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Abstract

Urban and Regional Planning in China has had a long history spanning back as far as 5000 years and has undergone several fundamental transformations over the course of time due to political, societal and technological changes. The aim of this thesis is to put the present Regional Planning system in China into historical context in order to gain a deeper understanding of the current challenges it is facing and possible ways to address them, using the Yangtze River Delta metropolitan region as a practical example. This region is regarded as the most dynamic and economically vibrant region in China, causing the fast construction of infrastructure and leading to large-scale migration waves from less prosperous regions in China. On the downside, however, this has led to detrimental consequences for the environmental and ecological resources, causing excessive land consumption and problems with pollution and congestion.

One major step forward in addressing these challenges has been the Yangtze River Delta Regional Plan (YRDRP), which was prepared by the National Development and Reform Commission and approved by the state council in 2010. The main goal of this Plan is to further extend the strong role of the region within the Chinese economy, but also position the region in the international financial and economic system with Shanghai being the spearhead. The YRDRP is a major step forward, as it deals with a wide range of issues largely neglected in previous Regional Planning approaches, especially when it comes to recognizing environmental and ecological challenges. However, it remains rather superficial with very few concrete targets and leaves open questions about mechanisms for implementation.

The implementation of the YRDRP is considerably restrained by a number of limiting factors such as a lack of cooperation between different municipalities and inefficiencies in the administrative system. This aspect is also shared by many other planning systems around the world too, such as in Austria where the scattered planning law inhibits efficient cooperation between different provinces (“Bundesländer”).

However, what makes China so unique is the unparalleled speed of economic growth and the resulting growth of cities at a very fast pace since the start of the “open door policy” in 1978. This brought many opportunities, but also challenges, such as a heavy strain on environmental and ecological resources. In this context it is even more important that urban and regional planning recognizes these challenges and directs this fast growth into a more sustainable path.

Also, Chinese planning has always been characterized by the complex interplay between centralized and decentralized urban and regional planning, often changing over different

periods of time, with the central government more recently trying to increase its influence over local authorities again, especially since excessive competition between different local authorities has led to undesired and uncoordinated development.

So as the YRDRP has not fully led to the intended results, policy-makers were looking for new ways to address regional planning in the Yangtze River Delta Region. In 2016, the NDRC approved “The Yangtze River Delta City Cluster Development Plan”, shifting the focus even more towards high tech manufacturing and service industries and opening up the Chinese market to the world. It remains to be seen, if this plan is a step forward compared to the YRDRP in overcoming challenges to urban and regional development in the region.

Zusammenfassung

Regional- und Raumplanung haben in China eine bis zu 5000 Jahre zurückreichende Geschichte, während der sie mehrfach fundamentalen Veränderungen aufgrund von politischen, gesellschaftlichen und technologischen Transformationsprozessen unterworfen waren. Das Ziel der vorliegenden Diplomarbeit ist es, diese Prozesse aufzuarbeiten, um die heutige Praxis der Regionalplanung China in einen historischen Kontext zu stellen. Um dies zu veranschaulichen, wird die Praxis der Regionalplanung der Yangtze River Delta Region näher beleuchtet und der im Jahre 2010 durch die chinesische Zentralregierung beschlossene Yangtze River Delta Regional Plan (YRDRP) einer Analyse unterzogen.

Das Hauptziel dieses Regionalplans ist die weitere Stärkung der Region als eines der Zugpferde sowohl der chinesischen als auch der globalen Wirtschaft und Finanzindustrie mit Schanghai als Speerspitze dieser Entwicklung. Der YRDRP ist eine große Weiterentwicklung im Vergleich zu früheren Zugängen zu Regionalplänen in China, da in diesem Regionalplan den Themen Umweltschutz und Ökologie bedeutender Raum gegeben wird. Jedoch lässt der Plan einige Fragen in Bezug auf die Implementierung offen, da er wenig konkrete Ziele enthält und eher oberflächlich formuliert ist und auch keine konkreten Mechanismen festgeschrieben wurden, wie die Inhalte des Plans in die Tat umgesetzt werden sollen.

Die Erfahrung hat gezeigt, dass die Umsetzung des YRDRP durch administrative Hürden und einen mangelnden Kooperationswillen zwischen verschiedenen staatlichen und privaten Institutionen und Gebietskörperschaften erheblich erschwert wird. Zudem wurde deutlich, dass noch erhebliche und schwer aufzulösende Widersprüche in den Denkmustern bestehen in Bezug auf das System der freien Marktwirtschaft und dem bis 1978 praktizierten System der zentralen Planwirtschaft.

Im Mai 2016 bewilligte die chinesische Zentralregierung den “The Yangtze River Delta City Cluster Development Plan”, welcher die Nachfolge des YRDRP antreten soll. Bis jetzt sind nur spärliche Informationen zu diesem neuen Regionalplan an die Öffentlichkeit gelangt. Nachdem was aber gegenwärtig dazu bekannt wurde, soll laut diesem Regionalplan der Wandel Richtung Hochtechnologiesektoren und Dienstleistungen weiter forciert werden. Es bleibt abzuwarten, wie sich dieser Regionalplan auswirken wird, sobald dazu mehr Details bekannt geworden sind.

Auf der anderen Seite gibt es eine Vielzahl an Herausforderungen, die nicht spezifisch die Regionalplanung in China, sondern auch Planungssysteme etwa in Nordamerika, Europa oder Asien betreffen, wie etwa ein Mangel an Kooperationswillen zwischen Akteuren unterschiedlicher Gebietskörperschaften und öffentlichen und privaten Agenturen und

Interessensvertretungen. Es muss daher oberstes Ziel sein, den Kooperationswillen durch eine Vielzahl an Maßnahmen zu stärken, sei es durch finanzielle Anreizsysteme oder die Schaffung von Koordinationsplattformen.

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1. Introduction

1.1. Motivation

In the summer of 2011 I was offered the unique opportunity to complete an internship in a small architecture firm in the city of Hangzhou, China in the East Coastal Province of Zhejiang. This firm was mainly concerned with entering competitions for Master Plan projects in different cities in China. During my time at the firm I was involved in participating in a Master Plan competition for QingXi New Town, Daqing City, Heilongjiang Province, North East China. I was especially asked to bring in perspectives from Austrian and European Planning practice with Master Plan projects, specifically projects in Vienna such as the Seestadt Aspern Master Plan. For European Planning standards Aspern is an unusually large-scale project, but the aforementioned Master Plan project for QingXi New Town was about tenfold larger in planning scope, making obvious the sheer speed of growth in China and the need for cities to expand. In numerous conversations with my co-workers I gained valuable insights into the challenges facing Planning in China today, which ultimately sparked my interest in investigating Urban and Regional Planning in China more deeply beyond my own stay in China.

1.2. Literature Review

Chinese Urban and Regional Planning has been extensively covered in the academic literature and the recent years have seen a proliferation of articles, books and documentaries on the topic in the English language. However, until recently a comprehensive overview and analysis of the Chinese Planning Systems had been missing, but this gap was closed among others by Dr. Li Yu, a Senior Lecturer of School of Planning and Geography at Cardiff University, UK, who published the textbook “Chinese City and Regional Planning Systems” in 2014. In this work the history of Planning in China dating back several thousands of years, as well as the different levels of Plan making are extensively covered. Most importantly, it explains how the often monumental changes in the political system over the past decades have changed and redefined Urban and Regional Planning in China.

The role of Regional Planning in China has seen major shifts over different periods, but especially the Economic reforms of 1978 have initiated a major shift in regional planning paradigms. These reforms have meant a gradual shift away from the centrally planned communist system to a decentralized system with more decision making powers for local authorities (Yu, 2014).

Another notable example of a comprehensive overview of the Chinese Planning System is "Planning for Growth, Urban and Regional Planning in China" (2015) by professor Fulong Wu of the Bartlett School of Planning, University College London, who in addition to this key textbook has published numerous papers and studies on Regional Planning in China in general and in the Yangtze River Delta Region in particular. Some of these works were used as a reference in this thesis.

Recent years have seen a major effort by the central government to produce Regional Plans, such as the Yangtze River Delta Regional Plan (YRDRP). This recent initiative can be seen as an effort by the government to bring back regional planning on the national policy agenda. This new era in Chinese Regional Planning has been analysed in the academic literature among others by Yi Li & Fulong Wu in "The transformation of regional governance in China: The rescaling of statehood" (2012) and "The emergence of centrally initiated regional plan in China: A case study of Yangtze River Delta Regional Plan (2013)".

However, as will be analysed in detail in the following chapters, the recent wave of regional plans comes not without criticism, and the production and implementation of the YRDRP more specifically has been critically scrutinized by academics. For example, Wang, Y. and Jiang, L. (2012) in "The Dilemma of the Implementation of the Yangtze River Delta Regional Planning" have identified several major constraints to the implementation of the Plan, such as a lack of efficient formal administration mechanisms and a lacking willingness of local authorities to cooperate with each other. These constraints to implementation have also been analysed by Zhang, Y. (2010) in "Yangtze River Delta's System Integration: Institutional Barriers and Countermeasures".

Additionally, I have conducted several interviews with academics from Nanjing Southeast University and the University of Technology in Vienna. These interviews provided very valuable additional insight, but also crucial material for the thesis.

2. The Chinese Planning System

In order to gain an understanding of Regional Planning in China and the problems and challenges it is facing today, the evolution of Regional Planning within the Chinese Political and Planning System will be analysed and put into historical context in the following chapters. This system has evolved from as far back as 5.000 years and has been subject to several fundamental changes, especially most recently over the last hundred and fifty years (Guo, 1999).

These changes had often happened at a breath-taking speed, in which the political principles guiding Planning practice have been completely turned upside-down only in the course of a few years. One of those fundamental changes was the influx of Western Planning ideas in the late 19th century, mixing and sometimes replacing Planning ideas that had been guiding the country for many centuries (Guo, 1999). It was therefore very difficult to resolve the contradictions that resulted from a new system, in which old ways of thinking collided with the demands of a new era. So it can be argued according to Guo, Y.'s analysis (1999) that today's Planning environment in China is very different from other systems in the world due to its long and complex past.

In the following sup-chapters we will analyse the evolution of Chinese Planning Practice in a chronological fashion, spanning from the very beginnings of Planning to the complex system of the present day which has evolved over several thousands of years.

2.1. The beginnings of Planning in China

As mentioned before, Urban and Regional Planning in China has had a long history dating several thousands of years. For example, already around 2000 B.C. recommendations for city layouts were made in books such as "Gun Zuo Cheng Lang". According to this book a city should be designed with an inner and outer ring, where the inner city is reserved for the emperor and higher class citizens, while the majority of the population lived in designated zones in rural areas and fringes of cities, being strictly segregated from the aristocracy. Also, recommendations were given for the right locations for cities, such as near main waterways, and a hierarchical road network throughout the empire was established already then, making it one of the pioneering systematic approaches to regulating land-use in human history (Yu, 2014).

During the Han dynasty in the Zhou era around 900 B.C. plan documents for the ideal layout of a capital city emerged (see figure 1), in which a capital's structure shall be organized

according to the cosmological principle of unifying earth, heaven and man. According to ancient beliefs the earth was a square, and therefore the capital city layout shall be also designed as square, with the palace being in the heart of the city. Also, the location and number of the city's gates followed strict religious and spiritual guidelines. For example, as can be seen in figure 1, the ideal capital city has 12 gates, symbolizing the 12 months of the year. Also, there was a strict separation of uses within a clear hierarchy following Confucian moral principles (Nelson, 1988).

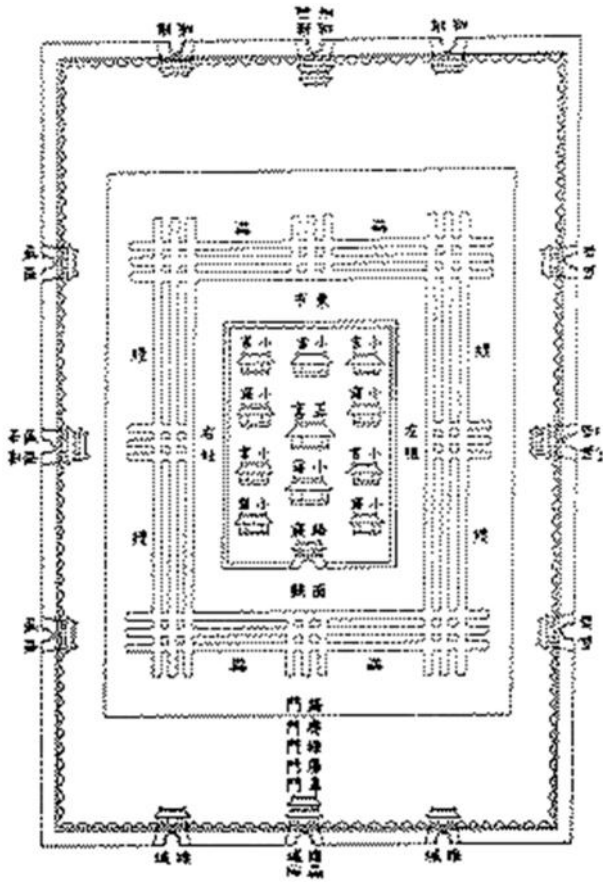


Figure 1: Ideal capital city layout during the Han dynasty (Nelson, 1988)

In the era around 1100 to 700 B.C. first hints of regional planning can be found, when the concept of integrating the planning of urban and rural areas was established. These guidelines were published in the "Ethical Code of Zhou's Rituals" in the chapter "To Develop Rural Land While Defining and Managing the City" (Yu, 2014). In this chapter the roles for urban and rural

areas were outlined, with rural areas serving as vital supplies of food and natural resources, which support the functioning of cities.

From around 770 to 220 B.C. the principles of living in harmony with nature became the dominant philosophy guiding Planning thought, established among others by the book “Laozi”, written by Li Er. According to “Laozi” humans should follow the principles of earth and the natural world, as going against the forces of nature will inevitably lead to major human disasters. Nature should be respected as the main source for humanity’s vital supplies. Also, the design of cities and buildings should follow the forms of nature and should also take into account the constant changes taking place in nature (Yu, 2014).

2.2. Planning from the 19th century on

It is quite astonishing that these different principles of living in harmony with nature that had been developed over many centuries remained the dominating philosophies guiding the construction of the built environment up until the middle of the 19th century (Yu, 2014). The Opium War of 1840 marked a major shift in all aspects of Chinese culture with the arrival of Western countries in China, and therefore the principles guiding Urban Planning have been changing dramatically several times since then.

From the mid-19th century to the founding of the People’s Republic of China in 1949 urban planning in China was done in an unsystematic and uncoordinated way. It was mostly the cities occupied by different Western countries that produced comprehensive plans. Some cities were occupied by a single country, such as Qingdao by the Germans, and therefore produced a plan comprising the whole area of the city, but others were occupied by different Western countries, which complicated the production of a comprehensive Plan for the whole city (Yu, 2014).

Shanghai for example was divided into international concession areas as well as Chinese settlements (see figure 2). Planning in the international concessions was very heavily influenced by Western ideas of Planning, contrary to the parts of town that were governed by China (Medicographia, 2014). Initially, a common administrational body, the Shanghai Municipal Council, supported by the different countries occupying Shanghai was founded in 1854, but in 1861 the French concession decided to leave this Council due to fears that it

would lose influence and the French character of the concession would be lost. Following that the British and American concessions merged to create a common council.

This lead to a fragmentation of the city and gave the different parts of the city very distinct and different characteristics. The concessions had different planning laws, for example the French concession introduced a system of land registry, but other concessions didn't. Common infrastructure projects across borders of concessions were therefore complicated and often not realized, with some exceptions such as a common tram system and commonly decided rules for police and traffic (Medicographia, 2014).

The time of the foreign concessions in Shanghai that had existed for almost a hundred years came to a halt during the Second World War, when Shanghai was occupied by Japanese forces, and the foreign concessions saw a large influx of refugees from the Chinese controlled concessions. Following that, these foreign concessions were handed back to the Chinese government in a treaty between Great Britain and China in 1943, which was seen as an Act of support and partnership between the two nations (Medicographia, 2014).

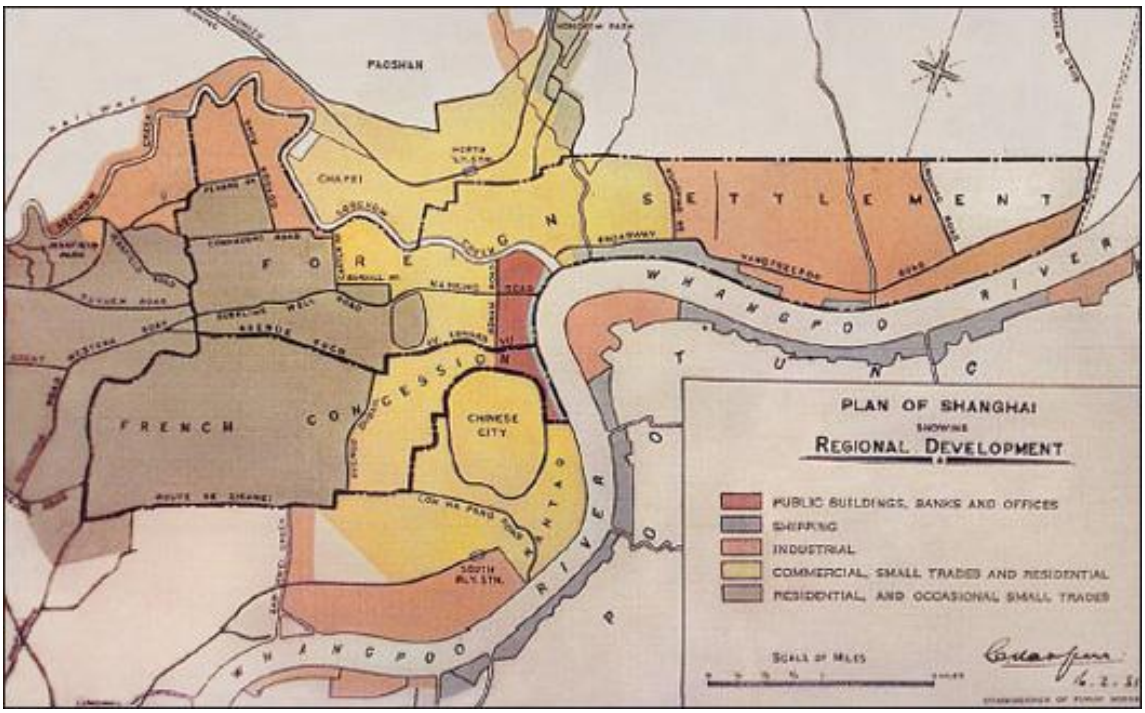


Figure 2: Map of Shanghai from 1931 with the French Concession (South), the international Concession (US and British, North) and the Chinese City (Center) (Medicographia, 2104)

Other cities in China created plans for themselves, such as the “Hangzhou New Urban Area Plan” or the “Nanchang 5-year Development Plan”, but none of them were realized. After Nanjing had been named the National Capital by the Chinese government in 1928, a Capital City Plan was created, detailing 28 different issues related to urban planning, such as zoning, architectural design, provision of housing and road infrastructure networks (Yu, 2014).

However, due to political turmoil this Plan was never realized. As we will see later on in the detailed analysis of Regional Planning in China and the YRDRP, the turbulent political history and the complicated and at times intransparent political structures and hierarchies in China add a higher level of complexity to Urban and Regional Planning than in most other countries.

2.3. Planning in the People’s Republic of China (1949-1978)

Following the 2nd World War, during the pre-reform years in Mao Zedong’s era, urban planning was done in an uncontrolled and unchecked manner, and urban growth was seen as the main goal in a then largely agricultural society, with environmental considerations not being dealt with as a priority. The central government issued targets on population growth and cities, and large swaths of land were designated for expansion, without proper control or consideration. This caused several disastrous environmental and societal consequences (Yu, 2014).

Important decisions, including those with a spatial planning component, were made by the central government in a strictly hierarchical and plan-based system. Spatial and Regional Planning themselves were not an issue of primary concern, and the main focus was on fulfilling economic targets and strengthening the military infrastructure. Under the “156 program” the industrial infrastructure was expanded under the guidance of the Soviet Union. 156 industrial key projects were launched in the 1950s, mainly in the North of the country and the hinterland further away from the coast (Breitung, 2014).

During the early 1960s the main focus was on strengthening the Military and Defence Industry. This was carried out under the “Third Front Movement” in which military and defence industries were concentrated in Central and South-Western China (Breitung, 2014). The industries were strategically located as a defensive line, hence the name “Third Front”, and as was the case with the “156 program” development mainly took place in peripheral regions further away from the most important conurbations on the East Coast.

Even though these major projects did have a spatial impact by creating new infrastructure surrounding the developments, it was by no means carried out in a comprehensive or structured manner. However, even Spatial and Regional development that is not done in this manner, can be viewed as a form of Planning, even when the main driver for those developments was based on military strategy, and Planning only became a by-product. Following the two major aforementioned waves of development, the Cultural Revolution which started during the mid-1960s largely lead to an abandonment of long-term and strategic planning of economic and infrastructure projects, and therefore Spatial and Regional Planning was put on halt and became effectively non-existent (Breitung, 2014).

During the years of the Cultural Revolution between 1966 and 1976 the country plunged into chaos, which had its roots in internal power struggles within the Communist Party. The party leadership under Mao Zedong feared that the principles of Communism were in danger, and decided to act against the growing wave of criticism targeted at the regime. Especially in academic and intellectual circles there was growing dissent, with wide-spread protest movements springing up across the country (SPICE Digest, 2007).

Mao tried to silence those protests with brutal force, but the supressed anger of the people after years of authoritarian rule has grown so intense that instead of giving in to Mao, open clashes emerged between the government forces, who tried of enforce the goals of the communist revolution using the paramilitary Red Guards, and protesters, which included many intellectuals, but also high ranking Communist party figures who Mao identified as anti-revolutionary. In the following years millions of people, who were seen as enemies of the regime, were brutally attacked, tortured or murdered. This outbreak of violence led to a virtual break-down of the country almost stumbling on the verge of anarchy and eventually caused the downfall of the ruling Party leaders (SPICE Digest, 2007).

After the death of Mao in 1976, the “Gang of Four”, who were the main leaders of the Cultural Revolution under Mao, were stripped of their powers and arrested leading to a change of Party leadership (SPICE Digest, 2007). It was seen as necessary that a more pragmatic and moderate path was to be chosen, and in 1979 Deng Xiaoping gained full control as the new Party leader. In the following years major reforms were undertaken, especially in economic terms with a major shift towards capitalism.

2.4. Planning after the Economic Reforms of 1978, Open-Door Policy

This major shift from a country preoccupied with communist ideology to a more pragmatic approach focussing on economic growth was labelled the “Reform and Opening” era (in Mandarin: “gaige kaifang”). In the subsequent years major reforms were undertaken that turned the economic system completely upside down. Most importantly, the economy was opening up to foreign markets, attracting large-scale foreign investment and turning the country into one of the biggest exporting countries in the world (Wong, 2014)

In 1978 the National Conference of Urban Development decided to reintroduce Urban Planning Policies and therefore counteract the uncontrolled growth that had happened during the pre-reform years. Planning authorities and decision-making structures on different levels of government were created or reintroduced (Yu, 2014).

However, Planning during that time was mainly used as a tool to support economic growth and to facilitate the expansion of urban agglomerations mainly along the East Coast, so the aims of Planning were rather one-sided during this era as opposed to the more comprehensive planning approaches in the following years (Breitung, 2014). The result was that the political goal of achieving a balanced development that would strengthen the hinterland was not achieved, and disparities within the country grew even larger.

It became obvious that even though economic growth was spectacular, that the growing disparities between the booming coastal regions and the underdeveloped areas in Central, Western and Northern China could lead to a growing destabilization of the country and threaten social cohesion. The growing disparities also lead to a growing number of impoverished workers and farmers migrating into the big economic centres (Breitung, 2014).

This large influx of migrant workers from rural to urban areas has caused serious social problems, such as overcrowding and uncontrolled urban sprawl, as these large numbers of incoming people had to be absorbed into the cities within a short period of time. These problems of accelerated urban growth are still an issue until this day. Furthermore, this growth of urban areas has not only caused large scale depopulation of inland areas, but also to an unprecedented deterioration of natural resources and ecosystems (Wong et al., 2008).

Land expropriations as a major cause of urban sprawl

Apart from the immense development pressure in urban areas caused by the influx of migrant workers, one of the main drivers of this urban sprawl is the local authorities' reliance on land expropriation as a source of income. This happened on large-scale after the beginning of the reform period in 1978, when previously fully collectively owned land under the communist system was privatized and vast areas of agricultural and natural land were converted into privately or publicly owned and developed land. This lead to the destruction of environmental resources on an unprecedented scale (Prosterman & Zhu, 2012).

Even though the central government has determined that local authorities can only undertake land expropriations "in the public interest", the widespread practice was that most of the land was used for maximising profit. A vast proportion of the expropriated land has been used for construction purposes, such as factories, housing and road construction with the preservation of natural and agricultural land being largely neglected (LANDESA, Rural Development Institute, 2011, see figure 3).

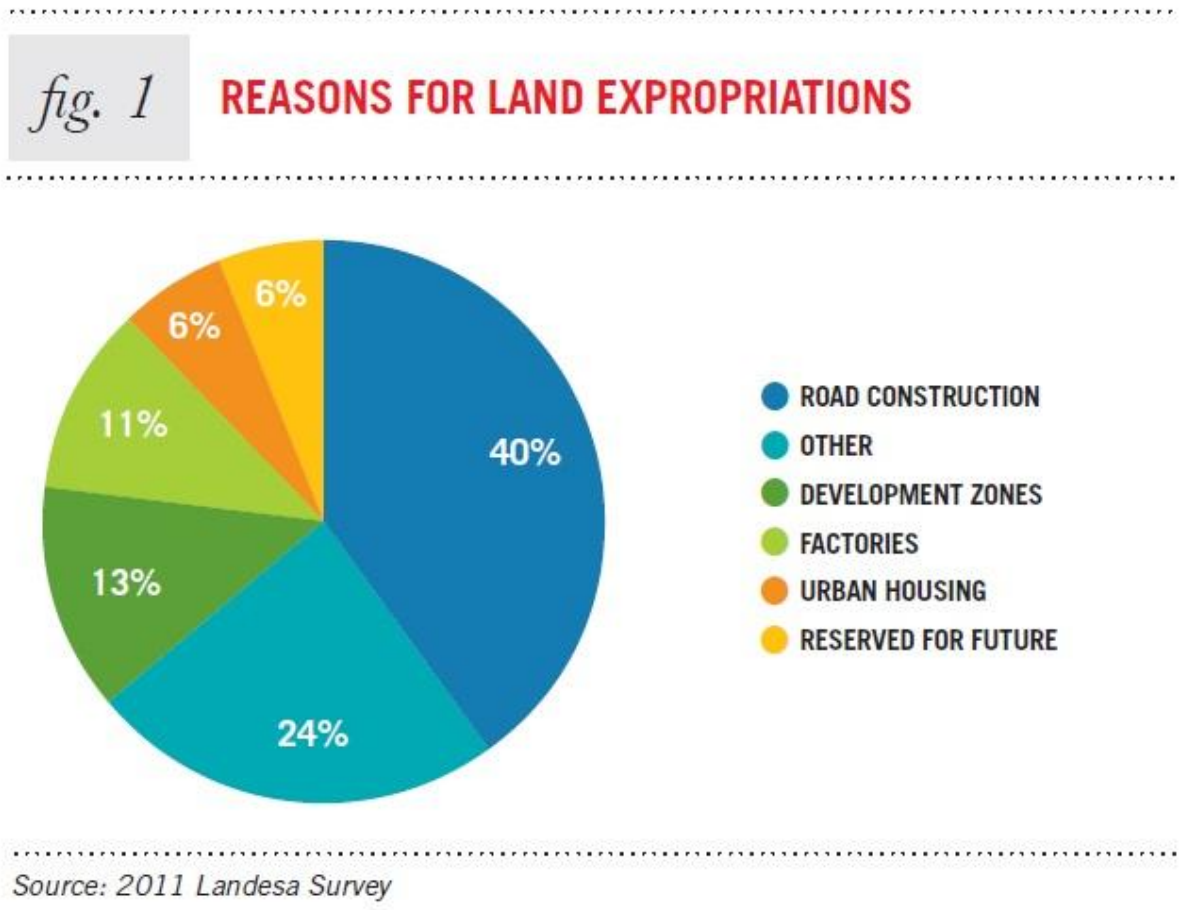


Figure 3: Reasons for land expropriations (LANDESA, Rural Development Institute, 2011)

Although one can argue that road construction or Urban Housing at least partially serve the public interest, most of the generated new uses served private interests, including much of the new road construction that ultimately serves the new private developments. A relatively large proportion of 24% falls under the category “Other”, with critics accusing the authorities of not properly informing the public about the use of the expropriated land in order manipulate the statistics in their own favour. Also, it is suspected that illegal activities are being covered up by this label. One of the main reasons for the disregard of the “public interest”, as prescribed by Chinese Constitutional Law, was that a clear definition of what constitutes “public interest” was never formalized, leaving large room for interpreting it according to one’s own interests (Prosterman & Zhu, 2012).

Local authorities have been able to generate a large amount of income through land expropriation, as by law only 30% of the revenue that comes from selling land has to be transferred to the central government by way of fiscal transfer. Local authorities therefore became the main drivers and beneficiaries of land expropriation (Li, 2011). In 2010 the estimated income generated by local authorities through land expropriation amounted to RMB 2.7 trillion (roughly equals EUR 370 billion), which meant an increase of no less than 70.4% compared to 2009 (Wong, 2014).

These large income increases have been heavily criticized, as the farmers whose land has been expropriated only received insufficient compensation for their land. In 2011, farmers received an average compensation of $17,850 per acre, whereas local authorities were able to earn $740,000 per acre on average, resulting in a huge profit margin for the authorities (LANDESA, Rural Development Institute, 2011).

Since this trend is expected to continue without major land policy reforms, the continued building over of land for profitable development will lead to catastrophic consequences for the country’s natural resources as well as to growing social instability. A survey of 1,791 farmers in 17 provinces in China conducted by the LANDESA Rural Development Institute in 2011 even comes to the conclusion that the current practice of land expropriations and the insufficient compensations for local farmers constitute the “single greatest challenge facing China’s sustainable development and continued stability” (LANDESA, Rural Development Institute, 2011). In order to solve this issue several approaches have been suggested by experts and academics. This will further be discussed in chapter 7 of this thesis.

Also, the fast economic growth lead to a vast depletion of natural resources and pollution in the booming urban agglomerations became a pressing problem. It was therefore seen as imminent to adopt a more sustainable approach to Planning, with the goal of achieving a more balanced development and strengthening underdeveloped and peripheral regions in order to ease pressure on the major urban agglomerations that are already struggling with the fast speed of growth. Starting in the 1990s several major programs and policies were initiated to achieve these goals (Breitung, 2014).

These efforts to modernize the Planning system were complicated though by the still pervasive mentality of the centrally planned economy. These contradictions between the old and the new systems still exist today and sometimes create unresolvable conflicts. It is this complex environment that makes the Chinese Urban Planning system incomparable to any other system in the world (Yu, 2014).

What also complicates the implementation of Regional Plans in China is the secrecy and intransparency of the Chinese governmental authorities. Regional Plan documents, such as the YRDRP, are not available to the general public which has at no stage been involved in the preparation of the plan as opposed to Planning systems in countries with a longer democratic culture, where Planning is a broad scale process that involves the general public as one of the main pillars of participation (Wong et al., 2008).

3. The evolution of Regional Planning in China

To begin with, it is difficult to find a commonly understood definition of what makes up a region in China. Regions were defined in national five-year plans as geographical units, where common economic and social developments should take place. However, the borders of these units changed over the years, and never matched the actual borders of administrative units in China. As we will examine more closely in the following chapters, the lack of an administrative body over-seeing the development of regional plans constitutes a major problem in the implementation of the YRDRP, as the scope of the plan extends over three provinces that have no common administrative body (Wong et al., 2008).

One of the main reasons for these unclear mechanisms is the historical development of regional planning in China, which has seen several distinct phases that often differed from each other substantially. According to Wong, C., Qian, H. and Zhou, K. in "In search of regional planning in China, the case of Jiangsu and the Yangtze Delta" (2008) three distinct phases have characterized Chinese Regional Planning since the founding of the People's Republic of China in 1948. Figure 4 provides an overview of these phases that will be introduced in more detail in the following sub-chapters.

Description	Nature	Subjects dealt with
Wave 1: 1950s The Soviet model	Productivity distribution planning	Resource exploitation, productivity distribution, locations of large industrial projects, cities and residential locations.
Wave 2: 1980s–90s Open-door policy and orthodox regional planning paradigm	1980s: Territorial planning Japanese and Western models	Exploitation, use and protection of the territorial space, coordinating economic, environmental and population resources (later became land-use plan that focused on farmland preservation).
	1989: Urban system planning (first National Planning Act)	Spatial hierarchy and functional relationship between cities and the region; designation of function and size, provision of infrastructure at the regional level.
Wave 3: 2000–now Globalisation, urbanisation and sustainable development	Experimenting with new forms of regional plans and regional governance	Strategic spatial plans, conceptual plans at different spatial scales (from the whole state to counties), crossing administrative boundaries.

Figure 4: The three waves of regional Planning in China (Wong et al., 2008, p. 302)

3.1. Regional Planning pre-1978

During the first wave of Regional Planning in the early years of the Peoples' Republic of China Regional Planning did not play a central role and was only used as a means to fulfil the goals of a growing economy and the strengthening of the country's industrial base. Most importantly, the central government's intention was to strengthen areas in inland China, so that economic development would not only take place in the Coastal Regions (Wong et al., 2008)

According to Wong, C., et al. (2008) Regional Planning during this era produced inadequate results for a number of reason, at least looking back in hindsight from today's point of view, as Planning Practice always has to be viewed in a historical context, and mistakes and undesirable developments oftentimes only become apparent many years later. Also, one has to take into account which kinds of philosophies and practices are fashionable in a given period. Firstly, due to its primary focus on meeting economic goals environmental considerations were largely neglected, creating severe problems with pollution and the depletion of natural resources. Secondly, as administrational structures were strictly vertical and top-down, horizontal planning and cooperation between neighbouring regions was largely absent, which however would have been essential for effective regional planning.

On top of the hierarchy was the National Planning Commission (NPC) (in Mandarin: "guojia jihua weiyuan hui"), which centrally decided on all resource allocation and the distribution of production factors throughout the country by issuing "Five-Year Social and Economic Development Plans". The NPC ordered the ministries to prepare plans within their own sectors, on which the NPC would base its decisions for the allocation of resources and production factors to local work-units through a vertical hierarchy from the central government to the Provincial and eventually the Municipal Level (Li & Wu, 2012, see figure 5).

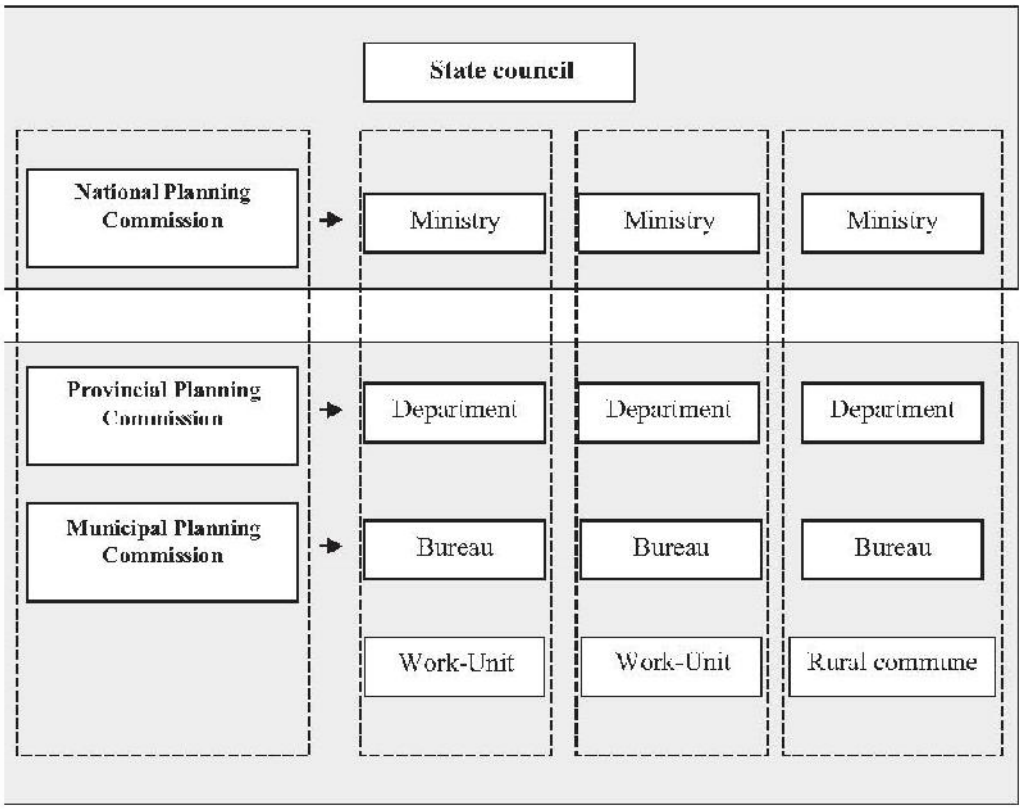


Figure 5: Administrational hierarchy in the Planning System, pre-1978 (Li & Wu, 2012, p.60).

Even though there were regional institutions that spanned over several provinces, they had very little independence and were only put into place as a mechanism to implement centrally issued goals and directives on a regional level. They were also used a coordination mechanism within the region, but there were no institutional ties to other regions, making horizontal coordination virtually inexistent, (Li & Wu, 2012).

As already mentioned in chapter 3, the years of the Cultural Revolution led the country into turmoil, and Regional Planning was therefore virtually inexistent in a country struggling not to end up in anarchy. Regional Planning though experienced a revival after the Economic Reforms of 1978, when free-market practices became prevalent, but also led to contradictions with the strong role of the central government that didn't want to give up control (Wong et al., 2008).

3.2. Regional Planning after 1978, Open-Door Policy

Although there have been some changes in the administrational structure and the role of different levels of government, the underlying structure of a strictly top-down hierarchy with strong state-control by the central government was maintained in its core, with the Five-Year-Plans remaining at the heart of government strategy. And even though a resurgence of Regional and Spatial Planning could be observed, it was still heavily focussed on meeting economic growth (Breitung, 2014).

One of the main consequences of the shift towards a market economy was the decentralization of economic strategy from the previously centrally controlled Plan-based Economic Policy of the allocation of production factors and resources towards a shift to free trade and more local independence of local economic policy (Li & Wu, 2012). The regional bureaus for the implementation of government directives on a regional level that had been set up under Mao's rule where now downgraded and became platforms for the coordination of the economy within regions. The coordination of economic activities was therefore shifted towards the regional level away from the Central government. Special Economic Development Zones, such as the East China Economic Zone, were launched in order to facilitate the horizontal coordination of economic activities (Li & Wu, 2012).

3.2.1. Territorial Planning

The central government's influence on local economic development was therefore greatly reduced, which prompted the NPC to introduce the concept of territorial planning in the early 1980s that was already widely used in Western Planning Systems (Wong et al., 2008).

Through this practice it was hoped to counteract the growing problem of the uncontrolled destruction of natural resources caused by local authorities keen on achieving economic growth and trying to become more competitive. Territorial Planning aims to regulate and restrict land-use, in theory making it an effective tool in keeping negative environmental effects of accelerated economic growth in check (Li & Wu, 2012). The first necessary steps were taken in April 1981, when the Central Party Secretariat recommended the government to implement Territory Planning and subsequently a concept was devised by the by the central administration.

According to Wang, Y., & Hague, C., in "Territory planning in China: A new regional approach" (1993) it was intended by the central government that territorial planning should be undertaken in two separate phases. In a first step information should be collected covering the whole country by providing data on natural resources, the ecological environment, the different types and percentages of land use, such agricultural land, land used for industrial and commercial uses, but also data on ecosystems sensitive to the negative by-products of human activity. Due to the chaos and turmoil of the Cultural Revolution no suitable data was available and therefore the collection of data proved to be an immense challenge.

Territorial Planning was therefore a major change compared to the pre-reform era, as environmental considerations and a sustainable approach were reintroduced into planning thought, as opposed to the heavy focus on military and defence industries during Mao's rule (Wang & Hague, 1993).

In a second phase after the completion of the surveying work a strategy should be created deriving from results of the surveying process. As required by legislation, a territorial plan should contain comprehensive information on a number of issues (Wang & Hague, 1993). For example, it should set regional economic goals, depending on the individual characteristics and the natural resources of a region, but also strategies for the protection of ecosystems, its geographical location and the potential of human resources on the basis of comprehensive demographic information. Due to their different geographical prerequisites inland areas of the country will have different strategies than coastal areas.

Also, a territorial plan must contain a map on where basic infrastructure should be located, which includes communication, transport, energy and water networks. It must also contain a strategy on how industry, agriculture and housing are coordinated within a region (Wang & Hague, 1993). Also, it assign different roles to towns and cities in a region within a hierarchy and network of cities. All these policies should always follow the principle of protecting natural resources and minimizing negative environmental impacts as much as possible.

One of the main pillars of territorial planning is to provide a frame for developments, in which similar to the Austrian "Flächenwidmungsplan" it is up to the owner or developer of the land to decide on its use, as long it is done according to its designated function, such as housing, industrial or commercial use. Of course the legislator should provide a useful framework for

development, that ensures to minimize the negative environmental impact of human activities, but it also gives developers a certain degree of freedom following the principles of a free market economy within the given restrictions by territorial plans (Wang & Hague, 1993).

It soon became obvious though that territorial planning was an unsuitable approach in a system that was still dominated by a mentality of top-down decision-making. As the communist ideology of a highly centralized system, in which virtually all important decisions are made by the central government, was still very prevalent, the territorial planning approach was eventually doomed to fail in post-reform China (Li & Wu, 2013).

This was due the fact that territorial planning was not implemented in its intended form, as the local authorities did not only designate zones for different developments, but the central government attempted to actively intervene by trying to impose what kind of development should take place within those zones or what types of companies or industries should settle there, effectively meaning a return to the previous system of centralizing decision-making on economic development (Li & Wu, 2013). Following the realization of these highly contradictive issues the practice of territorial planning was finally completely abandoned by the NPC in 1996.

Another barrier to implementing territorial planning on a broader scale was a lack of effective administrational structures and insufficient and incomplete land survey data, as the quality of the conducted surveys varied greatly throughout the country and did not provide a suitable reference point. With only insufficient and incomplete plans on land use it is impossible to systematically apply territorial planning (Wong et al., 2008).

But nevertheless this first approach of comprehensive territorial planning at least raised awareness of the importance of sustainability issues and the regulation of economic activities, and even though the collected data was not sufficient to implement it systematically on a national level, the newly gained information provided some important insights into the prerequisites and potentials of some regions (Wang & Hague, 1993).

3.2.2.Special Economic Zones, Urbanization

Another major change in the post-reform era was the policy of strengthening urban agglomerations after the years of Mao Zedong's regime had seen de-urbanization to remote inland and rural areas in order to strengthen the defensive line of the country through strategic location of military industries as well as to turn China into an agricultural society according to Marxist ideology. Peasants were to be the foundation of the Communist Revolution according to Mao (Nailer, 2009). These reforms of returning cities back into the focus of national policy were introduced in 1984 (Wang & Hague, 1993).

However, this renaissance of urban growth, especially along the dynamic urban agglomerations on the East Coast had led to an increasing wealth gap with the inland regions mainly in the West and the North if the country. One of the reasons was the creation of several Special Economic Zones mainly on the East Coast and along the Yangtze River which has resulted in large-scale foreign-direct investment (Wong et al., 2008). The first four Special Economic Zones during the Post-Reform Era were initiated in 1980 in the cities of Shantou, Shenzhen, Xiamen and Zhuhai, with the following fourteen Coast Open Door Cities being added between 1984 and 1988: Beihei, Dalian, Fuzhou, Guangzhou, , Lianyungang, Nantong, Ningbo, Qingdao, Qinhuangdao, Shanghai, Tianjin, Wenzhou, Yantai and Zhangjiang (Sahling, 2008).

Of the 41,998 projects initiated through foreign direct investment throughout the country between 1979 and 1991 a staggering number of 37,665, or 89.7%, were established along the East Coast (Li & Wu, 2012).

With the establishment of these Special Economic Zones the central government gradually gave up control over economic Planning and the local level gained more and more economic independence. Local authorities became autonomous in their investment decisions and therefore had a larger scope for competing in the national and international competition for investment and growth. However, competition between different local authorities became so intense that useful cooperation was more and more abandoned (Li & Wu, 2013).

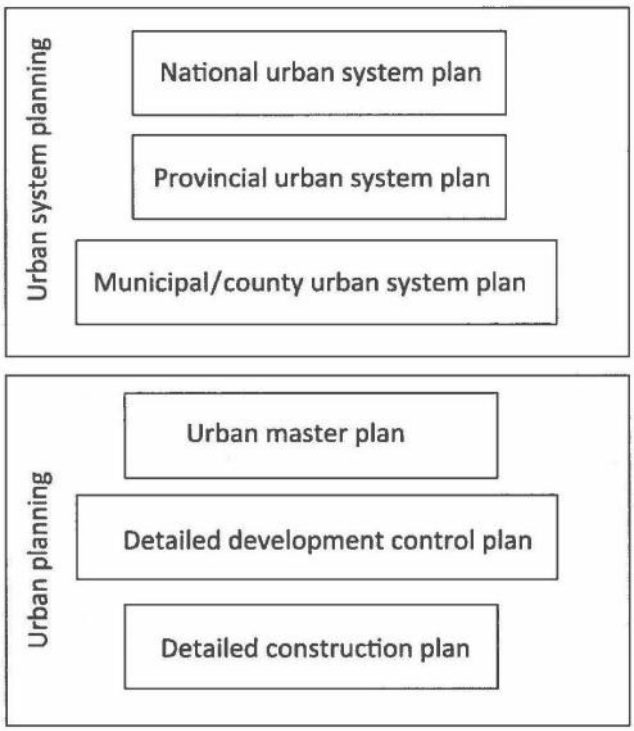
This lead to the demise of large-scale projects that would have been a useful cooperation between different local authorities, but were not implemented due to excessive competition, as is analysed by Luo, X. & Shen, J. in "Why city-region planning does not work well in China:

The case of Suzhou-Wuxi-Changzhou" (2008). We will discuss this in more detail in the following chapter.

The shift away of economic decision-making power from the central government to the local level was most accentuated in the 1990's, when local authorities gained even more independence in policy-making, e.g. they were from now able to collect local taxes at rates they decided for themselves and most importantly local authorities became the main actors in land-use management. They would decide on land-use within their boundaries, and had to right to buy and sell land for different kinds of uses, generating an income in the local budget (Li, 2011). The local authorities' reliance on land expropriation for generating income has however resulted in unfavourable outcomes, as we have already analysed in Chapter 3.1.4.

3.2.3.Urban System Planning

After Territorial Planning had been abandoned a new approach to Planning was sought by the National Ministry of Construction. A concept was developed focussing on city hierarchies and functional links and connections between cities, also known as the "Urban System Plan" (Wong et al., 2008). This concept was introduced as part of the City Planning Act of 1990, through which a statutory planning system was put into force, consisting of two levels, with the upper level being the urban master plan and the lower level the detailed plan (see figure 6).



The statutory planning system in China. This system consists of two tiers: the urban master plan and the detailed plan. But there are supplementary plans to support these tiers, for example, the urban system plan before the preparation of the urban master plan. For large cities, a district plan may be prepared to make the overall master plan more concrete. And at the lower tier, the detailed development control plan appeared as a zoning type of development framework for land sales and development.

Figure 6: The statutory Planning System in China (Wu, 2015, p. 62)

The master plan is more generalized and unspecific, designating the overall role of a city and defining targets such population numbers, the infrastructure network, industrial development and the land use division and distributrion. It is more strategic in its outlook, and has a planning scope of 20 years. Below the master plan is the detailed plan, which is required to use the master plan as a guideline. The detailed plan specifies the targets and policies of the master plan and breaks it down to smaller units of a city by defining the needs for concrete construction projects. This includes specifics of buildings such as size, and functions and their relations with the surroundings, such as road networks and other vital infrastructure networks of the city (Wu, 2015).

Another feature of the detailed plan in relation to urban planning is the “residential district plan” or the “residential micro-district plan”. This plan defines the development of a

neighbourhood, designating its different functions (see figure 7). One level above the master plan is the “urban system plan” (see figure 6). According to the 1990 Planning Act urban system plans should be produced by different levels of administration, from the national down to the provincial and municipal level. These types of urban system plans were hailed as moving the production of Plans up from the city level to the city region level, thus having a wider geographical outlook (Wu, 2015).

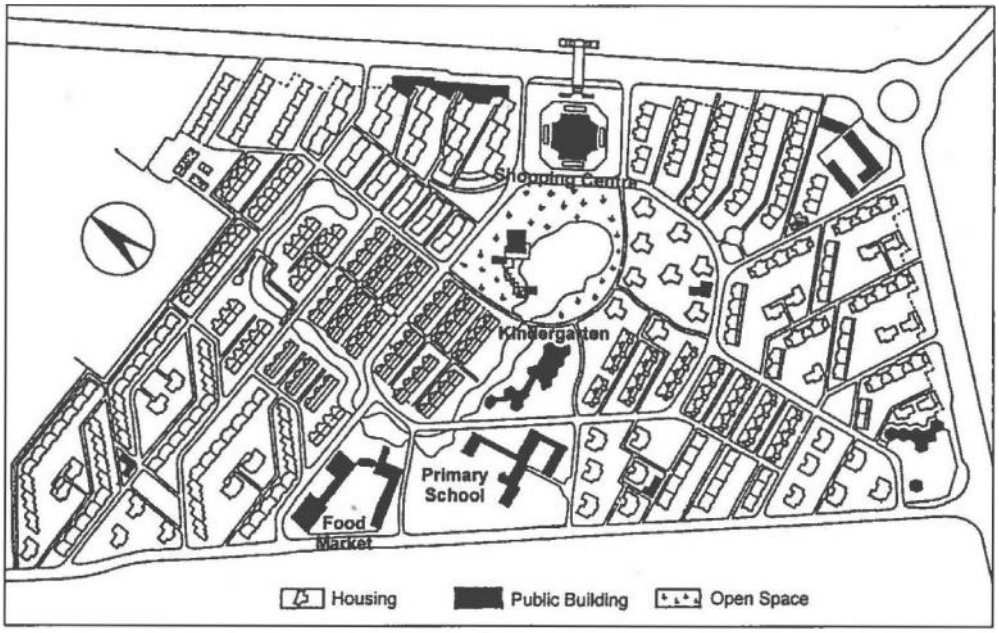


Figure 3.3 The detailed plan for a residential micro-district in the city of Changzhou. The plan was prepared in the early 1980s, showing the features of the detailed plan as a layout of construction and services, for example, the location and layout of green space and parks, the food market, kindergarten, primary school, and community center as well as apartment buildings.

Source: Yeh and Wu, 1999

Figure 7: Residential micro-district plan in Changzhou (Wu, 2015, p. 61)

Urban System Plans follow the concept of “three structures and one network”, with the three structures being the space, size and function and network meaning the transportation network. The specific role of a city within a network and hierarchy of cities is defined by the function. Space means the geographical structure of cities within the Plan unit and size defines the hierarchy and location of cities due to their sizes. These three functions are embedded in the transport networks which provides the underlying grid of the area of an Urban System Plan (Wu, 2015).

However, several problems emerged with the implementation of the Urban System Plan, according to Li, Y. & Wu, F. (2013): It followed anachronistic ideas of a predefined hierarchy of city-networks, in which each city is assigned a certain role within this hierarchy. The most prominent example of an Urban System Plan was the Pearl River Delta (PRD) Urban System Plan, initiated in 1996 (see figure 8).

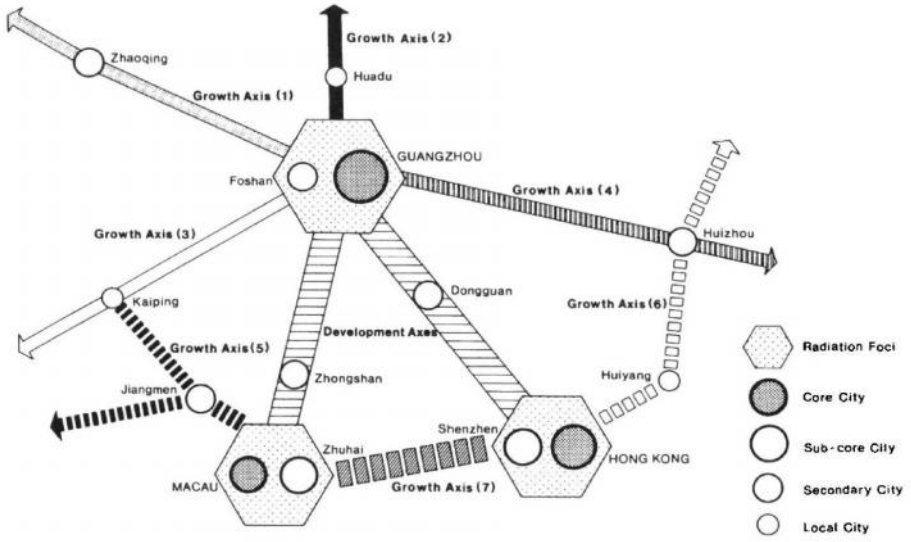


Fig. 2. Development and growth axes in the PRDUSP. (*Note:* Hong Kong and Macau had not been officially considered in the formulation of the PRDUSP and they occasionally were mentioned to complete the picture of development in the region. This diagram has made the PRDUSP's implicit recognition of Hong Kong and Macau explicit, and labels them as core cities in the urban hierarchy.) *Source:* Modified from Construction Commission of Guangdong Province (1996, p. 38).

Figure 8: City network and hierarchy, development axes in the Pearl River Delta (Ng & Tang, 1999, p.606)

This approach, however, is not adaptable to major external changes, and it soon became obvious that it is an unsuitable approach in the new and dynamic Capitalist System, in which a great degree of freedom is given to investors and future development is therefore very difficult to predict. It does not take into account that regions are constantly changing, and an inflexible city hierarchy does not do these changes justice (Wong et al., 2008). This is yet another example of how the mentality of centralized decision-making from the pre-reform years came into major conflict with a new era.

Also, these urban system plans focussed on city networks and hierarchies within regions and did not cross the borders of provincial governments, neglecting the fact that such networks should also be defined across regional boundaries, and not only focus on development within a region. So these Urban System Plans completely neglected the already longstanding problem of a lack of interregional cooperation (Wu, 2015). Moreover, even though the production of Urban System Plans is statutory by force of the 1990 Planning Act, there is no clear mechanism for implementing them. A statutory mechanism for implementation only exists for the urban master plan, but not for the urban system plan, which covers the wider city-region (Wu, 2015)

So the only way to actually implement the urban system plan is that cities include the necessary steps into their own urban master plans, but this can only work, if all of the major cities within the Urban System Plan area do this and coordinate with each other (Wu, 2015). However, the lack of efficient coordination is one of the main challenges within the Chinese Planning System, and therefore the "three structures and one network" approach prescribed by the Urban System Plan were rarely put into practice.

So the major problem was the loss of influence by the central government, as the production of such an Urban System Plan was done by the local authorities, and even though higher level authorities had to give their formal approval, their actual influence on the policies was very marginal. The coordination of the Urban System Plans between different regions and local authorities was therefore insufficient and unsatisfactory, and even though it is formally still in force, its importance fell compared to new plans in the 1990s and especially from 2000 on (Li & Wu, 2013).

3.2.4.Regional Planning in the 21st century

The beginning of the 21st century saw a revival of regional planning in China, following growing discussions on the inefficiency of regional planning policies in the post-reform period. It was especially worrying that regional disparities had substantially grown in favour of the booming coastal regions and there was a consensus among different stakeholders and academics that new policies need to be developed to both reduce these disparities, but also to find a more sustainable approach to Regional Planning, after the often catastrophic environmental consequences of the fast economic growth had become obvious (Li & Wu, 2012).

The biggest lack of past regional policies was that they did not provide a sufficient strategic outlook for regions and were too inflexible and not forward-looking. In a time of fast and often unpredictable changes it became imminent to find new ways of thinking and strategies, and so a number of policies were subsequently developed by the central government, starting in 1999 with the policy "Developing the Western Region", followed by the strategies "Reviving the North-East Industrial Base" in 2003 and "Boosting the Midland Economic Growth" in 2004 (Li & Wu, 2012).

It was hoped that these strategies would provide a counterweight to the imbalanced economic growth between the coastal and inland regions, but it turned out that they could not stop the trend of growing disparities, despite the large amounts of financial transfers to underdeveloped inland regions. It was a learning lesson for policy-makers that even if major policies are drawn up to reduce imbalanced development, booming regions will still remain attractive for development due to their advantageous locations and their endowments with production factors. Even though these policies in the early years of the new millennium did achieve some limited results, the Coastal Regions still remained highly desirable to foreign investment (Breitung, 2014).

This realization that the attractiveness of these major urban centres on the East Coast should be viewed as an advantage and not something that needs to be weakened in favour of peripheral regions lead to a reorganization of the central government's regional planning strategy. Major policies during the 2000s and 2010s turned the focus back to planning for these major metropolitan regions. The motivation behind this was not only driven by the failure of domestic regional planning programs that aimed to reduce regional disparities, but also by growing competition from major metropolitan areas in a globalized economy (Breitung, 2014).

Also, the attitude towards the massive influx of migrant workers into the booming coastal cities dramatically changed during the recent years. For example, Shenzhen, which developed into one of the powerhouses of the rising Chinese economy, had been attracting millions of migrant workers from rural provinces. Shenzhen, which is located in Guangdong province in the south east of the country, was designated as a so-called "arrival city" during the early 1980s, growing from a small fishing town with 25.000 inhabitants to an economic an industrial centre with a population of 14 million only within a few decades. This fast growth was due to the city being

chosen as a Special Economic Zone benefitting from the proximity to the already booming financial centre of Hong Kong (Saunders, 2011).

Shenzhen became an industrial centre for the production of export goods, such as clothing, but also high-tech-products such as laptops and mobile phones. This economic success was to a large degree achieved on the shoulders of these migrant workers, but starting in the 1990s the growth of Shenzhen slowed down, with thousands of migrant workers leaving Shenzhen again and never returning back, causing a lack of qualified workers for the booming industries of the city. The responsible authorities were puzzled by this developed and searching for the possible causes (Saunders, 2011). It turned out that these migrant workers left the city because they couldn't find affordable accommodation, but also had no perspective to raise their own families in the city, as only a small fraction of the city's population possessed a "Shenzhen-Hukou", which grants their children the permission to visit a school in the city. This status was mostly reserved for privileged higher-income and qualified workers.

Only recently has there been a turning point in the approach on how to treat migrant workers in these cities, when an extension of these workers' rights, but also the recognition of the informal settlements was demanded by notable experts and policy-makers. Previously, these informal settlements had been destroyed on large-scale across many cities in the developing world, as the authorities were afraid of the negative effects of slums on the development and the image of a city. These slums were mostly replaced by modern high-rise apartment building, which however were only affordable to more affluent workers, and did not provide the same sense of community as the informal settlements (Saunders, 2011).

However, it was recognized that these informal settlements are essential for migrant workers as they provide a starting point for living in the arrival city. It provides a social network, as mostly migrants from the same region join to live in a settlement, but also provides affordable housing for which they can pay with their workers' salaries. Also, it gives those communities a sense of self-reliance, as these settlements are built and organized by the migrant workers themselves (Saunders, 2011). But most importantly, it gives them the opportunity to participate in the booming economies of these arrival cities, possibly generating a higher income over time through running their own businesses, and ultimately giving them the opportunity to afford more high-quality housing.

The renaissance of Urbanization

It was under Prime Minister Li Keqiang when Urbanization was actively being promoted and major metropolitan regions were seen as the main drivers for growth and innovation (Breitung, 2014). These globalized world cities, Shanghai and Hong Kong, should be at the forefront of this development and become showcase examples for the whole country to the outside world.

These two cities have long been seen as the most globalized cities in China, being the most internationalized cities that are very attractive for foreign direct investment. But more recently Beijing has gained importance on the global stage, for which the fast growth of the city and its surroundings, the sharp rise in the number of international flights and growing investment from international companies are a strong indicator. Also, Beijing has hosted major sports events such as the 2008 Summer Olympics (Breitung, 2008).

Since most of these leading cities are located on or near the coast they would from now on serve as gateway cities to the rest of the country. However, as cities competed with each other for the status of becoming one of these leading cities, the central government designated these city categories centrally, with “globalized cities” being in the in the first and “international cities” in the second category (Breitung, 2014).

This strategy not only focussed on the significance of globalized cities, but also on the regions around these cities, as it was recognized they can function only in cooperation with their surroundings and smaller, lower category cities (Breitung, 2014). However, major metropolitan regions usually constitute their own municipality, and coordination within the wider metropolitan regions has to be done across administrative borders. As these coordination mechanisms are not sufficiently formalized and are largely informal, the success of metropolitan regions mostly depends on the good-will of the different municipalities in the region.

The YRDRP also reflect these attempts of focussing primarily on booming, globalized metropolitan regions, with Shanghai playing the central role, but the other cities of the region are clearly assigned important roles in the Plan as well. The whole Yangtze River Delta Region constitutes one of the most prosperous and dynamic regions in the whole country, and the Official Yangtze River Delta Regional Planning Document (2010) clearly emphasizes the

region's intention to be a gateway and role model for the rest of China in chapter II.1."Guiding ideology" (pp.7-8):

> ...we will lead the country in scientific development, harmonious development, leading development and integrative development, endeavor to become a demonstration zone that practices scientific development view, a guiding zone of reform and innovation, a leading zone of modernization construction, and a pioneer zone of international development, and make greater contribution to build well-off society in an allaround way and realize modernization.

However, similar to the Greater Beijing Region, intraregional cooperation is constrained by the administrative structures and a deficit of coordination mechanisms. We will analyse this in more detail in chapters 5 and 6.

4. The Yangtze River Delta Metropolitan Region

4.1. Defining the Region

The Yangtze River Delta Region spans of the provincial-level city Shanghai and the two provinces Jiangsu and Zhejiang (see figure 11) and extends over a total area of 210,700 square km with a population of an estimated 105 million (United States of America Department of Commerce, 2014, see figure 9).

Provinces:	Shanghai (provincial level city), Jiangsu, Zhejiang
Total area:	210,700 km²
Population:	105 million
GDP (2009):	7,179.412 RMB (21.41% of the national GDP)
Major cities:	• Shanghai (population: 24.15 million) • Jiangsu Province: Nanjing (8.17 million), Suzhou (10.5 million), Wuxi (6.4 million) • Zhejiang Province: Hangzhou (p.: 8.8 million), Ningbo (7.6 million)

Figure 9: Yangtze River Delta Region fact sheet (United States of America Department of Commerce, 2014)

Its advantageous geographical location on the Eastern Chinese Coast (see figure 10) as well its natural resources, strong economic base, well-connected city-network and strong research, educational and cultural facilities have contributed to the region becoming one of the powerhouses of the unprecedented growth that China has seen since the economic reforms in the late seventies (Wang & Jiang, 2012). The region plays a crucial role in the country's economy, as in 2009 it produced a staggering 21.41% (7,179.412 RMB) of the national GDP (Zhang, 2010). The YRDRP aims to build on this role and further strengthen and extend the region's economic position.

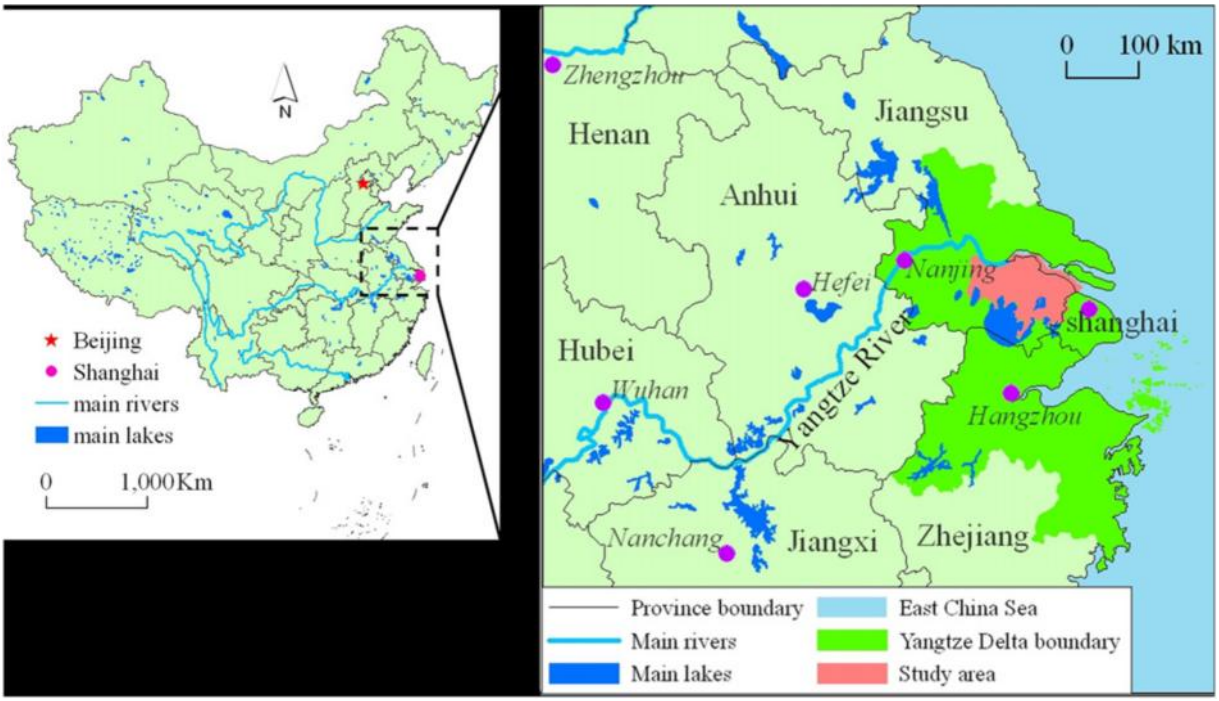


Figure 10: location of the Yangtze River Delta Region within China (Gu et al., 2011, p. 545)

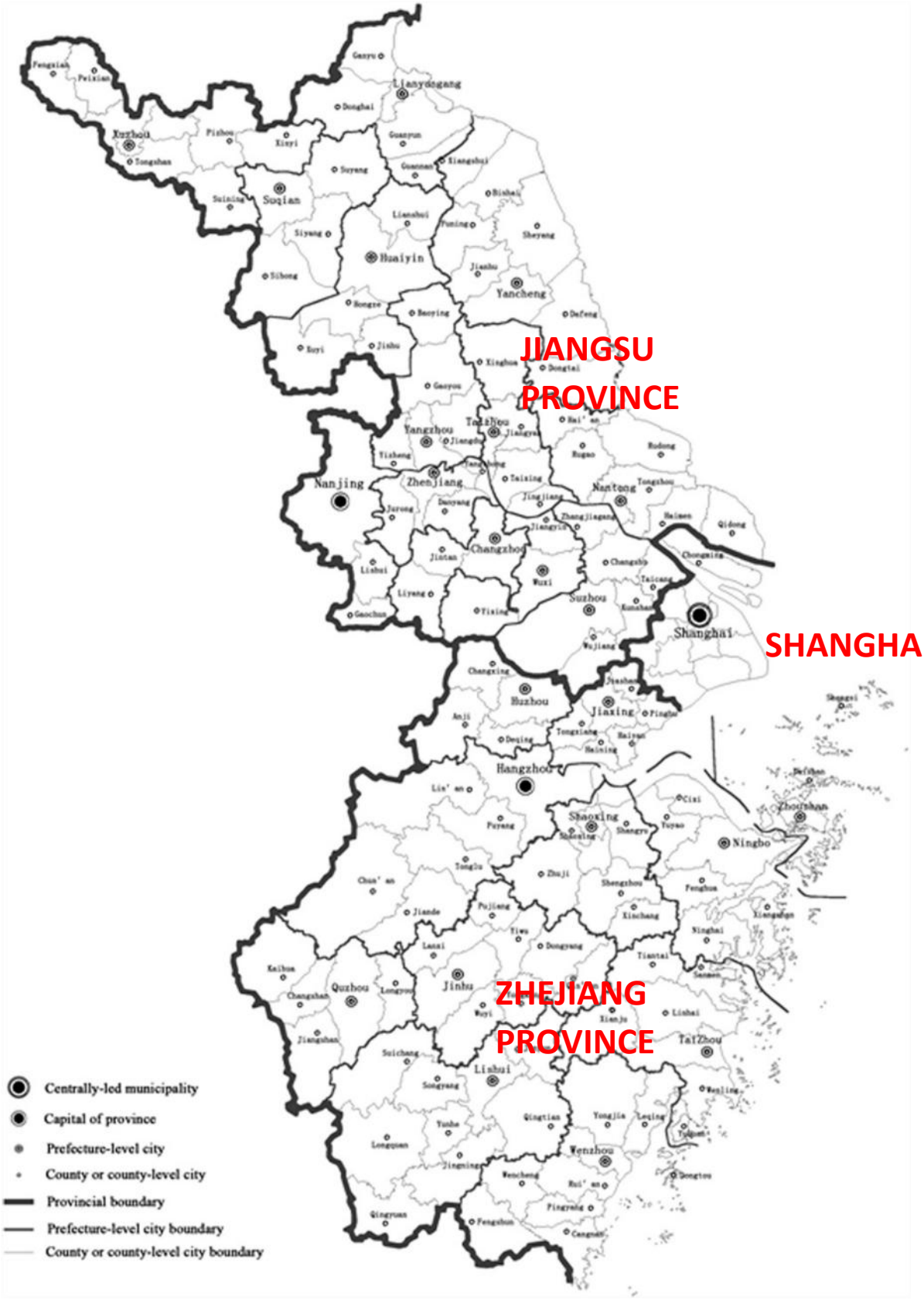


Figure 11: The three provinces of the Yangtze River Delta Region (Li & Wu, 2013, p.142)

4.2. The Yangtze River Delta Metropolitan Region throughout history

Regional Development of the Yangtze River Delta Region has been 7.000 years in the making, and due to its favourable geography, climate and abundant natural resources has become one of the most prosperous regions in China. The region has always been very suitable for agriculture, and has therefore become famous for its wide diversity of agricultural products, especially for its production of high-quality teas that have been traded throughout China and beyond until this day. Other important regional products that were, and still are, produced in high quantities are rice and silk, for which the mild and humid climate in the region proved to be ideal (Gu et al., 2011).

But apart from that the Region has also developed into a cultural and economic hotspot of China, mostly because of its highly advantageous and well-connected location on the Chinese East Coast, with rivers such as the Yangtze River serving as major trading routes. Major ports and trade centres for rice, silk and other products had been developing over centuries, turning the region into a prosperous and dynamic economic region (Gu et al., 2011).

A sophisticated network of canals was developed in many cities of the region to serve these major trading waterways, most importantly the Grand Canal of China, for which construction had already begun in 486 BC and had been expanded to connect Beijing on one end to Hangzhou at the other end, reaching its final length of a staggering 1.794 km between Beijing and Hangzhou by 1271 (Ruggeri, 2014).

The main motivation for constructing the Grand Canal was to create a North-South route for the transportation of agricultural products that were produced in abundance in the YRD. The construction of the Grand Canal was necessary, as the Yangtze River was only suitable for the transportation of goods from East to West, and so the Grand Canal made it possible to ship goods into the Northern and Southern China. Through the construction of these Canal systems the YRD became the main provider of grain and other agricultural products in the Chinese empire (Ruggeri, 2014)

The Grand Canal is still operational today and many of the ancient canal systems in the cities that are connected to the Grand Canal are still preserved until this day. In order to protect these remaining canal systems they have been declared a World Heritage Site on June 22nd, 2014 (China Daily Online, 2014b).

The wealth of the region that was a consequence of its bustling trade and economy also sparked the development of cultural and educational facilities. This environment provided to be an ideal breeding ground for urban growth, and so the region became the most densely urbanized region in China. Shanghai is the undisputed leading city of the region, which has turned into of the most influential financial centres in the world, after it had stagnated in development during the pre-reform years under Mao, as it was largely bypassed by international markets. Also, it has become a centre for high-tech industries. However, other major cities in the regions, such as Hangzhou and Suzhou, were able to attract large-scale foreign direct investment and develop a strong position in high-tech and other fast growing industries. One internationally renowned example is the Alibaba Group, which was founded in Hangzhou and still has its headquarters there (Liu, 2016).

So the region has managed to undergo a major transformation from the country's bread basket supplying the whole country with essential crops to a highly dynamic and competitive economy (Gu et al., 2011).

Also, the Yangtze River Delta Metropolitan Region is the country's leading region in terms of research and higher education, as Prof. Jiang from the School of Architecture at Nanjing Southeast University, pointed out in a structured questionnaire that I sent to him in May 2016. According to Prof. Jiang the region boasts a number of high-profile universities and research institutions. Compared to other regions in China it is the most internationally connected and accessible region in China, attracting large-scale investment, but also expertise from other regions in the world (see also interview transcript in the Annex).

Also worth mentioning is the city of Hefei in Anhui region, if you include it in the Yangtze River Delta Metropolitan Region. Hefei has been designated to be one of the China's four science and education bases and among the many institutions in the city, the University of Science and Technology of China (USTC) stands out most prominently (Xinhua News Agency, 2012). USTC is a leading institution with global competitiveness in many research fields, for example in Quantum Physics and Quantum Information. USCT has made headlines in August 2016, when a quantum satellite was sent into orbit, as part of the ambitious QUESS project, which is a cooperation between USTC and the Austrian Academy of Sciences (China Daily USA Online, 2016).

4.3. The role of Shanghai in the global financial system.

As will also be mentioned in chapter 5.2, one of the main policy aims of the Yangtze River Delta Regional Plan is to further expand Shanghai's role as both a domestic and an international financial centre. It should take the leading role as a gateway to the Yangtze River Delta Region, but also increasingly compete with major global financial centres such as Hong Kong, London or New York.

According to Loechel, H. (2010) Shanghai has good prerequisites to become one of the leading financial centres in the world, which is also reflected in a survey in 2010 of 600 leading experts in top companies of the financial industry, where Shanghai is placed second only after New York in a projected ranking of the most important international financial centres in the world in the year 2020. If Shanghai successfully manages to continue on this path, the whole Yangtze River Delta Region will benefit from the spillover effects of such an international financial centre and the region's cities will grow in importance.

Some measures to increase Shanghai's competitiveness as a financial centre have already been undertaken, as for example the Shanghai Free Trade Zone (FTZ) has been established on Sept.29, 2013 under the initiative of Premier Li Keqiang. It was hoped that through this initiative the success of the Shenzen Special Economic Zone could be repeated but those expectations have not yet been fully met one year after its implementation. Foreign investors complain that the liberalization of free trade rules has not been far-reaching enough and the bureaucratic grip by the government is still too tight (The Wall Street Journal, 2014).

Deng Xiaoping has already pointed out the importance of Shanghai as a future financial centre in 1991 and he is being quoted as saying "if we want to have a say in the world of finance, we need to rely on Shanghai". With this statement he was far ahead of his time, when the rise of Shanghai was not yet considered as a possibility in the West (Loechel, 2010).

This immense potential was correctly recognized in the YRDRP, but the city still has to take several crucial steps in order to fully meet these possibilities. Most importantly, Shanghai has a lot of catching-up to do in what Loechel, H., terms as "Value-Added Chain", which can be described as the professional knowledge and services that are necessary to support the functioning of an international financial centre. This for example includes specialized law and accounting firms among other finance industry professionals. Also, there is a need for extending the education of academics and finance professionals, as Shanghai in that respect can currently not sufficiently compete with other financial centres in the world. This also

includes the removal of language barriers that New York, London and Hong Kong of course don't have to deal with in a similar dimension (Loechel, 2010).

According to Loechel, H., (2010) the establishment of a functioning supporting network of services and educational facilities is long-term process that takes a lot of time to establish, as it means a major cultural change that is dependent on a multitude of influencing factors. The creation of the necessary built, transport or communications infrastructure of course is equally important and the YRDRP clearly emphasizes this need, but these types of infrastructure can be established in comparatively short time as opposed to the service and educational environment. The YRDRP does mention the necessity to create a modern service infrastructure (Chapter V.i., p.20), but the aspect improving educational facilities in that field is not mentioned.

In the area of education for finance professionals London has had the undisputed leading role globally with a wide range of different institutions committed to training in areas such as law, accounting and banking. This is one of the major reasons for success in London, as there is abundant suitable personnel that completes their training in renowned institutions such as London Business School and the London School of Economics. Moreover, non-domestic students constitute a total of 14% in these schools, resulting in a diverse range of graduates from different backgrounds who can bring in knowledge and viewpoints from different parts of the world, from which London ultimately benefits as a financial centre (Boeing & Loechel, 2010).

Another barrier for Shanghai to become an international financial centre is the relative overregulation compared to established financial centres, especially in relation to London (Boeing & Loechel, 2010). Due to this overregulation foreign investment is still somewhat constrained and many potential investors still shy away from entering the Chinese market due to this. However, attracting more international companies and therefore a broader range of professional capacity would be a necessity in order to push Shanghai forward. The Chinese financial industry and banking sector still has a highly domestic focus and needs to internationalize in order to achieve its ambitious goals.

Figure 21 illustrates the overall performance of Shanghai as a financial centre compared to London, a global city which is widely recognized as an being international financial centre, while Frankfurt is considered as regional and Shanghai as a domestic financial centre. This figure illustrates that Shanghai still lags behind London and Frankfurt in a number of indicators,

for instance in education and academic institutions, regulations and the provision of financial services, as already mentioned.

A Comparison of Three Financial Centres: Shanghai – London – Frankfurt

	Shanghai	London	Frankfurt
"Clients-Dimension"			
Capital	No	Yes	No
Central bank	No	Yes	Yes
Regulator	Branches	Yes	Branches
HQ domestic banks	Few	Yes	Yes
Regional HQ of foreign banks	Some	Yes	No
Stock exchange	Yes	Yes	Yes
"Geographical Reach-Dimension"			
Global	No	Yes	No
Regional	No	Yes	Yes
Domestic	Yes	Yes	Yes
Mobility & communication	Medium	High	High
Market entry conditions	Restricted	Open	Medium
Tax Environment	Not competitive	Competitive	Not competitive
"Product-Dimension"			
Product portfolio	Medium	Broad	Broad
Regulation	Tight	Lax	Medium
Capital markets	Medium	Fully fledged	Fully fledged
"Value-Added-Dimension"			
Talent pool	Narrow	Broad	Broad
Intellectual infrastructure	Medium	High	High
Supply-chain	Medium	High	High

The Overall Result

	Clients	Geographic reach	Products	Value-added chains
London	High	Global	High	High
Frankfurt	Medium	Regional	Medium	High
Shanghai	Low	Domestic	Low / medium	Medium

Source: Loechel / Boeing (2010)

Figure 12: A Comparison of Three Financial Centres: Shanghai – London – Frankfurt (Loechel, H., 2010, p.48).

Moreover, there are still unresolved issues with Beijing, as many important financial institutions such as the Chinese Central Bank and regulatory institutions are still located in the capital. However, it would be most advantageous if some of the decision-making processes of these crucial financial institutions would be transferred at least in part to branches in Shanghai (Loechel, 2010).

This can be demonstrated by the example Frankfurt, which among others serves as the base of the Deutsche Bank, as well as the European Central Bank. This would dramatically improve

the efficiency of the financial centre Shanghai and is especially important as Shanghai is in stiff competition with other East Asian financial centres such as Hong Kong or Singapore, which still have a far higher proportion of international cooperations and international and regional banks (Loechel, 2010). However, there are encouraging signs, that the central government in Beijing has recognized this and is working towards further concentration important financial institutions in Shanghai.

Another major obstacle to Shanghai's rise to an international financial centre are the stringent regulations on the tradability of China's currency renminbi (RMB). It is crucial that these regulations must be reduced, as a competitive currency that can be traded on international markets is a prerequisite for a city to become a major global financial centre (Loechel, 2010). This, combined with the other aforementioned challenges that Shanghai still has to deal with, has already lead to slight decrease in the growth of the financial industry in the major Chinese financial centres Shanghai and Beijing, which both had previously seen spectacular growth rates that had pushed them into the leading 25 cities in the world for attracting foreign direct investment. As figure 22 illustrates, the rising Chinese financial centres, together with Singapore, Tokyo and Seoul, are now among the major poles of the international financial system (Clark, 2015).

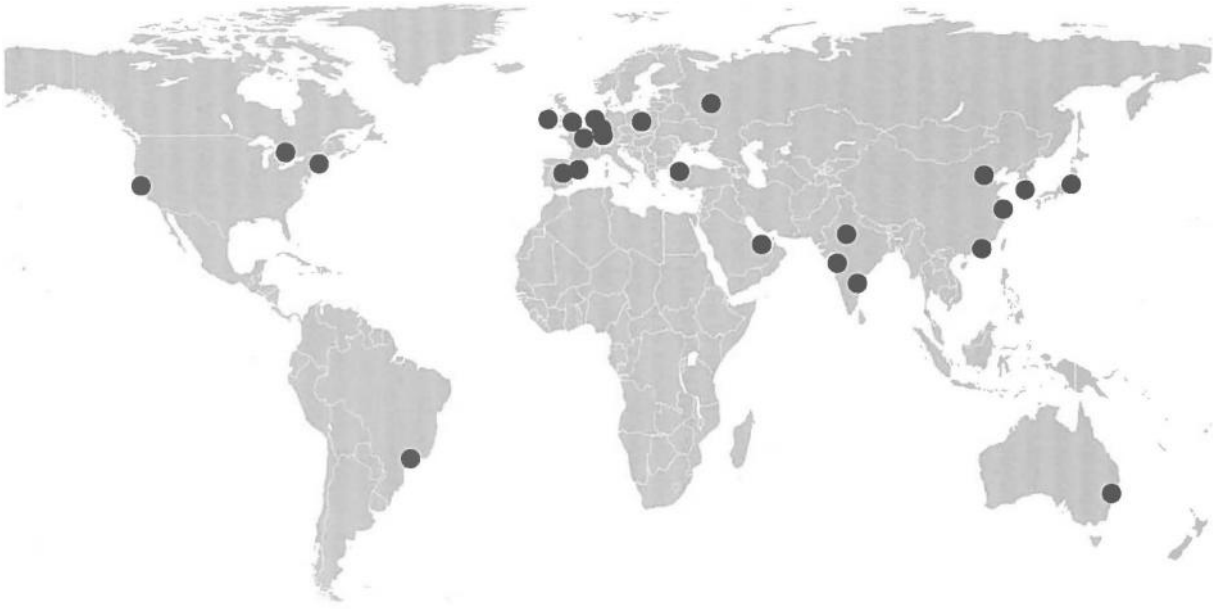


Figure 10.2: The most popular 25 cities for foreign direct investment in 2013
Source: KPMG and Greater Paris Investment Agency (2014).

Figure 13: The top 25 financial centres for attracting foreign direct investment (Clark, G., 2015, p. 129)

However, the international financial market is also subject to a number of unpredictable events, be it in terms of political or economic changes, and so it is difficult to forecast the future development of Shanghai within the global financial system. The recent Brexit vote demonstrates that the fate of London as a global financial centre could drastically change within a short period of time due to sudden political instability (The Economist, 2016).

Although London will most likely remain an important financial centre it is presently unclear to what degree it will lose out to other financial centres and what financial services will eventually be moved away from London. For example, China had previously chosen London as its main trading centre for its national currency RMB, and even though there are no signs yet that this about to change, the Chinese government may still choose to relocate these trading relations to a different financial centre within the European Union (The Economist, 2016).

So a possible future change in the political climate in China could also have unpredictable consequences for Shanghai as a financial centre.

5. Regional Planning policies in the Yangtze River Delta Metropolitan Region

5.1. Earlier Regional Planning Policies in the Yangtze River Delta Region

As we have already discussed, administrational fragmentation and parallel structures that compete and often contradict each other constitute a major problem in the Chinese Planning System. This also became apparent in the Yangtze River Delta Region, where different government authorities developed Regional Plans independent from each other without consulting each other. For example, the MOHURD (Ministry of Housing and Urban-Rural Development) initiated the "Yangtze River Delta Urban Cluster Plan Project" (not to be confused with "The Yangtze River Delta City Cluster Development Plan" that will be analysed in chapter 5.3). However, this Plan never managed to become statutory and was outcompeted by the NDRC which successfully drew up the YRDRP that eventually was formally approved (Wu, 2015). However, it never became statutory, but rather gained the status of an "official document", which makes it more difficult to implement. In other words, it became a government document without any legal mechanism for its actual implementation (Wu, 2015)

5.2. Present Challenges to Regional Planning in the Yangtze River Delta Metropolitan Region

One of the main challenges that have become apparent since the start of the open-door policy is a lack of willingness to cooperate between different local authorities. As we will also realize in the analysis of the YRDRP local authorities rather focus on following their own projects in order to outplay other local authorities rather than working together to achieve common goals. One prominent example is the construction of Pudong International airport, which was opened in 1999 and has since then served as Shanghai's main international airport (Yuen & Zhang, 2009).

While one of the main rationales for building this airport was of course to meet the growing demand from increasing passenger numbers and the growing role of Shanghai as an international financial city, another motivation was also to weaken Hongqiao Airport's position as a transport hub Hongqiao Airport has an advantageous location in the west of the city with good connections to other major cities in the region such as Hangzhou and Wuxi. Today it also serves as the main hub for high speed train connections to and from Shanghai (Lu, 2014).

Pudong Airport, however, lies 40 km to the East of the city centre on the coast, which causes these other major regional cities to be somewhat cut off from the airport, as it is further away

than Hongqiao. By shifting the international air traffic from Hongqiao to Pudong it was therefore hoped, that Shanghai's position would be strengthened compared to other areas of the region, because the better connected Hongqiao airport would lose its importance as a transport hub. From Shanghai's point of view this strategy has been successful, as in 2000 passenger traffic at Hongqiao Airport went down by 15,4%, as all the major international air links shifted to Pudong, including those to Macau and Hong Kong (Yuen & Zhang, 2009). However, from the regional viewpoint, this strategy is highly questionable, as it as a good example of how the pursuit of local interest in order to outplay other local authorities leads to an undesirable overall outcome on a regional level.

And this is not the only example of a failure of creating a regional airport through cooperation in the region, as became obvious in the failure to build a new airport in the SWC (Suzhou-Wuxi-Changzhou) region, which is part of the Jiangsu and Yangtze River Delta region, located to the north west of Shanghai. Since the construction of Pudong Airport and the following degradation of the more favourably located Hongqiao Airport to a regional airport, the accessibility to an international airport has considerably worsened for the SWC region, sparking fears that this would lead to losing out on competitiveness (Luo & Shen, 2008).

The provincial government of Jiangsu therefore pushed for the construction of a new international airport, which would also mean that the existing airports in each of the three cities need be closed down. However, as it soon became apparent each of the three cities showed little interest in cooperation and were all demanding for the new airport to be built in their cities. They all put forward different reasons, why the new airport should be located in their city and not in the other cities, which finally lead the provincial government to change its original plan. While still proposing a new central airport within the SWC region, the adapted plan now also proposed to keep the three existing airports. Even then the cities of Changzhou and Suzhou were not happy with the plan and still proposed their own airport projects (Luo & Shen, 2008).

Since decision powers have been increasingly shifting to local governments since the beginning of the reform period, the central government can no longer fully impose top-down planning decision on provincial and local governments and therefore the proposed Sunan airport project could not go forward in its original form, because of the refusal of the individual cities to close down their own airports (Luo & Shen, 2008). But even though the central and provincial government is continuously losing its grip on local decision making power, it still has still kept its top-down mentality of imposing plans on the local level. This often leads to local

governments not implementing centrally issued plans not because they deem them inefficient, but simply out of defiance of this mentality.

This is also recognized by Breitung, W. in “Raumordnung und Regionalplanung in China” (2014) who argues that regional plan-making should not only focus on the final results and goals of the plan but also take into account on the decision-making process by building trust among local stakeholders and facilitating cooperation so that these stakeholders can find common goals through cooperation and negotiation (Breitung, 2014).

In the case of the intended construction of the Sunan International Airport there was a high level of mistrust between the cities of Suzhou, Wuxi and Changzhou, which was a direct result of insufficient cooperation and dialogue. So by improving the level of trust and cooperation local governments may be more willing again to implement regional plans coming from the central government (Luo & Shen, 2008).

Also the newest generation of regional plans, including the YRDRP, is constrained by the culture of fierce competition, apart from obstacles in the administrative system. The main problem with Regional Planning in the Chinese Planning system is a lack of a direction, as there is no clear direction or assignment of responsibilities on which government department is responsible for coordinating regional development and draw up regional plans (Wu, 2015).

Several government authorities, such as the NDRC, the MOHURD (Ministry of Housing and Urban-Rural Development) and the MLR (Ministry of Land and Resources) independently produce regional Plans and concepts without properly coordinating with each other. Additionally to this governmental fragmentation there are no suitable instruments for implementing those plans. On a positive note, despite all the aforementioned challenges the newest generation of regional Plans at least constitute a first attempt to improve coordination and give clearer guidance on a national level on how regional planning should happen, at least in theory (Wu, 2015).

And even though there is a lack of cooperation and cities used to implement their own policies with little regard to the big picture on a regional level, there have been a number of promising individual initiatives in different cities. For example, according to Prof. Jiang (2016), many individual initiatives have emerged to promote electric mobility in different cities around the region. For example, through a mix of funding by central government, the province and the local city, Suzhou has introduced financial support for electric vehicles. And some cities have introduced electric buses. It is interesting to note in that respect that Tesla vehicles are not

included in this financial support. This can be understood as a step to promote the Chinese electric vehicles industry (Wang & Jiang, 2016).

Prof. Jiang also points out that in terms of other sustainable forms of transport the picture is somewhat mixed. It has to be positively highlighted that many cities have ambitiously expanded their subway systems, which has tremendously helped to reduce congestion. The latest city to open a subway system and continuously extending its network has been Hangzhou in Zheijiang province (Urban Rail, 2015). However, according to Jiang, H. (2016) this has also put a high financial burden on communities due to the comparatively high costs of subway construction and maintenance. So it may be advisable for communities to look into other, less costly alternatives, such as buses and trams, but also walking and cycling.

In terms of walking and cycling many cities in the Yangtze River Delta Metropolitan Region have invested into planning for improving the infrastructure in this regard. However, this progress has been somewhat piecemeal, as the car industry in China is a very dominant industry in China with high revenues, and therefore communities are still somewhat reluctant to enforce measures that would reduce car traffic. The main focus has been on reducing car use, rather than reducing car sales. This includes a sharp rise in the taxing of gas by a factor of 4 and the doubling of inner city parking fees in the city of Nanjing, now costing 15 to 20 RMB per hour (Jiang, 2016).

5.3. The Yangtze River Delta Regional Plan (YRDRP) (2005-2015)

In 2005 the National Development and Reform Commission (NDRC), which is the successor of the previous National Planning Commission (NPC), announced plans to draw up The YRDRP. For this purpose a broad range of experts and stakeholders was invited to contribute to the preparation of the YRDRP, including the government both on a national and local level, academics, universities, The Chinese Academy of Sciences and private planning practitioners. (Li & Wu, 2013).

This preparation culminated in the formal approval of the YRDRP by The State Council on May 24, 2010. The Plan's main goal is to effectively strengthen the position of the Yangtze River Delta Region and promote its role as one of the most dynamic and wealthiest regions of the country. One of the main drivers behind producing such a Regional Plan was the realization that in order to stay competitive urban areas need to focus on the regional level, beyond actual

administrational borders of cities, as the most dynamic growth around the world happens in large scale megaregions with strong interlinkages between individual cities in a region (Wang & Jiang, 2012). Also, The YRDRP should compensate for weaknesses in the administrative system and lead to more coordinated development of the region. Most importantly it should lead to a more sustainable growth that also takes into account environmental issues, as the fast growth of the region in the previous decades had caused disastrous ecological consequences (Wang & Jiang, 2012).

The Plan area covers two provinces and one municipality, which are under the direct control of the Central government (Jiangsu, Zhejiang and Shanghai). However, these three overarching provinces are only at the top of a very complex administrational hierarchy in the region, which apart from three provincial-level governments also includes 24 governments on the prefecture-level , 49 city governments on the county-level and 61 Governments on the county-level (Li & Wu, 2013).

The Plan focusses on regional interregional relations between the cities, and assigns different roles to the region's cities relating to their contributions they can make to the whole region, rather than focussing on strategies for individual cities isolated from the region. This is a very different approach to previous urban plans, which were made by individual cities largely neglecting the regional scale (Wu, 2015).

The YRDRP is part of the NDRC's efforts to raise regional governance up the agenda, as the relatively high autonomy of decision-making powers of local authorities has led to undesirable regional outcomes. Also, it breaches with the previous tradition of plans that only contain one region. The Urban Systems Plans for example, described in Chapter 4.2.3., were made on a provincial level, but neglected connections and cooperation with other provinces. This approach was radically changed by the new generation of regional plans. The YRDRP, however, specifically follows the government's policy that regional plans should not introduce a new regional planning authority that is in charge of implementing the plan. The regional plan should rather be a document of guidance and a reference point, following the central government's "new state space" policy (Wu, 2015).

5.3.1. Main issues and themes

As the first ever comprehensive plan that covers all of the three provinces of the Yangtze River Delta Region the YRDRP sets the main goals for future development of the region and comprises of twelve chapters. The main goals and strategic concept are outlined in Chapter II. "Strategic Orientation and Development Goals" of the Official YRDRP Document.

Sub-Chapter II.ii. "Strategic Orientation" affirms the region's importance as a driver of economic growth and innovation and emphasizes the prominent role the regions' cities have both domestically and internationally. More specifically, the Plan suggests to further extend and strengthen Shanghai's role as an important financial centre both in the Asia-Pacific region and globally. In order to achieve this, the necessary infrastructure shall be provided, both in the built infrastructure, such as the extension of shipping centres for trade, but also in the service sector. Service clusters shall be established, combining financial services, logistics and other state-of-the-art service industries that are necessary to establish a competitive economy in a globalized world (NDRC, 2010).

But the Plan not only focusses on Shanghai, but also highlights the importance of other major cities in the region, such as Hangzhou, Nanjing and Suzhou. The Plan is very ambitious in that it intends to create the most competitive city-network in the world, with Shanghai taking the leading role with strong links and connections to other cities and towns in the region, by creating a highly interconnected urbanized structure. The Plan document as a whole is written in a very broad way, formulating policies for almost any issue that need to be considered in a comprehensive Plan document.

These policies range from the overall development strategy to infrastructure networks, the production of energy, social issues, industrial development, the protection of Ecological Resources or Research and Education. However, all of these policies, although touching on many relevant issues, remain rather generalized and unspecific and still leave a lot of room for interpretation as to how and when and at what scale these policies shall be implemented. However, with that being said, the Plan does contain some concrete development targets on certain key policies illustrates (NDRC, 2010). Most of these targets were defined to be reached by 2015, and some were projected to be achieved by the year 2020.

	Development targets to be reached by year	
Selected indicators	2015	2020
GDP per capita	82,000 yuan (100,000 yuan in core areas)	110,000 yuan (130,000 yuan in core areas)
Proportion of the service sector	48% (50% in core area)	53% (55% in core areas)
urbanization	67% (70% in core areas)	72% (75% in core areas)
proportion of GDP for R&D expenditures	2.5% (3% in core areas)	N/D
proportion of new energy (e.g. photovoltaic, tidal, biomass energy) in the energy mix	4%	N/D
Sulphur dioxide emissions	Reduced by 8%	N/D

Figure 14: Development targets for the Yangtze River Delta Region as defined in the YRDRP (NDRC, 2010)

In addition to these selected indicators the Plan document also defines targets for the population sizes of cities in the Yangtze River Delta Region, depending on the position of a city in the region's city hierarchy (NDRC, 2010):

- The central areas of Shanghai shall not exceed a total population of 10 million, while other districts in Shanghai surrounding the core areas shall increase their population to a total of 8 to 10 million.
- The population of the two "wings cities" Nanjing and Hangzhou shall not exceed 7 million.
- Suzhou, Wuxi, Wenzhou and other cities in that category shall have a population of between 1 and 2 million.
- Finally, cities on a district level, such as Suqian and Lishui shall have a population of around 0.5 to 1 million.

Another main focus of the Plan is to strengthen research and development, by investing in high-tech industries, but also into key research at the region's universities (NDRC, 2010). It

is also intended to create strong linkages between industry and research facilities, in order to foster the creation of novel and innovative products and services. However, the Plan also clearly emphasizes the importance of investing into fundamental research that is not directly linked to industry, but exclusively seeks to achieve scientific excellence. A regional network of these institutions shall be created in order to enhance cooperation between them and thereby strengthen the research base in the region (NDRC, 2010).

All of these ambitious goals shall be reached by 2020, which is the extended Plan period, although as mentioned above, not all of the development targets defined for 2015 were projected until 2020.

According to Chapter III. "Regional Distribution and Coordinated Development" of the official Plan Document, development in the region shall take place within a spatial pattern of "one core and nine belts" (see figure 15), with Shanghai taking the lead as the core city. As already mentioned, Shanghai's role as a financial and commercial centre with a globalized outlook shall be maintained and strengthened. However, this role shall not be limited to Shanghai only, but extend to other parts of the region too, mainly on the Development Belts on the Shanghai-Nanjing Line and the Shanghai-Hangzhou line (NDRC, 2010).

The cities along these lines shall form a densely developed urban belt, where the main focus is on modern services and high-tech industries with a highly international orientation. Nanjing and Hangzhou are declared as Shanghai's "wing cities" in the Plan document. Together with Shanghai they form the spearhead of an interconnected city and town system in the Yangtze River Delta Region (see figure 16).

Already today these three cities constitute an almost uninterrupted and continuous mega-city, which are not governed by one common administration though leading to conflicts of interest. However, the proposal of a regional strategy of Development Belts is a novel approach compared to the five-year plans (Wu, 2015)

Figure 15: Development Belts in the Yangtze River Delta Region as defined in the YRDRP (Li & Wu, 2013, p.144)

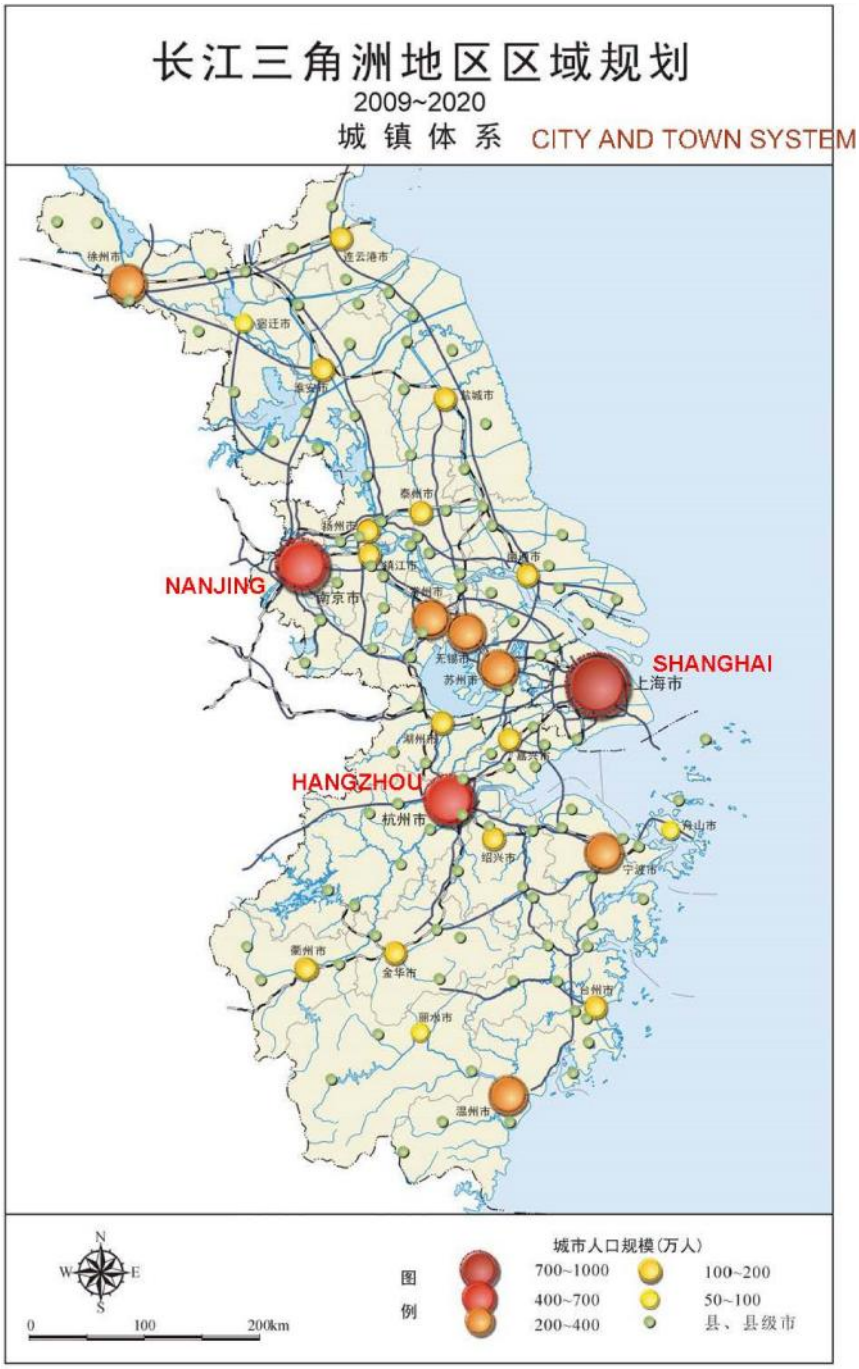


Figure 16: City and Town System in the Yangtze River Delta Region as defined in the YRDRP (Shanghai, Hangzhou and Nanjing are highlighted as core cities) (NDRC, 2010, p.62)

High-emission industries shall be heavily restricted and rather located in regions with a lower population density further away from the major population centres. Industrial development of this kind shall mainly be located in the northern area of the Jiangsu province along the Longhai-development line (see figure 15). In this part of the region the production of goods that are highly intensive in labour and production materials shall be concentrated (NDRC, 2010). It is

conveniently located along a railway line that can be used for the transportation of these goods.

From there goods can be transport to the Coastal development belt (see figure 15), where port facilities shall be extended, in order to provide the logistical infrastructure for the export of these goods, but also for import. This development belt stretches from north to south on the coast, from where regional products, including from high-tech industries, shall be exported to other countries. In order to minimize negative environmental effects of these export-intensive industries they shall be conveniently located in or close to this belt, with high-quality transportation links (see figure 17 below) leading from the industries to the Coastal belt (NDRC, 2010).

In terms of infrastructure provision the Plan emphasizes the need to improve the standard of energy, transport, information, water and other types of infrastructures, which is especially important as the Yangtze River Delta Region aims to further extend its role as the the main centres for trade in China. In that light, the YRDRP strongly recommends to extend port facilities for shipping trade, especially the Shanghai International Shipping Center with the Jiangsu and Zhejiang ports being at the core of this port infrastructure (NDRC, 2010). These ports shall be interlinked with other major nodes of transport, in order to create an efficient transportation system that is labelled "Integrated Transport Hub" in the Plan (NDRC, 2010).

One very remarkable and ambitious project that is explicitly mentioned in the YRDRP is the intention to construct a Shanghai-Hangzhou Maglev high speed magnetic train line that would dramatically reduce the travel time between the two cities, which is already very short due to the existing CRH high speed train link (NDRC, 2010). However, in the meantime this project has already been abandoned by the central government, mostly due to the excessive cost that such a project would produce. The central government rather prefers to rely on the already existing CRH high speed train network and intends to further extend it. Furthermore, the maglev connection that links Pudong Airport with Shanghai city centre has not been received very well both by locals and international travellers, and most importantly the ticket revenue still can't cover the operational costs (Ren, 2012).

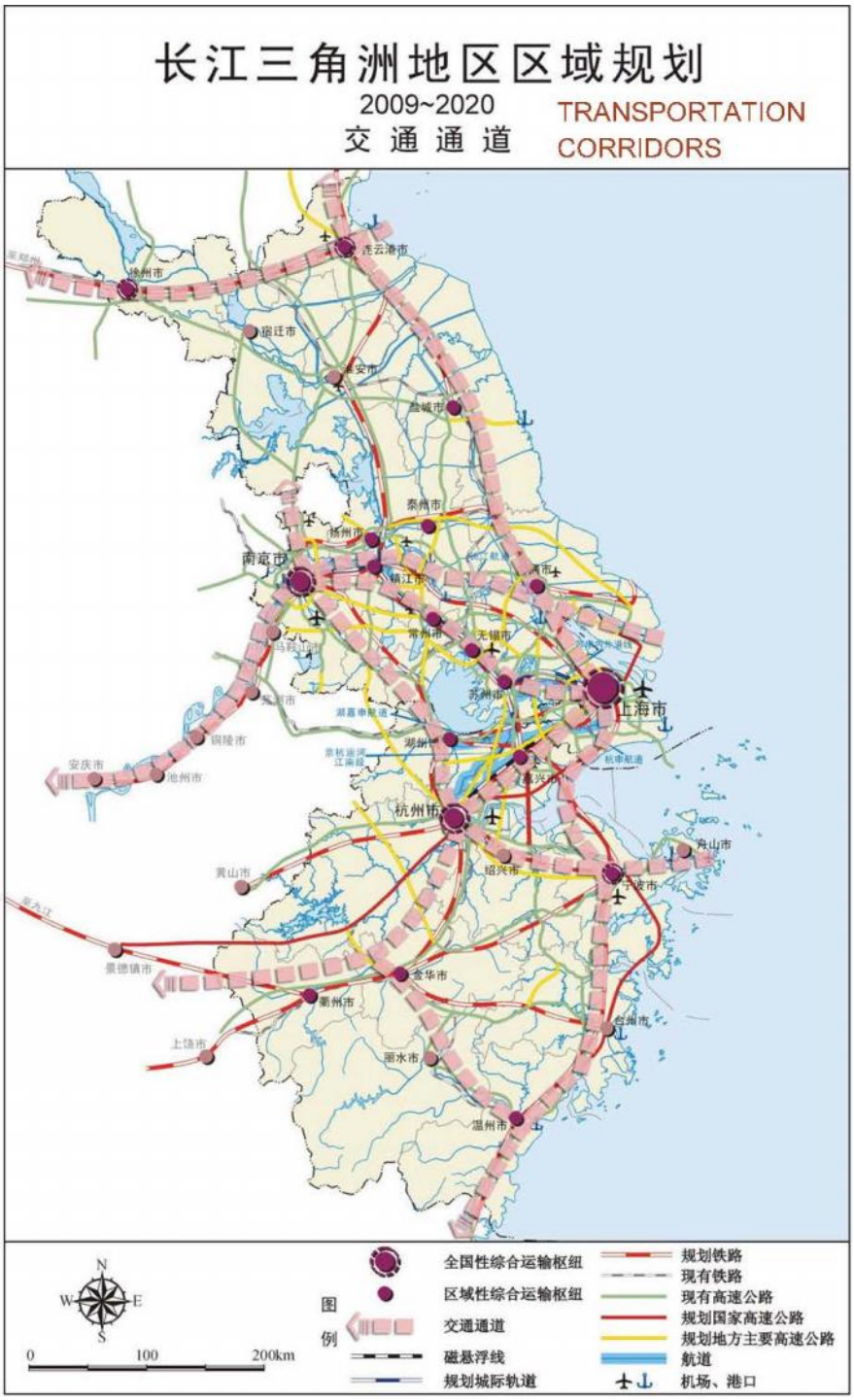


Figure 17: Transportation corridors in the Yangtze River Delta Region as defined in the YRDRP (NDRC, 2010, p.68)

Other Development Belts such as along the Nanjing-Lake-Hangzhou Line, the Development Belts around Taihu Lake and along the Grand Canal of China are designated for more “soft developments” such as tourism, leisure and culture. This is due to their rich heritage of cultural treasures and ecological resources. Especially cities like Hangzhou and Suzhou are major

centres for tourism famous for their cultural and natural treasures that date back many centuries. However, even in those areas the Plan document suggest for some limited industrial development that is compatible to these sensitive cultural and natural uses. This includes industries that are relatively low in emissions and lean more towards the service and high-tech sector. Among these are creative industries, but also certain high-tech and R&D industries, but of course also industries that are necessary to support the important tourism sector in these Development Belts (NDRC, 2010).

Implementation of the YRDRP

A strategy for the implementation of the YRDRP is outlined in the official Yangtze River Delta Regional Planning Document in Chapter XII. "Planning, Organization and Implementation" (NDRC, 2010). However, it remains rather unspecific over a little more than one page, and mainly reminds the three provinces of Shanghai, Jiangsu and Zhejiang to collaborate closely together in order to achieve the policies described in the Plan. It mainly emphasizes the existing informal mechanism for cooperation and communication, but not how these policies shall be enforced through a legally binding administrational mechanism.

This, however, is a major problem for the implementation of the Plan, as will be analysed in the following chapter, even though on a positive note it has to be highlighted that the Plan document is a step forward in that it strongly appeals to the provincial and local authorities in the Yangtze River Delta Region to collaborate more closely (NDRC, 2010).

Even though Chapter XII does mention that by law the National Development and Reform Commission (NDRC) is required to periodically review the implementation of the Plan's policies, the mechanisms for sanctioning by the NDRC in the case of non-compliance with the Plans largely remains unclear and not thoroughly defined, as we will analyse further on.

5.3.2. Production phase of the YRDRP

Several problems and challenges have arisen with the YRDRP that are connected to both the production and the implementation phase of the Plan.

Expert involvement, public participation

As already mentioned, the production of the YRDRP was a process involving a broad range of stakeholders. This was an unprecedented and unusual approach within the Chinese Planning system, as previously the production of Regional Plans was routinely completed within the central government without much outside involvment (Li & Wu, 2013). Even though the production of the YRDRP was financed by the central government, with the NDRC taking the lead role, the plan-making process involved the active participation of a wide range of academics and other planning experts.

These stakeholders were distributed to three different working teams, which were the expert team, the comprehensive team and the local team. The expert team was again subdivided into various research teams, which included topics such as urbanization and demographics, protection of natural resources and industrial and economic development. Secondly, the local team comprised of local stakeholders with thorough knowledge of local circumstances. The main purpose of the local team was to form a building bridge between the central government and local institutions. And thirdly, the comprehensive team took over the overall coordination of the plan-making and research process. The main task of this team was to gather all the collected information and data and produce the final YRDRP document (Li & Wu, 2013).

At first, one can come to the conclusion that this was a very comprehensive process where many views and interests were being considered. This no doubt is true concerning the involvement of academics in the production phase of the plan, as for example the comprehensive team was headed by Nanjing Institute of Geography and Limnology, which is part of the Chinese Academy of Sciences (Li & Wu, 2013).

However, when it comes to the involvement of different government authorities and the public the production phase of the YRDRP was unsatisfactory (Li, 2011). Even though there was a certain degree of consultation with local authorities, this only included major cities down the prefecture level, so smaller towns and cities were actually excluded from the participation process. These major cities that were included were Shanghai at the provincial level, then cities at the sub-provincial level, which are the second highest tier in the Chinese

administrational structure, such as Hangzhou and Nanjing, and prefecture level-cities (China Internet Information Center, 2015). According to Yi Li (2011) many of the smaller local authorities were not even aware or informed that a regional plan for the Yangtze River Delta Region was being produced. But even the above-mentioned major cities were not involved in decision-making, but were only used for information gathering. The general public was involved at no stage or level of the production phase of the YRDRP, so this is an aspect that is completely absent.

What I can gain from this as a conclusion is that even though there were well-intentioned efforts to put the production of the YRDRP on a broad base and consider many different aspects, the central government and its agency responsible for the YRDRP, the NDRC, were not able to fully abandon the long-standing mentality of top-down decision making structures. This becomes especially apparent in the lacking involvement of lower level local authorities and the general public. According to Yi Li (2011) many authorities below the prefecture-level felt excluded and can't identify with the YRDRP, as they were not involved at any stage.

Many of them complained that their interests were not taken into account and therefore find it difficult to stick to the policies in the Plan. The lack of support for the YRDRP also contributes to excess competition within the region, as will also be analysed in the following sub-chapter. This is due to the fact that local authorities are anxious that they will lose out to competitors, as there is no commonly agreed vision for the region, and therefore local authorities will merely lobby for their own interest and attract funding from the NDRC for their own projects instead of pushing in the same direction in the greater interest of regional development (Li, 2011).

So as a conclusion, it is not enough to produce a regional plan that is based on knowledge of a wide range of experts, but the support of the Plan and involvement of all levels of government down to smaller-sized districts, towns and cities is a t least equally important. Without this support, the level of competition between different stakeholders will increase to an unmanageable degree and eventually lead to the failure of a regional plan.

5.3.3. Implementation phase of the YRDRP

Excess intraregional competition and lack of efficient cooperation

Another area of concern regards the implementation Phase of the YRDRP. According to Wang, Y. and Jiang, L. (2012) in “The Dilemma of the Implementation of the Yangtze River Delta Regional Planning” several problems and limiting factors have surfaced in the implementation of the YRDRP. The fact that the region has emerged into the most dynamic and competitive region in the country has led to fierce competition between local authorities in the area in attracting investment. This competition has been especially pronounced in local governments at the same administrative level. In order to achieve an implementation of the goals outlined in the Plan the issue of excess competition needs to be addressed and solved.

Some tangible successes have been achieved in the built regional infrastructure, such as the Hangzhou Bay Bridge or the CRH high speed train lines that connect major cities within the region (Wang & Jiang, 2012). However, the rapidly growing and highly successful high-speed train network is planned by the central government, which also provides the funding for the planning and construction of the network. So the successful implementation of the high-speed train network is not a result of effective regional cooperation, but of top-down planning from the central government (Lu, 2014).

But merely putting the blame on local and provincial governments for failing to implement regional planning projects would be a too one-sided view, because they only have a limited amount of funding available, as at least two thirds of the tax-revenue stays with the central government in Beijing. So the central government has more power to implement large-scale projects that require a large amount of public funding (Lu, 2014).

But even with that being said the region still lacks effective tools of collaboration and coordination. The main problem is that the existing mechanisms such as the "urban economic coordination commission of Yangtze River Delta" are mainly informal and serve as a platform of communication, instead of being a formal organization with methods of negotiation such as in the EU. The existing coordination methods in the Chinese Planning system are not far-reaching enough and the coordination process in bodies such as the "urban economic coordination commission of Yangtze River Delta" is complicated by the circumstance that they are composed of members of various hierarchy levels. This creates too many conflicting interests and is therefore ineffective (Wang & Jiang, 2012).

The competitive environment in the region has led to a homogenization of the industrial structure of the area, in other words local authorities have focussed on competing with each other in the same industrial sectors instead of focussing on different sectors and thereby diversifying the industrial structure of the area. So even though the Yangtze River Delta Region is one of the most prosperous economic regions in the country the awareness has grown that this isomorphism of the industrial structure is one of the major barriers to the further sustainable development in the region (Zhang, 2010).

Furthermore, competition has led to excess construction of local infrastructure, as local authorities aimed to create an advantage for themselves, but which has led to redundancies in the infrastructure. Capacities that exceed the actual needs have for instance been created in the port infrastructure of the region (Wang & Jiang, 2012).

Fierce competition has also lead to rapid deterioration of natural and ecological resources. Especially water and air pollution have become an acute problem, leading to an explosion of costs in counteracting those negative effects, for example in the form of rising health care costs due to increasing numbers of diseases caused by pollution. There has been an increasing outcry in the public about these issues prompting the government to take large scale action. Regional Plans such as the YRDRP were launched as one of the main tools to deal with these large-scale problems (Wang & Jiang, 2012).

Existing mechanisms for cooperation

It has to be noted, however, that local authorities have started to realize in recent years that they need to increasingly move away from competition to cooperation, as this would also be to their own advantage, as the fierce competition has actually produced additional costs due to aforementioned redundancies (Wong et al, 2008). This realization still doesn't fully seem to have settled in, as local authorities still refuse to cooperate in some much needed large scale infrastructure projects. One prominent example is the refusal of the local governments of Suzhou, Wuxi and Changzhou to agree on the construction of the Sunan International Airport (Wang & Jiang, 2012).

Several attempts have been made to improve cooperation within the region, such as in 1997, when the City Economic Coordination Committee consisting of 16 mayors of major cities in the region was established, who meet through a Joint Conference System on a regular basis. Furthermore, since 2001 the Standing Vice Governors of Shanghai, Jiangsu and Zhejiang have

been meeting annually within the newly created Ecomomic Cooperation and Development Forum. And since 2004, the regions of Jiangsu and Zhejiang have created a platform in which the leaders of the 3 provinces of the Yangtze River Delta Region hold regular talks on improving regional development through regional cooperation (Zhang, 2010).

However, although these attempts were well-intentioned, they have proven to be largely ineffective due the fact that these mechanisms are merely informal without any relevant incentives. It was hoped that the creation of the YRDRP as a comprehensive plan whose would finally solve these pressing issues, but a first analysis of the Plan gives a lot of reason for scepticism (Zhang, 2010).

However, even if these informal mechanisms have been constrained by excessive competition, there are still some promising new attempts for cooperation. In spring 2015 mayors of 30 major cities in the Yangtze River Delta Region met for the 15th Yangtze River Delta Economic Coordination Forum. Apart from Shanghai and cities from Jiangsu and Zhejiang provinces, the Forum was also attended by mayors from cities in the Anhui province (China Daily Online, 2015b). The Forum's main goal was to discuss challenges for urbanization and strengthen the cities' willingness to cooperate in order to raise the competitiveness of the region, but also achieve more balanced urban development.

While economic growth was still defined as the main priority, it should happen in a more sustainable and comprehensive way, as Zou Young from the NDRC, which is in charge of coordinating the Forum, pointed out (China Daily Online, 2015b): "The cities should first of all develop themselves well in economy, politics, society, culture and ecological civilization". And he further adds that "The member cities should enhance their coordination in environmental protection and integration in transportation".

It remains to be seen, if this Forum can finally address the challenge of excessive competition within the region successfully or if it turns out to be yet another well-intentioned, but mostly ineffective initiative to improve cooperation. However, at least the willingness at least seems to be there despite many failed attempts.

Further problems with Implementation

However, according to Wang and Jiang (2012) there are a host of other institutional, administrational and organizational barriers to effectively implement the YRDRP. The Plan lacks sufficient enforcement measures that would ensure the realization of its policies, as was analysed by Li, Y. & Wu, F. (2013) in "The emergence of centrally initiated regional plan in China: A case study of Yangtze River Delta Regional Plan". Even though the Plan was approved by the State Council in 2010, and technically is an official document that the subordinated levels of government have to adhere to, the tools for actively enforcing those policies are not sufficient. Since it has statutory power every new project has to be compatible with the Plan and if that new project is not situated in the zoning area identified in the Plan it can't go ahead.

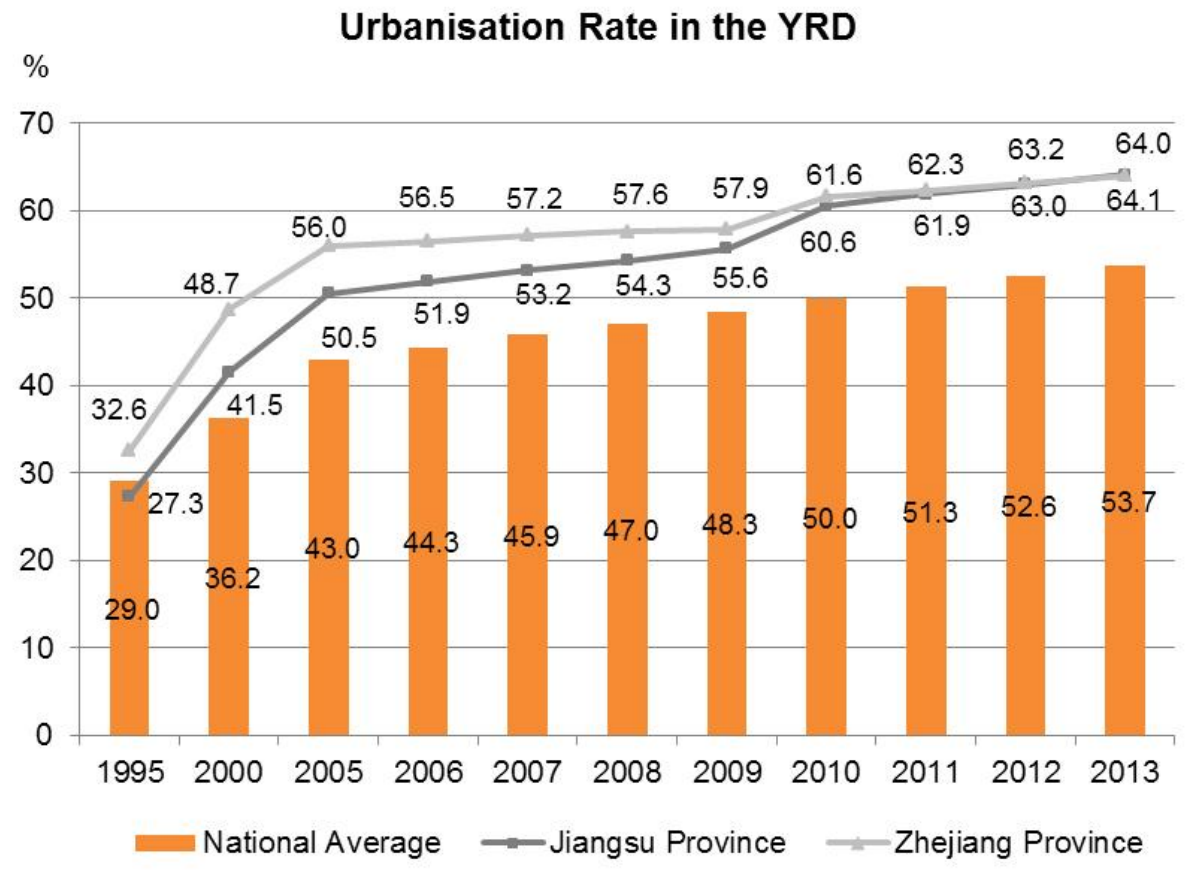
However, the enforcement measures are not sufficient enough, e.g. there is not even a Regional Planning Act in China that would define regulations to force the implementation of a Regional Plan on a local authority, or other measures such as fiscal incentives. And for that reason local authorities often don't have any motivation to stick to a Regional Plan. It remains a real concern, that Regional Plans only have symbolic meaning, and have no real effect. A major and therefore unlikely reform of the Chinese political system would be necessary in order to give Regional Plans more power and significance (Li & Wu, 2013). Currently no institution or organization can be held accountable for the implementation of the YRDRP and it is not even clear which organizational body is responsible for implementation of the YRDRP. Therefore, local authorities effectively have no real reason to stick to the policies detailed in the Plan (Wang & Jiang, 2012).

Another consequence is that there is no mechanism for monitoring and sanctioning the progress of the policies detailed in the Plan (Li & Wu, 2013). Even though the Plan document mentions targets on different indicators that shall be reached by 2015 and 2020, there has been no mandatory review as of 2015, at the time when this thesis was written.

5.3.4. Analysis and Critical Reflection of the YRDRP

The YRDRP covers a wide range of issues and tries to bridge the gap between economic, ecological and social issues. In my opinion however, the Plan is still too heavily focussed on economic growth, and is too unspecific about how to mitigate the potential negative effects of this economic activity on the natural resources of the region. Even though the Plan does lay out some concrete targets, e.g. on the proportion of new sources of energy or the reduction of sulfur dioxide emissions (NDRC, 2010), these targets are few in number in the Plan document, and should have covered a broader range of targets and indicators. This, as one example, should have included detailed plans on what land should be kept free from building activity (e.g. green belts). Granted, the Plan document does mention the importance of taking into account these environmental issues, but without any further numbers or targets it is difficult for local authorities to adhere to and implement these policies.

Furthermore, the Plan places high importance on increasing urbanization levels in the Yangtze River Delta Region, as according to the Plan a high level of urbanization reflects a high level of economic prosperity and dynamism. As mentioned above, it even lays down concrete targets for the desired level of urbanization in the region until 2015 and 2020. However, the Plan should in my opinion have gone into more detail on the challenges that come with rapid urbanization in China. Urbanization no doubt is a sign of growing sophistication and modernization of a country' economy, it can however have severe side-effects that can endanger the Quality of lives of millions of People (Chu, 2015). And as projected in the YRDRP, urbanization in the Yangtze River Delta has continued to grow since 2010, at the time when the YRDRP was published, as the following figure demonstrates:



Source: *China Statistical Yearbook, Jiangsu Statistical Yearbook, Zhejiang Statistical* Yearbook

Figure 18: Urbanisation rate in the YRD (Chu, 2015)

These effects have been especially visible in the Yangtze River Delta region as one of the most prosperous regions in the country, where urbanization has happened at a higher pace than the national average. Even though the need to address these challenges was not sufficiently recognized in the YRDRP, the government authorities in the Yangtze River Delta region have in recent years come to the realization that more needs to be done beyond the policies formulated in the YRDRP (Chu, 2015).

These challenging side-effects effects of rapid urbanization include for example the growing pressure on the transport infrastructure due to increased levels of traffic that the existing infrastructure cannot accommodate and for which the construction of new infrastructure happens too slowly. This has lead to growing problems with congestion and the emission of greenhouse gases, severely hampering peoples' quality of lives (Chu, 2015). Also, provision of public and social services has been insufficient on rural areas and smaller cities, accelerating

the migration of people, especially of younger people, looking for a better life in the urban agglomerations.

But probably the most pressing problem has been the harmful effects of industrial activity on environmental and ecological resources. Economic growth in China has largely relied on industrial production, excessively straining ecosystems and causing major air and water pollution. However, the YRDRP has taken account of this problem, as the “one core and nine belts” structure proposes to cluster industrial activity further away from the major population centre (see figure 14, p.44), with the major development belt for heavy industries being planned to be located at the northern edge of the Yangtze River Delta Region with a relatively low population density (NDRC, 2010). Furthermore, the YRDRP stresses the need to put more focus on high-tech industries and the service sector, in order to broaden the economic base and reduce reliance on heavy industries, thereby reducing pollution and ease the pressure on ecological resources. But as already said, the YRDRP remains rather superficial and unspecific on how and to what degree to implement these policies.

Another measure to reduce the development pressure on large urban agglomerations is to focus on the creation of urban city clusters, which aim to improve the connections and infrastructure between different cities in a region, so that smaller cities and towns are better connected to the large metropolitan areas and therefore improve their appeal to residents and investors. It is also an opportunity to assign different roles to different cities, so that not all of the major development happens in the large urban centres. In Zhejiang and Jiangsu provinces several urban clusters have developed over the recent years (Chu, 2015), as figure 19 shows:

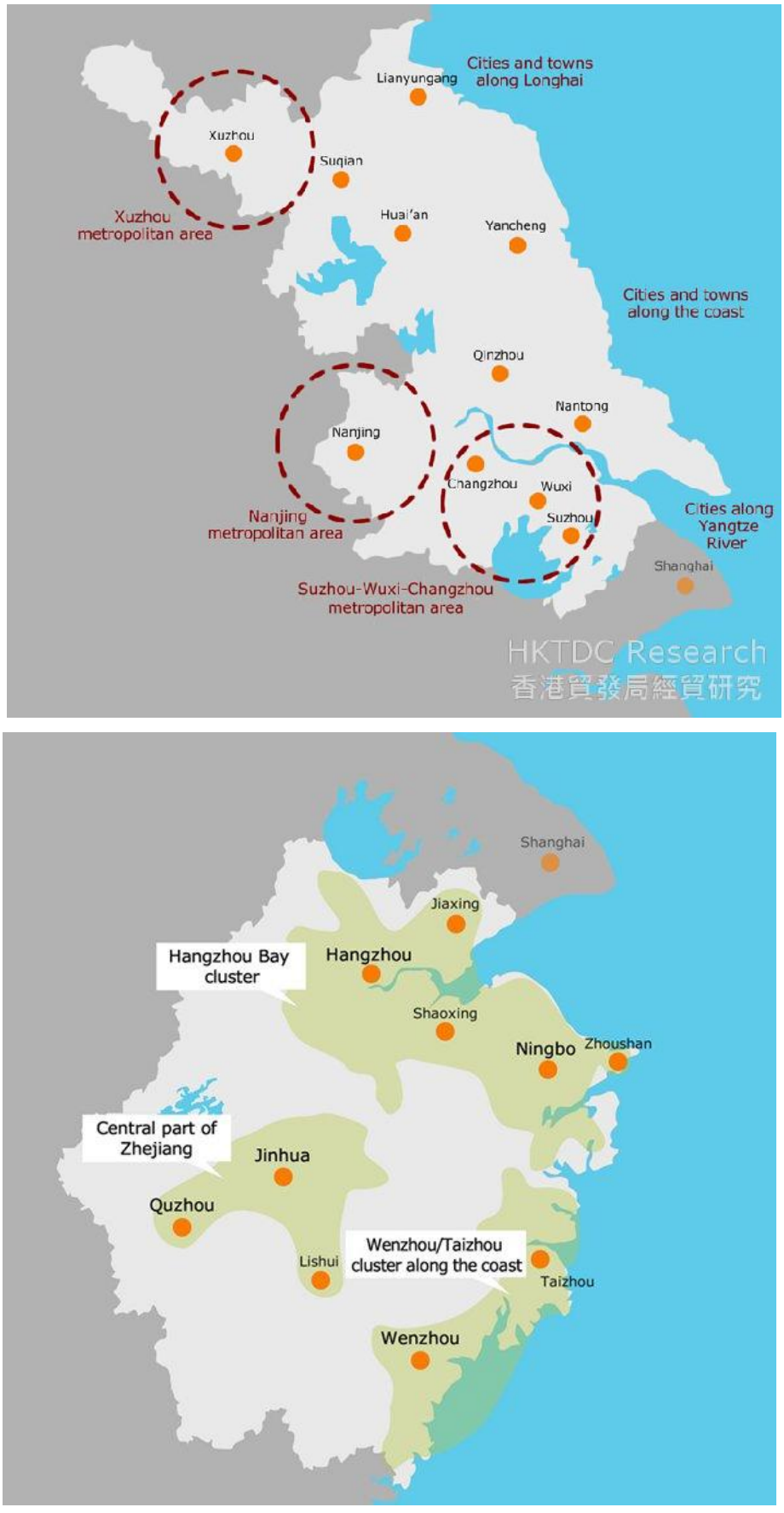


Figure 19: Urban clusters in the Jiangsu region (above) and the Zhejiang region (below) (Chu, 2015)

The YRDRP does emphasize the importance of creating city clusters with different functions, however it is in my opinion still too heavily focussed on strengthening the already booming metropolis of Shanghai which is assigned the role as the core in the “one core nine belts” approach. But Shanghai already now has such a strong appeal on its own that it is highly questionable if there are further measures needed to raise its appeal. This seems to have been recognized in recent years, where the focus has been put on those clusters outside the Shanghai region, which already now is suffering from the consequences that come from its sheer size and unprecedented growth in recent years (Chu, 2015).

Shanghai, and the other major urban agglomerations in China such as Beijing and the Pearl River Delta, will continue to be the powerhouses of growth in China, but it is important to manage growth more sustainably and ease development pressure on these cities. One measure, as said above, would be the creation of city clusters, improving collaboration with surrounding cities, but another measure, as will also be further analysed in chapter 7. would be to extend the introduction of property taxes (Wong, 2014).

These property taxes would be an effective measure to limited overheated urban sprawl and construction activity in Shanghai, as on the one hand municipalities would not be dependent on selling land to private developers to create income, but on the other hand it would reduce real estate speculation bubbles, as the absence of property taxes has lead to large-scale developments that remain unused, as “currently real estate is cheap to hold but expensive to sell” (Johnson, 2014). In many parts of China the absence of property taxes has largely contributed to the phenomenon of large-scale ghost towns that are devoid of any human activity (Shepard, 2015).

Monocentric vs. polycentric development

Urban growth itself is not a bad thing, but in China it has happened at a speed that is not sustainable and has overwhelmed the carrying capacity of major urban agglomerations. But even though the YRDRP has not sufficiently taken this issue into account, there are promising signs in recent years that the central government has recognized the need to do more in this respect, and investigate these negative effects more closely. The central government has therefore adopted the “The New Style Urbanization Approach” in 2014 that should ensure that

this growth happens gradually and at a Speed that construction of necessary infrastructure can cope with (Johnson, 2014).

And according to Pan Jiahua from Institute for Urban and Environmental Studies, the Chinese Academy of Social Sciences, efforts to reduce Shanghai's dominance within the Yangtze River Delta Region seem to have shown some promising results, as a city cluster has evolved where Shanghai and its surrounding regions of Jiangsu and Zhejiang have developed strong functional interlinkages that depend on each other with a high level of trade and the exchange of services and industrial products. This demonstrates that the importance of polycentric development has been recognized by the central government as an important tool for managing urban growth (Liu, 2015).

In the case of the Yangtze River Delta Region recent trends have shown a growing importance of secondary cities such as Nanjing and Hangzhou, compared to Shanghai, with stronger interlinkages between major cities in the region and fast economic growth, also outside of Shanghai. However, according to Prof. Jiang Hong (2016) it is difficult to judge, if the YRDRP or other regional plans before that had any influence on this development. He argues that the Yangtze River Delta Metropolitan Region mostly functions on "internal division" with already strong interlinkages and a strong and dynamic economy, and a regional plan may not even be necessary in order to make the region grow and prosper. He contrasts this to the Beijing-Tianjin region, where outside intervention was necessary in order to sort of artificially create a multi-city region that would not have developed like this by itself.

On a critical note, however, Pan Jiahua also mentions that more recent plans for the Beijing Capital Region by the central government are once again too heavily focussed on Beijing as the core, possibly exacerbating and repeating negative environmental effects that come with rapid urbanization. This would also include growing problems with water and energy shortage, as supplies could possibly not keep up with the fast growth of the city. This concept of "one core, two cities and three routes" would contradict president Xi Jinping's doctrine that resources shall be distributed more evenly (Liu, 2015). Pan Jiahua emphasizes the importance that essential infrastructure and services shall not be too heavily focussed on Beijing, and surrounding cities shall be better equipped.

Over time, excessive growth in megacities of the size of Beijing will overwhelm the infrastructure of the urban centres of these cities, for instance leading to skyrocketing real

estate prices on the private and commercial markets, causing problems with congestion and an overstrained transport system, which can already now be observed in Beijing. Even though an excellent metro system with a high passenger capacity has been created, this system already now is hitting capacity limits. Further growth in Beijing could therefore could lead to the collapse of these systems and lead to unmanageable environmental problems (Quartz, 2014)

It has to be positively highlighted that this concept of polycentric development is recommended in the YRDRP document as a suitable approach to reduce the pressure on the urban core of Shanghai, and strengthen the position of surrounding cities, even though, as mentioned above, the Plan may still be a little too heavily focussed on Shanghai as the core. However, the Plan in my opinion goes into the right direction, as it sees a strong role of Nanjing and Hangzhou as "wing cities" with strong interconnections and interdependence with Shanghai, but also encourages smaller cities in the region to create stronger ties with the urban core of Shanghai. In this context the Plan highlights the importance of improving the transport, energy and communication infrastructures so that the cities in the region can collaborate and benefit from each other more effectively (NDRC, 2010). By doing this the regions' cities can benefit from the high-quality service sector in the urban core of Shanghai, but also trade goods and services more easily to Shanghai, nationally and abroad.

According to Jadric, M. (2016) the fast growth of Shanghai in the past has caused excessively high prices in the city effectively slowing down economic development due to lower demand. In recent years new industrial development has increasingly shifted towards Southeast Asian countries such as Malaysia. Also in that context the creation of a polycentric urban cluster in order to relieve the development pressure on Shanghai should be high on the agenda of policy-makers.

If these policies envisioned in the Plan can be implemented successfully, then the Yangtze River Delta Region could become a role model for polycentric development in China, and as mentioned above, urban clusters in the Yangtze River Delta have been developing und continue to develop in the future. This development is also in line with the comments made by Pan Jiahua above.

Economic development still the main priority?

However, there are also some critical voices arguing that it was never the central government's first and foremost priority to actually implement the policies of the YRDRP, but only use the document to an image that they are interested in a comprehensive regional planning approach that also takes into account balanced regional development and the protection of natural and ecological resources. One of the senior planners from the Chinese Academy of Urban Planning and Design who was involved in the preparation of the YRDRP summed this up as follows (Li, 2011):

> Anyway, even for scientific development or coordinated development, what is overriding is still to develop the economy.

He argues that the wave of producing regional plans such as the YRDRP may be a short-lived one and that the central government's main priority still is and will be fast economic growth, largely ignoring the negative consequences accompanying this development. However, very recent comments coming from the highest government ranks, including President Xi Jinping himself, at least raise some hopes, that the senior planner's fears may at least partly be unjustified (China Daily, 2015a).

Reform of the Hukou system

Another possible solution to the overheated growth of megacities in China could lie in a reform of the Hukou residential registration system. In China, every citizen is allocated a Hukou status in their hometown, which however is very difficult to change, even if residents decide to leave their hometown and settle in larger cities to seek more opportunities and provide for their families. Originally, the this strict Hukou system was put into place by Mao Zedong's regime in 1958 in order to prevent large-scale migration into cities and ensure continued agricultural production to provide suffidient food supplies for the large Chinese population. However, in reality this Hokou system did not prevent these migrant workers from settling into larger cities due to their vast opportunities resulting from economic growth, which led to the social problem of millions of migrant workers who had no access to social security and other state benefits (Fischer-Schreiber, 2015).

The “National New-Type Urbanization Plan (2014-20) now suggests to change this Hukou system so that migrant workers can gain Hukou status in other cities than their home towns more easily. However, in order to ensure a more balanced regional development, larger cities should be allowed to have more restricted access to the Hukou system than smaller cities, which would reduce development pressure especially in megacities with more than 5 million residents. In 2014, Guangdong province in Southern China decided to ease Hukou access for migrant workers and skilled workers with university degrees in order to reduce the pressure on the already very attractive megacities of Guangzhou and Shenzen. It remains to be seen, if this approach will lead to a more balanced regional development, it could however be an effective approach, if these smaller and medium sized cities manage to provide a sufficient number of jobs and opportunites for research and education (Fischer-Schreiber, 2015).

5.4. The Yangtze River Delta City Cluster Development Plan (2016-)

In May 11th 2016 the State Council approved the Yangtze River Delta City Cluster Development Plan, which in contrast to the YRDRP also includes cities in the Anhui region, which lies inland to the west of Jiangsu and Zheijiang provinces. In total, the envisioned city cluster comprises of 30 cities, constituting the economically most vibrant city cluster in the country that produces 20 percent China’s GDP, but only 3.69 percent of its land area (Hu, 2016).

At the center of these newly added areas, compared to the YRDRP, will be the city of Hefei in Anhui province, which will be one of seven “node cities” in the newly conceptualized city cluster. The other “node cities” will be Shanghai, Nanjing, Hangzhou, Suzhou, Wuxi and Ningbo (CBRE Hong Kong, 2016). Compared to other regions in the new cluster, Anhui has a significantly lower GDP per capita, but its GDP growth rate has already surpassed that of Shanghai, where first signs of saturation can already be observed. It is hoped that Anhui province can further catch up compared to its wealthier and more developed neighbouring provinces and the Yangtze River Delta City Cluster Development Plan could play a key role in achieving this goal (Hu, 2016).

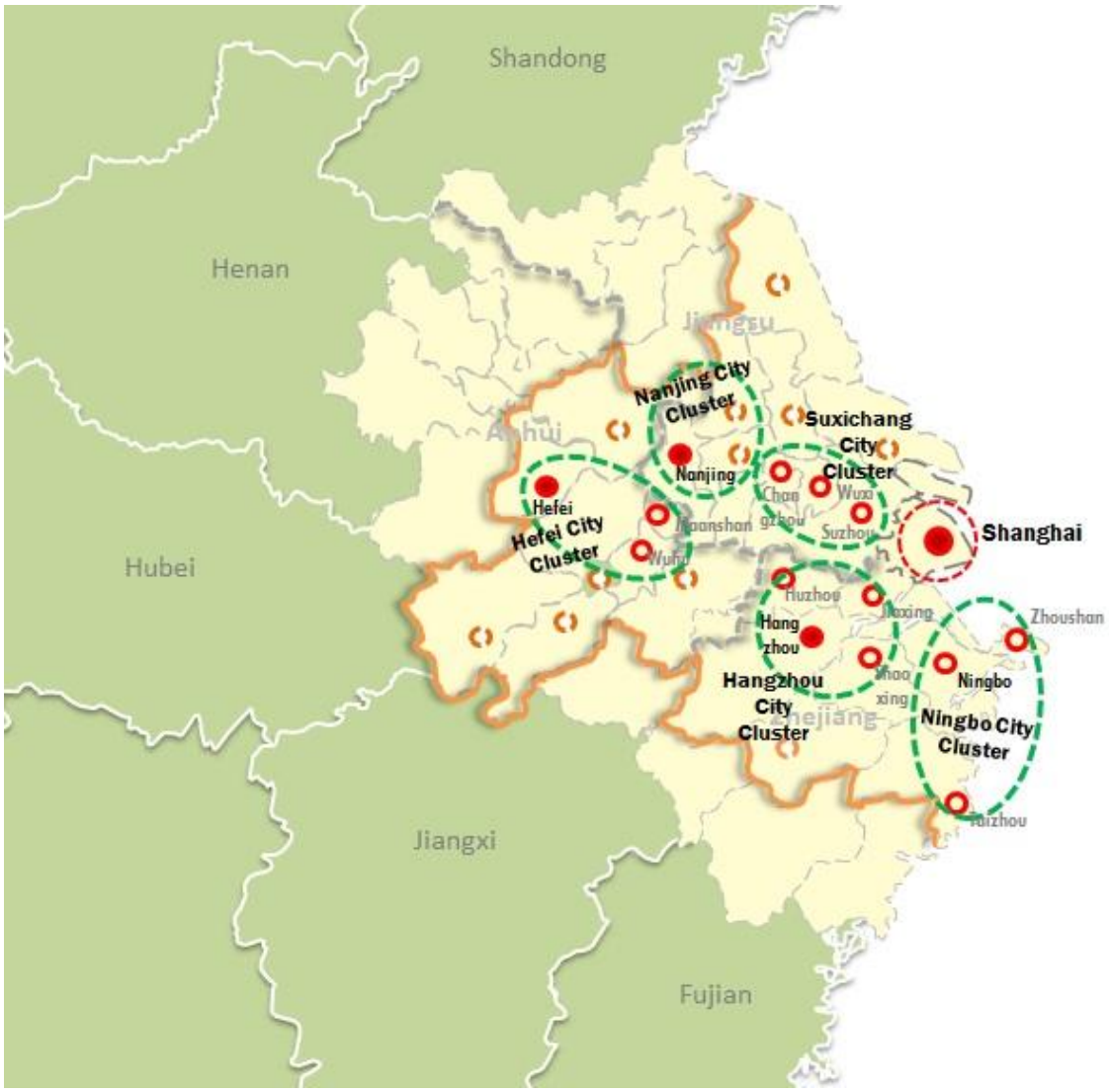


Figure 20: Plan area for the Yangtze River Delta City Cluster Development Plan (CBRE Hong Kong, 2016)

Compared to the YRDRP the Yangtze River Delta City Cluster Development Plan is a more flexible approach in that it is not confined by provincial borders, as regional connections and relations are not necessarily correlated with these administrational borders. The YRDRP only deals with the three provinces Shanghai, Jiangsu and Zheijiang, without taking into account neighbouring provinces. Also, these provinces where included in the YRDRP as a whole, so even more remote areas in the regions of Jiangsu and Zheijiang were included, even if the might not have strong relations with core of the region (NDRC, 2010).

This becomes especially apparent when looking into the aspect of science and technology. One of the main priorities of the YRDRP was to promote science and research, and invest into higher education facilities in the Yangtze River Delta region. However, as the YRDRP was

confined to only three provinces, this excluded the city of Hefei in the Anhui region, which is located in the immediate vicinity of Shanghai, Jiangsu and Zhejiang. As already mentioned, Hefei is a very important science and research centre in China and for that reason it was advantageous to include Hefei in the Yangtze River Delta City cluster, so as to intensify ties between Hefei and the core of the Yangtze River Delta Region in order to benefit from each other (Xinhua News Agency, 2012). The strong international position of Shanghai as a commercial and transportation hub could serve as an additional pull factor for Hefei in the science and research sector, for example attracting additional R&D facilities, but also promote internationalization which is a key driver of scientific progress.

However, as the Yangtze River Delta City Cluster Development Plan is still in its early stages and not all the details about its policies and their implementation have yet been made public, it is still too early to tell if it will be a promising and suitable approach to planning the region.

6. Hangzhou case study

As previously mentioned one of the main goals of regional planning policies was to achieve a more balanced urban development in the region, reducing development pressure on Shanghai, and strengthening the role of second- and third tier cities in the region, with Shanghai serving as the main gateway to the region. So in this chapter we will take a closer look at Hangzhou in order to see if the city has developed according to the envisioned strategy.

Hangzhou has recently made international headlines as the host city of the G20 summit, taking place in the city on September 4 and 5, 2016. The decision to designate Hangzhou as a host city has generated large-scale investment into infrastructure, accelerating the city's modernization and boosting the employment market due to the construction boom, but also increasing the desirability Hangzhou as a tourism destination, as the G20 summit has sparked an a large-scale investment into the city's hotel infrastructure (ICCA, 2106). Additionally, Hangzhou has developed into a major destination for e-commerce, largely owing to the success of Alibaba group which has its headquarters in Hangzhou (Liu, 2016).

From an urban planning point of view it is interesting to note that Hangzhou is currently investing into the construction of a large-scale subway system (Urban Rail, 2015). In 2011 during my stay in Hangzhou, when the first line of the Hangzhou Metro system had not been opened yet, it was very obvious that Hangzhou was in urgent need of reducing the extremely fast growing rate of car use, as the city's roads were plagued with congestion with all the negative consequences such as congestion and excessive noise and pollution.

What is astonishing about Hangzhou's Metro system is the sheer speed of construction and completion of the planned Metro lines. By 2035 the city will have created a Metro network totalling 278 km, a pace of development that is unmatched in European cities (Urban Rail, 2015). So far three lines have been opened for operation, with a total of 10 Metro Lines after completion of construction (Travel China Guide, 2016).

In addition to this ambitious project of constructing an extensive Metro system, Hangzhou's city government has introduced a series of measures to reduce car use in the city. In 2011 the city imposed a restriction of car use during rush hour traffic, based on the last digits on licence plates (China Daily Online, 2014a). On each workday cars with two different last digits are banned during these hours. Additionally, in 2014 Hangzhou became one of only six cities in China to introduce a lottery for the admission of new vehicle licences. Every year the city limits the number of newly admitted car licences plates to only 80.000. Interest by car users has been high and the number of applicants far exceeded this limit, with the city government therefore being able to generate high revenues from these lotteries, as 20 percent of these

80.000 new licences being auctioned with new upper limit for the possible final price, and the remaining 80 percent being drawn randomly through a lottery (China Daily Online, 2014a).

So to sum it up, Hangzhou has taken many ambitious steps forward to in order to become more recognized both domestically and internationally, while at the same time taking steps towards a more sustainable city infrastructure. Hangzhou has especially focussed on hosting big events like the G20 summit in 2016 and the 2022 Asian Games, which attract international media attention and also lead to large-scale investments into the city's infrastructure (ICCA, 2016). Investigating the effects of these events on Chinese cities would be a worthwhile subject of research beyond the scope of this thesis.

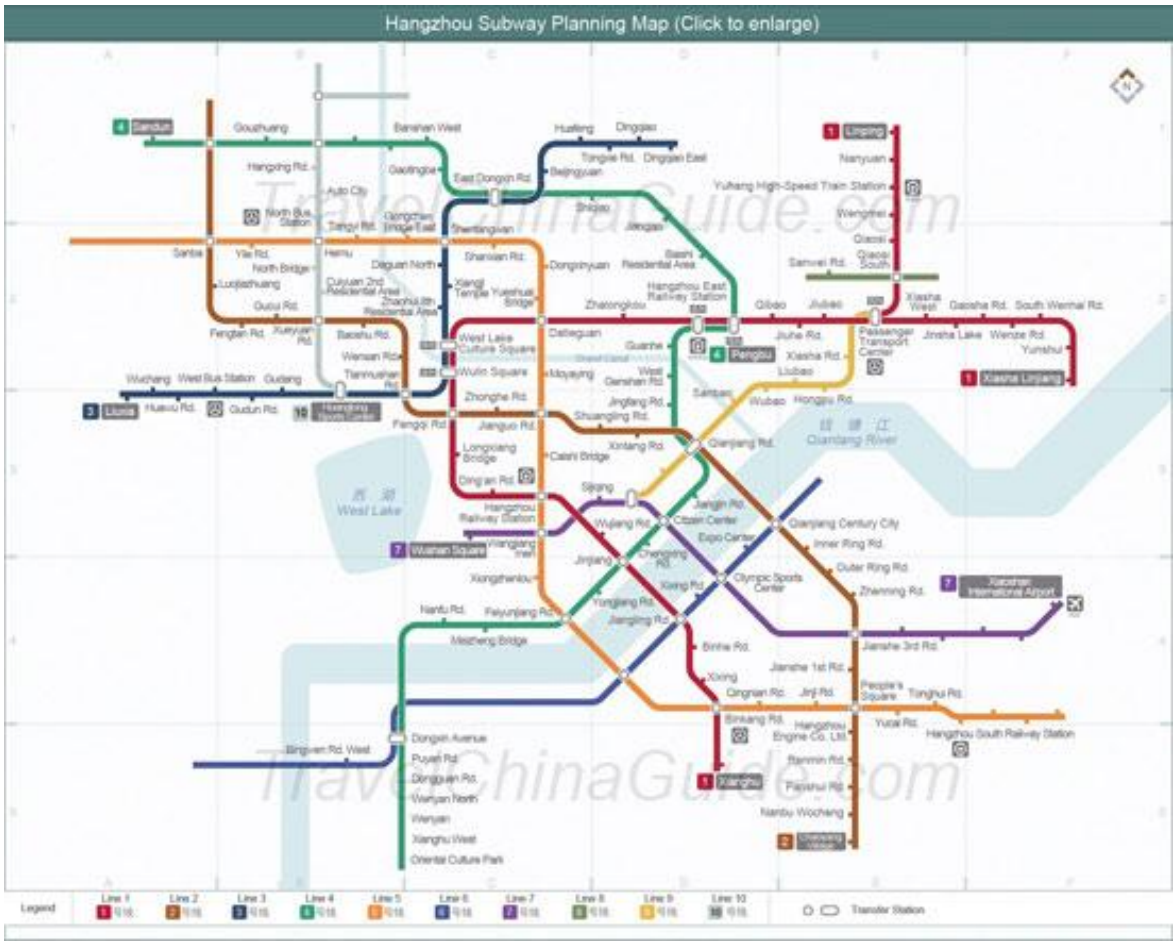


Figure 21: planned Hangzhou Metro Network, after completion of construction (Travel China Guide, 2016)

7. Summary, main issues and challenges

Regional Development in the Yangtze River Delta Region faces several challenges, but due to its locational advantages and its already strong position within the Chinese economy there is also a great deal of potential for the region to grow into an even more prosperous and dynamic mega-region than it already is. However, in order to achieve this, the region still needs to address several issues concerned with Regional Planning.

This, on the one hand, concerns the challenges that arise from the long and complex history of the Chinese Planning system. For example, as was shown in chapter 4.3., some of these characteristics that are specific to the Chinese Planning system are still slowing down the growth of Shanghai on its way to becoming an international financial centre. On the other hand, however, many of the challenges to Regional planning are not necessarily specific to China, but are shared with many other Planning systems in the world, such as a deficit of both vertical and horizontal cooperation between different administrational levels and other relevant stakeholders.

Concerning the YRDRD there are several issues that regard the contents of the plan. Most importantly, as said before, the Plan remains rather unspecific and general and offers very few development targets to adhere to. However, in my opinion this is not the major issue of concern, and the shortcomings of the Plan documents itself are far outweighed by challenges resulting from regional governance and decision-making processes that have become obvious during the implementation phase of the YRDRP.

In order to sum up the research of this thesis, the key issues emerging from the analysis in the previous chapters concerning Regional Planning and Development in the Yangtze River Delta Region, but also for the Chinese Planning System in general, will be summarized in this chapter. Addressing these issues would in my opinion be a great step forward and increase the chances of future regional plans in being implemented successfully. And even though the YRDRP was not fully implemented as intentioned, it can be viewed as a valuable learning experience, on which policy-makers can rely on in the future.

Issue #1: Decision-making processes (vertical "top-down" decisions vs. horizontal cooperation and coordination).

One key issue concerns cooperation between different government authorities, both vertically and horizontally. As mentioned before, some mechanisms for coordination and cooperation already exist in the Yangtze River Delta Region, but most local authorities, however, didn't show a great deal of willingness to cooperate. This mostly has to do with the characteristics of decision-making processes within the Chinese Planning System. As Jiang, H. & Wang, X. (2106) pointed out in an interview I held with them at Nanjing Southeast University on Nov. 4th 2016, the Chinese Planning system has largely been characterized by top-down decision-making, although compared to the pre-reform years before 1978 the local level has gained more influence. Important decisions, also regarding Urban and Regional Planning, have mostly been made by the central government in a top-down vertical manner. This has also been a driver for the excessive competition between different local authorities that has been analysed in the previous chapters (Jiang & Wang, 2016).

Local authorities have lobbied with the central government for attracting funding and resources in an attempt to outcompete neighbouring local authorities. Consequently the central government has initiated projects on a local level, largely neglecting the outcome on a regional level. In this system horizontal cooperation and coordination between these local authorities has not received enough attention, both by the central government, but also by the local authorities themselves, leading to many of the troublesome outcomes mentioned in previous chapters, such as excessive land consumption (Jiang & Wang, 2016).

As a consequence the state in the future needs to focus on increasing the willingness to cooperate by a number of initiatives. It can create statutory mechanisms for cooperation and set targets for local authorities, who can be rewarded by different incentives if they manage to achieve these targets (Innes et al., 2009). In the case of the YRDRP this would also mean as a consequence that the Plan should contain more specific goals than it does now so that local authorities have a useful reference point for adhering to targets. Another measure that would reduce widespread competition between local authorities would be a reform of the tax system (see issue #4 below).

In this context it should be mentioned that the challenge of horizontal cooperation is not unique to China, but also shared by many other planning systems in the world, although the political circumstances may be different. For example, a lacking willingness to cooperate across administrative borders can also be observed in the Austrian Planning system, in which

cooperation between the provinces (“Bundesländer”) is mostly informal through platforms such as the Austrian Conference on Spatial Planning (“Österreichische Raumordnungskonferenz”). But Planning Law is in fact scattered and lies in the competence of the provinces and not the state, complicating and often making impossible cooperation, also in part due to unwillingness to cooperate (Kanonier, 2011).

In the case of the extensive high-speed train network that has grown very fast in recent years in China, the centralized planning and coordination proved to be highly efficient and acted as a major driver for development in many Chinese cities according to Jiang, H. & Wang, X. (2106). It moved cities closer together and in some cases proved to be a complete game-changer. For example, the city of Hefei in Anhui province has experienced a development boom since it has become a major traffic centre for the high-speed railway network, leading to a surge in apartment prices. Combined with the city’s role as a major centre for science and research, with USTC being located there, Hefei has significantly increased its popularity and desirability (Jiang & Wang, 2016).

It is a delicate balance what administrational level is the most suitable for decision-making processes. In the case of the nationwide highspeed railway network, it proved to be highly efficient to leave the planning and construction of the network to the central government, as a railway network of this scale only makes sense when planned and coordinated centrally in a top-down manner (Jiang & Wang, 2016). Similarly, in the case of the new airport in the SWC (Suzhou-Wuxi-Changzhou) region mentioned in chapter 5.2, it would have been more efficient to decide upon the construction of the airport on a higher administrational level than the individual cities. The construction of airports lies within the responsibility of local governments, and therefore they are also responsible for the financial allocation as well as the allocation for land for an airport. It would be more efficient to move this responsibility at least up to the provincial level, if not the central government, in order to avoid these conflicts about construction a common airport (Luo & Shen, 2008).

Issue #2: Strengthening the regional level in the Chinese planning system.

Another conclusion I can draw from the literature and interviews with academics is that the regional level of administration has been given too little attention, as the most important planning decisions are either made on a local or on a national level. The central government decides on large-scale projects such as the high-speed railway network, and local authorities decide upon land allocation through land expropriations, but are also given a high degree of freedom in terms of economic development. In my opinion, however, in such a large and vast country like China, more planning decisions should be made on a regional level, for example when it comes to the regional economy or regional transport infrastructure. The central government may occasionally lack the sufficient knowledge about local circumstances and implement policies that don't suit the specific region, and local authorities are often too caught up in protectionism and excessive competition.

Granting the provinces more power in local and regional planning processes could help alleviate this conflict between the local and national level and help solve many of the challenges discussed in this thesis. This could either mean that the provinces of Shanghai, Jiangsu and Zhejiang are given more power individually, or even as a regional planning body across several provinces. However, in my opinion, which is also reflected by the statements of Jiang, H. & Wang, X. (2106), the central government should still retain control of projects with nationwide impact, such as the construction of the high-speed railway network, for which central planning proved to be very efficient.

Issue #3: Developing a national Regional Planning strategy

According to Wei H. & Wu X. (2012) in "China's Regional Policy Scenarios for 2011-2015 Period" the central government's choice to produce a Regional Plan for the Yangtze Region was not based on any underlying national strategy on Regional Planning, but rather a handful of regions were chosen selectively as a result of lobbying by regional governments and influential pressure groups and individuals. Another region for which a regional plan was produced was the Tianjin-Binhai New area close to the capital of Beijing, so in other words it is those regions who already are in a stronger position than others that were able to successfully influence the central government to produce a Regional Plan for their area.

That these decisions were not always based on sufficient objective or standardized bases is an ideal breeding ground for preferential treatment, as certain powerful regions or groups will always attempt to exert influence on the Central government. Wei H. & Wu X. (2012) argue that in order to prevent this from happening in the future the central government shall

implement a national strategy on Regional Planning policy that is based on objective mechanisms covering the whole territory of the country.

It shall include a strategy on the relationship between urban and rural areas, but also between different regions. Also, it shall be focussed on cooperation rather than competition and propose development strategies for both the economically dynamic Coastal Regions and structurally underprivileged inland regions. The focus of regional planning shall be comprehensive, taking into account environmental and ecological issues, and not merely focussing on economic growth. Also, regional plans shall be adapted to the specific individual needs of a region, as the central government's plans on regional development have in the past suffered from being too broad and general. A national strategy on regional development would also enable regions to find their own strategic role in relation to other regions (Wei & Wu, 2012).

Moreover, as analysed in chapter 5.3, different government departments will need to find an agreement to produce a common and coordinated strategy for the regional level, instead of competing with each other as has happened in the case of the Yangtze River Delta Region, when the NDRC and the MoHURD produced plans independently from each other (Wu, 2015).

The deficit of a national strategy can also be observed when analysing the Yangtze Regional Planning document. It covers in great detail policies on a variety of issues, but the issue of interregional an international cooperation only covers a little more than one page in chapter XI.ii. "Strengthen Regional Cooperation between Domestic and Overseas" and is very generalized and unspecific on how this kind of cooperation shall be put into practice (NDRC, 2010). So it was obvious that this issue was not a major area of concern in the production phase of the Plan. This also becomes evident by the fact that the Plan document contains several maps for instance on the overall layout, the development belts or transportation corridors within the region, but it only contains one map of the wider context in which the region is embedded, but with no further details whatsoever about the types of interconnections with other regions in the country or abroad.

The Yangtze River Delta Metropolitan Region has in many ways successfully developed into a highly developed and competitive megaregion, but this more likely seems to be the result of a number of individual public and private initiatives, rather than stemming from one common regional plan (Jiang, 2016). For example, the central government initiated industrial parks in different cities in the Yangtze River Delta Region, such as the Suzhou industrial park, providing basic infrastructure, attracting businesses and therefore helping to drive the spectacular economic growth in the Yangtze River Delta Region, but these were individual projects by the

central government that were not part of a major regional plan or strategy. Also, the nationwide construction of a high-speed railway network is an example of this project-based planning (Jiang & Wang, 2016). So this also reflects the lack of a comprehensive national strategy for regional planning.

On a local level, as already mentioned, cities have individually introduced initiatives to promote electric mobility, extend their subway system or extend their cycle and pedestrian path network. So it does seem that awareness for more sustainable forms of transport and economic activity seems to be there. From a regional perspective though it seems practical to coordinate more closely so that individual activities for example in terms of electric mobility could be coordinated more efficiently. So developing a more strategic approach to regional planning that is not only based on singular projects coming from the national or local level is very critical in my opinion!

Issue #4: Reforming the tax system.

As has been outlined in chapter 2.4, one of the main drivers for excessive urban sprawl has been the local authorities' dependence on generating income by selling land to private developers. Several approaches to address this issue have been proposed in the academic literature. For example, Breitung, W., argues in "Raumordnung und Regionalplanung in China" (2014) that a major tax reform and a restructuring of fiscal transfers could lead to the desired results of a reduction of urban sprawl, and therefore help in making spatial and regional planning more sustainable.

According to Breitung, W. (2014) the existing legal framework leads to the unsolvable contradiction for local authorities that they on the one hand act as regulators that have to ensure the sustainable use of land resources within their boundaries, but on the other have to rely on land expropriations as a source of income. This inability of local authorities was one of the reasons that a recentralization of decision-making had been observed, with the central government making attempts to get more involved as a regulator again.

Breitung, W. (2014), and Wong, V. (2014) suggest to introduce property taxes that would solve this contradiction for local authorities, by making them less dependent on land expropriation, and therefore enabling them to view restrictions on the further building-over of arable land and urban sprawl not as a strain on to their budgets. This would also reduce the widespread practice of property speculation. Another advantage compared to land expropriation is that property tax would create annual income as opposed to the one-time effect of land expropriation.

The central government has become aware of this problem, and on January 28th, 2011, the municipalities of Shanghai and Chongquing introduced property taxes, but these were only applicable for luxury properties of 60 square metres per adult occupant and are quite low, so they mostly had symbolic value. Also, the tax is not applicable for properties bought before that date. However, as Wong, V. (2014) argues the main obstacles for a nationwide implementation would be administrative barriers, a problem that also becomes apparent with the implementation of the YRDRP. Also, there is no systematic nationwide land surveying mechanism in place. There must be a comprehensive land registry in each local authority that would in detail list the property rights including details on the sizes of properties according to the result of the surveying.

Issue #5: The political system: Further democratization needed?

As analysed in chapter 6 the Chinese economy has recently shown considerably lower growth rates that have put a halt to the growth euphoria that has dominated in the country over the last few decades. This has sparked a discussion on how to prevent a possible economic crisis, leading to different suggestions on where the country should be headed in the future. The current political system in China is at the heart of these discussion and many observers hold the view that changes in the system towards further democratization would be necessary in order for the country to grow steadily and sustainably.

However, as this is a very long-term process I would suggest as a first step to extend public participation and give citizens the opportunity to have their say on how their towns and cities should develop in the future. Participation could then be extended step by step to higher levels of administration and in the long term gradually lead the country to more democratization.

In an interview with Professor Mladen Jadric I held at the University of Technology in Vienna on January 20th 2016 he pointed out that the democratization of Chile after the fall of the Pinochet regime could serve as an example for China, as this democratization process has lead to economic growth and progress in Chile that is considered a success story in the Latin American world. During that process several reforms have been undertaken, in which Chile was transformed into a competitive social market economy with a great degree of freedom for economic activity leading to the growth of private businesses and an encouragement for entrepreneurial activities. At the same time, however, a strong social security system was established so that disadvantaged people in society could be supported sufficiently (Larroulet, 2013).

But maybe the most significant reform was the establishment of a representative democratic system replacing the Pinochet dictatorship. It is a system similar to many other democracies in the world with an elected president and a government that is designated by an elected parliament. Since then the country was mostly lead by moderate governments giving the country considerable stability. The main priority has been a focus on the sustainable long-term development of the country instead of short-term and more radical thinking (Larroulet, 2013).

How then does Chiles's development relate to regional planning and what could be the consequence for future policies in China? As mentioned above, economic growth has been the main priority for the Chinese government since the economic reforms where introduced by Deng Xiaoping and while this growth has happened in spectacular numbers, there were many downsides such as a degradation of natural resources and large-scale land consumption. A political system with democratically elected representatives, as Larroulet (2013) has pointed out, could lead to a shift in the government's priorities, focussing on sustainable development that puts its citizens' wellbeing at the forefront, while at the same time allowing a sufficiently high degree of freedom for economic activities. Urban and Regional Planning under these circumstances could happen in a more long-term fashion that reduces the strain on social, environmental and ecological systems.

As already mentioned several times during the course of this thesis, one of the biggest challenges for China's further development and stability is to put environmental and ecological issues higher on the agenda. Even though improvements have been made, such as curbing car use and heavily investing into more sustainable forms of transport, such as high-speed railways and Metro systems, air pollution for instance still remains at very high levels throughout China.

Air pollution in major Chinese metropolitan regions remains at very high levels when compared to other industrialized nations in Asia, Europe and North America. Especially striking are the differences in air pollution between China and its immediate neighbours Japan, South Korea and Taiwan. All of these countries have experienced very fast economic growth during the second half of the 20th century, but show significantly lower levels of air pollution (World Air Quality Index, 2016). What these three countries have in common is that in contrast to China they have a democratic system with elected representatives, which could be an indicator that growth has happened in a more sustainable fashion, reflecting the analysis by Jadric, M. (2013) and Larroulet, C. (2013).

8. Conclusion

Aside from all the challenges described in the previous chapters, the latest approaches to urban and regional planning in China certainly show promising signs that the central government has recognized the need to address some of these challenges arising from the fast economic growth.

For instance, the extensive construction of high-speed railways across the country, as well as initiatives to increase the share of electric vehicles in different Chinese cities, show a trend towards more sustainable modes of transport in the country. It remains to be seen if these efforts are merely used to polish the central government's image and economic growth still remains the top priority or if real change is underway. Especially in the case of the Yangtze River Delta Region, which, as already said, is the most dynamic and modern economic area of the country, as well as a centre for higher education and research it is important to carefully observe the possible negative side-effects of economic growth.

The YRDRP, which has been used in this thesis as an example for recent Regional Policy in China, is a very ambitious step forward, as it contains policies on a wide range of themes in a comprehensive way, especially the concept of a polycentric region with Shanghai at its core is pioneering concept within the Chinese Planning system. The main challenges that still remain relate to difficulties in implementing the policies in the plan. This is mostly related to a lack in regional planning strategies and excessive competition between local authorities.

The need for closer cooperation between major cities in the region was also stressed by participants of "15th Yangtze River Delta Economic Coordination Forum" in 2015, as outlined in chapter 5, so it remains to be seen if these different promising developments in the region will continue and intensify in the future (China Daily Online, 2015b). A lot depends on the overall political stability in China, but also on the future development of the global economy, which the Yangtze River Delta Region is so closely connected with.

The central government has successfully drawn international attention to the Yangtze River Delta Metropolitan Region for example by heavily investing into science and research and attracting international research facilities. For example, several universities from overseas have opened campuses in the region, such as Duke University and M.I.T from the United States or Queens University from Canada (Jiang & Wang, 2016). Also, efforts have been made to put the region into the international spotlight by holding the G20 summit in Hangzhou, the capital of Zhejiang province, on Sept 4th-5th 2016, which has spurred investment into the city's infrastructure (ICCA, 2106).

It remains to be seen if the "The Yangtze River Delta City Cluster Development Plan 2016", which was approved by the state council very recently, will be a further step forward in addressing these challenges. First hints of this new regional plan's policies although show some promising signs, as it further focusses on modernizing the region's economy, thereby reducing the share of high-emission industries with a high strain on ecological and environmental resources, and raising the region's national and international competitiveness even further. However, it also remains to be seen, if the difficulties in implementation that have surfaced during phase of the YRDRP can at least be partly resolved. In this context it would be advantageous to implement a continuous review process to monitor the implementation of this and future regional plans.

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10. List of Figures

11. Annex

Transcript: Structured Interview with Prof. Jiang Hong, Deputy Director, School of Architecture, Department of Urban Planning, Nanjing Southeast University, China (e-mail correspondence, May 31st, 2016):

Q: In 2010 the National Development and Reform Commission issued the Yangtze River Delta Regional Plan. Its main goal was to promote a more balanced urban development in the region, reducing the development pressure on Shanghai ("first-tier city"). In your view, have surrounding cities such as Hangzhou and Nanjing ("second-tier cities") caught up and grown in importance in relation to Shanghai, as envisioned in the regional plan?

A: The Yangtze River Delta Region is the most sophisticated area in China, which means the development of this region relies more on its' internal division rather than outside force—the regional plan. The comparatively balanced internal relationship is very different from the Beijing-Tianjin region.

The "second-tier cities" like Nanjing & Hangzhou did become more important in this region during these years as envisioned in the plan. But according to the previous point, I think it's hard to say that this is the result of the regional plan. In addition there is a new plan approved this year, you may find it to take a look.

Q: The Chinese government has heavily focussed on investing into research and the higher education sector. Do you see Shanghai and the Yangtze River Delta Metropolitan region sufficiently equipped to compete globally in this regard?

A: Personally I think it is true. During the past 1500 years, this region was regarded as the most educated region in China. Over half of the government officials were from this region.

And now the Yangtze River Delta Metropolitan region has the most universities and institutes in China. And the mark of entrance test to the universities is still the highest in the nation.

Besides, nearly half of the middle school students in Jiangsu province will not go to the normal high school but go to the professional high school. This means there are sufficient well educated human recourses in this region.
In addition, this region is also very open to the rest of the world, attracting the most western experience and experts, compare to the other regions in China. So I am quite optimistic to this question.

Q: I am curious to learn about the development of electric mobility in Shanghai. Are there any strategies in place for increasing the share of electric vehicles compared to combustion engine vehicles?

A: Yes.

1. Some local government began to make the planning for the electric vehicle infrastructure.
2. There is a Subsidies policy when you buy an electric vehicle. The central government, the province and the local city will give some money to each buyer. For example, in Suzhou if you buy a pure electric vehicle, you will get 50000 from the central government, 25000 from the province and 30000 from the local city. Of course, this number differs by different cars. BUT, mainly for Chinese cars, TESLA is not included.
3. Many of the buses have been changed to electric ones.

Q: Are there any strategies for increasing the share of other modes of transport,such as cycling and walking, in order to reduce the share of car use and reduce congestion and pollution?

A: In recent years, many big cities had invested a lot of money on subway systems. And this has become a huge expenses of the local government.
The cycling and walking green path planning has also became one of the important type of planning to the design institutes and companies in the past a few years.
But as car industry is now one of the major industries in China, especially to many industrial cities, I think reducing the share of car use is very hard.
But in the other hand I think the policy is more rely on reducing the car use, not reducing the car selling. That's why the tax of gas has raised 4 times last year and the parking fee in the city centre was doubled in Nanjing (15-20rmb/hour).