the area is occupied by mono-functional blocks close to each other. The shopping mall tends to attract people from the street into the building while the outside facilities fail to generate a diversified street life, and the open parks of the area remains desolate (De Jong, 2009; Trip, 2008; Dovey, 1998).

4.4 Key Elements for Positive Impact of HSR on Urban Development

Based on the empirical analysis, it seems clear that the impact of HSR on the economy is neither automatic nor uniform, the real effect is largely interweaved with many other elements. At most, the advent of HSR could be regarded as a catalyst or engine to facilitate the local economy when all other conditions are met. Therefore, HSR is by no means a ‘saviour’ or ‘guarantee’ to boost urban development, sometimes, if local authorities do not take advantage of it to a good extent, an adverse effect would occur. Basically, in order to positively promote the local economy with the advent of HSR, several conditions need to be met.

1) Objective and Distinctive Orientation for a City

First of all, as the local governor or project leader, an objective and explicit orientation towards a city is quite essential. In other words, the context, strength and weakness of a city should be fully understood and evaluated carefully before setting up a specific development plan. More importantly, seeking and identifying the unique features of a city would prevent the fade of urban identity in a globalized context. Otherwise, any ambitious or flashy plan would ultimately lead to a deviation and even big failure. Basically, cities most likely to gain from HSR are those cities with already developed economic conditions. In particular, an advanced service sector or at least

they should have an enthusiastic intention to transform towards tertiary industry. Otherwise, the more efficient connection with major nodes would cause unpredictable loss to cities without favourable conditions. Meanwhile, adequate population density is also an indispensable element for HSR to promote the local economy, because HSR, compared to conventional lines, are relatively expensive due to their comfort, reliability and speed. Therefore, without adequate population density, it would be quite costly and possibly hurt the local economy rather than boost it. That's why at the moment, some countries with a strong economy like USA and Australia are still hesitating to develop HSR widely.

2) Long-term Vision and Stepwise Process

In the second place, since the urban development associated with the high speed railway station is a long, complicated and gradual process, the outcomes, either benefits or harms it might bring, would be realised over decades. Therefore, a long-term and visionary perspective should be conceived not limited in urban geography but closely connected with a wider context. Based on the explicit and objective understanding of a city and a region, a clear framework and primary aims need to be carefully considered at the beginning. In the meantime, the framework should allow adaptation and flexibility over time. It is important to foster a climate of continuous questioning and meanwhile to leave sufficient room for change (Independent Transport Commission, 2014). Furthermore, although the project is perceived as a single scheme, the achievement, in reality, is a stepwise process with the implementation of numerous smaller projects. Therefore, the whole system should be an 'open system' being continuous, unstable and evolving rather than a 'closed system' with fixed and rigid measurements (Independent Transport Commission, 2014; Sennett, 2008).

3) Fluent Connection

Thirdly, since all cities are involved in a regional network and in which all of them are somewhat interdependent on each other, the increase of local economy, to a large

extent could be considered as the relocation and redistribution of capital and labour between cities. Therefore, fluent external and internal accessibility of a station area appears to be a quite important and decisive factor. As a large number of economic activities tend to be concentrated on the station area, a good access to station would induce more investors to locate and meanwhile, easier access also means much more potential passenger flow which would be beneficial to urban facilities such as shopping malls, department stores, etc. In addition to the fluent transportation connection, integrating the station area into a wider urban context, being compatible with the overall urban strategies and creating seamless spatial connection of the station area with surrounding neighbourhood, also appear to be essential. The station area is neither an isolated island nor a privileged place over the surroundings, it plays the role of a catalyst for local development and urban image lifting. Therefore, creating continuity between places, incorporating the station area into a big picture and blurring the distinctive station area boundary to a larger extent appear to be a challenging, yet necessary.

4) Strong Leadership and Wide Participation

Last but not least, with the advent of HSR, many cities have the intention to regenerate the station area or exploit vacant urban areas to attract urban activities. However, despite the original high expectation, most cases turn out to be less achieved. Since the development project is a complicated process which is filled with various actors and conflicts of interests, hence, a strong leadership with a long term commitment, positive policy and various participations are deemed to be necessary for station area development. A successful city capturing the most benefit of high speed railway should be able to involve a diverse range of partnerships to share objectives, to build up a foundation of open dialogue, collaboration and to ensure sufficient trust between different parties. On top of that, a leadership which could create alliances between competing communities and address conflicting interests between parties is of great demand. And moreover, establishing a strong power of implementation and supervision appears to be another decisive factor.

5) Matrix of Key Criteria for Successful Urban Development around High Speed Railway Station

Similar to the previous chapter, the key findings and components of international high speed railway station area development can also be summarised into a matrix (Table 4.10), which indicates the essential elements for positive impact of HSR on urban development.

Node value		Place value	
Location	Accessibility	Diversity	Spatial Organization
• Urban density • Public facilities and market access • Economic foundation • Potential cost prediction • Consideration about impact on environment and existing community • Potential for development • Integral development strategy • Transport connection	• Hierarchical accessibility system • Fluent connection with key urban areas • Population scale • Relatively strong economic condition • Multimodal transfer system • Importance of urban rail transit • Environment friendly transfer mode	• Consideration of interest of actors • Diversified urban functions • Adoption of high technology • Climate sensitive approach • Flexibility • Strong leadership and wide participation • Distinctive orientation • Long-term vision and stepwise process	• Proper spatial model selection • Focus on urban quality creation • Integration with existing urban context • Urban identity creation • Size control

Table 4.10: Key findings from Successful Urban Development around High Speed Railway Station

4.5 Chapter Summary

As a safe, comfortable and efficient transportation mode, the advent of high speed railway considerably connects cities in a much wider network and provides huge potential for their development. Although local governments put great confidence in the station area development, the process is a rather tortuous and complicated process, full of fierce debate, conflicts of interests and ambiguous impacts. Through a systematic analysis of international experience based on a wide range of typical cases, it has been found out that in node value, whatever the location choice is, the final choice is the compromise between various concerns and which would bring the largest benefit for passengers and urban development. During the decision process, it requires a wide range of participation from different sectors and furthermore, it needs to be put into a larger picture of local development agenda rather than restricted within transportation development agenda. In terms of accessibility, the successful station area should have a multimodal transfer system in which rail transit would play the vital role, and the degree of accessibility would in turn have huge impact on the development of the station area.

In place value, in order to create a diversified station area, various political and economic issues will occur as well as accompanying changes in goals, programme and phasing. A good organization system demands the wise integration of a large number of actors. Then, the impact of the station area on urban development usually appears to be ambiguous. Although the ultimate benefits are less than expected, the advent of HSR and station area development is still considered to be a boost for accessibility and local development as long as authorities respond actively to it and make their efforts to absorb various opinions from different actors and the public. With respect to urban functions in the station area, there are several functions which

seem quite common and popular around stations, namely offices, commerce and leisure. The current development of the station area tends to adopt high technology and a climate sensitive approach, and with more flexibility. In spatial organization, basically, there are two typical models, namely the node model with concentrated development and the network model with extensive development. Regardless of the spatial model, despite the claims by developers of urban vitality creation, the actual spatial performance of many projects has not been very compelling, particularly in new peripheral station areas. Hence, based on the analysis in node value and place value, various preconditions need to be met to collectively support the positive impact of high speed railway on urban development. These are, an objective and distinctive orientation for a city, a long-term vision and stepwise implementation process, fluent connection both with external and internal areas, a strong leadership and wide participation. And lessons learned from international cases would be expected to provide valuable experience for Chinese HSR new town development.

Part II Summary: Matrix of International New Town Development and International HSR Station Area Development

Due to the initial stage of HSR New Town development in China, the research spends considerable time on studying the international experience of new town development and urban development around high speed railway stations so as to acquire valuable experiences and lessons. Furthermore, since the ‘HSR New Town’ is a brand new urban phenomenon originating in China, there is no previous experience across the world. Hence, a separated study on new town development and high speed railway station related development is conducted to evaluate and understand experiences from the two fields. As the conclusion, key findings from the two fields can also be summarised into a new matrix (Table 4.11), which indicates the combination of successful experiences of node value and place value.

Node Value		Place Value	
Location	Accessibility	Diversity	Spatial Organization
• Consideration about topography of the site and resources • Secondary transport connection • Preservation of natural beauty and historic interest • Availability of facilities • Market for industrial development and housing • Integral part of regional planning • Urban density • Relatively strong economic foundation • Potential cost prediction • Consideration about impact on environment and existing community • Potential for development	• Hierarchical accessibility system • Fluent connection with key urban areas • Population scale • Economic condition • Multimodal transfer system • Importance of urban rail transit • Environment friendly transfer mode	• Consideration about interests of actors • Diversified urban functions • Adoption of high technology • Climate sensitive approach • Moderate flexibility • Strong leadership and wide participation • Distinctive orientation • Long-term vision and stepwise process • Enough employment • Infrastructure convenience • Decent environment • Balance of sexual groups and age • Various facilities for different age groups • Create community spirit and sense of belonging • Mix of housing type • High level of information transparency • Neighborhood establishment • Ecological balance	• Proper spatial model selection • Focus on urban quality creation • Integration with existing urban context • Create urban identity • Size control • Create an integrated network of green space • Safe environment • Sustainable approach
• Effective organization	• Cooperation between different institutions	• Long-term commitment	• Sufficient funding system

Table 4.11 Key findings from International New Town Development and HSR Station Area Development

Part III China's Experience

Chapter 5 High Speed Railway New Town Development in China

Since the HSR new town is regarded to be a new round 'new town campaign' in China and a considerable number of new towns in China share similar driving forces and development context, it appears to be essential to present a broad overview of new town development before analysing the specific HSR new town development. In this chapter, first of all, China's new town typology and primary motivations would be explored so as to make a critical evaluation about the new town phenomenon. Then, the high speed railway development in China and the relationship between the high speed railway and the 'new urbanisation' will be discussed to pave the foundation for further deep research about the HSR new towns. Thirdly, as the highlight of the chapter, the unique HSR new town will be critically evaluated based on the framework of node value and place value.

5.1 New Town Development in China

5.1.1 Typology of New Towns

Unlike new towns of European countries which have a relatively clear definition, new towns of China are loosely defined and consist of various typologies. Through literature review, there are many ways of classification based on different perspective. This thesis tries to define a new town from both a broader perspective and narrow perspective so as to show the difference of Chinese new town with western countries

and their big variety. Basically, from the broader perspective, new towns of China would include three types, namely development zones, functional towns such as university towns, Olympic towns, etc, and suburban residential towns. These new towns are mostly project-motivated or government-led so as to promote economic growth. From the narrow perspective, new towns with comprehensive functions planned or constructed in order to relieve an overcrowded old city could be considered as the typical new town.

1) Broader Perspective

The definition of Chinese new towns from a broader perspective refers to urban settlements which on the one hand possess the character of typical new towns in western countries such as being situated in suburb area, on the other hand, they have their own uniqueness since most of them are driven by economic development needs rather than decongestion demand from the old city.

a) Development Zones

Since the operation of Open up Reform Policy in 1978, various economic development zones were sprouting up across the whole country. Basically, industrial based development zones are dominant because as a traditional agricultural country, China urgently demands the development of industry to promote its economic growth. Therefore, a wide range of development zones occurred such as economic development zone, high-tech zone, export processing zone and border economic cooperation zone. According to relevant statistics, until October of 2014, there were 215 national economic development zones and 115 national high-tech zones (Feng, 2015). As the symbol of national reform, development zones have been considered as the primary platform of industrial concentration, the window to the outside world and a strong engine of economic growth (Zhu, 2008). Moreover, they contribute a lot to urban spatial extension. For example, from 1999 to 2009, the urban built up area of Xian had increased from 118 km² to 375 km², and among the incremental 257 km²

urban area, development zones contributed 76% (Huang et al., 2009).

b) Project and Big Event-Oriented New Town

In the recent decades, more and more thematic new towns are sprouting out such as university towns, Olympic towns, high speed railway towns, administrative towns, etc., and the common ground for them is that they are motivated by a mega project or big event at the beginning and strongly led by local government. Moreover, these new towns are located near old cities and gradually develop as the sub-centre or urban cluster rather than the typical new town although they are still called 'new town'. For example, in 2005, Nanjing decided to promote Hexi New Town in the wake of the 10th national games. After the construction of primary sports facilities, various public facilities were built gradually and, at present, Hexi New Town has become one of sub-centres of Nanjing. Recently, with the arrival of high speed rail, Nanjing tends to enlarge urban structure through construction of a southern new town based on a high speed railway station, and according to master planning, the southern new town would eventually become one of the three sub-centres of Nanjing. Basically, a mega project or big event would significantly stimulate urban development and within a centralized political context, this type of new town has gradually become one of the indispensable motivations for urban development due to their advantages of a large amount of investment particularly in the initial period, strong consistent policy support by local government, relatively mature public facilities and good-quality urban planning (Zhang, 2011a). However, although most of the new towns tend to have a bright beginning, their follow-up utilisation seems to pose a big challenge for local government (Zhang et al., 2007).

c) Suburban Residential Town

Apparently, the extension from urban areas towards the suburbs has emerged in many big cities and mega cities in the wake of fast urbanisation. During the process, a vast number of large scale residential towns, led by private developers but hugely affected

by government policy, are widespread and invading more and more suburban areas. Particularly in southern China such as Guangzhou and Shenzhen, some private developers proposed a new idea of 'residential town' in the suburbs which quite seems like a 'sleeping town' in the past (Zhang & Zhao, 2007). Huaqiao town, a typical residential area developed in 1985 in Shenzhen has been regarded as the embryo of a 'suburban residential town', it combined tourism and residence together enhancing its popularity. Besides the residential cluster, the 'Huaqiao town', developer also constructed two large scale theme parks, 'Happy Valley' and 'The Window of the World', and at present, the three urban clusters constitute a modern new town (Wang & Zhao, 2012). According to relevant statistics, there have been over 20 large scale 'residential towns' around Guangzhou suburb, and the total area ranges from 0.5 km² to 4 km² (Yuan & Wei, 2011). After 2000, more and more 'residential town' occurred in big cities such as Beijing, Shanghai, Chongqing, Chengdu, etc. The phenomenon, on the one hand, provides a better living environment for urban residents and hugely benefits local government through profit of selling land. On the other hand, due to the 'profit driven' nature of private developers and lack of master planning, public facilities are severely inadequate and there is a huge gap between residential town and outside. Moreover, the suburban area tends to be weakly linked with the old city, therefore most residential towns could be merely regarded as sleeping towns rather than genuine new towns.

2) Narrow Perspective: Urban Development Strategy Promoted New Town

In parallel with the prosperity of fast urbanisation, on the one hand, the regeneration of the old city is taking place in a large number of well developed cities, on the other hand, new town construction has been considered as an essential way to decentralize population and industry so as to relieve the congested old city. This kind of new town, often situated in suburban area with green land separation with old city, is similar with typical western new town concept. They are relatively independent and planned

carefully within the master planning, and more importantly, they tend to be comprehensive rather than mono functional. For instance, in the master planning of Beijing in 2004, 11 new towns were planned to be independent, environmentally friendly, and comprehensive towns and in Shanghai's 'Eleventh Five Year Plan', 11 new towns have been conceived with different theme. Among the typical new towns, most of them are based on existing old towns which are in proximity to an urban area and already have the advantage of good natural conditions, as well as economic foundations to assist the pressure release of the central city. They could to a large extent accommodate the overspill of population and industry from cities whereas central cities are still having to face constantly increasing development pressure. Effective outcomes could be expected through some measures such as old towns merging or existing towns upgrading. However, in many cases, new towns show less competitive power because of weak linkage between different industries and undeveloped public facilities, they are prone to be overshadowed by central cities (Zhang & Zhao, 2007; Zhang, 2007; Zhang, 2011a; Peng, 2013).

5.1.2 Motivation

New town, as one of the most important outcomes of fast urbanisation, is closely related with social, economic and political factors and to a great extent, it could be regarded as the comprehensive result of various elements. In general, there have been four major motivations behind the large scale new town development in China.

1) Engine for Economic Growth and Platform for Fast Urbanisation

It is quite obvious that after the Opening Up Reform in 1978, economic growth has been put on top priority in government's agenda. For many cities, the development of a new town, to a great extent is the method of stimulating the local economy rather than relieving the old city. This is because for a certain period of time, the overall economic foundation of China as well as the infrastructure facilities was quite weak.

Hence, limited resource has to be concentrated on certain areas to attract advanced technology and capital for the sake of economic development (Feng, 2015). New towns, as undeveloped new urban spaces, appear to be a strong economic engine to attract foreign investment and create more job opportunities. Furthermore, since China has stepped into an unprecedented fast urbanisation period, there is huge demand for a guaranteeing healthy population and industrial transfer, meanwhile optimising urban structure. According to relevant statistics, approximately 20 million rural people would flock to urban area every year. New towns, without doubt, provide an effective platform to absorb the increasing urban population and promote an orderly urbanisation process. For instance, the new towns of Beijing have absorbed 40% of the increasing urban population (Feng, 2015). Moreover, since many new towns are initiated by mega-projects, they would play a pivotal role in elevating urban competitiveness and enhancing urban image.

2) Land Finance System

The so called ‘Land Finance’, resulting from the ‘Revenue-Sharing System’ between central and local government, has been the strongest incentive to igniting the initiation of Chinese urbanisation and supporting a 30 years’ period rapid development which has no identical case across the whole world. In other words, the ‘Land Finance’ is the core in the urbanisation process of China.

The choice about urbanisation model, essentially, is a choice about the method of primitive capital accumulation. From the historical perspective, the early accumulation of capitalistic countries largely depended on the external plunder while China, after 1949 (When the People’s Republic of China was founded), had to convert to the ‘Planned Economic System’ which indicated a forcible accumulation method through ‘self-transfusion’. That means the accumulation of agriculture was considerably transferred to the industrial sector to set up the foundation and provide

profit for industrialization. However, this unsustainable method was too weak to realise sufficient accumulation for urbanisation, and moreover, it considerably suffocated the national economy and hugely impeded the efficient circulation of production and consumption. Consequently, before the national reform of 1980s, the overall urbanisation rate of China was less than 20% (Zhao, 2013). The breakthrough began during the late period of 1980s when ‘Special Economic Zones’ like Shenzhen and Xiamen were forced to sell land use right to get money to invest in urban infrastructure construction. Since then, a unique method which based on ‘land credit’ was created which later was called the ‘Land Finance System’. In 1994, with the introduction of a ‘Revenue-Sharing System’ between central and local government, local authority has been confronted with a severe fund shortage since which largely hindered the development of the local economy. However, at the same time, the right to get land by selling at a profit has been given to local government which paves the institutional foundation for the ‘Land Finance System’. In such circumstances, the transfer of land use right has become popular and proved to be quite profitable and has contributed a lot to the revenue for local government, significantly relieving the great financial pressure on them (Zhang, 2002a). After a series of institutional innovations such as ‘Reform of Urban Housing System’ in 1998, and the ‘Land Bid Invitation, Auction and Listing System’ in 2003, the ‘Land Finance System’ was improved continuously and has become a vehicle acting as profit machine for urban development (Dai, 2013; Zhao, 2013). Accordingly, cities began to develop at a stunning speed, far exceeding the original expectations (Table 5.1). Therefore, from the urban development perspective, the ‘Land Finance System’ has made the most significant contribution to national urbanisation. Without the innovative land system, the realisation of fast urbanisation could not have been achieved.

However, behind the prosperous urbanisation promoted by the ‘Land Finance System’, a large number of serious problems have occurred which require examination. First of all, since the central government does not control the land right directly, local government, to a large extent, could be considered as the ‘dictator’ of land who takes charge of land management and operation. As a result, under the big pressure of fund

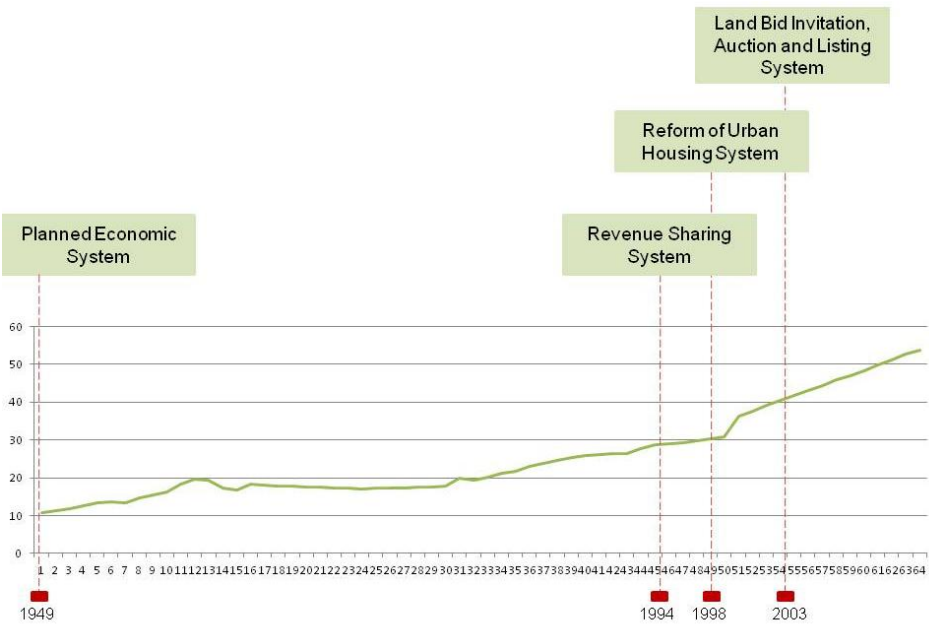


Table 5.1 Land Finance System and Urbanisation Rate of China

shortage, local government overly depends on ‘Land Finance’ and tends to maximise land value via various ways like lowering compensation during land expropriation, raising land selling price, enlarging land selling scale, etc. These measurements, in many cases, have caused community riots, soaring housing prices and the loss of a large amount of precious cultivated land (Shao & Mi, 2013). In the second place, the absolute control right over land of local government has brought about severe corruption. According to a recent speech given by a top official in commission for inspecting discipline, among all corruption cases, land right transfer and property development occupies a significant percentage (Sheng, 2014). Thirdly, constant land trading overdraws land reservation for future development which would be detrimental for sustainable economic and urban development. Furthermore, from an

industry perspective, the quick and huge financial return in property enabled property industry to become the leading industry and promoted rapid expansion of several property related industries such as iron and steel, chemical engineering, building material, etc. The unbalanced industrial development intensifies the contradiction between environmental protection and economic development, and in addition, aggravates the fragility and instability of the economy and causes the difficulty in the construction of a healthy economic structure.

3) Cadre Accessing System

In addition to the large profit through peripheral land trading, the ‘Cadre Accessing System’ could also be considered as the further impulse behind leapfrog urban extension. In order to please the leadership and get promotion, local officials need to accumulate political credits during their tenure of office. These are mainly based on achievements in economic development, namely the Gross Domestic Product (GDP). Apparently, new towns, as mega infrastructure projects, could attract enormous investment and make a great contribution to the growth of local GDP. Furthermore, compared with urban regeneration in urban centres, constructing new towns at the urban fringe or in rural areas could boost the urban image within a relatively short period and maximise profit due to their low cost during the demolition and expropriation process. With the ‘Cadre Accessing System’, the higher level government, each year, would allot a quota to lower-level government for investment on fixed assets. This economy-dominated accessing system, to a great extent, forces local government to push physical urbanisation such as mega construction projects, rather than rational, people-oriented urbanisation. This phenomenon has caused a large amount of redundant low-level development and low-efficiency, sprawling urbanisation.

4) Political Slogan Convention

From central government to local government, officials have always been enthusiastic

and proficient in putting forward spectacular ‘political slogans’ in order to make a good impression and show their achievements to citizens and to higher-level officials. Many local officials prefer ostentatious projects or image projects which could have quick effectiveness rather than long-term projects which have no visible impact in the short term. For example, projects like landmark architecture, roads of great width and new towns have been considered as good showcases for their achievement, although a considerable number of the projects may have no positive impact on urban improvement and may even have a negative impact. In the mind of local officials, urban planning, to a large extent, is merely a tool to realise their indiscriminate pursuit of high grade development, regardless of local realities such as the financial situation and the potential for urban development. Hence, planning, in many cases, only remains as a fantasy on drawing board and could never be realised. A popular saying ‘paper painting, wall hanging’ describes the phenomenon vividly. Usually, once the governor changes, planning changes accordingly. The widespread formalism and bureaucracy among local governments not only lead to a great waste of money and manpower, but also encourage local authorities to compete with each other. The construction of new towns are acclaimed as a ‘savior’ promoting urban extension and prompting the slogan ‘one year to prepare, three years to take shape, eight years to complete’ successively. However, until now, many cities are still getting stuck in financial crises resulting from extensive development and have not recovered from the ‘ghost town’ and ‘empty town’ curse. Therefore, the planning for new towns, to a great extent, has become more akin to a publicity campaign or a simulation exercise among cities rather than a rational consideration based on local reality.

5.1.3 Critical Appraisal

In general, the new town development in China hugely promotes the urbanisation process and stimulates economic development. However, at the same time, the wild and overly rapid development imposes a big threat on healthy urban development and

urgently needs correction. The specific appraisal will be explained in detail in the following.

1) Transformation

As one of the main carriers for fast urbanisation, the new towns of China, not only substantially promote the regional and urban development, but also relieve the great pressure on old cities, especially for some mega-cities (Shao & Shen, 2009; Wang & Zhao, 2012). In terms of development scale, according to the statistics, the increment of built up urban areas has reached 2000 km² per year since 2000, and until 2011, the subtotal new town planning area has reached 107,288.69km² (Lu, 2007). Such a large scale new town development apparently has provided a huge potential for urban development and economic growth. Taking Beijing as the example, from 2005 to 2012, nearly half of the increased population is concentrated in urban new towns due to the supply of a large number of job opportunities and promotion of urban infrastructure. The population of the urban core in 2012 has reduced 2.7% compared to 2005. In terms of economic growth, many new towns have become the core area of the regional economy and high technology. Until 2013, over half of high tech companies are situated in national high tech zones and the patent level of every ten thousand people is 10 times as much as the national average (Feng, 2015). Take Pudong New District of Shanghai as the example, from 1990 to 2001, the overall number of direct foreign investment projects was 7515 while the investment has reached 38.195 billion dollars (Yang, 2006a). There have been above 200 world top 500 companies settling there which stimulated Pudong to be one of the attractive global cities and has substantially promoted regional economic growth (Feng, 2015). Furthermore, the fast development of various new towns has, to a large extent, transformed the city image. Many well-developed new towns such as university towns, administrative districts and high-tech zones have become the new remarkable landmark for cities, which can significantly enhance a city's competitive power (Shao

& Shen, 2009). Lastly, for cities with demand for protection of old city or have geographical restrictions, new town development indeed provides an effective way to overcome these limitations and offers great potential for urban development.

2) Overly Government-Led

In recent years, as the most significant symbol of urbanisation, loads of various new towns are sprouting out all over the country and the tendency has become more and more fierce. According to the current statistics made by the Planning Institute of China Centre for Urban Development, in 12 provincial cities, all of them have the intention to build up new towns, and a subtotal of 55 new towns are planned to be constructed. Among 144 cities, 133 of them have new town planning which means that on average 1.5 new towns per city are planned to be built. Furthermore, among 161 county cities, 67 of them have the intention (Feng, 2015). This phenomenon, to a great degree reflects the adventurous even ridiculous aspect of the new town campaign in China. In fact, the new town campaign has been pushed and fostered by local government rather than the real demand of urbanisation. Which means there is a great lack of assessment criteria of how many new towns we essentially need and how large for a normal new town it should be. A research shows that the planned population of new towns has reached to 3.4 billion which equals more than double the current population (Du, 2014). And it seems that the situation of county-level cities is particularly short of effective control and vulnerable to be manipulated by investors and related interested parties. For many county-level cities, the reality is over half of them are gradually losing permanent residents while central government intends to promote the development of small-medium cities and has allocated a large amount of land, bank credit to local government. This policy preference hugely stimulates the confidence and enthusiasm of local government to construct new towns indiscriminately rather than investigate the real demand carefully. Local officials misunderstand the central policy of ‘urbanisation’ as the accumulation of steel and

concrete rather than putting human beings as the top priority. Therefore, without adequate industry support, many cities, especially small cities merely promote the development of 'property new town' in the name of new town. In addition, in terms of financial system of new town, in most cases, local government still plays a dominant role through enormous bank loans and profits from land selling. Since government has an absolute advantage over various resources coordination and has no credit assessment, it tends to promote new town development regardless of cost and it leads to the rapidly increasing debt of local government. And due to the frequent tenure shift of governors, they do not have to take the responsibility for the immense debt which significantly worsens the disorderly management of new town development (Feng, 2015).

Therefore, the overly government-led way, lack of market guidance and scarcity of a wide range of cooperation hugely exaggerates the actual demand for new town construction and has become an indiscriminate large-scale competition between different cities. Within this competitive background, investment could hardly be concentrated on limited construction which would make the potential target even more difficult to achieve (Li & Fan, 2013).

3) Extravagant Physical Planning and Lack of Local Character

The essential aim of new towns in China should be to relieve the great burden of the old city and accommodate new urban residents. However, according to the planning documents of many new towns, the reality turns out to be decent choice for middle-upper class. The splendid space and expensive private apartments indeed provide many more investment opportunities for rich people to find additional properties while for rural immigrants or low-income class, there are hardly proper living places or job opportunities planned for them. Furthermore, most new towns of China, at present, are situated far away from old cities and the connection appears to be scarce

due to the lack of public transport. Even though some cities have developed an underground metro system, the coverage of new town areas remains very small (Wu et al., 2011). This phenomenon worsens the relationship between new town and old city and hugely hinders the potential relocation of residence. Therefore, even though many middle-upper class people choose to buy property in new town, they still prefer to live in old city due to the convenience of public facilities and working proximity. The result is that a new town in the end, would become an empty town without neither adequate population nor relevant industry.

On top of that, new town construction, with a fancy appearance, to a great extent has become a show off tool for local officials and adds credits for their political promotion. The wide road, clustered skyscrapers, vainglorious park has become a common symbol for all new towns of China. The severe homogenization led to a huge lack of cultural phenomenon and response to local character. Taking Shanghai as an extreme example, in the ‘one city, nine towns’ development strategies, each new town was planned to be an European style town, Anting became ‘German Style’, Luodian---‘Swedish Style’, Fengcheng---‘Spanish Style’, Gaoqiao---‘Dutch Style’, etc. Only one of the nine towns was planned to remain with its traditional Chinese Style and develop as a tourist centre with attractive Ming and Qing Dynasty architecture. Shanghai is considered to be an international window of China and pioneer in the economic field and urban development, however, within such an essential urban policy, that most of its new towns would indiscriminately follow European style appears to unthinkable and even ridiculous, it’s hard to imagine in the near future, what the typical ‘Shanghai Urban Identity’ is and the high possibility would be that local identity has been immensely drowned by the so-called ‘International Style’. From this perspective, it appears to be clear that the current new town planning of China put so much focus on physical and spatial creation rather than cultural and community concern, new town itself has become a platform for spectacular but

inhuman space and has largely neglected the continuation of tradition and innovation of culture. With regard to the social environment, the lack of popularity could be largely attributed to the unbalanced population structure and employment structure. In fact, property and industry have become the most important two pillars to dominate the development of new town and in many cases, real estate projects have become a pioneer to initiate a new town and a massive profit machine for local government. However, no sufficient public facilities are considered to support the completion of new town and many new towns are severely short of motivation for further development. At present, a large number of new towns are left empty and enormous area of land has been inefficiently utilised (Wang, 2008; Li, 2013a; Feng, 2015). These issues tend to be neglected by government and developers because, from their perspective, a new town is regarded as an effectively economic growth pole rather than a complete community.

4) Lack of Legislation and Management

Compared with some developed countries such as the UK and the USA, China's new towns, so far, have a distinct character is that all of them are planned and promoted from top to bottom but have no legislative support or explicit national policy to assess and manage new town construction (Feng, 2015; Wu et al., 2011). Questions like which provinces are in need for national new town; which cities need provincial or city level new town; what is the proper location and what is the proper scale have no answers given by authoritative institution. As the result, the freedom for local government to construct a new town is very high. In many cases, local officials make decisions on building up various new towns merely based on regular meeting rather than formal assessment and approval. Taking Guangzhou as an example, since the beginning of the 21st century, 'Huanan Zone' which was located at the southern fringe of Guangzhou has got its reputation nationwide due to its large scale property development and became the showpiece across the whole real estate field. Through

the ‘Huanan Zone’, a large number of real estate projects were developed and the average land area has reached to 1.3km². The fast development of such a massive property area could largely be attributed to the mismanagement of local government. By the end of 1990s, fearing of the loss of financial autonomy due to the administrative district adjustment, the local government sold the majority of rural land to developers swiftly at an extremely low price and got enormous profit from it. However, because of the low land price, local government cannot take the responsibility of infrastructure construction and in the end, the huge gap of public facilities have to be filled by private developers who only showed enthusiasm when making efforts to sell houses but did not sustain once selling out. Therefore, due to the severe lack of pre-planning and mismanagement, the large scale of ‘Huanan Zone’ has turned out to be a troublesome ‘sleeping town’ which calls for urgent infrastructure complement and restructuring(Yuan & Wei, 2011).

Besides the development of functional malformations due to the mismanagement, from an environmental perspective, local government also should be accountable for massive environmental destruction. In some cases, without sufficient scientific evidence and environmental assessment, governments choose to create new towns through large scale mountain removal and sea reclamation. Those extreme methods would definately lead to extravagant resource consumption and break the ecosystem balance (Xinhua Daily Telegraph, 2013). In addition, without normative regulation, frequent contradiction might occur during the new town development process particularly in the land expropriation phase, and problems such as construction without permission, excessive construction, extravagant planning, etc. have led to a huge waste of land and financial strain. In a word, the planning policy and management entity of new towns are all at the experimental stage which has, for a long time, caused a certain amount of chaos and needs urgent regulation (Shao & Shen, 2009; Wu et al., 2011).

5.2 China's High Speed Railway Development

Although the total railway length increased significantly during the previous century, for such a large-sized and populous country as China the average density of railway is still ranked very low by the international comparison (Chen, 2012). The length of railway lines in China per land area (7.7 km/1000 km²) and per capita (0.6 km/10,000 people) is much less than those of Japan, Germany, France, USA and India (Table 5.2). The scarcity of capacity on the railway system generates a bottleneck considerably impeding the national economic growth (Okada, 2007; Takagi, 2011). In an attempt to tackle the severe problem, central government took effective measures to build railway lines at an extraordinarily fast pace, approximately 1000 km every year, and meanwhile, speeded up the existing lines. Through the Six Times Speed-Up Project, certain sections reached maximum speeds of 250 km/h, which marked a brand new stage for China railway travel. Since then, the government focus has been shifted from merely speeding up existing lines to building up high speed railway.

	Length of Railway Per Capita (km/10,000 people)	Length of Railway Per Unit Area (km/1,000 km²)
China	0.6	7.8
Japan	2.2	72.8
Germany	4.4	100.8
France	4.9	54.0
USA	7.7	23.1
India	5.8	19.9

Table 5.2 International Comparison of Railway Length, 2005 (Okada, 2007)

The Blueprint for HSR of China, 'Intermediate and Long-Term Plan for Railway Network' was released by the Ministry of Railways in 2004. Obviously, the plan depicts a magnificent picture of a highly effective railway system in the following

decade, which will undoubtedly bring about significant changes to the whole country in many respects. The plan comprises 2 systems.

The first system (Figure 5.1) consists of 11,940km of railway lines on 8 routes which connect the major provincial cities, and among those, 4 routes are planned from north to south, the other 4 extending from east to west (Wang, 2011).

The second system, namely the Inter-city HSR Network, is designed at regional scale to cover primary urban clusters such as Pearl River Delta, Yangtze River Delta, Great Bohai Sea, Guanzhong, Zhongyuan, Chang-Zhu-Tan etc, linking up cities among those within 1-2 hours. By 2020, the overall HSR network is expected

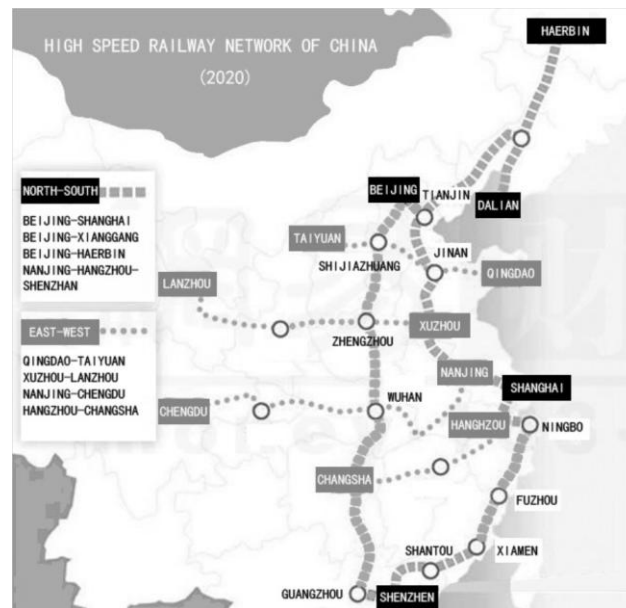


Figure 5.1: High Speed Railway Network of China by 2020 (Wang, 2011)

to reach 18,000km, taking up more than half of the total number of the world, connecting the major Chinese cities with a population of over half million of China (Zhang et al., 2010; Okada, 2007). Table 5.3 shows the length of HSR in main countries all over the world. China, developing at an unprecedented scale and speed, already covers about 3937 miles at present, overshadowing all the rest of the world (International Union of Railways, 2011).

INTERNATIONAL HSR COMPARISON (UNIT/MILE)				
Country	Operation	Construction	Planned	Total Length
Belguim	131	0	0	131
France	1185	131	1635	2951
Germany	803	236	419	1458

Italy	577	0	247	824
Netherland	75	0	0	75
Poland	0	0	455	445
Portugal	0	0	629	629
Russia	0	406	406	813
Spain	1285	1104	1064	3453
Sweden	0	0	469	469
Switzerland	22	45	0	67
UK	71	0	128	198
China	3937	2712	1813	8462
Taiwan	216	0	0	216
India	0	0	309	309
Iran	0	0	297	297
Japan	1665	236	364	2266
Saudi Arabia	0	344	0	344
South Korea	258	116	31	404
Turkey	279	474	762	1515
Morocco	0	125	300	425
Brazil	0	0	319	319
USA	226	0	563	789
All Over The World	10729	5930	10199	26858

Table 5.3 International Comparison of HSR Length, 2011 (International Union of Railways, 2011)

5.3 The HSR and Urbanisation

In some ways, High Speed Railway is not just a big breakthrough in transportation, but also a strong signal of the urbanisation level and a powerful engine to promote further urbanisation. When looking at the development of HSR in different countries, an obvious point is that the time of HSR being put into use was closely related with the urbanisation level. Basically, the HSR appeared only when the urbanisation rate reached a certain level, for example, Japan introduced the HSR in 1964 when the urbanisation rate had reached around 50%. Other European countries, like France, Italy, Belgium brought it into use when the urbanisation rate had already passed 65%,

70% and even 95% (Table 5.4) (Yu et al., 2012). That means the introduction and development of the HSR highly depends on the development level of a city. Among the various issues during urban development, the economic development level and population density exert the greatest impact on the demand for HSR.

The economic development level, to a large extent, has been considered as the precondition for the development of the HSR. Taking several countries and regions as an example, France started the construction of TGV when the per capita GDP had arrived at around 12500 dollars (Tianya, 2012). The corresponding level of Korea and Taiwan was 9461

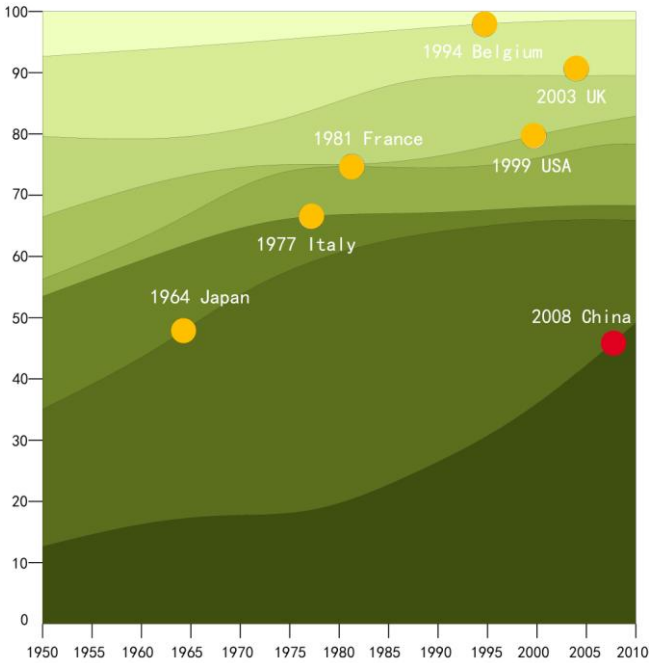


Table 5.4 Urbanisation Rate of Different Countries when the First HSR Began to Operate (Yu et al., 2012)

dollars and 12773 dollars respectively which were at the same level as that of France (Liu, 2012). That means only when the economic level achieves a certain level could it support the advanced transport development due to its demand for a vast amount of investment. Then, the population density of cities along the lines is the decisive element for the potential requirement of passengers. When looking at some Asian

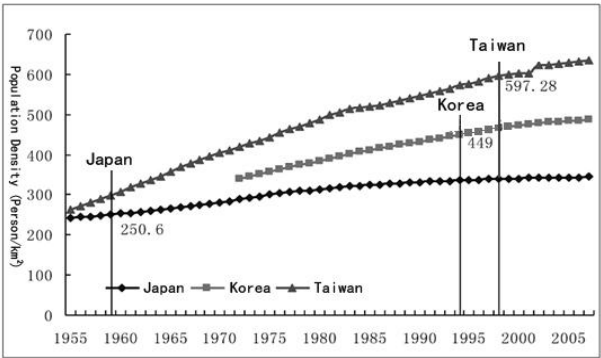


Table 5.5 Population Density at the beginning of HSR Construction of Different Countries (Liu, 2012)

neighbours, Japan started the construction of Tokaido Shinkansen in 1959 when the population density of cities along the lines had reached 785/km². The corresponding number for Korea in 1994 and Taiwan in 1998 was 449/ km² and 597/km² respectively (Table 5.5) (Liu, 2012). Relatively high population density provides a great many passengers which may guarantee the persistence and stability of the operational income.

With regard to the Chinese situation, by 2020, the urbanisation rate is expected to reach approximately 60%. This means that nearly 863 million people will live in urban areas, which calls for much more efficient long distance public transportation. Hence, China make great efforts to develop high speed railway have been regarded as a quite sensible choice. In terms of economic conditions, major regions which have been connected by the HSR network like Beijing-Tianjin Region, Yangtze Delta Region, Pearl River Delta, and the Shandong Peninsula have laid the solid foundation for HSR development (Table 5.6). The economic development level has reached at

Region	Urban Population (million)	GDP Per Capita (dollar)	Population Density (person/km²)
Beijing-Tianjin	2719.49	9357	450
Yangtze Delta Region	4521.35	16141	997
Pearl River Delta	4646.13	10788	1026
Shandong Peninsula	2078.72	9502	631

Table 5.6 Population and Economic Situation of Different Regions in China, 2010 (Liu, 2012)

least the same level or an even higher level compared with other countries. Although the relatively good economic condition cannot guarantee the development of HSR, it would definitely provide basic financial support for the construction of HSR. And moreover, the development of HSR could also stimulate local economies and promote industrial transformation. In addition to the economic condition, population is another key issue. According to relevant statistics, the population density of most regions has

shown a much higher level than that of Japan, Korea and Taiwan (Liu, 2012). This means there would be a large passenger flow between different regions especially during a special period like the spring festival or the golden week holiday. This on the one hand could provide stable tourists for HSR, and on the other hand would demand public transportation with fast speed and large carrying capability (Du, 2011).

5.4 High Speed Railway New Town of China

5.4.1 HSR New Town Campaign

In the wake of the rapid HSR expansion, a seemingly more crazy campaign emerged,

namely the ‘HSR New Town Campaign’. Literally, the HSR new town refers to new urban area that centred around new HSR station and normally planned to become a diversified urban sub-centre or thriving new district. Among the roughly 200 cities with connection

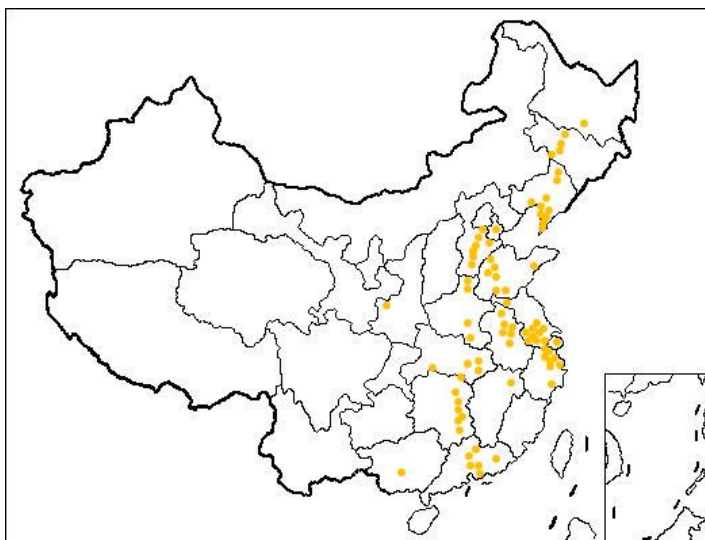


Figure 5.2 HSR New Town Layout of China

to HSR, over 70 cities have the planning for construction of 76 HSR new towns (Figure 5.2). At regional level, until now, there have been three municipalities and 16 provinces have connection with HSR, and among all of them, 2 municipalities and 15 provinces have the plan to build HSR new towns, what seems intriguing is the number of HSR new town in relatively underdeveloped provinces (middle and northern region) with constantly declining resident population exceeds the number of developed eastern provinces (Table 5.7). This trend hugely reflects the national strategy, which focuses on the development of underdeveloped provinces especially in middle and western part, aiming at breaking down the gap between east and other parts and

creating a more balanced national economic pattern.

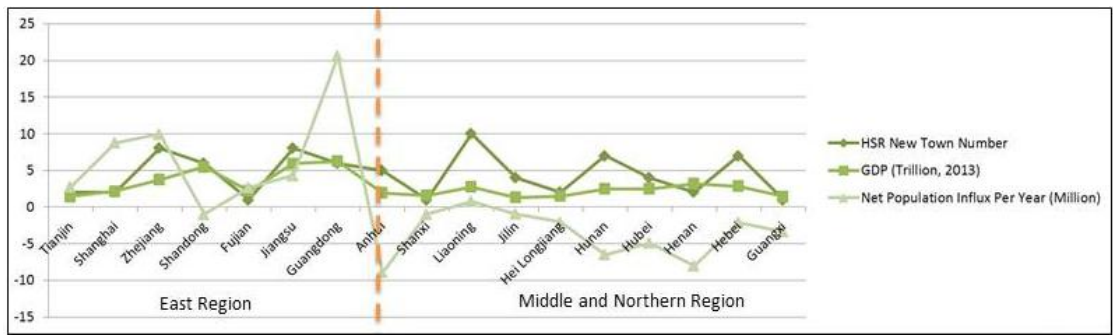


Table 5.7 Regional HSR New Town Number and Its Economic and Population Situation

1) Node Value

In this section, the location choice trend of the new high speed railway station in China and its position in urban hierarchy will be explored based on a comprehensive documentation collection. And then, the current accessibility of station area and the planning intention towards the transportation connection in station area will be analysed. Furthermore, some doubts and potential risks related to the node value will be posed to raise the alarm behind the prosperous development.

a) Location Choice

(1) Peripheral Trend

Although the international experience has shown that for many cities, the construction of an HSR station could be a strong catalyst for urban regeneration of old city (Pol, 2008), China is a totally different story. Basically, when deciding the location for HSR stations, local

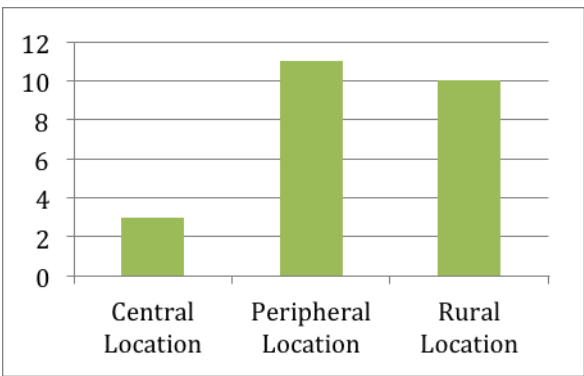


Table 5.8 Location of Stations along the Beijing-Shanghai Line

authorities in China have focused their attention on the urban periphery rather than on the central area. Taking the Beijing-Shanghai line as the example, among 24 stations,

21 are located in urban peripheral or rural areas while only 3 are in urban centres. In addition, except for 2 old stations (Beijing South and Tianjin West), all the other 22 stations are newly built and 21 of them are put in peripheral or rural areas (Table 5.8). This peripheral trend, obviously, has revealed the great ambition of local governments for urban extension.

When investigating the location of all potential HSR new towns of China, apparently, peripheral and rural area have become the top priority and the average distance between the new town and the urban centre is 11.59 kilometres. Furthermore, the distance between cities with varied scales and economic situations show no distinct differences: the first level city---17.5 kilometres, the second level city---

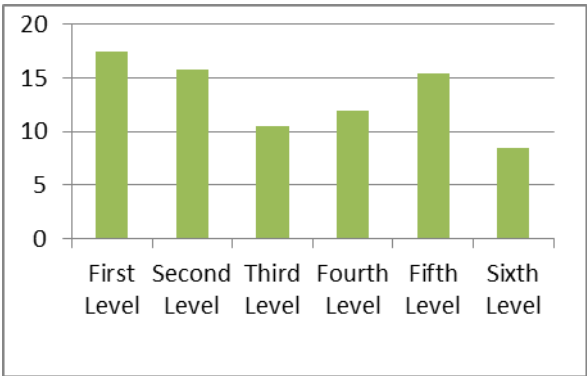


Table 5.9 Distance between HSR Station with the Old City in Different Level Cities (unit/km)

15.74 kilometres, the third level city---10.44 kilometres, the fourth level city---11.39, the fifth level city---15.37 kilometres, the sixth level city---8.43 kilometres (Table 5.9). However, even the distance seems to be similar, the planning intention for urban development in each city category still shows a clear distinction.

For the first and second level city, due to their large urban scale, the HSR new towns are mainly put on the urban fringe and have a close connection with the old city. This phenomenon, to a large extent, reflects that the local government of these cities wants to restrict an excessive urban extension and optimise the resources in the urban-rural fringe rather than leap far from the existing urban area. By contrast, for cities of third level and lower level cities, due to their smaller urban scale, the planning intention appears to be more ambitious because the HSR new towns tend to be situated at a

much more distant place from the urban centre and merely has a poor connection with them even though the distance is quite similar with the first two level cities. From this point, it is quite clear that the local governments of smaller cities are eager to grab the chance of HSR to promote local development, sometimes, they seem to be overly optimistic about the benefit of which HSR could bring. Furthermore, in some cases, the reason for putting the new station in some location is aiming at meeting the demand for the development of a certain new district. For example, the Wang Fangdian west station is located in Lao Hutun county which is 20.5 kilometres from the urban centre. This new station is expected to stimulate the development of Lao Hutun cluster which would become one of the two main urban clusters in the master planning and attract industry of logistics, administration and culture. However, whether the construction of this new HSR station would trigger the Lao Hutun urban cluster formation still remains unpredictable because at present, the location seems quite awkward due to its long distance from the existing urban area and the potential sub-centre which means this urban cluster is an isolated island in the urban structure and hugely depends on the connection with HSR. And the more tricky thing is, when the old urban centre appears to be underdeveloped and still has large potential for further development, the location of new HSR station was put in a remote and much more underdeveloped village rather than located close to the urban centre, it seems hard to imagine the hidden logic of local government in the decision making process.

Compared with smaller cities, the location choice of larger cities seems more rational and reasonable, taking the provincial city of Jiangsu province, Nanjing as the example, the current new high speed railway station is situated in southern part of Nanjing. However, the original choice of station is totally a different one and it was located in the northern part. The southern station is the local government's choice while the northern station is chosen by the Ministry of Railway. The dispute has lasted 12 years although there has been a long period of stagnation. From the technical perspective,

both northern and southern stations are feasible and the main difference relies on cost and urban foundation. While the northern station is close to the old railway station and would be convenient for railway staff to commute since most railway accommodation and management offices are in the northern part of Nanjing, the southern station possesses considerable development potential although at that time, it was merely on the urban fringe and severely lacks infrastructure foundation. Local planning officers insist that the southern station completely accords with urban development direction while the northern part has very little development potential due to the barrier of Yangtze River (Zhang, 2011b). Moreover, since the airport is situated in the southern part, the connection between the southern station and airport would be more efficient and the impact of construction on the surrounding environment would be less. Finally, agreement has been achieved between the Ministry of Railway and local government and at present, the southern new station has become one of the largest stations in Asia and a HSR new town is under construction. From a long-term perspective, the southern station is more compatible with urban development although it needs longer time to be constructed (Zhang, 2011b).

Based on the analysis on the current HSR new town location choice of different cities, the choice for larger cities show more consistency with the overall urban development plan, while the smaller cities favour a leap-frog mode which results in relatively huge gap between the HSR new town and the existing urban area (Figure 5.3).



Figure 5.3 Location of Old City Centre and HSR New Town Stations in Small Cities and Large Cities

b) Position in Urban Hierarchy

Basically, the intention towards the position of the HSR new town in the whole urban hierarchy could be classified into three types (Figure 5.4). In the first type, the HSR new town has a relatively independent role in terms of function and at the same time, it would have an interactive relationship with the other urban clusters. On the whole,

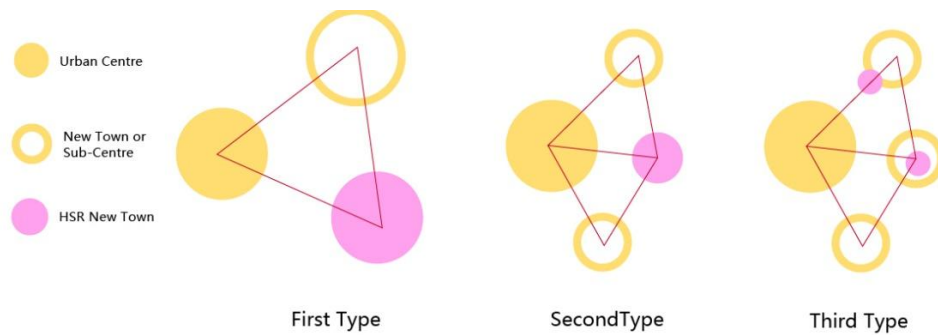


Figure 5.4 Position of HSR New Town in Urban Structure

it shares the equal position with the old urban centre and other new towns or sub-centres. The second type of HSR new town, to a large extent, could be regarded as the satellite encompassing the urban centre and effectively carry the spill-over effects of urban centre. Therefore, this type of HSR new town has the lower position in the whole urban hierarchy compared with the first type. The last type, in principle, could only be considered as a new district within a new town on the urban fringe or transition area, situated between new town and urban centre although most of them are still called ‘HSR new town’, and for HSR new town situated within an existing new town, the existing new town, usually has a relatively good foundation and has gone through several years’ development. The advent of high speed railway, to a great extent could be regarded as a second round catalyst for new town development. And this type of HSR new town, in general, plays the role as urban gateway or urban connector.

c) Doubts about Location Choice

Although the peripheral and rural area seems to be the top priority for almost every

city as a location for the new high speed railway station, the final outcome of station area development is still hard to predict. Some scholars show more confidence in larger cities than in small cities. According to responses from the three academics, they all expressed their concerns towards the unrealistic station choice for underdeveloped cities. One of them pointed out:

“For some small cities which have weak economic condition and poor urban environment, to put a new station far away from the old city would probably trigger the loss of labour and enterprises rather than increasing the attraction due to its inadequate public facilities and limited financial budget. Furthermore, sometimes, the location choice would clash with the original urban development (quotation from AC1).”

For instance, the high speed railway station of Suzhou (Anhui Province) is located at Liangbanchang village which is 20km away from the old city (Figure 5.5), and according to the urban master planning, the station area will be developed as the high speed railway new town with a total area of 30km². In the future, it would be expected to become the

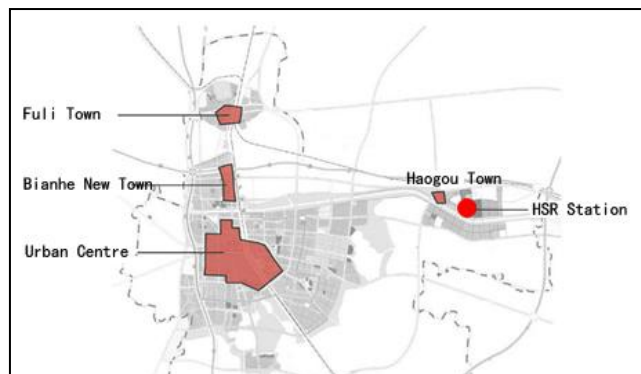


Figure 5.5 Urban Structure of Suzhou (Yu et al., 2012)

urban sub-centre aiming at tourism, business and logistics. However, the new town situated on the eastern side seems incompatible with the original urban space development axis which extends along a north-south direction. Moreover, the distance between the new town and the original three main urban clusters is overly far which may restrict the effective usage of resources and destroy the urban development context (Yu et al., 2012).

Another problem that has emerged at present is the potential fierce competition that the HSR new town might confront. All academics have expressed their deep concerns about the issue, with one stating that: *“the biggest problem is the overlapped planning at urban scale and lack of thorough consideration for relationship between different new projects”* (quotation from AC2). Another one of them said (AC3): *“local government tends to impulsively rush into large scale projects with the advent of new policy or new transportation link, it seems that they hardly consider the necessity and feasibility. I think that’s the biggest problem of China’s urbanisation and the HSR new town campaign is just a miniature of it.”*

Taking Suzhou (Jiangsu Province) as the typical example, previously, it has two alternatives for a new station location: one is close to the existing old station which seems quite suitable and considered to be a priority from urban development perspective. The other is to construct a brand new station which is 10km away from the old station and surrounded with greenfields and farmland. Unfortunately, the latter choice got the permission in the end. The current problem is in the northern part of Suzhou. From the old station to new station, there have been three key urban nodes, namely the old station area, Xiangcheng sub-centre and the new north station

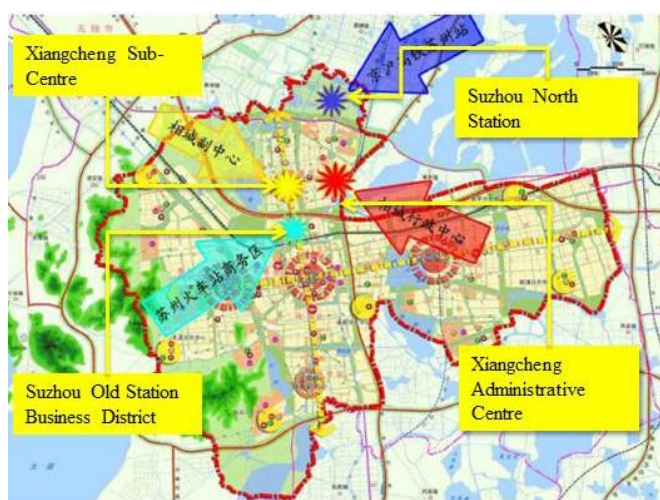


Figure 5.6 Key Urban Nodes in Northern Part of Suzhou (Zhu, 2010)

district. All of the three nodes have huge potential to become urban sub-centres in the future (Figure 5.6). Xiangcheng sub-centre is planned to be a retail, commerce,

business, logistics and recreational centre in the master plan but at present, it still remains undeveloped except for some infrastructural facilities. The old station area is also planned to develop commerce, retail, business, recreation within 2.4km² urban area. The intention for the new north station district, to a great extent will focus on business, hotels, offices, culture and logistics with a subtotal area of 1.81km² and it is expected to be the economic centre in Xiangcheng district (Zhu, 2010). It is clear that the development strategies of the three districts are quite similar, more troublesome is they are so close to each other. It seems quite hard for Suzhou to support three urban nodes simultaneously and as a result, there is a high possibility for the failure of all of them due to the overly fierce competition and the distraction of government focus.

Thirdly, for a few very small cities, the location choice is hugely affected by political issues rather than objective considerations. Take Xiaogan north station as the example, the station is situated in Dawu county which belongs to Xiaogan city, and the distance from the new station to Xiaogan urban centre is 150km, much longer than the distance between Xiaogan and the provincial city, Wuhan (70km). Moreover, the name of the station causes much misunderstanding for passengers who tend to regard the station as the northern station of Xiaogan city, and this indeed has resulted in inconvenience for passengers especially for night passengers. Such an awkward location choice could be largely attributed to the 'strong political social connection' of Dawu county leaders. Through their great effort, Xiaogan north station has finally been located in Dawu county (Baidu, 2015). However, until now, although ambitious new town has been planned, the basic public transportation link with the new station still remains as severely insufficient, and the potential for such an isolated HST new town seems not optimistic.

2) Accessibility

a) Current Situation

In terms of the current accessibility of HSR new town stations, it is evident that the public transfer is hugely both insufficient and monotonous. Among the 76 HSR new town stations, it seems that the intra-city ordinary bus provided the majority of public transportation although in some cases, the number of bus routes seems insufficient (13 stations only have 1 bus route). According to statistics, 74 of 76 stations have links with intracity bus lines and 2 stations even have no public connection which means only a private car or taxi could reach them. And among the 74 stations, stations in larger cities tend to have more bus routes than smaller cities and for some stations, not only fewer bus routes have been provided but also the operation time is limited and many routes stop before 7pm which would be quite inconvenient for night passengers.

In terms of intercity bus, only 21 stations have a long distance bus stop at the station and passengers of other stations have to commute to the bus station in the old city. In terms of other more efficient public transportations with larger carrying capability and advantage of punctuality such as tram, BRT and metro, merely 6 stations have a link with tram or BRT and 11 stations have metro connection, and all of them are belonging to first to third level cities. Particularly for stations with metro, all of them are key cities with important regional positions and strong economic conditions like Nanjing, Shanghai, Tianjin, etc. However, for intracity railway which has been used widely in many European and Japanese cities to promote the effectiveness of the public transportation system, none of the 76 stations have the railway connection with other urban areas. In terms of a direct link with the airport, among the 20 first and second level big cities, although all of them have their own airport except Suzhou, only 9 of them have a direct public transportation link with the airport which results in huge dependence on private transportation and an expensive cost. On the whole, it

appears that the accessibility of the new town station with other places within the same city and with areas outside cities is somewhat low and the insufficient public transfer modes would possibly imply that the time passenger saves on high speed train would be wasted on traveling from the train station to the specific destination. According

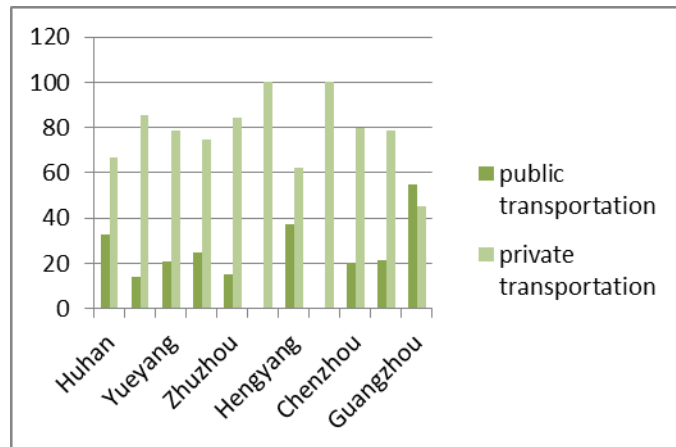


Table 5.10 Transfer Way of HSR New Towns (Yuan, 2014)

to a statistic from Feng (2015), among 11 new town stations along the Wuhan-Guangzhou line, except for Guangzhou south station, all other 10 stations have a dominant private transfer mode and for two stations, due to the limited bus routes (only 2 routes for each station), the private transfer mode has reached 100% (Table 5.10).

With regard to the reason, the first and foremost one might be the location of station as most stations are located on urban fringes or in rural areas with undeveloped surroundings and require huge investment and a long period of time to provide sufficient transport facilities. Since many existing public transportation system such as the long distance bus station would already be built in the city centre, it would definitely take extra time to transfer from the new train station to the inter-city bus hub. Besides, most HSR new town stations, particularly in small cities, only have a few dedicated railway tracks for HSR lines and do not provide additional service for non HSR lines due to the inapplicability of the track.

In general, the HSR new town stations, to a large extent, have quite limited means of internal and external public transfer modes. The lack of internal system leads to an

increasing dominance of private transport such as taxi and private cars, but in some cases the new stations did not provide sufficient parking places and the outcome is the disorder of station area. And limited external link makes the new station an isolated island and causes long transfer time between different transport hubs.

b) Planning Intention

(1) Diversified Public System

Although the current accessibility of HSR new town stations seems relatively low and requires urgent development, in many planning documentations, it demonstrates a comprehensive transportation program and the major focus has been put on public transfer system. First of all, nearly all new town stations intend to diversify transfer modes and some of them, especially in developed cities, the metro has become a priority for local government. Secondly, besides the metro system, bus rapid transit (BRT) and tram, as the supplement for metro and ordinary bus are increasingly gaining more importance in the whole transfer system due to their high efficiency and low emissions. Thirdly, local government also intends to guide the development of green transport system such as the continuous pedestrian path linking surrounding parks and greenfields and there are also plans to set up public rental spot to promote the usage of the bicycle. Lastly, the intercity transfer system around the new station will be strengthened, not only the long-distance bus stations are planned but also more interregional high speed rail lines are under planning or construction.

(2) Hierarchical System

Since the urban population and economic foundation of a city could hugely affect the accessibility level of a HSR new station, basically, there are three types of new town stations which show different intentions regarding the transfer system.

The first type of stations is located in municipalities like Tianjin south, Shanghai

Hongqiao and provincial capitals like Nanjing south, Guangzhou south, etc. As the HSR stations of these cities take considerable responsibility not only for urban transportation but also for regional transportation, the planning of the means of transfer are quite diversified. Basically, high speed railway, ordinary railway, metro, long distance bus, ordinary intra-city bus, taxi, private car, bike and even airplane would be seen in the near future or already can be seen at present. Taking Nanjing south station as an example, in the planning proposal, there will be a comprehensive transfer system in the station including 5 high speed railway lines, 3 metro lines, 1 airport light rail, a long distance bus centre, an intra-city bus centre, taxis and private cars. And among all of them, public transportation especially the metro would take the majority of passenger flow, with private transportation providing a complementary role to the public.

The second type of station is situated in cities with good economic development like Suzhou north, Wuxi east, Changzhou north, etc. Compared with the first type of station, the passenger flow in these stations would be much less. Therefore, although the planning for the variety of transfer ways appears to be similar to the first type, the specific lines of each method of transfer would be fewer. Therefore, in the public transportation system, bus and metro would collectively to become the most important tools to carry passengers, and the metro lines would be fewer than the large cities. For instance, in Suzhou north and Wuxi east, there will be only 1 metro line connecting the HSR station to the city centre.

The last type of station is situated in small cities, county-level cities even towns with relatively low position of regional network and weak economy. Hence, the passenger flow of these stations would be relatively small, and also since the HSR station, in most cases are new stations dedicated for HSR and far away from city centre, there would be hardly any other railway lines connecting with the station. Normally, there

would be no metro connecting the station in the near future, although in some cases, the construction would be considered in a long-term planning. Generally speaking, for this type of station, intra-city bus, taxi and private cars will take the primary responsibility for carrying passengers.

2) Place Value

In this section, functional diversity and spatial organization of Chinese HSR new towns will be analysed. Based on current development strategies of overly extravagant functional orientation and spatial form & scale, potential risks will be suggested as a warning for further development of HSR new towns.

a) Diversity

Although the 76 HSR new towns are planned in diversified cities, the functional orientations for them have quite a lot in common. According to the current planning documentaries, the most obvious point is that nearly all HSR new towns are planned to be a comprehensive functional urban space. All the three academics noticed the similar functional orientation of HSR new towns, with one stating that, “it is

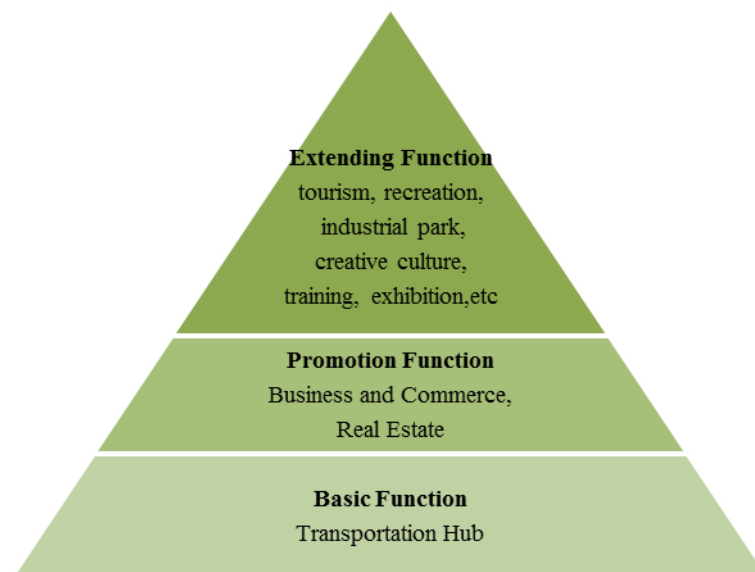


Table 5.11 Three Level Functions of HSR New Towns in China

quite clear that local authorities are passionate about building up a mixed-used urban area with high-end industry to promote a new urban gateway or to create a fully-fledged urban sub-centre regardless of their economic condition and urban scale (quotation from AC2)." Basically, the specific urban function of HSR new towns

could be divided into three levels (Table 5.11), the first and second level could be viewed in almost all HSR new town planning while the third level function depends largely on local circumstance and could somewhat reflect the urban uniqueness.

(1) Basic Orientation

The ‘integrated transport hub’ constitutes the first level function for an HSR new town. Since all the potential functions will be organized and developed around the HSR station, the basic function of an HSR new town would be a highly efficient transit junction which could provide various transfer modes and seamless link with each other. In addition, some functions with strong demand for efficient transport would gather around the station such as the postal service, commodity distribution centres, warehouses and logistic support services, etc. Furthermore, the transportation efficiency of an HSR new town will provide a quick and intuitive way for travelers to form their first impression, as it will be regarded as the urban gateway. Therefore, the ‘integrated transport hub’ would be the unique function which distinguishes an HSR new town from any other types of new town, and would also paves the way for further development around the area.

(2) Promotion Orientation

The second level function of an HSR new town would be the commerce and business which could largely boost the economic development and facilitate the transfer of the station area from a pure transport node to a comprehensive urban place. As we all know, the most important area in a city is the city centre which contains a large amount of commercial and business functions. Therefore, in order to build up a new area to play as a catalyst for urban development, functions with high profit potential cannot be ignored. In addition, the further development of commerce and business in the new urban area would complement the development of the old city and connect with other sub-centres, finally to form a comprehensive, balanced, and harmonious commercial and business network across the whole city, even extending to nearby

cities to attract more customers. Due to its large profit potential before-mentioned, almost every HSR new town intends to develop a business and commerce core near the station with the image of solid cluster of skyscrapers. *“Even for some cities or counties with quite weak economic circumstances, they seem to be more enthusiastic to rely on the business ‘panacea’ to lift them out of poverty and move towards brighter future”*, one academic pointed out (quotation from AC1). Among the business function, ‘headquarter economy’ has become the most popular choice particularly in developed cities such as Wuxi, Suzhou, Nanjing, etc. For example, in Jinan West HSR new town, the government intends to attract three types of ‘headquarter economy’, namely advanced manufacturing industry headquarter, business or CBD related headquarter and commerce headquarter. All three types of ‘headquarter economy’ could be accommodated within two forms, Central Business District (CBD) and Business Park. While CBD mainly focuses on business and commerce related headquarters, the business park would concentrate on advanced manufacturing industry (Wang & Wang, 2009) (Table 5.12).

Headquarter Economy Industry Chain	Main Industries	Development Form
Enterprises	Commerce and Logistic, Local Business, Manufacturing Management, Market Centre	CBD
Base of Research and Development	Digital and New Media Industry, Biological and Medical Industry, New Energy Industry, Cultural Creative Industry	Business Park

Table 5.12 Headquarter Economy Industry Chain in Jinan West HSR New Town (Wang & Wang, 2009)

Real estate development, in parallel with business functions, constitutes another pillar of the HSR new town. For many cases, before the official construction of the HSR new town, the development of real estate has spread and dominated the priority of agenda for quite a long period. And the potential construction of an HSR new town, to

a large extent promotes the rapid increase of housing prices and meanwhile it has become a very attractive slogan of developers when selling properties. Moreover, the development of real estate helps to accumulate a large number of people which would form a good foundation for further new town development. Through the planning documentaries, it is interesting that planners and officials are keen on ‘ecological communities’, a series of measurements are adopted such as vertical vegetation, green roof, shadow system, catchment of rain, recycling of water, solar energy, etc. These environmentally-friendly intentions, if finally implemented in the final, would be profoundly positive to energy saving and environment protection. However, in terms of potential users, most property is merely targeted on middle and upper classes while low-income classes are hugely ignored and in most planning documentaries, sections referring to affordable housing development only occupies several sentences or is even completely neglected in the wider planning context. Therefore, the academics all expressed their concerns towards the ‘overly prosperous’ real estate industry and insufficient public housing of HSR new town planning. One of the academics claimed that, *“just the same as business, real estate development has also become a profitable machine in HSR new town planning rather than an effective solution to serve the needs of all (quotation AC3).”*

(3) Extending Orientation

The third level is various extending functions which are associated with the basic and promotional function and help to enrich the diversity of an HSR new town based on the local characteristic. Basically, the extending functions would include tourism, recreation, sci-tech industrial park, creative cultural industry, education and training, exhibitions, etc. For example, cities with rich natural resources would take the opportunity to develop tourism to promote the urban image and strengthen the local economy. In the case of Wuhan, relying on the Yangchun Lake, East Lake and a number of fish ponds, the local government intends to develop the surrounding area as

a main tourist attraction in the first phase. In the case of Jinan, exhibitions would be a function with high potential due to the connection with HSR, and the planners intend to turn Jinan into the fourth biggest exhibition centre following Shanghai, Beijing and Guangzhou. Among all extending functions, there is an apparent trend to develop knowledge industry and high tech industry. Taking the Beijing-Shanghai line as the example, among 20 cities with the intention to construct HSR new towns, 10 of them plan to develop a high tech industry park, to attract advanced technology and a research base or build up a creative industry park. Through these, the HSR new town would have huge potential to increase the overall competitiveness and transform to the so-called ‘intelligent city’.

(4) Potential Risk

Homogeneity and High-end Oriented Function

Although local authorities and planners show great enthusiasm for and big confidence in the development of HSR new towns, some potential risks still exist. During the planning, most cities, regardless of their economic conditions and social and cultural character, have extremely high expectations for the HSR new town and eager desire for the potential huge profit. First of all, since within the whole high speed railway line network, different stations have different scales and a unique network hierarchy which would have a profound impact on potential passenger flow and radiation scope, the current HSR new town seems to ignore these objective factors and ambitiously wishes for advanced and even unrealistic development. When looking at some selected urban conditions of undeveloped cities in 2012 (Table 5.13), it is hard to imagine that cities with insignificant station, with around or less than 5000 dollars GDP per capita would be able and have the necessity to construct an urban CBD focusing on headquarter economy and luxurious hotel. Even if the new town would be built in the near future, the question is whether the local economy has the sufficient capability to support it. Meanwhile, for some small cities or county-level cities or

towns, the number of the resident population is declining continuously rather than increasing which to certain extent means, there is no urgent necessity to extend urban area and build such a large HSR new town. But for local authorities, a new town would be a strong catalyst for urban competitiveness and beneficial for attracting more population and boosting the local economy. However, in current situation, such a large scale urban development might be a heavy financial burden for local government during a long period and probably impede local development rather than promoting it.

City	GDP per capita (US Dollar)	Population
Gaoyi (county)	5269	190,000
Dawu (county)	2490	640,000
Zhuozhou (county-level city)	4365	645,500
Heshengqiao (town)	2623	730,000

Table 5.13 GDP and Population of Several Cities with HSR New Town Planning in 2012 (Complied by Author)

Secondly, apart from the self-condition of a city, the relation with a nearby city might be another important issue to consider. For small cities situated near large and key cities, the separated and homogenous orientation would on the one hand waste local resources, and on the other hand cause unhealthy competition between cities, the most likely result is the unoccupied new town in small cities. At present, no regional HSR new town planning has been made or even under consideration, each city is keen to draw its own picture rather than considering it from a broader and integrated perspective. Take Danyang as an example, it is just a county-level city along the Beijing-Shanghai HSR railway and situated near Zhenjiang, only 20 trains stop at this station per day and pause for merely a few minutes. Therefore, the orientation of the station should be an intermediate station with no primary significance. Even so, the local government has planned an ambitious blueprint for the station area which is expected to be a commercial and business centre with a relatively large capacity (Yin et al., 2015). Apparently, many important parameters have not been taken into consideration carefully before the planning. The key issue is the potential users. For

people living in the old city, few will be willing to work in the remote area and suffer the time-consuming commuting. Moreover, for people from nearby cities, Danyang, obviously, is not an attractive city for the business industry compared to nearby cities like Changzhou and Zhenjiang which have better economic potential. As a result, the planning will most likely become an unrealistic dream which only exists on paper in the end.

On the whole, the current planning orientation for each new town appears not closely connected with each city's character and do not form a coordinated planning from regional perspective. Then, high-level functions like business, commerce, luxurious hotels and top grade apartments have become the most favourable functions recognized by officials and planners. According to the statistics compiled by Wang (2011) on industrial planning around HSR new towns along the Beijing-Shanghai high speed railway line, functions like recreation, finance, business and real estate account for the majority. However, there seems a trend for local government to over-emphasize the effects of HSR. In fact, not all the cities connected by the HSR have an equal opportunity. Therefore, the balance and reasonable proportion between high-end, middle and low-end functions seems quite important. Essentially, one of the main aims of HSR new towns is to integrate urban-rural area, to create job opportunities for people with different educational levels and provide a diversified market for people with different incomes. In this sense, a proportion of low-end functions become indispensable, not only meeting the demand for various types of workers and customers, but also would help to promote the diversity of the HSR new town.

Excessive Tourism Exploitation

In many places, tourism appears to be extremely popular due to the relatively rich natural resources surrounding the new location on urban fringe. In many cases, governments are ambitious to exploit waterfronts, mountainous regions or cultural

heritage sites into attractive scenic spots. For example, Danyang, which is a small county-level city of Zhenjiang, the HSR new town intends to develop an ‘ancient cultural city’ between a historic stone sculpture of Qi-Liang dynasty and the HSR station. Moreover, in order to stimulate tourism to a greater extent, a huge artificial lake is planned to be dug in the middle of the new town. In the planning documentary, the primary slogan is ‘landscape promote, project stimulate’. However, from the objective perspective, according to international experience, the advent of HSR mainly strengthens the value to already known and popular tourist destinations but is not strong enough to promote the development of little-valued tourist spots (Albalade & Bel, 2012). Furthermore, for small cities like Danyang, although it has some historic heritage, it does not indicate a good foundation for tourism development. Even more unlikely is who will be willing to go to a newly constructed ‘ancient city’ in such a remote area? In some cases, government officers and planners even intend to create tourism spot from nothing through digging an artificial lake and building a new ‘old temple’. Therefore, for Chinese HSR new town planning, the intention to develop a new tourism spot, to a great extent, remains as a glorious dream. Less practically and less economically, the tendency might result in excessive exploitation of natural resources and a huge waste of money which not only would be detrimental to the local ecological environment, but also may consume public financial resources which could be originally allocated more wisely and effectively.

In a word, firstly, for the natural resources which exist in new town areas, just leave it as what it is and preserve it. Alternatively, it could be developed into a free daily exercise spot which might be more useful and more people-oriented. In the second place, more attention should be paid on the preservation for current historical buildings and sites, and also setting up a dedicated place in railway stations to introduce famous local tourist attractions and provide specific guide information rather than constructing new tourist spots.

Monofunctional Station

The diversity of station functions seems quite limited (Figure 5.7). For some intermediate stations in small and medium cities, the transportation-led function plan appears relatively reasonable due to the smaller passenger flow and limited station scale. However, for some highly positioned stations like Nanjing



Figure 5.7 Images of HSR Stations in China (Compiled by Author)

south, Guangzhou south and Wuhan with a total area over 240,000m², they still only act as the transportation hub instead of a more comprehensive complex which to a certain extent, could be a considerable under-utilisation of land. This generalized phenomenon could be largely attributed to the institutional parameters.

At present, different railway companies which belong to the Railway Materials Corp take charge of the construction of rail track and station while local government would be responsible for the subsequent management and urban development around the station area. The administrative separation hugely leads to the split between transportation node and the surrounding urban area. In other words, urban functions have to be excluded from the design of station hub which might result in the inefficiency of land use and inconvenience for visitors (Feng, 2015). However, fortunately, this contradiction may have the potential to be addressed in the future according to the new document called ‘suggestion for the reform of investment and financing system of railway made by state council’. In the document, it encourages the synthetic exploitation of land resource along the railway to promote local economic development and use the land value increment to compensate the railway

construction fund paid by railway companies. Furthermore, the three academics all appealed for cooperation between different institutions. One of them pointed out that, *“it is hugely desirable that the local railway company and local government could cooperate together to stimulate the integrated development of railway construction and the station area development in a more sensible and efficient way (quotation from AC3).”*

Fluctuated and Blurred Policy Towards HSR New Town Development

Behind the prosperous HSR new town campaign across the whole country, it appears that many governors are indiscriminately following the trend. *“They are anxious about falling behind in the widespread campaign and missing the potential political achievement. However, based on the official term system, most of the top governors merely focus on their own tenure rather than conceiving a whole picture for urban development. As a result, the urban development strategies are largely affected by political factors”*, demonstrated by one academic (quotation AC1). The HSR new town development policy of many cities appears to fluctuate and be blurred due to the political issues. Taking Nanjing as the example, as the provincial city of Jiangsu Province, it has the largest high speed railway station in Asia, and correspondingly 164km² southern new town concept had been raised in 2008 and planned systematically in 2010. In 2011, the southern new town had been regarded as one of the three urban centres of Nanjing and would play a key role in the rise of urban southern part. It seems that a brand new urban centre would come up through the extensive efforts and policy support. However, things are not always going on the predicted route. As a series of political corruption scandals swept the whole city, several top key governors were replaced and furthermore, as the long-forgotten Jiangbei New District (situated in urban northern part) became a state-level new district in 2015 (the thirteenth state-level new district of China), all public attention and political support has been rapidly shifted from southern new town to Jiangbei

New District. And according to the new division leader of local government, all key urban development projects including Jiangbei New District are led by the mayor except the southern new town (Zhang, 2015). In China, the development of new town is highly dependent on political support, but the southern new town, after several years' dynamic planning and preparation, seems confused about its future at the moment, and particularly since its thunder has been stolen by the Jiangbei New District.

Besides the unstable policy towards the HSR new town, another political issue is also largely affecting its development, namely the divergent planning intention. As a seemingly profitable urban project, some cities find it is hard to reach an agreement between different urban units since different administrative units have their own planning intention towards the HSR new town. For instance, Baisha station is a new high speed railway station situated in Humen town of Dongguan, as the new station area is sitting at the junction area of two towns, Humen town and Houjie town. Since 2006, several plans have been made by the two towns. Interestingly, while Humen town intends to plan Baisha station area as an important logistic and commercial area, Houqiao town plans it as an innovative area focusing on high-end function. Both plans are merely conceived at town level and no holistic intention has been achieved yet. The separated plan and lack of high level control would be quite likely to hamper the consistent development of Baisha station new town and much time and energy would be wasted in arguing with each other (Zheng, 2011).

Thirdly, some realistic issues such as a lack of financial support and alteration of planning might also have negative impact on HSR new town development and cause the huge gap between plan and implementation and, in return, the blurred planning orientation might also cause the reconsideration of planning in the process and the shortage of investors. In a word, the current development strategies for HSR new

towns have been confronted with many setbacks. This could be on the one hand, attributed to the fluctuated and unstable urban policy, on the other hand, because of the blurred and unrealistic planning.

Excessively Rapid Development and Subsequent Land Waste

Since the blurred orientation towards HSR new town and lack of evaluation of the initial stage has already had a negative impact on its development over the course of time, relevant measurements, in some cities have been adopted such as slowing down the development pace, stop making new planning or scale down the whole new town area, etc. However, some side effects can never be reversed or compensated. One of the most considerable effects is the waste of farmland. In the wake of new town planning, many cities rush into the massive demolition and farmland expropriation. Taking Beihai New District as the example, it is a new town (94.5km²) in Yingkou city and since 2009, over 20km² land has been acquired for urban construction and nearly 4km² land is farmland. However, it has been six years since the expropriation and unfortunately, most of the land still remains vacant. Moreover, no approval procedures were shown in the expropriation process and a lot of local residents expressed their anger and distress. In particular, farming has been prohibited since 2010, as the result, a large amount of farmland is wasted and neither urban construction nor farming is underway (China Economist, 2014). In the UK, on the contrary, land for new town construction could be kept for the current usage until it has to be expropriated (Town and Country Planning Association, 2014).

In China, another serious problem is the excessive real estate development in many HSR new towns particularly in some small cities or county-level cities which suffer from a severe lack of supporting industry. Basically, due to the remote location of station, the land price is much lower and the scale is much larger. This makes them quite attractive to property investors, consequently, a large number of properties

around the station have been constructed quickly and hugely ahead of other construction. And this has become a primary way for local government to increase revenue and make a good annual financial report. However, the result is that in the wake of a national real estate decline, considerable flats remain vacant since construction and new towns has become a dormitory suburb without sufficient residents and other industry support (Sun, 2015). At present, a series of new policies such as ‘New Urbanisation’, ‘Urban Extension Control’, ‘Comprehensive Urban Development along Railway’ have been released aiming at controlling the rampant urban extension. *“Although significant alteration of HSR new town plan will be made or is already in the process, such a huge waste of land resources will be difficult to compensated and no one could be responsible for such a big loss (quotation AC2)”*, pointed out by one academic, and another two academics also expressed similar opinions.

b) Spatial Organization

(1) Spatial Form

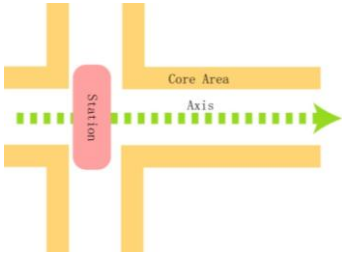
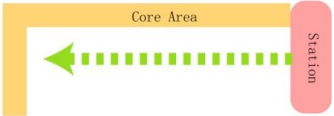
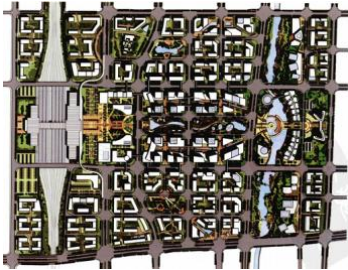
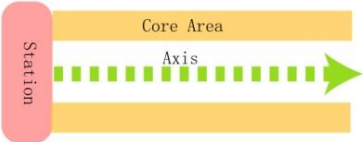
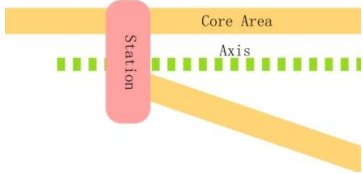
Due to the much larger scale of Chinese HSR station areas compared with their European counterparts, their spatial organization of them seems to be more complicated and with a stronger pattern. According to the current planning documentary, there are, in general three types of spatial form which have emerged. These are axis-led form, free form and concentric rings.

Axis-Led

The axis-led form can be seen in most planning cases of Chinese HSR new towns since it is regarded as an effective method of organising space around the station. Moreover, the strong visual guide appears quite capable of projecting the majestic urban image which is favoured by many officials (Table 5.14). Basically, the axis is often used in relatively large scale station area development cases in big cities such as Nanjing, Jinan, Wuxi, Hangzhou, etc. which could provide adequate space for the axis

extension. And also, the core area of many cases is most likely evenly laid on each side of the axis which accentuates the central position of the axis strongly. Furthermore, in terms of the relationship between station and core area, it seems that most core areas only stand or at least focus on one side of the station, so as to avoid the physical barrier of station and rail. That means the axis starts from the HSR station point, then extends in one direction in order to concentrate the core area on one side of station. However, in some cases like Ma'an Shan, Wuxi and Hangzhou, the highly intensive business zone extends on both side of the station which seemingly emphasizes the magnificent spatial form rather than respecting the practicability.

In terms of specific functions of the axis and core area, and taking the cases of Hangzhou, Nanjing and Wuhan as the examples, the length of the axis is 2.7km, 2.6km and 1km respectively. A series of key function nodes are planned to unfold along the main axis such as a public square node, a transfer node, a business node, an administration node, etc. Therefore, the axis could be regarded as the organizer and integrator for different spaces with various uses. The function of the axis itself, in most cases, is commonly planned as a green area which contains various types of landscape, public square, waterfront area and pedestrian area. In a word, the main orientation of the axis is entertainment and leisure spaces which make the contrast with the surrounding high intensity building area and provide a relatively relaxed space for people working and passing there.

Station	Site Plan	Spatial Structure
Ma'an Shan East		
Wuhan		
Wuxi East		
Jinan West		
Hangzhou East		

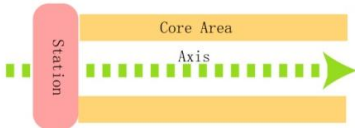
Nanjing South		

Table 5.14 HSR New Towns with Axis-Led Form

Free Form

Due to the special location and certain objective limits for planning, some HSR new towns present a relatively free form which differs from the tightly regulated planning form as mentioned above. This type of HSR station area, most likely has no ambitious intention for business. It is useful to take the Hongqiao station area of Shanghai as the example (Figure 5.8), since it is the largest comprehensive transportation hub in China and is closely related with four administrative districts and Hongqiao international airport. Furthermore, it combines various transfer modes such as high speed railway, metro, bus, taxi, etc. The main orientation of the Hongqiao station area would be the transportation hub facing the Yangtze Delta Region. Based on the orientation and wide space of the station area, the spatial planning does not follow a certain fixed pattern like an axis or concentric rings. In addition, the intensity of commerce and business seems relatively low due to the restrictions of building height around the surrounding the airport, and it only aims to meet the demand for the basic supporting service facilities (Nan, 2012).



Figure 5.8 Urban Planning of Hongqiao Station Area (Nan, 2012)

The second type of free form HSR new town lies in cases with rich natural resources like large areas of water or mountains. Taking Suzhou North as the examples, the irregular form of water in the case breaks the strict pattern of planning and enhances the vitality of the overall planning (Nan, 2012) (Figure 5.9). Moreover, the natural element has become a bond which connects different



Figure 5.9 Urban Planning of Suzhou North (Nan, 2012)

functions together and simultaneously provides a relaxed area for people. And in the cases of Shenzhen North and Yichang East, since the station areas are built between or close to large areas of mountains, the spatial form appears to be quite free and the natural resources have become an essential element for the spatial organization.

Concentric Rings

This model of the development zone is quite popular not only among western station area cases, but is also frequently used in Chinese cases (Table 5.15). Centered around the HSR station area, all the functions will be organized on one side or on both sides of the station. Normally, the first development zone could be considered as the core area which usually comprises various commercial facilities, transfer facilities and public spaces. In the second development zone, high-end business is expected to occupy the majority of spaces, then, beyond the two development zones, residential functions and some other services are often planned. In terms of development intensity, the most intensive area is concentrated between the first and second development zones, then declines gradually.

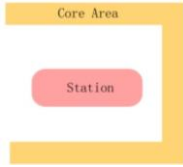
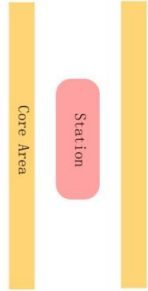
Station	Site Plan	Spatial Structure
Guangzhou South		
Changsha South		

Table 5.15 HSR New Towns with Concentric Rings

(2) The Limits of Spatial Organization

Lack of Specific Measurements for Spatial Flexibility

Although in most cases, especially large scale HSR new towns, regions with different implementation timetables are planned, the overall spatial flexibility is still relatively weak. Alternatives for space use cannot be seen in the plan which means for single building, the potential function is fixed and no transformation possibility is considered at the moment. However, the scale of HSR new towns of China is unprecedented, and the construction period will definitely last for quite a long time. This may demand an alternative and more flexible planning approach. But at present, these glorious buildings or clusters on the paper seem to be vulnerable to uncertainty and setbacks in the future. Therefore, generally speaking, though in the longer term, a certain allowance for spatial flexibility in large scale is planned, specific measurements for small scale regions or even buildings are hardly seen in current planning. *“The planner, in most cases, seems get highly involved in a traditional approach to planning and urban design rather than considering the uncertainty and complexity of*

the project, and the current planning narrowly focuses on the physical and visual aspects (quotation from AC1)”, pointed out by one academic. Hence, the ambitious planning of HSR new towns, at present, is more like a fanciful picture rather than a plausible proposal.

Formalization Pattern and Low Intensive Usage of Land

As concluded in international experience in terms of overall spatial form, the decentered development form is more practicable and could be seen in most well developed station areas. However, in Chinese planning, planners seem quite enthusiastic to follow the so-called ‘symmetrical or concentric pattern’ rather than considering the reality. In some mega-projects, the core area has been put on each side of the station and forms a majestic visual effect. With regard to the spatial form, as the new symbol and landmark for cities, spectacular but vainglorious spaces such as large-scale squares, grand axes extended from HSR station towards a cluster of skyscrapers are the most often-used spatial strategy for HSR new towns which leads to the homogeneity of visual image. And furthermore, through with these, human touch scale and connection with surrounding area is hugely ignored. The new town, in the end would most likely appear to be an isolated area with the absence of various and vigorous traditional characteristics. Moreover, officers and planners are keen to extend HSR new town to a large degree, which consequently results in low intensive usage of land. According to relevant statistics, the average development intensity is between 0.97 to 2.3, and the intensity of the core area of new town is around 1.67 (Yuan, 2014) (Table 5.16). Particularly, in almost every example of planning, excessive land around the station is planned as a huge square and landscape corridor which might be a waste of land resource and could be detrimental for improving the vitality of the station area. This phenomenon, significantly reflects “*the dependence of local government on selling land for profit and the ossified mode towards the place making method (quotation from AC3)”,* pointed out by one academic and similar ideas

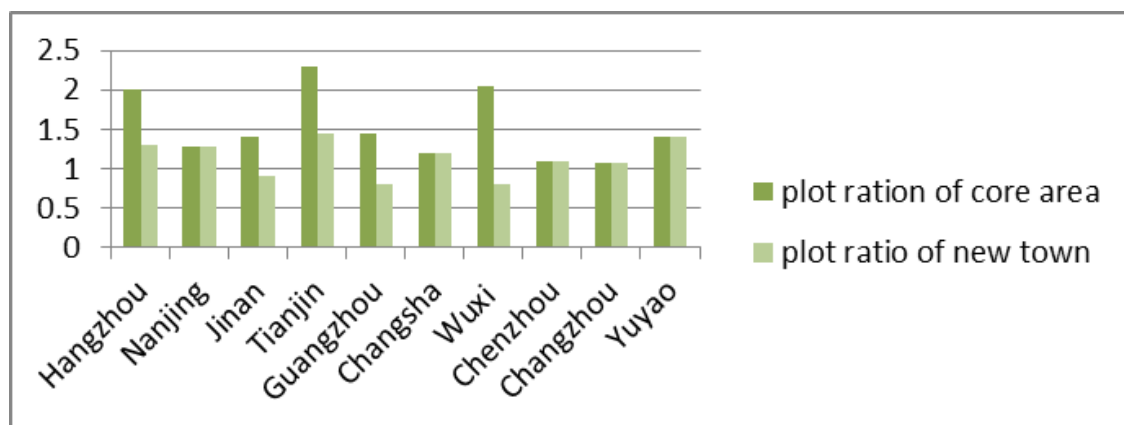


Table 5.16 Plot Ratio of HSR New Towns (Yuan, 2014)

were also heard from the other two academics.

Stunning Scale

Compared to international cases, the HSR new towns of China show much greater scale which might cause huge waste in the future. According to the analysis of cities intending to build up HSR new town, the average planning area is 24.09km², and in different city

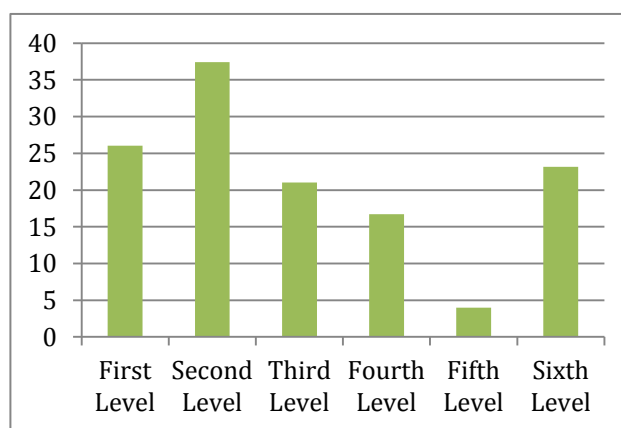


Table 5.17 Scale of HSR New Towns in Different Level Cities

level (rank of 2014), the scale shows difference (Table 5.17). In general, the second level of cities show the biggest ambition in HSR new town development compared with other cities, even much bigger than the first level city, the average planning area has reached up to 37.42km². This phenomenon, to a large extent, might reflect the urgent urban extension intention of local government, and also the solid economic condition of those kinds of cities. And from third level cities to fifth level cities, the average planning area begins to decline sharply (21.03km², 14.29km²,

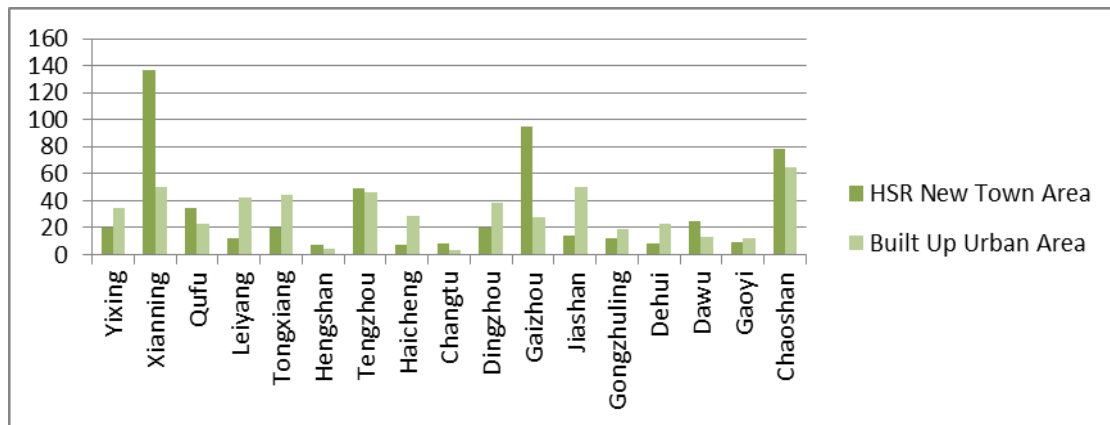


Table 5.18 Comparison between Built up Urban Area and HSR New Town Area in Sixth-Level Cities

3.97km² respectively). However, the scale of sixth level cities shows huge desire for HSR new town construction which has reached to 24.18km² and ranks just behind the first level cities. When looking at the specific figure of HSR new town planning area and the current built up urban area of these sixth level cities, it is shocking to find out that most HSR new town is more than half scale of the built up urban area, and for some cities, new town will be even larger than the old city (Table 5.18). Furthermore, the subtotal area of HSR new town of these cities is even bigger than the built up urban area which means in the near future, around the small high speed railway stations, dozens of brand new cities would appear which nearly equal with a copy of another old city in terms of scale. This trend, to a great extent reflects that some insignificant cities (most of them are county-level cities or counties) hugely rely on the HSR new town to boost local economy. For example, Dawu is a state poverty county which is located in Hubei province, with the operation of high speed railway, the county governor decided to build up a HSR new town with a total area of 25km², and intended to develop quite high-end function like business and ecological tourism to promote the development of the county. By contrast, the planning has to face many practical problems from the beginning such as the financial shortage, land resource limitation and scarce investment which would impede the overall project severely and become the potential risk for the overall development of county in the future. Besides the financial situation, another key issue for the realisation of a new town is the

population. Take three cities of Anhui province along Beijing-Shanghai line as an example, namely Suzhou, Bengbu, Chuzhou. The scale of potential HSR new towns of the three cities will be 10km², 23km² and 4.98km², however, the reality is the permanent population of all the cities has experienced severe decline. The population of Suzhou has fallen from 5.54 million to 5.36 million, Bengbu has reduced from 3.3 million to 3.17 million, Chuzhou has declined from 4.02 million to 3.94 million (Fu, 2014). That means the current urban scale is generally sufficient to support urban development and there is no need to expand urban area to such a great extent. Therefore, the construction of HSR new towns would result in a huge waste both in land and finance. In conclusion, it seems that many cities especially small cities conceive to build up new town in a stunningly large scale regardless of its economic situation, real demand and urban network position. *“Apparently, the local government has put extremely great hopes in the capacity of the HSR new towns to promote urban extension. Hence, during the process of planning, the core area seems to be much larger than the real impact area of HSR (quotation from AC2)”*, stated by one academic. This trend, to a large extent, may cause a huge waste of investment in the future. And furthermore, it seems that all Chinese HSR new towns have great ambitions to develop as the network model with highly intensive CBD district. However, in fact, *“besides several high profile cities like Nanjing, Wuhan and Guangzhou, etc, many smaller cities might be more suitable as places to adopt the node model as they have no adequate population nor economic foundation to support such a mega-project (quotation from AC2)”*, pointed out by one academic, similar perspectives have been heard from the other two academics.

Overly Large Station and a Lack of Vertical Development

Lastly, with respect to the scale of the station itself, the key problem would be the contradiction between oversized station building and the efficiency of transfer organization. Table 5.19 (Fan et al., 2012) shows the gap between current usage and designed capacity of new HSR stations of several cities along the Wuhan-Guangzhou

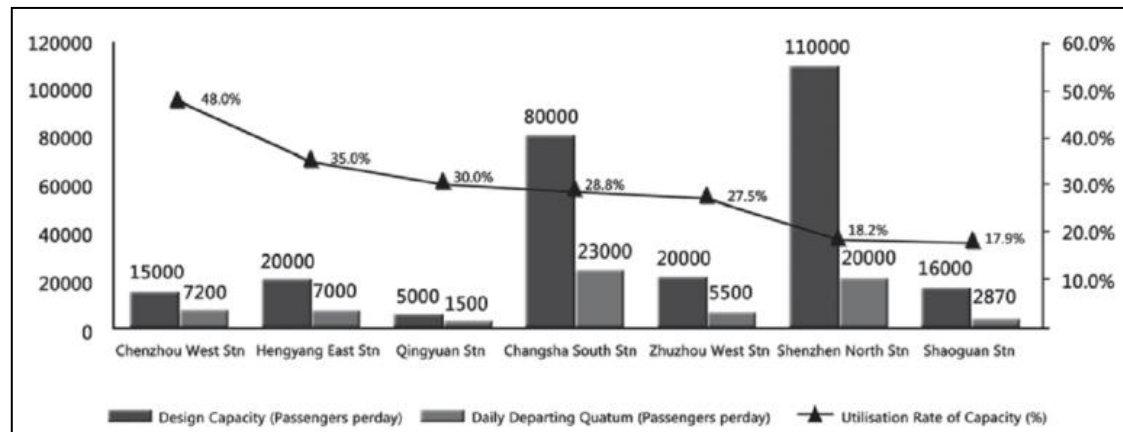


Table 5.19 Comparison of Expected and Current Usage of Seven HSR stations along the Wuhan–Guangzhou Line (Fan et al., 2012)

line. On the whole, the highest rate of usage only reached 48% which reveals a serious issue of waste of space. Furthermore, the more severe issue that might be triggered would be the time-consuming interchange procedure. Although the concept of ‘seamless transfer’ has become a primary principle for designing HSR stations, in reality, genuine seamless transfer is not achieved due to the overly grand station (Chen & Wei, 2013). For example, in Nanjing South Railway Station, 131 lifts and escalators are placed inside the station itself and more than 200 within the whole rail hub (Shi, 2011). From the passengers’ perspective, the series of up and down procedures would be so troublesome and hugely affect the feeling of ‘seamless transfer’. Then, another problem for station is the lack of vertical development. At present, most stations remain as isolated building with horizontal spatial mode and extensive spatial planning for surrounding area. No vertical and concentrated node development mode has been adopted, just as mentioned before, this phenomenon could be hugely attributed to the institutional separation. It might be resolved in the future because, for some small cities, a vertical development mode of station would

be more suitable for them rather than extensive pathways due to the limited passenger flow. For large cities, most public transfer process is concentrated on the same floor and causes relatively long distance walking for passengers, if the vertical spatial mode of station is adopted, it might be more convenient for the transfer process and also significantly improves spatial efficiency.

5.5 Chapter Summary

In China, as a country with the largest population and fastest urbanisation across the world, the new town movement has played a pivotal role in the urbanisation process. Unlike western countries which have an explicit definition for new town, the typology of new towns in China varies a lot. Basically, there are four types of new town, namely the development zones, the project-and big event-oriented new town, suburban residential new town and urban development strategy promoted new town. It has been found out that four motivations considerably promote the extensive development, namely the economic growth and urbanisation demand, land finance system, cadre accessing system and political slogan convention. Therefore, Chinese new town development is hugely stimulated by political and economic factors rather than decongestion demand from the old city. During the large scale and fast development process, the new town movement of China, on the one hand hugely boosts the urban transformation and improves the living environment for residents. However, on the other hand, it reflects many problems in the process such as the overly government led way, extravagant physical planning and lack of urban character, and the lack of legislation and management which requires urgent correction.

As a unique outcome with the operation of high speed railway, the construction of HSR new towns has become a widespread campaign across the whole country. A large number of cities with the connection or which will have the connection with high speed railway have ambitious plans for building up a new town around the station.

They tend to put the high speed railway in a remote area where the public transfer appears to be severely insufficient. And moreover, the remote location, in many cities particularly in small cities is not compatible with the overall urban planning which imposes a threat to HSR new town development. In terms of the diversity of industry, the HSR new town intends to develop in a comprehensive but homogenous way which significantly lacks the urban uniqueness, and also, it lacks an explicit, consistent and reasonable policy to support the healthy development of new town. In the spatial organization, the stunning scale, formalization pattern, overly large station and lack of vertical development, low intensive land use and the scarcity of flexibility considerably reflects the lack of proper development strategies for this new type of urban extension.

Chapter 6 Wuxi East New Town

Chapter 6 presents a deep analysis of the case study, Wuxi East New Town. Firstly, the general background of Wuxi and the East New Town is introduced in the beginning to provide a holistic picture of the history, evolution and current development situation of Wuxi and East New Town area. Then, following the framework of node value and place value, development strategies in the two aspects will be discussed in the following two sections based on the deep review of a wide range of documentation from various sources, interviews of 20 relevant people from different backgrounds and observation of the new town site. Finally, the advantages and challenges of development strategies will be critically evaluated in the last section. Throughout the chapter, various international cases will be presented to make a comparison and critical appraisal.

6.1 Background

6.1.1 The Background of Wuxi

Wuxi, a medium-sized city (4788km²) is located at the southern part of Jiangsu Province, just 128km from the national economic centre, Shanghai. It is renowned for its splendid ‘Wu’ culture (an essential part of ancient Chinese culture), its abundant natural resources and for being the cradle of ‘Township Enterprises’. From a regional

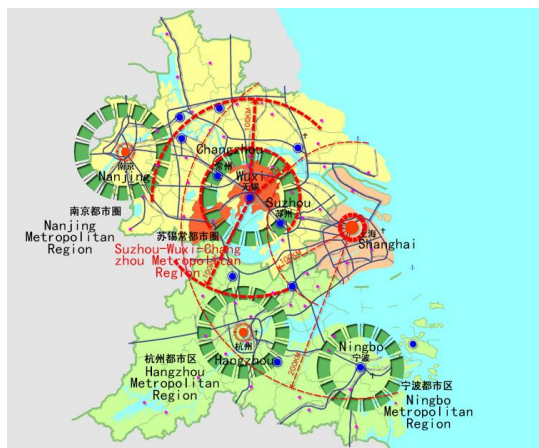


Figure 6.1 Yangtze River Delta Metropolitan Region (Integrated Urban Design for Wuxi, 2006)

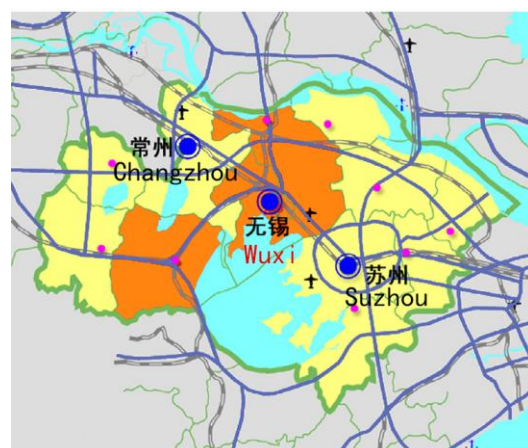


Figure 6.2 Suzhou-Wuxi-Changzhou Metropolitan Region (Integrated Urban Design for Wuxi, 2006)

perspective, Wuxi is situated in the central area of Yangtze River Delta, one of the three most developed areas of China (the other two are the Pearl River Delta and the Beijing-Tianjin-Hebei Region) and the core city of ‘Suzhou-Wuxi-Changzhou’, the metropolitan area of Jiangsu Province (Figure 6.1, Figure 6.2).

Since the beginning of the 20th century, with the rise of Shanghai attracting global attention, Wuxi was regarded as the sister city of Shanghai and became attractive to many developers due to its convenient connection with Shanghai, the relatively low cost of land and labour, and rich industrial resources. From then on, Wuxi has gradually become a new regional economic centre and, since it was a centre of prosperous national industry and commerce, Wuxi was called ‘little Shanghai’. Although it suffered severe destruction from a series of human-made disasters such as the anti-Japanese war (1937-1945), the civil war (1945-1949) and the Great Culture Revolution (1966-1976), Wuxi still found its unique way to regenerate urban economy after the Reform and Open Policy (1978), encouraging the development of township enterprises, and was regarded as the representative of the ‘Sunan Model’¹ (Haosoubaike, 2015).

At present, the urbanisation rate of Wuxi has reached around 72% which indicates that the city has stepped into the post-industrialization period and should pay more attention to the urban optimization rather than urban extension (Qian, 2013). In terms of its economic power, among the approximately 660 cities of China, Wuxi firmly occupies the first tier. According to relevant statistics, from 2009 to 2014, it hovered around rank 9 to rank 12, and in Jiangsu Province (which is considered to be the most economically strong province of China), it is always in the top three, standing just behind Suzhou (which is regarded as the ‘back garden’ of Shanghai) and most of the time surpasses the provincial capital, Nanjing (Table 6.1). And moreover, in terms of per capital GDP of Jiangsu Province, Wuxi undoubtedly ranks in the first place. Therefore, Wuxi, to a great extent could well represent the most prosperous city of China, while possessing huge development potential in the future.

¹ a typical regional economic development model of southern part of Jiangsu Province, which originated from the development of massive township enterprises, strongly led by local government and contributed a lot to suburban area development.

	2009	2010	2011	2012	2013	2014
1	Shanghai	Shanghai	Shanghai	Shanghai	Shanghai	Shanghai
2	Beijing	Beijing	Beijing	Beijing	Beijing	Beijing
3	Guangzhou	Guangzhou	Guangzhou	Guangzhou	Guangzhou	Guangzhou
4	Shenzhen	Shenzhen	Shenzhen	Shenzhen	Shenzhen	Shenzhen
5	Tianjin	Suzhou	Tianjin	Tianjin	Tianjin	Tianjin
6	Suzhou	Tianjin	Suzhou	Suzhou	Suzhou	Chongqin
7	Chongqin	Chongqin	Chongqin	Chongqin	Chongqin	Suzhou
8	Hangzhou	Hangzhou	Hangzhou	Chengdu	Chengdu	Wuhan
9	Wuxi	Wuxi	Wuxi	Wuhan	Wuhan	Chengdu
10	Qingdao	Qingdao	Chengdu	Hangzhou	Hangzhou	Hangzhou
11	Foshan	Foshan	Qingdao	Wuxi	Wuxi	Nanjing
12	Wuhan	Wuhan	Foshan	Qingdao	Nanjing	Wuxi

Table 6.1 National Urban Economic Power Rank (GDP) (Compiled by Author)

Despite the advantages above-mentioned, Wuxi still is confronted with a development dilemma. Compared to the provincial capital, Nanjing, it lacks a strong educational and research support which to a certain degree restricts its further development. Furthermore, being totally eclipsed by the neighboring city of Suzhou due to the latter's geographical connection with Shanghai, Wuxi has lagged far behind it particular in export-oriented economy. Overall, if Wuxi wants to stand out distinctively and speed up the development pace, it should on the one hand keep and strengthen current advantages, and on the other hand overcome the weakness so as to break current development constraints.

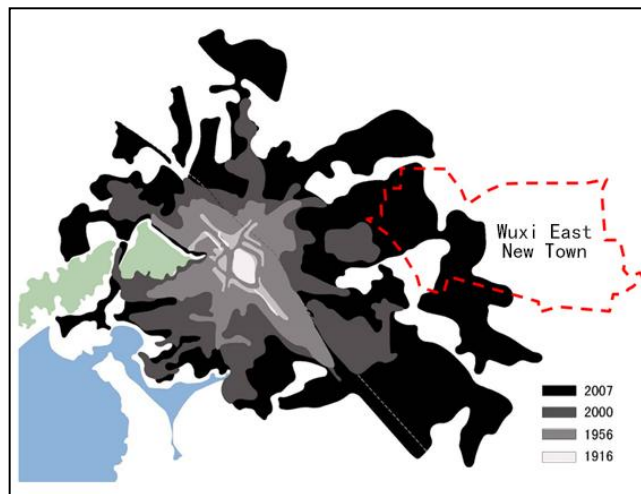


Figure 6.3 Urban Form Transformation of Wuxi (Research about the Wuxi East New Town Planning, 2008)

From the urban spatial perspective, the development of Wuxi has experienced several phases (Figure 6.3, Figure 6.4). During the period from the commencement of Wuxi

in 202 B.C. to the early 20th century, the city was restricted within the boundary of its ancient ramparts and formed a concentrated turtleback shape. In addition, the south-north urban canal has had a great impact on urban development with its essential role of transportation and triggered the formation of a commercial area along the canal. However, the whole city still appeared as a compact form. Then, from the beginning of the Republic of China (1912) to the 1970s, the whole city began to break the original boundary and gradually extended along the primary road and railway, and, although still remaining as a mono-centric city, Wuxi has transformed its urban form from the concentrated lump to a cross-shaped axis. After stepping into the new era following the Reform and Opening-up Policy (1980s), the city has expanded rapidly in all directions. Various urban forms such as ‘economic development zones’, ‘new towns’, and ‘tourist and entertainment zones’ are booming and the constructed urban area has gradually encircled the majority of natural resources which has led to a relatively less ordered but prosperous development era (Integrated Urban Design for Wuxi, 2006). In order to cope with the fast urbanisation of the new century, the local government of Wuxi has made ambitious plans to direct a comprehensive and reasonable urban expansion, focusing on several key projects to improve urban power and optimise urban space. The development of Wuxi East New Town is among one of the core projects.

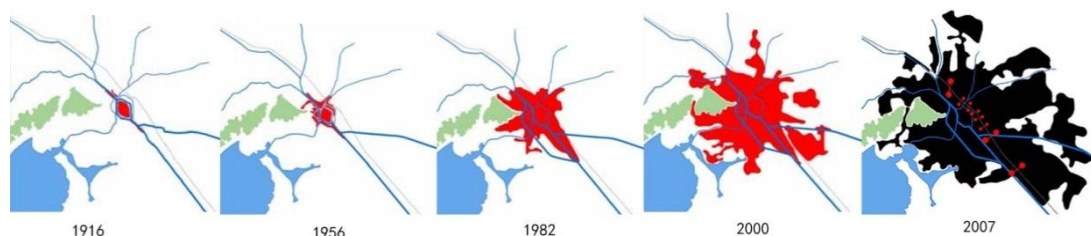


Figure 6.4 Urban Form Transformation Process of Wuxi (Research about the Wuxi East New Town Planning, 2008)

6.1.2 The Background of Wuxi East New Town

From an administrative perspective, Wuxi East New Town belongs to Xishan District (there are 7 urban districts and 2 county-level cities within the jurisdiction of Wuxi), which is situated in the eastern part of Wuxi and close to another two county-level cities of Suzhou (Figure 6.5). Therefore, Xishan District could be regarded as the eastern gate of Wuxi and a strategically important area due to its connection with the nearby city, Suzhou. Before 1995, the whole Xishan district territory was part of Wuxi

to a certain extent, had a negative impact on its economic development, but it still remained as the strongest county in China. Unfortunately, in order to promote the further development of urbanisation, a more drastic administrative change in 2000 broke the original area into three separated districts (Xishan District, Huishan District and New District), totally making the previously prosperous ‘first county’ disappear (Figure 6.6). At present, the gross area of Xishan District (399km²) is merely one third of the original Wuxi County (1234km²), and the economic situation cannot be compared with the past (Investment, 2009).

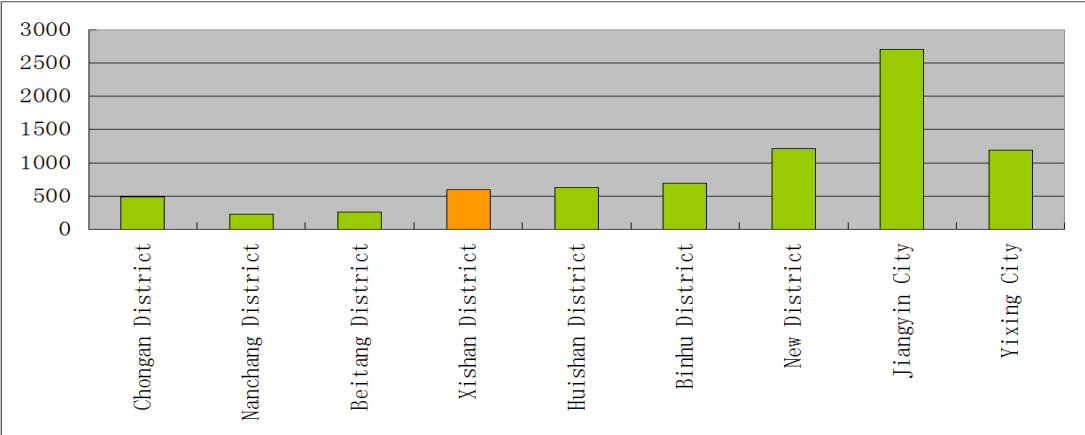


Table 6.2 GDP of Districts and County-Level Cities in Wuxi (unit/100,000,000 RMB), 2014 (Compiled by Author)

At present, among the seven urban districts and 2 county-level cities, Xishan District has fallen to the sixth place in terms of GDP and lagging far behind Jiangyin county-level city (Table 6.2). However, with the opening of a new high

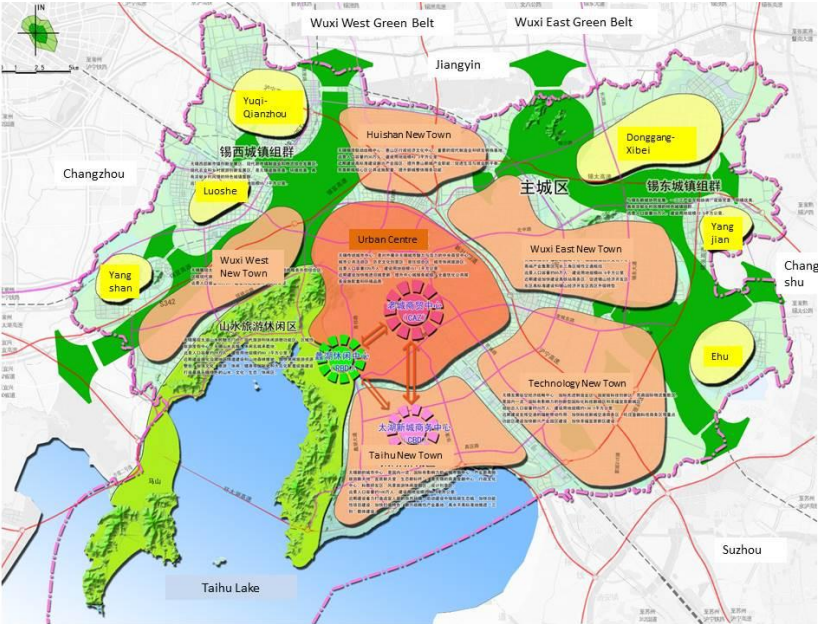


Figure 6.7 ‘One City, Five New Town’ Urban Scheme of Wuxi (Report of Wuxi East New Town Planning, 2013)

speed railway station, Xishan District has met an unprecedented great opportunity and has been increasingly attracting emphasis within the whole urban development strategy. According to the recent Urban-Rural Integrative Plan for Xishan District, at Yangtze River Delta level, it will take the role as a regional transportation hub and advanced manufacturing base; at Suzhou-Wuxi-Changzhou Metropolitan Area level, Xishan District is considered to be the important joint node which helping the central city to enhance its regional influence; at the urban structure level, Xishan District is planned as the main driving force promoting urban eastward development and the key development area of the ‘one city, five new town’ scheme (The Urban-Rural Integrative Plan for Xishan District, 2012) (Figure 6.7). When looking at the five new town scheme, it is quite obvious that local government, with the purpose of meeting the rapid urban development challenge and guiding reasonable urbanisation, has decided to enlarge the urban framework comprehensively through the construction of new towns. The five new towns are situated in different directions and among all of them, Taihu New Town in the south and East New Town are regarded as the top two new towns of Wuxi. Although Taihu New Town has received more focus due to its political advantage. At Xishan District level, the construction of Wuxi East New Town undoubtedly has been put on the top priority. Previously, the old centre of Xishan District, the Dongting Area, has always been given a lot of attention while the other area of the district was at a lower development grade (Figure 6.8). But as the urban

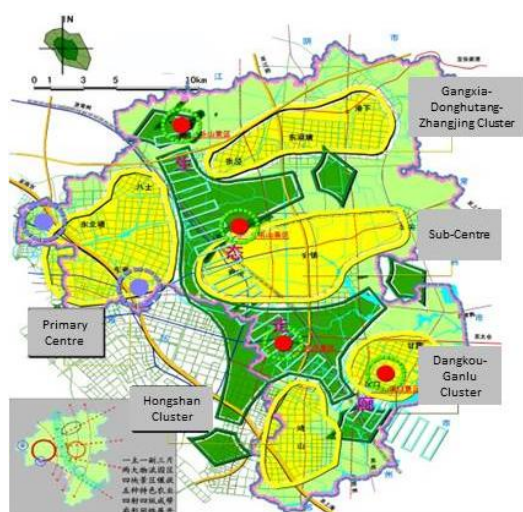


Figure 6.8 Previous Urban Structure of Xishan District (The Urban-Rural Integrative Plan for Xishan District, Wuxi, 2012)

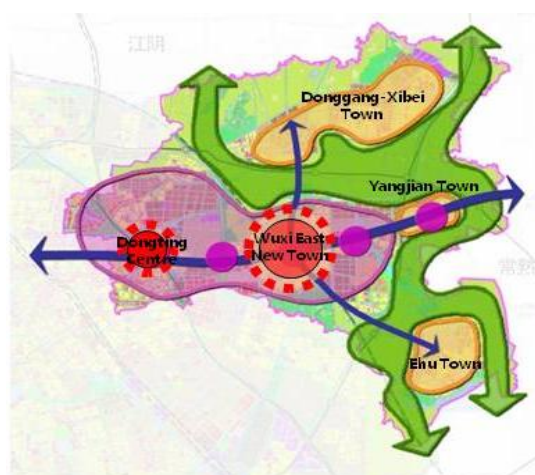


Figure 6.9 Adjusted Urban Structure of Xishan District (The Urban-Rural Integrative Plan for Xishan District, Wuxi, 2012)

development strategy is moving eastwards, the current district plan has clearly stated that the over-dependence on the old district centre, the Dongting Area, has to be adjusted and the East New Town should develop cooperatively with Dongting Area to help to balance the mono-centric district structure (The Urban-Rural Integrative Plan for Xishan District, 2012; The 12th Five Year Urban-Rural Construction Plan of Wuxi, 2011) (Figure 6.9).

6.1.2 Planning for the Wuxi East New Town

In terms of Wuxi East New Town, the total planning area is 125km² with a projected population of 500,000 and comprises three separated sites which belong to two independent management organizations; Management Committee of Xishan Economic Development Zone takes charge of the western and eastern site, and the Management Committee of Wuxi HSR New Town Business District takes charge of the middle site (Figure 6.10). In addition to that, there is a dedicated planning office belonging to Urban Planning Bureau, taking charge of all planning issues for the three sites, and above the three institutions, Xishan District government is in charge of a few key infrastructure constructions such as urban expressway running through the whole new town territory. On the whole, the organization system, to a great extent

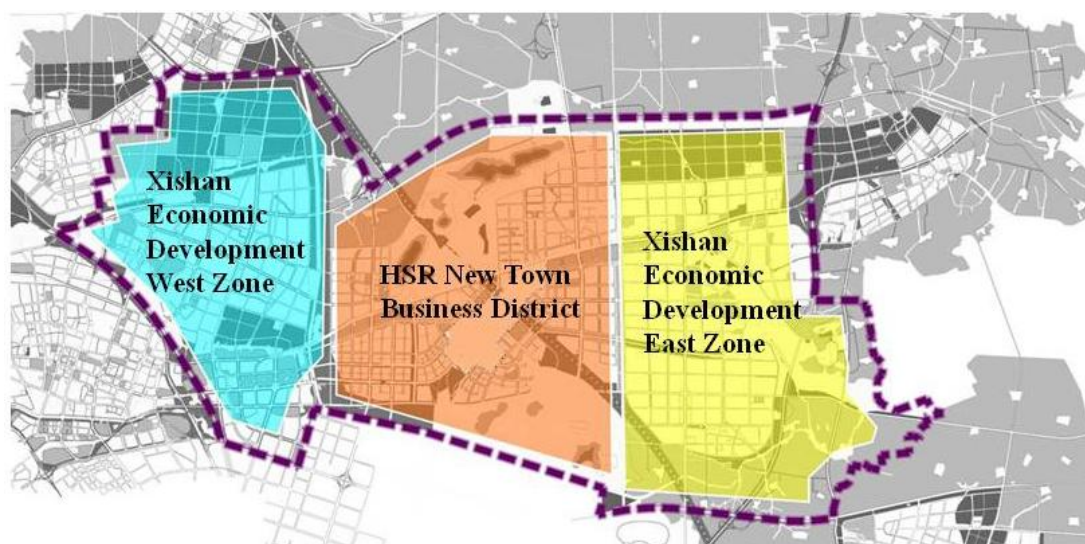


Figure 6.10 Wuxi East New Town (Report of Wuxi East New Town Planning, 2013)

reflects the government-dominant way of the East New Town development since all institutions are subject to Xishan District government and Wuxi municipal government, all officers are appointed by government, even for the three companies under the Management Committee of Wuxi HSR New Town Business District, they

are also government-owned companies taking charge of financial issues of the new town construction. No second party has been seen in the organization group (Table 6.3).

Basically, the western site (34.38km²), based on the ‘Xishan Economic Development Zone’, has been hugely occupied by various manufacturing factories and demanding large-scale industrial upgrading. The middle site (45.5km²) is based on the new high

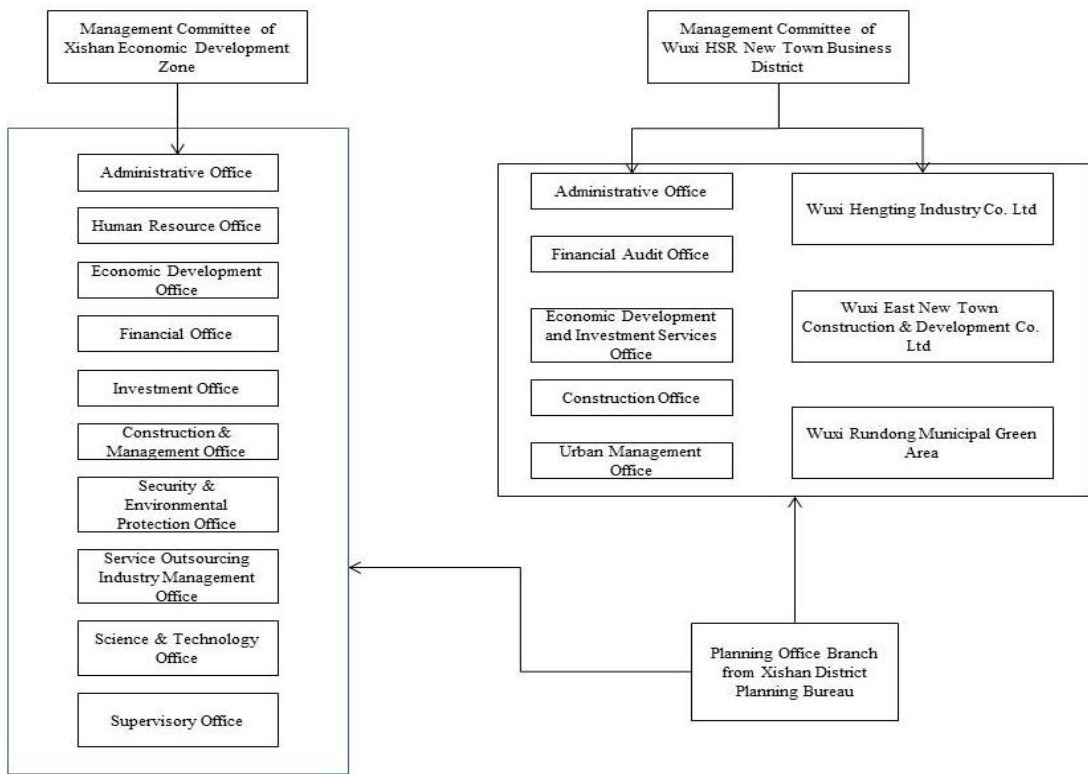


Table 6.3 The Institutional Organization of the Wuxi East New Town

speed railway station. It has a comprehensive and distinct development plan which aims to construct a modern ‘high speed railway new town business district’ and it would become the core area for the whole new town; the eastern site (45km²), which shares the same management organization as the western site, is also planned to be a new industrial area and will possess an advanced and ecological industry in the future, but at present, the specific plan of the eastern area is still at the processing stage, and unfortunately, according to most recent news, the planning process has been suspended due to the national policy for urban extension control. Therefore, based on the current development plan, the focus of the case study will be on the analysis of development strategies of the middle site, the high speed railway new town business

district, while at the same time, the general analysis of the other two sites will be still made as a supplement to the middle site. The planning for the middle site began in 2009. Before that, the built up area was only 10.8km², one quarter of the total area, 45.5km². It was mainly occupied by industrial land, 66.4% and then residential land, 22.2% (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010). The residential area mainly concentrated on two towns, namely Anzhen and Zhaqiao. The remaining land was farmland with dispersed villages (Figure 6.11). During 2009 to 2010, the total demolition area reached 2.55 million square metres.

According to the planning orientation, the middle site, the new town business district, is going to be the administrative, cultural and business centre of Xishan District; the urban sub-centre, the producer service centre of Wuxi; and the regional transportation hub. Moreover, it has a very ambitious time schedule of 'one year to prepare, three years to take shape, ten years to complete' (Report of Wuxi East New Town Planning, 2013). The planning process started in 2009 in the wake of the establishment of the Management Committee of Wuxi HSR New Town Business District. Up to the present, the planning work which includes prophase research, specific planning, concept planning and regulatory planning has been finished. The construction is still

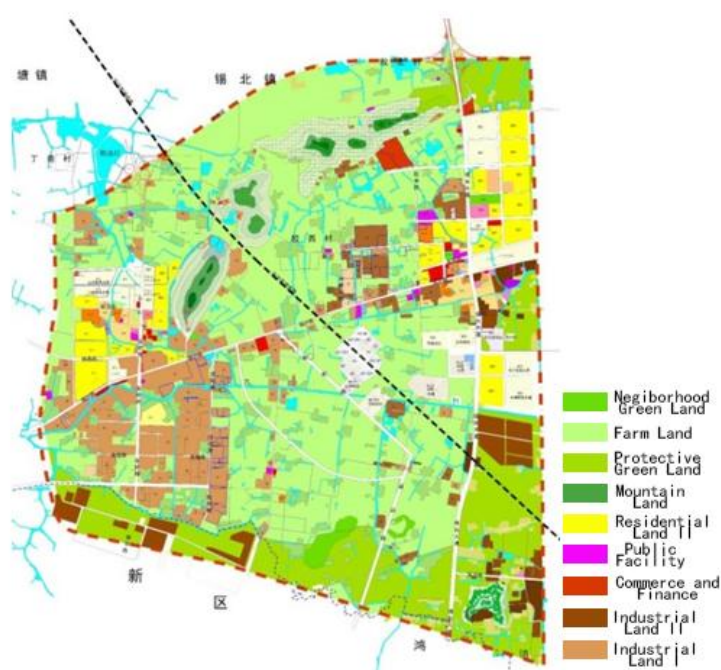


Figure 6.11 Previous Land Use of the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

underway, and around 30% has been completed.

6.2 Applied Development Strategies on Node Value

In this section, the process of location choice of the new high speed railway station in Wuxi will be introduced. In particular, the comparison between two options would be made from both municipal government's perspective and district government's perspective. This comparison explains why government put the new station in Xishan District in the end. Then, the current accessibility of the station area and planned secondary transportation connection of the station area and new town would be critically evaluated.

6.2.1 Location Choice

1) Perspective from Wuxi Municipal Government

The location choice of a high speed railway is always a strategic decision since it not only directly relates to the efficiency of the whole line but more importantly, it will have a huge impact on urban development. The consideration of location choice, to a large extent, is a comprehensive assessment of the current situation and a predictive forecast of development potential. Therefore, the location could be regarded as a joint

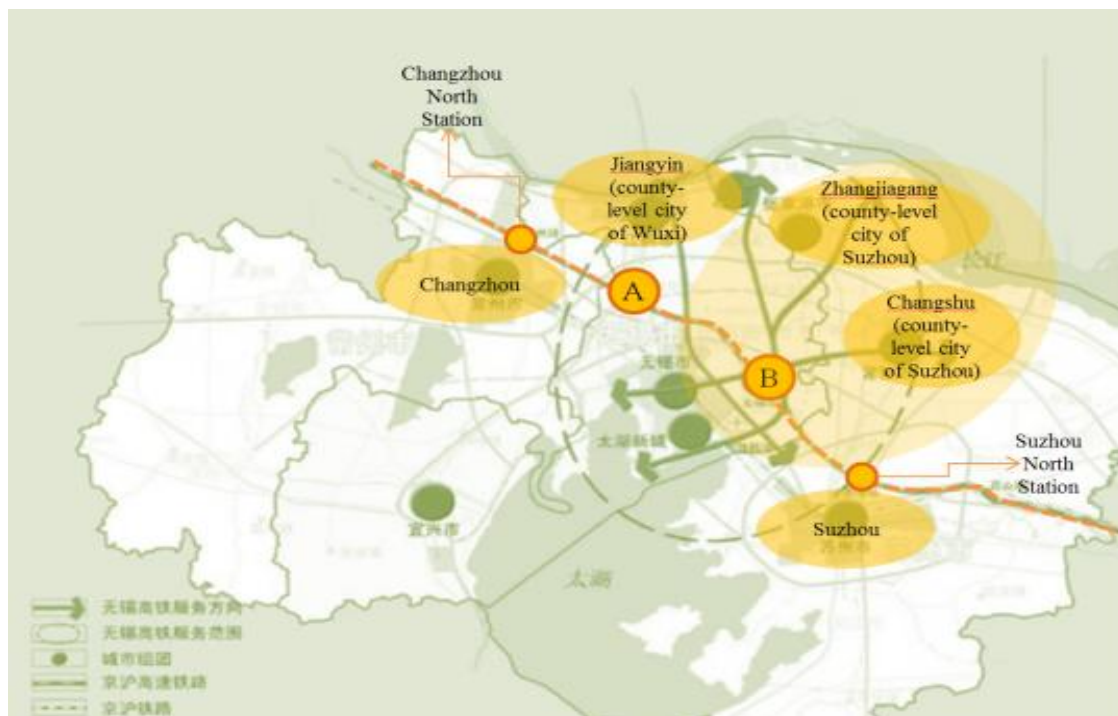


Figure 6.12 The Layout of Two Location Choices

connecting the past with the future. For Wuxi, although the current high speed railway station location seems quite reasonable at the moment, another location candidate also generated much dispute at the beginning.

Basically, there were two primary choices for station location. Plan A is in the southern part of Jiangyin county-level City, and plan B is at Xishan District (Figure 6.12). Compared with Xishan District, Jiangyin county-level city is already a well developed area whose economic power has always ranked at the top within Wuxi and in the top 5 places among all national county-level cities. From the urban geographic perspective, plan A is closer to the urban centre than plan B. However, in the end, plan B became the choice for the new station and has been in operation for several years. The site of plan A still remains as an undeveloped rural area. Through interviews with major officials of Wuxi East New Town and Wuxi municipal government, three key considerations were put as a priority during the debate and played the vital role in the decision-making process.

First of all, from Wuxi municipal government's perspective, urban competitive power is always the most important issue. Within the regional range, undoubtedly, Suzhou is the biggest rival and threat to Wuxi due to its geographic advantage with Shanghai. Therefore, to contend with Suzhou has been an eternal theme for Wuxi government. When exploring the economic structure of Suzhou, it is obvious that country-level cities contribute hugely to the whole urban economy, and among the four county-level cities, Changshu and Zhangjiagang are dominant forces which usually rank in the second and the third place. Moreover, among all national county-level cities, according to the statistics from 2010 to 2014, they are also reliably standing at the first tier, in the top five. In a word, Changshu and Zhangjiagang are key competitive elements within Suzhou. After the general regional analysis, it is easy to understand why local government finally put the station in Xishan District. The distance from Changshu and Zhangjiagang to the new station of Wuxi is closer compared with the distance to the new northern station of Suzhou. That means Wuxi might use its geographic advantage to attract more local people from the two county-level cities to take trains, and much more importantly, it would provide a more convenient channel for industrial and financial exchange between Wuxi and the two county-level cities of Suzhou. This might have quite a positive impact on the urban development of Wuxi itself. Then, the radiation coverage and connection with other cities seems more

essential than its impact on its own city. As a result, although the plan A seems more convenient for local people due to its closer distance to the old city, its coverage is relatively limited within the Jiangyin county-level city. Just as one high level government official said (quotation from GO1):

“The first and foremost issue when deciding the location is the radiation coverage. A high speed railway station should not only provide convenience for local citizens, more importantly, it should cover a wider region and promote regional development to a full extent. Therefore, considering the close distance with nearby cities like Changshu and Zhangjiagang, we put the station in Xishan district rather than in Jiangyin”.

Moreover, Jiangyin is situated near the Yangtze River which means a big natural barrier for radiation range. In conclusion, from the regional perspective, plan B seems more profitable than plan A for a long term development. Meanwhile it shows more promising potential for urban development and the ambitions of local government.

In the second place, from the urban perspective, plan B conforms to the urban development plan better than plan A. Since the location of plan A is situated in a county-level city rather than an urban district, that means the benefit, particularly the land selling profit, for Jiangyin county-level city would be enormous, while the urban district would get nothing from it. From Wuxi municipal government's perspective, the urban district development is much more important than its county-level cities, as the relationship between Jiangyin county-level city and urban districts of Wuxi is always subtle. One official described Jiangyin as the 'adopted son' of Wuxi while Xishan district is the 'biological son'. Then, if Jiangyin gets the opportunity to build a new station, the nearby rival, Changzhou (one key city of Suzhou-Wuxi-Changzhou Metropolitan Area) and Jiangyin would become closer and have more potential to develop collectively. This might impose a big threat to Wuxi urban districts. Moreover, for Xishan district, as the eastern gateway of Wuxi and part of the original 'China first county', it had made great contribution to urban development in the past, but the current economic condition has fallen far behind Jiangyin and it ranks in a lower place among all districts and county-level cities of Wuxi. Therefore, from emotional perspective, municipal government is always seeking for good opportunities to boost its development and expects economic revival of the district. Several planning officers

in the Commission of Wuxi East New Town Business District made similar responses, and one of them stated that,

“The primary problem for the Xishan district is that it only has industrialization rather than urbanisation. Therefore, in order to stimulate the development of Xishan, we have to hugely promote the urbanisation process. The new town construction, to a large extent, provides us a big opportunity to transform, and government leaders are very concerned about the development of new town (quotation from PO1)”.

To sum up, for municipal government, to adopt plan B is more reasonable, from both subjective and objective perspectives at the urban level and the regional level, and it is expected to stimulate eastern Wuxi and create a more balanced and well developed modern city.

2) Perspective from Xishan District Government

Thirdly, from Xishan District's perspective, plan B site sits in the middle of two national economic development zones, Xishan Economic Development Zone (west site and east site). That means the station area has a relatively good industrial foundation and could potentially provide better support for new town development. But for plan A, although Jiangyin city has enormously strong economic power, the urban area is concentrated in the northern part due to the transportation advantage of the Yangtze River. The southern part is just a town and the rural area and lags far behind. Moreover, based on the overall planning of Jiangyin, the southern part is planned as an undeveloped area with the focus on ecological agriculture, tourism agriculture and a low carbon economy which means that there is little potential for further intensive station area development (lgy865, 2014; Specific Planning, 2010). Although it stands near to Huishan District Economic Development Zone, due to the administrative segregation, it seems unrealistic to integrate station area smoothly with the economic zone. Furthermore, in terms of scale and economic strength, Huishan District Economic Zone is apparently weaker than the Xishan Economic Development Zone. It is obvious that the severe lack of industrial development potential of plan A site and inferior existing industrial support surrounding it, the site seems to be a huge waste of transportation resource. For Xishan district government, the high speed railway station area should become a showcase of urban industrial

prosperity which could well represent the character of Xishan and even Wuxi. One planning officer stated,

“The biggest advantage of the East New Town is the strong industrial support from Xishan Economic Development Zone. The new town is not built from nothing, it has solid economic and industrial foundation. Moreover, as the industrial upgrading of the economic development zone accelerates, new town would definitely benefit more from it (quotation from PO2)”.

3) Critical Analysis

Generally speaking, the choice of the new station location is mainly based on issues at three different levels. At the regional level, plan B shows a closer link with its stronger neighbor, Suzhou, and a broader radiation scope. At an urban level, it conforms better to the potential urban development structure and, due to the administrative system, the local government is inclined to favour the urban district rather than county-level cities emotionally. At a district level, the plan B site also possesses a stronger industrial foundation than plan A site. Therefore, in the end, local government has achieved an agreement to put the new station at Xishan District, although at the beginning it might be more difficult for people in the old city to get there due to the longer distance. In terms of the typology of new town choice mentioned in chapter 3, the plan B accords with the first category which sits close to the urban area, and this type of location could hugely improve the connection between new town and parent city by limiting commuting times. Furthermore, it indicates a more continuous and sustainable way of new town development which focused on regional integration rather than being confined in its own territory.

Although the location of the new station has been decided upon by very careful consideration from district to regional level, there are still many critical voices against the choice. First of all, citizens in Jiangyin County (plan A) expressed their dissatisfaction because, from their point of view, Jiangyin, due to the loss of a new station, has missed a great opportunity to further its rapid development and increase its advantage among all urban districts and county-level cities. Furthermore, it would have a negative impact on the development of Huishan New Town, which is on the southern side of Jiangyin county-level city. At the moment, in spite of 10 years' development, it still seems underdeveloped and is in great need of stimulation. In

addition, the new station, to a large extent, could trigger the development of Huishan New Town. Meanwhile, all academics have expressed their concerns about the overly rapid enlargement of the urban structure and the potential waste of various resources, one of them pointed out,

“Wuxi, at most, is a medium-sized city and the population growth is relatively limited in recent years, since it already has 4 large-scale new towns, the necessity of another brand new town in the east would be questioned. To a large extent, the expansion of urban structure is just a way of creating more political credit for governors but distract and waste current resources (quotation from AC3).”

The Gifu-Hashima example (Table 6.4) explicitly shows the importance of station location. In spite of the initial good vision, the inappropriate location has hugely restricted the development of a station area. In China, similar phenomenon has already occurred, for most small cities with remote station location, the final result might possibly turn out to be the same as the Gifu-Hashima. Therefore, government should, from the beginning, make a careful and reasonable choice rather than rush into a blind urban extension fancy.

Example: Undeveloped---Gifu-Hashima Station

Gifu-Hashima station is a station along the Tokaido line located between Nagoya and Osaka. After a long period of dispute about the location under political pressure-both from national politicians and local communities (Hood, 2002), the station was finally put in a rice field about 15 kilometres from the urban centre of Gifu. The intention of the Gifu-Hashima station area was to become an urban gateway to promote the local image. However, after 30 years of construction, the station area has been dominated by a large area of parking lots. Obviously, the automobile-dependent station area

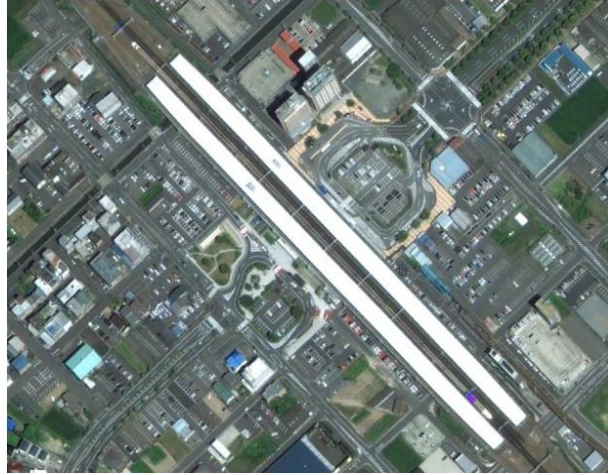


Figure 6.13 Gifu-Hashima Station (Murakami & Cervero, 2010)

has not enhanced the local image nor promoted further development (Murakami & Cervero, 2010). Besides the parking lot, only quite limited numbers of warehouses, restaurants and entertainment centres scattered around the station. Hence, in spite of optimistic expectations, there has been relatively little development at the station and it still has remained as a remote location since the opening (Figure 6.13). The most important factor leading to the awkward situation might be the poor connectivity with the urban centre. The new urban rail line was brought into operation 10 years after the station opened. And moreover, only local trains stop at Gifu-Hashima while both the express Hikari and the local Kodama trains stop at Nagoya, thus, long-distance Shinkansen travelers for Nagoya can bypass Gifu-Hashima (Sand, 1993).

Table 6.4 Gifu-Hashima Station Case Study

6.2.2 Accessibility

1) Current Situation

When evaluating the efficiency of a new town, external accessibility cannot be ignored since it is a decisive element for a new town's connection with other regions. With regard to Wuxi East New Town (WENT), according to comments from one relevant planning officer, *“it has evident transportation advantage compared to other new towns of Wuxi, due to its close distance to the urban airport and to surrounding*

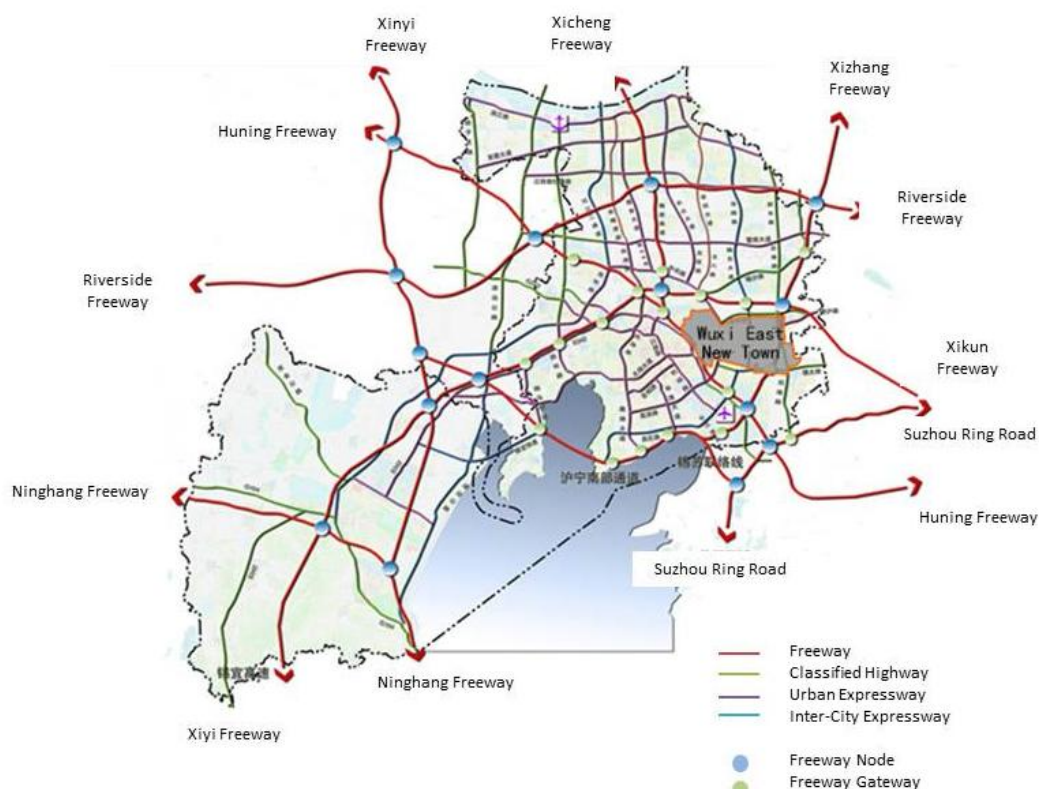


Figure 6.14 The Transportation of Wuxi East New Town (Report of Wuxi East New Town Planning, 2013)

highways leading in different directions (Figure 6.14) (quotation from PO3).” From a regional accessibility perspective, WENT has, first of all, a high speed railway station which stands as an important transportation hub of the Beijing-Shanghai line. It also has convenient connection with 9 high speed lines, namely the Shanghai-Chengdu line, the Shanghai-Hangzhou line, the Nanjing-Hangzhou line, the Hangzhou-Ningbo line, the Ningbo-Wenzhou line, the Jinan-Qingdao line, the Qingdao-Rongcheng line, the Tianjin-Shenyang line and the Shenyang-Harbin line. However, the overall coverage is highly restricted to the eastern and northeastern area. The western and southern part of China is not well connected. Compared with Wuxi central railway station, which has 247 daily trips, the east station merely has a maximum 80 trips

each day. Moreover, trains running from Wuxi central railway station cover a larger area than the east station. Therefore, although the east station is planned as a key regional transportation hub, in fact, its connection capability seems somewhat limited at the moment and cannot replace the dominant position of the central station.

With regard to the accessibility with the airport, only taxi service and illegal electric cars are provided at present while there is no other direct public transportation link between them. The interviewed member of the public all expressed their dissatisfaction towards the issue, one of them stated that,

“it’s not convenient for us to go to the airport, each time, I have to spend a lot of money on taxi or illegal electric, if metro line could be linked with the airport, that would be much better (quotation from MP1)”.

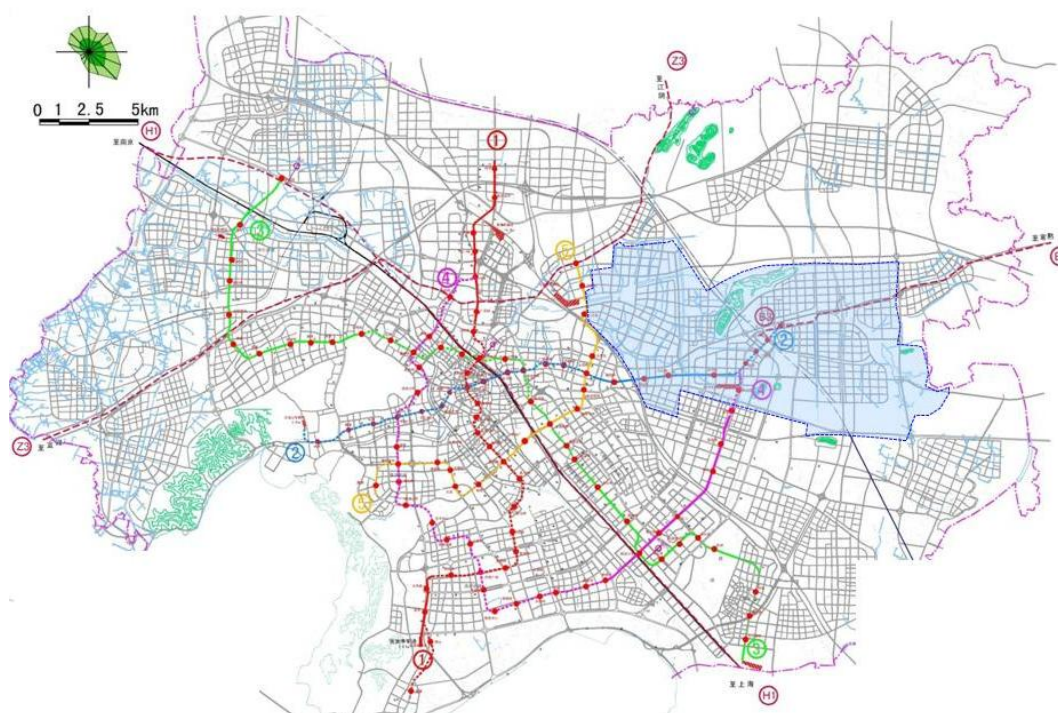


Figure 6.15 The Metro Planning of Wuxi (Report of Wuxi East New Town Planning, 2013)

According to the metro planning (Figure 6.15), even in the future, there will be no direct metro line linking between east station and airport, and two transfers are needed to get to the airport. In other words, the connection between the east station and

airport will be quite inconvenient whilst the connection between the central station and airport is much smoother with shuffle bus, bus, metro and taxi. Therefore, although the east station has the geographic advantage (8km), compared with other cities with airports of a similar scale, it doesn't utilise it to the best of its capacity.

At present, there are, in total, 9 public bus lines passing by the east station and two long-distance coach lines commuting between the east station and two coach stations in nearby cities, Changshu and Zhangjiagang. When looking at the bus linking map, it could be seen that the connection between east station and city centre are most frequent while there are 6 lines leading to. The rest 3 lines are, respectively leading to another town in the north, several towns in southeast and Taihu New Town (Figure 6.16). However, when looking at the radiation area of public bus lines running from the east station, it appears to be quite limited. Through the interview, several planning officers and designer all expressed their concerns about the lack of connection issue, one planning officer claimed that,

“although the link between the city centre and the east station is relatively sufficient, other areas such as New District and Huishan District severely lacks convenient connection with the east station. Furthermore, although Wuxi is a famous tourist city, there is no connection between the east station and key tourism spots, which might cause great inconvenience for visitors. For the two county-level cities of Wuxi, Jiangyin and Yixing, the connection between them and the east station is also neglected as Yixing has its own high speed railway station while Jiangyin is closer to Changzhou north or Changzhou station than to Wuxi. Consequently, there is no direct public transportation link between the east station and the two county-level cities (quotation from PO1).”

By contrast, the connection between the station and two county-level cities (Changshu and Zhangjiagang) of nearby city, Suzhou, is more convenient, since two dedicated coach lines run between them each day. The trips to Changshu (11 trips) are more than twice many as the trips to Zhangjiagang (5 trips), reflecting different passenger flows in the two county-level cities. With respect to other public connections with the east station, there is one metro line running between it and the city centre, line 2, which considerably improves the accessibility of the station area. The member of the public all claimed that,

“the advent of metro line 2 has significantly changed the East New Town, previously, we have to spend several hours commuting to the city centre. Now, it merely takes 30 minutes which is a big benefit for us (quotation from MP2).”

In conclusion, first of all, the transportation infrastructure foundation around the new town area is good based on the extensive highways and an urban airport. Secondly, the public transportation link between the new station and the city centre is relatively fluent, with the combination of a new metro line and intra-city buses. On the other

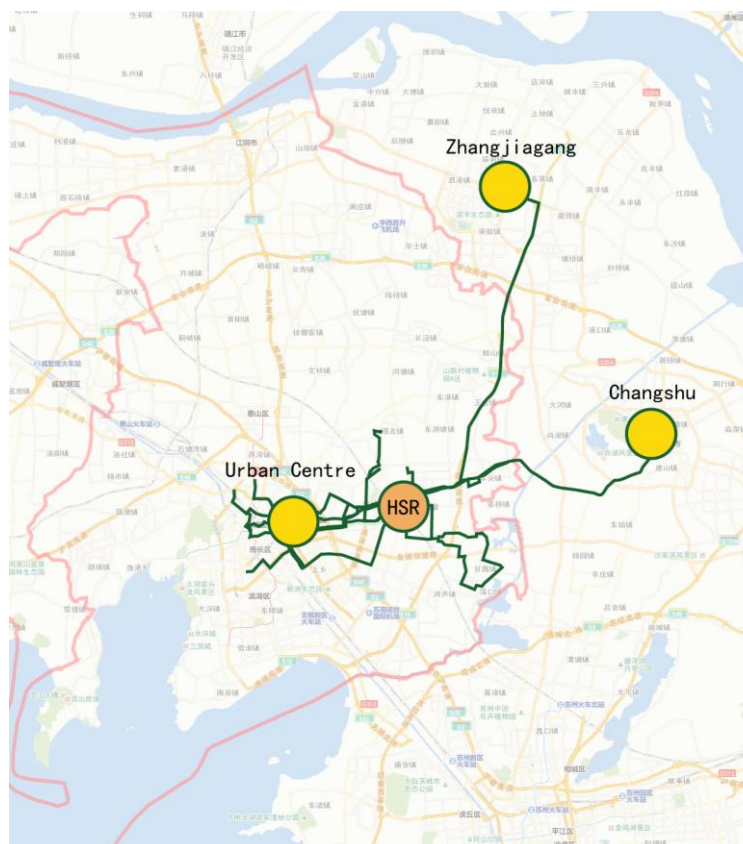


Figure 6.16 Bus Connection with the East Station

hand, the external public transportation connection between the station and nearby

cities and other urban areas (except the urban centre) seems quite limited, due to the restricted coverage of bus lines. Moreover, regardless of the close distance from the urban airport, the connection between airport and station is still hugely unfulfilled. Therefore, generally speaking, the current external accessibility of the station area appears to be relatively limited and cannot match the potential orientation of Wuxi East New Town.

2) Planning Intention

As one of the two major new towns in Wuxi, the East New Town (another one is Taihu New Town) has been given much emphasis on its transportation advantage. One designer commented,

“The most important slogan of East New Town is ‘transportation efficient’ town, and our primary mission is to accentuate the uniqueness and fulfill the target. Basically, the new town has both affluent external and internal link. It has metro, highway and high speed railway link with the outside, it sits close to the airport. And inside of the new town, we have also planned an efficient, diversified and green transportation system. Compared with other new towns, only the East New Town has the substantial transportation advantage which would definitely have a huge impact on many industries such as logistics, information, etc (quotation from DG1).”

Based on a series of transportation model assessments, the ultimate transportation strategies for the middle site of the new town would be ‘public transportation first + diverse + balanced model’. Specifically, first of all, public transportation would account for over 30% of total transportation and around 50% of vehicle travel; private vehicle transportation occupies no more than 60% of total vehicle travel. Secondly, private car use should be modestly encouraged, since it is one of the key transportations for important business travel. It is estimated that in the future private car transportation would reach 19% of total. The vehicle travel including private car and public transportation would account for around 55% while non-motorized travel such as walking and bicycle would take around 45% of total (Planning Text of Comprehensive Transport Planning for Development Area Centred with Wuxi High Speed Rail Station, 2010). Thirdly, through the integration of a transfer facility, a one card solution and other management methods, the diverse transportation model could

be well integrated and smoothly connected. In terms of a specific public rail system, two potential metro lines passing by or ending in the new town area are planned, in addition, one regional railway, linking the east station and Changshu is planned to improve the intercity connection. However, no potential links between the station and other nearby cities are envisaged, such as the other two county-level cities of Wuxi, Jiangyin, Yixing and another county-level city of Suzhou, Zhangjiagang. This might hugely hinder the integrated development of the new town and surrounding area, and impede its own development due to the lack of good accessibility. Besides the metro line and railway, bus would be another pillar for the accessibility of the new town area. Basically, the bus system would be divided into three types with different functions. The first type would mainly take the responsibility for external connection particular with city centres. The second type would be to fulfil the transportation demand between each district of the middle site to enforce the internal accessibility. The last type is planned as a dedicated tourism line which would cover the primary tourist resources such as Cuiping mountain, Baidan mountain and a historic site. Furthermore, more environmentally-friendly buses such as electric buses would be used to replace current ones and special bus lanes are considered, to



Figure 6.17 The Tourism Route Planning of the Middle Site (Planning Text of Comprehensive Transport Planning for Development Area Centred with Wuxi High Speed Rail Station, 2010)

separate the buses from ordinary roads (Figure 6.17). With regard to non-motorized transportation, walking and bicycling is highly encouraged in the planning and moreover, it would be regarded as a key element to enhance urban quality and promote tourism. Specifically, dedicated routes for bicycling, jogging, skateboarding, etc. with different themes are planned to connect various tourist spots. Moreover, the

system aims at integrating smoothly with green spaces to create a livable slow traffic system. According to planning, at the entrance to each tourist spot, a rental service for bicycles and skateboards would be provided to make the slow traffic experience more convenient and vivid (Planning Text of Comprehensive Transport Planning for Development Area Centred with Wuxi High Speed Rail Station, 2010).

Another highlight of the transportation system in the new town is the underground vehicle circulation ('arc' + 'circular') with a total length of 3.1km in core area, designed by a Japanese design team. The key concept is to separate vehicles for

Overground Road



Figure 6.18 Different Concept for Overground and Underground Transportation (The Conceptual Underground Planning for Core Area of Business District in Wuxi East New Town, 2010)

business, cargo and commuting from bus and non-motorized traffic. In other words, overground transportation would be more environmentally-friendly and safe while underground circulation would focus on efficiency and address the large demand for traffic. Meanwhile it would provide a large number of connected parking spaces (around 7000) (Figure 6.18, Figure 6.19). Coupled with the dedicated underground route, underground pedestrian streets and commercial streets

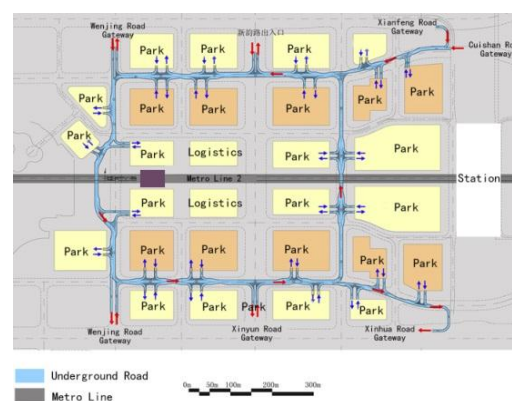


Figure 6.19 The Parking Spaces of The Middle Site (The Conceptual Underground Planning for Core Area of Business District in Wuxi East New Town, 2010)

in the central area are also planned, to utilise the commercial potential and attract potential customers (The Conceptual Underground Planning for Core Area of Business District in Wuxi East New Town, 2010) (Figure 6.20). The underground vehicle circulation, according to comments from the planning officer of the Commission of Wuxi East New Town Business District, *“is considered to be the first time this has been tried in Jiangsu Province and it has attained huge publicity. We try to construct a people-oriented new town rather than a car-oriented new town. In subtotal, we have invested 500-600 million RMB, and will provide 7000 parking places (quotation from PO1)”*. At the moment, the ‘arc’ circulation is already open while the ‘circular’ one is still awaiting operation, due to the slower construction of the central business area.

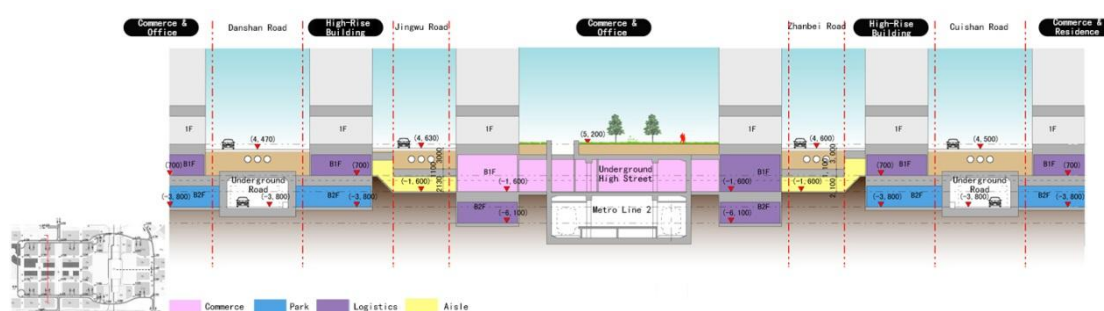


Figure 6.20 Section of Underground Space (The Conceptual Underground Planning for Core Area of Business District in Wuxi East New Town, 2010)

3) Critical Analysis

The east station, as the transportation hub of WENT and the whole region, is intended to create a ‘highly efficient and environmentally-friendly’ public transportation system to improve the accessibility of the new town area and particularly the station area. However, based on current plans, the external link with nearby county-level cities, the urban airport and key tourism spots still appears to be inadequate, and this problem, might have a negative impact on the potential development of the new town. During the interview, several planning officers have expressed their concerns over the transportation problem, one of them claimed that,

“the original orientation of the new station is to serve as the regional transportation centre. Therefore, the connection with airport, key areas of the city appears to be quite important. However, at present, the planning just focuses on the smooth link with city centre and hugely neglects its coverage which would significantly restrict its development and do not help to fulfill its

role as a regional transport centre (quotation from PO5)."

Another planning officer explained,

"as a new town on urban fringe, first and foremost, is to lay a solid foundation for transportation, otherwise, new town would become an isolated island and become obsolete, it's a quite common problem for majority of new towns in China. Regarding the Wuxi east new town, despite the high expectation in the beginning, the planning of transportation is in the hands of different institutions and would be affected by many complicated issues such as funding, top governor's priority, etc. Therefore, the result is highly unexpected (quotation from PO8)".

6.3 Applied Development Strategies on Place Value

In the place value section, strategies in industrial development and spatial organization will be evaluated. In industrial section, five specific categories would be explained, namely the secondary industry, housing, commerce and business, public service and tipping points. In spatial organization section, an overall evaluation would be made in the first place, followed by a specific comparison between the core area & surrounding, green field & usable public spaces, and the connection between fringe spaces.

6.3.1 Diversity

Basically, the overall industrial structure of the middle site consists of 'one core, two axes and several functional areas'. The core area refers to the central business area which is situated next to the new station. Two axes indicate first of all, the central business axis originating from the new station and leading to the central park. Secondly, the other axis is the Jiuli River waterfront axis which runs through the whole site from west to east. Lastly, there are several functional areas such as residential communities surrounding the

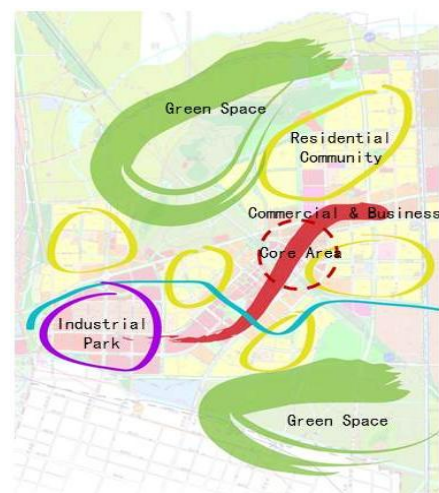


Figure 6.21 Functional Layout of the Middle Site

two axes, industrial park standing at the end of the business axis and two open green spaces at the northern and southern boundary (Figure 6.21).

1) Industrial Upgrade Intention

Strategy

Before investigating the industrial strategies of Wuxi East New Town, it is essential to have a close look at the overall traditional industrial background of the new town area. As a prosperous modern city, Wuxi has a much more glorious past which could be largely attributed to the so called ‘Sunan Model’. This type of economic model was first proposed by a famous scholar, Xiaotong Fei in the 1980s and refers to the ‘government led’ and ‘collectively owned’ township economy which mainly flourished in the southern part of Jiangsu Province, namely Wuxi, Suzhou and Changzhou. After the ‘People’s Commune Movement’² began in 1958, plenty of commune and brigade enterprises came into being but developed at a low standard, focusing on manual labour such as production of farm tools (Xu et al., 1982). During the 1970s, the small scale commune and brigade enterprises gradually expanded due to the central government support and experienced a rapid development based on rich rural labour resources, good natural conditions and convenient transportation connections within southern Jiangsu Province. Moreover, at the beginning of ‘Reform and Opening up’ in the 1980s, a large number of technicians from Shanghai came to Wuxi, Suzhou and Changzhou during holidays, bringing precious working experiences and technical information which to a great extent improved the overall standard of township enterprises (Zhang, 2002). Until 1989, the production value of township enterprises had occupied 60% of the regional rural society in the southern part of Jiangsu Province. The uniqueness of the ‘Sunan Model’ hugely relied on the direct government interference in the whole process. That means from the organization of land, capital and labour to the final realisation of an enterprise, town government has been playing an absolutely pivotal role and to a large extent guarantees the low cost and high efficiency (Haosoubaike, 2015).

² The People's Commune was born during the Great Leap Forward, when Mao Zedong, the president of the People's Republic of China from 1949-1976, had a vision of surpassing the United Kingdom and the United States in a short period of time in terms of steel production. Mao also wanted to mobilize peasants to undertake huge water projects during the winter slack seasons in order to improve agricultural productivity. Each commune was a combination of smaller farm collectives and consisted of 4,000-5,000 households. Larger communes could consist of up to 20,000 households.

As one of the most important economic models in modern China, the ‘Sunan model’ significantly promoted fast regional economic growth and had a great impact on the regional development (Ruan, 2007). However, after the middle of the 1990s, many problems of the ‘Sunan model’ emerged gradually such as the obscurity of property rights, a mix up of government and enterprises, an increase of non-production cost and non-productive employees, low-end industrial chain, severe environmental pollution, etc (Haosoubaike, 2015; Gu, 2002). And these problems, in fact, led to a big slump in the economy and called for urgent industrial transformation. In 1996, the major economic index fell around 20% compared to 1995 while in 1997, the index dropped 10% again (Zhu, 2003). Under these circumstances, a series of township enterprise reforms were launched from 1997 which hugely stimulated the level of market allocation of resources and created a brand new ‘Sunan model’, combining state owned economy, private economy and foreign investment together.

As the origin of the ‘Sunan model’, Wuxi, based on a solid foundation of redundant labour, land resources and convenient geographical connection with Shanghai, experienced a rapid development of manufacturing industry and had advantages in mechanical industry, textile industry, chemical industry and metallurgy industry. During the late 1970s and late 1980s, the secondary industry production value peaked at 70% of the total industry value and ranked in the sixth place across the whole country, following Shanghai, Beijing, Tianjin, Suzhou and Guangzhou (Baiduwenku, 2012). Then, as the widespread township enterprises downturn emerged across the southern part of Jiangsu Province, Wuxi stepped into an era of inward reform as well as outward opening. On the one hand, a vast number of traditional township enterprises were transformed into modern enterprises which possess much more advanced corporate system; on the other hand, attracting foreign investment has become another pillar policy in the secondary industry, and consequently, several ‘economic zones’ and ‘high-tech zones’ were established as the primary opening window for foreign investment. In the 21st century, industrial upgrade has been put as a priority on the municipal government agenda, particularly after the disastrous ‘Taihu blue-green algae’³ event. Over five thousand heavily polluted industries have been

³ Taihu blue-green algae: During May and June in 2007, all tap water of Wuxi has been severely contaminated due to the large scale eruption of blue-green algae of Taihu Lake. All spring water in supermarket was grabbed empty.

forced to close and moreover, a series of dedicated measurements have been adopted targeting enterprises with ‘heavy pollution, high energy consumption, high emission, low efficiency, low output’. By contrast, a number of high tech industries such as electronic information, photovoltaic industry and precision mechanism were strongly supported by local government (China Association of Environmental Protection Industry, 2008). At present, Wuxi is consistently making great efforts to transform from an industry which is ‘investment motivated’ and with low-end manufacturing to an advanced industry, with design & innovation and high tech (Baiduwenku, 2010). With the arrival of the post-industrialized era and subsequent development of tertiary industry, the secondary industry output value of Wuxi has fallen to below 50% of the total, but with higher efficiency (Table 6.5).

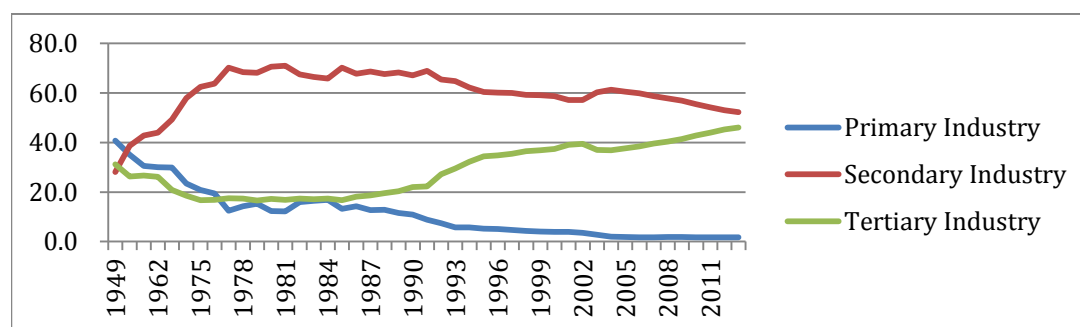


Table 6.5 The Industrial Structure of Wuxi (Compiled by Author)

With regard to Wuxi East New Town itself, the majority of the secondary industry is concentrated on the western and eastern sites to provide enormous support for the whole new town development. At present, the majority of the western site has been fully occupied while the eastern site still remains largely undeveloped and awaits potential industrial projects. Since the two sites are situated at the heart of the former Wuxi county, which is the origin of the ‘Sunan Model’ this means they have a relatively good industrial tradition, but in general, the industrial potential seems quite limited due to its low technology level. Under the global circumstances of energy shortages, the industrial structure of the western and eastern site urgently demands for transformation. Hence, the primary focus of the two sites would be the upgrade for current industry and attraction for potential advanced industry. The industrial development is in the hands of Committee of Xishan Economic Development Zone which is a separated institution from the commission of the middle site. Xishan

Economic Development Zone (XSEDZ) was founded in 1992 covering 64 km² area and was upgraded to a state-level development zone in 2011. With decades of development, XSEDZ has made a great achievement. By the end of 2014, XSEDZ has attracted investment from 3500 companies including over 700 foreign funded firms, and among all of them, there have been 2 companies with an annual turnover of around 5 billion RMB⁴, 14 companies with an annual turnover of around 500 million RMB and 100 companies with an annual turnover of over 100 million RMB (Xishan Economic & Technological Development Zone, 2015a). In terms of industrial diversity, until now, four primary advantageous industries have initially taken shape, namely electronics, precision machinery & auto parts, precision textile and modern logistics and on top of that, several types of advanced industries are sprouting out, such as biological medicine, cultural innovation, software & service outsourcing, etc. The prosperous industrial development hugely promotes the local economic growth and has brought considerable convenience for local residents. Moreover, it significantly boosts the urbanisation process of Xishan district as a wide range of

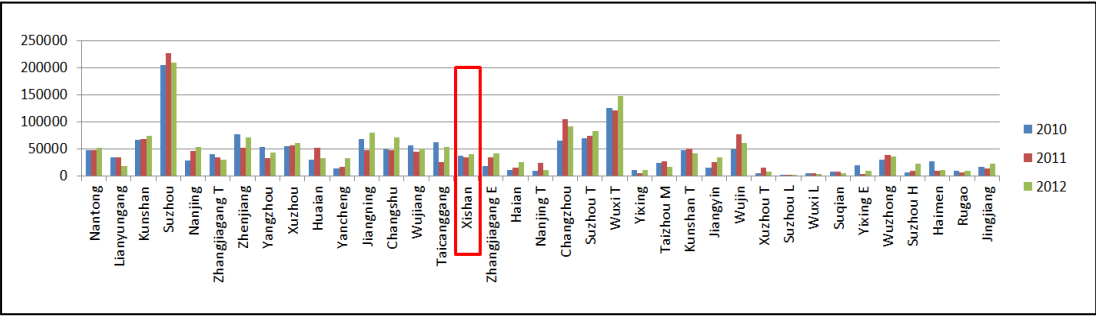


Table 6.6 The Foreign Capital of 36 State-Level Economic Zones in Jiangsu Province (unit/10,000dollar) (Commerce Department of Jiangsu Province, 2013)
Department of Jiangsu Province. 2013

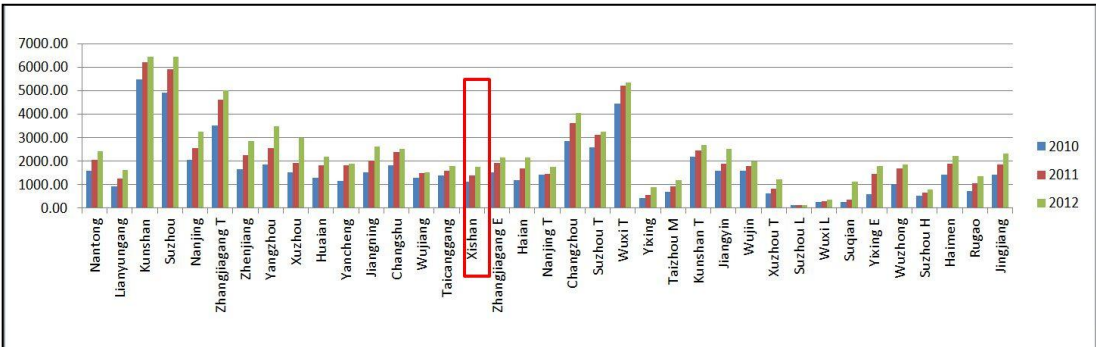


Table 6.7 The Revenue of 36 State-Level Economic Zones in Jiangsu Province (unit/10,000dollar) (Commerce Department of Jiangsu Province, 2013)

public facilities are gradually set up. The previous remote suburban area has more

⁴ 1 Pound≈10 RMB

merged into the urban area. However, despite the great achievement XSEDX has made, it still has many weaknesses which need to be addressed urgently. Compared with the other 36 state-level economic zones in Jiangsu Province, in terms of fulfilled value in foreign capital and subtotal revenue, XSEDZ merely ranks in the middle or below (Table 6.6, Table 6.7). Moreover, of the 126 economic development zones of Jiangsu Province, the environmental condition of XSEDZ is lagging far behind the others, ranking in the 116th place (Commerce Department of Jiangsu Province, 2013). According to interviewees from the planning office and Wuxi municipal government, the main problems of XSEDZ are, first of all, low-end industry and small scale economy. At present, the overall industrial competitiveness is relatively low because the vast majority companies are engaged in original equipment manufacture or

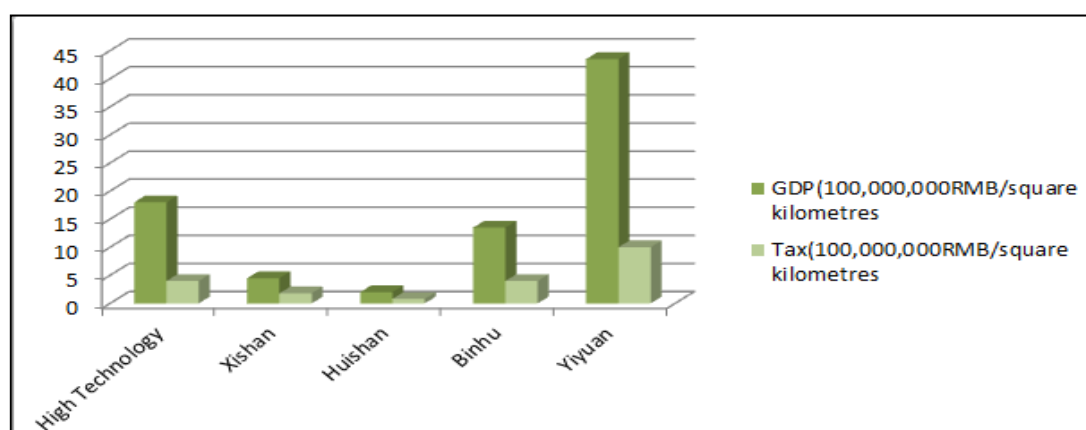


Table 6.8 The Economic Power of Xishan Economic Zone (The Urban-Rural Integrative Plan for Xishan District, Wuxi, 2012)

assembly which are at a fairly low-end of the whole industrial chain, whilst key parts of the products and core technology are still largely relying on import. Moreover, the average industrial scale and economic value is small and there is a lack of leading companies such as Global 500. According to relevant statistics in 2010, compared with the other primary economic development zones in Wuxi, the density of GDP output and the density of tax profit of XSEDZ is 687 million RMB per square kilometres and 129 million RMB, only around one tenth of the highest, the Yiyuan economic development zone (Table 6.8). For a large number of textile and mechanical enterprises, the profit is still minus (The Urban-Rural Integrative Plan for Xishan District, Wuxi, 2012). Secondly, the industrial chain is not well connected and no interdependent industrial network has been formed. When attracting investment, no explicit planning for industrial relevancy has been considered and consequently, the

degree of association of companies is relatively low. The specialized service of small-medium enterprises provided for large enterprise is rare and many foreign companies have to import key accessories from abroad. Thirdly, the innovation atmosphere has not been fully encouraged and the introduction of top-level talents is still in the preliminary period. Moreover, the cooperation between economic zone and university, research institution and government is not carried out frequently and smoothly. Therefore, for XSEDZ, from the planning officers' and local government officers' perspectives, the most urgent issue is to promote the industrial upgrade and attract more advanced, clean industry. At the same time they need to integrate related industries together to raise the overall production efficiency.

Based upon problems above-mentioned, officers in XSEDZ have released a series of measurements to promote its further development. One of the important policies is to strongly stimulate a close and deep cooperation between enterprises, research institutions & universities. Until now, approximately 200 projects are carried out through the cooperation, and a cooperative relationship with top universities in China such as Tsinghua University, Zhejiang University, Shanghai Jiao Tong University, etc. have been established, aimed at providing a platform for top talented people and innovation. Moreover, companies in XSEDZ have fostered a certain number of high-level talented people through their own creative and high-tech projects. In 2015, there will be over 100 innovative projects newly imported, bringing together over 1000 talented people with a master's degree or above (Baiduwenku, 2011; Development Zones of Jiangsu Province, 2015b). Then, in a bid to adapt to the fierce market competition, the optimization of the industrial structure has been hugely advocated. On the one hand, current low-end enterprises are encouraged to improve their technological level and create their own brand product. On the other hand, newly imported projects are mainly focused on large scale, high-end and leading enterprises specialized in emerging industry with high potential such as biological medicine, new energy automobiles, mechanical equipment, etc. Projects with heavy pollution, high energy consumption and low output would be strictly prohibited (Development Zones of Jiangsu Province, 2015a). Thirdly, to promote the industrial concentration and to optimise the spatial layout through the construction of high-tech park, at present, two high-tech parks, V (vitality) Park in the western site and S (Science) Park in the eastern site have been built and are in the process of attracting further investment. V

Park has been planned as an information service and creative industry park to boost local vitality. Relevant commercial facilities will also be provided to meet the demand for local residents. S Park intends to create a high-tech industry centre and a commercial & business centre (Xishan Economic & Technological Development Zone, 2011, Xishan Economic & Technological Development Zone, 2015b).

Critical Analysis

When exploring the overall picture of state-level economic zones of Wuxi, it seems that the homogeneous competition is quite fierce between each. Among all 15 economic zones, over half of them focus on similar industries such as electronic information, mechanism, new material, biological medicine, etc. That means the uniqueness of different zones has been largely ignored. Moreover, there is no macro-level planning for industrial coordination between each, and this might lead to an overly fierce and unhealthy completion in the future (Table 6.9). Also, although current industrial development strategies appear to be reasonable and comprehensive, there is still doubt about their investment strategies. According to the comments from two high-level government officials of Wuxi, they all express their deep concerns, one of them pointed out that,

“Wuxi government prefers large scale and well developed enterprises rather than self-employed small companies which have much lower production value but high development potential (quotation from GO1)”.

Another government official complained:

“local government would investigate carefully about the overall strength of an enterprise, small enterprises would be possibly rejected while famous companies such as KFC, Ikea, etc. would be warmly welcomed with a considerable financial support from government (quotation from GO2)”.

From planning officer's and developer's opinion, attracting talented graduates to create their own business could be more beneficial to boost the domestic consumption from a long-term perspective. However, the government seems much more interested in enterprises which could bring instant huge revenue rather than fostering growth-

type small companies. By contrast, in Milton Keynes, 90% of companies are very small with around 10 people (Town and Country Planning Association, 2014). For Chinese government officials, short-term revenue achievement tends to be more essential for them since it's important for their political credit accumulation and promotion. Then, from the regional perspective, there have been dozens of economic development zones surrounding the XSEDZ, the competition at regional level is becoming more fierce. Furthermore, with the advent of Yangtze River-spanning bridges and highways, the previous geographic disadvantage of cities to the north of the Yangtze River has been hugely improved. Consequently, more and more foreign investment is attracted due to their lower labour cost and policy support. This phenomenon, in fact, has imposed a certain threat on the XSEDZ.

Economic Zone	Industrial Development Intention
Yixing Industrial Park For Environmental Science & Technology	New metal material, electronic information, precision machinery, chemical medicine, high-end textile
Xishan Economic Technological Development Zone	Electronic information and software, precision machinery and machine photoelectric integrated, high-end textile, modern service
Huishan Economic Technological Development Zone	Wind power energy, auto & accessories production, environmental protection
Yiyuan High Technology Industry Park	Industrial design and development, electronic information, precision machinery
Wuxi Economic Development Zone	Ordinary machinery, electrical machinery and equipment
Yixing Economic Development Zone	Photovoltaic & New Energy, photoelectric new material
Wuxi Shuofang Industrial Park	Special steel, ship building, steel structure, auto accessories
Wuxi High Technology Zone	Electronic information, integrated circuit, photovoltaic industry, auto accessories, biological medicine
Yixing Ceramic Industrial Park	Ceramics, electromechanical industry
Jiangyin Harbor Economic Development Zone	Mechanic equipment manufacturing, new material
Jiangyin Jingjiang Industrial Zone	Ship building, electromechanical industry, metallurgy, energy, logistic, research, commerce & business
Jiangyin High Technology Zone	New metal material, communication equipment,

	intelligent equipment, modern Chinese medicine & biological medicine, headquarter economy, cultural innovation, software & service outsourcing, modern logistic
Taihu Lake Tourism Zone	Tourism, modern service, biological medicine, modern manufacturing
Wuxi High Technology Free Trade Zone	Electronic information, precision machinery manufacturing, integrated circuit chip
Wuxi Landscape City	Mechanism, metallurgical casting, communication electronics, light industry & textile

Table 6.9 The Industrial Development Planning for Primary Economic Zones in Wuxi (Compiled by Author)

2) Housing Development Strategies

Strategy

For the overall development of a new town, the standard of housing always plays a pivotal role. However, housing, for many current new towns of China, has become a nightmare due to its excessive construction and subsequent vacancy. Therefore, a new word ‘ghost town’ has been made up to describe this widespread phenomenon and the public have fiercely questioned about the primary driving force of ‘land selling profit’ of local government. Basically, the relationship between developers and local government appears to be very subtle. On the one hand, local government is highly dependent on the land selling profit as it would contribute to the majority of its revenue and the real estate has become the most important industrial pillar in China. Hence, the more expensive the housing price is, the more profit government could get. However, on the other hand, if housing price increases too rapidly, government needs to intervene in order to maintain the stability of the whole society, that’s why in the recent years, a series of policies were released to control the excessive growth of housing price. Therefore, local government and developers are interdependent on each other most of the time, yet have conflicts sometimes. When investigating the housing development strategies of the middle site of Wuxi East New Town, a two-sided situation is quite worthwhile to explore. On the one hand, it shows a sufficient care for resettled farmers through the construction of high quality relocation building. However, on the other hand, the pursuit of ‘land selling profit’, through the

construction of a large number of high-end private residential buildings, results in a considerable vacancy rate at present.

In the middle site, due to the huge demand of land resources for the new town development, nearly 10km² of dispersed villages have been removed. Consequently, original residents need to be resettled in government built 'relocation housing' (Figure 6.22). Similarly, in the eastern and western sites, several 'relocation housing' areas are constructed as a compensation for local residents losing their home. Although in China, conflicts between local residents and government due to the compulsory demolition are reported frequently, in



Figure 6.22 Layout of Relocation Housing (Report of Wuxi East New Town Planning, 2013)

Wuxi, local government has set a good model in relocation policy. In the beginning of the new town development, dedicated relocation areas have been confirmed with the total construction area of two million square meters and the overall relocation & demolition ratio is 1:1 which means all resettled residents could obtain at least one new apartment of the same size as their previous house. Specifically, there are two types of compensation methods. The first type is size compensation. If a family had a house of 200m², local government would provide them the same size apartment. In most cases, it would be more than one apartment because the size of each apartment is smaller than their self-built detached house. And if the total area of compensated apartments surpasses the original house, residents should pay for the extra area with a price far below that of the market. Moreover, government would also compensate each household a certain amount of decoration fee based on their demolished house decoration level. During the gap period between demolition and relocation, each household was paid to rent a private apartment. The second type is person compensation. Each person of a family could get a compensation area of 35m² and the only child of the family could get a larger area, 55m². Therefore, in most cases, the relocation apartment area would be smaller than their previous house, and the size

difference will be paid by government at a below market price. And for this type, relocation apartments would be finished before demolition, hence, there is no time gap for farmers and the best arrangement is that farmers who used to live nearby would be put together in the same residential area and the social network has been preserved to a full extent. According to several local residents' comments, in general, the relocation apartment is much better than their previous house due to its good building quality, security guarantee and convenient surrounding facilities. And most of them feel quite satisfied since living quality is improved through the relocation. Furthermore, since a certain number of households could get more than one apartment, some of them would put the extra apartment on rental market to earn more and after five years, all relocation apartments could be sold on the market at the same price as private apartments. Therefore, compared with their previous off market self-built house, their new homes apparently could enable them to benefit financially. The remarkable thing is the relocation area has the same quality as the private apartment area. Although the building intensity is relatively high (all apartments are tall buildings over 20 floors), the overall environment is pleasant. Public squares, gym facilities, resting places and various items of street furniture are provided to create a livable residential area. Surrounding the relocation area, shops along the podiums are planned to constitute a commercial street which could, to a large extent meet the demand of locals for daily use. The most significant achievement the relocation area has is the good combination of residential and commercial area which prevents the bulky apartments isolated from other urban function (Figure 6.23). According to responses from member of the public, all of them expressed their satisfaction, with one of them stating that,

"I'm very happy with new home due to its better quality, modern and convenient facilities. More importantly, our family got one more apartment which has been rented out, and we have extra 900 RMB each month. So the good arrangement for my family has hugely relieved my previous concerns (quotation from MP3)."



Figure 6.23 Image of Current Relocation Housing Area

Despite the adequately supplied relocation housing, other types of public housing for low income families such as low-rent housing and economically affordable housing have not been seen in the new town area. According to the response from one planning officer, “*at present, local government has no specific plan for the construction of public housing because it is not compulsory. However, the construction of relocation housing is a ‘must-do’ thing due to the relevant regulation (quotation from PO6).*” Therefore, from the public housing provision perspective, Wuxi East New Town has done a good job on compulsory ‘relocation housing’ construction, but has no plan to go further for the supply of more public houses for low-class people. The relocation housing merely occupies a small percentage of the whole housing market of the middle site. Apparently, the new town mainly caters for the middle and upper class.

Apart from relocation housing, the private housing development still remains as a

pivotal role in housing strategy. Before exploring the specific situation, looking at a larger picture of the housing development situation of Wuxi seems essential. As a prosperous medium sized city, Wuxi has done a great job in housing price control

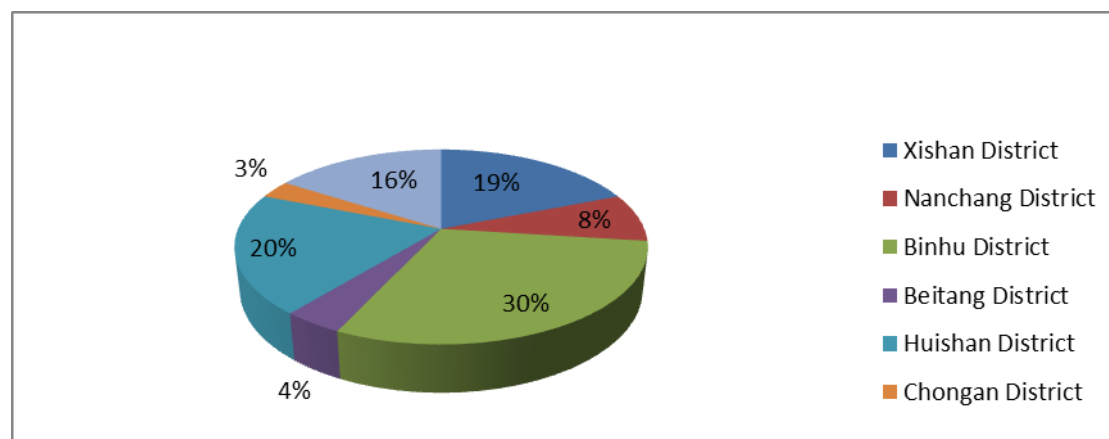


Table 6.10 Private Housing Stock in Seven Urban Districts of Wuxi (Toutiao, 2015)

compared with other same level cities. According to relevant statistics, the average price of private housing merely ranked around 30th to 40th place across the whole country, far behind its economic power rank (around 10th place). In terms of the main reason, one local government official responded that: *“firstly, a sufficient supply and good quality of relocation building make the most significant contribution since it results in the reduction of local purchasing demand. Secondly, the residential land supply has always been staying at a high level which surpasses the real demand (quotation from GO1).”* The two strategies promoted by local government, on the one hand secure the living standard for resettled residents and keeps the overall housing price at a reasonable level. On the other hand, it slows down the selling speed and leads to a considerable vacancy rate which poses a great pressure on private developers. Until the end of 2014, the overall private housing stock number of Wuxi has amounted to 71,301 with a subtotal area of 9,911,300m² which means in an ideal condition with no appearance of new private housing, at least 30 months are demanded to deplete such a large stock. And among the seven urban districts, Xishan district ranks in the 3rd place in housing stock and has 19% of housing which needs to be sold, the total housing area has reached 1,883,147m² (Toutiao, 2015) (Table 6.10). Of the top five residential projects possessing the biggest vacancy rate, Wuxi East New Town occupies four.

Critical Analysis

Through the interview, many planning officers expressed their worries about the housing development strategies, one of them pointed out,

“due to the overly large infrastructure investment input in the beginning period of new town construction, local government has to make profits through selling land and provide continuous public facilities for new town development. Therefore, government never rejects the offer from private developers. And the excessive housing development, in parallel with a series of national housing control policies and the low population import, has led to the current high vacancy rate of the new town area. But it's not local government's business any more since they have got the land selling profit. Moreover, the disappointing housing sale has resulted in house selling difficulties at present and the consequent unwillingness of potential private developers to purchase land. Sometimes developers would bargain about the land price, but local government is reluctant to accept because of the large amount of infrastructure investment at an earlier stage. In the meantime, local government is also reducing the residential land supply this year (quotation from PO7).”

However, despite the deep concerns from planning officers, it seems that high level officials of municipal government tend to keep quite a positive attitude towards the excessive housing stock phenomenon. According to one interviewee, he stated that,

“Wuxi has three advantages, namely its eastern coast location, its developed urban economy and its close distance to Shanghai. Hence, the development potential is undoubted (quotation from GO1)”.

And he estimated that at least 1.5 million population would come to Wuxi in the future. Accordingly, 60 million square meters' of housing are needed based on 40m² per person. However, when looking at the urban population growth from 2008 to 2014, it is clear that the increase rate has been hugely reduced, not least within the recent four years. The average population growth per year is less than 20,000 (Table 6.11). On the whole, the overall housing development situation of Wuxi is of an excessive stock and insufficient consumption. This could be hugely attributed to, firstly, a lack of local purchasing capability due to the pleasant relocation supply, secondly, the import of outcomers not being able to keep pace with the growth of

housing supply, and thirdly, excessive supply of housing land. Last but not least, is the population loss due to the industrial adjustment (a vast number of heavily polluting enterprises have been shut down after the shocking event ‘proliferation of blue-green algae’ of Wuxi’s mother water, Taihu Lake in 2007). Consequently, local government has adopted corresponding measures to tackle the problem such as the reduction of housing land supply and lowering the compulsory threshold of housing area purchasing for outcomers from 100m² to 60m² (National Business Daily, 2014). In a word, from the urban perspective, the housing market of Wuxi has stepped into a bottleneck period which requires more sensible government policy to guide a reasonable and sustainable housing market.

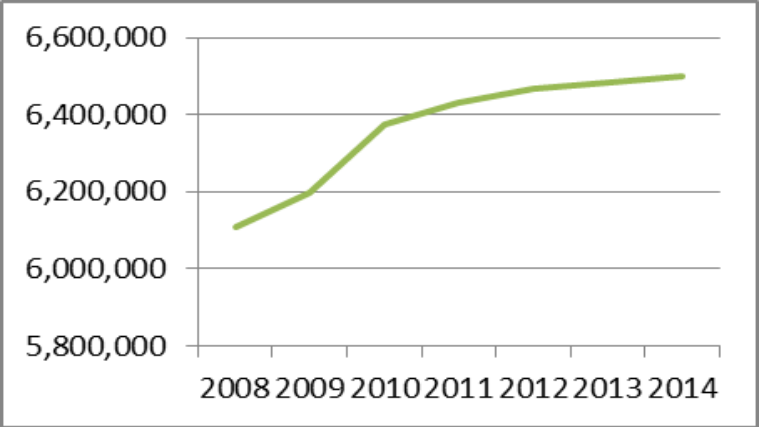


Table 6.11 Urban Population Index in Wuxi (Compiled by Author)

In terms of housing development in the middle site of the new town, two distinct periods can be seen. From 2009 to 2012, several nationally-famous real estate developers flocked to the middle site and triggered a housing construction peak. However, coupled with the publication of a series of national housing policies in 2011 such as the ‘house purchase restriction’ and ‘differential first payment’, the overall housing market began to cool down gradually and consequently, private developers become more cautious. At present, for 11 newly built private

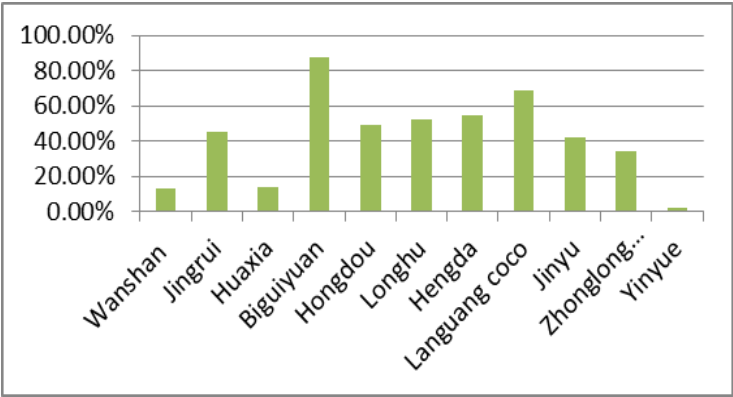


Table 6.12 Trading Volume of Current Private Housing in the Middle Site, 2015 (Compiled by Author)

housing projects, the average trading volume is only 42.16% and based on planning officers' estimation, at least 20 months would be needed to digest such a large number of stock (Table 6.12). And due to the decline of the whole housing market, some buyers want to return apartments they already purchased, which has led to big conflicts between developers and buyers, and the planning office has to deal with the problems frequently. Moreover, compared with other urban districts with a high housing stock, the new town has no distinct advantage. For Binhu District, the political preference and unique natural resources of Taihu Lake and several concentrated tourist spots could become the biggest catalyst for house selling. For New District, a strong industrial foundation has already paved the way for further housing development.

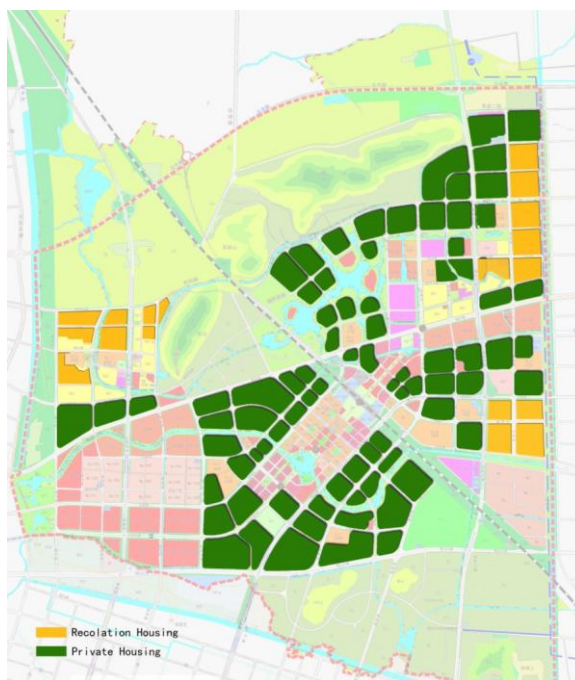


Figure 6.24 Layout of Residential Development of the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

However, for East New Town area, the house selling target, from private developers' perspectives, is concentrated on outcomers and local residents in Xishan District. Both developers and planning officers admitted that it seems very hard to attract people from old city to buy property in the new town area. However, the current population of outcomers cannot meet the development pace of housing development. Furthermore, a certain number of outcomers are from the lower-class who have no capability to purchase a private property in new town area. Last but not least, due to the sufficient supply of relocation building, a large number of local residents have no demand for private residential property purchase. Hence, based on the reasons mentioned above, the potential of the residential property market in the new town area seems not very optimistic.

When looking at the location of residential projects (Figure 6.24), it is obvious that all the high-end private residential areas are situated around the central business area or close to landscape resources. One planning officer stated, *“Compared to relocation buildings which are located at the fringe area, private housing has the superb privilege of location. Moreover, although the current housing market remains inactive, local government still puts great efforts to promote housing land selling with the utilisation of good natural resources. For example, on the south side of Cuiping Mountain, the previous land function is public green land. However, local government decided to transform it into a high-end residential area with a combination of apartment and detached house. Hence, the original public green space has become private (quotation from PO6).”* But meanwhile, in the northeast corner, the original residential area was transformed into logistics and warehouse land due to the excessive housing land planning (Figure 6.25). Based on these two housing land changes, on the one hand, it reflects local government’s effort to adjust excessive housing land supply, and on the other hand, it still represents the preference of government for high-end housing development and different location choice for private housing and relocation housing.

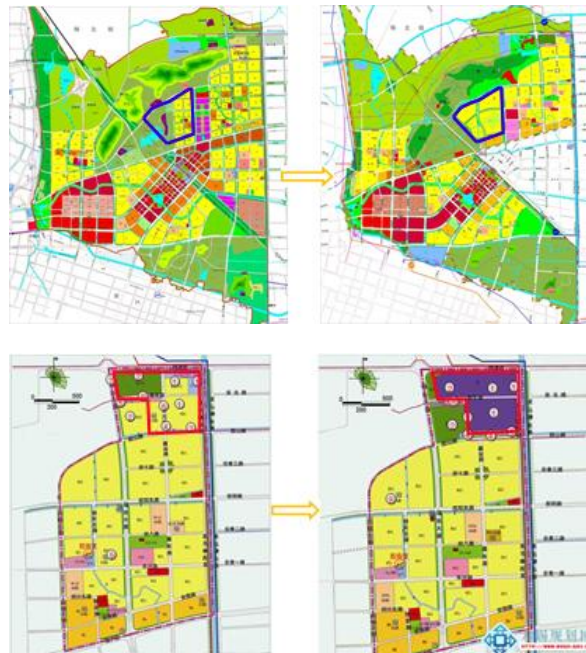


Figure 6.25 Residential Land Use Change of the Middle Site (Dynamic Update of Regulatory Planning of Middle Site in Wuxi East New Town, 2012)

3) Commercial and Business Development Strategies

Strategy

As a strong engine for economic development, commercial and business industry has always been given emphasis in government policy agenda. Generally speaking, commercial and business industry mainly refers to properties aimed at office, retail, markets, hotels, shopping malls, etc. which differ from private residential housing. In

China, the development of commercial property has generally experienced four phases. The first phase was from 1984 to the early 1990s. Before the 1980s, there was no real commercial property because all types of department store and market were under state or collective ownership. In 1984, the reform of the commercial system approved by central government marked the beginning of commercial property emergence. At that time, private developers from Hong Kong and Macao began to invest in five-star hotels and upper class offices on the mainland but the majority of commercial properties on the market were still temporary and had no property rights. The second phase was around the middle of the 1990s, with the rise of supermarkets and various small scale catering and recreation facilities, and commercial property became another pillar in the property field besides private residential housing. The third phase began when China stepped into the late 1990s. A variety of high streets and pedestrian streets developed gradually and the commercial property became a hugely profitable industry. The last phase started in the 21st century when shopping malls and CBDs were sprouting up as the rapid economic growth hugely promoted the commercial property demand. Moreover, a series of policies were published aimed at stimulating its development (Baiduwenku, 2013; Analysis of Commercial Property Market, 2013).

However, besides this thriving phenomenon, plenty of problems emerged at the same time. The most severe problem is the excessive construction and the consequent high amount of vacancy rate. The situation appeared around 2005, according to relevant statistics, by the end of 2005, the overall vacant commercial property area reached 3,872,000m². The vacancy rate has grown dramatically in recent years, particularly since 2010, as a series of restrictive regulations on house purchase have been brought into operation. The potential profit in the housing market was significantly reduced which led to the focus shift of many private housing developers to the business market. Moreover, under the national circumstance of industrial upgrade from industry to service, the prosperity of commercial property industry has been largely promoted. Secondly, local government seems more willing to supply commercial land due to its long lasting tax revenue and employment absorbing ability. Consequently, an excessive supply of commercial land significantly promoted the dramatic growth of commercial property development which has surpassed the realistic demand (Eastmoney, 2014). Thirdly, the high profit reward of high quality commercial

projects stimulates a vast number of developers to follow and copy, but the homogeneity of such projects led to enormous invalid supply and overly fierce competition. Last but not least, the rise of E-Business has thoroughly changed the foundation of traditional business and challenges the traditional commercial strategy (Xinhua, 2014). Relevant statistics have shown that the increase rate of national commercial and business property investment and selling area was 35.11% and 31.28% respectively (Analysis of Commercial Property Market, 2013), and by the middle of 2014, the stock of urban commercial property reached 70 million square meters (China News, 2014b). Among all cities, the vacancy rate of second and third level cities are much higher than the first level city due to their excessive construction and limited absorbing ability of population and social economy. According to a report from an official institution, nearly 60 second and third level cities are confronted with excessive commercial property supply (Real Estate Association, 2015). In 2012, the vacancy rate of office property in first level cities was 7.94% while the rate in second level cities had reached to 20.7% (Analysis of Commercial Property Market, 2013). The vacancy rate of shopping mall in first level city was 8.4% while the rate in second level cities was 10.5% (Eastmoney, 2014).

With regard to the commercial property development of Wuxi, as a typical second level city, at present, it has become overly saturated and according to government officials working in the local development and reform commission, there will be no more new commercial complex projects for some time (Wuxi Daily, 2014). Relevant statistics show that at present, the overall commercial stock of Wuxi has reached nearly 8 million square metres and current operating commercial properties is around 40 (Wuxi Daily, 2014). Furthermore, the per capita commercial area of Wuxi is 1.8m^2 which surpasses international standard of 1.2m^2 and greatly exceeds some key international business cities such as London (0.9m^2), New York (1.1m^2), Hongkong (1.3m^2) and Tokyo (1.3m^2) (Tao, 2015). It seems quite difficult for Wuxi to absorb such a large commercial volume due to its limited population growth.

Until the end of 2014, the vacancy rate of the office market was 58% which was indicative of the severely excessive commercial stock situation (Wuxi Daily, 2014). Among the seven urban districts, until April of 2013, Binhu District occupied the top rank in terms of office

stock, at 463,100m² and has become the first choice of developers due to the local government relocation and construction of Taihu new town. New District, as the main high-tech

industry development area, ranks in the second

place (293,800m²) of office stock due to the demand for industrial upgrade. Then, Chongan District (215,900m²), as the city centre, also possesses large development potential due to its complete public facilities and population density. Xishan District just ranked in the fifth place with around 122,000m² because at present, the overall economic foundation and industrial development situation is not sufficient to support a larger volume (Tao, 2015) (Table 6.13). Besides the significant vacancy rate, there are still a large number of new projects awaiting opening. In 2014, the subtotal of new projects area reached nearly 1 million square meters. Therefore, for a medium-sized city like Wuxi with limited commercial carrying ability, such a vast stock and constantly increasing new projects would definitely impose great pressure on developers. Consequently, the overall commercial market competition would be extremely fierce for quite a long time in the future (Market, 2015).

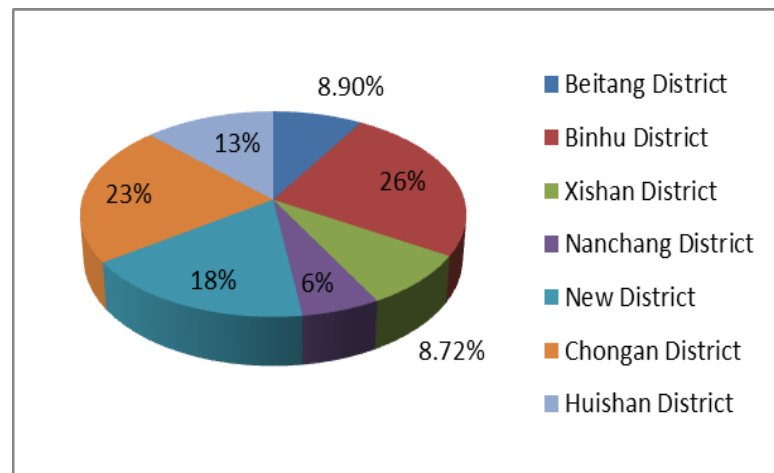


Table 6.13 Office Property Stock in Seven Districts of Wuxi, 2013 (Soufang, 2013)

Critical Analysis

In terms of Wuxi East New Town, since previous town level commercial facilities are low class and cannot meet the demand of local residents, ambitious commercial and business projects are planned and the majority of them are concentrated on the middle site due to the high speed railway advantage. Local government is putting great efforts to attract high-end commercial and business projects in and surrounding the central business area. According to the planning, the subtotal planned commercial and

business area is 1.9 million square meters and at present, 11 projects have been realised with most of them are still under construction. When exploring the functional orientation of these projects, except for one project aiming at providing a professional car service, the other 6 projects are all concentrated on offices, 3 projects are planned as a combination of office and shopping mall, and 1 project is purely focused on a shopping mall. That means in the near future, there will be an area of nearly 1.67 million square metres for commercial and business (Table 6.14, Figure 6.26).

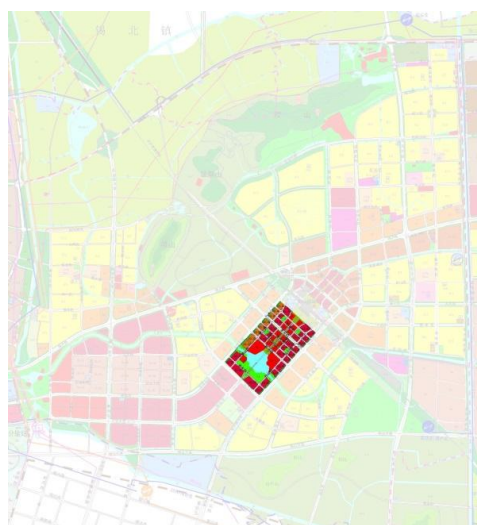


Figure 6.26 Layout of Primary Commercial and Business Facilities

Commercial & Business Building	Area (10,000m ²)	Orientation
Huaxi Business	5.4	Headquarter for Huaxia Property Company
Yidong Square	75	To create the biggest waterfront food court in Wuxi, the biggest sky garden children's park in Jiangsu Province and building for commerce, five star hotel and office
Xian Changqing Property Co. Ltd	5.7	Headquarter and purchasing centre for Changqing oil field of Petro China in Eastern China, placement centre for compressed natural gas in Eastern China
Jiangsu Tianyu Energy	5.5	Commerce and office
Jiangsu Ningtaiyunying	5	To create a small-scale business complex with commerce and office
Jiangsu Jinyang	4.04	To create a five star smart office building with business, technology & research, creative design, business service, etc.
Wuxi Hengting Industry	9.34	Business and office
Wuxi Hongdou Property	24.3	Hotel, hotel apartment, office
Shiao Square	11.3	Commercial centre
RT-Mart	9.6	To build up an integrated mall with mega

		supermarket, KTV, large-scale banquet hall, retail and various food departments
Xianfeng Auto City	12	Aggregation for Auto Industry

Table 6.14 Development Intention of Current Commercial and Business Projects in the Middle Site

According to comments from relevant planning officers in Wuxi East New Town, the planned commercial and business construction volume is based on future population size. However, several planning officers expressed their concerns, with one stating that,

“according to the current situation, the population import is largely falling behind the expectation and the investment potential is not optimistic. Moreover, from the urban structure perspective, the potential CBD centre would be mainly concentrated in Taihu New Town due to its political advantage. That means for Wuxi East New Town, the potential biggest rival will be Taihu New Town but its current vacancy rate of commercial and business property has ranked the top among all urban districts. The primary potential risk for Wuxi East New Town might exist here (Figure 6.27) (quotation from PO3)”.

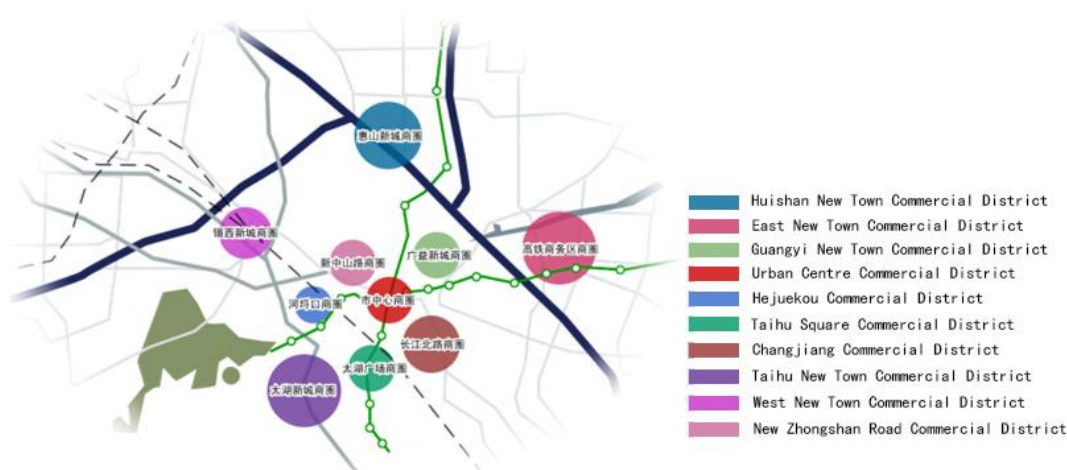


Figure 6.27 Urban Commercial Centres in Wuxi (Market, 2015)

At the same time, a higher rank official working in local government expressed quite different opinions. From his point of view:

“Wuxi is the central city of the Yangtze River Region and has much lower commercial cost compared with Shanghai. Therefore, the attraction for potential clients from Shanghai is evident if given sufficient time. In terms of competition with Taihu New Town, as long as differential orientation is set up during the

development process, fierce competition would be largely avoided (quotation from GO1)”.

However, the current situation is that for the high speed railway station square, nearly all underground commercial properties remain vacant except for one dining room, and for newly built commercial and business properties in the central business area, the overall capital drawing situation appears to be dim. For the remaining land for commercial planning, the land selling process is much slower than expected, according to one planning officer, in 2014, only two commercial pieces of land have been sold which was far short of the original target, and in 2013, all lands sold were residential which have turned out to be highly vacant also at present.

4) Public Service Equalization

Strategy

If the industrial, housing and business development of a new town might contribute greatly to its economic prosperity and outside image, the level of public service provided has the most direct link with the living quality of new town residents. Fortunately, for Wuxi East New Town, from the beginning of construction, local government always puts great emphasis on providing equalized and high quality public services for everyone. And through the five years' development, great transformation has been made. Basically, the public service could be divided into three main categories, namely recreation, education and health. First of all, in order to equalize varied facilities, the middle site has been grouped into three primary units, five

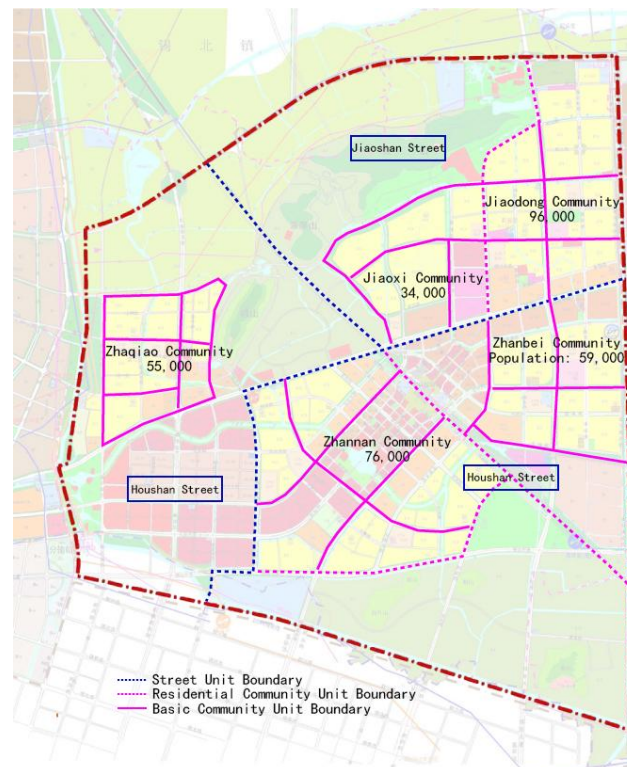


Figure 6.28 Units of the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

residential units and 26 basic units (Figure 6.28). Based upon the three level units, all public facilities are planned to be in conformity with the demand of each unit.

In terms of recreational facilities, they consist of three types. The first type is cultural facilities. At the beginning of new town construction, cultural facilities in the middle site merely include a cultural centre with a total area of 10,000m² and a library of 1500m² which obviously cannot meet the demand of local residents. Therefore, in order to enhance the cultural brand of Wuxi East New Town and provide better cultural facilities to residents, local government plans to construct a comprehensive activity centre (37,000m²) including library, exhibition, technology and science museum, activity for youth, cultural centre and archive museum. Besides it, an arts centre (5,000m²) is also planned to be located at the lakeside of central park. At the residential unit level, five smaller culture and activity centres are planned at each unit centre, which, combined with the community centre, provide a cultural and technology service for around 50,000-100,000 population. The second type of recreation facilities is sports places. However, according to the relevant planning, it seems not quite reasonable because three of the five athletic facility centres would be integrated within primary and secondary schools, which means public accessibility will be low. The third type of recreation facilities is the community centre. Based

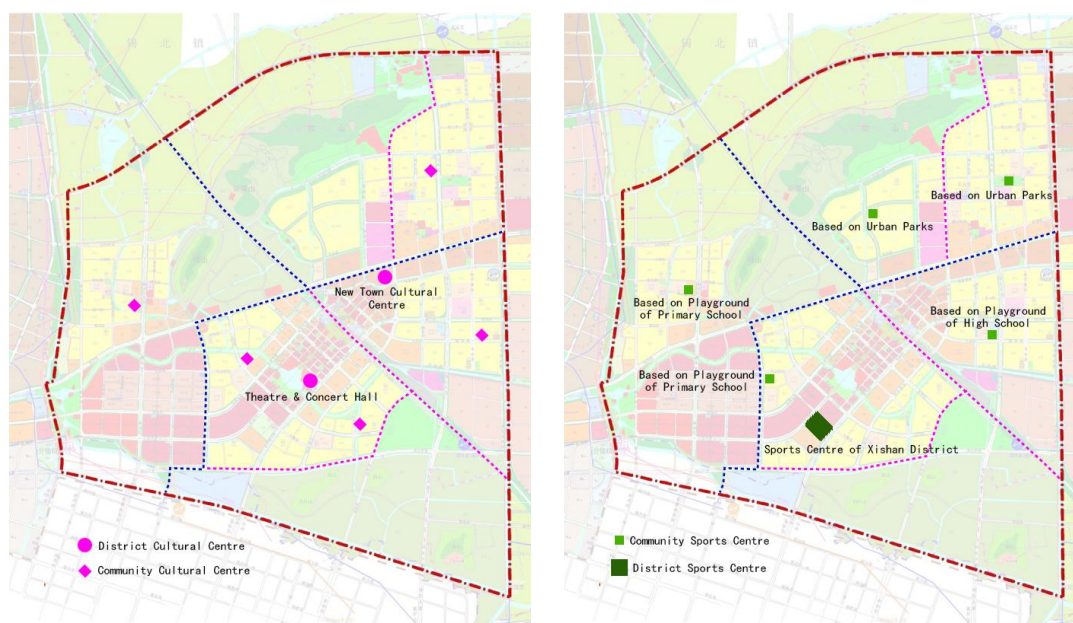


Figure 6.29 Cultural, Sports and Community Facilities Planning in the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

upon the unit division, five community centres and 19 unit centres would be

distributed among basic units. And both community & unit centres are aiming to provide recreation, fitness, shops and health services together and create a good neighbourly and friendly relation. Particularly in relocation housing areas, the unit centre provides a gathering place for old neighbours who used to live nearby to chat and help each other to get adjusted to their new life as soon as possible (Figure 6.29).

The second category of public facilities is education. Basically, from kindergarten to high school, the planning index accords strictly with relevant standards. Previous schools are reserved or merged into new schools, furthermore, several international standard modern schools have been established. For instance, in the high-end private residential area, a bilingual school has been set up and inputs western educational ideas into the overall educational system aimed at elevating the educational level of the new town and fostering excellent students with an international standard (Figure 6.30).

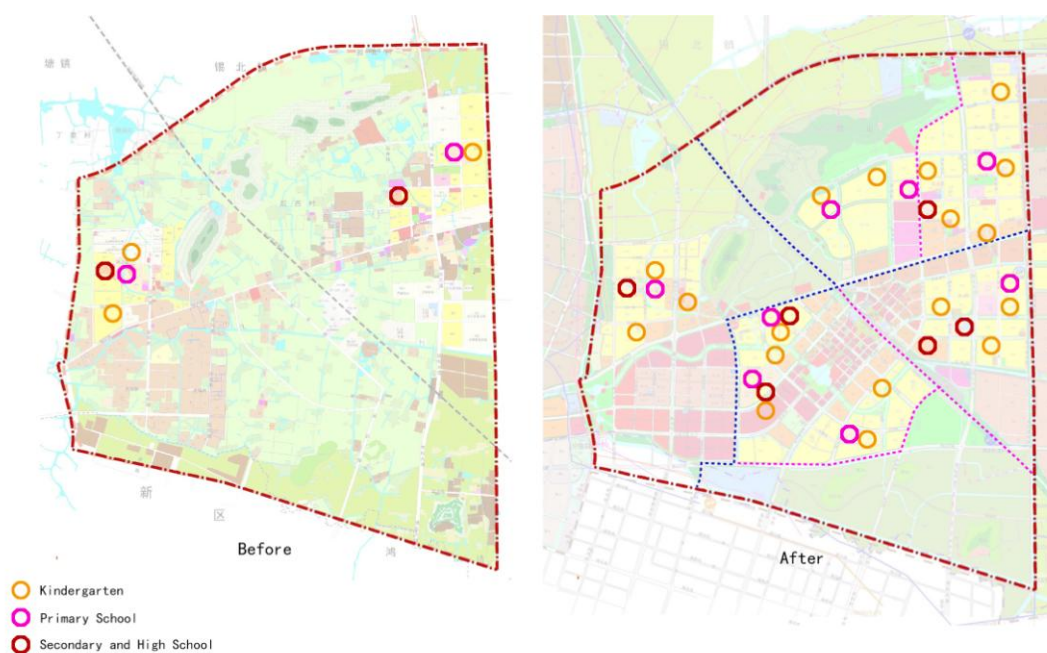


Figure 6.30 Educational Facilities in the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

The third type of public facilities is concerned with health (Figure 6.31). In 2009, there was a severe lack of large scale hospitals and the only hospitals of the middle site were Anzhen Hospital with 400 beds and Zhaqiao Health Centre with 59 beds. Local residents had to suffer the inconvenience for seeing a doctor by commuting to

the old city. Therefore, the new plan decided first of all, to establish a brand new comprehensive hospital with 1200 beds to cater for the medical needs of local people. Then, three health centres would be created at different residential units. Besides the plan for hospitals, nursing homes are another pillar of the health system, especially when China has stepped into an ageing society and is confronted with the increasingly severe problems of supporting old people. In new town planning, a large scale modern nursing home will be created with 1450 beds to replace the current two small nursing homes with only 145 beds in total. However, the concentrated nursing home seems to ignore the social network and merely focuses on the nursing problem rather than on emotional and psychological problems. A dispersed nursing home in each residential unit might be more suitable for familiar old people who know each other to communicate and more convenient for offsprings to visit them. But according to the plan, no such issues have been carefully considered.

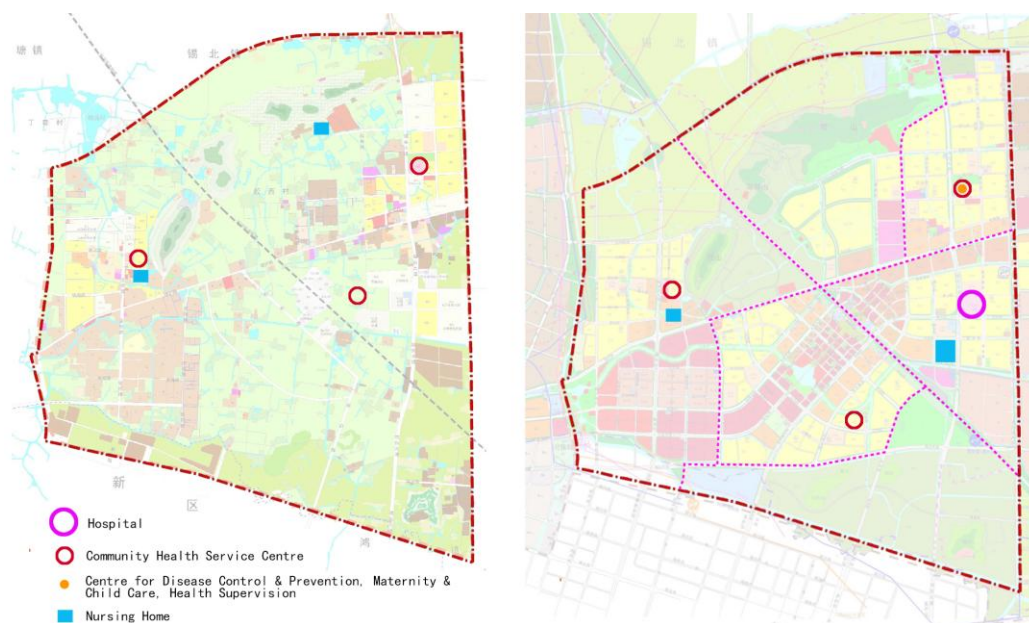


Figure 6.31 Health Facilities in the Middle Site (The Development and Construction Planning for Wuxi HSR New Town Business District, 2010)

Critical Analysis

Generally speaking, the overall public facility planning for Wuxi East New Town appears to be reasonable and relatively equalized, moreover, many high quality projects are going well or have been put into operation. And the priority given to public facilities construction paves a solid foundation for the new town's further

development. More importantly, it indeed improves the quality of living environment for current local residents. Just as one interviewed member of the public responded, *“I’m quite happy for the new hospital, previously, I need to spend a long time to urban centre to see a doctor. Once the new hospital completed in new town, my family can see a doctor on doorstep (quotation from MP2).”* Another member of the public stated that, *“Previously, there is no supermarket and commercial facilities nearby, but now it’s very convenient for me to make the daily shopping with my husband (quotation from MP3).”*

However, the problem of current planning still exists. It seems that the planning overly accord with the relevant standard index and somewhat ignores the specific situation of different areas. Since residents of each residential unit have varied financial situations and different social status, the public facilities should be planned subject to their realistic demand. And also, the old town area appears to have more old people than the new planned area which means the facilities should vary according to the reality. But the current plan merely focuses on the equal number of facilities rather than meeting the demand of different groups of people. Last but not least, at present, the public service construction is merely focused on physical rather than emotional, the social community spirit has been hugely ignored and no special institution has been established to promote the community spirit and help newcomers to get adjusted to new town environment as much as possible. Although in British new towns, social goals have not been achieved as good as physical goals, at least, many efforts have been made such as participation of existing residents for the new town planning, establishment of voluntary organizations or neighbourhood associations, etc. In Wuxi East New Town, through all planning documentation, no relevant content has been put into planning, and according to interviews with planning officers, they all express similar opinions towards the issue, one of them responded that,

“the community issue is not included in the planning process and the current planning focus is mainly concentrating on tangible issues rather than spiritual issues. In addition, since the majority of housing is private and all private housing is organized in separated gated community, the integration of community appears to be unlikely and unnecessary here. Local residents need more sense of security rather than interaction (quotation from PO6).”

5) Tipping Points Dilemma

Strategy

In China, the best way to initiate a new town or promote the development of a new district might be through big events such as the Olympic Games, World Expo, government relocation, etc.

During the planning for Wuxi East New Town, planners also took ‘big events’ into consideration for the sake of promoting a leap-forward development of the new town. Basically, two types of ‘tipping point’ are set (Figure 6.32). The first type is the so called ‘red point’ referring to three urban functional districts which could initiate the first

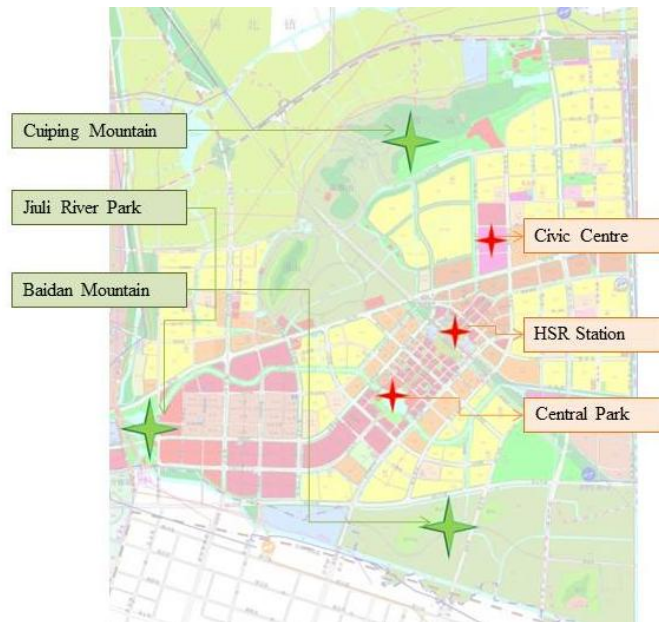


Figure 6.32 Tipping Points in the Middle Site

round of new town development. The three urban functional districts are the central park located at the central business area, the civic centre at the northern end of the central axis and the high speed railway station. However, despite great ambitions, the current development situation is far behind that expected. The central park and high speed railway station surroundings are undergoing much slower construction pace, and the civic centre might never get permission for quite a long time due to the ban on new government building construction within five years enforced by central government. The other type of ‘tipping point’ is the ‘green point’ referring to ecological park. Three points are included, namely Cuiping Mountain at the northern boundary, Baidan Mountain at the southern boundary and Jiuli River Park on the western side. The three green districts are planned as the primary lung of the new town which not only purifies urban air but also provides entertainment and a relaxing place for citizens. The theme of the three green points is distinguished from each other. For the northern gateway Cuiping Mountain, a very large urban leisure park focusing on a ‘happy life’ theme is planned, and a series of supporting facilities would be provided such as a business conference centre, green agriculture, cultural experience

and amusement park. On the whole, it aims at becoming a comprehensive, large scale resort centre in the future.

Critical Analysis

The current problem is that no private developer dares to take the risk for such a large project since the potential market seems quite vague at the moment. Several planning officers expressed their deep concerns over the issue, one of them stated that,

“Now the situation is very awkward, we try our best to look for powerful developers for the large project, but until now, no developer has shown great interest and keep relatively hesitant perspective towards the project. So we have to wait for more time (quotation from PO9)”.

The same dilemma happened in the southern gateway, Baidan Mountain as well. Although it has been planned as a ‘sports and recreation resort’, it still awaits powerful developers. According to information from one interviewee, local government is negotiating with a university to establish a new campus here. If it is realised, a vast number of students might be a good engine for further development of the new town and could reverse the current awkward situation. The only finished green point, Jiuli River Park on the western side, is constructed by government as a civic park with a total area of 0.39km². But the fringe location and traffic inconvenience leads to it being less than successful so far. In conclusion, the planned ‘tipping points’ seem to carry overly extravagant and ambitious functions which might not be realised easily and quickly, not least under the current inactive investment environment. Moreover, Wuxi already possesses a series of famous and characteristic tourist attractions, and to develop a brand new tourist project based on almost nothing seems quite risky and unrealistic at the moment. Maybe at present, *“a relatively modest project orientation would be more appropriate for local government, more practical for private developers and more beneficial for local residents”*, stated by a planning officer (PO4).

6.3.2 Spatial Organization

1) Overall Evaluation

Strategy

Based on 125km² of new town territory, the spatial strategies fall into three separated pieces due to different management organizations. The western part, as the base for national economic zone, has been largely occupied by existing industries, but the most important problems at present are the unpleasant industrial space quality and its unordered mix with residential area. Moreover, it severely lacks landscape and green spaces to embellish the whole environment (Figure 6.33). Therefore, the development potential mainly focuses on regeneration rather than new construction. The spatial strategies could be considered to be the optimization strategies which concentrate on,

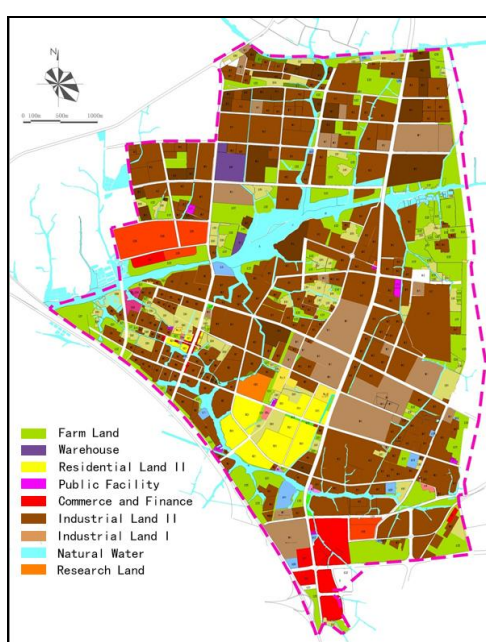


Figure 6.33 Previous Land Use in the Western Site (Dynamic Update of Regulatory Planning of Wanan, Yangting, Chunlei, Yunlin, Zhuyuan Management Unit of Wuxi East New Town, 2011)

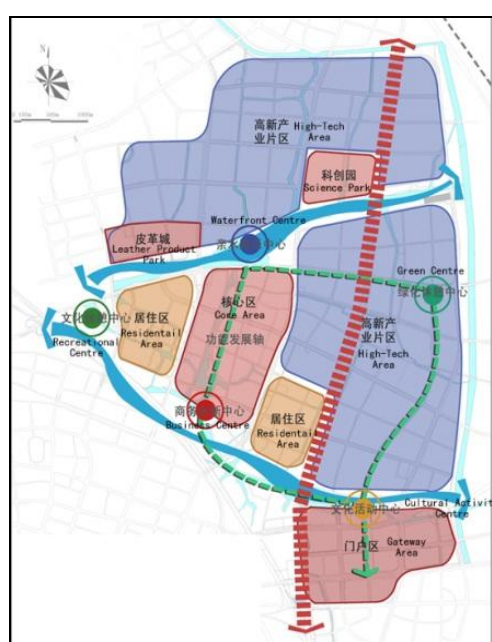


Figure 6.34 Planned Urban Structure in the Western site (Dynamic Update of Regulatory Planning of Wanan, Yangting, Chunlei, Yunlin, Zhuyuan Management Unit of Wuxi East New Town, 2011)

Site

firstly, significantly improving the quality of green space through building up a circular green corridor in the core area, optimising the waterfront environment along two main rivers and setting up three key green points along the waterfront, and lastly selecting two sites as the main representative area of western site, namely the central commercial & business area and southern gateway area based on a large scale homeware shopping mall (Figure 6.34). A new functional and spatial organization would be planned for the two areas. The remaining industrial part would be left for further gradual transformation (Dynamic Update of Regulatory Planning of Wanan,

Yangting, Chunlei, Yunlin, Zhuyuan Management Unit of Wuxi East New Town, 2011). On the whole, the western site is intended to become a modern economic zone not only with advanced industrial development but also possessing a graceful environment and convenient commercial facilities.

However, all the spatial strategies appear to be relatively general and mainly highlight the core area although the central business area seems to be difficult to realise. More importantly, for the vast area of existing industry, no specific spatial plan for the urban image enhancement has been made, neither for the combination and integration between the industrial area and other urban areas. But the good thing is, the overall environment and urban vitality is indeed improving as a result of gradual optimization and the import of new facilities such as IKEA, METRO, etc.

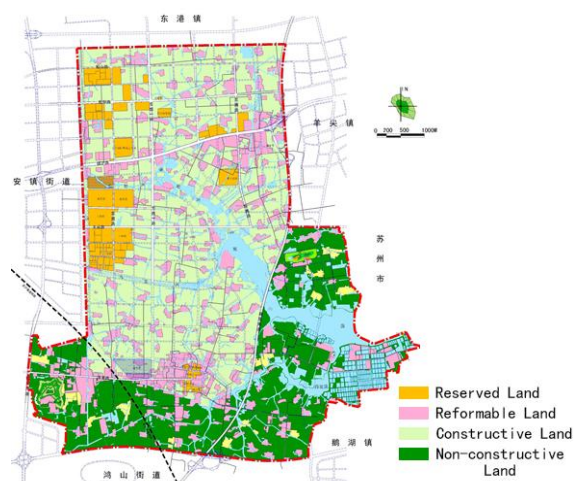


Figure 6.35 Previous Land Use in the Eastern Site (Urban Design and Dynamic Update of Regulatory Planning of Eastern Site in Wuxi East New Town, 2011)

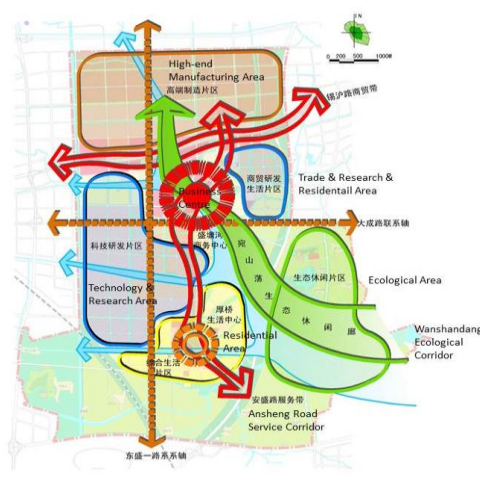


Figure 6.36 Planned Urban Structure in the Eastern Site (Urban Design and Dynamic Update of Regulatory Planning of Eastern Site in Wuxi East New Town, 2011)

For eastern part, the majority of it still remains as rural area and awaits further development. The planning is still in process and no completed spatial strategies have been formed. According to recent information from planning officers, the planning of the eastern part has been suspended due to national urban extension control. However, based on previous planning and intention from local government, the area around the Wandang River has been confirmed as the core development and primary landscape corridor. This is a mixed district centre with mixed use of business and high-end residential and research bases would be located there. Furthermore, the waterfront

area would be planned as an environmentally-friendly relaxing place and tourism spot (Urban Design and Dynamic Update of Regulatory Planning of Eastern Site in Wuxi East New Town, 2011) (Figure 6.35, Figure 6.36). Until now, only legible urban spatial strategies of the middle site in the new town have been made, so the analysis will focus primarily on the middle site (Dynamic Update of Regulatory Planning of Middle Site in Wuxi East New Town, 2012).

Critical Analysis

First of all, although the middle site has shown big ambitions on several key urban areas, from the macro perspective, it lacks a holistic spatial control and guideline. This can be seen clearly from the spatial related plans. Basically, there are five main urban design plans concentrated on urban spatial development. When putting all plans

on the map, it shows that the overall urban design covers first of all the core area, then the main green area which runs through the middle site and forms the northern and southern boundary. For the



Figure 6.37 Regulatory Planning for the Middle Site (Dynamic Update of Regulatory Planning of Middle Site in Wuxi East New Town, 2012)

rest of the middle

site, there is no urban design control or any guidelines. All they have are merely cold block indices such as function, height restriction, building density and plot ratio maximum which might not help to impose a positive influence on the holistic urban image (Figure 6.37). One designer pointed out that,

“the lack of overall urban design control means for all the rest area, the potential urban image is quite blurred and to a certain degree, the control right will be broken into pieces and transferred to mostly private developers after they purchase a single block to start construction (quotation from DG1).”

According to the response from one planning officer,

“although there is no overall urban design for the middle site, planning officers would review every new project in terms of form and connection with surrounding area (quotation from PO3)”.

Therefore, to a large extent, the spatial control appears to be loosely and subjectively controlled, and hugely in the hands of current planning officers and private developers. Based on its natural resources like the central river and surrounding mountains, how to integrate them smoothly with the constructed urban area seems a key challenge for planners. However, for the current urban design, it seems that these resources are treated separately and do not interact positively with the surrounding area. Furthermore, planners might ignore the question of how to maximise the utilisation of natural resources, they may leave them as where they are and do not intend to set up a systematic landscape map with combination of linear corridors and viewing points to bring the green fields into the urban area to a full extent. On the whole, the spatial strategies for new town could be regarded as an elite space which is concentrated and fragmented but is at the international level design in certain parts.

Secondly, when conducting interviews with government officials, instead being concerned about the lack of overall spatial strategies, they all expressed great confidence and enthusiasm about the fantastic core area planning designed by world renowned companies such as RTKL, SOM, etc. One government official stated,

“Government has spent huge amount of money to invite the most talented designers across the world to design for East New Town, this shows the big decision of government to create a modern and advanced HSR New Town. More importantly, the East New Town will become the role model in China when it's finished, I'm quite confident about that (quotation from GO2).”

And the majority of interviewed planning officers have expressed similar opinions. Within the urban design planning system, core area has been put on top priority from the beginning since it would become the showcase and primary profitable engine for the new town. In the official's opinion, the key decisive element for the new town is the development of the core area. Hence, in order to maximise the success rate, local

government paid huge attention mentally and financially to the planning of the core area. As the result, the urban design of the core area and specific block control turns out to be splendid and has been widely praised and put into operation gradually. In terms of the main green area, Jiulihe Riverfront, due to its close connection with the core area, has undergone a relatively comprehensive planning process and been finished mostly. The local officials repeatedly emphasized that the environmental improvement has been valued highly during the planning and development process. The potential new town would not become a concrete forest but a livable town with beautiful scenery and pleasant environment. And for the other two mountainous area plans, the urban design seems quite general and stays at concept level and is ambitious rather than practical. At present, it still remains as beautiful vision on paper. At present, local government is actively conducting investment promotion and waiting for powerful developers to take over the whole mountainous project. In conclusion, the specific outstanding urban planning for certain areas show great intention for potential development and they indeed assist the whole new town to stand out among other peers at present stage. The care for environmental improvement of local government has won a good reputation among citizens and enormously enhanced the urban image of the new town.

2) Strict Central Area Control vs Loose Surrounding Area Control

Strategy

The No.1&No.2 Block were planned as the first phase of the new town construction schedule and have been given great enthusiasm and confidence from local government to become a new gateway of Eastern Wuxi (Figure 6.38). After the first round of the general concept design for the core area, another round of more detailed urban design for the two commercial street blocks has been conducted by a world famous company, SOM, and designers imposed careful guidelines for street diversity, the open space system and the potential form of every single building. According to response from one designer, *“it aims to create a modern commercial area with appropriate block*



Figure 6.38 Location of No1&2 Street Block

proportion, a highly efficient road system, diversified street types, vigorous commercial activity, high quality open space and strong urban identity (quotation from DG3)”. Basically, four main spatial strategies are adopted, namely small blocks, street guidelines, open space guidelines and urban form guidelines.

First of all, reasonable block scale is considered to be the foundation for further design. Hence, from the beginning, designers made a lot of research on what kind of block scale could stimulate urban activities to a full extent. Basically, blocks of Manhattan midtown and San Francisco midtown are compared as reference (Figure



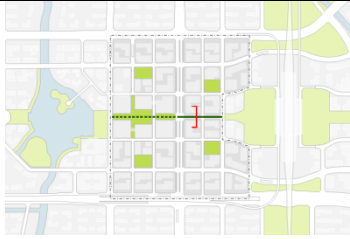
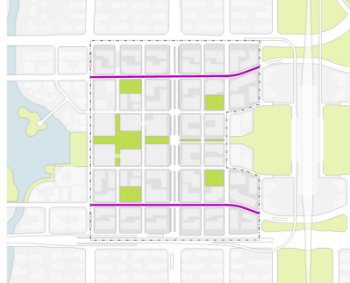
Figure 6.39 Street Block Scale Comparison (Urban Design for No.1 & No.2 Blocks of the Wuxi HSR Commercial Area, 2011)

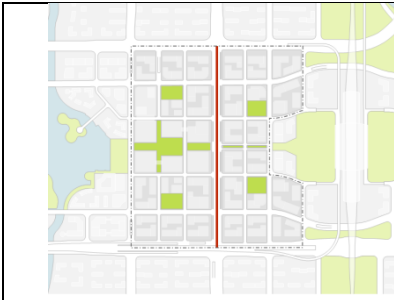


Figure 6.40 Street Block Scale Change (Urban Design for No.1 & No.2 Blocks of the Wuxi HSR Commercial Area, 2011)

6.39). *“It appears that previous blocks defined by the first round of design was relatively larger, therefore, in the new design, we changed them into a smaller grid since designers believe that the new block scale is more capable of increasing accessibility of walking, providing more choices for vehicles, reducing traffic volume of main roads and last but not least, enabling land to be sold and developed more easily (quotation from DG1)”, according to response from one designer (Figure 6.40).*

Secondly, in order to clarify different functions so that each street would have and enhance its distinctive character, a specific street guideline was made and a completed street system with clear hierarchy was planned (Table 6.15).

Site plan	Street Image
 Northern part of central street: main axis of the site and primary green corridor connecting HSR station with central lake	 Street wall required Ground floor retail required High quality street furniture encouraged
 Southern part of central street is designed as pedestrian only and a plaza is located at the centre	 Street wall required Ground floor retail required High quality street furniture encouraged
 地址性街道 ADDRESSING STREETS Danshan Road & Cuishan Road: normal street which carries heavy traffic volume	 Street wall required Ground floor retail required

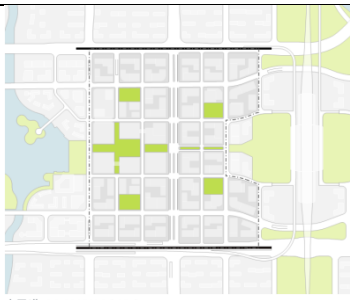


主街 MAIN STREET

Xinyun Road: main throughway of the site and meanwhile a landscape street

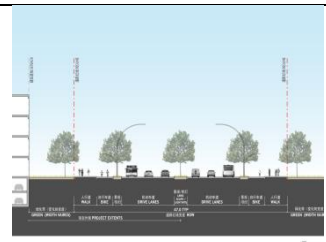
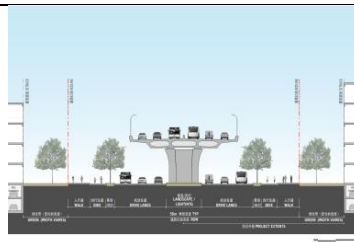


Street wall required
Ground floor retail required
High quality street furniture encouraged



主干道 PRIMARY ROADS

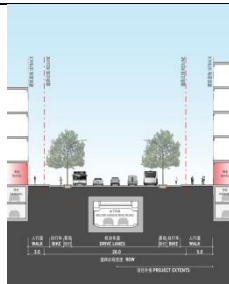
Xianfeng Road & Xinhua Road: the northern and southern boundary and the transition place from surrounding area to the site



Street wall required
Landscape zone in front of building required



Wenjing Road: waterfront landscape street which is beneficial to strengthen the connection between central commercial square and central lake



Street wall required
Ground floor retail required
High quality street furniture encouraged

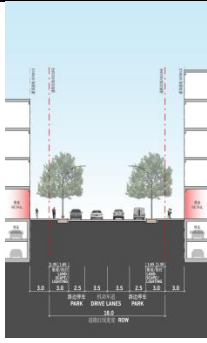
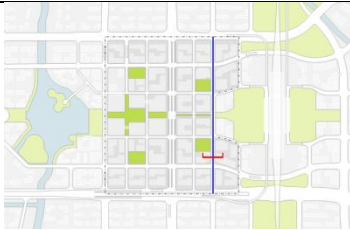
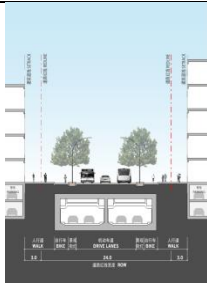
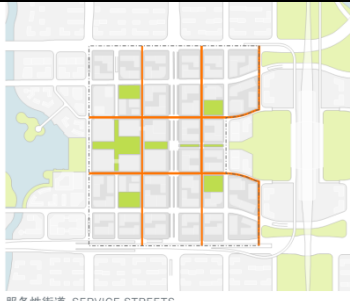
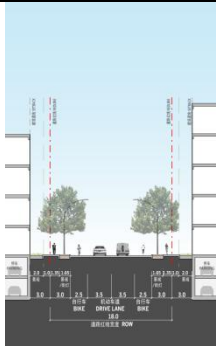
 Zhanwu Road: links three squares and metro centre, aims to become a prosperous commercial street	  Street wall required Ground floor retail required High quality street furniture encouraged
 Xingwu Road: adjoin HSR station and define the eastern boundary of the site	  Street wall required High quality street furniture encouraged
 Service Street: provide car park and exit	  Main parking and service entrances required Landscape zone in front of building required

Table 6.15 Street Guidelines (Urban Design for No.1 & No.2 Blocks of the Wuxi HSR Commercial Area, 2011)

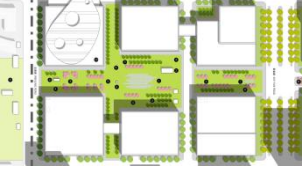
Overall, the design principles for No.1&No.2 Block set up a clear and stringent guideline from street level to building level. At street level, each street has its own character which tends to be compatible with the function of surrounding blocks and natural resources. The whole street system is expected to form a livable, people-oriented and meanwhile highly efficient modern environment.

Thirdly, at open space level, a dispersed layout is adopted instead of concentrated form. Four main open squares are distributed at four function areas and designed with a varied theme. In addition, a central plaza and a number of smaller open spaces would go through each block to strengthen the environment and create an equalized urban area which would enable everyone to have an easy access to public open space (Table 6.16).

Lastly, at architecture level, the guideline turns out to be more specific and rigid. *“For each building, we regulate its potential form including the position of the main tower and podium, maximum height, block density and the relationship between different buildings (Table 6.17). Under this regulation, private developers have to obey the rules and architects have relatively limited freedom to design. However, from the macro perspective, the guideline would be quite helpful to control the potential urban image and create an integrated rather than fragmented central area (quotation from DG2),”* according to statement from one designer.

When visiting the site, although merely six projects are under construction at present, it can be seen that the guidelines are put into operation very well and current buildings do not break any regulations so far. The interviewees from the planning office also reflected that although the guidelines make the construction process much more difficult, government would still insist the rigid implementation of all guidelines.

Site plan	Planning Intention
	Four Key Qualities of Public Open Spaces: - Accessible - Allow a variety of activities - Comfortable and aesthetically pleasing - Provide a socially pleasant atmosphere Key Components for All Open Spaces: - Shading systems or trees - Seating, gathering and recreational areas - Connection to transit and parking - Retail and public facilities to support activity

  	Typology: Public plaza supported by retail and metro station Function: Gathering and relax space for public Accessibility: Pedestrian access from all directions Direct link with underground retail and car park Design Elements: Central fountain Shaded seating areas Retail pavilions Pedestrian lighting for public safety Retail lighting and direction signal
  	Typology: Linear park and pedestrian road Function: Gathering and relax space for public Main link between central plaza and HSR station Accessibility: Pedestrian access from all directions Direct connection with underground car park Design Elements: Shaded walkway and seating areas Flowering trees to divide sidewalk Pedestrian lighting for public safety Direction signal

	Typology: Neighbourhood square with various parent-children facilities Function: Gathering and recreational space for residents Accessibility: Direct connections with underground car park Design Elements: Children's playground and carousel Shaded seating areas Interactive water features Pedestrian lighting for public safety Direction signal
	Typology: Neighbourhood square with exhibition and entertainment Functions: Gathering and exhibition space for neighbourhood businesses Accessibility: Direct connections to underground car park Design Elements: Seating area to watch performances and exhibition Shaded seating areas at the periphery Central performance area Pedestrian lighting for public safety Direction signal

	Typology: City square Function: Lunchtime relax space for nearby office workers and visitors Accessibility: Direct connections to underground car park Design Elements: Shaded seating areas Public art or water feature at centre Pedestrian lighting for public safety Direction signal
	Typology: Innovation square Function: Gathering and art exhibition space for nearby business man Accessibility: Direct connections to underground car park Design Elements: Shaded seating areas Landscape mound Water features Art installation areas Pedestrian lighting for public safety Direction signal

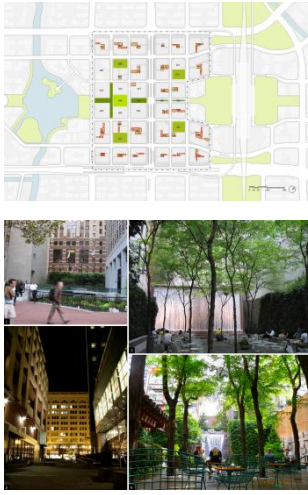
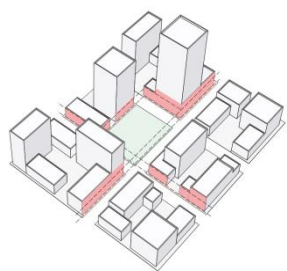
	Courtyards and pocket parks are publicly accessible and evenly distributed in the whole site. They are expected to complement four main neighbourhood squares and central plaza to stimulate urban activities and enhance overall environment

Table 6.16 Open Space Guidelines (Urban Design for No.1 & No.2 Blocks of the Wuxi HSR Commercial Area, 2011)

Strategies for Architecture	Design Drawing	Description
Overall Principle		Primary axis is the central corridor and all towers are kept free of the axis allowing a visual connection between HSR station and central lake Careful consideration was given to the skyline to shape a dynamic rather than monotonous urban form.
Layout of Towers		Towers are staggered to ensure sufficient sunlight and visual connection between each building. Buildings are carefully distributed so as to prevent an undesirable concrete wall.

Defining Squares		Towers are arranged around four open squares to accentuate their significance as the neighbourhood centre and the sense of enclosure.
Tower Control		Podiums and towers must be within regulated height. Maximum height of podium is 35 meters and maximum tower height varies according to different block.
Ground Floor Control		Ground floor retail or other functions opening to public is required in highlighted buildings. Active ground floor functions might include pedestrian entrances, community or government services, information centres or bank & stock trading centres.
Street Wall Image		Buildings should form a consistent facade along the street boundary and separated towers are prohibited in the project due to its negative interaction.

Street Wall Distribution		Marked street boundary must create a continuous facade and the minimum height is 15 meters. At the intersection, detail of building should be designed carefully to ensure the continuity of street wall.
Building Setback Control		Setback lines are defined according to street hierarchy. Basically, boundary road in north and south would have the widest green buffer due to their importance for transportation. For other streets, the setback should be treated as an extension of public sidewalk.

Table 6.17 Urban Form Guidelines (Urban Design for No.1 & No.2 Blocks of the Wuxi HSR Commercial Area, 2011)

Critical Analysis

Despite the rigid spatial strategies of No.1&No.2 Block, the rest of the area has no specific control. Taking a piece of area which is situated on the eastern side of the central area as the example, the new residential area has been constructed by a private developer. Consequently, there is a series of residential buildings forming a massive concrete wall which hugely blocks the visual link between central area with the surroundings and moreover, it prevents sufficient daylight to penetrate into the nearby street. This might result in an uncomfortable and depressing feeling (Figure 6.41).

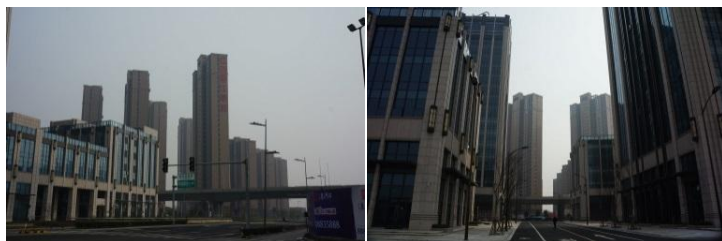


Figure 6.41 Concrete Walls of Residential Buildings

From this point, it seems that only the urban form of the central commercial area has been paid great concern and the other areas, even the nearby areas are, mainly left in the hands' of private developers. Several planning officers expressed similar attitudes towards the issue, with one stating that,

“there is no specific guideline for residential area, as long as it complies with the height and intensity regulation. Maybe in the local government’s opinion, the rest area would not become the showcase for new town, hence, the maximum of profit pursued by private developers surpasses the importance of urban image and overall environment. On the whole, most of the surrounding residential areas tend to adopt a highly intensive development mode which are separated from each other by tight building walls and have a relatively pleasant inward environment only for their own residents (quotation from PO8) (Figure 6.42).”

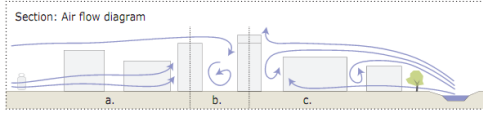


Figure 6.42 Intensive Development of Residential Areas

The Berlin case (Table 6.18) presents a good picture of the climate-sensitive urban design approach, taking all of the environmental elements into consideration. Through various environmentally-friendly designs, the urban form, to a large extent is not only about the favourable aesthetics. More importantly, it represents the harmony between human beings and the environment. The case provides a good example for China’s HSR new town spatial organization, a climate-sensitive design concept that could be adopted in the design process so as to create a holistic and green urban form for the new town.

Example: Berlin

Located directly to the north of Berlin's Central Station, a 40 hectare development known as the Europacity Quarter intends to create a lively mixed-use urban area with living, working, culture and recreation (Europacity Quarter, 2014). The urban form and geometry, during the whole planning process, is highly related with the climate elements such as ventilation, solar radiation, water and vegetation (Milosovicova, 2010).

Suggested Climate-Sensitive Urban Design Elements	Explanation	Image
Urban Form and Geometry	Six-storey average height, aiming to allow sufficient shading as well as ventilation, and the height to width ratio of about 1 creates good shading/sun condition of the streetscape	
Ventilation	Use the existing channels, railway and water channels to cool the adjacent commercial area, provide scattered high rise buildings to enhance turbulent ventilation	Section: Air flow diagram  a. West: Let winds penetrate through loose buildings and opened urban blocks b. Heidestraße: Create turbulent ventilation with the help of scattered higher buildings c. East: Let winds penetrate through loose building blocks, supported by the shelter effect
Solar Radiation	Green all buildings and place rainwater catchment basins to achieve the cooling effect, shade streetscapes and open spaces with trees and vegetation	

Water and Vegetation	Plan parks and pocket parks, vegetated streetscapes and swales, plazas and building, water basins and water permeable surfaces that enhance the local cooling effect, minimize paved but non-vegetated areas	
Other	Build low ceilings to accommodate more use, use adiabatic cooling system in buildings instead of conventional air-conditioning systems	 Height of ceilings: Left: 22 m = 5 storeys á 4,4 m height (e.g. Berlin's houses at the beginning of the 20th century) Right: 22 m = 7 storeys á 3,1 m (social housing and Eco-Developments)

Table 6.18 Berlin Case Study

3) Luxurious Green Field index vs Limited Usable Public Spaces

Strategy

When asked about the most distinct advantage of new town compared with the old city, most people might consider a livable environment and immense green space. Suffering from the constant traffic jams and crowded living environment, urban residents are eager to breathe fresh air and enjoy public open space within close distance to home. A new town, undoubtedly, is an ideal place which could provide a pleasant living environment for them. Based on the rich natural resources, Wuxi East New Town aims at creating a 'New town in Garden' to provide a large amount of green space for people and lift the urban image through various landscape constructions (Jia & Ma, 2015). In the middle site, the overall planning area for green space has reached to 20 km² which amounts to nearly 45% of the whole site, and the

splendid green system mainly consists of four types of spaces, namely two large scale public parks, one linear waterfront landscape corridor, neighbourhood green spaces and green buffer land.

The first type is the potential public parks at the north and south boundaries (Figure 6.43). They are also the most considerable part of the whole green system. At the northern boundary, a series of small mountains form a fragmented green wedge and local government intends to integrate them into a relatively completed landscape system, providing a wild forest park for local residents. Construction intensity is planned to be relatively low and architecture layout tends to be dispersed because the majority part would be preserved as the forest park. And among those mountains, a dedicated site called Fenghuang Mountain would be developed as a ‘love theme park’ aiming at providing a wide range of love related facilities and attracting people from all ages. A considerable part of the Fenghuang site would be reserved for rose planting and orchard gardens. And the other part would be planned for a resort area with hotels, activity areas, a business club, etc. At the southern boundary, two separated hills are intended to constitute a modern cultural sports park aimed at providing various exercise spaces for the public. And the spatial strategies for it still concentrate on the



Figure 6.43 Public Parks in the Middle Site (Wuxi Xidong New Town Jiuli Riverfront Landscape Planning, 2010)

preservation and optimization of current green resources, so no highly intensive construction is allowed.

The second type of green space is the linear waterfront corridor. As the main river running through the middle site, Jiuli River has great responsibility to be transformed into an urban green lung to represent the sustainable urban image for Wuxi East new town in the future (Figure 6.44). More importantly, *“the waterfront area would not only possess a favourable ecological environment but also has an interactive relationship with local people and provide them with a good relaxing place. The whole spatial strategies are first of all, to create a continuous pedestrian linkage throughout the park. Secondly, to create a strong unified and iconic landscape that can be identified, and lastly, to weave the city together (quotation from DG2)”*, pointed out by one designer. The basic design language is ‘willow’ since Jiuli River which swings through the city is just like a willow branch. The willow could well represent the unique charm of the southern cities of Jiangsu Province. Specifically, the whole waterfront has been divided into various linear green parts with different areas of focus, and the focus is carefully combined with the surrounding urban function area. For instance, in the central business part, the waterfront space is designed as a central park and the summit of the linear landscape corridor which aims at enhancing the urban image of central business area and mitigates the sense of the tension of the CBD. Furthermore, it highlights the primary business axis originating from the HSR station. In the residential area, the waterfront space is planned as the ordinary community green land. In general, the divided linear waterfront spaces constitute a complete system of waterfront green space and in each part, a larger park or landscape node is set up to diversify the linear waterfront public space. The most significant green node is the Jiuli River Wetland Park situated at the west end of the waterfront corridor. Since the site is under a high voltage line, no urban function is allowed to be built here. Therefore, local government decided to turn it into a public wetland park to accentuate its ‘ecological’ theme. At present, it has become a green island of the middle site and forms a sharp contrast with the surrounding busy urban areas (Wuxi Xidong New Town Jiuli Riverfront Landscape Planning, 2010).

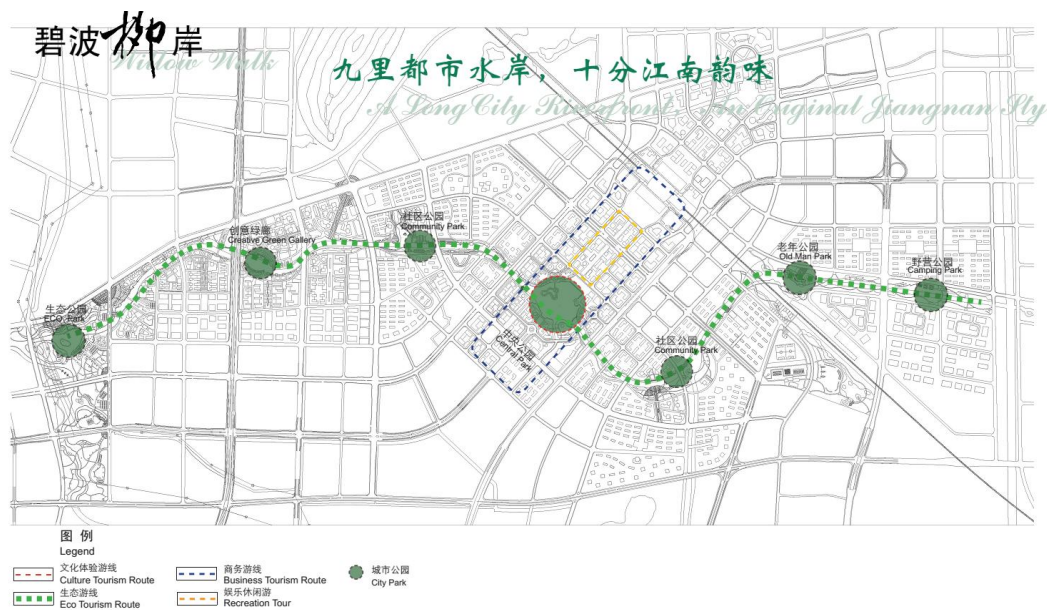


Figure 6.44 Planning for Jiuli River Waterfront Space (Wuxi Xidong New Town Jiuli Riverfront Landscape Planning, 2010)

In conclusion, the two types of green space in Wuxi East New Town collectively constitute a pleasant environment and considerably contribute to the government's intention of constructing a 'new town in park'. If realised in the future, the middle site of the new town would indeed be surrounded and penetrated by significant green land and would hugely improve the new town vitality and attract more people to live and visit (Table 6.19).

Green Space Planning	Site Plan
Urban Recreational Park---Planning for Cuiping Mountain Area 	

Concept Urban Design for Ecological Park of Fenghuang Mountain 	
Comprehensive Improvement and Planning for Baidan Mountain Area 	
Wuxi Xidong New Town Jiulihe Riverfront Landscape Planning 	

Table 6.19 Planning for Green Space in the Middle Site

Critical Analysis

Besides the two types mentioned above, there are another two types of green space which have not been paid great emphasis and would appear to be humble and mute compared with the outstanding boundary green wedge and waterfront corridor. One type is the neighbourhood park and another is the green buffer space. Figure 6.45 could show an interesting phenomenon of the green field change. The northeast part of the previous plan on the left clearly indicates several mini parks within residential areas while in the current plan on the right, the previously planned mini parks disappear. Furthermore, a large area of green field has been changed into a residential

area in the recent plan. According to an interviewee's explanation, local government expects that the area could become a high-end residential community due to the nearby mountainous resources. One planning officer stated that,

“government leaders of the new town are primarily concerned about the large scale parks and waterfront corridors because they are beneficial for urban image and could become the ‘image project’ for the new town. In their minds, the total green space area is already sufficient and no more mini parks are necessary. As a result, mini green space is only planned equally in the central business area but in large areas of residential community, where very limited neighbourhood parks or green spaces are distributed. However, from the local residents’



Figure 6.45 Green Space Reduction in the Middle Site (Dynamic Update of Regulatory Planning of Middle Site in Wuxi East New Town, 2012)

perspectives, these corridors and flashy theme parks are not public spaces and they could not be easily accessible and used by local residents daily due to their long distance. The potential users might be the businessman working in central area and upper-class residents living in posh apartments (quotation from PO5). And several interviewed member of the public also expressed similar opinions, with one stating that,

“the least favorite thing of the new town at present is, the park is too far away from my home, although we have basic activity places in the residential area, I still prefer go to big park to do some exercises. But the primary park is not within walking distance, and we don’t have sufficient nearby green parks or green land (quotation from MP2).”

Another type of ignored green space is the green buffer land along road, river and

railway. A large amount of buffer space has been reduced in recent plans. For example, the original planning green buffer along Zouma River (southeast of the map) (Figure 6.45) was 70m whilst the current plan is reduced to 20m which could merely covers the high voltage power line ((Dynamic Update of Regulatory Planning of Middle Site in Wuxi East New Town, 2012). And also, the green buffer along the western & eastern boundary and railway in the previous plan is much wider than the current plan. The most important reason, according to planning officers' opinions, is the profit from land selling, one officer pointed out,

“Once the buffer area of a block is reduced, the corresponding marketable land area is increased, and that means that a considerable profit could be obtained from the land selling process. Therefore, instead of preserving the relatively ‘useless’ buffer space, keeping them to a limited amount is an obvious spatial strategy for the green space planning (PO7)”.

In terms of the green space system in the eastern and western sites, a severe problem is that there is almost no concentrated neighbourhood green space planned in the industrial area. Since the industrial area is intended to be upgraded and converted to cleaner and more advanced industry, the overall working environment should be considered in advance. When looking at some other cases of well-developed industrial zones worldwide, the environmental design is integrated with functional area to a great extent, and the whole industrial zone, to a certain degree, could be regarded as an industrial park. This puts together the most advanced technology and the most comfortable and people-oriented environment in one place.

Besides the problem of ignorance of certain types of green field, another issue is that not all green spaces on the planning map are planned real green spaces in the future. Behind the beautiful drawing, the intention for an alteration of the function is conceived. For example, the green space in the southeast of the middle site is altered from previous farm land to park land. However, according to one planning officer's comment, the real motivation of the alteration is reserved for potential residential construction, since the construction on farmland is not allowed at all, while urban green space can be converted to functional urban area much more easily. Furthermore, the green space along Shanghai-Nanjing highway and along the boundary between the middle and the west site is just for appearance and seemingly systematic green

network. No specific plan is made for the green space realisation for certain areas. Hence, it seems like on the one hand, neighbourhood and buffer green space is reduced to a large extent, but on the other hand, some of the planned green space is merely a disguise for potential urban construction or so that the planning looks good.

Fortunately, despite the lack of planning for neighbourhood green space, the linear green buffer along main roads in industrial area appears to be pleasant. Wide road greening truly lifts the urban image and helps to purify the air (Figure 6.46). However, it hardly provides any usable space for local residents. Hence, they may stay as effective visual tools rather than practical urban spaces. According to several interviewees' explanation, local government has put great efforts into road construction and beatifying so as to create an attractive investment environment for private developers. Since in



Figure 6.46 Green Buffering Area along Main Roads in the Middle Site

China, one of the key elements to judge a city is the quality of road system, there is also a famous saying 'Want to be rich? Build roads first!' which vividly depicts the significant impact of roads on urban development.

In conclusion, although the intention of green space of Wuxi East New Town is to create a comprehensive, integrated point-line-surface green system, it is obvious that only large scale linear and surface green space has been carefully planned, to help the new town have a good looking green index. The practical neighbourhood green space is widely ignored which might be inconvenient for urban residents.

4) Fringe space disconnection

Last but not least, from the macro perspective, the green space system of the west, middle and east area does not link well and no specific plan is set for the coordination between each site. For example, the connection between the northern green corridor of the western site and the corresponding waterfront in the middle site has no clear

intention. Also, the green corridor along the rivers of the eastern site seems to lack a coherent connection with the linking area of the middle site. On the whole, the overall green space system has been treated as a divided area although they belong to an



Figure 6.47 Green Space Disconnections in Wuxi East New Town (Compiled by Author)

integrated natural network (Figure 6.47).

The Zuidas case (Table 6.20) presents an experimental example to show the concept for integration. From the beginning, the connection between each part has been put on priority which indicates the importance of an integrated urban development around the high speed railway station. China's problems at present, is the divided management and subsequent disconnection of different part of new town area. Therefore, the efforts made by Zuidas project team is worthwhile to learn.

Example: Zuidas Project---Dock Model

In order to prevent further unorganized development on the urban fringe, in 1998, the Amsterdam municipality in 1998 designed an integral development plan: Masterplan Zuidas (DRO, 1998) aiming at building up a world class business centre attracting international head offices that would compete with other European office locations, thus elevating the role of Zuidas in the region (Salet & Majoor, 2005; Vreeker, 2008; Bruinsma, 2008). Afterwards, with the background of urban transformation from mono-centric to poly-centric, the Zuidas area was re-designated not only as a business centre, but, more importantly, it would be a new city centre with high quality mixed-use (45%-45%-10% for offices, housing and other facilities) (Trip, 2007; Majoor & Schuiling, 2008). When completed around 2030, the area will include varied

functions to cater for people with different purposes and interests, making the area an exciting place to visit or live and also to pursue business.

In order to achieve the objective, a proper measurement is required urgently to address the separation caused by the central cluster of infrastructure in the middle of the area. Accordingly, three alternatives have been outlined to focus on the development of the central area and to provide different plans to deal with the infrastructure cluster. Among those plans, the dock model depicted the most ambitious and exciting picture for the future of Zuidas. In this model, a 1.2 km long tunnel will be constructed to accommodate all transportation infrastructure, moreover, an

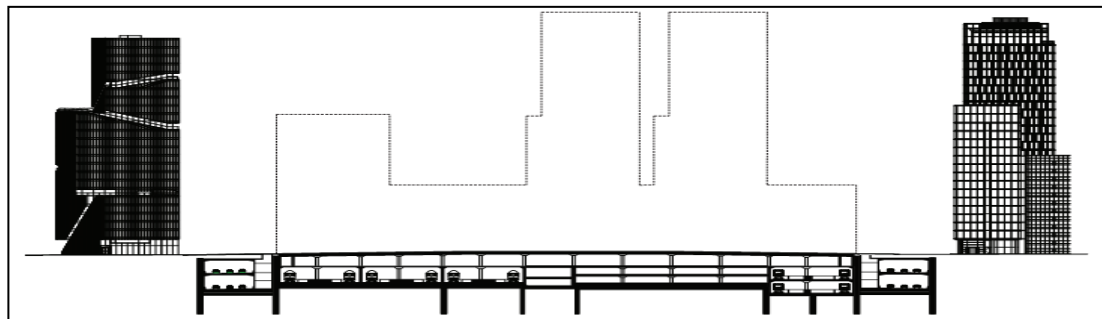


Figure 6.48 Cross-section of the 'Dock' (Zuidas Vision Document, 2009)

additional 930,000m² of real estate can be realised on top as an air-rights development (Figure 6.48). Compared with other alternatives, the 'dock model' would accommodate the largest volume of transportation and increase by 40% space for dwellings, offices and facilities, hence, more users and travelers would be attracted (Berg & Pol, 1998b; Bruinsma, 2008). On the whole, the main purpose of the 'dock model' is first of all, to remove the physical barriers between Zuidas Station and surrounding parts, which would contribute a lot to the integration of the whole district. Secondly, it will significantly increase land use efficiency and provide more space for concentrated business core development in the centre of the project. Furthermore, from an environmental perspective, the 'dock' will largely reduce the air pollution and traffic noise which would be essential to create an environmentally-friendly new district of Amsterdam (Zuidas Vision Document, 2009). Ultimately, a second compact mixed-use city centre would be created and at the same time, it could diminish the investment risk, since the office market is volatile but the housing market seems more stable (Majoer, 2008). Despite all the potential positive effects of

the abovementioned, the ‘dock model’, is still a more institutionally and financially complicated process and has been the central theme in ongoing complex negotiations during the past decade. Therefore, at present, the ‘dock model’ alternative is still awaiting construction and indeed, the auction of 60% of the shares to private parties has been postponed and, it is unclear when the auction will take place (Majoor, 2008; Bruinsma, 2008).

Table 6.20 Zuidas Case Study

6.4 Absent Development Strategies on Urban and Regional Scale

In this section, the relationship between the current development strategies of Wuxi East New Town with other urban areas and nearby cities would be evaluated. Specifically, the overall urban structure of Wuxi and the orientation towards key urban clusters will be explained. Then, in a wider context, the lack of interaction between each HSR New Town will be pointed out to show the severe absence of urban and regional cooperation.

6.4.1 Potential Position in Urban Structure

When looking at the whole planning picture of Wuxi, three different levels of development are clearly demonstrated. The first and foremost development level is the central urban area comprising the old city centre, Taihu new town and the tourism district. The second level is made up of four new towns standing around the central urban area, among those, Wuxi East New Town is one of the new towns which serves as the eastern gateway for the whole city. The third level consists of two clusters of small towns situated at east and west. Therefore, from the urban development strategy perspective, Wuxi East New Town is planned as, first of all, the strategic centre of Wuxi, radiating industry from the Beijing-Shanghai line, then, the regional transportation hub of the Yangtze River Delta, and thirdly the administrative, economic and cultural centre of Xishan District and containing the high-end industry. However, when investigating the specific development strategies of Wuxi East New Town, it seems that the new town is more ambitious than planned because it aims at so many industries such as economy headquarters, high-tech, cultural innovation,

business service, tourism, high-end housing, etc. And some of the industries are also conceived as the key point of other new towns of Wuxi. For instance, with regard to becoming a headquarters economy, local government has already planned to build up three primary urban business centres including the old city centre, Taihu New Town centre and Yihu centre, among the three centres, the old city centre mainly focuses on creating an urban public centre with a rich cultural connotation, and recently it strongly promotes the construction of a series of large scale urban complexes. For Taihu New Town centre, it aims at forming a potential urban CBD centre including a business centre, an administrative centre as well as other urban functions like conference, exhibition, sports and culture (The 12th Five Year Urban-Rural Construction Plan of Wuxi, 2011; The 12th Five Year Economic and Social Development Plan of Wuxi, 2011). Therefore, it is quite evident that the potential urban business centre would be concentrated in Taihu New Town and the old city centre. However, under the circumstance of high vacancy of the business rental market across the whole city especially in Taihu New Town, Wuxi East New Town is still ambitious to develop a new business area with around 2,000,000m² of building area. According to the response of most planning officers, they show many worries about the business market prospects of Wuxi East New Town and the potential fierce competition with Taihu New Town and the old city centre. Interestingly, government officers at different levels all express a great confidence about its attraction for business due to high speed railway. One top-level government official said:

“all we need is just time, the current vacancy is just temporary and quite common for every new town. Pudong New District of Shanghai, one of the earliest and most famous new town in China also went through a long period of hard times at the beginning, but, at present, no one would deny its great success. Therefore, for Wuxi East New Town, as long as we provide good infrastructure foundation and positive policy, I believe in ten to fifteen years’ time, it will definitely succeed (quotation from GO1).”

On the whole, it seems that on the one hand, government officers show great confidence in the business market of Wuxi East New Town, but on the other hand, planning officers are more concerned about its overly excessive strategy and uncertain future. Maybe it is quite hard, at this stage, to judge the development strategies but at

least, for such a large scale new town, Wuxi East New Town seems too ambitious and too optimistic about the impact of high speed railway on local development. Just as mentioned in chapter 4, the relationship between HSR and regional-economic development is often included implicitly or explicitly, high speed railway is at most a strong catalyst rather than a guarantee (Trip, 2007). Although office buildings turn out to dominate most proposals since profit can be obtained in short term (Bertolini, 1996), the reality is that the occupancy rate seems lower than originally expected because it is hugely affected by capricious financial markets. The business industry indeed has experienced apparent growth and a certain number of job opportunities have been created, however, inadequate rates of occupancy and the moderate performance of local companies still limit the overall economic development of the station area. And the overly optimistic prediction leads to a lack of overall assessment about its potential market construction area and its relationship with other new towns. It might be essential for local government officers of Wuxi to objectively consider the potential of East New Town and the corresponding reasonable orientation.

6.4.2 Potential Position in Regional Structure

From the macro perspective, the development strategies ought to be conceived within a larger picture, namely the regional view, since Wuxi is merely one city along the Beijing-Shanghai line and one of the core cities in Yangtze River Delta. However, unfortunately, there are no concerns about the connection with other cities through all the planning. When conducting interviews, the most frequent responses by planning officers is that although Wuxi wants to pursue integrated planning with neighbouring cities such as Suzhou and Changzhou, but they didn't respond. Therefore, they merely do some general research about the surrounding cities but on the whole, planning has been conceived inward rather than outward. A top-level government official explained the reason vividly, he said:

“in China, the basic political system is a feudal economy which means leaders in their own lands deal with everything separately rather than cooperatively. Unless for some particularly important issues such as a highway traversing two cities, that might be negotiated through dinner among top government officers in each city or coordinated via provincial officers, otherwise no virtual intercity cooperation would be seen (GO1).”

In respect of Wuxi East New Town, although at the beginning of location choice, it is concerned much about the geographical connection with the two nearby county-level cities of Suzhou, Zhangjiagang and Changshu, in reality, particular in functional planning, no specific coordinated development is demonstrated and furthermore, since there have been 18 planned high speed railway new towns along the Beijing-Shanghai line, no integrated research has been done about the potential relationship between each new town, it seems that each new town is ambitious to stand out among the competition and focuses on quite similar profitable industries such as business, real estate, tourism, etc. They merely pay attention to the grand planning about themselves rather than the whole regional picture. Therefore, new towns along the line are merely physically connected rather than functionally connected. There is neither dedicated regional organization to cope with the coordination between each new town nor any inter-city interaction through the planning and construction process.

By contrast, our neighbour Taiwan, as a new member of high speed railway family as well, has a comprehensive, regional-level cooperation and coordination towards station area development, aimed at utilizing urban character to a full extent and constituting a well connected, interactive regional network. Lille, as a most often mentioned case in high speed railway station area development, also shows great cooperation between different urban areas. But in China, the current disconnection and separation of high speed railway new town planning is quite severe and would definitely cause negative impact in the near future. However, the most frequent responses is that *“as long as we construct a good quality high speed railway new town and provide decent and sufficient infrastructure and public services, people would definitely be attracted here (quotation from GO1)”*, claimed by one government official. But the truth is that even for a prosperous city like Wuxi, the development speed of new town appears to be lagging far behind than expected, not only the current sale for business residential properties is not optimistic, meanwhile the concept planning for eastern site has been postponed temporarily. This phenomenon, partly could be attributed to the alteration of national policy which shifted from previous ‘speed and scale oriented’ to ‘quality oriented’, based upon the tone, all types of urban construction are forced to slow down and many ‘image projects’ have been prohibited. More importantly, the phenomenon is the natural outcome for this new round excessive urban extension campaign. In other words, the

speed of population inflow is much slower than speed of new town construction which led to current stagnation. From a long term perspective, it might be a good chance for Wuxi East New Town to reevaluate its development situation and find out its strength & weakness, then reconsider its potential position in a regional picture so as to adjust its current planning policy.

The Taiwan example (Table 6.21) has clearly shown an integrated and well-organized regional planning for all HSR station area development projects. From north to south, each station has its unique orientation based on local character. And also, a clarified timescale has been made by government to concentrate on certain projects within a certain period of time.

Example: Taiwan

Though the urbanisation rate of Taiwan has achieved over 80%, unlike other European countries and Japan choosing to put the majority of stations in old city, Taiwan government gave priority to the new urban area. As a result, most of the new HSR stations were planned on urban fringes or rural areas so as to boost development of untapped urban areas. However, from the transportation perspective, this peripheral location has led to a severe connection problem between station and urban centre and in return somewhat affects the ridership. Although the accessibility of station areas is hugely needed to be enhanced, the planning for industry development around station areas is still worthwhile to mention. During the planning period, the government made a great effort to introduce various industries according to local character and set up a holistic planning targeting at five main station areas, namely Taoyuan, Hsinchu, Taichung, Chiayi and Tainan. In order to optimise regional resources, stations from north to south would be expected to form an industry chain based on unique local conditions (Table 6.22). In the northern part, Taoyuan station would choose a business park and exhibition centre as its main industry since it has the advantage of the international airport. Hsinchu station, south of Taoyuan station, would focus on a biomedical science park based on its rich human resources from several universities and huge support from Hsinchu science park which possesses 150,000 staff. According to the long term planning, the biomedical science park and science park would cooperate together to become a strong industrial node to provide a solid foundation for the high technology development of Taipei, and finally the three cities

would be expected to form a new integrated functional region (Zhu, 2012). In the middle part of Taiwan, the Taichung station would aim at building a recreational and shopping park to provide adequate public facilities for tourists and opportunities for them to experience Taiwanese culture. Then, in the southern part, Chiayi station intended to promote its tourism industry based on rich local natural resources such as Yushan national park, Ali mountain, Taiping scenic spot, etc. At the southern end, the station of Tainan would construct an eco park associated with tourism, green agriculture and leisure to develop a diversified new life circle (Council for Economic Planning and Development, 2004).

Station	Area (m ²)	Function
Taoyuan	4,900,000	International Business Park
Hsinchu	3,092,200	Biomedical Science Park
Taichung	2,733,500	Recreation and Shopping Park
Chiayi	1,352,400	Leisure and Travel Park
Tainan	2,997,200	Eco Park
Total	15,075,300	

Table 6.22 Urban Function of Each Station Area from North to South in Taiwan (Zhu, 2012)

Besides those stations in the metropolitan areas, government of relatively underdeveloped areas with connection by HSR such as Miaoli, Zhanghua, Yunlin, etc. also adopted corresponding policies to promote local government and meanwhile to prevent the ‘drain away’ effect from other major cities. Considering the relatively weak economic situation of those areas, the orientation for station area development primarily focuses on optimal utilisation of local cultural uniqueness. For example, Miaoli would set up a Hakka cultural centre to publicize local art work, Changhua intended to develop a flower art centre, and arrange flower exhibition and auction regularly. Yunlin would focus on the development of educational exchange centre for teachers and civil servants (Council for Economic Planning and Development, 2002). On the whole, the policy of station area development is concentrated on regional specialization based on superior local resources rather than homogenous competition, furthermore, regional cooperation between different cities would be hugely expected. In the near future, with the connection by HSR, Taiwan government intends to build two strong life circles in north and south area respectively, and in the end the two

circles would be expected to merge together and the so called ‘one-day commuting circle’ would form (Feng, 2011) (Figure 6.49). In addition, through a comprehensive industrial planning for different station areas along the line, a completed industry chain including various modern high technologies in accordance with local character would emerge. The different industries might be complementary to each other and stimulate the local and even the regional economy significantly.

With regard to the timescale of development, considering the current foundation and potential, three groups were classified, namely cities with good development potential and foundation: Taipei, Kaohsiung; cities with good development potential but current condition needs improvement: Taoyuan, Hsinchu and Tainan; cities with inferior condition and development potential: Miaoli, Changhua, Yunlin and Chiayi. Accordingly, the second group of cities would be put on top agenda for development while the first rank cities would be the last (Feng et al., 2003). From this point, it is

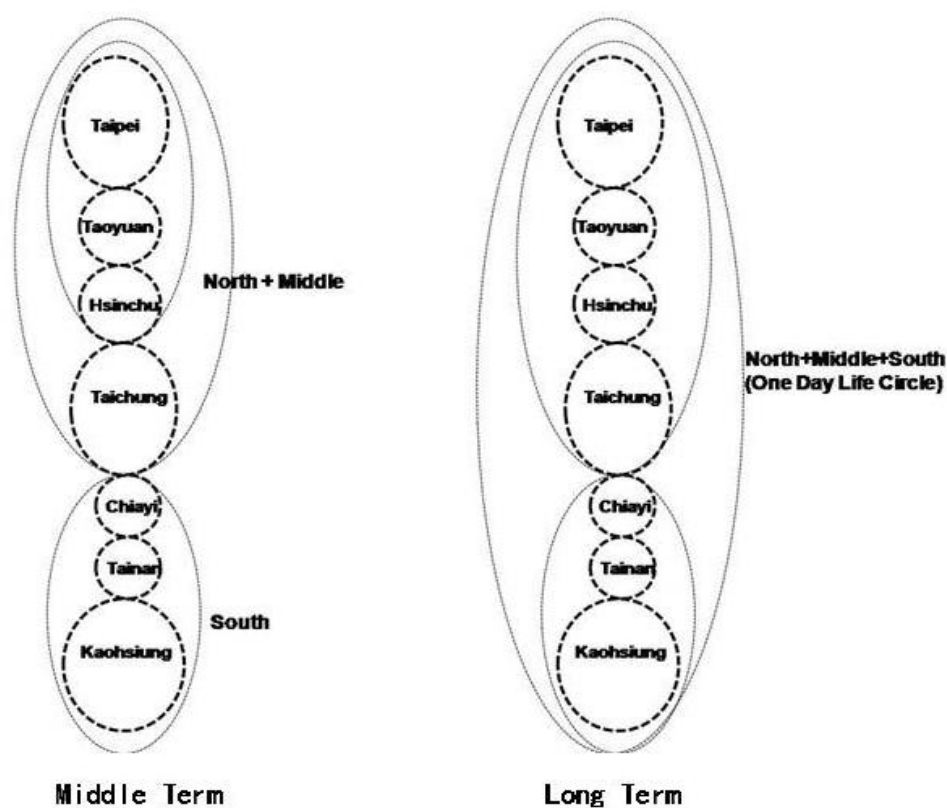


Figure 6.49 Spatial Structure in Middle Term and Long Term (Feng, 2012)

clear that the local government pays much attention to balance regional disparity and makes great efforts to boost undeveloped areas via strong engine. Following a clear development orientation for different station areas, a series of accompanying policies were also adopted including the establishment of dedicated organization, tax reduction and relevant sale strategies.

Table 6.21 Taiwan Case Study

6.5 Advantages and Challenges

While the Wuxi East New Town is undergoing fast development and has become the role model in Chinese HSR New Town construction, great challenges have also emerged during the process. In this section, both advantages and challenges will be explained so as to critically estimate the current development situation. More importantly, it would help to provide guidelines for the proper development for this new type of urban extension.

6.5.1 Advantage

1) Advanced Planning Intention

With the construction of Wuxi East New Town, planning, from the station location choice to the specific strategies for new town development, has always been given a priority by local government. According to interviewees from the planning office, around 40 million RMB were spent on 29 plans in total, ranging from an overall concept plan to a specific district plan, from an underground plan to an overground plan. Moreover, all of the design teams were strictly selected and most of them are from world-renowned design companies such as SOM, RTKL, ATKINS, etc. Since the new town was established in 2009, a dedicated planning office was founded to take the responsibility for the new town planning organization. According to one planning officer's description, workload is quite intensive and, particularly in the first three years, several meetings or reports would have been arranged every day. In 2012, primary planning was completed. And through the analysis of plans for new town development, it is evident that the general concept for new town is quite comprehensive and ambitious. Current natural resources of all kinds have been taken into consideration carefully and have been fully exploited in the planning. The overall planning shows a promising picture of the potential new town around the high speed

railway station. Moreover, it will become another key urban area in Wuxi even along the Beijing-Shanghai railway line. Generally speaking, the planning organization has shown a positive attitude from local government. It indeed paves a solid foundation for further development and sets a good role model for other cities.

2) Priority for Infrastructure and Environment

Unlike the typical new town construction process in China which starts with massive house building and industry, Wuxi East New Town put great efforts into creating a large area of green parks and dredged waterways of 25 km ahead of other construction (Zhang, 2015). Until now, 1.4 billion RMB has been invested in ecological construction and a relatively systematic green network has been formed consisting of neighbourhood parks, a linear waterfront and ecological parks (Jia & Ma, 2015). Furthermore, during the process of attracting new industrial projects, an assessment system has been adopted to critically review the industrial standards including their efficiency and impact on the environment. Therefore, low-end projects which might be unfriendly to the environment would be banned (Xishan Economic & Technological Development Zone, 2014). In addition, a linear landscape along several newly built main roads is not ignored, and at present, the road landscape has been well represented through continuous linear green space. In June of 2015, a public event of ‘walking around Juli River’ was organized by local government to encourage the public involvement and enhance the popularity of new town. And the overall comments appeared to be quite positive as most people appreciated the green environment provided. Apart from the friendly environment, the infrastructure and public services such as road construction, education and health facilities, shopping facilities, etc. could also be considered as of a high standard although the ultimate usage situation is still uncertain. On the whole, planners and officers had made great efforts to build up Wuxi East New Town as a prosperous and people-oriented town through the improvement of the environment, a supply of good quality public services and infrastructure.

6.5.2 Challenge

1) Institutional Segregation

Through searching interviews with related planning officers, for Wuxi East New Town, one of the biggest barriers might be the institutional segregation and the

consequent planning segregation. The East New Town consists of three parts which belong to two independent institutions, namely the Commission of Business District in Wuxi East New Town which takes charge of the middle site and Commission of Xishan Economic Development Zone which takes charge of the west and east industrial zones. And due to the widespread criticism about the overly large scale of new town construction, which extends to 125km² and the possibility of unlimited urban sprawl, the government officers have decided to refer to the middle site as the actual high speed railway new town, particularly the core area of 10km² and the rest would be merely regarded as industrial support so as to avoid the social and media pressure. However, when exploring the specific planning of each site, it can be seen that no sufficient coordination has been made. For instance, since the middle site has already set a high target for business development, the western and eastern sites still intend to build their own gorgeous business centres regardless of their industrial support role within the whole new town planning. The institutional segregation directly results in separated planning and competition between each institution. According to one planning officer's comments:

“each institution deals with specific issues in its own territory while a dedicated planning office takes responsibility for the planning issues of the three sites. Only when some conflicts happen do officers of each institution gather together to settle it. On top of that, for certain high level infrastructure projects such as a highway traversing the whole new town area or hospital, a higher government sector, Xishan District, would be in charge of them (PO9)”.

That means, although the planning issue of the three sites belongs to one institution, there has no integrated planning for all of them, planning for each site hugely prioritizes its own interest rather than considering the whole new town development. Moreover, the implementation process of each site is in the hands of different institutions which might bring about certain obstacles or even conflicts in the future. Fortunately, above the two institutions, government officers of Xishan District could coordinate some issues, but the whole process would take quite a long time and require many conferences. Hence, generally speaking, the new town development, to a certain extent, could be regarded as three separated development plans which are geographically put together.

2) Government Dominated Strategies

Although in many aspects, Wuxi East New Town has done well in providing a people-oriented new town with a sufficient and good quality supply of relocation housing, a decent waterfront environment, thoughtful public facilities, etc., from the planning perspective, it is still an internal procedure which has been dominated by government officers and severely lacks public involvement. One planning officer described the situation as: *“mayor led, sector implemented and the public totally disappeared (quotation from PO7)”*. Through the whole planning process, the final public notification procedure online or on site is the only way open to the public. However, according to interviews, both planning officers and government officers admitted that the notification period is just a ritual and most of the time very few people take any notice. Therefore, the new town planning, to a large extent, is a tool reflecting government officers' intention particularly the top officer's. In China, the flow of officers happens quite often which means they do not need to take the responsibility of decision consequences. This trend, to a great extent enables officers have more freedom to be ambitious even unrealistic towards urban development. As mentioned in chapter 5, the primary motivation for new town construction in China is economic development demand, land selling profit, cadre assessing system and political slogan convention. And the high speed railway new town, to a large extent could be regarded as another round of extensive new town construction which are promoted by similar motivation with other new towns and constructed in a government-led way. A top-level government official stated that:

“Government is forced to sell land due to the regime. Local government has heavy financial burden to provide all public facilities. Therefore, we have to borrow a huge amount of money from bank, and pay back by land selling profit. For example, it takes around 300 million RMB to provide all necessary infrastructures to 1km² of land, and we can get 1 billion RMB through selling. After that, all the profit we make will be invested in public facilities and infrastructure. I think that's a good way to promote fast urbanisation and improve urban image in a short period (quotation from GO1).”

Therefore, from local government's perspective, getting land profit is still their priority and under the government-led new town construction process, the profit could be realised to a full extent and meanwhile bring huge benefit for government officers'

political credits.

In terms of public participation, from both the planning officers' and government officials' perspective, it's significantly insufficient. Just as one planning officer stated,

“the low involvement of the public cannot be completely attributed to the domination of the government, because most ordinary people merely care about issues of their own, such as house removal, construction of hospitals and schools, etc. For the overall planning or concept planning, their own knowledge cannot achieve the required level and in any case, they don't care that much. Therefore, due to the political context and a limited knowledge on the part of the common citizens, new town planning is completely in the hands of local government (quotation from PO4).”

As mentioned in chapter 3 and 4, the new town or station area development project is a complicated process which is filled with various actors and interests conflicts, it needs a strong leadership with a long term commitment, positive policy and various participations, and to build up a foundation of open dialogue, collaboration and to ensure sufficient trust between different parties. Apparently, Wuxi East New Town, as the pioneer and role model of high speed railway new town in China, it fails to achieve that at the moment.

The following two examples (Table 6.23, Table 6.24) show a general picture of the public participation process of European high speed railway projects, although to a certain extent, they are still considered to be elite-oriented, at least, great efforts have been made during the consultation process. China should and have to learn valuable experiences to improve the current autocratic decision-making process.

Example: Zuidas

Due to the complexity and enormous financial risks involved in the project, Amsterdam City Council is unable to undertake the project alone and needs partners to share the risks. Hence, Zuidas is being developed as a cooperation between the public and private sector. The city government in partnership with private sector investors is taking the lead for the 'flanking development' whilst the central 'dock' and infrastructure development are mainly in the hands of the national government and the local municipality (Majoer, 2008; Pol, 2008). All partners will be included in

the Zuidas Dock Company in which public bodies occupy the minority and private investors take the major shares and risks (Heijden, 2009). On the whole, Zuidas could be regarded as a market-led project supported by local government with only marginal regulation (Majoor & Schuiling, 2008). However, while the cooperation looks well organized, due to the extremely high risks, prospective investors threatened to back out and called for more control of the project, demanding investigation into possible fraud related to the construction. In addition, a number of experts also question whether a large-scale office location of shiny sky-scrapers is really necessary while there have been many problems needing addressing in the city such as taxes, immigration policy, education, etc. (Agora, 2008).

Apart from the debate among investors and academics, a number of participants involved in the process who have played a positive role to promote its development such as the Green Business Club, Hello Zuidas, WTC Business Club, Zuidas Partners, Amsterdam Region Business Association (ORAM) and VU Connected. Together, they represent a wide range of interests and organize various activities like lectures, debates and symposia throughout the project to promote the smooth development of Zuidas. However, the lack of connections with the social, civic and cultural domain is obvious since more focus is concentrated on economic and technical aspects. As a result, it has failed to be connected to the wider public (Majoor, 2008). Great efforts were made by the government to involve nearby residents and other social players in the process of the first master plan and urban design vision through a large number of informal public hearings (1998 and 1999). Public participation, however, seems to have become less important lately, and the enormous financial pressure associated with the very risky ‘dock model’ might result in a less ‘open’ system cutting off public involvement and scrutiny in the future (Majoor, 2008).

Table 6.23 Zuidas Case Study

Example: Euralille

Euralille has demonstrated strong public leadership, integrated levels of government and powerful technical elites (Ashford, 1983; Newman & Thornley, 1995). Among all

actors, the most prominent are the city of Lille and the Communauté Urbaine de Lille (CUDL), representing 80 municipalities. In particular, Pierre Mauroy, the mayor of Lille, the president of the CUDL and former Prime Minister, played the key role in the whole process and was the link and psyche between various participants in realizing the project (Bertolini, 1998; Pol, 2008). Therefore, Euralille could be regarded as a government-led project controlled by very strong leadership whilst being supported by private investors.

During the development process, the Euralille Société d'Économie Mixte (SEM) was established in 1990 to organize the negotiations between public and private actors (local and regional governments 54%, banks 40%, SNCF 3%, chamber of commerce 3%) and to take charge of the realisation of project (Bertolini, 1998; Newman & Thornley, 1995). This is therefore a complex arrangement and several points during the management process are worth highlighting since they contributed a lot to the cohesion of the whole team and guaranteed the support and acceptance by outside interests. The innovations comprise: Japanese-style quality circles (groups of selected experts to give advice on economic development); communications and cultural development in the project; opinion polls among the local population; discussion forums; and public conferences with experts. Indeed, during the first two years' of planning period, one third of the budget was spent on information and publicity (Bertolini, 1998; Newman & Thornley, 1995). Furthermore, considerable attention was given to other municipalities in the Lille region as they feared the Euralille project might have negative effects on their own development. Wider economic development strategies including distribution of functions between different towns were therefore formed. Lille, for instance, was viewed as a business centre and Roubaix as a centre of communications (Stevens, 1993).

Table 6.24 Euralille Case Study

3) Excessive Construction and a Lack of Correction and Risk Evaluation

It has been 5 years since the beginning of Wuxi East New Town construction, and obviously, the image of the new town has transformed a lot and moreover, exciting

news is still expected. However, besides the seemingly prosperous development, problems or even risks cannot be ignored. First of all, the excessive construction of residential and business properties led to the current high vacancy rate. In China, urban development significantly relies on the overall political policy. In the first three years, due to the supportive policy, developers were overly confident and enthusiastic about the potential of East New Town, and consequently, they hastily entered the middle site and began the construction. Through the review of planning documents, the case study research about the impact of high speed railway on urban development appears to be very biased and overly optimistic. Apparently, such a subjective analysis is largely based upon the great confidence from both government officials and private developers. However, with the transition of authority of national top leaders, urban development policy shifted from ‘quantity and scale oriented’ to ‘quality oriented’ which results in a widespread downturn of urban planning and related industries. Moreover, the previous large-scale urban construction has led to a longer period of market absorption. Therefore, Wuxi East New Town stepped into a relative cooling down period. This on the one hand, would give developers more time to address the current vacancy rate problem, and on the other hand, enables local government to adjust the situation of overly excessive construction. According to the information from one planning officer, the overall evaluation of new town development in the past five years will be undertaken. This means until now, there has been no surveillance system to assess the outcome of specific strategies, and consequently, no correction strategies have been set up in the first five years. Furthermore, no relevant risk evaluation has been or will be done. One planning officer said:

“for local government, the money for new town construction is mainly from bank mortgages and the sale of land, and since banks are also nationalized, the risk about cost and profit has never been carefully considered and evaluated (quotation from PO8).”

In conclusion, although a wide range of planning has been done, there have been no evaluation and correction strategies for new town development of every phrase, since most planning is primarily concentrating on creating a good looking new town rather than addressing problems which occur in the process. As mentioned in chapter 4, the urban development associated with high speed railway station is a long, complicated and gradual process, the outcomes, either benefits or harms it might bring would be

realised over decades. It needs a framework which could allow adaptation and flexibility over time. It is important to foster a nature of continuous questioning and meanwhile to leave sufficient room for change (Independent Transport Commission, 2014). The whole system should be an ‘open system’ being continuous, unstable and evolving rather than a ‘closed system’ with fixed and rigid measurements (Independent Transport Commission, 2014; Sennett, 2008). Wuxi East New Town, at this stage, appears to be constructed in a hotheaded and extensive way which forces government to overly rely on land selling profit and severely lacks stepwise strategy and subsequent correction.

The example of HS2 (Table 6.25) in the UK shows a relatively systematic consultation process consisting of various aspects. Basically, from the beginning of the HS2 concept, a wide range of parties and public has been deeply involved in the process, although there has been tremendous dispute throughout the consultation, great efforts have been made to balance interests from all parties.

Example: HS2 Debate and Consultation Process

As the railways in UK are becoming busy and crowded, more efficient long distance rail has been required to meet the demand for the potential increasing 10 million population over the next 25 years (MP, 2013). As the result, High Speed 2 (HS2) is planned between London and Birmingham (First phase) as far as Manchester and Leeds (Second phase). The new rail link is designed not only to ease overcrowding journeys by providing more frequent and faster services, more importantly, it is expected to boost regional economy and help to balance the disparity between north and south of England. Around 32.7 billion pounds is expected to spend, and at least 100,000 jobs will be created (Independent, 2013). However, this mega project has triggered fierce debate across the whole country since it was released. The good thing is, from the beginning of the project, a comprehensive consultation system has been established to request for comments from public and professionals. The consultation covers various issues ranging from economic benefit, environmental impact, safeguarding, community engagement, civil engineering design, etc. Different team has been set up to deal with issues mentioned above, and a series of reports have been and will be released regularly to update information for public. Basically, the whole process is open and transparent although there has been much debate between different parties.

Debate on Economic Benefit

The first key issue among debate is concentrated on whether the huge investment is worthwhile and whether the optimistic economic benefit expectation will be realised in the end?

Proponents of the HS2 believe in short and medium term, it will relieve great pressure on north-south links and free up enough capacity on existing rail lines and better enable rail connectivity in the 'business-to-business markets', at the same time, local economy will be stimulated and areas which have been neglected in the past would gain great opportunity to develop. According to the report made by KPMG on behalf of HS2 Ltd, it claims that HS2 could generate £15 billion for British economy every year in 2037 and the improvement in productivity would be expected to continue in the following years (KPMG's HS2: The Regional Economic Impact' Report). In the long term, rebalance of Britain would be achieved and the overly dependence on London and South East would be fundamentally changed. Therefore, for Britain, if it is going to stand out on the international stage in the 21st century, HS2 is an indispensable tool to provide the engine for its development and strengthen the society by better connection, it is also believed to be a precious treasure for next generation (Department for Transport and High Speed Two (HS2) Limited, 2013).

Despite of the alleged substantial benefit, at the same time, opponents of the project cast great doubt about the necessity for HS2 development. First of all, the new technology popularity means that people will not need to travel as they will communicate through video-conference more often in the future. Therefore, the forecast of future demand takes no account of the rapid spread of electronic communication. And even if the HS2 is realised, it just looks to be a white elephant since it merely enable people to get to Birmingham 20 minutes faster than before but cost much more (Whitelegg, 2013).

In the second place, as the estimated budget for HS2 is £34 billion, that means the cost for per household is over 1000 pounds (Independent, 2013), even if the expected 100,000 jobs would realise, each job costs £34,000 while the normal cost per job figure for employment created through regeneration projects would be only £32,000,

hence, opponents argue that HS2 is absurdly expensive in employment creation. Furthermore, UK has many severe problems like shortage of houses, high level of unemployment, energy crisis, etc., why are high speed trains being prioritized (Barrie, 2012; Geddes, 2013b). Even if it is necessary to improve transport efficiency, a combined network electrification, complementary enhancement or a selective re-opening program could be achieved more quickly and less costly than HS2 and moreover, these measurements are believed to have more widely economic impacts across the country (Geddes, 2013c). In addition, critics also point out that new investment would more likely induce business relocation rather than create new economic growth, and improved competitiveness may not mean more jobs, sometimes, it might mean the reverse---more output produced by fewer workers (Geddes, 2013a).

Thirdly, with regard to the intention for north-south rebalance, a large number of experts say that the existing most developed area---London, South East and nodes around few stations are likely to be the primary beneficiary of HS2. And the international experience has shown that new transport investment benefit the dominant economic centre which they connect (Geddes, 2014). Then, on the whole, opponents figure the HS2 project is an overblown rhetoric about economic growth, jobs creation, reducing the north-south divide and making the nation more prosperous, but in fact, it's a means of no necessity, low cost-benefit ratio and biased benefit. It may thus serve only narrow geographical and sectoral interests, and accentuate, not break down the North-South divide (Geddes, 2011; Whitelegg, 2013).

Debate on Environment Policy

Apart from the economic issue, environmental impact of HS2 is another hot spot issue which stimulates much debate and doubt. HS2 Ltd's Environmental Statement declares that the main environmental aim is "*seeking to achieve no net loss in biodiversity at the route-wide level*" (HS2 Ltd, Environmental Statement, Para 9.8.6). And moreover, the National Planning Policy Framework states that, "*If significant harm to biodiversity resulting from a development proposal cannot be avoided, adequately mitigate, or, as a last resort, compensated for, then planning permission should be refused*" (Biodiversity Offsetting in England Green Paper, 2013, p.24).

However, at the same time, critics claim that the Environmental Statement (ES) is misleading public and downplaying all the negative effects of the HS2 project and it also exaggerates the capability of HS2 Ltd. Specifically, since ‘mitigation’ and ‘compensation’ measures will be adopted if local environment is affected, however, there is no guarantee of the delivery, and with a political intention to reduce the cost, it is believed that the uncertain budget for compensation and mitigation would be the first to be dispatched in any cost-cutting measures. Even places which have been claimed to be hugely affected do not benefit from any mitigation recommendations (Joe, 2014).

With regard to the debate about the potential reduction in emissions by using HS2 rather than cars and airplanes, many opponents say, at best, the savings are likely to be relatively small since greater emissions would occur in construction and in particular using of cuttings and tunnels (Authority of the House of Commons, 2014). Furthermore, many areas affected by HS2 already have air quality problems, the construction of railway could have negative impact on large number of people especially the existing respiratory or cardiovascular population. What is worse, the dust and noise may lead to mental health stresses which calls for urgent installation of window and building cleaning, visual replacement like plants etc. Besides those potential negative impact abovementioned, there still have been large number of issues need to be settled such as the usage of water and ecological resources, flood risk evaluation, preservation of valued landscape, country park and ancient woodlands, etc. But the disappointing thing is the ES document just provides an overly simplistic view or even ignore them equating it having minimal impact (Joe, 2014; Watts & Mason, 2013).

Risk Management

A framework of risk management has been set up to provide guidance that could help organizations to arrange risks. Basically, four types of risks are defined as internal, external, strategic and major projects (Table 6.26). The board has to manage each type of risk, as well as highlighting the most significant risks and to address them. In order to address the four types of risks, three elements---building blocks, routine processes and periodic activities---are regularly found in an effective risk

management arrangement. Regarding the role of risk management, ministers, the board, the accounting officers, and the audit & risk assurance committee would actively take part in the process to ensure the effectiveness of risk management (Table 6.27).

Type of risk	Features and approaches	Examples
 Internal	These are risks over which the organisation has some control, for example risks that can be managed through internal controls and, where necessary, additional mitigating actions. This often involves traditional risk management, such as risk registers, controls and assurance.	• Fraud • Health & safety • Capacity & capability • Data security • Delivery partners
 External	This focuses on big external events/perils and then considers how to make the organisation more resilient to such events, in part because of difficulties on assessing likelihood ² . A tried and tested approach to managing external risks is through considering the impact those external events could have on infrastructure, finance, people, operations and reputation. A common example of a resilience framework for infrastructure is a business continuity plan.	• Economic downturn • Terrorist attack • Extreme weather • Cyber attacks
 Strategic	This third element concerns the organisation's raison d'être and key objectives (such as the organisation's enduring purpose and the objectives set out in the Single Departmental Plan), identifying the principal risks to the achievement of those within a set timeframe. For some this could be the lifetime of a parliament. Risks in this area would be accompanied by regularly monitoring and adjusting interventions, as necessary. Forward-looking charts are often helpful here.	Can be: • immediate impact risks to the organisation's ability to continue operating, e.g. loss of customer data; or • slow-burning risks that grow and eventually prevent delivery of objectives, e.g. staff turnover or leadership capability.
 Major projects	Major projects form such a critical part of the plans for many government bodies. Experience suggests that one or two critical projects for that organisation should be considered at board level in their own right. The key is to only report to board level on the two or three that really matter. This should be via whatever tools, techniques and reporting are appropriate for each.	These risks will be specific to the major project in question, and could involve: • shifting requirements • slippage in delivery timeframes • failure to deliver

Table 6.26 Four Types of Risk (Management of Risk in Government, 2017)

Post	Role (with regard to risk)
Ministers	Set the direction against political imperatives and articulate a high-level appetite for the risks to those imperatives.
Accounting Officers	Should set an appropriate tone from the top, for example by articulating risk appetite, championing and driving the effective management of risk and ensuring the risk function is supported in carrying out its role.
The Board / Senior Executive Team	Should support the Accounting Officer in articulating risk appetite and by leading the assessment and management of risk.
The Audit & Risk Assurance Committee	Should support the board and Accounting Officer by reviewing the comprehensiveness and reliability of assurances on risk management.
Managers (part of the 1st line of defence)	Should actively identify and manage risks as part of their everyday business, escalating them promptly as and when necessary.
The Risk Management function (part of the 2nd line of defence)	Should support and facilitate the organisation's management and oversight of risk. For example by building the organisation's risk capability and defining the organisation's risk management practices and framework.
Internal Audit (part of the 3rd line of defence)	Should provide independent and objective assurance on the effectiveness of the organisation's risk management arrangements, and share good practice through comparative assessment.

Table 6.27 Role of Risk Management (Management of Risk in Government, 2017)

Table 6.25 HS2 Case Study

6.6 Chapter Summary

Wuxi East New Town, as the pioneer in the HSR new town movement in China, has experienced nearly six years' intensive development. Through the process, considerable achievements have been made whilst many problems still occur (Table 6.28).

In node value, the location choice appears to be reasonable and compatible with the overall urban development plan although it might restrict further development for certain urban areas. The accessibility, although to a certain extent seeming not quite

sufficient at present, the planning intention considers a diversified integration of highly effective public transportation and environmentally friendly non-motor transportation with the construction of dedicated tourism route, underground vehicle circulation, bicycle rent point, etc. However, the potential connection with the airport and nearby cities still remains insufficient which might possibly have a negative impact on the development of the new town.

In place value, from the positive perspective, first of all, the new town has provided a pleasant natural and living environment for local residents with plenty of green land and high quality private and housing. Then, the high standard public service has been and will be offered in a relatively equalized way. Thirdly, a large number of relocation housing has been provided for local people, and diversified commercial and business facilities have been or will be built in the core area. Furthermore, there has been strict spatial guidelines for the core area which could hugely guarantee its urban image. From the negative perspective, the strategies in industry especially in the commercial and business sector tend to be unrealistic and lack the deep and careful concern about the wider context of the whole city and even the regional area. Then, there has been no overall spatial organization for the whole new town area and no connected planning for each part of new town area, furthermore, the neighbourhood green land is severely insufficient which hugely neglects the real demand for the daily use of local residents. Thirdly, the lack of concern for social communities, to a great extent reflects the physical way of new town construction. In urban scale, the absence of development strategies at the urban and regional level hugely imposes a threat to the overall development of Wuxi and the coordinated regional development. In conclusion, the Wuxi East New Town, on the one hand possesses an advanced and comprehensive physical planning and has a high quality of infrastructure construction, but on the other hand, it has big problems in institutional segregation, government dominated planning process, overly excessive construction speed and the lack of risk evaluation. The East New Town of Wuxi, to a large extent targets on middle and upper class rather than creating a mixed and balanced society.

	Advantage	Disadvantage
Location Choice	• Reasonable; • Compatible with the overall urban development plan	• Restrict further development for certain urban areas
Accessibility	• Diversified integration of highly effective public transportation; • Environmentally-friendly non-motor transportation	• Insufficient connection with the airport; • Insufficient connection with key tourism spots and nearby cities
Diversity	• High standard public service; • Sufficient relocation housing; • Diversified commercial and business facilities; • Industrial upgrade intention	• Homogeneous industrial planning; • Lack of public housing; • High vacancy of private housing; • Unrealistic commercial and business strategy; • Insufficient regional coordination; • Insufficient concern for social community and different group; • Institutional segregation; • Government dominated planning process; • Lack of risk evaluation
Spatial Organization	• Pleasant natural and living environment; • Strict spatial guidelines for core area	• No overall spatial organization; • Unrealistic planning for certain areas; • Insufficient neighbourhood green land and green buffer land; • Fringe space disconnection

Table 6.28 Summary of Wuxi East New Town Development Strategies

Part IV Summary of Research

Chapter 7 Conclusion

The final chapter summarises the results of the research which assist with presenting a holistic picture of what the study has achieved. The chapter covers five primary sections: research synthesis, comparison, criteria for optimal HSR new town development, matrix of proposed HSR new town strategies, and limitation & future research perspective in the field. The research synthesis section will give a brief conclusion of research findings and summarise the limitations of current HSR new town development. Then, in the comparison section, an attempt will be made to compare the different experiences in various countries and China's experience in the development of high speed railway station areas. In the third section, criteria for optimal development strategies will be proposed, based on critical analysis in previous chapters. Fourthly, a matrix is created to clearly demonstrate the key points of these strategies. Finally, the limitations of current research will be pointed out and recommendations of directions for future research will be made.

7.1 Research Synthesis

7.1.1 Research Statement

In order to establish the optimal development strategies and guide the rational development process for the newly emerged 'HSR New Town' in China, the research has, first of all, comprehensively reviewed the international new town development and international station area development, this is because there is no existing 'HSR New Town' example to explore. Based on the analytical framework consisting of node value and place value, valuable experiences are drawn from international development, thus providing effective guidelines for China's development. Then, through critically examining the general new town development of China and current development strategies of the 'HSR New Town', an overall understanding of China's new town & 'HSR New Town' problem has been obtained to pave the foundation for a deep case study. Thirdly, a deep and critical investigation about Wuxi East New

Town has been conducted to reveal the existing and hidden problems of ‘HSR New Town’ in China, to enhance the awareness of severe threats associated with the current ‘blind’ development across the whole nation. Due to the lack of well-formed practical guidance and sufficient relevant literature at present, the research has comprehensively reviewed a wide range of international theories and best practice. This provides a matrix of a proper new town development and gives a framework for the high speed railway station area development. Then, the findings from international experience have been integrated and combined with findings from China’s unique urbanisation process and case study. Finally, the research develops a new criteria which would be more capable of adapting to China’s own social and political background.

7.1.2 Conclusion of HSR New Town Development Strategies in China

As the sub-objectives have been achieved gradually, the research findings, in the end, contribute to answer the primary research question: **What are the current development strategies of China’s HSR new towns and how are they conceived in relation to node value and place value?**

1) Inappropriate Location Choice (Node Value)

It appears to be clear that in China, when deciding a location for a new high speed railway station, local government tends to put it on the urban fringe or in a rural area regardless of its urban scale and urban development demand. In big cities, the new station tends to be put on the urban fringe and the location seems to be in accordance with the overall urban development plan better, while in many small cities or even county-level cities, the majority of new stations would be put on remote rural area which imposes a huge gap between potential HSR new town and the existing urban area. This trend, to a certain extent, reflects the high yet overly optimistic expectation of local government on urban development through the operation of high speed railway. More importantly, it shows the lack of an objective and thorough understanding of local government towards the urban condition and the subsequent trend towards a biased location choice. In the opinion of local governors, the advent of high speed railway would be a big benefit for urban economic development, rather than providing convenience for citizens, therefore governors would try their best to grab the opportunity. However, there is no comprehensive and professional assessment for the choice of suitable of locations. Also, the lack of public

participation and the dominant role of the local governor could result in the ‘behind door’ decision-making process.

2) Disconnection with Old City (Node Value)

Regarding accessibility, due to the remote area of the station, the current connection with secondary transportation, particularly in small cities appears to be severely insufficient and has led to considerable inconvenience for passengers, which would have a huge negative impact on the further development of the HSR new town surrounding the station. The time saved by high speed railway would be wasted on commuting from isolated station to urban centres. And also, the diversity of secondary transportation is quite limited, for the majority of medium and small cities with a high speed railway station, traditional bus is still the most often used transfer tool. Very few environmentally-friendly transfer modes such as subway or tram have been brought into use. According to available planning documents, the situation would be transformed in the near future while a diversified and hierarchical transfer system will be developed based on the urban scale and the demand for transportation. However, due to the big uncertainty of the potential for HSR new towns in many small and insignificant cities, the implementation of accessibility improvement still remains unclear and even dim, and furthermore, the lack of accessibility would in turn impede the development of the HSR new town which might force the new town construction into a vicious circle.

3) Homogeneous Orientation and Unstable Policy (Place Value)

The diversity of urban functions are indeed given much emphasis in the majority of HSR new town planning, and the primary purpose of the HSR new town is to build up a mix-used, vigorous new urban area with advanced transportation connections and pleasant living environment. However, at the same time, the station itself tends to be mono-functional and urban functions around the station tend to be overly homogenous, high-end and sometimes aggressive to natural resources. Basically, through the examination of China’s current HSR new towns, most of them are keen on the development of profitable functions such as business, office, private housing and tourism. Little consideration has been given to the working class. Skills training, public housing and the establishment of community spirit have been hugely neglected. The HSR new town construction is mainly focused on physical and visual aspects rather than paying more attention to cultural and social life. Furthermore, the policy

towards the new town development appears to fluctuate in the wake of changes of governor. The local governor mainly cares about prestige and large-scale projects to show off his or her authority as well as accumulating political credits. As a result, when the term of the current top governor ends, the next leader would be very likely to change the overall urban planning and, consequently, huge amounts of money would be wasted and current projects would be terminated.

4) Extensive Spatial Sprawl and Lack of Planning Flexibility (Place Value)

In spatial organization, the most apparent trend is the extensive spatial area planning and overly large station building. The low intensive land development, formal patterns such as glorious square, a big axis and clusters of skyscrapers have become the common spatial character of the most HSR new towns in China. The scale of new towns appears to be stunning, and in many cases, the planned new town area is even bigger than the existing built up urban area, which poses a huge doubt about its necessity and rationality. The spatial planning for an HSR new town, to a large extent, has become the window for urban wealth and prosperity rather than creating high-quality public urban spaces for people. Large-scale landscape green space is planned for visual beauty rather than creating proper scale green space which would be accessible for daily use. On top of that, the flexibility of spatial organization appears to be limited. The planning process is severely lacking an articulate short-term, mid-term & long-term perspective and a regular review system to adjust the planning problems. Therefore, the frequent alteration of planning in the wake of a change of governor can result in large amount of financial waste and a lot of squandered land.

5) Inadequate Public Participation and Community Involvement (Place Value)

In China, urban planning, to a great extent, has become a tool for local governors to accumulate political credits and promote economic development through the sale of land. And during different stages of the planning process, voices from the public, especially from vulnerable groups are hardly heard. Sometimes, a seemingly transparent ‘public hearing’ or workshop is held involving selected public representatives. However, when conflicts occur between government and public, public opinions cannot be adopted and realised. After the planning draft has been produced, online publicity would be held for one month to notify the general public. But in fact, in most cases, the public are only told what there is going to be instead of being consulted. Moreover, the online resources are often incomplete and provide

limited access for the public to get information. Hence, basically, the parties involved in the process are mainly from the elite class such as academics, experts and governors, the final planning severely lacks transparency and balanced interests. The dominant role of government leaders during the process has led to severe bias and they tend to ignore opinions from experts in many cases. In conclusion, the inadequate public participation and community involvement in the planning process has become a big issue which needs to be addressed urgently.

6) Lack of Planning for Regional Integration (Place Value)

Based on the evaluation of development strategies of node value and place value of HSR new town in China, the final impact of them on urban value might possibly be quite pessimistic. In chapter 4, it has been learned from international experience that the advent of high speed railway is far from sufficient to promote the development of a city unless many other preconditions could be met such as appropriate location, smooth transportation connection, supportive and coherent policy, objective understanding of urban character, and cooperative relation with nearby cities, etc. But for China, cities with HSR new town intentions tend to draw their beautiful pictures in their own boundaries. No wider cooperation with other urban areas and nearby cities have been made due to the separated government regime. Furthermore, the overly ambitious goal set up in the beginning appears to be quite hard to achieve even in a prosperous city like Wuxi, not mention to other less developed cities. According to the lessons from international experience, resources of cities without proper policies are most likely drained away from other cities along the line and even end up with a worse situation. For China, this situation might happen as well, particularly in cities without the necessity for building up a HSR new town, such a wasteful construction would significantly distract the financial and political resources and impose a huge threat for its overall urban development.

7) Summary

In conclusion, the development strategies of HSR new towns in China, at present, appear to be elite & profit driven, unrealistic and even risky. Although the original intention is to promote urbanisation in an effective way, the outcome might be not as optimistic as expected. The most possible result, for many cases, might be the abortion of the whole or at least part of the original plan. Hence, in general, such a widespread but hotheaded ‘HSR New Town Campaign’ is just a new round of the new

town movement and inherits the extravagant tradition seen throughout the new town development history in China. In essence, it is again, another product of the unique land finance and cadre assessing system.

7.2 Comparison

Compared with European counterparts, the construction of HSR and HSR new towns have progressed at an unimaginable pace and on a breathtaking scale. For instance, the 1318km line linking the two key cores, Beijing and Shanghai, took only 39 months. By contrast, in the UK, according to the schedule, HS2 is going to take 20 years and at present, a fierce and continuous debate is still going on across the whole country. Whether HS2 can be realised remains uncertain. From this perspective, the government of China, to a great extent, could be regarded as an efficient project promoter and executive.

With respect to the underlying reason for this, the institutional parameter is the first and foremost one. In European countries, the multiparty system constitutes the basic political context which means no single party has excessive power over public issues. Long debates between parties and public have therefore become a quite common procedure for every project, especially mega projects. In contrast, in China, the one-party system creates the overall political context, enabling the Communist Party to have the absolute right over almost everything particularly on important public issues. In terms of HSR itself, the Ministry of Railway (MOR) is an independent kingdom which contains various systems such as public security, a court, an investigation agency, military, etc. When central government raised the ‘4000 billion RMB plan’ to address the national financial crisis in 2008, a considerable amount of money was allocated to MOR to develop high speed railway. In the subsequent years, an HSR ‘great leap forward campaign’ took place in China and MOR, playing the role of dictator, forcefully promoted the process regardless of much debate about economic feasibility and technical problems. During the process, in order to circumvent opposition nationwide, the Minister of MOR even promoted the construction of HSR in the name of ‘passenger special line’ to deceive the public. When it was completed, he admitted that the line was truly a high speed railway (Ifeng, 2011). In addition to the high hand political power, the most complicated and time-consuming process such

as land expropriation appears to be much easier in China since the land is owned by state, and moreover, the relevant environment assessment seems to be a routine rather than an important basis which would affect project development. Hence, under the rule of an autocracy, shocking developments like these are hardly surprising.

Secondly, if the station area development of European countries is somewhat ‘elite-driven’ and ‘profit-oriented’, the HSR new town ambitions of China, absolutely, could be labeled as ‘politics-dominated’, ‘government-led’ and ‘profit-pursuing’ urban mega projects. Consequently, the non-market type incentives supporting stunning developments on an awe-inspiring scale can contribute a lot to local revenue and official reputations (Dai, 2013). When many European critics cast doubt about the transparency of decision-making although various types of exchange can be seen during the process, local authorities in China, normally, have adequate guts and confidence to concentrate on their own minds and set aside any academic and public opposition, moreover, public have extremely rare channel to challenge government decision. If the grand Beijing-Shanghai line can be constructed under the lie of ‘passenger special line’, a new town, of course can be realised smoothly. This phenomenon starkly reflects the severe lack of public participation and supervision and the prevalent ‘behind-the-scenes’ operation of government on big issues. Although in Europe, no single case shows perfect democracy in the planning or development process, at least local authorities, irrespective of their willingness or lack of it, indeed make an effort to balance different interests. But in China, this effort barely exists, and that is why in newspapers, we can frequently see the propagandistic headline ‘zero protest in the land expropriation’ or similar (Li, 2013b).

Thirdly, compared with the much smaller and more cautious planning scale around HSR station areas in Europe, China, without any doubt, has shown an exceeding amount of confidence in HSR and sky-high expectations about what it can bring. In European cases, the normal scale for station area development is around 1-2km² or even less and is divided into different phases. Even so, the ultimate outcome, in many cases is still less than expected and has to confront many problems. For China, it seems much more difficult to realise such ambitious plan in a very short term. The final outcome, to a great extent, might be far away from achieving the original goal and may even become another ‘ghost town’ nightmare.

However, at the moment, any prediction is less than convincing because China is always producing miracles and the urbanisation epic has proven to the world that it is without parallel. Looked at in this way, any European or other experience could only indicate a possible scenario, and definitely could not indicate the destiny of China in the future.

7.3 Criteria for Optimal HSR New Town Development

To achieve the final objective of the research, guiding the proper development of Chinese HSR new towns, proper suggestions would be made based on a combination of international experience of new town development, high speed railway related development, the reality of the China's context and responses from relevant interviewees.

7.3.1 Planning for Consultation

The major merit of European station area development might be the relatively rational and careful decision-making process and the consideration of various actors. The seemingly time-consuming yet valuable assessment of many aspects such as finance, environment, historic preservation, etc. definitely would have a long lasting significance. More importantly, this cautious process, to a great degree, shows respect from the authorities and developers towards citizens and cities they live in. They do not impose the project upon humanity. In China, based on the current dominant role of local government, the HSR new town has become a tool to get political credit for officials rather than an urban real space to provide a better living environment for residents. Therefore, to establish an effective organization which has a strong leadership, a wide range of public involvement and adequate public consultation to maintain a stable yet flexible policy appears to be important. The decision-making process should be more open and transparent. Drawing upon the experiences from western countries, especially the UK HS2, a community engagement institution should be founded to look into issues arising from every step of HSR new town. This should monitor complaints related to the new town planning and construction, providing impartial independent decisions, so as to ensure a coordinated and cohesive strategic approach to community engagement through the whole process. Specifically,

a wide range of campaigns could be undertaken to maximise the impact such as distribution of leaflets, community posters, social media advertising, free lectures, etc. Furthermore, a regular report should be provided on the website, to promote awareness of all citizens so that anyone is eligible to know about the new town. According to responses from interviewees, designers, academics and member of the public, all of them expressed their requirement for wider consultation participation. One member of the public stated,

“the new town is for people, but most of the time we even don’t know what is going to happen, I hope government could do better job to inform us and our suggestions could be heard to a larger extent (quotation from MP2).”

One designer stated similar ideas: *“although we are designers for the new town, we have to comply with ideas from government and sometimes, they are quite stubborn and don’t consider much about the reality. However, in China, government has the final say for the urban project. We have no other choice other than obey them. Therefore, a transparent consultation process is urgently required and public voices should be heard. All in all, new town, is for people rather than a show off tool for governor (quotation from DG2)”*.

In a word, critical voices are significant for the planning and construction of the HSR new town.

7.3.2 Organizational Integration

Since the HSR new town is a large-scale & long-term project, and relates to the interests of all parties, a deep integration and cooperation between different institutions is essential. Basically, a dedicated institution should be set up to take charge of the planning and construction issues of the HSR new town, a cohesive and integrated masterplan must be given priority through the process. In many cases in China, due to the large scale of new town, the whole territory belongs to several local government administrations and consequently, a divided management would occur that might cause overly fierce competition, overlapped construction and disconnected planning. Therefore, a dedicated institution should take responsibility for dealing with all conflicts and competitions within the territory, thus ensuring a relatively balanced planning. Apart from the integration and cooperation inside the new town territory, a wider integration is also required between the new town and other urban & regional

areas. For the majority of cities, especially big cities, several new towns and new districts are under construction at the same time, therefore repeated and divided planning occurs frequently. Hence, planning from a broader perspective for the HSR new town is ideally needed. The majority of planning officers and government officials have appealed for organizational integration. One government official responded that:

“at new town level, the planning for station building function should be integrated into the overall planning for new town. At urban and regional level, there should be a dedicated organization to take the responsibility to put HSR new towns into a wider context and adjust their development consistently. Furthermore, the cooperation between the HSR new town institution and relevant local government in nearby cities should be established. Only through a deep cooperation, can the overlapped planning, waste of resources and disconnection be largely avoided (quotation from GO1).”

From the national perspective, a ‘clear up’ measurement should be adopted to rectify the current hotheaded HSR new town campaign and cancel a large number of unnecessary projects. And more importantly, before promoting a widespread HSR new town development across the whole country, selecting several cases with relatively fast and smooth development as the pilot cases seems to be a cautious way to guide the further orderly development of HSR new towns. The designers and academics all expressed similar ideas, one academic stated that,

“only through the evaluation of both favourable and unfavourable experiences of pioneer HSR new towns, could more systematic and logical guidelines be offered in future (quotation from AC2).”

7.3.3 Reasonable Location Choice

The location choice is a collective decision from local government and the Ministry of Railway, therefore, issues concerned with techniques, urban development potential, cost, regional cooperation, etc. have to be considered in a comprehensive way. The final choice, to a great extent should be the most optimal option which on the one hand avoids the major unfavourable technical factors, and on the other hand maximises the utilisation of favourable urban resources. In the process, local government has to make a great effort to overcome the weakness of indiscriminate

comparison with other cities and must avoid being overly ambitious for urban extension, it has to put the location in a wider context and make sure the potential location accord with the overall urban development. The local governor should be clearly aware that the choice of station is not a way to expand urban structure blindly, the key role of a station is to provide convenience for passengers and promote the urban development at a moderate level.

7.3.4 Fluent Connection

The original purpose of high speed railway is to establish a coordinated transportation network promoting the exchange of labor, capital and other resources. However, the current isolated station choice does little to help improve the transportation condition since passengers have to suffer from a longer time commuting between urban areas and the new station. Therefore, the original purpose has not been realised because of current poor connections. By contrast, the disconnected station hugely offsets the potential benefit that high speed railway could bring and moreover, just like Gifu-Hashima Station, it could restrict the urban development of the station area. Therefore, to improve accessibility, first of all, local government should and must try their best to optimise the secondary transportation connection of the station area with other urban areas, especially with key areas such as the old railway station, the main tourism spots, the airport, coach station and the urban centre. Secondly, a diversified secondary connection system should be set up to maximise the accessibility for the station area and among all transportation types, mass rail transit such as subway, tram and railway should be encouraged due to its punctuality, low emission and large capacity. Thirdly, for cities which already have unreasonably remote high speed railway stations, improving the accessibility urgently might be the most effective way to rescue the potentially unpromising destination of HSR new towns. Furthermore, the connection with nearby cities and key areas in the region would be quite essential since modern cities are becoming increasingly interconnected with each other and forming a wider regional network.

7.3.5 Diversified Land Use

To increase the place value of the new station area, urban function needs to be developed in a diversified way. However, the planning for functions has to be carefully considered based upon both the urban character and the relationship with nearby cities rather than merely focusing on the profitable industries. To achieve this,

first of all, a thorough evaluation of strengths and weaknesses, opportunities and obstacles of cities would be of great importance. Secondly, a wider cooperation between railway company and local government and with nearby cities has become desirable, and the Taiwan case shows a good example of regional planning for HSR new town industry. Only through a broader perspective could a separation between station building and surrounding urban area be avoided, and a more rational industry plan for HSR new towns and more interactive cooperation between cities could be realised. Thirdly, due to the peripheral location of HSR new towns, the planning of diversity is not only for the middle-class and upper-class, more importantly, it has to cater for the demand of lower-class people such as farmers and blue collars. An established skills training program should be provided so as to enable more people to have access to job opportunities. Furthermore, social community spirit should be given a great emphasis and a caring public facility system should be established to provide help for those in need. Ideally, a dedicated community institution should be set up to help create closer community relationships and strengthen the community bond.

7.3.6 Controlled Size and Flexible Spatial Form

In terms of spatial organization, to control the urban area of HSR new towns to a proper scale has to be dealt with urgently. The most recent national urban planning policy has regulated that the extensive urban development would be prohibited and the new town scale should be strictly decided on the population density, industry intensity and environmental carrying capacity (National New Urbanisation Planning Report, 2014). All interviewed academics have expressed their deep concern about the size control for HSR new town, one of them pointed out,

“the overly large new town planning is completely disobeying the idea of sustainable and compact city, although China is a big country with a large amount of land, the blind urban extension will significantly consume the cultivated land and cause huge waste. Therefore, the size for new town must be rigidly controlled and adjusted in a timely fashion (quotation from AC2).”

Then, in terms of the spatial form, a comprehensive and flexible spatial guideline covering the whole new town area should be established in the beginning to control the overall spatial organization. More focus should be given to the practical and

livable neighbourhood public green space rather than the marvelous axis and cluster of skyscrapers. Since the European counterparts do not perform very well in balancing station areas with other urban regions and fail to reinforce the urban quality of the station area, China needs to carefully consider the relationship between the station area and the old city. This is particularly important because the location of most new stations is quite far away from the city centre. The urban quality of a new town is decided according to the daily life of local residents and urban vitality rather than the outside urban image. Furthermore, as responses from academics, designers, planning officers and government officials, the spatial model of station area should be carefully considered, just as one government official pointed out,

“the station building, as the centre of the HSR new town, should have the possibility to accommodate mixed-use urban functions rather than being a monotonous and separated island. A more intensive development model should be adopted in key cities, and for some small cities, a comprehensive development of the station itself might be more realistic and effective than constructing a large scale new town (quotation from GO2).”

7.3.7 Sustainable Strategies

Due to the long period of project construction, Europe is increasingly adopting more flexible planning to allow for more alternatives and more adaptations to the project. Meanwhile they are converting from traditional physical planning to more social planning such as ‘events programmes’ and ‘public vote’, although this can sometimes cause more uncertainty. For China, flexible and social-oriented planning seems to be more important as it would allow more flexibility and social harmony within the rapid urbanisation era. The interests of public should and must be put on the priority all the time. With the background of the worldwide energy crisis, great efforts have been made in Europe towards sustainability. In the case of Berlin and Zuidas, the green energy techniques have been fully applied to the urban design of the station area in order to create an environmentally-friendly urban area rather than a traditionally functional area. Although the final outcome still seems obscure, China should, at least make sufficient attempts to develop appropriate green and energy-saving technology during this massive construction process.

7.3.8 Objective Evaluation and Regular Review

Based on the deep exploration of current development strategies of HSR new towns in

China, a series of problems have occurred in node value and place value and call for urgent resolutions. But before proposing the proper development strategies for this new type of urban extension, the first and foremost issue to understand is the preconditions for HSR new town construction. According to analysis of the international new town movement, the new town construction should be on the basis of an explicit purpose and meet the actual demand for urban development for a certain period of time. The two primary purposes for the majority of new towns, relieving the overcrowded existing urban area and boosting local economy, would be the main motivations for new town construction. Hence, in China, one of the preconditions for HSR new town construction would be that the existing urban area has reached its development limitation which urgently needs a further development to accommodate the overspill of population and industry. For cities with small population and limited industrial development potential, building a HSR new town would be a huge waste and pose a big threat to the old city. Secondly, since the implementation of new town construction, to a great extent relies on the financial investment, the economic condition of a city appears to be essential. For cities with quite weak economic foundation, indiscriminately building up a new town would not only impose a heavy financial burden on local government, but it would bring a huge risk for the overall urban development which might be disastrous and irreversible.

In conclusion, not all cities with the operation of high speed railway have the necessity and the competency to build up a HSR new town, local government should be clearly aware of the urban condition and make a rational development plan. For some small cities, to adopt a concentrated but small scale development around the high speed railway station might be more practical and realistic. Furthermore, a regular risk evaluation and correction system should be established to assess the development process. Since China is in the transitional period in all aspects, a wide range of problems may occur which need to be explored in time, and proper adjustments should be proposed quickly. Therefore, critical evaluation has to be conducted based on voices from the public and the government. Furthermore, a review report should be prepared each year and be open to the public.

7.4 The Matrix of Proposed Optimal HSR New Town Strategies in China

The major objective of this research is to investigate the current development strategies of high speed railway new towns in China, and to establish the optimal development strategies and guide the rational development process for this new type of urban settlement. Based on a thorough review of international experiences and deep investigation into China's HSR new town development strategies, and a specific case study, the current development strategies of China's HSR new towns appear to be elite& profit driven, unrealistic and even risky. Therefore, the widespread and hotheaded 'HSR New Town Campaign' is just another round of new town movement, inheriting the extravagant tradition seen throughout the history of new town development in China. It can be considered to be a miniature of China's rapid urbanisation. Through the comprehensive understanding of international new town development and high speed railway station area development, valuable experiences can be drawn and applied to China's HSR new town development. The key findings for optimal HSR new town strategies in China are summarised into a new matrix (Table 7.1). In accordance with the analytic framework seen through the whole thesis, findings are classified into node value (location, accessibility) and place value (diversity, spatial organization). All key findings would collectively contribute to the guidance for the rational development process of HSR new towns. As well as that, the effective organization, a sufficient funding system, long-term commitment, cooperation between different institutions, regular risk evaluation, and a consistent and stable policy should be effectively implemented throughout the whole development process.

Node Value		Place Value	
Location	Accessibility	Diversity	Spatial Organization
• Consideration about topography of the site and resources • Fluent transport connection • Preservation of natural beauty and historic interests • Availability of facilities • Market for industrial development and housing • Integral part of regional planning • Through consideration of urban density and economic foundation • Potential cost prediction • Consideration about impact on environment and existing community • Potential for development	• Hierarchical accessibility system • Fluent connection with key urban areas • Multimodal transfer system • Provide environment friendly urban rail transit • Sufficient frequency of public transport • Sufficient parking place • Provide pleasant pedestrian environment and cycling facilities	• Consideration of interest of actors • Diversified urban functions • Adoption of high technology • Provide skill training for local residents • Climate sensitive approach • Moderate flexibility • Wide participation and community engagement • Distinctive orientation based on urban character • Long-term vision and stepwise process • Enough employment • Balance of sexual groups and age • Various facilities for different age groups • Create community spirit and sense of belonging • Mix of housing type • High level of information transparency	• Proper spatial model selection • Focus on urban quality creation • Integration with existing urban context • Urban identity creation • Objective orientation • Create an integrated network of green space • Safe environment • Compact station building • People-oriented public space • Accessible public parks • Control of planning area size
• Effective organization • Cooperation between different institutions	• Sufficient funding system • Regular risk evaluation	• Long-term commitment • Consistent and stable policy	

Table 7.1 The Matrix of Proposed Optimal HSR New Town Strategies in China

7.5 Limitations and Recommendations for Future Research

The findings of the research may provide valuable insights for the current and future development of the 'High Speed Railway New Town' in China. However, at the same time, there are three main limitations which should be noticed.

Firstly, due to the initial stage of HSR new town development, the current investigation stays at a broader rather than a specific and deep perspective. Scores of problems in node value and place value have been explored and analysed based on a relatively limited amount of available information. Although compared with other cases, Wuxi East New Town has been in the lead in terms of construction speed, there is still plenty of work undergoing in the process and the outcome cannot be predicted at the moment.

Secondly, during the process of case study, a certain number of interviewees, due to their sensitive positions, were reluctant to express their true ideas completely and avoided commenting on certain issues such as government policy or the transparency of the decision-making process. This phenomenon, to a certain extent, has a negative impact on the research findings.

Thirdly, the case of Wuxi is still under construction and it possesses many uncertainties particularly in the Chinese urbanisation context. Therefore, the evaluation of current development strategies, to a great extent, is based on the prediction of their potential impacts rather than the real outcomes since they have not been tested in practice. It is possible that the current prediction would appear to be in the opposite direction since the urbanisation speed of China is enormously rapid and the urban development process is hugely affected by government. However, this limitation may provide more opportunities for researchers to conduct subsequent studies when the Wuxi East New Town and more cases are complete. In a word, this research explores a brand new urban phenomenon occurring in China and hopefully it would have a certain positive effect on the proper development guidelines for HSR new towns development in China. And furthermore, it provides a broader spectrum

and huge potential for future research of potential similar projects.

In the near future, when a certain number of HSR new towns have been completed in China and the real impact can be assessed, more critical analysis could be made and more convictive recommendations for development strategies of node value and place value could be proposed. Specifically, the impact of node value and place value on HSR new town development could be accurately assessed to show the importance of the two aspects. And more importantly, as the host of an HSR new town, the personal experience of local residents could be obtained and the comparison of experience before new town's construction and after new town's completion could be made. Then, the impact of HSR new town on urban and regional level could be evaluated so as to show a bigger picture of the new type of urban extension and relationship between HSR new towns and other urban areas. Finally, since the urban policy towards new town development in China is hugely affected when there is a change of governor, the impact of the policy on the new town development and the outcomes could be deeply evaluated then. All in all, it is hoped that the future research will provide planners, governors and other relevant people more systematic and logical guidelines for the proper development of HSR new towns in China.

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Appendix: Transcript of Interview

For this research, 20 interviews have been conducted including:

Designers (3): representatives of urban master planning and planning of Wuxi East new town ;

Government Officials (2): representatives of government sectors who are in charge of the overall urban development and particularly the Wuxi East new town development

Planning Officers (9): representatives of the Commission of Wuxi HSR New Town Business District who directly take responsibility for the HSR new town construction

Academics (3): representative of experts in the urban planning field who are not directly involved in Wuxi East new town planning

Member of the Public (3): residents who live in the Wuxi East New Town and have personal attitudes towards the development of the new town

Each interview lasted approximately 40-90 minutes based on the Interview Protocol according to their positions. In the appendix, one interview has been translated into English and listed as below. The interviewee is a high-level government official (GO1) who initiated the planning and construction of Wuxi East New Town and knows well about the whole process.

General Questions

1. Could you please briefly elaborate the nature of your involvement in the project?

I, together with my colleagues proposed the concept of 'HSR New Town' in 2007 when we were informed that high speed railway would be brought into operation in Wuxi in the near future. And then we started to set up a dedicated team dealing with the planning issues of Wuxi East New Town. Basically, I'm a member of decision maker.

2. In your opinion, what is the main objective of the project?

Wuxi is a very prosperous medium-sized city and its economic development always outperforms other medium-sized cities and ranks among top 10 richest cities across the whole country. However, Wuxi is currently in the industrial transition period transforming from traditional manufacturing industry to high-technology industry and service industry. High speed railway is, without any doubt, a big catalyst for urban

development and transformation. Therefore, the main objective of the project is to improve the regional status of Wuxi through the establishment of high speed railway, more importantly, it would promote the industrial transformation of Wuxi and attract more advanced industry.

3. In preparation for the project, did you visit or study other projects which provided ideas or inspiration for the project? If so, which other projects did you visit or study? Which aspects of these projects do you like in particular?

I've visited many famous cities in the world. Japan gave me very good impression. It has extremely advanced railway system and subway system. You can't even see much overground traffic since the majority of people would choose public transportation. And around the high speed railway station in Japan, especially in Tokyo, compact and intensive development has been implemented. The station building itself is a big urban complex which could provide various services for passengers and locals. And around station area, relevant urban functions are well connected and organized in a comprehensive network.

4. Which aspects are, in your opinion, the most important issues with respect to the realisation of the project? Over which of these issues do you have direct influence?

Wuxi East New Town is one of the key projects for urban development and government has given it top priority. We have set up a dedicated team for dealing with planning issues. And government has spent large amount of money for international competition to ensure the high quality for whole project. We have to spare no effort to collect creative ideas to a full extent. From my point of view, a good project should and must have the top design and smooth implementation, Wuxi government has the final authority to choose the best planning and make sure that the construction for East New Town will take place in due course.

5. In your opinion, generally speaking, to what extent do you think the HSR new town will succeed? Why?

It would definitely succeed. It is a quite new concept integrating advanced transportation and industry. And more importantly, Wuxi has a very solid economic foundation which would be a key factor to guarantee the smooth construction of the East New Town. From my perspective, the success of an HSR new town is only

suitable for city with good economic condition and high development potential. For small and poor cities, large scale HSR new town might not be suitable.

6. Which specific measurements do you adopt to compensate for those affected people during the construction of the project?

Wuxi has very people-oriented compensation system for people affected by urban projects. Normally, they would get apartment with much better quality and living environment at quite a cheap price. That's why we don't have protest like other cities. Furthermore, many families would get more than one apartment, so they could rent out one and get extra money. Basically, Wuxi has done a very good job on the compensation for those affected people.

Questions about Node Value

1. In your opinion, what does node value mean for a HSR new town?

Node value is a very academic word, from the practical perspective, it means a proper location for the station, good accessibility, smooth connection with key urban areas and regional areas. Basically, HSR new town should not be an isolated island, it should become a joint centre which could provide convenient transportation for passengers and integrate nearby areas into a wider network.

2. Which points do you think are of great importance with regard to the development of node value for the project?

When deciding the location, complicated factors should be taken in consideration. The location must comply with the overall urban development and has high potential for further development. More importantly, we can't just put the location of a station within the urban territory, we should put it within a larger picture to assess the regional impact. Once completed, the station should be optimised to a full extent and impose positive impact on a regional level.

3. In this project, what do you think of the location choice? What is the advantage and disadvantage of the choice?

In the beginning, we have two choices for the new station. Jiangyin and Xishan. Xishan has the largest radius of service which could serve passengers from nearby cities such as Zhangjiagang, Changshu. At that time, local urban planning bureau

proposed two choices and government made the final decision. Basically, the development potential for the new station is quite high since at the moment, it's still hugely undeveloped. However, at the same time, government needs to spend huge amount of money to provide the infrastructure such as road, transportation, school, hospital, etc. Therefore, sufficient funding is required to guarantee the construction of new town.

4. What kind of measurements do you adopt to promote the node value of the project? And which measurements do you think are particularly worthwhile to highlight?

Around the new station, diversified transfer mode will be developed to improve the connection of new town with other areas. Public transportation such as metro, railway and bus will be hugely encouraged. More importantly, an underground vehicle circulation ('arc' + 'circular') with a total length of 3.1km in core area has been constructed in order to separate vehicles for business, cargo and commuting from bus and non-motorized traffic. It is considered to be the first time this has been tried in Jiangsu Province and it has attained huge publicity. We try to construct a people-oriented new town rather than a car-oriented new town. In subtotal, we have invested 500-600 million RMB, and will provide 7000 parking places.

Questions about Place Value

1. In your opinion, what does place value mean for a HSR new town?

The key point of a new town should first of all, provide better life for people living there and attract more people to settle down. Meanwhile, sufficient job opportunities have to be created so as to reduce the daily commuting and strengthen local economy. The final aim of the new town is to create a new urban sub-centre to deconcentrate the old city. Regarding the HSR new town, it has one more significance which is the transportation advantage compared with other types of new town. Therefore, to construct a HSR new town for people, we should ensure the diversity of urban function, and optimise the connection to a full extent.

2. Which points do you think are of great importance with regard to the development of place value for the project?

Wuxi East New Town has already had a solid foundation for development. Currently, it has one national economic development zone which could hugely support the

development of a new town and provide sufficient job opportunities. Therefore, we should exploit the advantage and integrate new town with the existing economic development zone. Then, as Xishan is converting from secondary industry to tertiary industry, high-tech and energy-efficient companies should be hugely encouraged to accelerate industrial upgrading. Thirdly, public infrastructure should be provided with a high quality. Hospital, school, public housing and parks has to be put on the top priority.

3. What kind of measurements do you adopt to promote the place value of the project? And which measurements do you think are particularly worthwhile to highlight?

The design for Wuxi East New Town is absolutely international-level. SOM is invited for the urban design for central area. Very detailed design guidelines are set up to create a vibrant and modern new town centre. Just like Manhattan, it adopted small block to maximise the vitality of street life. Furthermore, east new town provided sufficient public housing for relocated citizens to minimize the potential negative impact from construction work. Many public parks and green space are set up to beautify the living environment and provide relax place for citizens. Basically, the whole design is fantastic and it would definitely become the role model for other HSR new towns in the future.

4. Do you have influence over these measurements being present or not in the project? Government made decision on big issues such as the location, construction of infrastructure, etc. Then executives would deal with daily issues and details of the project. Basically, government especially the top governor has the absolute power over the large-scale project.

5. Which of other actors do you expect to be involved in this?

Basically, government would take the primary role in the project. In China, top governor has the absolute authority to influence urban construction. But for Wuxi East new town, we have invited international professionals to participate in the design and provide inspirations for local government. Therefore, government and professionals are the most important actors in the project.

6. What kind of measurements do you adopt to balance the industry relationship

between the HSR new town and other urban regions? What kind of uniqueness will HSR new town possess?

Wuxi is currently having 5 new towns, and each new town has different role. In urban master planning, the industrial orientation has been clearly demonstrated. For Taihu New Town, financial centre would be established while East New Town would focus on service industry, other 3 new towns have their own characters based on their local conditions. The most important slogan of East New Town is 'transportation efficient' town, and our primary mission is to accentuate the uniqueness and fulfill the target. Basically, the new town has both affluent external and internal link. It has metro, highway and high speed railway link with the outside, it sits close to the airport. And inside of the new town, we have also planned an efficient, diversified and green transportation system. Compared with other new towns, only the East New Town has the substantial transportation advantage which would definitely have a huge impact on many industries such as logistics, information, etc.

7. What kind of population do you think will benefit most from the HSR new town?

The success of a new town could not only benefit local residents, more importantly, it would offer significant advantages to people from other districts and attract more people to work and settle down there. I hope within 20 years later, east new town could act as a genuine urban sub-centre to relieve the pressure for the urban centre and become the magnet of eastern Wuxi. Moreover, it would act as an important regional node to connect nearby areas and attract advanced industries thus promoting local and regional economic development.

8. Have you ever worried that urban economies and labour would be drained away to other cities? What kind of measurements do you think are essential to stop the trend?

No, I strongly believe that Wuxi is a very attractive city and would get better in future. Wuxi has very solid economic foundation, pleasant living environment, rich cultural heritage and reasonable living costs. Compared to similar cities nearby, the housing price of Wuxi is the cheapest and quite affordable. Moreover, as the strategic urban industrial transformation from manufactory to service sector, I'm quite sure that more job opportunities will be created to attract more skilled talent. With the advent of high speed railway, the distance between Wuxi and Shanghai becomes much closer which enable more people to settle down here.