

The Role of Ecological Modernization in City Branding
Practices in Chinese Megacity Regions
--- A Case Study of the Jing-Jin-Ji Integration Region

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Executive Summary

Over the past few decades, the whole world has witnessed rapid urbanization, with the focus gradually shifting from the Western world to the Eastern world. China's modernization process has attracted attention from all over the world, especially in the three mega-city regions: Yangtze River Delta (YRD), Great Pearl River Delta (GPRD), and Jing-Jin-Ji (JJJ), each encompassing about a dozen cities. With the staggering level of environmental pollution caused in the process of achieving unbelievable economic growth, these cities are compelled to address the challenge of ecological modernization (EM). The discourse of ecological modernization implies achieving higher economic growth with less harm to the environment, which stresses that the ecology and environment can benefit and facilitate rather than restrict the economy if appropriate measures are taken under the notion of ecological modernization. Different cities have their particular economic and regional profiles, based on which different types of development pathways are expected to respond to the EM challenge. For instance, big cities like Shanghai and Beijing are faced with a challenging restructuring task to replace the low-end manufacturing industries with high-tech service-oriented industries. This challenge has also been added to their (re)positioning effort to attract the talented workforce, well-endowed residents, direct investors, etc. In the process of competing for obtaining advantages over other cities, city branding practices have been adopted by local cities.

Existing research in city branding has mainly covered 'subjective' aspects of the concept of city branding, such as city image, branding strategy, stakeholder engagement as well as the historical evolution of the concept over time, etc. However, the city geographic embeddedness regarding positions in the region and the influence of the economic development stage have not been addressed in the literature. This thesis was set out to explore the relationship between them and cities's branding practices in the context of local cities being faced with the EM challenge. This thesis is focused on the case study of the Jing-Jin-Ji mega-city region under an umbrella project led by Professor de Jong.

Four progressive studies have been conducted to explore the relationship between the city profiles and city branding practices: theory review and analytical proposed analytical framework, research method design of the thesis, data collection about city profiles and city branding practices, and analysis of the collected data based on the proposed analytical framework. The findings of each study above lays a foundation for its following study. The proposed analytical framework is the basis of the research method design which further clearly elaborates on the data collection and analysis method. Moreover, the data collection study provides the data pool for the last data analysis chapter.

The first study starts with the literature review of city branding, the main theory adopted in this thesis work. The literature review focuses on the definition, development, and relevant concepts

about city branding. Another important concept, ecological modernization, has also been studied, especially its role in city branding to respond to the EM challenge. Based on the literature review result, the main analytical framework has been proposed. The core content of the proposed analytical framework is the 5 ecological development pathways (or modes of ecological modernization) which are considered as intermediate variables to facilitate the study of the relationship between current city profiles (considered as independent variables) and city branding practices (considered as dependent variables). Both the city profiles and city branding practices are rather vague, and thus are difficult to operationalize. In this thesis, however, two major aspects of city profiles have been chosen as the two operationalizable variables: the economic development stage and regional positions of cities. The city branding practices have been operationalized through city branding identities and city positions. City identities are often reflected in the form of self-descriptions; how the cities wish to be viewed by their target audiences. City positions, on the other hand, are often the labels that cities use to stress some particular aspects. In real-life city branding cases, city identities tend to be more general while city positions are often more specific. More specifically, brand positions often relate to EM to address the ecology challenges that they face.

This is followed by the research method discussed in chapter 3 to elaborate on the data collection method and how the collected data can be used for the research design. The core idea of the research method is to identify the significant convergences and divergences between city branding practices and ecological development pathways based on the proposed analytical framework. Especially, the divergences deserve subsequent discussion, which can constitute as the basis for the policy recommendation.

The data collection study has been done step by step, from general to specific, and from qualitative to quantitative in chapter 4 and 5 of this thesis. Chapter 4 gives an introduction to the JJJ mega-city region (officially known as Jing-Jin-Ji integration region) and constituent cities in it. JJJ stands for Jing (Beijing), Jin (Tianjin) and Ji (Hebei). This chapter first gives an introduction of how this concept has evolved from the (Inner) Bohai Rim Economic Zone to JJJ Integration Region in the historical development. Moreover, it has been explored on a national scale to be compared with YRD and GPRD. Currently, it is still relatively lagging behind the other two mega-city regions. A similar comparison has been conducted inside the JJJ integration region and it found that there is high economic development imbalance among the cities in it, with Beijing and Tianjin playing an absolutely dominant role over other cities in the Hebei province. Furthermore, the profiles of each city have been explored from different perspectives: historical evolution, GDP and dominant industries, main strengths and weaknesses, and current city profiles, etc. Especially, the relevant data about the two important city profiles, economic developmental stage and regional positioning, are summarized. Chapter 5 then explores the city branding practices in the JJJ integration region. First, city identities in general have been summarized based on the self-descriptions in the three official documents: Urban Master Plan

(2010-2020), 12th Five-Year Plan (2011-2015), and 13th Five-Year Plan (2016-2020). Then major city positions (in general) have been selected from them. It has been found that most of the city positions are related to the concept of ecological modernization. Then, 10 of them are selected, which are *smart city*, *innovative city*, *resilient city*, *tourism city*, *eco-city*, *low-carbon city*, *livable city*, *advanced manufacture city*, *service city*, and *modern agriculture city*. How these 10 city labels related to ecological modernization are selected is explained in the method chapter. The frequency of them occurring in those documents has been counted, which is the quantitative analysis of city positions related to ecological modernization.

The data collected in chapter 4 and chapter 5 serve as the data pool for the analysis in chapter 6. It mainly analyzes the relationship between the city profiles and city branding practices. First, the collected data has been processed to get a score on the two independent variables based on which the theoretically EM pathway for each city is determined. Then, the overall dominant actual (desired) EM pathways can be determined based on the dominant city positions (labels) found in the three official documents. It found that there is a convergence between the expected EM pathways and desired EM pathways for most cities. One observed significant divergence is that some cities on the (expected) EM pathway 2 choose to use the off-pathway labels that seem fancier. Apparently, the labels for pathway 2 are less attractive, and thus local cities make relevant position choices signaling the desire to look fancier for the desired off-path transformation. These desirable branding choices, which are deviating from their current city industrial and regional profiles, are doomed to suffer credibility issues by the public. Thus, more in-depth research should be done to explore the likelihood of success for these fancy branding choices, the motives (intentional or not) of the local governments, and the relevant mechanism to realize them, if any.

Finally, in the concluding chapter, the relevant main research result has been summarized. And based on that, some policy recommendations have been proposed to the local city governments. Moreover, the reflection of this thesis work has been done and relevant recommendations have been made for future research work on this topic.

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This master thesis project has been done while working at LSIS, Korea. It is not an easy task to work full-time in a company and do a master thesis at the same time. Most of my spare time has been spent on this thesis report. This experience has reminded me again that I should always push myself outside the ‘comfort zone’ and pursue a higher goal. Many people have helped me during this journey. First of all, I would like to thank Professor de Jong, who is the defense committee chairman and also plays an important role of supervisor. I received significant help from his inspirative and detailed advice on the direction of the project work and the design of the thesis report. Without his endless assistance and encouragement, I would not have been able to finish this master thesis project. Here I am also especially grateful to Professor Cuppen, my first supervisor. Her critical attitude motivated me to aim for a high-quality thesis report, with more work on a clear conceptual model, an explicit research method, a precise selection of vocabulary, as well as the research relevance of the research results. Without her sincere help, I would not have been able to deliver this final thesis report as it is. The quality of the final thesis report could have decreased significantly without her critical comments. The critical attitude to ask more What/How/Why style questions instead of taking everything for granted, is not only helpful for this thesis report but will also help me in my future career. Also, my special gratitude goes to my second supervisor, Haitao Zheng, who has given practical advice on the research work and helped proofread the thesis report. Other people who helped contribute to this thesis report include Ph.D. candidates: Caiyan Qin, Haiyan Lu, Qihui Yang, etc. They helped collect data and edit this report.

At the final stage of this thesis work, several native English-speaking friends have been invited to do the language check. They are Robert Bryan Kesling, Domenic Gulla, Sean Beaudette, Brian Hurley, Matthew Adams, and Manish Shrivastava, etc. Without their help, the readability of the final thesis report could have decreased significantly.

Now, it is reaching the end of my EPA master’s study at TU Delft. Looking back on this experience, I feel I owe special thanks to Professor Wim Ravesteijn, who helped me apply for the EPA program and played the role of life/study advisor during my time studying at TU Delft. My second supervisor, Haitao Zheng, on the other hand, encouraged me to apply for this master’s program and provided indispensable help during the application process. I would also like to thank all the friends I have met during the EPA master’s study at TU Delft. They helped turn my experience of pursuing my second master’s degree into an interesting and joyful journey. Finally, I need to give apologies to my dear family members and friends for my long absence. Thank you all for being there for me.

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1. Introduction

This thesis aims to contribute to the literature regarding city branding in the context of cities being faced with the challenge of ecological modernization. The main contribution of this thesis work is to flesh out ecological modernization in different modes or pathways for cities and connect them with city branding practices adopted by the cities. This is based on a case study of the Jing-Jin-Ji megacity region, also known as the ‘Jing-Jin-Ji Integration’ in Chinese official terms (Kan, 2016). In this introduction section, the background context of the research topic will be introduced. The city development and urbanization trend in the world, especially in China, will be simply demonstrated. Then, the three major megacity regions will be introduced due to their dominant roles in the Chinese city development process. Furthermore, the research scope and research questions will also be presented.

1.1 Research background and research objectives

1.1.1 Research background

The population of the world has more than doubled in the past half-century, from about 3.3 billion in 1965 to about 7.3 billion in 2015. Meanwhile, the percentage of the urban population has increased from 35.6% in 1965 to 53.9% in 2015. According to the UN report, *World Urbanization Prospects: The 2014*, more than half (about 54%) of the world’s population lived in urban areas in 2014. Around 70 percent of the world’s population were in rural areas in 1950, yet the world’s urban population is estimated to make up 66% of the world’s total population by 2050 (Du et al., 2016). The urban cities play a significantly important role in the current world, which accounts for more than 80 percent of the total GDP in the world.

Not only is the urbanization process developing at an ever increasing speed, but it is also shifting from the North to the South and the West to the East, globally (Dobbs et al., 2011). It’s not surprising that China, which is at the heart of that shift, has been seeing increasing attention from all over the world. As has been widely reported, China has been experiencing rapid urbanization which has been stressing the need for industrial transformation, especially in the relatively developed regions (Friedmann, 2005; Hsing, 2010; Logan, 2011; Wu et al., 2007). The urbanization level has increased from 17.9% in 1979 to 53.7% in 2013, with the urban residents increasing from 170 million to 730 million (Shin, 2015). China’s new leadership taking office in 2012 has also made it an explicit objective that the urbanization level will increase to 60% by 2020 so that the domestic demand will be stimulated further in order to sustain the economic growth for another 10 years or so (Chan, 2014).

During this process of urbanization in China, the number of cities has also increased from 193 in 1978 to 658 in 2010. Among these cities, megacities like Beijing, Shanghai, Guangzhou, and Shenzhen are listed as the fastest growing cities in the international city network (Derudder et al., 2013). Surrounding these cities, three megacity regions have formed. Namely, Yangtze River Delta (YRD), Great Pearl River Delta (GPRD), and Jing-Jin-Ji (JJJ). In the literature, the megacity region might also be recognized as a polycentric urban region or global city region (Hack & Simmonds, 2013; Kloosterman et al., 2001; Parr, 2004; Simmonds & Hack, 2000). Despite the variety of the terminologies, this thesis will stick to the use of the term “megacity” for uniformity. These three megacity regions are so highly developed that with about 7.8% of the national territory, they created about 44% of the national GDP in 2015 (National Bureau of Statistics of China, or NBSC, 2016). The YRD region is located in the downstream area of the Yangtze River, along the Yellow Sea and the East China Sea. It is composed of 8 cities in the Jiangsu Province and 7 cities in the Zhejiang Province, with a total area of 109,933 square kilometers and a population of 110.2 million (Yangtze River Delta Urban Agglomeration Development Planning, 2016). The YRD region makes up about 2.1% of the total national area and creates 21.7% of the national GDP in China (Shanghai Municipal Development and Reform Commission), making it the strongest economic center in China. The PRD region lies around the Pearl River Estuary, from where the Pearl River flows into the South China Sea. It includes 9 cities in the Guangdong Province and 2 special administrative regions: Hong Kong and Macao. It occupies an area of 57,539 square kilometers with a population of 62.3 million. It contributes to about 10 percent to the national GDP, and the GDP per capita in the PRD region is 3 times that of the national average. The Jing-Jin-Ji Region is located around the Bohai Rim in the northern part of China, and includes Beijing, Tianjin, 11 cities in the Hebei Province, and 1 city in the Henan Province. It is 206,613 square kilometers in area and has a total population of 114 million. In 2015, the GDP of the Jing-Jin-Ji region was 6931.29 trillion RMB, accounting for 10.2% of the national GDP. Except for the three above polycentric urban regions, there are two new ones emerging. Namely, the Middle Reaches of the Yangtze River (Sun et al., 2015; Xu, 2014; Yang, 2015) and the Chengdu-Chongqing urban agglomerations (Shi & Yu, 2002; Tan et al., 2011), which were also initiated and recognized at the national-level as urban agglomerations. Despite their relatively new emergence and less influence compared with the three traditional urban agglomerations, the two new agglomerations are projected to become increasingly important in the future urbanization process of China.

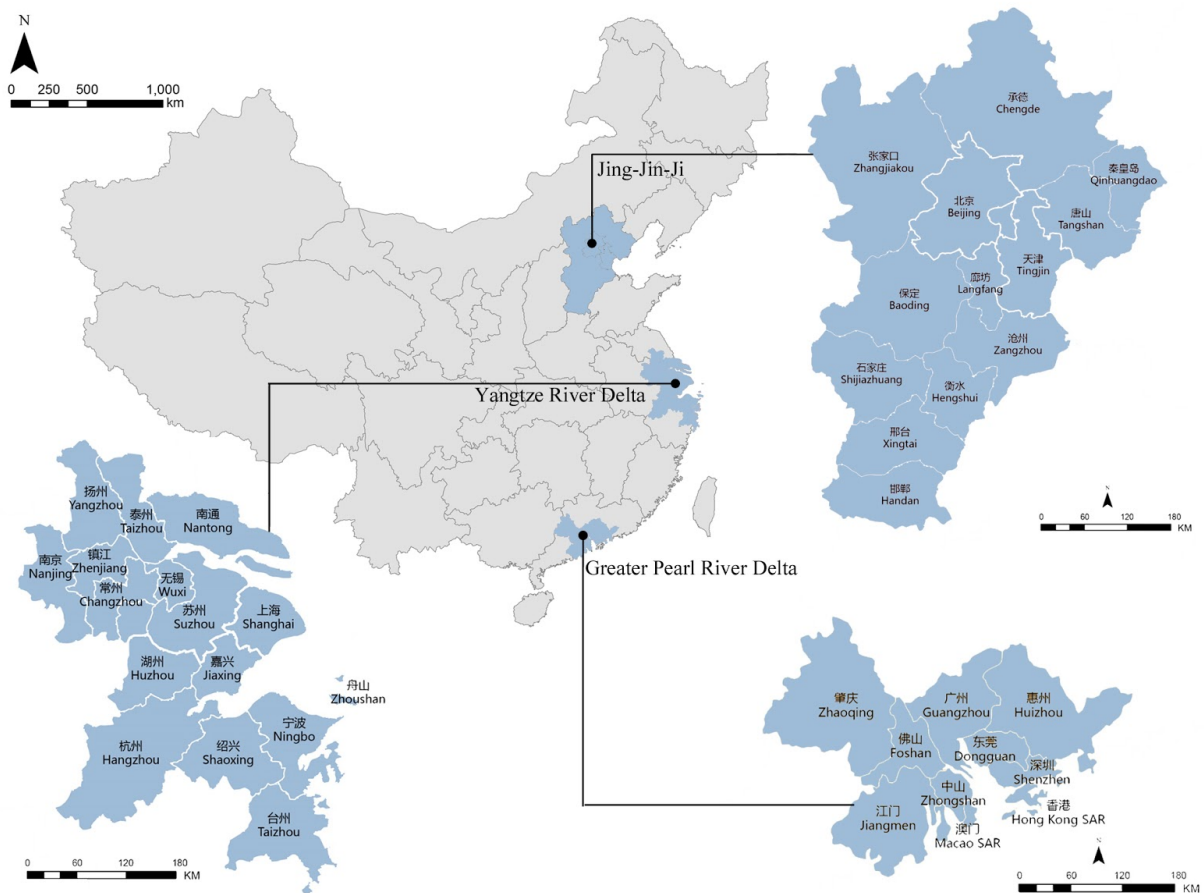


Fig 1.1 The three megacity regions in China: YRD, PRD and Jing-Jin-Ji

Two direct consequences come after the staggering urbanization development. The first consequence is that the cities need to be more competitive in order to attract the limited financial and human resources. One of the strategies adopted by most cities to enhance their competitiveness is through city branding (Dinnie, 2011). The second consequence is the degraded and sometimes shattered eco-environment. This is why the concept of ecological modernization has not only been a hot academic research topic, but has also been actively adopted by the policymakers, forcing them to design policies with environmental protection and economic development in mind (Mol, 2006). These two concepts, city branding, and ecological modernization, seem to be unrelated to each other at first glance. In the practice of city branding, however, most cities aim to brand themselves from the perspective of ecological modernization to address the challenge of ecology and environment (de Jong et al., 2015). The following section will give an introduction to the development and application of the concept of city branding, especially in the context of local cities facing the challenge of ecological modernization during the urban development process in Chinese megacity regions.

In the process of urbanization, each individual city tries to brand itself as attractive as possible in order to build a good city image, which is very important for the prosperity of a city. City branding is a process of trying to turn the city from a pure location into an attractive destination (Ashworth, 2009; Kavartzis, 2008). The targets to be attracted could be tourists, new residents, investments from businessmen, or potentially investments from renowned international companies. What does city branding contribute to a city? First and foremost, it helps in displaying the city's characteristics and to strengthen the city's charisma (Braun, 2011). Every city is different and needs their city brand to make them stand out. For example, to name a few: Paris is famous for its so called "romance". Hong Kong is known for its international trade and shopping mall. Tokyo is widely accepted as being highly modernized. And, Jerusalem is treated by many religious practitioners as the religious saint place. The Olympic city, Beijing, put forward a slogan 'New Beijing, New Olympic', which greatly enhanced the city's charisma (Bu, 2009). Secondly, it helps to improve the internal cohesion amongst the local citizens, contributing to the awareness of the involvement in the city development. Outstanding examples are the "I love New York" slogan for New York City and the "Iamsterdam" for Amsterdam. Another example is the image of 'Bravebull' of Shenzhen, which has greatly improved the city owners' awareness. Thirdly, it can be helpful for attracting talent. For instance, Shenzhen, located near Hong Kong, labeled itself as "young", attracting more and more passionate young people to this new, emerging city. In addition, it could also help to attract outside investments. Most cities face a shortage of funds while in the process of city development. In China, for instance, attracting investments is always one of the most important goals of the local city government. And in most cases, it is considered as the main achievement for the local government. In addition, it can also prove financially beneficial via tourism. Take Dali, for example. It is labeled as the "leisure and relaxation city", which attracts tourists from all around the world. Finally, it can also enhance the trust of the citizens with their local government. City branding is like a promise that the government makes to its citizens. If managed well, the government can greatly enhance the image of itself by fully delivering on the promises made. However, it could also potentially ruin that positive image if it is "over promising and low delivering" without much practical change.

The most well-known branded cities are the big cities, especially in the western world. There are numerous different types of city brands, such as political brands (Brussel, Geneva), economical/industrial brands (Zurich), transportation brands (Frankfurt, Singapore), cultural brands (Venice), tourism brands (Hawaii), and green/livable brands (Kunming, Chengdu). Each city should position itself according to its special features. In practice, however, many cities, especially the small ones, are still struggling to search for appropriate branding. According to a survey regarding international image of cities in China conducted in 2010, more than 90% of municipal-level cities in China were poised to become international, while the specific features of these cities were not paid much attention to. The unclear positioning and lack of special

characteristics seem to be a prominent issue in the city development of China. Another common issue lies in the fact that the emphasis is mainly put on the material aspects without equivalent concern regarding the spiritual, cultural, and historical aspects. Moreover, during the practical implementation of the city branding strategies, it often lacks coherence due to the alteration of the city leaders. This issue is partly derived from the fact that the city branding strategies lack comprehensive and systematic understandings of the cities. The city branding strategies can be changed simply due to the personal preference or interests of the new city leaders. In a nutshell, despite the widely recognized importance of city branding, many issues are still remaining to be solved in order for it to really exert its influence.

Along with the urbanization and economic development, there are serious problems regarding the environment and resources. The air pollution problem in China has been so severe that it has become the representation of China's environmental pollution. Take Beijing, for example. The PM_{2.5} index, which indicates the density of particulate matter (2.5 micrometers or less in diameter), went beyond the threshold 300 for 19 days in January of 2013 (Lallanilla, 2013). This situation, still, has not improved significantly in recent years. The statistical data shows that, in Beijing from 2011 to 2015, 23% of the days were categorized with good air quality, 55% with light air pollution, and 22% with severe air pollution (Wu et al., 2016). Beijing has been seeing increasing attention for its air pollution worldwide due to its role as the capital, but it is definitely not alone in terms of facing the air pollution problem. Numerous Chinese cities, especially those in the northern part of China, are all faced with severe air pollution. Besides that, other pollution problems, such as water pollution, land pollution, and desertification have also become increasingly severe in China due to the primary focus of economic achievement in China. The amount of resources consumed in China is also tremendous, which causes another significant issue. China accounts for about 20% of the global energy consumption; and more specifically, 47% of global coal consumption, 11% of the oil, and 4% of the natural gas (IEA, 2014). This large amount of energy consumption, especially coal consumption, has provided momentum for the economic development, but has also caused numerous environmental problems.

The problems described above are not unique to only China. Western countries also used to be faced with similar challenges in the 1960s and 1970s. For instance, London experienced the Great Smog of 1952, as a direct result of which more than 4,000 died and 100,000 more were made ill due to the respiratory tract diseases caused by the smog's effects (Laskin, 2006; Zhang et al., 2014). Accordingly, relevant theories and policies were proposed by western scholars to address these challenges. Among the numerous theories, sustainable development and ecological modernization are two outstanding and time-honored achievements. Sustainable development emphasizes that the present economy should be developed in a way to not only satisfy the needs of the contemporary people, but also to sustain the future generations (Huber, 2000; Redclift, 2005). Therefore, natural resources should be used moderately and the ecological system needs to be conserved even though the current economic achievement might be sacrificed, to some

extent. While from the perspective of the ecological modernization, which was first raised in the 1980s by Joseph Huber and Martin Janicke, the ecology and environment can benefit and facilitate rather than restrict the economy if appropriate measures are taken under the notion of ecological modernization (Huber, 1985). The concept of ecological modernization will be adopted in this thesis, and especially the role of it in the city branding will be explored.

The literature review shows that city branding started from around the 1990s in China and the city branding practices have gradually shifted its focus from the previously economic-dominant industrialization perspective to the current ecological modernization perspective (Loo & Davies, 2006). The reason for the focus shift lies in the fact that industrialization and modernization were the core development themes for most cities in China in the 1990s and the notion of an ecological city (eco-city) had become popular and widely used only since the 2000s due to the increasingly negative consequences of the traditional, primary economic-focused, city development (Li et al, 2007; Wang & Ye, 2004). Until 2011, more than 90% (over 259 out of 287) of municipal-level cities had established the goal of ‘eco-city’ or ‘low-carbon city’ (sometimes combined as ‘low-carbon eco-city’) for their city positioning and future construction. On the one hand, it is commonly believed that China can not only focus on the economic goals without taking the environment issues into account. On the other hand, it is not practical to give up on the goal of economic achievement for the purpose of conserving the ecological system. It is widely recognized, from the academic scholars to the government policymakers, that an eco-city is the inevitable choice for the cities aiming for urbanization in China at the current stage (Li et al., 2010). Thus, window dressing or reputation management is widely used in the city branding process by most cities in the terms of eco-city and low carbon city. Some cities also use other terminologies (some internationally widely used and some pretty much China-style) to express similar ideas, such as smart/intelligent city, sustainable city, green city, knowledge/information city, sponge/resilient city, compact city, garden city, etc. (de Jong et al., 2015). Despite the variety of the numerous, different terminologies, they are all related to the core concept of ecological modernization. Thus, they can all be perceived as the city branding practices from the perspective of ecological modernization.

1.1.2 Knowledge gap and Research relevance

The challenge of ecological modernization has been getting increasingly urgent for many local cities in China over the past decade. On the one hand, the ecology problems caused by the economics-dominant development pathway have already hindered local city’s further development potential. For instance, lacking the attractiveness for the talented workforce or direct investment. On the other hand, it is a policy reality that the Chinese central government requires them to respond to. Thus, local cities have both internal and external pressure to reposition themselves, embracing ecological considerations with the ecological modernization

discourse. This will then naturally cause critics to wonder whether the local cities are really addressing this challenge through their city branding practices or if it is just greenwashing.

Existing research in city branding has mainly covered the different ‘subjective’ aspects of the concept, such as city image, branding strategy, and stakeholder engagement (Houghton & Stevens, 2011), as well as the historical evolution of the concept over time (Dinnie, 2011). However, the city geographic embeddedness regarding positions in the region and the influence of the economic development stage have not been addressed in the literature.

This thesis aims to contribute to the understanding of how these two factors, namely the stage of urban economic development and the geographical position within the region, influence the city branding practices related to ecological modernization.

It is argued in this thesis that the bandwidth of the branding choices will be influenced by these two factors because of the particular developmental possibilities and limitations brought by the combination of the two factors. Although it cannot be absolutely determined which group of city brands will be most suitable for a city given its geographical position and development stage, we do expect these two factors will have an influence on the chosen mode of ecological modernization and will be reflected in the city branding practices. In the causal framework, the two factors will be taken as the independent variable, the mode of ecological modernization as the intermediary variable, and city branding practices as the dependent variable. The branding practices here include the city brand identity in general and the city brand positions related to ecological modernization.

The research result of this thesis can provide a possible theoretical guideline for the central government to determine to what extent local city’s EM branding choices match its current city profiles. Thus, it can also be useful in the process of checking whether local cities are actually implementing the promised EM related policies or just greenwashing. For instance, those cities adopting obviously off-pathway EM branding practices (not resembling their current city profiles) deserve critic’s doubt on its credibility. In that case, those cities should clearly elaborate on the mechanism to realize the desirable branding choices.

At the end of this thesis, some policy implications will be derived based on the research results found in this thesis together with other relevant reports. In other words, some policy recommendations will be made to the local governments to potentially reduce the likelihood of greenwashing without addressing the real challenge of ecological modernization.

1.2 Research Scope and Research Questions

This section is designed to present the research scope and research questions, which can facilitate the following research study and make the thesis report selectively focused and interesting to read as well.

1.2.1 Research scope

Why the Jing-Jin-Ji Integration region?

This thesis research work is under an umbrella project led by Professor Martin De Jong at the TPM faculty of TU Delft to study the role of ecological modernization in the city branding practices in China's mega-city regions. The three mega-city regions are **the Yangtze River Delta (YRD), the Pearl River Delta (PRD), and the Jing-Jin-Ji(JJJ) Region (also sometimes known as the Inner Bohai Rim)**. Each of these three region cases will be studied by one member in his research team. YPD is studied by the master's student, Q. Yang, and PRD is studied by the PhD. candidate, H. Lu, and this thesis project will be responsible for analyzing the case of the Jing-Jin-Ji Region. To compare the findings in the above 3 megacity regions and to get more interesting research, the three of us were suggested to adopt a similar approach for the reason of infirmity. After internal discussion, the EM pathway method has been chosen as the common main analytical method we will use.

1.2.2 Research questions

This master thesis project is designed to answer the **main research question** described as below:

How do cities in the Jing-Jin-Ji region position themselves through the EM related city branding to respond to the faced EM challenge, and what is the relationship between current city profiles and city branding practices?

To make the main question more approachable, the main question is decomposed to the following **sub-research questions**:

1. *What is the adopted conceptual model(analytical framework) and research method to analyze the relationship between current city profiles and city branding practices? (To be answered in Chapter 2 and 3 of the thesis)*
2. *What are the current city profiles of each city in the Jing-Jin-Ji region as well as the Jing-Jin-Ji region, as a whole? (To be answered in Chapter 4 of the thesis)*
3. *What city brand practices do the cities in the Jing-Jin-Ji region adopt to promote themselves? (To be answered in Chapter 5 of the thesis)*

4. What influences do the current city profiles have on the city branding practices? (To be answered in Chapter 6 of the thesis).

1.2.3 Overview of the thesis structure

To facilitate the reader's quick understanding of the thesis structure, a quick overview of the following chapters of the thesis will be described as follows. Basically, each chapter is designed to answer one of the above four sub-research questions.

The sub question 1 will be answered in chapter 2 and 3. Based on the literature study, the concept of city branding, which is the main theory of this research work, will be introduced. The other concept, ecological modernization, will also be introduced; especially the role of it in the city branding will be explored. They serve as the theoretical basis for the following study and analysis. Moreover, the main analytical method will be presented in a flowchart and the relevant research process to be conducted later will be stepwise explained so that nothing in chapter 4-6 will come as a surprise to the readers.

The sub-research question 2 will be explored and answered in chapter 4, based on the literature study. The literature here includes the academic papers and other online documents regarding the historical evolution and city profile for each city in the Jing-Jin-Ji region.

Chapter 5 will contribute to answering the sub-research question 3. This sub question will be explored and answered based on the focused study on the three official documents, namely, the Urban Master Plan (2010-2020), the 12th Five-Year Plan (2010-2015) and the 13th Five-Year Plan (2016-2020).

The last sub-research question will be answered in chapter 6. The relationship between two independent variables (the stage of urban economic development and the geographical position within the region) and the dependent variables (the city branding practices, i.e., city brand identities and city brand positions) will be studied.

Chapter 7 will be the final chapter, which will present the major conclusions derived in this thesis, based on which policy recommendation will be made. Furthermore, the strengths and weaknesses of this research will be reflected and a follow-up agenda for the future research work will be formulated.

2. Theory reviews and analytical framework

In this chapter, the major theory adopted in this thesis will be explored with a literature review study, based on which the analytical framework of this thesis will be presented to readers.

Two core theoretical concepts, namely city branding and ecological modernization, are used in this thesis to analyze the Jing-Jin-Ji region case. For both of the two core theoretical concepts, the historical development will be analyzed and summarized based on the literature reviews. The intersection between these two will also be analyzed further with the focus on the role of ecological modernization in city branding in the context of cities being faced with the challenge of ecological modernization. Furthermore, the five pathway method for determining the ecological modernization modes based on the current city profile will be introduced as well. This main analytical framework has been co-proposed by the research group (including the author of this thesis) led by De Jong.

2.1. Theory reviews

2.1.1. Brands and city branding in general sense

The past few decades have witnessed a remarkable increase of the academic research work in the field of city branding (Kavaratzis, 2008; Kavaratzis & Ashworth, 2005; Rainisto, 2003). The literature study shows that the topics cover from the definition of the concept itself to the applications of the branding theory into the specific city cases (Ashworth, 2009; Kavaratzis, 2005; Xu & Yeh, 2005). Some scholars contribute to the development of this concept through an overall literature review (Dinnie, 2004; Kavaratzis et al. 2011; Kavaratzis, 2005). The branding method has also evolved with the development of the technology, and social media has been adopted as a new way for branding the cities (Sigala, 2008; Zhou & Wang, 2014). Moreover, the influence of city branding goes far beyond academic literature study, and in real life the cities have a strong internal drive to enhance the attractiveness through active branding. The city branding contributes to improving the general perception of the city as a city to visit, a city to invest in, a city to organize the international conference, or a city to live in, etc. (Anttiroiko, 2014). Despite its widespread use in both academic study and real-life implementation by the city governments, there are still some debates about its definition and its practical effects of achieving the expected goals (Braun, 2011; Skinner, 2008).

2.1.1.1 Cities, brands and city branding theory

From city agglomeration to city positioning

Nowadays, it is widely known that the globalization and agglomeration of cities has enhanced the competition among the cities in the global arena. The cities compete for limited resources:

human resources (talented professional young people, tourists, etc) and financial resources (the investment from the businessman, leading companies, or the central government) (Dinnie, 2011; Koller, 2008). Thus, city competitiveness has been getting more and more important and the competitive edges of the city come from city positioning with the strategic manipulation of the city assets and characteristics (Doel & Hubbard, 2002). The overemphasis on competition among cities, however, can be one-sided and misleading because cities do not only compete in an independent 'island' state, but also cooperate or co-compete in connected, larger networks (Amin & Thrift, 2002). Regardless of perceiving the growing urbanization force as simple competition or complex co-opetition, the strategies of city branding are about positioning the city, relevant to other cities, to gain the strategic advantages in certain practical contexts (Berg & Bjurner, 2014). The appropriate city positioning can contribute to claiming certain positions, including the functional geographic roles like transportation hubs (Lohmann, Albers, Koch, & Pavlovich, 2009), the hierarchical positions (national or regional center) in a nation (Saich, 2011), and competitive positions (Most livable list in China) in a ranking list (Liu & Wang, 2012).

From brands to branding

A brand is a multifaceted construct in which managers augment their product(s) with extra values recognized by the consumers (De Chernatony & Riley, 1998), or to put it simply, intangible assets in relation to the customer's perception (Blombäck & Axelsson, 2007). Based on the definition from the American Marketing Association, the brand could be any feature, including a name, sign, design or symbol, that identifies the good or service as different from other, similar ones. It could also be defined as loyalty, as well as value added vision (Kapferer, 2011), and the brand loyalty can be a significant factor for the brand's success. Other scholars expand this definition and perceive a brand as the selective symbolic embodiment of an object, which could be a commercial product or a complex city, to generate the expected goals (Lucarelli & Berg, 2011). In the context of city, the embodiment can range from an iconic building to a city vision like 'livable city'. Other scholars also shifted the emphasis on the symbolic design or image to the deep philosophy behind that (Inskip, 2004). Moreover, the focus of the concept branding has gone from the interface between the organization and the outside environment to the internal decision and functioning process inside the organization itself (Kornberger, 2010). Again, in the context of a city, branding goes beyond the iconic building or a vision slogan 'livable city', to how the city government functions inside to get that result.

City branding concept

Branding strategy has long been used in the business world for either corporate branding or specific product branding, before it was used in the city promotion field (Kavaratzis & Hatch, 2013; Kavaratzis & Ashworth, 2005; Short & Kim, 1999). In the business field, the branding strategy has been used by the companies to highlight the distinctiveness and uniqueness of their

products (Lynch & de Chernatony, 2007). Due to its fancy and widespread use in the commercial world, it was also introduced to the city study field.

The city branding theory is chosen as the main theory to analyze the Jing-Jin-Ji case in this thesis. It is worth the effort to figure out what this concept really means. However, there is no simple answer to this question as there is no single well-accepted definition of this concept. The researchers and experts in this field tend to elaborate it to their own use. However, taking the source of this term into account, we can fairly treat city branding as the application of branding from commercial products into cities. Thus, it is helpful to explore this concept with two major points. The two points are: what the branding for products is in the commercial world and how it can be related into the cities.

To start with the first point, what is branding in the commercial world? In the modern commercial world, the brand is getting increasingly important for a certain product. Customers are getting more and more sensitive about the brand, which turns the normal customers into loyal customers. In the past, customers tended to compare the quality and the price among several different products. Nowadays, the commercial commodity is getting unbelievably complex and the increasing variety overwhelms normal consumers. Thus, most customers choose a simple method to deal with this increasingly complex issue, and the answer is the trust on a certain brand. In this case, the customers have no need to go deep to study the performance or quality of a certain product. With the trust on a certain brand, the customers can make quick shopping decisions. For instance, customers will choose to buy the iPhone since they have used a Mac computer in the past and they have high trust in the Apple brand. Therefore, it's fair to say that a brand is more than just a name but that it actually adds extra values to the products, and the company can benefit from it. However, a successful brand does not come from nowhere; it is the result of deliberate and complicated branding processes of carefully selecting attributes and core beliefs of the commodity.

These branding processes can be analyzed through the three core elements of the brand, namely brand identity, brand positioning, and brand image (Kavaratzis, 2008; Kavaratzis & Ashworth, 2005; Knox & Bickerton, 2003). The product's identity means the qualities or features of a product that make them distinct from others. They are the objective features of a certain good or service. On the other hand, the brand identity is the result of the strategic choices of those beneficial objective features by the product owners to add extra social, symbolic, or emotional values on their products. Simply put, a brand identity is how the owners wish their products to be perceived. A good example is the diamond. As without branding, a diamond is no more than a super hard stone. However, the diamond companies identify the 'super hard' feature as 'everlasting love', which adds the social and emotional value to the diamond. The brand identity is seen from the perspective of the owners, while the brand image is on the other end of the story, the consumers. The brand image is a collection of the quality evaluation, the values, as well as loyalty and feelings. One of the key factors for iPhone's success lies in its widely recognized

brand image of innovation. Many people tend to think of the brand image as a logo. A well-designed logo displays the main characteristics of a product and attributes a positive image to it. A logo has an enormous impact on the brand image, but still it is not the image itself. Brand image is how the customers perceive the products, positive or negative. However, it is not surprising that the brand identity does not transmit to brand image automatically, and it involves the brand positioning process, which is the marketing process targeted at a certain group of people with the competitive advantages of the products. Chronologically, brand identity appears first, followed by brand positioning, and then brand image comes last in one branding circle. The relation among the three core elements of branding can be summarized as follows: The positioning strategy is generally not conducted randomly, but based on the current identity; the brand image can be seen as the result of the follow-up activities according to the relevant positioning strategy; and furthermore, the achieved brand image itself will again contribute to the new identity in the future, which makes it a dynamic circle. The dynamic characteristic of the branding makes it very practical in its application into the real, complex world.

How can the branding be related to the city? Obviously, a city is more complex and multifaceted than a commodity product. An effective branding strategy of a commodity product needs to involve the customers and the stakeholders in the context of the company. While a city is a creature that involves multifaceted features, such as the buildings, the infrastructure, the necessary facilities, and most importantly, the people living in it (Kavaratzis, 2009). An appropriate city branding needs to involve different stakeholders with different core interests. The local citizens care more about the life quality standard in the city and the city government might be more interested in the attraction of the tourists and the investors. The expectations of the stakeholders overlap in some aspects but might contradict each other in other aspects. Sometimes, the difficulty of city branding just lies in the simple fact that even the simple question of ‘who actually owns the city?’ cannot be addressed properly (Berg & Bjurner, 2014). This question might seem easy but turns out to be a difficult one when we try to take a deep look into it. The ownership ambiguity here makes the core question, ‘How can city branding be done?’, difficult to address. The goals of product branding and city branding are also different. Product branding tends to have a clear branding goal of maximizing the profit, while city branding competes for investments, tourists, talented citizens, etc. The literature review, however, shows that there are numerous similarities and parallels that can be derived between product branding and place branding (Balmer & Greyser, 2006; Hatch & Schultz, 2009). Both of them involve different groups of stakeholders with multiple identities in a long-term development period, and thus are both intangible and complex (Anholt, 2002; Hatch & Schultz, 2009).

A brand is the extra value added to the products. From this perspective, product branding and city branding are the same in essence. And thus, despite the fact that many of the concepts about city branding are highly elusive and a clear definition is almost impossible, the three core

concepts of commodity brand can be borrowed and used in the field of the city branding. Namely, city identity, city position, and city image. In a nutshell, city identity stands for the unique essence of the city that differentiates itself from others and how it wishes to be perceived by the public; city positioning stands for the strategic effort by the city government to position the city for gaining some competitive advantages; and city image stands for how the city is presented to the world and how the public actually perceives that city.

2.1.1.2. Concept comparison regarding city branding, why city branding?

Branding marketing advertising

The whole research work will be done based on the theory of city branding. Therefore, it's highly relevant that the concept of city branding should be explored in a relatively detailed way before we can use this concept to illustrate the Jing-Jin-Ji city case. The discussion can go awry due to the lack of common understanding of the very concept itself. So, what is city branding? It's quite straightforward that the concept has two important elements, namely, city and branding. Moreover, city is the descriptive word for the word 'branding' and branding is the core concept. Still, there seems to be a lot of confusion between the concepts of branding and marketing. To avoid any further confusion, the differences between them need to be clarified.

Even though these two concepts seem quite similar, there is still a minute difference between them. Marketing is the process of deliberate activities that promote a certain product to contribute to the targeted sales. Branding is more than just aiming to get the potential customers, but instead aiming to turn the customers into loyal ones. Thus, branding is the process of determining the essence of the product, which, in a nutshell, is what it really is and represents. In the context of city, branding is more strategically oriented than the marketing (Kavaratzis, 2007). Kavaratzis (2004) claimed that marketing involves the promoting, positioning, and selling process, while branding places the emphasis on the internal communicative aspects of the above marketing process. Furthermore, Kavaratzis (2007) argued that branding goes beyond the economic aspect related to marketing to a deeper social and cultural aspect. Another similar concept here is advertising. Advertising, however, is the final practical message that a certain firm tries to get across to the customers and encourage or persuade them to buy their products. In most cases, the end customers can only get access to the final advertising messages and are influenced by the brand image, as well. To summarize, branding contributes to determining the core value that a brand presents and marketing contributes to getting that value across to the potential end customers. Advertising is only a practical form of the marketing process that contributes to the sales and reinforcing of the brand image. Which comes first? The branding process should be done first and the advertising normally comes as the final stage (Heaton, 2011).

City branding and place branding, why city branding

From the 1970s, the concept of ‘place promotion’ has emerged in the academic literature. This is followed by the emergence of many similar concepts, which include place/nation/city/urban branding. The term branding can be also replaced by promotion/positioning/marketing/ in some cases. In spite of the minute differences among these above similar concepts, place branding can be seen as a general umbrella concept covering all of them (Kavaratzis, 2005). When the keyword ‘city branding’ is searched in Google, the first thing that comes up is ‘place branding’ instead of ‘city branding’, which gives an impression that the concept ‘place branding’ is more widely used than ‘city branding’. At least it is fair to argue that ‘place branding’ is quite relevant to the concept of ‘city branding’. As the name suggests, place branding is more like an umbrella concept which consists of city branding and nation branding, and a general region branding. City branding belongs to that umbrella concept because city is obviously a place. Nonetheless, this thesis chooses to adopt the concept of city branding instead of place branding because city branding is more specific and thus more suitable for the case study to be carried out in the later part of this thesis. For the Jing-Jin-Ji megacity region, each specific city inside it needs to be analyzed. Even though some scholars still choose to use the concept of place branding, their study objects are also the specific cities, in most cases. Taking all the above factors into account, only the concept of city branding is chosen to be used in this thesis to avoid any conceptual confusion. For some reference papers, they use the concept of place branding, but it’s still addressed in this thesis as city branding to avoid any confusion.

City branding in the context of China

One outstanding scholar, Jacques (2009), opposes the widespread assumption that as countries modernize, they also westernize. He argues that China cannot be understood in western terms, but through its own culture as well as history. Karvelyte and Chiu (2011) have studied the planning process of city brands, concluding that the conceptual framework of the western city branding theory can only be partially applied and needs to be modified in the context of Taipei city due to the constant leader involvement. The concept of city branding can have slightly different meanings in the context of China and ‘western’ countries due to the different languages, cultures, and demographics, as well as governmental structure (F. Wu, 2003).

The differences come from numerous different perspectives. Firstly, even though the urbanization process is occurring globally, that staggering process speed in China is still far beyond the expectation of the westerners, resulting in some Chinese-style, context-based opportunities and challenges. One of the examples to illustrate this point is that Chinese urbanization has got millions of the population out of the poverty line, but at the same time causing alarming environment issues. This is why Chinese cities tend to brand themselves as eco-cities nowadays. Secondly, the city in the west tends to be more independent from the central government, if any, while Chinese cities are still strongly influenced and controlled by the central

government. Still taking the branding from the perspective of ecological modernization as the example, when Chinese central government aimed to develop ‘eco-cities’ all around China, the regional cities have no choice but to brand themselves like that even though it might not be aligned with their practical situation and interests. Thirdly, the participation of non-government organizations or individuals in China is very limited and different from the case in western countries. Finally, the communicative methods, like how the media runs, can also influence how the city branding is actually implemented. The above differences signal that urbanization and city branding, in the context of China, need to be studied and interpreted with the Chinese context fully taken into account, not just through a ‘western lens’ (Berg & Bjurner, 2014).

The above analysis shows that city branding in the context of China is mostly controlled by the government. This also makes it suitable to choose the official documents published by the government as the main data source in this study.

2.1.2. Ecological modernization and its role in city branding

In the recent decades, the environmental issue has been a hot debate topic. Especially, there is an increasing concern about the environment change with the phenomenon of global warming. Despite the lack of absolute consensus that global warming is actually occurring, it is still widely believed that it is the result of the modernization process, and that the industrialization has increasingly negative influence on the environment (Gibbs, 1998). In the 1960s and 1970s, the dilemma between the environment deterioration and industrial modernization has reached a tipping point, which generated the new theory: ecological modernization. Joseph Huber and his colleagues believed that the win-win situation between economic development and environment protection can be realized with the ecological advantages added into the modernization process. Afterwards, the concept of ecological modernization has not only been a hot academic research topic, but also has gained its influence in the practical application. In spite of the fact that it was majorly limited in western and northern Europe at the first stage of development, nowadays it is widely used internationally. However, some scholars argue that ecological modernization is only a fancy concept and impractical in the real world.

2.1.2.1. The development of ecological modernization

Among the academic scholars, there is still debate of who first came up with ecological modernization as a social science theory. Nonetheless, it is widely believed that the concept of ecological modernization was first brought up in the early 1980s by some outstanding social science scholars, among whom are Joseph Huber and Martin Janicke, at Free University and Social Science Research Center, in Berlin. Afterwards, this concept has been not only a hot theoretical research topic in environmental discourse, but also it has been used as a policy strategy by many policymakers in the process of urbanization development. In the academic field, some scholars have made substantial contributions to the development of the ecological

modernization theory. The concept of ecological modernization is based on the assumption that the economic achievement can benefit if the modernization moves toward the notion of ecology and environmentalism. The traditional idea is that the economic success in the industrial development can only be achieved at the cost of environment. This idea was also widely accepted by western scholars and policymakers in the 1960s and 1970s. In the eastern developing countries, taking China as an example, this traditional idea has been deeply embedded in people's minds for more than a decade. And, even nowadays it is still widely believed that the environment pollution is not only tolerable but also necessary as long as a higher economic standard of living can be achieved. This kind of embedded idea forced people to choose either the protection of the environment or the economic achievement. However, the concept of ecological modernization is totally on the other side of the pendulum, and it stresses that not only are the economic success and environment protection not contradictory, but also the two can be favorably combined and enhance each other. It even promotes the productive use of natural resources seen as environmental productivity, which is just as important to the industrial process as the labor and capital productivity. Basically, from the perspective of ecological modernization, environmental protection is not just a challenge to the economic development, but an opportunity. The harmony between nature conservation and human need is not only achievable, but also inevitable.

In the 1960s, the development of industry and modernity has led to the so-called industrial society and civilization, which greatly contributed to the economy progress in the western world. However, in the 1970s, the consequences of the modernization process has become more and more widely seen as serious. In the western world, there was a growing trend of anti-modernization or anti-industrialization due to the environment pollution and resource issues. The citizens began to feel that they could no longer tolerate the ecological deterioration to pursue the economic development. At the same time, they could not give up on the convenience of the economic achievement resulting from the modernity and industrialization. In the 1980s, to solve the dilemma between the economic development and the environment issues, some new concepts, like *The Third Wave* (Toffler, 1980), *Ecological Modernization* (Huber, 1985), and *Reflexive Modernization* (Bec, 1986) have been brought up by some scholars. In the 1990s, other scholars continued to contribute to the development of the modernization theory concepts, among them are *Postmodernization* (Inglehart, 1997) and *The Second Modernization* (He, 1998).

It is worthwhile to note that the scope, features, focus, and geographical application have changed dramatically since its first emergence in the early 1980s. The development of the ecological modernization theory can be divided into three major stages (Gibbs, 2001; Mol & Sonnenfeld, 2000). In the first stage from the early 1980s to the late 1980s, the key focus of the ecological modernization was put on the technical innovation and progress in environmental reforms and protection, especially in the industrial production field. Market actors and economic agents were favored with a critical attitude towards the role of the government. Meanwhile, the

emphasis on the concept of human agency and the struggles in the social movements is rather limited. From the late 1980s to the Mid 1990s the ecological modernization theory has entered a more overall balanced stage. For instance, the emphasis has shifted from only the technical innovation to a more balanced viewpoint, highlighting the role of the institution and culture in the process of social transformation. At the same time, the balanced roles of both the economic market and national government in the ecological modernization process has also been noted. Still, during that period, the research interest was still majorly limited in the OECD countries, without much focus on the developing countries. From the Mid 1990s onwards, the research in the sphere of ecological modernization has been expanded to non-OECD countries featuring the global perspective. It has also emphasized on the institution transformation of the whole society which includes politics, market, technology, etc. In the early 2000s, some scholars contributed to the development of this theory through a systematic review study of the concept. For the past decade, the research on the ecological modernization theory has been majorly focused on the context of Southeast Asian developing countries, analyzing some specific projects.

In terms of the scope of this concept, there are still many different understandings and interpretations. For some scholars, this concept can only refer to 1) the relevant government policies related to the environmental transformation (government level) and 2) the technological progress relevant to the environment protection (company level). Other scholars might also extend this concept to 3) cultural aspects, which include the people's daily behaviors, lifestyle, and mind (person level). Despite all the different perspectives, there is still a common understanding that this concept can lead to not only sustainable economic growth, but also innovative structural change.

2.1.2.2. City branding from the perspective of ecological modernization

When city branding and ecological modernization meet together, a new term, eco-city, occurs frequently. As a result, city branding from the perspective of ecological modernization might be misinterpreted just as 'eco-city' by some people. The literature reviews shows that the role of ecological modernization in the city branding mainly focuses on the city brand positions and the reality is far more complicated than just the one brand position term, 'eco-city'. Many similar terms occur in the literature, including sustainable city (Chiesura, 2004), low carbon city (Li et al., 2010), green city ((Low, 2005)), smart city (Hollands, 2008), livable city (Southworth, 2003), digital city (Ishida, 2002), informational city (Castells, 1989), intelligent city (Shifu, 2012), resilient city (Vale & Campanella, 2005), knowledge city (Musterd & Deurloo, 2006) and ubiquitous city (Lee et al, 2008). All these terms are related to the three pro-environment concepts: sustainable development, ecological modernization, and regenerative sustainability, which all take as the departure point that ecological, economic, and social development can be achieved at the same time (de Jong et al., 2015; Hes & Plessis, 2014; Robinson & Cole, 2015). Numerous scholars and policymakers just seem to use these terms interchangeably without clear

conceptual difference. For instance, the Chinese city Guangzhou has worked together with the Singaporean government to carry out an urbanization development program with the name, ‘knowledge city’, while the indicators used to support that program are more like the ‘eco-city’ indicators (Crane et al, 2012; de Jong et al., 2015).

Against such a backdrop, some scholars (de Jong et al., 2015) explore the conceptual difference and relationship among those terms. De Jong and his co-workers have been to date the first to have done such a work. Their research results will be simply referred here. Based on the appearance frequency in the literature and level of distinctness from other terms, De Jong chooses ‘sustainable city’, ‘eco-city’, ‘low carbon city’, ‘smart city’, ‘knowledge city’, and ‘resilient city’ out of the preselected 12 terms (with ‘sustainable city’ covering ‘green city’ and ‘livable city’; and ‘smart city’ covering ‘ubiquitous city’, ‘intelligent city’, ‘digital city’, and ‘information city’). The conclusion has been derived that all these preselected 12 city branding terms are not interchangeable. More specifically, the further selected 6 terms are clearly distinct from each other. It is suggested by De Jong that each city branding term has a unique meaning and the rigor in the use of them should be stressed for the policy implications to be better comprehended. This work has been complimented by another study (Fu & Zhang, 2017/2). Fu and Zhang (2017) have done a bibliometric study on the trajectory of sustainability concepts over the time span of 35 years. They have concluded that the city concepts that promote the sustainable urban development can be categorized into two basic groups, ‘sustainable city’ and ‘smart city’. The former one stresses on the urban sustainability and mainly deals with the eco-economic realms, while the latter one, which promotes the application of information technology for improving the urban service efficiency, is more focused on socio-economic aspects.

Just like many other fancy ideas, the concept of ecological modernization has also been criticized by many critics. Their main argument is that it cannot really prevent the environmental degradation because of the inner-core nature of the capitalist economic mode. In the context of city branding, critics also doubt whether a branding term like ‘eco-city’ really helps promote the ecological modernization. In the worst case scenario, those fancy ecological modernization related city branding terms can just be used by the policymakers to serve the purpose of the so-called ‘green washing’. Time is needed to check the real effect of ecological modernization in the urbanization process.

2.2. Proposed analytic framework: Theoretically expected pathway of ecological modernization

The exploration of city branding and ecological modernization concepts has been done in the above sections. Especially, the role of ecological modernization in city branding has been explored based on the literature study. This lays a foundation for the main analytic framework to

be proposed in this section. The major focus of this thesis is to contribute to the understanding of how the stage of urban ecological development and geographic position within the region influence the city identity in general and city positions related to ecological modernization. The main analytic framework, pathway of ecological modernization, serves as the conceptual model for analyzing the influence of current city profiles on the city branding practices. Moreover, this section can also be considered as the bridge between the research theory and research method.

2.2.1. Introduction to proposed pathway of ecological modernization

As mentioned in the introduction chapter, two major aspects of the current city profile have been taken into account: the economic development stage and geological position. The two aspects of city branding practice that are considered are brand identity, and brand position (city labels). Brand identity is the city's core branding strategy, often appearing in the form of self-descriptive sentences; brand position is a city label like 'tourist city' or 'eco-city' for promotion purposes, often related to ecological modernization. With the aim to understand the influence of current city profiles on the city branding practices, this analytic framework has been built on the work by Goess et al. (2016) and De Jong et al. (2017), analyzing city branding practices in different regions. In this thesis work, the proposed analytic framework is designed to map and analyze the city branding identity and brand positions related to ecological modernization for the cities in the Jing-Jin-Ji region.

For the brand positions (city labels), the twelve categories of city branding terms distinguished by De Jong et al (2015) are taken as the point of departure. They are modified to fit the Chinese policy practice and linguistic semantics, which results in ending up with 10 terms most relevant to Chinese context. De Jong et al (2015) concluded that some of the 12 categories overlap with each other and have similar conceptual perspectives. As a result, six categories ("sustainable city", "smart city", "eco-city", "low-carbon city", "resilient city", and "knowledge city") are found to be conceptually distinct enough, which can be supported by a specific body of theories. In the context of China, the concept of sustainable city has been overused because the sustainable development strategy has been initiated and stressed by the central government in the past few decades. On the contrary, "knowledge city" is rarely used in the context of China. Thus, only the remaining 4 terms are chosen to be appropriate for the case study in the context of China. However, table 4.2 shows that there are other widely used city branding terms closely related to ecological modernization in the context of China. "Innovative city" is widely used due to the ongoing industry transformation in China, for which innovation capability is an indispensable factor. Another popular term is "tourist city" because increasingly more Chinese cities are sparing no effort to develop the tourist industry. Due to the worsening living conditions caused by environment pollution, the concept of being "livable" or "green" is one that influences the selection of city destinations for many Chinese young talents. The remaining three new labels are "modern agriculture city", "advanced manufacturing city" and "service city", which are related

to the three industries respectively. These three are taken as related to modern ecological modernization in an indirect way. They are opposite to pollution-induced traditional agriculture or low-end manufacturing. As a result of the above analysis, we end up with 10 EM city branding terms for the quantitative analysis in this thesis. They are *smart city*, *innovative city*, *resilient city*, *tourism city*, *eco-city*, *low-carbon city*, *livable city*, *advanced manufacture city*, *service city*, and *modern agriculture city*.

It is worth mentioning here that the above selection process is more or less subjective, even though we try to make the most of the relevant literatures available and take the Chinese context into account. The basic rule here to determine whether a city label is related to EM, is if it reflects the core idea of EM. They should first focus on the process of urbanization and then have a strong connotation related to ecology protection or industry transformation towards a mode that causes less harm on the environment.

For the determination of the expected city branding practices, the typical pathway in terms of ecological modernization needs to be determined. For a specific mode of ecological modernization, certain groups of city branding practices are expected to be applied, thus by determining the mode of ecological modernization, the city branding practices can be (theoretically) expected. The mode of ecological modernization is seen as the dependent variable, which is hypothetically dependent on the current city profiles indicated by two factors: stage of economic development (Agriculture-oriented primary industry sector, manufacture-oriented secondary industry sector, and service-oriented tertiary industry sector) and position within the region (Regional orientation, National orientation, and International orientation).

Each city will be scored for the two factors, and the possible scores for each city is 3. i.e., 3 levels for stage of economic development, and 3 types of position within the region. Through the possible scores on these two independent variables, theoretically 9 (= 3 x 3) possible modes of city profiles in light of ecological modernization can be derived as follows:

Table 2.1 Pathway of ecological modernization

Stage of economic development/ Position within the region	Primary sector dominates	Secondary sector dominates	Tertiary sector dominates
Regional orientation	PATHWAY 1 Eco-tourism	PATHWAY 2 Advanced, low carbon manufacturing	PATHWAY 4 Knowledge and culture-oriented services
National orientation	N.A.	PATHWAY 2	PATHWAY 4

		Advanced, low carbon manufacturing	Knowledge and culture-oriented services
International orientation	N.A.	PATHWAY 3 High-tech innovation	PATHWAY 5 Advanced services with global orientations

The literature study shows that no city, at least not today, that is nationally-oriented or internationally-oriented, is still dominant in the primary industry sector, which is quite reasonable. Therefore, two boxes are indicated as not available. For the secondary and tertiary industry sector, there seems to be no significant difference whether the city is regionally oriented and nationally oriented. And thus, the remaining 7 boxes end up with 5 modes or pathways that each city can possibly pursue on the way of ecological modernization. The pathway is considered as the intermediate variable. Given their score on these two variables, different cities are expected to follow on one of the main 5 pathways of ecological modernization and adopt the city brands that match the likely realization of it. The expected city branding practices, the city identities in general and city positions related to ecological modernization, that match each of the 5 pathways are expected as follows.

Pathway 1: Cities that still retain the high percentage of agricultural or low-end manufacturing (like extraction) industry economy activity. Meanwhile, they are lagging behind in terms of the knowledge development. These cities can likely still have a relatively high percentage of ‘green’ space within the city territory, which can thus be possibly chosen by the government to attract some ‘clean’ industries (for instance eco-tourism). At the same time, the manufacturing industry moved out from the relatively more developed cities needs to be accommodated by these cities, which can be seen as a ecological burden, but also an opportunity for the development of the economics. These characteristics are expected to be reflected in their city brand identities. *eco-city, tourist city, and advanced agriculture* can be expected as the favorite brand positions for the cities on the pathway 1.

Pathway 2: Cities that are regionally or nationally oriented, where the secondary manufacturing industry is the relatively dominant industry. These cities have already been highly rooted in the manufacturing industry and aim to upgrade the current middle/low-end manufacturing process to the advanced one, with the environmentally friendly and low carbon developmental goal. At the same time, the environment issues as a result of the manufacturing oriented industry will force the cities on pathway 2 to achieve the balance between the economic development and environmental development. Cities on pathway 2 are expected to majorly promote advanced low-carbon manufacturing. *Advanced manufacturing city, low carbon city and eco-city* are likely to be the preferred brand positions for the cities on pathway 2.

Pathway 3: Cities where the secondary manufacturing industry is also the dominant industry as cities on Pathway 2 but are internationally oriented. They aim to become high-tech and innovative through fusing seamlessly the concurrently pursued high-end manufacturing industry and service-oriented industry into a whole, maximized, value added industry. Thus, cities on pathway 3 are expected to promote the development of science and technology in their city identities. They are expected to choose brand positions, like *innovation city*, *smart city* and *advanced manufacturing city*.

Pathway 4: Cities that are regionally or nationally oriented, where the main workforce in the society is in the trade and service industries. Their aim is to strengthen their current position and influence in these industries through providing space and other necessary resources for the knowledge-intensive and culture related production activities. Cities on pathway 4 are likely to choose a comparatively generic brand identity with the focus on *service city*, *innovation city*, *liveable/green city* and *tourism city*.

Pathway 5: Cities where the main workforces in the society are in the trade and service industries as cities on pathway 4 but are internationally oriented. Their aim is to develop as a global hub in the field of producer services. And thus, they need to compete with other global cities through providing top-notch education, transportation, work, and facilities, as well as comfortable living environments. For the city brand identities, cities on pathway 5 will have a strong desire to stress the internationally prominent role. Moreover, *service city*, *livable city*, and *tourism city* are likely to be the preferred brand positions.

2.2.2. How to use pathway of ecological modernization

The above conceptual model contributes to expecting a certain group of city brand positions as if it were a deterministic one. It should be noted that in reality, the city branding choices will also be made consciously to some extent by the city government taking other interests and concerns into account. Overall, it is assumed in this thesis that cities would tend to adopt the city branding practices, both brand identity and brand positions (city labels), corresponding with the expected pathways if their relevant ecological modernization positions are fully recognized by cities. If that's the case, we argue that the city branding practices are quite realistic and thus potentially advantageous for the city to realize its goal of ecological modernization. The question here is how the divergences can be explained. The first explanation could be that cities just choose the popular brand identity or brand positions adopted by other cities without taking its own ecological modernization positions into account. It is less likely that the branding practices would just be chosen randomly due to the high importance and influence that they have on city development. Thus, some wishful, fancy brand identity and brand positions not matching its current economic development stage and regional position might be observed. The intention of

these unrealistic city branding practices is to make the city fancier, however, in practice these could be potentially adverse for the city brand image in the long run.

Moreover, this pathway of ecological modernization is used in this paper more like a descriptive model instead of a predictive model. Thus, we have no intention to validate this model itself and take it for granted for the purpose to check how well the expected EM pathways and actual city branding practices are aligned. However, we do expect the city branding practices observed in some cities to possibly deviate from the expected ones based on the model, due to other influence factors. Both the convergences and divergences will be identified and explained. Divergences can actually be more interesting than the convergences taken for granted based on the model.

2.3. Visualization of the analytical framework

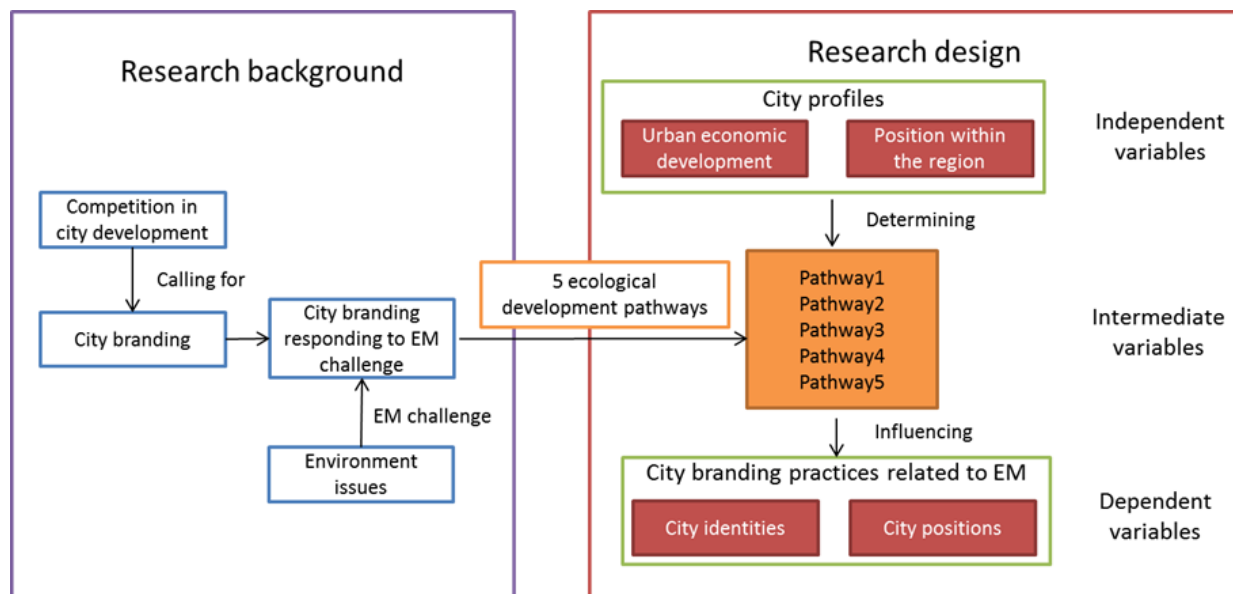


Fig. 2.1 Conceptual model of the current research

The previous theory reviews and analytic framework are visualized as in Fig. 2.1. This conceptual model is composed of two parts: research background and the research design. The research background is the requirement of city branding response to the EM challenge which is caused by the fierce competition and the serious environmental issues. The answer to this city branding response to the EM challenge is the 5 ecological development pathways, which can help cities to achieve economic growth without harming the environment, and in some cases, making use of the environment itself to make economic gains such as developing eco-tourism or eco-agriculture. The five ecological development pathways are namely sequentially, ecotourism, advanced low carbon manufacturing, high-tech innovation, knowledge- and culture- orientated services, and advanced services with global orientation. The pathway (or the EM mode) is

dependent on the city profiles which are indicated by the two independent variables: the urban economic development status and the position within the region. The determined pathway (taken as the intermediate variable) will further have influence on the design of the city branding practices, composed of city identities and city positions, which are the dependent variables.

3. Research method

The research methods used in this thesis will be introduced in this chapter. It includes two parts, namely data collection method and research methodology. The data will be collected mainly from three official documents, and the collected data will be processed and analyzed based on the flowchart in Fig. 3.1.

3.1. Data collection method

To study the city branding practices in the context of the ecological modernization process in the Jing-Jin-Ji region, different kinds of data resources are available and can be accessed online. Out of them, the three official documents, which are the Urban Master Plan (2010-2020), the 12th Five-Year Plan (2010-2015), and the 13th Five-Year Plan (2016-2020), are chosen as the major data sources in this thesis. The major reason lies in the fact that the most important stakeholder in the process of city branding practices is the city government. Thus, the official documents published by the city government can be seen as the most appropriate and reliable data resource. Some might argue that the documents majorly serve the purpose of propaganda. However, past data shows that most city governments have been serious with the plan outlined in those documents and spare no effort to achieve the set goals. Thus, it is fair to argue that these official documents can serve as the credible data resources in this thesis project.

Urban Master Plan (UMP) is a document in which the city government sets and presents the future city development direction based on its natural resources, historical backgrounds, and the current city profile, etc. Five-Year Plan (FYP) is a document that is majorly concerned about the economic and social development within the next five-year period. The two documents overlap in some aspects, but have different focuses. The former one is more focused on the efficient land and space layout to achieve the goals set based on the current available resources, while the later one puts more emphasis on economic aspects. The Land Use Plan is another official document published by the local governments; however, it is more about the specific land use and is less relevant to this thesis topic. Therefore, it is not included in this thesis.

The time scope of the data source is chosen to be from 2010 to 2020. Most of the Urban Master Plans are aimed for the city development in the next 10 years and the period between 2010 and 2020 is the latest one that we have access to. Since the Five-Year Plan is only for the period of five years, we choose the latest two documents: the 12th Five-Year Plan (2010-2015) and the 13th Five-Year Plan (2016-2020).

Besides, the data is also retrieved from the provincial or municipal level Statistics Yearly Report to get the important data indicating the stage of the economic development for each city, such as

GDP of each city, GDP per capita in each city, population and territory of each city, as well as the respective percentage of primary, secondary, and tertiary industries in the economic activity.

3.2. Research methodology of the thesis

The whole research work will be done based on the 5-pathway method. The visualization of that process is shown as a flowchart in Fig.3.1. As the flowchart shows, there are two main storylines, one with the expecting EM pathways and the other is the collection of real city branding practices. The two storylines will finally merge and the comparison analysis between them will be done.

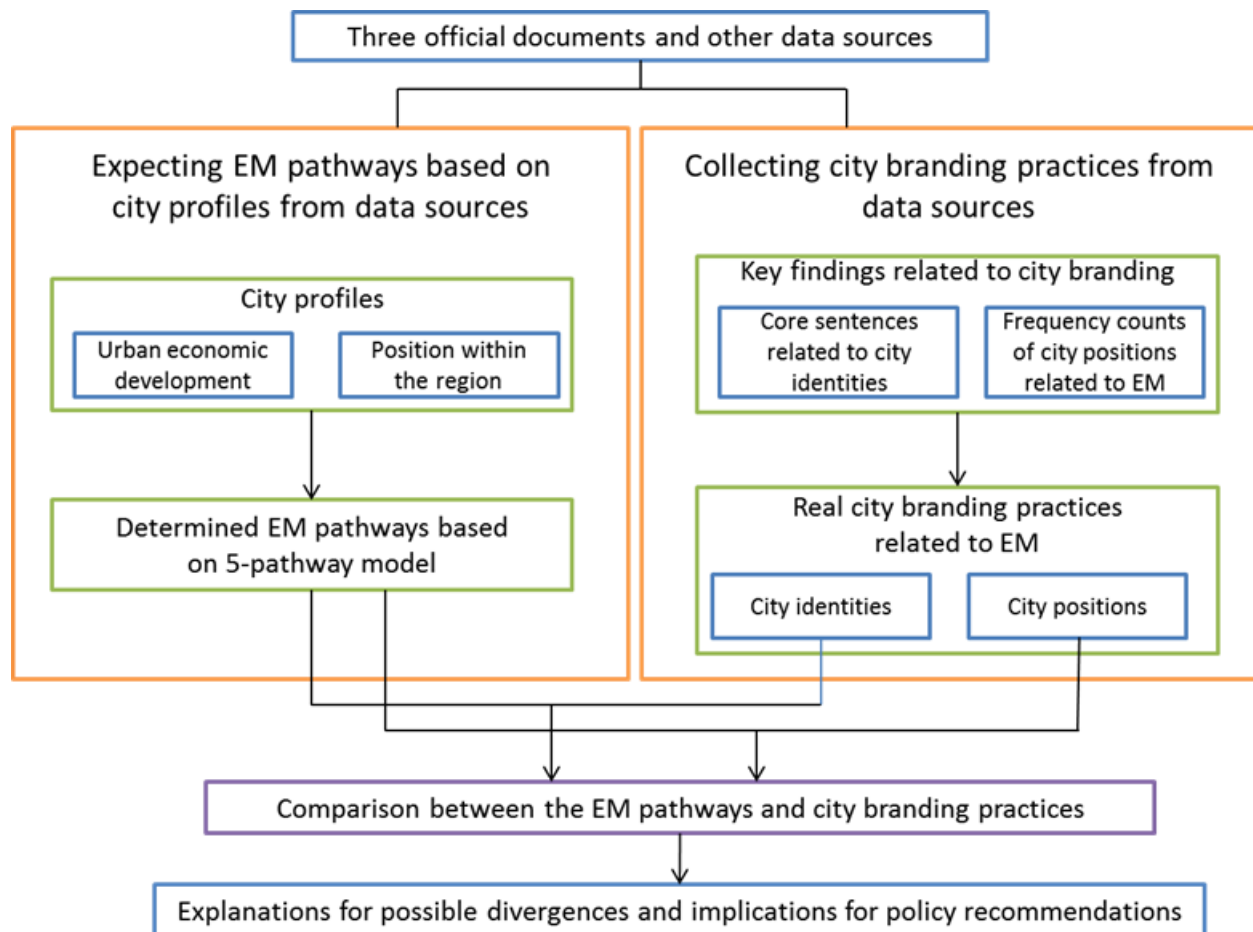


Fig 3.1 Flowchart of the thesis work

To avoid confusion to readers, it should be noted here that the purpose of the comparison study here is not to validate the conceptual model itself. Instead, we take this theoretical model for granted assuming EM pathways can be theoretically expected based on the city profiles. We then use this to analyze the actual city branding practices. If there is a convergence between them, the city's branding choices are deemed to match their city profiles. Otherwise, the divergence deserves more explanation. This method can provide a simple operable guideline to relatively

objectively evaluate the city's branding practices, such as the likelihood of practical implementation or just greenwashing.

The research methodology adopted in this thesis includes both qualitative method and quantitative method. Based on the EM pathway method, the following steps will be taken for the analysis.

Chapter 4 and 5 will serve as the data pool for the later analysis. The data of each city in the Jing-Jin-Ji region, including history evolution, economic data, industry composition, strengths and weaknesses, will be collected and summarized in chapter 4. In Chapter 5, each of the three official document, namely 12th FYP, 13th FYP and UMP, will be studied qualitatively and quantitatively to gather data on city branding practices, i.e., city brand identities and city brand positions. In Chapter 6, all the collected data will be analyzed comprehensively based on the flow chart.

Concerning the methodological approach, operational research steps are outlined as follows in a sequential way to flesh out the above flow chart.

- 1) To establish the score on the *urban economic development stage* (independent variable) for each city, a series of meaningful data will be chosen, such as overall national GDP, permanent population, GDP per capita (1), the ratio of primary/secondary/tertiary industry (2). ADI (annual disposable income) per capita or ALE (annual living expenditure) per capita (3). Since there is no single factor that can be convincing enough to determine the score on the urban economic development stage, the above three indicated factors have been chosen to collectively to serve that purpose. If they show different results, a mixture of scores will be indicated. All the cities are scored with 1, 2, or 3 depending on their economic development stage. The higher the score, the more developed the economy. The detailed score method will be explained in 5.1.1.
- 2) To establish the score on the *regional position* (independent variable), likewise a mixture of methods is adopted. The first method is to check how the cities try to position themselves in three official documents, which is like a self-evaluation/position and thus highly subjective. The second method chooses a more objective way, which is to score it based on its administrative level. Based on the two methods, it is still not compelling enough to decide whether some cities belong to the international or national city group. The result published by GWaC is used as the third method to validate the result. The score for each city for regional position can be international city, national city or regional city.
- 3) The two scores obtained in step 1) and step 2) can then be combined to get the expected pathway (intermediate variable) for each city based on the above EM pathway table.

4) City brand identity is established through the core sentences that have a clear purpose of presenting the city identity. They are found in the introduction or summary of each of the aforementioned documents. Moreover, major city brand positions in general are also selected out in Table 5.2 to determine the city labels related to ecological modernization in step 5.

5) The major city brand positions will be selected out from the three official documents to find what city brand positions are the most widely used ones in the context of Jing-Jin-Ji region. Then, a quantitative method will be adopted to specifically explore the city branding positions related to ecological modernization. Specifically, the frequency of the 10 brand positions (city labels) mentioned in section 2.2 will be counted for each document. It is worth mentioning that each of the 10 brand position categories is like an umbrella term that takes different forms in the practical use. For instance, the umbrella term ‘innovation city’ might appear as innovation city, knowledge city, start-up (company) cities and learning city (see Appendix for the detailed sub-terms under each umbrella term). For each document, the top 3 popular terms will be selected, which results in an overall most popular term for each city among the three documents.

6) Finally, it comes to the data analysis step. The comparison between the expected EM pathways and actual city brand practices will be compared. For the comparison of brand identity, due to the high internal consistency of the brand identity in the three documents for each city, only one of them is selected to be analyzed. A mixture of them will be adopted if they obviously have different focuses. For the comparison of brand position, the top three most popular city labels will be selected out for each of the three documents, and then the overall most dominant brand positions can be determined. It will be examined to what extent the practical branding identities and positions respectively match what are expected based on identified actual pathways to ecological modernization found in Chapter 5. Especially, the deviations found between them will be explained and discussed.

4. Data collection I : Profiles of cities in the Jing-Jin-Ji Region

This chapter is mainly the collection of city profile data. First, the definition of Jing-Jin-Ji region will be clarified and the general profile of Jing-Jin-Ji will be introduced. Second, the data regarding the city profiles of the 14 cities in the Jing-Jin-Ji region will be collected based on the three official documents and some other sources.

4.1. Definition and profile of Jing-Jin-Ji megacity region

The term, Jing-Jin-Ji integration (or collaborative development Beijing, Tianjin and Hebei province) region, first came out officially in 2014 when the Chinese prime minister stated in his government report that the economic collaboration should be strengthened inside the Bohai Rim region as well as the Jing-Jin-Ji region (Kan, 2016). Before that, the government always used only the term of Bohai rim economic region, which is too broad and relatively unclear (Dan-lin & Han-ying, 2002; Zhu, Li, & He, 2001). However, it is generally recognized to include three major subregions: former Jing-Jin-Ji region (also recognized as Inner Rim), Shandong Peninsula region (also recognized as South Rim) and Liaoning Peninsula region (also recognized as North Rim). The three regions surrounding the Bohai rim are like a triangle. Even though the term Bohai rim economic region has been adopted long ago, few practical measures have been taken to really promote the economic collaboration among the three sub-regions. Therefore, the government tried to make one of the sub-regions, Jing-Jin-Ji region (Inner Rim), stand out specially. One of the reasons is that the economic power levels of the three regions are far from near. Jing-Jin-Ji plays an absolutely dominant role in the Bohai rim economic region. Not only did the government make the Jing-Jin-Ji region stand out separately, but it also further made it into a new term, Jing-Jin-Ji integration/collaborative region, which includes more cities, as the national major development strategy. The former Jing-Jin-Ji region (Inner Rim) inside the Bohai rim economic region includes Beijing, Tianjin and part of Hebei cities near the Bohai Rim, which are Shijiazhuang, Tangshan, Qinhuangdao, Cangzhou, Langfang, Chengde and Zhangjiakou. The other four cities in the Hebei province are geographically far from the Bohai rim and thus are not included in the inner rim economic zone, former Jing-Jin-Ji region. The inclusion of cities into the Bohai Rim Economic zone majorly depends on the geographical reason (whether the city is near the Bohai Rim geographically).

However, the current Jing-Jin-Ji integration region takes a departure point from the administrative roles instead of the pure geographical reason. As the term name suggests, it includes three major parts: Jing standing for Beijing, Jin standing for Tianjin and Ji standing for Hebei province. It is administratively reasonable that the Jing-Jin-Ji integration region includes

Beijing, Tianjin, and all of the 11 prefecture-level cities in Hebei. Geologically, Beijing and Tianjin are surrounded by Hebei province, and they are separated by another city named Langfang in Hebei province. Surprisingly, one city, named Anyang, administratively belonging to the Henan province, is also included in this integration region, which is shown in Fig 4.1.



Fig 4.1 The 14 cities in the Jing-Jin-Ji Region

The inclusion of Anyang (belonging to Henan, not Hebei) into the Jing-Jin-Ji collaborative development is beyond the public expectation. However, it is officially included into the Jing-Jin-Ji integration region by the central government according to the '13rd Five-year' period *Jing-Jin-Ji economic and social development plan* published in February, 2016. Afterwards, more than 45 billion RMB was invested into about 50 major projects in Anyang by the central government under the name of Integration development, which proves the inclusion of Anyang is not only a slogan but a real strategy. The reason why Anyang is included in the Jing-Jin-Ji integration development plan is because it is the connection gate between Jing-Jin-Ji and the middle of China. According to Zhang Weining, the vice governor of Henan province, the inclusion of Anyang into the Jing-Jin-Ji integration development is not only in the interest of

Anyang but also Henan province as a whole. Together with Anyang city, Jing-Jin-Ji integration region consists of 14 cities: 2 province-level municipalities directly under the central government, namely Beijing (**Jing**) and Tianjin (**Jin**), 11 cities in Hebei Province (**Ji**) (Baoding, Langfang, Tangshan, Zhangjiakou, Chengde, Qinhuangdao, Cangzhou, Hengshui, Xingtai, Handan, Shijiazhuang) and Anyang in Henan.

Located in the center of the Bohai Rim, Jing-Jin-Ji is the largest urbanized and most dynamic region in the northern part of China. This region, with an area of 218,000 square kilometers, accounts for only 2.3% of the national area. Nevertheless, it accounts for about 7.23% of the national population and 10.4% of the national economy in 2014. Statistics show that the GDP per capita in this region is relatively higher than the national average. Around 110 million people, among who 17.5 million are floating population, live in this region. In 2015, the total GDP of the region was 6931.29 trillion RMB, accounting for 10.2% of the total GDP in China, with the primary, secondary and tertiary industries accounting for 5.5%, 38.4% and 56.1% respectively. It is worth mentioning that the tertiary industries for Beijing, Tianjin and Hebei are 79.8%, 52.2%, 40.2% respectively, from which we can see that tertiary industry is dominant in Beijing.

Jing-Jin-Ji has also been an important region in Chinese history. The old name Youyan and Yanzhao both meant this area. Beijing was the capital city in the last three royal dynasties, Yuan (1271-1368), Ming (1368-1644) and Qing (1636-1912), and this area was named Zhongshu Province, North Zhili, and Zhili province.

The concept of ‘Jing-Jin-Ji Integration’ was derived from the concept of ‘Jing-Jin-Tang’, short for Beijing-Tianjin-Tangshan, which is located in the northern part of The North China Plain, and is the largest comprehensive industrial base in northern China. Traditionally, heavy industries and manufacturing are the two dominant industries in Jing-Jin-Ji Region. Thanks to its advantageous geographical position, Tianjin has always been strong in logistics, aviation and shipping, while Beijing complements Tianjin with strong petrochemical, education and R&D industries. In recent decades, this region has grown to be a hub for the automobile, electronics, petrochemical sectors, automotive industry, software and aircraft industries, also attracting foreign investments in manufacturing and health services. The surrounding areas are capable of providing resources like water, food, and mining resources for the needs of regional development.

The policy of ‘Jing-Jin-Ji Integration’ is now one of the most important national development strategies. On February 26, 2014, in the conference of Collaborative Development of the Jing-Jin-Ji Region, President Xi Jinping stressed that to realize the good collaboration of the region is a significant strategy; this region should complement each other with their advantages to benefit each other and to increase the speed of sustainable development. On April 30, 2015, the Political Bureau of the Central Committee passed The Plan of the Collaborative

Development of Jing-Jin-Ji. In this plan, the core is to disperse the non-capital functionalities of Beijing to other parts of the area, and to realize transportation integration, protect the ecological environment, and upgrade industries. The positioning of Beijing, Tianjin, and Hebei are as follows. Beijing: national political, cultural, international communication, and scientific innovation center; Tianjin: national advanced manufacturing base, northern international shipping core area, experiment area for commercial innovative operation, the priority area for reform and opening up; Hebei Province: important national trade and logistics base, experimental area for industrial transformation and upgrading, demonstration area for new urbanization and integration of urban and rural regions, ecological and environmental support zone for Jing-Jin-Ji Region.

To have a better and comprehensive understanding of Jing-Jin-Ji (Jing-Jin-Ji) megacity region, the comparison between it and the other two major megacity regions, YRD and PRD, is needed. The comparison result is shown in Table 4.1 (data from 2014) .

Table 4.1 Statistical comparison between the three megacity regions

Item/Regions	YRD	PRD	Jing-Jin-Ji
Regional GDP (billion RMB) & percentage to national GDP	10601/ 15%	8419/ 12%	6816/ 9.6%
Population (million)	110.2	62.3	115.0
Land area (km ²)	109933	57539	223028
GDP per capita(RMB)	96210	135037	59291
Urbanization level	65%	66%	56%

It can be seen from Table 4.1 that the YRD area accounts for 15% of the national GDP, followed by 12% for the PRD and 9.6% for the Jing-Jin-Ji region. However, the per capita GDP tells a slightly different story that PRD has the highest per capita GDP of 96210 RMB, which is higher than that of YRD and more than twice that of Jing-Jin-Ji. It demonstrates that Jing-Jin-Ji is still lagging far behind the other two megacity regions. This is further validated by the urbanization level. The urbanization of the Jing-Jin-Ji region is only 56%, much lower than that of YRD (65%) and PRD (66%). However, taking the population and land area into account, Jing-Jin-Ji still has a large space to improve itself and catch up with the other two megacity regions. The comparison among the three megacity regions shows that there is still some unbalance among them in terms of urban economic development. Since Jing-Jin-Ji region is the main analysis object of this thesis, the comparison inside it is further done and shown in Table 4.2.

Table 4.2 Statistical comparison inside the Jing-Jin-Ji region

Item/Regions	Jing	Jin	The rest 12 cities
Regional GDP (billion RMB) & percentage to regional GDP	2133/ 31%	1573/ 23%	3110/ 46%
Population (million)	21.52	15.17	78.27
Land area (km ²)	16415	11917	194696
GDP per capita(RMB)	99995	105231	39736
Urbanization level	86.3%	78.3%	49.3%

It can be seen from Table 4.2 that the two major cities, Beijing(31%) and Tianjin(23%), together account for more than half of the total GDP in Jing-Jin-Ji region, while the other 12 cities only account for less than half of it. It is fair to conclude that Beijing and Tianjin play an absolutely dominant role in the Jing-Jin-Ji region. The population in the other 12 cities is 78.27 million which is more than twice the sum of that in Beijing and Tian. Despite the high percentage of the population in the other 12 cities, they only account for less than half of the total GDP. This can be explained by the low per capita GDP in them. Per capita GDP in Beijing and Tianjin are almost the same, around 10000 RMB, which is more than 2.5 times than that of the other 12 cities. The other 12 cities are lagging far behind Beijing and Tian. This can further be validated by the urbanization level. Less than half of the population in the other 12 cities still live in urban cities, while in Beijing and Tianjin the percentage is 86.3% and 76.3% respectively. It can be seen from Table 2 that the unbalance in terms of urban economic development inside Jing-Jin-Ji region is rather significant when we compare Beijing, Tianjin and the other 12 cities.

4.2. Cities in the Jing-Jin-Ji Region

The Jing-Jin-Ji integration region as a whole is introduced in the above section with the comparison with other megacity regions. In this section, the 14 individual cities in the Jing-Jin-Ji Region will be introduced respectively including the aspects of their respective historical backgrounds, economies, strengths and weaknesses, as well as their current city profiles. The historical evolution gives an insight into each city's role in history and how it reached its current state. It is summarized based on the open online information source. Moreover, the GDP and main industries about each city are introduced to get a general idea about important economic aspects of the city. This part is mostly written based on the official economic statistics report. Furthermore, the main strengths and weaknesses of each city are derived from the latest (13th)

five-year plan report. Finally, the current city profiles are introduced based on the the latest five-year plan report and other accessible online data sources.

4.2.1. Beijing

4.2.1.1. Historical evolution of Beijing

The city's history dates back to three thousand years ago. The first walled city in Beijing was Ji, a city-state from the 11th to 7th century BC. It has been the political center of the country during most of the past eight centuries, being the capital city of the last three dynasties, Yuan, Ming and Qing. After the Xinhai Revolution in 1911, the Qing Dynasty was replaced by the Republic of China. Then the foundation of The People's Republic of China replaced The Republic of China in mainland China in 1949, with Beijing being the capital city of China ever since, as the location of both the central government and National People's Congress. It has developed into the center of politics, culture, economic policy and management in China.

In the 1950s, the city began to expand beyond the old walled city and its surrounding neighborhoods, with heavy industries in the west and residential neighborhoods in the north. With the completion of the 2nd Ring Road in 1981 and the subsequent addition of the 3rd, 4th, 5th and 6th Ring Roads, Beijing experienced quick expansion since the 1980s.

4.2.1.2. GDP and dominant industries of Beijing

In 2015, the GDP of Beijing was 2296.86 billion RMB, with a yearly growth rate of 6.9%. The tertiary industry was dominant with a total added value of 1830.2 billion RMB, composing 79.8% of its total GDP. The added value for secondary and primary industry was 452.64 billion RMB and 14.02 billion RMB respectively, contributing to the GDP with 19.6% and 0.6% correspondingly.

Today, Beijing is a city with a **post-industrial economy dominated by the tertiary sector (services)**. In the service sector, a wide variety of industries are included, such as **financial services, wholesale and retail, information technology, commercial real estate, scientific research, and residential real estate**. Multiple economic zones are developed in Beijing, including Zhongguancun (China's Silicon Valley), Beijing Financial Street, Beijing Central Business District, Beijing Economic and Technological Development Area, Beijing Airport Zone, and Beijing Olympic Center Zone.

4.2.1.3. Main strengths and weaknesses of Beijing

As the capital city of China, Beijing has a tremendous attraction for people at home and abroad. It is the center of politics, culture, technology, information, and international communication in China. The strengths of Beijing lie in the following: the economy of Beijing is consumption-driven and service-dominant which is healthy in nature; it has great advantages in talent and technology; additionally, as the capital city, it can receive substantial preferential

policies from the central government.

On the other hand, the weaknesses of Beijing also exist. The expansion and quick development of Beijing have caused some serious problems such as air pollution, heavy traffic, the loss of historic neighborhoods, and a significant influx of migrant workers from all over the country. This has affected the living quality of the residents and also the further development of the city, thus demanding new policies to properly handle these problems. Furthermore, the surrounding area of Beijing is not very developed. The division and collaboration in the industry between Beijing and its surrounding area is still not enough.

4.2.1.4. Current city profile of Beijing

The positioning of Beijing is to be the nation's political, cultural, international communication and technological innovation center, and the objective is to be the first-class international harmonious and livable city (13th Five Year Plan).

In the 13th Five Year Plan of Beijing, it summarized the achievements that Beijing has made during the 12th five year period (2011-2015). During these five years, Beijing has made efforts in promoting innovation-based development and treating the 'Big city illness'. It generally fulfilled the objectives made in the 12th Five Year Plan, and gained much progress in economics, innovation capability and international influence.

The urban function of Beijing has been improved and non-capital functionalities have been shifted out. A total number of 1006 polluting companies were closed. The increasing rate of the population was effectively controlled. The less-developed areas including the south and west parts of Beijing were given more emphasis.

The quality of economic development has been improved. The economic form has been going through a good transition. The average growth rate of GDP is 7.5%, and that of public budget income is 14.9%. The retail sales have grown from 634.03 billion RMB in 2010 to 1000 billion RMB in 2015, which is proof that the economy has become more consumption-based. The contribution of tertiary industry to GDP has grown from 75.5% in 2010 to about 80% in 2015.

The ecological environment has been improved. To resolve the problem of air pollution, the consumption of coal was reduced by about 14 million tons, and about 1.83 million vehicles with old motors were eliminated. The concentration of fine particles in the air has decreased by 15.8% since 2012. The treatment rate of polluted water has grown to 87%.

The social aspects have also been improved, such as employment, social security and education. Furthermore, the international influence has improved by holding various international events, such as the 2014 Asia-Pacific Economic Cooperation Conference, the Ceremony of the 70th Anniversary of success in anti-Japanese and anti-Fascism wars, and the 2015 IAAF World Championships in Athletics. It also successfully applied for the right for holding the 2022 Winter Olympics together with Zhangjiakou, another city in the Jing-Jin-Ji Region.

4.2.2. Tianjin

4.2.2.1. Historical evolution of Tianjin

The location of Tianjin used to be an ocean in ancient times. Around 4000 years ago, the alluvial plain began to form. Then in the Jin Dynasty, the coastline stabilized. In the following Han, Sui, Tang and Liao Dynasties, the central governments all supervised this area by setting certain administrative organs. The earliest name for Tianjin was Zhiguzhai, which was given in the South Song Dynasty (1214). During the Yuan Dynasty, it was renamed Haijin Town, and was responsible for transferring the tribute grain from the sea. The walled city of Tianjin was built in 1404 during the Ming Dynasty. At the end of the Qing Dynasty, it was the main base for Li Hongzhang and Yuan Shikai to promote westernization and strengthen the Northern Warlords. In 1860, Tianjin was forced by England and France to be an open port. Since then, it has been a major seaport and gateway to the nation's capital.

In the period of The Republic of China, Tianjin played a very important role in politics and was one of the most important cities in China. Then after the foundation of The People's Republic of China, Tianjin suffered a depression due to the policy reason and the Tangshan earthquake for about 40 years, but started to recover beginning in the 1990s.

4.2.2.2. GDP and dominant industries of Tianjin

The GDP of Tianjin in 2015 was 1653.819 billion RMB, and the growth rate was 9.3%. The added value for primary industry, secondary industry and tertiary industry were 21.051 billion RMB, 772.36 billion RMB, 860.408 billion RMB respectively, contributing 1.27%, 46.7% and 52% to the GDP correspondingly. The tertiary industry has surpassed the secondary industry for the first time.

Tianjin is an **important base for heavy industry** in China. The main industries include **aerospace engineering, petrochemical, equipment manufacturing, electrical technology, biological technology, new energy, new materials and national defense industry**. Additionally, finance, commercial and international trade are also important industries in Tianjin.

4.2.2.3. Main strengths and weaknesses of Tianjin

Tianjin is the largest coastal city in North China. It neighbors Beijing Municipality and Hebei Province and is bounded to the east by the Bohai Gulf of the Yellow Sea. Thus one of the most important strengths is its location and transportation advantages. In addition, the secondary industry is also strong, and the central government has put emphasis on the development of Tianjin, which would be very beneficial for its development.

The weaknesses of Tianjin are also critical compared to other bigger and more developed cities. These weaknesses include the following aspects: the total economic production is not high enough and the industrial structure is not superior; the innovation capability is not strong and the

private economy is not active; resources are limited and pollution control still remains as a big task; the public service system is not sound and the safety facilities are still weak.

4.2.2.4. Current city profile of Tianjin

Tianjin is now a dual-core city. One is the main urban area (including the old city) which is located along the Hai River, connecting to the Yellow and Yangtze Rivers via the Grand Canal; the other is called Binhai, an urban core to the east of the old city, beneath the Bohai Sea.

The positioning of Tianjin is to be ‘three areas and one base’, i.e., the core area of northern international transportation, the demonstration area of financial innovation, the priority area of reform and opening-up, and the R&D base for advanced manufacturing. The objective of Tianjin is to realize the positioning of ‘three areas and one base’ and become a high-quality well-off city (the 13th Five Year Plan).

In the 13th Five Year Plan of Tianjin, it summarized the achievements that Tianjin has made during the 12th five year period (2011-2015). During these five years, the economy has increased steadily, the industrial structure has been adjusted and improved, and a great many projects related to people’s living standards have been implemented. In 2015, the GDP of Tianjin was 1653.8 billion RMB and the public budget income was 266.7 billion RMB. During the 12th Five-Year period, the average GDP growth rate was 12.4%, and that of the public budget income was 20.1%. The industry structure has grown to be in the order of ‘third-second-first’. The capability of innovation has been improved a great deal. The expenditure in R&D took up 3% of the city’s GDP in 2015. Besides, the transportation system has grown larger. The living conditions of people have improved a lot. About 75% of the expenditure was put into projects related to people’s living standards. In addition, the administrative system has been reformed deeply, and the degree of opening-up has become greater. The increased rate of utilizing domestic capital and foreign capital was 14.3% and 19.9% respectively. Tianjin also participated actively in the implementation of the national strategy of ‘The belt and Road’, which helps itself gain more international influence.

4.2.3. Shijiazhuang

4.2.3.1. Historical evolution of Shijiazhuang

The history of Shijiazhuang can date back to pre-Han times (i.e. before 206 BC), when it was the site of one city in Zhao Kingdom. In the Han dynasty (206 BC- AD220), it was famous for manufacturing weapons and armour. During the Tang dynasty (618 - 907), it became a small market town due to reorganization. Then from 1905, it started growing into a major city in China due to the development of the railway and its important geographical location, connecting Beijing and Tianjin to Shanxi and further locations. In 1968, Shijiazhuang became the provincial capital of Hebei Province.

4.2.3.2. GDP and dominant industries of Shijiazhuang

In 2015, the GDP of the city was 544.06 billion RMB, with a growth rate of 7.5% compared to that in 2014. The added value for the primary, secondary and tertiary industry is 49.44, 245.29 and 249.33 billion RMB respectively, contributing 9.1%, 45.1% and 45.8% to the GDP correspondingly.

Shijiazhuang is an industrially developed city in the Jing-Jin-Ji region. The pharmaceutical industry is highly developed and it has the biggest pharmaceutical industry base of the whole country. The production of the antibiotics in the Huabei pharmaceutical group is No.1 in China and No.2 in the whole world. And thus, it is called the **Chinese medicine city**. Another outstanding industry in Shijiazhuang is the **textile industry** and it has one of the biggest textile manufacturing bases. Other major industries include **light industry and electronics, machinery and chemicals, building materials**, etc. In the meantime, it also has good agricultural resources, which is the major source of some agricultural products like cotton and pears in China.

4.2.3.3 Main strengths and weaknesses of Shijiazhuang

As the capital city of Hebei Province, Shijiazhuang is the center of politics, economy, technology, finance and information for the whole province. It has several major advantages. The first one is its special geological location. It is quite near to Beijing, Tianjin and Jinan, which are the major cities in China. It is also near Shanxi province, which is famous for its abundance of coal. Thus, it can get access to the coal in Shanxi province very conveniently, which is very important for an industrial city. The second major advantage is that the national policy of 'Jingjinji Integration' will facilitate the development of Shijiazhuang by making good use of its geological position and building stronger cooperation with other cities such as Beijing and Tianjin.

In the meantime, it also has some significant weaknesses. First, its city image is quite unclear, making it very difficult to stand out in the competition for young talents and investment. Second, its major industry is still manufacturing, lacking competence in the field of service and high-tech industries. There is still a long way to go to realize industrial transition. Besides, the environmental pollution and ecological problems are still serious. In addition, the public service and social management ability of the city still need to be improved.

4.2.3.4. Current city profile of Shijiazhuang

Lying to the east of the Taihang Mountains, the city is rich in mineral and fossil energy resources, making it a city with a high dependency on heavy industry. In recent years, both the central and local governments have made policies to improve the industry structure.

The positioning of Shijiazhuang is to be 'the third pole of Jing-Jin-Ji region' by adjusting the industry to that of Beijing and Tianjin, improving the service-oriented economy and enhancing its influence on the surrounding area. The objective of Shijiazhuang in the 13th Five-Year plan is

to achieve more economic achievement through industry transition and technology innovation, to make the role of ‘the third pole’ in Jing-Jin-Ji region more outstanding, and improve the air quality significantly (13th Five-year plan).

In the 13th Five-Year Plan of Shijiazhuang, it summarized the achievements that Shijiazhuang has made during the 12th Five-Year plan (2011-2015). In this Five-Year period, the main task was to adjust the industrial structure and treat the pollution problems.

In 2015, the GDP of Shijiazhuang was 544.06 billion RMB, making up 18.3% of the provincial GDP, which has been increased from 16.7% in 2010. The average annual GDP growth rate of Shijiazhuang has been 9.4%. The GDP per capita increased from 17 thousand RMB from 2010 to 51 thousand RMB in 2015. The fiscal revenue in 2015 was 77.85 billion RMB, making up 19.2% of the total provincial fiscal revenue, which has been increased from 14.8% in 2010.

The industry structure of the three industries (first, second and third) has been changed from 10.9, 48.6 and 40.5 in 2010 to 9.1, 45.1 and 45.8 in 2015. The added value of strategic new industry makes up 17.1% of that in the total industry. The service industry has developed quickly, contributing 59.5% to the city’s economic growth. Shijiazhuang thus became one of the national demonstration cities of e-commerce. The modernization of agriculture has been developing fast, with 65.7% of the agriculture becoming industrialized. Shijiazhuang has become one of the national modern agriculture demonstration areas.

The three regions in the central, east and west have been developing coordinately. The added value in service industry in the central region makes up 71.5% of that in the whole city, the added value in manufacture in the east regions makes up 42% of that in the whole city, while the ecological construction in the west has been developing quickly, growing into a green parclose.

The innovation ability has been improved upon quickly. The number of newly added research institutes for engineering and technology, key laboratories and enterprise technology centers during 2010 to 2015 amounted to 338, and the large-scale high-tech enterprises have increased by 84 to 413 since 2010. Shijiazhuang has been entitled ‘national technology advanced demonstration city’ 9 times in a row.

The infrastructure construction has also been improved a lot during the 12th Five-Year Plan. The transportation system is becoming more sound, the energy supporting ability has been improved steadily, the central line project of ‘south water to north’ project and corresponding auxiliary projects have been completed, and the internet covers up to 90% of the city.

The environment has been improved significantly, especially in terms of air quality, with days with good air quality in a year increased from 43 in 2013 to 180 in 2015. A series of measures aiming to reduce pollution have been implemented. The burning of coal was cut down by 9.98 million tons, the production of iron, steel and cement was cut down by 1.59, 1.6 and 18.5 million tons respectively, and the heavy-polluting vehicles were weeded out by 202.5 thousand.

3.2.4. Baoding

4.2.4.1 Historical evolution of Baoding

Located to the east of Taihang Mountain and west of the Central Hebei Plain, Baoding borders Beijing and Zhangjiakou to the north, Langfang and Cangzhou to the east, Shijiazhuang and Hengshui to the south, and Shanxi Province to the west. The history of Baoding can date back to the Shang dynasty (1600 BC - 1406 BC), being part of Northern Yan at that time. During the Qin Dynasty (221 BC -207 BC), it was named Shanggu, being one of the 36 prefectures in the country. In 981 during the Song Dynasty, Baoding was renamed as Baozhou. During the Song-Liao time, Baozhou experienced many wars due to its geographical position between Song and Liao, finally it was destroyed by the Mongols in the 13th century. After the Mongols founded the Yuan Dynasty, the Baozhou city was rebuilt. In the Ming Dynasty, the walled Baoding was built. Then from 1669, Baoding was set as the capital of Zhili Province, and became the political, economic and cultural center of Hebei from 1966. In 1970, the capital of Hebei was chosen as Shijiazhuang, which developed better than Baoding.

Today, Baoding is still one of the most important cities in Jing-Jin-Ji Region. It is recognized as a famous historical and cultural city in China by the State Council.

4.2.4.2.GDP and dominant industries of Baoding

According to the Bulletin of Economic and Social Development of Baoding, the GDP in 2015 for Baoding is 300.03 billion RMB, with a yearly growth rate of 7.0%. The added value for the primary, secondary and tertiary industry was 35.35, 150.07 and 114.61 billion RMB respectively, contributing 11.8%, 50% and 38.2% to the GDP correspondingly. The agriculture industry plays an important role in Baoding and Baoding has been entitled as **‘national advanced food production unit’** three years in a row. The five main industries in Baoding are **automobile, new energy, textiles and clothing, food, and construction materials**, which made up 18.9% of the GDP in 2015. Service industry and tourism have been developing quickly, both making new records in revenue gain in 2015. Besides, finance, insurance and logistics are also fast developing industries.

4.2.4.3. Main strengths and weaknesses of Baoding

Baoding is advantageous in the development of the coming years. First, as part of the ‘Jing-Jin-Ji Integration’, Baoding is endowed with great advantages in terms of policy privilege. For the first time, the development of Hebei is considered from the national level by the central government. Baoding will play a significant role in reallocating the non-capital functionalities separated from Beijing. Second, the new technology revolution brings great vitality for Baoding, such as the Internet. Third, the national strategy ‘The Belt and Road’ will introduce more markets which are helpful for the development of the city. In addition, Baoding is part of the

‘Shijiazhuang-Baoding- Langfang’ innovation and reform demonstration area, which is helpful to share the innovation resources from Beijing and Tianjin.

The weakness of Baoding is as follows. The economic development is relatively lagging behind, with a relatively small GDP and low GDP per capita. A lack of investment makes the economic increase very difficult to achieve. The new industry still makes up a low contribution, so it needs great effort to realize industry transition. The environment and resource pressure are becoming more serious. These are all barriers for the future development of Baoding.

4.2.4.4. Current city profile of Baoding

As stated in the 13th Five-Year Plan, the three main strategies of the development of Baoding are ‘coordinated development’, ‘innovation driving’ and ‘environmental supporting’. The main social and economic goal of Baoding during the 13th Five-Year Plan is to realize: ‘(1) making-sure, (2) double, (3) leading, and (4) improvement’, which means ‘make sure to realize overall *Xiaokang*’, ‘double the GDP and citizen’s income compared with that in 2010’, ‘play a leading role in terms of economic growth rate, economic quality, eco-environment’, ‘improve the technology innovation ability, new urbanization level, industry structure level and social governance level’.

The total economy of Baoding has been improved steadily. The average GDP growth rate during the 12th Five-Year period was 9.1% and the total GDP reached 300.03 billion RMB in 2015. The general public budget reached 19.69 billion RMB in 2015 with an average growth rate of 18.5%. The industry structure (proportion of the first, second and third industry) has been changed from 14.8, 51.9, 33.3 to 11.8, 50.0, 38.2, which is the second industry dominating and the third industry driving the city’s economy.

Taking the good opportunity of the ‘Jing-Jin-Ji collaborative development’, Baoding has made a series of achievements so far. Breakthroughs have been made in the following three aspects: transportation, ecology and industry by connecting Beijing and Tianjin. Agreements on many cooperation projects have been successfully signed with Beijing and Tianjin. A bunch of key projects such as Baoding-Zhongguancun Innovation Center, Zhuozhou guarantee base for 301 Hospital, Laishui Industry Park for China Electricity Technology Group, Industry Park for Aerospace Lekai New Materials have settled in Baoding. Baoding has made cooperations in 248 projects with Beijing and Tianjin, with a total investment of 419.5 billion RMB. Baoding also signed 75 cooperation agreements with 36 central enterprises, with a total investment of 166.5 billion RMB.

The innovation ability has been improving a lot. A bunch of R&D platforms have been founded. The technology innovation resources rank on top among the prefecture-level cities nationwide, with 10 national-level enterprise technology centers, national-level key engineering laboratories and 18 academician workstations. It also has cooperated with high-tech organizations such as The Chinese Academy of Science, Zhongguancun Technology Park, and Tsinghua University. Baoding has become the first innovation-driven demonstration city in China, with a growth rate

of 11.9% in the high-tech field.

Besides, the construction of the city and the overall development of urban and rural areas also have made great success during the 12th Five-Year period. The urban area was increased by 7 times and the urban population was increased from 1.19 million to 2.8 million. The transportation system is developed further and the Jing-Jin-Bao ‘one-hour transportation circle’ has been formed. Other basic infrastructures such as energy, the water system and environmental protection projects are also developing well.

In terms of ecological construction, a lot of achievement has also been made. By taking a series of measures in cleaning the city and the air, the number of days with good quality of air reached 127 in 2015, and the concentration of PM2.5 particles decreased by 17.1%. The energy consumption of unit GDP has decreased by 24.5% during 2010-2015. The forest coverage increased by 6.7% during these five years to 26.7% and the green area per capita grew to 9.2 square meters with an increase of 0.73 square meters since 2010.

4.2.5. Langfang

4.2.5.1. Historical evolution of Langfang

Langfang has another name “A pearl in the Beijing-Tianjin Corridor” as it is located in the midway between Beijing and Tianjin. It is 40 kilometers to Tiananmen Square of Beijing, 60 kilometers to Tianjin city center, 70 kilometers to both Beijing and Tianjin Airport, and 100 kilometers to the Tianjin Port. Due to the special geographical position, Langfang is one of the densest cities in terms of transportation routes, with five railway trunk lines and more than 30 highways passing through.

The history of Langfang can date back to 6000 years ago, when groups of people lived there. In the long history from Chunqiu to Qing Dynasty, Langfang was in charge of corresponding administrative units. Since 1900, Langfang experienced three important phases. The first phase is the set-up of Langfang Station in the Beijing-Shanhaiguan Railway, which was the starting point of Langfang in modern times. Langfang quickly developed from a small village to a famous town. The second phase was in 1951, when Langfang was set as the site for the county administration center for Anci County as the original site was flooded. The third phase was when the Tianjin Administration office was set in Langfang in 1973. Since then, Langfang was upgraded to a real city. Then in 1989, Langfang was upgraded to a prefecture-level city.

4.2.5.2. GDP and dominant industries of Langfang

According to the Bulletin of Economic and Social Development of Langfang, the GDP in 2015 for Langfang is 247.39 billion RMB, with a yearly growth rate of 8.8%. The added value for primary, secondary and tertiary industry was 20.62, 110.24 and 116.53 billion RMB respectively, contributing 8.3%, 44.7% and 47.1% to the GDP correspondingly. For the first time, the tertiary industry surpassed the secondary industry. The main industries are **high-end manufacturing**,

modern service, electronic information and new materials. Among them, the electronic information industry is the main industry with the fastest growth rate of 16.8% from 2010 to 2015, and high-end manufacturing contributed 28.4% to the large-scale industries. Besides, **modern agriculture** has also been developing fast and Gu'an has been evaluated as the national agricultural industrial park.

4.2.5.3. Main strengths and weaknesses of Langfang

Located between Beijing and Tianjin, with the entire area being the core functionality region, Langfang is faced with great opportunities for reform and open-up. The building of the new airport in Beijing is opening a new window for Langfang to the whole country and even the whole world. Listed as one of the experimental zones for innovation and reform in Jing-Jin-Ji region, Langfang can take the privilege to become a close member in the Beijing-Tianjin community. The new national strategies such as 'The Belt and Road', 'Made in China 2025' and 'Internet Plus' will provide more opportunities for Langfang to realize fast industrial transition and development.

However, Langfang is still facing some difficulties and problems. The constraint on resources is becoming more tight, such as land and water. The environment capacity is not enough, leading to both air and water pollution. Besides, the requirement on space control in the frame of Jing-Jin-Ji coordinative development will restrict the development of Langfang to a certain degree. In addition, the development of the neighboring cities also enhanced the competitiveness, making Langfang lose some traditional advantages.

4.2.5.4. Current city profile of Langfang

The main strategies for Langfang in the new stage (13th Five Year) are synergetic development with the whole Jing-Jin-Ji Region, innovation-driven and environment supporting. The main objectives are to enlarge the city, strengthen the industries, beautify the ecology and enrich the people.

During the 12th Five Year Plan, the economy was developing fast and healthily, indicated by all the main economic indicators. The GDP of the city increased from 135.1 billion RMB in 2010 to 247.39 billion RMB in 2015, with a growth rate of 9.5%. The GDP per capita increased from 32 thousand RMB to 54 thousand RMB correspondingly. The total fiscal revenue increased from 19.54 billion RMB to 48.13 billion RMB with a growth rate of 19.8%, ranking from 6th to 3rd in the province. The general public budget increased from 10.59 billion RMB to 30.34 billion RMB with a growth rate of 23.4%, ranking from 4th to 3rd in the province. The total investment in fixed assets increased from 90.9 billion RMB to 216.6 billion RMB with a growth rate of 21.1%. The added value of large-scale industries increased from 45.15 billion RMB to 72.16 billion RMB with a growth rate of 9.5%. The retail sales of consumer goods increased from 41.91 billion RMB to 79.32 billion RMB with a growth rate of 13.6%.

The industry structure has been transiting and upgrading. The proportion of primary, secondary

and tertiary industry has changed from 11.6, 53.6 and 34.8 to 8.3, 44.6 and 47.1, the structure of ‘tertiary - secondary - primary’ realized for the first time. The high-end manufacturing has been growing fast and the traditional industries have been undergoing intensive reform and upgrade.

The connection with Beijing and Tianjin is progressing well in aspects including planning, industry, transportation, finance and ecology. The three-dimensional transportation system is being formed. The Beijing new airport has started and the surrounding transportation construction plan was approved by the national government. A series of transportation projects have been completed, including Jing-Hu high-speed railway and Jin-Bao railway. Langfang has become the first city to experiment with the ‘one card transportation’ policy in the region. The functionalities of science, education, culture and sanitation have connected well with Beijing. A bunch of institutes, schools and hospitals in Beijing have moved or cooperated with Langfang. The eco-forest between Beijing and Langfang has been built.

The innovation ability has been improved. There are 154 high-tech enterprises and the added value of high-tech industry has increased to 17 billion RMB , making up 23.9% of that of the large-scale industry. Ten innovative platforms are founded for innovation generation and technological commercialization. A group of national talents have been introduced. The R&D funds have been increased from 0.6% in 2010 to 0.85% in 2015.

In terms of ecological improvement, a lot of achievements have been made. The industry with excessive capacity has been constrained. The iron, steel and cement production have been reduced by 2.03, 0.72 and 16.03 million tons respectively. The air pollutants have been reduced significantly. The days with good air quality in 2015 increased by 53 days compared to 2013. The waters have been treated and 1.64 million acres of forests have been planted (1 mu= 0.0667 hectares). The energy consumption per unit of GDP decreased by 21.02% in the five year period.

4.2.6. Tangshan

4.2.6.1. Historical evolution

Tangshan is a large prefecture-level city in the northeastern area of Hebei Province, it is north to Bohai, south to Yan Mountain, and connected to Beijing and Tianjin. Due to its geographical importance, the city is analogised as a throat between North China and Northeast China. The history of ancient people in this area dates back to 40000 years ago. This area belonged to Guzhu, Yan, and Youzhou in the Shang Dynasty, Zhanguo Time, and Han Dynasty respectively. The name of Tangshan was given by the Emperor Li Shimin in Tang Dynasty. In 1898 during the Qing Dynasty, Tangshan became an administrative town. And in 1939 during the Republic of China period, Tangshan was set as a city due to its important geographical and political position. Tangshan is a city of long industrial history, where the oil exploration started as early as the Tang Dynasty (619-907) when Tangshan was only a small village. It is also the cradle of modern industry in China with a great industrial basis. In 1876, the first mechanical coal mine in China named Kaiping Coal Mine was built in the charge of Li Hongzhang, the minister of the Qing

Dynasty and the cooperation of an American engineering Maris. In addition, the first standard gauge railway, and the first steam engine in China appeared in Tangshan. Tangshan is also known because of the 1976 Tangshan Earthquake which killed more than 255 thousand people. The whole city was rebuilt and became a place of tourism.

4.2.6.2. GDP and dominant industries of Tangshan

According to the Bulletin of Economic and Social Development of Tangshan, the GDP of Tangshan in 2015 was 610.31 billion RMB, with a yearly growth of 5.6%, increasing 48% since 2010, and the average growth rate from 2010 to 2015 was 8.2%. The added value for the primary, secondary and tertiary industry was 56.91, 336.54 and 216.86 billion RMB respectively, contributing 9.32%, 55.14% and 35.54% to the GDP correspondingly. The secondary industry was still in dominant.

The main industries of Tangshan are **iron and steel, equipment manufacturing, energy, chemical engineering and construction material**. Tourism is also a big industry for Tangshan, which has 38 A-level scenic spots.

4.2.6.3. Main strengths and weaknesses of Tangshan

The strengths for Tangshan are as follows. As a member of the Jing-Jin-Ji Region and a coastal city next to Bohai, the national policy of ‘Jing-Jin-Ji Integration’ provides Tangshan with great opportunities. And the development of the coastal area in Hebei Province is also stressed in the document ‘Guideline for cooperative development in Bohai rim’. Tangshan has an advantage in developing near-port industries as it has a deep-water harbor and 1.9 billion acres of free land near the harbor. Tangshan has a good industrial tradition and a large number of industrial talents. With a convenient transportation system, Tangshan is included in the ‘Jing-Jin one hour’ economic zone. Moreover, a couple of significant projects are in progress such as Caofeidian National Economic Zone, National Novel High-tech Zone and Comprehensive Bonded Zone, which will facilitate the industrial development of Tangshan a great deal. However, there are still some disadvantages. The industrial structure is not good, with too much dependence on the heavy industry while less of a proportion is dedicated to the service industry. Tangshan is facing overcapacity and pollution, which will take a lot effort to be resolved. The development has been extensive instead of innovative and resource-saving, and innovation ability is not strong.

4.2.6.4. Current city profile of Tangshan

In the current stage, the main objectives of Tangshan is ‘three fights to become’: to become a window city of the economic cooperation in Northeast Asia, to become a new industrial city in the Bohai Rim, to become a pivot point in Capital Economic Zone and a prosperous and livable coastal city.

According to the Bulletin of Economic and Social Development of Tangshan, the GDP of Tangshan in 2015 was 610.31 billion RMB, with a yearly growth of 5.6%, increasing 48.2%

since 2010. The average GDP per capita is 78.354 RMB in terms of people with a Tangshan Hukou. The GDP of the three major economic zones, coastal pole, central cities and counties are 53.87, 237.79 and 318.65 billion RMB, with a growth rate of 6.0%, 6.9% and 4.7%. The total fiscal revenue in 2015 was 57.46 billion RMB, increased by 1.4% compared to 2014. The general public budget receipt was 33.5 billion, increased by 3.5% compared to 2014 and 71.2% compared to 2010. The general public budget was 59.23 billion, increased by 12.9% compared to 2014.

The proportion of the three industries has changed from 9.4, 58.2 and 32.4 to 9.3, 55.2 and 35.5. The industrialization rate of agriculture is up to 67.9% in 2015 with 133 leading enterprises. The total added value of secondary industry was 309.76 billion RMB with a growth rate of 4.6%, among which, the industrial enterprises above the state designated scale makes up 273.92 billion RMB. The added value of iron and steel, equipment manufacturing industry, and chemical industries was increased by 4.9%, 11.7%, 5.1% respectively, and that of energy and construction material industries was increased by 8.0% and 8.4%.

The transportation system has been improved. The total length of highway inside Tangshan reached 18 thousand kilometers. The highway freight volume reached 360 million tons, increased by 8.6%. The throughput of Tangshan Port was 490 million tons, decreased by 1.6% compared to 2014 and increased by one time compared to 2010. Tangshan Port has become the fourth largest port in China and the fifth in the world.

The tourism sector is also important for Tangshan. The number of travellers to Tangshan in 2015 was 34.084 million, increased by 13.2%, and the total tourism revenue was 31.03 billion RMB increased by 20.9%. Tangshan is the origin of Ping Opera, and it is famous for shadow play, Ping opera and the Leting Drum. Tangshan was awarded the UN Habitat Awards, China Excellent tourism city, and the National Garden city.

4.2.7. Qinhuangdao

4.2.7.1. Historical evolution of Qinhuangdao

Located in the northeastern part of Hebei Province, Qinhuangdao is a coastal city on the Bohai Sea, which is at the combination area of North China and Northeast China. The history of Qinhuangdao is more than 6000 years old, with many historical relics and historical stories remaining. It was of great significance to the military throughout history. Qinhuangdao got its name because the first emperor of the Qin Dynasty visited here during his expeditions more than 2000 years ago. Qinhuangdao was part of Liaoxi (or Northeastern) until the Ming Dynasty when the Shanhai Pass was built which separated Qinhuangdao with Northeastern China. The development of Qinhuangdao started to take off since 1898 (the Qing Dynasty), when it was open as a trading port. Qinhuangdao Port is now the largest coal port in China and the third largest in the world, which transports coal from North China to South China. The throughput of the port reached 500 thousand TEUs in 2015, with an increasing rate of 20.9%.

4.2.7.2. GDP and dominant industries of Qinhuangdao

According to the Bulletin of Economic and Social Development of Qinhuangdao, the GDP of Qinhuangdao in 2015 was 125.1 billion RMB, with a yearly growth of 5.5%. The added value for the primary, secondary and tertiary industry was 17.76, 44.51 and 62.776 billion RMB respectively, with yearly growth rates of 2.8%, 4.9% and 6.6%, contributing 14.19%, 35.58% and 20.18% to the GDP correspondingly. Qinhuangdao is rich in plant, animal and mineral resources. It is one of the main areas for **grain production**, and it has 10 special agricultural industries including chicken, vintage grapes and marine fisheries. It is also a new industrial city with five pivot industries, which are **construction material industry** (including glass, cement and new material), **metal rolling industry** (including steel and aluminum), **chemical industry** (mainly compound fertilizer), **mechanical and electrical industry** (including auto parts, railway beam structure, electrical products), and **food beverage industry** (including beer and food processing). Besides, **tourism** is also a major industry in Qinhuangdao as it has very rich tourism resources such as mountains, rivers, lakes, ports, sand, temples and rare animals.

4.2.7.3. Main strengths and weaknesses of Qinhuangdao

Qinhuangdao is one of the first batch of open cities in China, the center of the Bohai Rim Area, and also an important trade port in Northeast Asia. The strengths of Qinhuangdao are as follows. First, as the largest port in the north part of China, it is advantageous in transportation. Second, it has rich and various resources which are necessary for development. Third, the ‘Jing-Jin-Ji integration’ policy provides Qinhuangdao with great opportunities for development as some of the industries without capital functionalities will be relocated from Beijing to Qinhuangdao. Besides, It can also benefit from the national strategies of ‘The belt and road’ and ‘cooperative development in Bohai rim’. However, the weakness of Qinhuangdao is also apparent. The base of manufacturing industry has been lagging behind the process of the industry developing speed in China. The ecological and geological advantages have not been transferred as the developing strength. The economic development is not fast, and the gap between Qinhuangdao and other counterparts in China is becoming larger. The municipal management is not advanced and the public service is not qualified. In the large context that the economic growth in China is slowing down, it is more difficult for Qinhuangdao to catch up.

4.2.7.4. Current city profile of Qinhuangdao

The developing objectives of Qinhuangdao are summarized as ‘four leading, three higher, two double and one fulfilment’. Specifically, leading in ecology, leading in urban and rural overall planning, leading in open-up, and leading in urban civilization, provincially; maintaining developing speed higher than the national average, maintaining quality effectiveness higher than its surrounding regions, and obtaining better ecological environment; fighting for double of GDP and average personal disposable income in 2019 compared to 2010; making sure to fulfil

well-off society as scheduled.

The GDP of Qinhuangdao in 2015 is 125.044 billion RMB, with a yearly growth rate of 5.5%, and it increased by 44.8% compared to 2010 with an average growth rate of 7.7% during the 12th five year period. The revenue of general public budget in 2015 is 11.436 billion RMB with a yearly growth rate of 6.5%, and increased by 58.8% compared to 2010 with an average growth rate of 9.7%. The investment in fixed assets in 2015 is 89.25 billion RMB, increased by 10.4% compared to 2014 and 76.5% compared to 2010, with a growth rate of 12% during the 12th five year period. The total retail sales of consumer goods are 63.133 billion RMB, increased by 9.3% compared to 2014 and 91% compared to 2010. The private economy is developing fast, which contributes half of the GDP, half of the employment and half of the tax.

The industry structure is optimizing, with the proportion of service industry more than 50%, ranking the first in Hebei province. In 2015, the added value of high-tech industry contributes to 10.1%, The added value of equipment manufacturing industry is 12.92 billion RMB, contributing 38.9% of the industry above the state designated scale. The growth rate of electronic information industry is keeping as high as 30%, overpassing the glass and construction material industry, becoming a new dominant industry.

The environment has been improved, especially the air quality was improved through measures such as ‘reduce coal, manage industries, reduce vehicles, planting more trees’. The number of days with good air quality accounts for 74% in 2015.

With a good ecological environment, Qinhuangdao is an experimental low-carbon city, one of the Garden Cities, one of the first batch of smart cities in China, and one of the most ideal leisure cities in China. It has held the Beijing Asian Olympics(1990) and Beijing Summer Olympics (2008) jointly with Beijing and other cities.

4.2.8. Chengde

4.2.8.1. Historical evolution of Chengde

Chengde, also known as Jehol or Rehe, is a prefecture-level city in the northernmost area of Hebei Province. It is located in the region connecting North China and Northeast China, bordering Inner Mongolia, Qinhuangdao, Tangshan, Beijing and Tianjin. It is famous for the Chengde Mountain Resort built throughout the 18th century. This site and surrounding scenic spots were recognized as a World Cultural Heritage site by UNESCO in 1994.

The history of Chengde dates back to more than 4000 years ago. It belonged to Yan during the Warring States period. Until the early Qing Dynasty, Chengde was only a village, which was populated with different ethnic peoples, Mongol and Manchu in particular. Then in 1703 during the Qing Dynasty, Chengde was chosen by Kangxi Emperor as the location for his summer residence, and the Chengde Mountain Resort was built, which was used by Yongzheng and Qianlong Emperors later. This served as a political center of the Chinese empire during that time. Under the Republic of China, Chengde was the capital of Rehe province. From 1933 to 1945, it

was under the control of Japanese forces as a part of Manchukuo. In 1948, the People's Liberation Army took control of Chengde. It remained a part of Rehe until 1955 when the Rehe province was abolished, with Chengde was incorporated into Hebei province.

4.2.8.2. GDP and dominant industries of Chengde

According to the Bulletin of Economic and Social Development of Chengde, the GDP of Chengde in 2015 was 135.86 billion RMB, with a yearly growth of 5.5%. The added value for the primary, secondary and tertiary industry was 23.56, 63.64 and 48.66 billion RMB respectively, with a yearly growth rate of 2.9%, 4.5% and 8.1%, contributing 17.4%, 46.8% and 35.8% to the GDP correspondingly. The main industries of Chengde are **green agriculture, metal mining and production, energy production, and tourism**. Chengde is also the largest edible fungi production base in North China.

4.2.8.3. Main strengths and weaknesses of Chengde

Chengde is a city with excellent ecological conditions and rich cultural tourism resources. It has been chosen as the 'Mandarin standard accent gathering spot'. In 2002, it was labelled as one of the 'top 10 tourist cities with special characteristics' because of the renowned Chengde Mountain Resort. Moreover, it has been selected by the national tourism bureau as the national full-area tourism demonstration city in November, 2016. Besides, the policy of Jing-Jin-Ji integration provides Chengde with great opportunities for development. Chengde, together with Zhangjiakou, is designated as the water conservation (or ecological defence) area and an important node city for Jing-Jin-Ji region. Some of the industries from Beijing and Tianjin will also be relocated to Chengde, which will facilitate the development of Chengde. The weaknesses of Chengde are also significant. Heavy industry is still dominant in the economic activity, and the developing style is still extensive. The innovation ability and the economic growth momentum are inadequate. The urban level is not high and there are still many poor areas. The investment in infrastructure is not adequate and the public service sector is in heavy debt.

4.2.8.4. Current city profile

The objectives of Chengde during the 13th Five Year Plan is to make sure to get rid of poverty and realize the well-off society. In 2020, the ecology quality should lead in Jing-Jin-Ji region; the GDP and disposable personal income should be doubled, and build a charming Chengde with excellent ecology, sound infrastructure and characteristic industries. The positioning of Chengde is 'water conservation functional area for Jing-Jin-Ji region, pioneer of the country for green development, poverty alleviation area surrounding the capital, international tourist city'.

The GDP of Chengde in 2015 is 135.86 billion RMB with a growth rate of 9%. Total fiscal income is 16.35 billion RMB, 1.4 times of 2010. The average disposable income in urban and rural areas is 22.885 thousand RMB and 7.923 thousand RMB respectively, 1.7 and 1.8 times of 2010, respectively.

The industry transition has been upgrading under a series of policies. The proportion of primary, secondary and tertiary industries has changed from 2010 with 15.7, 51 and 33.3 to 17.3, 46.9 and 35.8. Modern agriculture is developing quickly, with the industrialization level of 67.3% and 6 provincial-level agricultural parks. The internal structure of secondary industry has also improved. The low-end industries are getting eliminated and new industries are promoted such as clean energy, big data, electronic information. The added value of high-tech industry has increased by 50% since 2010. The tertiary industry has been developing fast with cultural tourism and ecommerce as representatives, and the proportion of tertiary industry has increased by 2.5% since 2010.

The cooperation between Chengde and Jing-Jin has made great progress. A number of 87 issues has been incorporated into national or Jing-Jin-Ji strategic levels. The cooperation has been made with a number of 201 institutions including state ministries, industry associations, R&D institutions and hospitals. So far, 124 cooperative projects are being taken into practice with a total investment of 35.08 billion RMB.

The ecology civilization has been initialized. The ecological system and especially the water resource are protected, and the ecological quality is ranking front in Jing-Jin-Ji region. Measures have been taken to conserve energy, reduce pollution and enhance the ability for wind-proof and sand -fixation. The afforestation area during the 12th Five Year Plan is 4.05 million acres, making the forest coverage rate 56.7%, which is 30% higher than the province's average. The water quality is best in the province. To prevent pollution, 45.897 thousand vehicles with heavy pollution and 776 coal-fired boilers have been eliminated, 116 mining factories are closed. The number of days with good quality of air increased to 260. Chengde has been the first to set up the pilot for cross-region carbon emission trading, and become the ecological civilization demonstration area.

4.2.9. Zhangjiakou

4.2.9.1. Historical evolution of Zhangjiakou

Zhangjiakou is a prefecture-level city in the north part of Hebei Province, bordering Beijing, Inner Mongolia and Shanxi Province. It was known to the Europeans as Kalgan until the mid-20th century. Its geographical position made it an important site for trading between China and abroad. It used to be the northern gate of the Great Wall to China for Europeans traveling along the North Tea Road. From around 1571, it became a market for horses imported from Mongolia. Later from 1727, it became an important station for trade between China and Russia. In October 1909, Zhangjiakou was connected by railway with Beijing. During the period of The Republic of China in 1928, the Chahar Province was set up and Zhangjiakou was the capital city. Then in 1959 in the PRC time, Chahar province was abolished and Zhangjiakou was merged to Hebei Province.

4.2.9.2. GDP and dominant industries of Zhangjiakou

According to the Bulletin of Economic and Social Development of Zhangjiakou, the GDP of Zhangjiakou in 2015 was 136.354 billion RMB, with a yearly growth of 5.8%. The added value for the primary, secondary and tertiary industry was 24.39, 54.55 and 57.41 billion RMB respectively, with a yearly growth rate of 3.3%, 4.6% and 8.1%, contributing 17.4%, 40.0% and 42.5% to the GDP correspondingly. Main industries include **energy production industry, machinery for coal mining, oil exploration and food production, tourism and agriculture.**

4.2.9.3. Main strengths and weaknesses of Zhangjiakou

The main strength for development lies in the following aspects. The policy of ‘Jing-Jin-Ji integration’ provides Zhangjiakou with good opportunities through industry and project cooperation with Beijing and Tianjin. Zhangjiakou has gained the right to host the 2022 Winter Olympics with Beijing, which will also facilitate corresponding industries such as sports and tourism. The geological, ecological and transportation advantages can all support the development of the city. The city is also very rich in energy resources, including coal, wind and solar energy. The tourism resources are also abundant. Zhangjiakou is famous for the Great Wall with a reputation of the ‘Great Wall Museum’. The 2 largest ski resorts in China are located in this city. It also has a high forest coverage rate with one national forest park and 16 provincial forest parks, making it a natural oxygen bar. However, there are also prominent weaknesses for Zhangjiakou. The economic developing level is low, the government is in debt, the infrastructure is not sound, and the innovation ability is inadequate. The gap between the current situation and the criteria of becoming an Olympic city is still large. The rural area is lagging behind with the number of population in poverty ranking top of the province, making it difficult to realize the objective of a well-off society.

4.2.9.4. Current city profile of Zhangjiakou

The main objectives of the 13th Five Year Plan are to realize spanning economic growth with GDP and average personal income doubled, to liberate all the people from poverty. Besides, the ecological system should be bettered to satisfy the criteria for Winter Olympics and also for serving as a water conservation functionality area for the Jing-Jin-Ji region. The strategies for the 13th Five Year Plan are to focus on ecology, tourism, big data, health industry, new energy, new technology and advanced manufacturing. The positioning of Zhangjiakou is to be the water conservation functionality area for Jing-Jin-Ji region, to become a cluster of green industries, a demonstration area for renewable energy, and to become an international sports and leisure city with the opportunity of holding the Winter Olympics.

The total GDP in Zhangjiakou in 2015 is 136.35 billion RMB, increased by 50% since 2010 with an average yearly growth rate of 8.1%. The GDP per capita is 30.84 thousand RMB with a yearly growth rate of 7.4%. The revenue of the general public budget is 13.3 billion RMB, doubled

since 2010 with a yearly growth rate of 16.3%. The investment in fixed assets in 2015 is 155.42 billion RMB with a growth rate of 11.9%. The consumption of the society is 61.56 billion RMB with a yearly growth rate of 14%.

The adjustment of industry structure has progressed much, with the proportion of primary, secondary and tertiary industries to be 17.9, 40 and 42.1. The number of industrial parks increased from 10 to 23 since 2010, with the provincial-level increasing from 3 to 6. The added value for high-tech industries such as advanced manufacturing, new energy and electronic information increased by 19.8 compared to 2014 and was 1.5 times that of 2010. Besides, the modern service industry, such as characteristic tourism, e-commerce and modern logistics, and the characteristic planting and breeding industries are also developing fast.

The industry docking with Jing-Jin is accelerating, with a bunch of programs in the fields of new energy, big data, electronic information and aerospace recently beginning operation. The shared mechanism on ecology is built up, with projects on forests, wetland parks etc. in implementation. The infrastructure such as Jing-Zhang express railway, Jing-Bei highway is in good progress which will release the pressure of transportation to the north-west of Beijing. Cooperation on health service and cultural tourism with Jing-Jin are also progressing well with many cooperation built up.

The attractiveness in ecology is increasing. The air quality was the best in 2015 in Jing-Jin-Ji region, with an average PM2.5 concentration of 34 microgram per cubic meter which is better than the secondary standards of the nation, and the number of days with good air quality reached 298. In addition, the energy consumption for unit GDP increase has been reduced noticeably.

4.2.10. Cangzhou

4.2.10.1. Historical evolution of Cangzhou

Cangzhou is a prefecture-level city located in the eastern Hebei Province, bordering Tianjin to the north and Bohai Sea to the east. Cangzhou, literally means land beneath water. The history of Cangzhou can date back to The Zhou Dynasty which is about 4000 years ago. In history, different parts of this place were governed by different administrative organs. It was not until 1983 that this place was incorporated into Hebei Province. Cangzhou is famous for the historical martial arts and acrobatics, which came up in the Ming Dynasty and became popular in the Qing Dynasty.

4.2.10.2. GDP and dominant industries of Cangzhou

According to the Bulletin of Economic and Social Development of Cangzhou, the GDP of Cangzhou in 2015 was 320.06 billion RMB, with a yearly growth of 7.7 %. The added value for the primary, secondary and tertiary industry was 32.13, 160.25 and 131.68 billion RMB respectively, with a yearly growth rate of 1.9%, 6.8% and 10.0%, contributing 9.9%, 49.5% and 40.6% to the GDP correspondingly. The five main industries of Cangzhou include

petrochemical industry, pipeline equipment and metallurgy, machinery manufacturing, textiles and clothing, and food processing.

4.2.10.3. Main strengths and weaknesses of Cangzhou

The advantages of Cangzhou in development lie in the following aspects. The three national policies, namely ‘The belt and road initiative’, ‘Jing-Jin-Ji integrated development’, and ‘cooperated development in the Bohai Rim’, have been issued where Cangzhou is of important role. Moreover, Cangzhou has very excellent location advantages with a convenient transportation system on land and a big port. In addition, the land resources and energy resources in Cangzhou are very rich. It has two large oil fields, Huatian and Dagang, with proven amounts of oil 1.5 billion tons and gas 28.2 billion cubic meters. It is a petrochemical industry base, and also the land-sea transportation hub in North China. It is an important port for the ‘west coal to east’ project.

The weaknesses of Cangzhou are also distinct. The GDP is not large enough, although ranking 3rd in the province, it is only about 50% of that of Tangshan and 61% of Shijiazhuang. The urban area and population are also ranking low in the province. The industry structure is still problematic with traditional heavy industries in dominance, while the service industry is lagging behind. The innovation ability is inadequate and the R&D fund is only about 25% of the national average level. Even though it is a coastal city, the degree of openness is relatively low. There will be more strict constraints on resources and the environment. Also, the urban civilization level and urban management ability are inadequate.

4.2.10.4. Current city profile of Cangzhou

According to the 13th Five Year Plan for Social and economic development, the objectives of Cangzhou is to rank high in the province in the aspects of economic development, quality effectiveness, and ecological environment, with GDP and GDP per capita doubled at the end of 2020 to realize well-off society on time. The positions of Cangzhou are: to become an important national security base for chemical industry and clean energy, to become an important industry support and base for technology transformation, to become an important modern logistics distribution center, and an important open coastal city.

The economy has been developing fast. In 2015, the GDP is 324.06 billion RMB with an increase of 7.7%, and is 1.5 times that of 2010, with an average yearly growth rate of 9.5% during the 12th Five Year. The revenues of the public fiscal budget are 21.09 billion RMB with a growth rate of 11.2%, and is 2.3 times that of 2010, with an average yearly growth rate of 18.2%. The total investment in fixed asset is 1.17 trillion RMB with a growth rate of 21.4%. The foreign capital being put into practice is 1.888 trillion RMB during the 12th Five Year Plan. The growth rate of major economic indicators all rank in front in the province.

The industrial transformation and upgrading have progressed with great achievement. The ratio of the three industries has changed from 11.5:50.7:37.8 in 2010 to 9.9:49.5:40.6 in 2015. The

internal structure inside secondary industry has been adjusted efficiently. The traditional five dominant industries are reformed and upgraded. Some new industries such as new material, new energy, and electronic information are growing fast. Some new industries are rising up such as automobile manufacturing, laser development, nuclear energy and biological medicine. The added value of high-tech industry has been keeping an average increase rate of 15%. The modern service industries are developing fast, the trading centers and trading cluster districts are built, and the trading, commercial, modern finance, e-commerce and modern logistics are developed. The added value of service industry has been keeping an average increase rate of 11%, higher than the provincial average. The agriculture industry is also upgraded, with many agricultural parks built. The level of industrialized agriculture has reached 62%.

The synergetic development with surrounding areas has been progressing well. A number of significant cooperation projects are finalized such as Beijing Hyundai Cangzhou company, Haixing nuclear and Beijing biological medicine industry park. The three main plates, central urban area, Bohai New District and county economy are developing coordinately.

The ecological environment gained much achievement. The energy-conversion and emission-reduction technologies have been applied to upgrade major industries and enterprises. The air quality has been improved with the PM2.5 concentration decreased by 31.4%. The water source for drinking water reached standard 100%. The forest coverage has reached 27.5% with 1.2 million acres of forest newly built.

4.2.11. Hengshui

4.2.11.1. Historical evolution of Hengshui

Hengshui is a prefecture-level city of Hebei Province, located in the southeastern part of the province. It has a long history dating back to the Xia Dynasty. It belonged to Ji and Chong during the Xia Dynasty. During the Spring and Autumn time, it mainly belonged to Jin, and during the Warring State Period, it belonged to Yan and Zhao. During the Ming and Qing dynasties, it was juristicated by Zhangshu province, Jingshi and Zhili province. In the early times of the Republic of China, Hengshui belonged to Zhili province, then in 1928, Zhili was abolished and Hebei province was set up. Finally, in 1982 Hengshui town upgraded into Hengshui city. The city is known for its deep culture, famous scholars such as Dong Zhongshu, Gao Shi and Sun Yingda, and various arts, such as Fi-branch Inner Painting and Wuqiang New Year Pictures.

4.2.11.2. GDP and dominant industries of Hengshui

According to the Bulletin of Economic and Social Development of Hengshui, the GDP of Hengshui in 2015 was 122 billion RMB, with a yearly growth of 7.6 %. The added value for the primary, secondary and tertiary industry was 16.89, 56.31 and 48.8 billion RMB respectively, with a yearly growth rate of 2.3%, 5.2% and 12.7%, contributing 13.84%, 46.16% and 40% to the GDP correspondingly. The main industries of Hengshui are **wire mesh manufacturing**

which occupies 85% of the domestic market, **fiberglass, rubber and plastic products, heating casting industry, textiles and clothing, chemical pharmaceutical, metalworks, auto parts, food and beverage industry, and arts and crafts industries.**

4.2.11.3. Main strengths and weaknesses of Hengshui

The main strengths for the development of Hengshui are as follows. The national policy ‘Jing-Jin-Ji integrated development’ will provide Hengshui with good developing opportunities. For the first time, the whole area of Hengshui is enclosed in a national level policy. The provincial government also designated Hengshui as the only pilot city for comprehensive reform, which will facilitate the reforms in every aspect. In addition, Hengshui is advantageous in ecology with the famous Hengshui Lake and abundant forests. The weaknesses of Hengshui are also obvious. The total economy quantity is relatively low and the industrial transformation and upgrading is slow. The industries are mainly low-technology, and the innovation ability is limited. The driving-force of the center city is not strong and the urbanization level is low. In addition, the ecological system has been overloaded with irrational energy structure, severe air problems and tightening resource constraints.

4.2.11.4. Current city profile of Hengshui

The objectives are Hengshui in the 13th Five Year Plan are to keep fast economic development, to double the GDP and GDP per capita in 2020 compared to 2010, to make sure all the people will get out of poverty, and to realize the well-off society on time. The positionings of Hengshui is to become the transportation and logistics pivot in the Jing-Jin-Ji region, the green supply base of agricultural products for the Jing-Jin-Ji region, the ecology protection base for the Jing-Jin-Ji area, industry undertaking base from Jing-Jin-Ji area, and an ease base for education, leisure and health-keeping.

The economic has been getting stronger. The total GDP in 2015 is 122 billion RMB with an average yearly growth rate of 9.5% since 2010. The total fiscal income is 16.33 billion RMB, doubled that of 2010. The general revenue of the public budget is 8.85 billion RMB, more than 3 times that of 2010. The total investment in fixed assets is 112.95 billion RMB, with an average yearly increase rate of 13.8%. The total consumption retail amount is 60.64 billion RMB, with an average yearly growth rate of 13.8%. The average capita disposable income for urban residents and rural residents is 21.615 thousand RMB and 9.03 thousand RMB.

The progress of industrial transition is noticeable. The proportion of the three industries has changed from 19.7, 50.7, and 29.6 in 2010 to 13.8, 46.2 and 40 in 2015, achieving a more sensible industrial structure. Inside the agriculture industry, the structure is becoming better, with several counties evaluated as demonstration areas for modern agriculture. The industrialization proportion of agriculture has reached 66.8%. The traditional industries have been updated and the added value for industries above state designated scale 46 billion RMB with a yearly growth rate of 11.5%. The number of large technology enterprises and small and medium technology

industries have become 160 and 2200, respectively. The service industry is contributing more and more to the economic growth. Anping logistics accumulation zone and Hengde logistics park are promoted as provincial logistics zones. The Hengshui Lake scenic spot and Wuqiang new year paintings museums have become 4A-level scenic spots. Hengshui was also granted as a ‘financial ecological city’.

The ecological environment has been improved a great deal. The main pollutants are reduced and the concentration of PM2.5 decreased 18.85% since 2013. The energy consumption for unit GDP has decreased 20% since 2011. The system for polluting water treatment and garbage disposal has been completed. The objective of ‘one person one acre of forest’ is realized.

4.2.12. Xingtai

4.2.12.1. Historical evolution of Xingtai

Xingtai is a prefecture-level city in southern Hebei Province. It is connected to Shanxi Province to the west and Shandong Province to the east and it is the new industry and new energy base of Hebei Province. Due to the pivotal position, it becomes the north window for the Central Plains of China. Xingtai has been a walled city for as long as 3500 years, which is the site of the earliest cities in northern China. It was chosen as the sites for three states and for 3 capitals. The place of Xingtai has long been known as Shunde Prefecture in history since 1262 during the Yuan Dynasty. In 1925 during the Republic of China period, Shunde Prefecture was abolished and Shunde city was established. In 1945, the Chinese Communist Army liberated this city and renamed it Xingtai, which was a county-level city. Finally, in 1983 Xingtai became a prefecture-level city in Hebei province.

4.2.12.2. GDP and dominant industries of Xingtai

According to the Bulletin of Economic and Social Development of Xingtai, the GDP of Xingtai in 2015 was 176.47 billion RMB, with a yearly growth of 6.0 %. The added value for the primary, secondary and tertiary industry was 27.56, 79.36 and 69.55 billion RMB respectively, with a yearly growth rate of 3.2%, 4.3% and 10.0%, contributing 15.6%, 45.0% and 39.4 % to the GDP correspondingly. Xingtai is among the first batch of Smart Cities, one of the garden cities, one of the new energy experimental cities and an experimental city for new industry. The main traditional industries in Xingtai include **new energy, construction materials, iron and steels, metallurgy, automobile, mechanical manufacturing, food industry** and so on.

4.2.12.3. Main strengths and weaknesses of Xingtai

The 13th Five-year plan period will bring both opportunities and challenges. The challenges are also rather salient. First, the per capita GDP in Xingtai is only three-fifths of that in Hebei province, and half of the national per capita GDP. Second, the main industries in Xingtai are mostly traditional ones and the strategic new industry is still in the infancy stage. Third, the

environment pollution, especially the air and water pollution, is very severe. Fourth, the ‘reform and open’ policy is relatively lagging behind compared with other cities. The free market has not fully played the role in the distribution of the resources. Fifth, the public service system is not well established, including the job provisions, education, medical cares, housing and security services. In addition, the legal system of government is still not soundly built and the functions of the government are not well distributed. Obviously, these challenges amount to the weakness of the city. However, from a positive perspective, it also indicates huge improvement space. Especially, the national policy ‘Jing-Jin-Ji integrated development’ will provide Hengshui with good developing opportunities. The ‘Chinese manufacture 2025’, ‘Internet plus’ development strategy will contribute to the industry upgrading and economic transformation. Moreover, the central government is implementing the ‘Belt and Road’, which will contribute to the development of ‘free trade experiment area’.

4.2.12.4. Current city profile of Xingtai

The objectives of Xingtai in the 13th five-year Plan are: to keep a high developing speed and develop into a well-off society before 2020, the GDP and average disposable income to be double of 2010, to improve the economic efficiency and environmental quality largely, to better both the city and the county economy, and to upgrade the ability of public services. As to the positioning, Xingtai is aimed to develop based on the framework named ‘one-core five-star three-axis three-districts and multiple-nodes’, in which the urban area is the core and the neighbouring towns are fulcrums, and the transportation trunks and eco-corridor will be the bridges connecting the large network.

The current city profile can be summarized from 5 aspects based on the achievements during the 12th five year plan. First, the comprehensive economy has improved by a great scale. The GDP of the city has grown from 121.2 billion yuan to 176.4 billion yuan during the 12th five year plan with an average increase speed of 8.1%. The total fiscal revenue is 17.65 billion yuan with a growth rate of 5.8%, and the public budget reached 10.27 billion yuan with an average growth rate of 12.5%. The total invest in large projects was 213 billion, which is 1.66 times than that during the 11th Five-Year plan. The total investment in fixed assets has grown to 734.7 billion yuan, which is 1.98 times that during the 11th Five-Year plan, with an average growth rate of 17.4%. Second, the industrial structure adjustment has made significant progress. Technology innovation has been the driving force and the added value of high-tech industry has reached 9.82 billion yuan, with the contribution in large-scale industry increased from 11.8% in 2010 to 17% in 2015. The new industries such as e-commerce, service outsourcing, and modern logistics have also grown rapidly, making up 39.4% of the total added value of GDP, with a total growth of 10.7% during the 12th five-year plan period. Moreover, modern agriculture has also been growing quickly, contributing 57% to the total agriculture production. Third, as a part of the Jing-Jin-Ji integration region, the coordinative development has been going well in many aspects including industry, transportation, ecological protection, technology and education. The number

of cooperative projects with Beijing and Tianjin has reached 156 and the total investment was 180.36 billion yuan. Fourth, the infrastructure has been improving, including transportation system such as high-speed rail, airport and railways, water delivery system, electricity delivery system, and energy production factories. Fifth, the ecological environment has been bettering. Great effort has been made to reduce the five polluting industries including steel, cement, power, glass, and chemistry. The reduced amount of iron, steel, cement and glass has reached 1.52 million tons, 2.325 million tons, 7.03 million tons, and 64.17 million weight cases. The ecological system has been repaired through forest planting and lake repairing, and the forest coverage rate has reached 26.7%. Besides, measures have been taken for energy-conservation and emission-reduction, and the corresponding objectives have been obtained successfully, contributing to the regional ecological system.

4.2.13. Handan

4.2.13.1. Historical evolution of Handan

Handan is a prefecture-level city in Hebei province. It is located at the juncture of four provinces, Hebei, Henan, Shandong and Shanxi. This makes it an important transportation pivot on land, connecting from east to west, from north to east. The history of Handan can date back to 8000 years ago, when the Cishan culture which belonged to the Neolithic Age came up in this area. In the Qin Dynasty, the nation was divided into 36 counties (郡), and Handan County was among them with Handan city as the capital. In the Han Dynasty, Handan was one of the five ‘greatest metropolises’ in China. It also used to be the capital of 5 kingdoms namely Later-Zhao, Ran Wei, Former Yan, West Wei, North Qi, in history, lasting for 364 years with significant historical influence. During the Ming and Qing Dynasties, Handan was the political and economic center of the region. In 1928, Hebei Province was established and Handan was under the control of it. In 1945, Handan was liberated and affiliated to the Jin-Ji-Lu-Yu government under the Chinese Communist Party (CCP). In 1984, Handan was promoted as a prefecture city in Hebei Province.

4.2.13.2. GDP and dominant industries of Handan

According to the Bulletin of Economic and Social Development of Handan, the GDP of Handan in 2015 was 314.54 billion RMB, with a yearly growth of 6.8 %. The added value for the primary, secondary and tertiary industry was 40.28, 150.07 and 124.19 billion RMB respectively, with a yearly growth rate of 2.4%, 4.8% and 11.2%, contributing 12.8%, 47.7% and 39.5 % to the GDP correspondingly. Handan has been doing well in energy saving, and was chosen as one of the first batch of experimental smart cities. The six main industries of Handan include **coal, metallurgy, electricity, textiles, construction material, and ceramics**.

4.2.13.3. Main strengths and weaknesses of Handan

Handan is a historical city with rich tourism resources and a convenient transportation system. It

is labeled as a national historical and cultural city in China, and it also ranked among the first batch of smart cities. The geographical position of Handan is also advantageous with five railways, six highways across and one international airport located in it.

As to the disadvantages, similar with other cities in the Hebei Province, it is faced with conflicts between economic development and environmental deterioration; heavy industry is still in dominance and the new industries are less developed; in addition, the overall developing level is still lagging behind.

4.2.13.4. Current city profile of Handan

According to the Handan 13th Five-Year Plan, the objectives of Handan's development can be summarized as 'four higher and one well-off society'. Specifically, the four higher are meant to be better than the provincial average in terms of the major economic indexes, citizens' income, urbanization level and major pollutant decrease rate. Moreover, the 13th Five-Year Plan also states the two major development positionings. First, the city should position itself as the regional middle-point connecting city between the Jing-Jin-Ji region and the Zhongyuan region (Central China) area, as well as a 'gate city' that connects the Middle-west part of China. Second, the industry should position itself as 'Five bases and one center', which are the bases for the competitive high-end steel, advanced equipment and manufacturing, food industry, energy-saving environmental protection industry and new energy vehicles, as well as the major center for trade logistics for northern China.

During the 12th Five-Year Plan period, 928 major construction projects have been implemented with a fixed asset of 1382.9 billion RMB, the annual growth rate of which is 18%. Meanwhile, the overall GDP has increased with the annual rate of 8.6% to 314.5 billion RMB (33,450 RMB per capita) in 2015. The industry structure has also been updated with the service industry growing to be the main driving force (56.9%) for the economy. The proportion of the three industries has changed from 13.0 : 54.2 : 32.8 in 2010 to 12.8 : 47.7 : 39.5 in 2015. Even in the primary industry, the modern agriculture, with the agriculture industrial management rate of 66.2%, has gradually replaced traditional agriculture, earning the title of 'National food production advanced city'.

The urbanization rate is higher than 50%, which means Handan has changed from the countryside to a major city. Despite the urbanization process, the effort on environment protection has not been neglected. For instance, the consumption of coal has been decreased by 5.78 million tons. The 'Green and beautiful Handan' activity has been implemented, aiming to build a 'national forest city'. The forest coverage rate reached 27.7% in 2015, with an increase of 7.5% since 2010.

4.2.14. Anyang

4.2.14.1. Historical evolution of Anyang

Anyang is a prefecture-level city in the northern part of Henan Province in China. It is at the juncture of three provinces, namely Henan, Hebei and Shanxi, and it is the southernmost city of the Jing-Jin-Ji Agglomeration. The history of Anyang dates back to the Paleolithic Age around 20,000 years ago. It is the first stable capital city in Chinese history called Yin, which was established by the King Pangeng of Shang Dynasty in the 14th century BC. In the later dynasties, Anyang used to be the location of different levels of administrative units in the later dynasties until now.

Anyang is famous for its history and it is the origin of the Book of Changes and Inscriptions on Bones and Tortoise. It served the function of the capital during the history of 7 dynasties. Both the Yin Dynasty Ruins and the Grand Canal are world cultural heritage.

4.2.14.2. GDP and dominant industries of Anyang

According to the Bulletin of Economic and Social Development of Anyang, the GDP of Anyang in 2015 was 167.22 billion RMB, with a yearly growth of 7.2 %. The added value for the primary, secondary and tertiary industry was 13.92, 87.33 and 65.97 billion RMB respectively, with a yearly growth rate of 4%, 5.8% and 11.1%, contributing 8.3%, 52.2% and 39.5 % to the GDP correspondingly. Anyang is an important industrial city in Henan Province. The main industries include **iron and steel, chemical industry, electricity, machinery**, etc.

4.2.14.3. Main strengths and weaknesses of Anyang

Anyang has been labelled as the ‘City famous for its history and culture’, ‘National garden city’, one of the ‘top 10 leisure and tourist cities with special characteristics’. Obviously, it has the potential to be a very attractive city for tourists; however, this potential still needs to be developed further. Anyang also has other attractive titles, such as ‘City for Chinese aviation sports’, ‘Famous city for Chinese calligraphy’, one of the etc. Moreover, as the only city in Henan included as part of the Jing-Jin-Ji integration region, it can gain great strategic advantages. The main weakness lies in the salient industry structure problem. The city development can not rely on the traditional metallurgy and coal industry, while the high-end manufacturing and service industries are still in the infancy stage, which only accounts only for a small percentage of the whole GDP. Moreover, the local enterprises lack enough innovation capability to update its current industry. As most other cities in the Jing-Jin-Ji region, it also has rather serious environmental issues. The basic public service, such as education, medical care, employment, is still far from the satisfaction of the local citizens.

4.2.14.4. Current city profile of Anyang

According to the Anyang 13th Five-Year Plan, the overall objective of Anyang is to be well-off by 2020. More specifically, during the 13th Five-year period, it aims to double the overall GDP and citizen incomes of 2010 through the industry transition and upgrade. The urbanization rate is estimated to reach 45% by 2020. Moreover, as the only city in Henan province included in the Jing-Jin-Ji collaborative development plan, Anyang aims to be the critical connecting point between Henan province and the Jing-Jin-Ji integration region as well as the Bohai Rim Economic Zone.

The overall GDP of Anyang city in 2015 was 167.2 billion RMB, with an average annual growth of 8.7% in the past 5 years; and the GDP per capita is 42,000 RMB with an average annual growth of 9%. In 2015, the proportion of the three industries is 8.3: 52.2: 39.5, with the service industry percentage increased by 11% compared with that in 2010. The added value of the high-tech industry is 19.25 billion RMB, with an average annual growth of 15%. Moreover, the contribution rate by the technological progress to the industry development is 54%.

Not only has Anyang achieved significant economic progress, but also it has done well in energy saving and carbon reduction. The energy consumption per unit output value has been decreased by 18% higher than the set provincial average target of 17% during the 12th Five-Year period. Besides, the city green land area is 2717 square kilometers, which makes the forest coverage rate over 39.3%. As a result, Anyang has been chosen as the provincial water eco-civilization city and national green demonstration city.

4.3. Summarization of statistics for each city in the Jing-Jin-Ji Region

To facilitate the further research study in the following chapters, some important statistics relevant to the economic development stage and the industry composition for each city will be summarized in this part based on the elaborate description about each city in the above section.

4.3.1. Important statistics for each city in the Jing-Jin-Ji Region

The important statistics including geographic, demographic and economic data for the 14 cities in the Jing-Jin-Ji Region at the end of 2014 are summarized and shown in Table 4.1.

Table 4.1. Basic information for cities in the Jing-Jin-Ji Region

Province	City	GDP (100 million RMB)	Permanent Population (10 thousand)	Land area (km ²)	GDP per Capita (by permanent Population) (RMB)
	Beijing	21330.8	2151.6	16415	99995
	Tianjin	15726.93	1516.81	11916	105231
Hebei	Shijiazhuang	5170.27	1061.62	15848	48701

	Tangshan	6225.3	776.82	13472	80138
	Langfang	2175.96	452.18	6429	48121
	Qinhuangdao	1200.02	306.45	7523	39158
	Baoding	3035.2	1149.01	22109	26415
	Chengde	1342.55	352.72	39500	38062
	Zhangjiakou	1348.97	442.09	36873	30513
	Cangzhou	3133.38	737.5	14033	42486
	Hengshui	1149.13	442.34	8815	25978
	Xingtai	1646.94	725.63	12486	22696
	Handan	3080.01	937.39	12009	32857
Henan	Anyang	1593.2	443.52	5599	35920

It can be seen from Table 4.1 that Beijing and Tianjin are leading in terms of both GDP and GDP per capita, followed by Shijiazhuang and Tangshan. This is in accordance with their administrative levels. Beijing, as the capital city of China, and Tianjin are both municipality directly under the central government. Shijiazhuang is the capital city of Hebei province, and Tangshan is a traditionally industrial city. In terms of GDP per capita, Langfang is also outstanding with a similar amount as Tangshan, which can be attributed to its geographical advantage that it is enclosed by Beijing and Tianjin, and thus can get lots of privileges such as being chosen as the spot for a new international airport. Other cities are lagging behind due to the inferior administrative levels/structures and thus lacking support in policy aspects. The three cities with GDP per capita lower than 30000 RMB are Baoding (26415), Hengshui (25978) and Xingtai (22696). By examining the profiles of the cities, the reasons for their low GDP per capita can be obtained as follows. The primary industry and secondary industry are dominant in these three cities. What's more, the secondary industry for these cities are mainly low-end and weak in innovation, thus it is hard to attract investment. The service industry and other social aspects such as social management, medication and education are still lagging behind.

4.3.2. Industry composition of each city

As the composition (percentage) of the three industries can reflect the economic status and also the urbanization level, information of industry composition in 2014 for each city in the Jing-Ji-Ji Region is collected and shown in Table 3.2. *Note that for the "Ratio of primary, secondary and tertiary industry in terms of workforce" for the 12 cities except Beijing and Tianjin, only the workforce in the urban area are accounted for due to the lack of data for the whole city (urban*

and rural areas), which is based. Therefore, only “Ratio of primary, secondary and tertiary industry in terms of GDP” will be used for industry composition analysis.

Table 4.2. Industry composition of each city in the Jing-Jin-Ji Region

Province	City	Ratio of primary, secondary and tertiary industry in terms of GDP	Ratio of primary, secondary and tertiary industry in terms of workforce
	Beijing	0.7 : 21.4 : 77.9	4.5 : 18.2 : 77.3
	Tianjin	1.3 : 49.4 : 49.3	7.7 : 38.9 : 53.4
Hebei	Shijiazhuang	9.43 : 46.76 : 43.81	0.09 : 35.67 : 64.24
	Tangshan	8.97 : 57.75 : 33.27	3.22 : 53.74 : 43.04
	Langfang	9.45 : 48.05 : 42.50	0.03 : 59.19 : 40.78
	Qinhuangdao	14.55 : 37.44 : 48.01	0.42 : 40.61 : 58.97
	Baoding	14.01 : 51.50 : 34.49	0.01 : 56.32 : 43.67
	Chengde	16.82 : 49.98 : 33.20	0.03 : 36.27 : 63.70
	Zhangjiakou	17.76 : 42.66 : 39.58	0.06 : 35.88 : 64.06
	Cangzhou	10.14 : 51.97 : 37.89	3.02 : 40.29 : 56.69
	Hengshui	14.49 : 47.86 : 37.65	0.03 : 32.61 : 67.36
	Xingtai	16.60 : 47.36 : 36.04	0.06 : 47.27 : 52.67
	Handan	13.09 : 50.11 : 36.80	0.05 : 57.46 : 42.49
Henan	Anyang	9.00 : 58.10 : 32.9	not found

The cities in the Jing-Jin-Ji region are featured with 4 different patterns of industry distribution according to the data shown in Table 3.2. Beijing belongs to the first pattern which is tertiary dominant as high as 77.9%, and the primary industry accounting for only 0.7%. This reflects their positioning to be the nation’s political, cultural, and technological innovation center, as well as being the center for international communication. It is outstanding in terms of various service businesses such as financial services, wholesale and retail, information technology, commercial real estate, scientific research, and residential real estate. Tianjin belongs to the second category, which also has very little dependency on the primary industry, while secondary and tertiary industries weigh equivalently in terms of GDP. This matches well with its industry features that it is a significant industry base for aerospace engineering, petrochemical manufacturing, equipment manufacturing, electrical technology, biological technology, new energy, new materials and the national defense industry; besides, tertiary industries such as finance, commercial and international trade are also highly developed. Qinhuangdao belongs to the third pattern, where the tertiary industry is dominant while secondary and primary industries also play a relatively important role. This is due to their high dependency on tourism resources and port logistics. The remaining cities belong to the fourth pattern, where the secondary industry is dominant while the primary and the tertiary industry are also important.

4.3.3 Summarization of the cities in the Jing-Jin-Ji

Generally speaking, there is a large gap among different cities in the Jing-Jin-Ji region in terms of the economic development stage. Beijing and Tianjin are dominantly leading in both overall GDP and GDP per capita. The industry structure in Beijing is the most advanced in that the tertiary industry makes up 77.9% while primary industry only contributes to 0.7%. Tianjin also has higher total GDP and GDP per capita, and it does well in both advanced manufacturing and tertiary industries such as commercial and international trade. Shijiazhuang and Tangshan are following the two leading cities in terms of GDP due to their strong secondary industry. Langfang performs as well as Shijiazhuang in terms of GDP per capita with roughly 48000 RMB due to its geographical advantage of being close to Beijing and Tianjin. Other cities are relatively lagging behind with GDP per capita lower than 43000 RMB. Among them, it is worth mentioning that Qinhuangdao is special in that its tertiary industry contributes to 48.01% of the GDP due to its rich tourism resources. The three cities with GDP per capita lower than 30000 RMB are Baoding, Hengshui, and Xingtai. A prominent characteristic of all the cities except Beijing in the Jing-Jin-Ji region is that the secondary industry makes up around half of their total GDP. This is in good accordance with the region feature of being a significant heavy industry base. This feature can be a great advantage if it develops on the right path, i.e., transforming into high-tech based heavy industry, such as in the case of Tianjin and Tangshan; on the other hand, it can also be a disadvantage if it lacks in the incentive for innovation, i.e., dominant with traditional low-end industries, such as in the case of Hengshui and Xingtai. Another disadvantage of the latter case is the air pollution due to the high density of traditional manufacturing industry, as discovered both in the corresponding official documents and real life practices.

5. Data collection II: City branding practices of cities in the Jing-Jin-Ji Region

This chapter is mainly the data collection of city branding practices. The three official documents, namely, Urban Master Plan (2010-2020), 12th Five-Year Plan (2011-2015), and 13th Five-Year Plan (2016-2020) will be studied and corresponding data will be collected. It will be done in the order from the city identities to the city positions, from general to specific, from qualitative to quantitative.

5.1. City brand identities and city positions in general

The core sentences with a clear signal to brand themselves are found in the three documents for each city in the Jing-Jin-Ji region. These core sentences serve as the purpose of city brand identities. The result is shown in Table 5.1.

Table 5.1 Core sentences related to the city brand identities

	Urban Master Plan (2010-2020)	12th Five-Year Plan (2011-2015)	13th Five-Year Plan (2016-2020)
Beijing	<p>Basic identity of the city: the <i>national political center, cultural center, world renowned historic city and modern international city</i>.</p> <p>Functionality of the city: Under the major goal to become the world city, Beijing will develop its capital economy and try to protect the traditional culture and natural environment at the same time. Moreover, it aims to be an international cultural city and a <i>livable city</i> with fresh air, good environment and balanced ecology.</p>	<p>With the goal to improve its level of full-service industry, the main strategies for Beijing are summarized as slogans: <i>Culture Beijing, Technology Beijing, and Green Beijing</i>. Moreover, Beijing aims to be the concentration hub city of the international activity, <i>high-end enterprise headquarter, high-end human resources</i>. Meanwhile, Beijing aims to be a cultural city, harmonic and livable city, and world city.</p>	<p>The strategic positioning of Beijing is to be the nation's political, cultural, <i>international communication and technological innovation center</i>, and the strategic objective is to be the first-class international, harmonic and livable city. The core functions of the capital need to be strengthened and the <i>non-core functions need to be shifted out of Beijing</i>. Moreover, it needs to take the lead to realize the goal of becoming an overall well-off society.</p>
Tianjin	<p>Basic identity of the city: <i>economic center in the Bohai Rim Region, international port city and economic center in northern China, and ecological city</i>.</p> <p>Functionalities of the city: (1) the base of modern manufacturing and R&D; (2) the northern international shipping center and international logistics center; (3) the national cultural and historic</p>	<p>Tianjin aims to be an international port city and economic center in northern China, and ecological city. The main targets are to strengthen the overall economic power, to <i>reshuffle the economic structure</i>, to strengthen the social construction, to enhance the living standard of the people and</p>	<p>The positioning of Tianjin is to be 'three areas and one base', i.e., <i>the core area of northern international shipping, transportation, the demonstration area of financial innovation, the pioneering area of reform and opening-up, and the R&D base for advanced manufacturing</i>. The objectives of Tianjin are to realize the</p>

	city and tourist city with the characteristics of modern history; (4) a livable city with good ecological environment.	to further the revolution and open-up.	positioning of ‘three areas and one base’ and to become a high-quality well-off city.
Shijiazhuang	<p>Basic identity of the city: the capital of Hebei Province, and the <i>the third pole of the Jing-Jin-Ji region, and one of the modern service and biological bases</i> in China.</p> <p>City positioning: the third economic pole in the Jing-Jin-Ji region, ‘Primary connection point’ between Jing-Jin and other cities in the central and western China, and the most important platform to compete with cities outside Hebei province.</p>	Except for the current two poles, Beijing and Tianjin, in the Jing-Jin-Ji region, it aims to become the third pole, with a dominant and leading economic role in the Central and Southern Hebei Province. Moreover it aims to be become a prosperous comfortable modern first-class provincial capital city.	The positioning of Shijiazhuang is to be ‘the third pole of the Jing-Jin-Ji region’, demonstration area for <i>coordinative innovation, modern trade and logistics center city, cultural and historic tourist city</i> . The objectives are to make the role of ‘the third pole’ in the Jing-Jin-Ji region more outstanding, and to improve the air quality significantly.
Tangshan	<p>Basic identity of the city: one of the center cities in Bohai Rim, and a new <i>national industrial base and port city</i>.</p> <p>Functionalities of the city: (1) Downtown area is the important industry service and living area in the Jing-Jin-Ji region; (2) Caofeidian new area: Important industry service center along the Jing-Jin-Ji coastal area, Research and Industry transition base in eastern Hebei, national coastal ecological innovation development center.</p>	Tangshan aims to be a window city of the economic cooperation in the northeastern Asia, a new industrialization base in the Bohai rim, a pivot city in the Capital Economic Zone, a happy city. Moreover, it aims to <i>transition itself from the traditional industrial city to modern ecological city</i> .	Tangshan aims to be a window city of the economic cooperation in the northeastern Asia, a <i>new industrialization base in the Bohai rim, a pivot city</i> in the Capital Economic Zone, and a modern coastal city that is beautiful, prosperous, livable and harmonic.
Langfang	<p>Basic identity of the city: <i>High-tech industrial base</i> in the Jing-Jin-Ji region, Jing-Jin-Ji <i>regional center city and ecological livable city</i>.</p> <p>It aims to be an important node and take the lead in the Jing-Jin-Ji region development, pioneering city for the urban and rural development in Hebei Province, a demonstration area for the economic transition, as well as a regional center with developed economy, high quality and distinct specialty.</p>	The positioning is to be Jing-Jin-Ji <i>electronic information connection hub</i> , Bohai Rim <i>leisure and commerce center</i> . The development objective is to take the lead in the green land per capita, capital economic zone and high-end industry. Moreover, it aims to be a provincial demonstration area for the urban and rural development with the goal of ‘ <i>happy Langfang</i> ’.	The main strategies for Langfang are summarised as synergetic development with the whole Jing-Jin-Ji Region, innovation-driven and ecology supporting. It aims to be leading area for the industrialization of the <i>innovative technology, concentration area of the modern service</i> , experiment area of the innovative revolution. Moreover, it aims to take over the industries moved outside from Beijing.

Qinhuangdao	<p>Basic identity of the city: <i>National tourist attraction, Bohai Rim complex port city, National cultural and historic city, National energy export port and coastal city.</i></p> <p>Functionalities of the city: National historic and cultural city, coastal city in Northern China, ecological base for the Jing-Jin-Ji northern area, and important manufacturing base in Hebei province</p>	<p>The development objective is to become a prosperous civilized harmonic ‘new Qinhuangdao’ that is suitable for living, working and traveling. It aims to be an <i>international tourist city, leisure culture industry city, national demonstration area of ecological civilization.</i> The goal is to turn itself from regionally renowned to nationally even internationally renowned ‘Coastal city near the Great Wall, leisure paradise for all seasons’.</p>	<p>The positioning of Qinhuangdao is to become an international coastal leisure vacation city, national demonstration area of ecological civilization, Jing-Jin-Ji regional synergetic innovation pioneering area, modern service leading area, northeastern Asia logistics hub center. Moreover, it aims to become an ‘<i>international name card</i>’ for the green development.</p>
Baoding	<p>Basic identity of the city: It is a national <i>historical city</i>, and one of the center cities in the Jing-Jin-Ji Region with <i>advanced manufacture and modern service industry.</i> The industry will be developed to make it stronger, the culture will be developed to make it more flourish, and it will also grow to become a <i>green city</i> with a good environment.</p>	<p>The development is projected to focus on the <i>new industrialization, new urbanization, modern agriculture.</i> Especially, it will place high emphasis on the urban and rural coordinative development, the reshuffling of the economic structure with the goal to become a competent, dynamic, charismatic and competitive new Baoding.</p>	<p>The development objective is to take over the non-capital industries moved outside from Beijing. Meanwhile, it aims to be an advanced manufacture and strategic new industry base, Jing-Jin-Ji synergetic innovation demonstration area, urban and rural development demonstration area. Moreover, it aims to be a <i>green, low-carbon, livable, ecological and civilized new city.</i></p>
Chengde	<p>Basic identity of the city: national <i>cultural and historic city, international tourist city, garden city, regional center city</i> that connects Jing-Jin-Ji and Inner Mongolia.</p> <p>The positioning goal is to develop the <i>high-tech, high-end service and high-end equipment manufacture industry</i> in the south part and to develop the high-end tourist attraction with the advantage of the famous Bishu Shanzhuang in northern China.</p>	<p>The major development goal of Chengde is to develop an <i>international tourist city and tourist attraction.</i> The goal is to set the <i>leisure tourist industry</i> as the strategic industry by the year of 2015. Four major economic development poles are the international leisure and tourist city, <i>capital green organic products base, Northern Beijing energy base.</i></p>	<p>The positioning of Chengde is to become a ‘water conservation functional area for the Jing-Jin-Ji region, pioneering area of national green development, poverty alleviation area surrounding the capital, <i>international tourist city</i>’. ‘<i>Ecological city, Charismatic Chengde</i>’.</p>
Zhangjiakou	<p>Basic identity of the city: A center city in the northern west of Hebei Province, and a transportation pivot connecting Jing-Jin, Shanxi and Mongolia.</p> <p>The city overall development goal is to build a <i>regional financial, information and trade center</i> and to play the role of connecting Jing,</p>	<p>The positioning of Zhangjiakou is to be a regional center city that connects Jing-Jin-Ji and Inner Mongolia. The development objective of Zhangjiakou is to construct the modern industry with the focus on ‘four bases’, namely <i>equipment manufacture base, new energy base, food</i></p>	<p>Zhangjiakou sticks to the three base lines: development, ecology and people's livelihood. It aims to be the water source conservation area, green industry concentration area, renewable energy demonstration area, <i>international leisure/sports tourist city</i> and Olympics city</p>

	Jin and Inner Mongolia to contribute to the regional economic development; Meanwhile, it aims to be a provincial <i>energy base and ecological tourist attraction</i> , as well as a regional modern center city.	<i>processing and supply base, mineral products fine-processing base, 'regional logistics center', and 'two industry belts in the Jing-Jin-Ji region', namely the leisure and tourist industry belt and high technology industry belt.</i>	with the focus on 'four big two new and one high-end' core industries, namely <i>big ecology, big tourism, big data, big health, new energy, new technology and high-end manufacture.</i>
Cangzhou	Basic identity of the city: core industry supportive base in Jing-Jin-Ji region, <i>transportation hub</i> in the Bohai Rim economic zone and a <i>modern port city</i> .	Cangzhou aims to be the bridge city of the Asia-European continent commerce, economic development center in the Southern Hebei province, Chinese <i>petroleum city, pipeline equipment city, coastal industry concentration area</i> in Bohai rim economic zone, <i>chemical industry new materials base, special steel base, modern logistics base</i> , national important pipeline for the energy resources, <i>modern coastal port city</i> .	Cangzhou aims to be <i>national chemical industry and clean energy base</i> , experimental area for the industrialization of the technology developed in the Jing-Jin-Ji region, modern logistics hub city in northern China, important coastal open city in the Bohai Rim region.
Hengshui	Basic identity of the city: an <i>ecological and livable city</i> near a lake in the north part of China, a regional center city in the central south part of Hebei, and an important <i>transportation pivot</i> . The regional positioning is to be an important node city, a regional <i>green agricultural product supply and processing base</i> , a regional <i>transportation hub</i> , and a <i>ecological lake and garden city</i> suitable for living.	The positioning of Hengshui is to develop itself to be a northern ecological lake city suitable for living. It aims to upgrade its industry structure transition with the focus on the urban and rural coordination development, ecological environment and cultural prosperity.	The positioning of Hengshui is to become a <i>regional transportation and logistics hub</i> in the Jing-Jin-Ji region, a <i>supply base of green agricultural products</i> for the Jing-Jin-Ji region, an <i>ecology protection base</i> for the Jing-Ji area, an experiment base for the industrialization of new technology developed in Jing-Jin-Ji, and a <i>supportive base of education, medication, leisure and health-keeping</i> for Beijing and Tianjin.
Xingtai	The positioning of Xingtai is to become an important center city in south part of Jing-Jin-Ji, an important <i>national base for manufacture and a demonstration area of innovative industrial transition</i> . Moreover, it also aims to be an <i>ecological tourist city, and cultural and historic city</i> .	Xingtai aims to become an <i>advanced manufacture base</i> with the core competence, an experiment area for the industrialization of the innovative technology developed in Beijing and Tianjin, a major economic development pole in the southern Hebei province and an important <i>transportation hub, a trade and logistics center</i> for the Jin-Ji-Lu junction area, a new <i>tourist city and cultural and</i>	Xingtai aims to become a <i>national new energy industry base, an industry transition upgrade demonstration area, a logistics hub city</i> in the northern Hebei province, an experiment area of new type urbanization and rural development, an ecological environment supporting area in the southern Jing-Jin-Ji.

		<i>historic city</i> with relatively high recognition, a regional center city and a modern city with a beautiful environment.	
Handan	<p>Basic identity of the city: <i>National historical and cultural city, a regional economic center city</i> at the joint of Hebei, Shanxi, Shandong and Henan.</p> <p>The city development strategy is to focus on enhancing the city competitiveness in the region and to become a regional economic center that connects Hebei, Shanxi, Shandong and Henan.</p>	<p>The positioning of Handan: economic development pole in the southern part of Hebei province and the regional center city that is the junction of four provinces.</p> <p>The industrial positioning is to become a <i>national fine steel and iron base, advanced equipment manufacture base, coal-fired power and coal chemistry base, new material base, cultural tourist base, and a modern logistics complex center</i>.</p>	<p>The positioning of Handan: a pivot city through which the Jing-Jin-Ji will provide force for the central part of China.</p> <p>The industrial positioning is to become ‘five bases and one center’, namely, national fine steel and iron base, advanced equipment manufacture base, food industry base, environmentally friendly products base, <i>new energy vehicles base</i>, and also a <i>center for commerce and logistics</i>.</p>
Anyang	<p>City identity: <i>National historical and cultural city; Regional center city</i> in the Northern Henan Province.</p> <p>Developing objectives: To become an important regional center in the Northern Henan Province with a strong economy, balanced industry distribution, good ecology, and livable environment.</p>	<p>Anyang aim to develop itself into a <i>prosperous, livable, central, innovative and harmonic modern city</i>. The positioning of Anyang is to become a regional center city in the northern part of Anhui province, <i>demonstration area for high-quality and high-quantity food, provincial modern new industrial base, national cultural tourist city, important transportation and logistics center</i> in the middle of China, city of <i>aviation sports</i>.</p>	<p>Anyang aims to upgrade its current economic mode and become a regional center city with the goal of ‘prosperous Anyang’, ‘<i>innovative Anyang</i>’, ‘<i>safe Anyang</i>’, ‘<i>beautiful Anyang</i>’.</p>

The other important aspect of city branding practices is the city position. The key phrases and terms related to *city positions* in general are picked out and summarized in table 4.2. Only the phrases that appear with a clear intention to serve as the major city positions are chosen.

Table 5.2 Key phrases related to city positions

	Urban Master Plan (2010-2020)	12th Five-Year Plan (2011-2015)	13th Five-Year Plan (2016-2020)
Beijing	National political center, National cultural center, World renowned historic city and Modern international city, Cultural and historic city, Livable city, International tourist city, Historic tourist city, International airlines hub, eco-city	World City with Chinese characteristics, Culture Beijing, Technology Beijing, and Green Beijing, National innovation center, Learning city, Capital economy (service, headquarter, knowledge, green), Beijing service brand, Beijing creation brand, Beijing Tourism brand,	Capital city, first-class international harmonic and livable city, Capital core functions, green low-carbon ecological homeland, low-carbon city, Ecological civilization construction, Sponge city, Intelligent city, Resource-saving and environmentally friendly

		Modern agriculture, Financial center city, Information service center city, Technological innovation center city, Cultural and historic city, International city, Livable green homeland	society, Innovative city, Technological innovation center city, Cultural and historic city, Intelligent service community, Tourist city, Intelligent Olympics
Tianjin	Bohai Rim Region economic center, International port city, Northern economic center, ecological city, International shipping center, International logistics center, Cultural and historic city, Tourist city, Livable city, Open gate, Coastal city	International shipping center, International logistics center, Open gate , Livable ecological new district, Coastal new district, Pillar industry base, Expo center city, Innovative city, Intelligent Tianjin	R&D base for advanced manufacturing, Innovative demonstration area, Tourism demonstration area, Innovative city, Livable modern city, International shipping hub, Intelligent city, Sponge city, Garden city, Low-carbon city, Free trade demonstration area
Shijiazhuang	Modern service industry base, Biological industry base, low-carbon city, ecological city, Intelligent city, Innovative dynamic city, Livable dynamic city, Coastal charismatic city.	Innovative city, Modern first-class provincial capital city, Chinese medicine city, Logistics base, Financial center city, Modern agriculture, National civilization city, National garden city.	Innovative city, Beautiful livable country, Ecological livable green homeland, Cultural and historic tourist city, Intelligent city, National forest city, Green development leading area, Trade and logistics center city, Sponge city, Green city, Ecological city
Tangshan	Bohai Rim regional center city, industrial base, port city, coastal city, ecological city, innovative development center	Modern ecological city, National renowned tourist city, Modern agriculture demonstration area, 'Digital Tangshan', Ecological livable modern city, Innovative city	Innovative city, Modern coastal city, Intelligent city, Regional finance center, Eco-city, Ecological livable city
Langfang	Jing-Jin-Ji regional center city, Ecological livable city, Regional leisure and service center	Ecological city, Intelligent city, Leisure city, Business city, Green development demonstration area	Pioneering area of the ecological civilization, Sponge city, Green Langfang, innovative Langfang, Ecological livable city
Qinhuangdao	Garden city, Ecological city, Modern city, Coastal city, Leisure tourist city, Coastal mechanical industry base, Cultural and historic city	Pioneering area of the modern service industry, Logistics hub city, Financial concentration area, Equipment manufacture base, Biological medicine industry base, Innovation experiment area and demonstration area Green ecological city	Ecological city, National forest city, national demonstration area of ecological civilization, Ecological pioneering city, Innovative city, Forest city, Modern agriculture demonstration area, Ecological agriculture demonstration area, Ecological livable city, Coastal tourist attraction, Cultural and historic city, Intelligent city, Sponge city
Baoding	Cultural and historic city, Advanced manufacture base,	Agriculture city, Low-carbon city, Advanced manufacture	Innovative city, Logistics base, Financial ecological city,

	National garden city, Ecological city, Low-carbon city, Leading industry concentration area	base, Regional tourist city, Modern logistics base	Cultural and historic city, Tourist city, Ecological city, Intelligent city, National forest city, Low-carbon city, Sponge city
Chengde	Cultural and historic city, Tourist city, Garden city.	Regional transportation hub, Digital Cheng, Intelligent city, National forest city, Ecological garden city, Environmentally friendly model city, International tourist city, Harmonic Chengde, Safe Chengde	Ecological city, Charismatic Chengde, National forest city, International tourist city, Green construction material base, Intelligent city, Advanced manufacture concentration area, Innovative demonstration area, Cultural and historic city
Zhangjiakou	Transportation hub, Financial center, Informational center, Trade center, Energy base in Hebei, Ecological tourist city	Regional center city, Modern industry, Ecological leisure city, Innovative city, Regional logistics center	National garden city, Olympics city, Tourist city, Green low-carbon life, Internationally open city, Ecological livable city, Intelligent city, Sponge city
Cangzhou	Port city, Low-carbon city, Sponge city, Ecological garden city	Modern port city, Livable, Cultural, Ecological Leisure tourist new city	Intelligent city, Advanced manufacture base, Cultural city, Leisure agriculture zone, Sponge city, Garden city, Ecological city, Modern agriculture, 'Cangzhou Intelligent manufacture', Modern port city, Innovation demonstration area
Hengshui	Ecological livable city near a lake, transportation hub, Garden city, Green agriculture product supply base	Equipment manufacture base, Modern Ecological industry base, Leisure Tourist attraction, Ecological livable northern lake city, Garden city, National modern agriculture demonstration area	Garden city, Intelligent city, Industrial city, Trade and tourist center, Ecological tourist leisure destination
Xingtai	Regional center, Innovation base, Green landscape city, Cultural city	Advanced manufacture base, Transportation hub, Commercial logistics center, Tourist city, Cultural and historic city	Advanced manufacture base, Intelligent city, Modernization center city, Forest city, Green city, Sponge city, Cultural and historic city, Ecological Livable city, Green Xingtai
Handan	Cultural and historic city, regional economic center	Cultural tourist base, Modern industry base, Modern agriculture, Green Handan,	Prosperous Handan suitable for living, working and traveling, Beautiful Handan, National garden city, Forest city, National

		Low-carbon city, Forest city, Talent city, Cultural city	fine steel and iron base, advanced equipment manufacture base, Food industry base, Environmental friendly products base, New energy vehicles base, Center for commerce and logistics
Anyan g	National cultural heritage sites, excellent tourist city in China, new industry base; commercial information center, transportation and logistics center, educational and R&D center, and cultural tourist center, Cultural and historic city, Tourist city	National garden city, Cultural tourist city, Modern industry base, Trade and logistics center, Regional financial center, modern agricultural city, Innovative city, Cultural and historic city, Ecological livable city	Advanced manufacture city, Service oriented city, Modern agriculture demonstration city, National ecological garden city, Sponge city, Intelligent city

A descriptive explanation of Table 5.1 and Table 5.2 is as follows. The city identities, positions and general strategies in the three official documents are summarized. An overall observation shows that the identities and positions of each city generally follow two basic principles. one is to make the most of their advantages of their current city profiles, and the other one is trying to overcome their obvious disadvantages or position itself in a fancy/desired way. Here the advantages and disadvantages can be derived from the basic information of the city profiles in Chapter 4.

More specifically, Beijing has rich cultural and historic resources and is tertiary industry dominant, correspondingly, part of its identities is to become the ‘cultural center, world renowned historical city’, and one of its strategies is to become a ‘technology city’. On the other hand, Beijing is facing serious environmental issues, and thus one of its core development strategies is to shift out the heavy polluting industries from Beijing and become a ‘livable city’. Tianjin is a port city that has great strength in secondary industry as well as in financial business; therefore, one of its identities is to become an international port city, and its position is to become a base for advanced manufacture, an important area of international shipping and transportation, and a demonstration area of financial innovation. At the same time, as it is still heavily dependent on the secondary industry, one of its intended goals is to reshuffle the industry structure to increase the fraction of tertiary industry, which can better match their position of ‘ecological city’. Similarly, Shijiazhuang and Tangshan also put emphasis on further improving the existing secondary industry through industry upgrades so that the pollution will be controlled. Langfang is aiming to achieve practical cooperation with Beijing and Tianjin to enhance its high-tech industry and tertiary industry. Qinhuangdao is outstanding as indicated in the previous section that it aims to make ‘green’ part of its identities given that it has rich tourism resources in terms of culture, history, and geography. Other cities, which are economically lagging behind,

are more concerned about developing economy through industry transformation and upgrade, but at the same time, they all recognize the importance of environmental protection.

One significant, interesting finding is that all cities in the Jing-Jin-Ji region try to position themselves through labels related to ecological modernization, such as eco-city, livable city, tourism city, etc.

In this section, the city identities and city positions (in general, not necessarily related to ecological modernization) have been analyzed based the qualitative method to gain a general insight of the city branding practices. In the next section, the city positions related to ecological modernization will be analyzed, specifically based on the quantitative method.

5.2. City positions related to ecological modernization

The city positions (city labels) related to ecological modernization in the three official documents, namely, the 12th Five-Year Plan, 13th Five-Year Plan, and Urban Master Plan, are searched and the frequencies of each term for each city are counted and listed in Table 5.3, Table 5.4 and Table 5.5 respectively. How the 10 city branding terms are chosen as the ones adopted in this thesis has been explained in the method section.

How is the counting process done? We went through all the three above documents and made a count of all possible terms about city positions related to ecological modernization. Then, this great variety of terms are further categorized into the above 10 city branding terms. For instance, smart city, intelligent city, information city, and digital city are all under the category of smart city (See Appendix 2 for the complete subspecies for each category).

Table 5.3 City branding terms counted from the 12th FYP (2011-2015)

	Smart city	Innovation city	Resilient city	Tourism city	eco-city	Low carbon city	Livable city	Advanced manufacture city	Service city	Modern agriculture city	Total
Beijing	2	14	1	11	14	1	9	2	13	1	68
Tianjin	3	1	2	5	12	3	5	3	12	1	47
Shijiazhuang	2	18	2	6	5	10	2	1	31	1	78
Tangshan	3	5	1	5	17	10	3	8	18	4	74
Langfang	2	4	0	0	5	8	3	5	15	1	43
Qinhuangdao	3	10	2	9	9	1	4	3	9	1	51
Baoding	0	0	0	4	6	9	0	5	1	1	26
Chengde	2	3	1	15	5	1	1	0	1	1	30
Zhangjiakou	0	2	1	4	11	2	5	6	5	5	41
Cangzhou	0	1	1	2	7	1	2	12	7	4	37
Hengshui	3	0	0	3	17	1	4	1	3	2	34

Xingtai	4	2	2	7	6	4	0	4	3	3	35
Handan	2	4	1	5	9	8	1	2	5	1	38
Anyang	2	2	0	2	11	1	4	5	16	9	52
Total	28	66	14	78	134	60	43	57	139	35	654

An overall observation of the above Table 5.3 is that ‘eco-city’ and ‘service city’ are the most frequently used labels in the 12th five-year plan, followed by ‘tourism city’, ‘innovation city’, and ‘low carbon city’. This indicates that the Jing-Jin-Ji region as a whole emphasizes these aspects. ‘Resilient city’ is the least frequently used term. A closer look shows that the most frequent brand terms for all cities are all within the range of the above five terms, with the exception that ‘advanced manufacture’ is the most frequent one for Cangzhou. The number of total labels for each city varies greatly. The 12th five-year plan document of Shijiazhuang uses the (78) most terms related to ecological modernization while that of Baoding is the least (26). This variation can be partly explained by the fact that the length of each document is not always the same. The level of the emphasis that each city puts on the concept of ecological modernization is different, which could be another reason for that.

Table 5.4 City branding terms counted from the 13th FYP (2016-2020)

	Smart city	Innovation city	Resilient city	Tourism city	eco-city	Low carbon city	Livable city	Advanced manufacture city	Service city	Modern agricultural city	Total
Beijing	1	12	1	8	14	6	12	0	2	2	58
Tianjin	3	12	1	5	4	7	4	0	12	0	48
Shijiazhuang	12	6	6	13	9	0	1	1	5	6	59
Tangshan	2	2	0	1	3	0	3	0	6	4	21
Langfang	2	2	4	3	5	5	5	1	6	7	40
Qinhuangdao	5	3	2	11	5	4	0	0	2	4	36
Baoding	4	2	3	5	2	13	4	0	12	3	48
Chengde	2	6	3	16	5	4	0	1	1	5	43
Zhangjiakou	3	0	4	2	2	5	2	0	1	4	23
Cangzhou	7	4	5	8	5	10	0	1	1	4	45
Hengshui	3	0	4	3	7	0	0	0	9	10	36
Xingtai	6	0	5	1	4	10	1	2	2	13	44
Handan	1	1	4	3	3	12	1	2	7	10	44
Anyang	2	3	8	2	2	6	1	2	3	8	37
Total	53	53	50	81	70	82	34	10	69	80	582

Compared to those in the 12th five-year plan, the terms related to ecological modernization in the 13th five-year plan distribute relatively more evenly among the 10 terms, with ‘low-carbon city’, ‘tourism city’, ‘modern agricultural city’, ‘eco-city’, and ‘service city’ as the five most frequently used terms. It seems that in this new five-year plan, cities in the Jing-Jin-Ji region tend to adopt overall more balanced brand positions. Smart city, resilient city, and modern agricultural city are not popular in the 12 FYP; however, their popularity has increased significantly in the 13th FYP. On the contrary, the frequency of dominant city brands, service city, and eco-city in the 12th FYP has decreased to a moderate level. An interesting observation is that ‘modern agricultural city’ which was the last third in the 12th five-year plan enters the top 3 while ‘advanced manufacture city’ drops to the absolute last. Baoding for instance, which applied ‘advanced manufacture’ the most in the 12th five-year plan, only mentioned ‘advanced manufacture city’ once. As many as 7 cities didn’t mention this term as well, in contrast with the fact that 13 cities out of 14 chose it as a brand term in the 12th five-year plan. This shows a trend that there is a growing focus on the modern agriculture replacing the traditionally overemphasized manufacturing industry. Note that the 12th five-year plan was made before 2011 as a developing guideline through 2011 to 2015, and the 13th five-year plan was made around 2015 for guiding the development through 2015 to 2020.

In terms of the total number of EM related terms used by different cities, Shijiazhuang is again the city that used the most brand terms related to EM while Tangshan used the least. Baoding which used the least brand terms related to EM in the 12th five-year ranked in the top 3 in the 13th five-year plan, indicating the recognition of the importance of ecological modernization by the Baoding municipal government.

Table 5.5 City branding terms counted from the Urban Master Plan (2011-2020)

	Smart city	Innovation city	Resilient city	Tourism city	eco-city	Low carbon city	Livable city	Advanced manufacture city	Service city	Modern agricultural city	Total
Beijing	1	4	0	32	8	3	1	11	24	0	84
Tianjin	1	2	0	13	13	0	1	7	10	0	47
Shijiazhuang	2	1	0	7	7	1	1	1	4	0	24
Tangshan	0	1	0	1	1	3	0	0	0	0	6
Langfang	0	0	0	6	14	0	1	4	4	0	29
Qinhuangdao	1	0	0	17	4	0	0	1	3	0	26
Baoding	1	3	0	12	12	0	4	10	8	0	50
Chengde	0	0	0	4	1	0	0	1	1	0	7
Zhangjiakou	0	0	0	1	1	1	1	0	1	0	5

Cangzhou	1	0	0	0	7	0	1	5	6	0	20
Hengshui	0	0	0	2	4	1	2	1	6	6	22
Xingtai	0	2	0	6	2	0	1	3	3	2	19
Handan	0	0	0	3	0	0	1	0	0	0	4
Anyang	1	0	0	5	0	0	1	1	2	0	10
Total	8	13	0	109	74	9	15	45	72	8	353

The urban master plan was made around the same time as the 12th five-year plan, thus it is more meaningful to compare these two. ‘Tourism city’, ‘eco-city’, ‘service city’, and ‘advanced manufacture city’ are the top 4 brand terms, which is roughly consistent with that in the 12th five-year plan. This could be explained by the fact that they were made in a similar time period. Moreover, the least frequently used terms related to EM in the 12th five-year plan were “Resilient city”, “smart city”, and “modern agricultural city”, which are also consistent with the finding in the urban master plan document. A rough comparison between the urban master plan and the 13th five-year plan shows there is no similar consistency found above. This proves that time period is a very important factor that influences the choices of the branding terms.

In terms of total number of EM related terms used by different cities, Beijing used the most terms while Handan used the least, which is different from that in the 12th five-year plan. This may be explained by the fact that different documents focus on different aspects of the city. In terms of the number of the total labels, Beijing used the most terms while Handan used the least, which is different from that in the 12th five-year plan. Another interesting observation here is that the number of total city labels for each city varies significantly in the urban master plan. The different length of the document could be the main reason for that. In the extreme case like Handan, the full report for the urban master plan is missing.

This chapter has first explored the general city branding practices based on the qualitative method, and then the quantitative method has been adopted to analyze the city positions related to ecological modernization. In this chapter, the relevant analysis of the collected data focuses on the goal of gaining a broad/overall insight of the city branding practice found in the three different official documents. Thus, the comparison of the three official documents has been done to shed a light on the difference between them. This lays a good foundation for a more deep analysis of city branding practices for each individual city in the next chapter. More specifically, the analysis in the next chapter focused on exploring the influence of the city profiles on the city branding practices based on the 5-pathway method.

6. Data analysis: The influence of city profiles on city branding practices

The city profiles and the city branding practices of each city in the Jing-Jin-Ji region have been analyzed and summarized in chapter 4 and chapter 5 respectively. They serve as the basis for the data analysis in this chapter. The core objective of this chapter is to explore to what extent the city branding practices match their city profiles; more specifically, how the position within the region and stage of economic development can relate to their city branding practices which include the city identities in general and the city positions related to ecological modernization. It is assumed in this thesis that the city branding choices by the municipal governments will be influenced by the city profiles based on the 5-pathway method. The 5-pathway analytic method uses the stage of economic development and position in the region as two independent variables to theoretically expect what city branding choices will be adopted. The expected city branding choices, as the dependent variable, will then be compared with the actual ones found in the three official documents.

Before the analysis can be done, one issue needs to be addressed. How reliable is the collected data? Both the city profiles and the city branding practices are retrieved from the official source, either the statistical yearbook or the three official documents. Thus, it can be claimed that the data resource is highly reliable. However, the reliability of the research can still be an issue if the data is not processed appropriately to get any conclusion. To enhance the reliability of the data analysis, we will use several different indicators or sources to validate the data itself. For example, to determine the stage of the economic development, three different indicators will be used.

6.1. Two major aspects of current city profiles (Independent variables)

The stage of economic development and the position in the region of each city will be checked and processed separately to facilitate the further analysis based on the 5-pathway method.

6.1.1. Economic development stage

In section 4.3, the economic status of each city in the Jing-Jin-Ji region has been qualitatively analyzed based on the collected data, and it is concluded that the cities in the Jing-Jin-Ji region are at different economic development levels with a relatively large gap. The quantitative analysis of the economic development stage will be discussed in this section.

There is no single widely accepted factor that can directly determine the stage of economic development for a city. However, there are some factors that can help shed light on this variable.

First and foremost, the ratio of the three industries in the city's economic activity is a significant factor that reflects how economically developed a city is. An economically developed city tends to feature a relatively high percentage of the tertiary industry, while a developing or undeveloped city is likely to have a high percentage of the secondary industry or primary industry. Second, the overall GDP and GDP per capita is another important factor that can reveal the stage of the economic development in a city. It can be generally argued that the higher the GDP, especially the GDP per capita, a city has, the more economically developed a city tends to be. The third factor is the *annual disposable income* (ADI) per capita or the *annual living expenditure* (ALE) per capita. It's not surprising that a more economically developed city tends to have a higher ADI per capita or ALE per capita. The statistical data about the economic development of the Jing-Jin-Ji region is summarized in Table 6.1.

Table 6.1 Statistical data about the economic development inside the Jing-Jin-Ji region

City	Per capita GDP	Population (million)	Overall GDP (billion)	Industry GDP ratio	ADI	ALE
National Standard	42990	1367.82	58801.9	9.20 : 42.70 : 48.10	20167	14491
Beijing	99995	21.52	2133.1	0.70 : 21.40 : 77.90	43910	28009
Tianjin	105231	15.17	1572.7	1.30 : 49.40 : 49.30	31506	24290
Shijiazhuang	48701	10.62	517.0	9.43 : 46.76 : 43.81	18984	12274
Tangshan	80138	7.77	622.5	8.97 : 57.75 : 33.27	21603	15385
Langfang	48121	4.52	217.6	9.45 : 48.05 : 42.50	21061	15080
Qinhuangdao	39158	3.06	120.0	14.55 : 37.44 : 48.01	17457	11350
Baoding	26415	11.49	303.5	14.01 : 51.50 : 34.49	14778	9282
Chengde	38062	3.53	134.3	16.82 : 49.98 : 33.20	13345	9328
Zhangjiakou	30513	4.42	134.9	17.76 : 42.66 : 39.58	14126	9311
Cangzhou	42486	7.34	313.3	10.14 : 51.97 : 37.89	16099	10667
Hengshui	25978	4.42	114.9	14.49 : 47.86 : 37.65	13111	8893
Xingtai	22696	7.26	164.7	16.60 : 47.36 : 36.04	13405	8118
Handan	32857	9.37	308.0	13.09 : 50.11 : 36.80	16292	9775
Anyang	35920	4.44	159.3	9.00 : 58.10 : 32.90	18900	12276

Table 6.1 is further divided into Table 6.2, Table 6.3 and Table 6.4 to facilitate the pathway determination based on different indicators illustrated above. The score for the urban economic development based on the overall GDP and per capita GDP is shown in table 6.2, industry GDP ratio in Table 6.3 and ADI/ALE per capita in Table 6.4.

Table 6.2 Score for the urban economic development based on GDP data

City	Per capita GDP	Population (million)	Overall GDP (billion)	Score
National Standard	42990	1367.82	58801.9	/
Beijing	99995	21.52	2133.1	3
Tianjin	105231	15.17	1572.7	3
Shijiazhuang	48701	10.62	517.0	2
Tangshan	80138	7.77	622.5	3
Langfang	48121	4.52	217.6	2
Qinhuangdao	39158	3.06	120.0	2
Baoding	26415	11.49	303.5	1
Chengde	38062	3.53	134.3	2
Zhangjiakou	30513	4.42	134.9	1
Cangzhou	42486	7.34	313.3	2
Hengshui	25978	4.42	114.9	1
Xingtai	22696	7.26	164.7	1
Handan	32857	9.37	308.0	1
Anyang	35920	4.44	159.3	2

For the score based on GDP data, per capita GDP (derived from the population and total GDP) is used to determine the score for each city. Those cities whose per capita GDP is much higher than that of national average are scored as 3. Three cities are scored as 3 and they are Beijing, Tianjin and Tangshan. On the contrary, those cities whose per capita GDP is significantly lower (20%) than that of national average are scored as 1. Four cities are scored as 1 and they are Baoding, Zhangjiakou, Hengshui, Xingtai. The per capita GDP of the remaining cities is similar to the national average and thus they are scored as 2.

Table 6.3 Score for the urban economic development based on industry GDP ratio

City	Industry GDP ratio	Score
National Standard	9.20 : 42.70 : 48.10	/
Beijing	0.70 : 21.40 : 77.90	3
Tianjin	1.30 : 49.40 : 49.30	2/3
Shijiazhuang	9.43 : 46.76 : 43.81	2
Tangshan	8.97 : 57.75 : 33.27	2
Langfang	9.45 : 48.05 : 42.50	2
Qinhuangdao	14.55 : 37.44 : 48.01	3
Baoding	14.01 : 51.50 : 34.49	2
Chengde	16.82 : 49.98 : 33.20	1
Zhangjiakou	17.76 : 42.66 : 39.58	1
Cangzhou	10.14 : 51.97 : 37.89	2
Hengshui	14.49 : 47.86 : 37.65	1
Xingtai	16.60 : 47.36 : 36.04	1
Handan	13.09 : 50.11 : 36.80	2
Anyang	9.00 : 58.10 : 32.90	2

In Table 6.3, Beijing and Tianjin are scored as 3 because the tertiary industry is the dominant industry for them. Tianjin is scored as 2/3 because the percentage of the secondary industry and that of the tertiary industry are the same. For the remaining cities, the secondary industry is the dominant industry and they would all be scored as 2 if we try to score each of them individually just based on the industry GDP ratio. However, the national industry GDP ratio is taken into account when the score is given to the remaining cities. The national industry GDP ratio is 9.20: 42.70: 48.10, while the ratio of human workforce in the three industries is 29.5: 29.9: 40.6. It shows that nationwide, the human workforce in the primary industry is quite similar as that in the secondary industry even though the GDP of the primary industry is much lower. The industry human workforce ratio could be a better indicator than the industry GDP ratio. However, that data cannot be accessed for the cities in Hebei province and Anyang. Therefore, the industry GDP ratio will be used in this thesis but with the national standard/average value taken into account as the reference value. Based on this, Chengde, Zhangjiakou, Xingtai and Hengshui are

scored as 1 instead of 2 due to their significant high percentage of primary industry compared with the national average of 9.2%. The remaining cities are scored as 2 due to their absolutely dominant percentage in the secondary industry.

Table 6.4 Score for the urban economic development based on ADI/ALE per capita

City	ADI per capita	ALE per capita	Score
National Standard	20167	14491	/
Beijing	43910	28009	3
Tianjin	31506	24290	2/3
Shijiazhuang	18984	12274	2
Tangshan	21603	15385	2
Langfang	21061	15080	2
Qinhuangdao	17457	11350	2
Baoding	14778	9282	1/2
Chengde	13345	9328	1
Zhangjiakou	14126	9311	1
Cangzhou	16099	10667	2
Hengshui	13111	8893	1
Xingtai	13405	8118	1
Handan	16292	9775	2
Anyang	18900	12276	2

It can be seen from Table 6.4 that the ALE per capita is almost proportional to ADI per capita for each city. Thus, for the reason of simplicity, only the ADI is used to score each city. Beijing is scored as 3 because the ADI is more than twice the national average. Chengde, Zhangjiakou, Hengshui, and Xingtai are scored as 1 because their current ADI is much lower than the national average. The other cities, except for Tianjin, are scored as 2 because their ADI per capita is rather similar to the national average. Tianjin is scored as 2/3 because the ADI is in the middle of the national average and Beijing's ADI per capita.

Table 6.5 Dominant score for the urban economic development

City	Industry GDP ratio	GDP per capita	ADI/ALE	Dominant score
Beijing	3	3	3	3
Tianjin	2/3	3	2/3	3/2
Shijiazhuang	2	2	2	2
Tangshan	2	3	2	2
Langfang	2	2	2	2
Qinhuangdao	3	2	2	3/2
Baoding	2	1	1/2	2
Chengde	1	2	1	1
Zhangjiakou	1	1	1	1
Cangzhou	2	2	2	2
Hengshui	1/2	1	1	1
Xingtai	1	1	1	1
Handan	2	1	2	2
Anyang	2	2	2	2

The overall score for the stage of urban economic development is shown in Table 6.5 based on the three indicators analyzed above. When the three indicators point in the same direction, that common score is just adopted as the dominant score without dispute. The problem is how the dominant score can be determined when they point in different directions. In this thesis, the industry GDP ratio is used as the major indicator and the other two indicators serve as the auxiliary ones. The industry GDP ratio is chosen as the major indicator because it directly reflects how well the society as a whole is developed economically. With this taken into account, a method to determine the dominant score has been designed as follows. When the two auxiliary indicators point in the same direction but they are different from that of the major indicator, a mixed score is adopted such as in the case of Qinhuangdao. When the two auxiliary indicators are scored with different scores and one of them is the same as that of the major indicator, the score for the dominant score is adopted such as in the case of Handan. When one or two of the indicators themselves point(s) in different directions, an overall balanced score needs to be

adopted. For instance, in the case of Hengshui, the score for the major indicator is 1/2, while the score for two auxiliary ones is 1, the overall balanced score is adopted as 1.

6.1.2. Position within the region

The variable ‘position within the region’ indicates in what geographic level/arena the city intends to compete with other cities. Three possible scores on this variable are international, national, and regional. The score for each city can also be determined through three methods to get a more reliable analysis.

This first method is to check how the cities try to position themselves in three official documents. Baoding, Langfang, Tangshan, Zhangjiakou, Chengde, Qinhuangdao, Cangzhou, Hengshui, Xingtai, Handan, and Anyang all try to position themselves as ‘regional center in the Jing-Jin-Ji region’ explicitly or inexplicitly in those documents. Thus, they can be scored as the regional city. Beijing in the three official documents clearly positions itself as ‘world city’ or ‘global city’; Tianjin also positions itself as ‘international port city’. Therefore, Beijing and Tianjin can be claimed to be internationally oriented. Shijiazhuang, however, has no clear intention to position itself as ‘international’; instead, it focuses on the positioning of the third economic pole of the Jing-Jin-Ji region (Beijing and Tianjin as the current two economic poles) and its leading role in the whole province. And thus, Shijiazhuang can be classified as a national city, in the middle of international city and regional city. Basically, this method is only more like self-evaluation and thus less objective. The self-evaluation result needs to be validated by a different source result.

The second method chooses to categorize them based on their administrative level, which is more objective than the first self-evaluation method. Beijing and Tianjin are two municipalities directly under the Central Government, which is the highest level in China. Shijiazhuang is a provincial capital that is the foremost important city in a province but not as important as municipalities directly under the Central Government. The other cities are treated the same administratively under the control of the provincial capital. Thus, it can be claimed that Beijing and Tianjin belong to the international city category; Shijiazhuang belongs to the national city category; and the remaining cities in the Jing-Jin-Ji region belong to the regional city category.

It can be seen that the two methods generate the same score result. It is not surprising that Beijing is chosen as the international city and 11 municipal cities are chosen as the regional city. However, the categorization of Tianjin and Shijiazhuang is not as compelling. It can be expected that some might have different attitudes towards the categorization of Tianjin and Shijiazhuang. Those who have a relatively high standard might categorize Tianjin only as a national city. Likewise, others who have a relatively low standard might also argue that Shijiazhuang also belongs to international city category, especially after the adoption of Jing-Jin-Ji integrated development by the central government. Therefore, one more method is used to validate the

result. This method is based on the source of GaWC (Globalization and World Cities). GaWC is a world renowned organization that ranks the cities based on their performance every few years. The latest result (2015 updated) shows that Beijing and Tianjin are evaluated as “Alpha+” and “Gamma-” world city respectively; while Shijiazhuang is not listed in the lists. Based on the above analysis, therefore, it can be claimed in this paper that Beijing and Tianjin are international cities, Shijiazhuang is a national city, and the remaining 11 cities are regional cities, as shown in Table 6.6.

Table 6.6 Categorization of the cities in the Jing-Jin-Ji Region

International city	National city	Regional city
Beijing, Tianjin	Shijiazhuang	Baoding, Langfang, Tangshan, Zhangjiakou, Chengde, Qinhuangdao, Cangzhou, Hengshui, Xingtai, Handan and Anyang

6.2. Theoretically expected pathways based on the 5-pathway method

The 5-pathway method is introduced in section 2.2. To make it more approachable, it is further sorted out as shown in Table 6.7.

Table 6.7 Expected city identities and positions based on 5-Pathway method

Modes of Ecological Modernization	Expected City Brand Identities	Expected City Brand Positions
Pathway 1	Attraction for ‘clean’ industries (for instance, eco-tourism)	Tourism city, eco-city, Modern agriculture city
Pathway 2	Promotion of advanced low-carbon manufacturing	Advanced manufacturing city, Low carbon city, eco-city
Pathway 3	Promotion of high-tech innovation and modern service	Innovation city, Smart city, Service city
Pathway 4	Selection of a comparatively generic brand	Service city, Innovation city, Livable/Green city, Tourism City
Pathway 5	Strong Desire to stress the internationally prominent role in the field of producer service	Service city, Livable city, Tourism city

Referring to Table 2.1, the pathway for each city in the Jing-Jin-Ji region can be determined as in Table 6.8 based on the analysis results for the two indicators in section 6.1.

Table 6.8 Pathway for cities in the Jing-Jin-Ji Region

City	Stage of economic development	Position within the region	Expected pathway
Beijing	3	International	5
Tianjin	2/3	International	3/5
Shijiazhuang	2	National	2
Tangshan	2	Regional	2
Langfang	2	Regional	2
Qinhuangdao	2/3	Regional	2/4
Baoding	2	Regional	2
Chengde	1	Regional	1
Zhangjiakou	1	Regional	1
Cangzhou	2	Regional	2
Hengshui	1	Regional	1
Xingtai	1	Regional	1
Handan	2	Regional	2
Anyang	2	Regional	2

6.3. City branding practice analysis and comparison

The main goal of this thesis is to explore to what extent the city branding practices match with their current geographic and economic positions (or development pathway for ecological modernization). As illustrated in the introduction chapter, the city branding process can be perceived as three major components, namely brand identity, brand position, and brand image. The brand image reflects how the city brand is perceived by the public. Since brand image is a relatively vague concept, it's highly difficult to get the brand image from a reliable source, especially for the regional cities. Thus, this thesis will only focus on brand identity and brand position. They will first be analyzed based on the data in chapter 5 and then be compared with the theoretically expected results analyzed in the previous section.

6.3.1. City brand identity and comparison

In section 5.1, the city brand identities for each city in the Jing-Jin-Ji region have been summarized based on the three official documents. Despite the small variation of the city brand identity description in them for each city, it can be seen that they are quite similar to each other. For instance, in all of the three official documents, Beijing aims to be a livable international/world city and Tianjin positions itself to be an international port city. Thus, the three documents can be seen to support and validate each other, which proves the reliability of the data retrieved in this thesis. It also proves that the city governments are serious and consistent with the selection of their city identity.

Due to the internal consistency among the city brand identities in the three documents, only one of them will be selected to be analyzed for the avoidance of redundancy. Compared with the 12th FYP, the 13th version comes out later and thus it is more appropriate to select the 13th FYP. For the remaining UMP and 13th FYP, the one with more specific city brand identity terms related to the pathway description, as shown in Table 5.7, will be selected. It is admitted here that the selection process is inevitably subjective to some extent. For some cities, both the UMP and the 13th FYP are referred to if the two have obviously focused on different aspects and complement each other. The city identity analysis and comparison with the pathway are shown in Table 6.9.

Table 6.9 Comparison of city brand identity between official sources and theoretical expectations

City (province)	Pathway	Brand identity description (source)	Conformity with expectations
Beijing	5	The positioning of Beijing is to be the nation's political, cultural, international communication and technological innovation centre, and the objective is to be the first-class international, harmonic and liveable city. (13 th FYP)	Yes
Tianjin	3/5	'three areas and one base', i.e., the core area of northern international transportation (port), the demonstration area of financial innovation, the going-first area of reform and opening-up, and the R&D base for high-tech manufacturing. (13 th FYP)	Yes
Shijiazhuang (HB)	2	The capital of Hebei Province, and the third pole of the Jing-Jin-Ji Area. It is one of the modern service and biological bases in China (Urban Master Plan). the third pole of the Jing-Jin-Ji region' by adjusting the industry to that of Beijing and Tianjin, improving the service economy and enhancing the influence on the surrounding area (13 th FYP).	General (Unclear)
Tangshan (HB)	2	To become a window city of the economic cooperation in the North-east Asia, to become a new industrial city in the Bohai Rim, to become a pivot	Yes

		point in Capital Economic Zone and a prosperous and liveable coastal city (13 th FYP).	
Langfang (HB)	2	High-tech industrial base in the Jing-Jin-Ji region (UMP). It aims to be a leading area for the industrialization of innovative technology, concentration area of the modern service, experiment area of the innovative revolution (13 th FYP).	No (3)
Qinhuangdao (HB)	2/4	A famous coastal city for tourism, leisure and holiday in China and an important port city with comprehensive functionalities (UMP).	Yes (4)
Baoding (HB)	2	A national historical city, and one of the centre cities in the Jing-Jin-Ji Region with advanced manufacture and modern service industry (UMP).	Yes
Chengde (HB)	1	It is a national historical and cultural city, an international tourism city, and a regional centre city for connecting Jing-Jin-Ji, Liaoning and Mongolia. The north part is aimed to be a high-level tourism destination, and the south part is aimed to be a high-tech area with advanced manufacture (UMP).	Yes
Zhangjiakou (HB)	1	the water conservation functionality area for the Jing-Jin-Ji region, to become a cluster of green industries, a demonstration area for renewable energy, and to become an international sports and leisure city (13 th FYP).	Yes
Cangzhou (HB)	2	an important transportation pivot in Bohai Rim Region, a regional centre city in the Jing-Jin-Ji Region and a port city with the specialty of canal culture and chemical industry (Urban Master Plan). An important national security base for chemical industry and clean energy, to become an important industry support and base for technology transformation, to become an important modern logistics distribution centre, and an important open coastal city (13 th FYP).	Yes
Hengshui (HB)	1	The transportation and logistics pivot in the Jing-Jin-Ji region, the green supply base of agricultural products for the Jing-Jin-Ji region, the ecology protection base for the Jing-Ji area, industry undertaking base from the Jing-Jin area, and an ease base for education, leisure and health-keeping (13 th FYP).	Yes
Xingtai (HB)	1	An important centre city in the southern part of Jing-Jin-Ji, an important national base for manufacture and a demonstration area of innovative industry transition. Also an ecological tourism city, and historical and cultural city (UMP).	Yes
Handan (HB)	2	The industrial positioning is to become a base for fine steel and iron, advanced facility manufacture, food industry, environmental friendly products, and new energy vehicles, and also a centre for commerce and logistics. (13 th FYP)	Yes

Anyang (HN)	2	A national historical and cultural city and a regional centre city in the north of Henan province (UMP). Aiming to upgrade its current economic mode (13th FYP)	General (Unclear)
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It can be seen from Table 6.9 that most cities choose a city brand identity that matches their pathway. For instance, Beijing stresses its role to be an international city in multiple aspects, especially in the field of the service industry. Tianjin aims to be an R&D base for high-tech advanced manufacture and a demonstration area for innovation, which matches with the pathway 3. Meanwhile, it also identifies itself as an international (port) city, which matches with the pathway 5. Overall, Tianjin's main identity is still more close to pathway 3 than pathway 5. Qinhuangdao's identity is to become a famous national coastal city for tourism, leisure, and holiday and an important port city with comprehensive functionalities, which typically matches with the pathway 4 instead of pathway 2. All the cities belonging to pathway 1 have a strong/dominant intention to brand themselves related to 'green industries', such as international/ecological tourist city (Qinhuangdao, Xingtai), green supply base of agricultural products & ecological protection base(Hengshui), international sports and leisure city (Zhangjiakou). It is worth mentioning here that some cities belonging to the pathway 1 (Chengde, Zhangjiakou) also use the term of 'international', which has a different meaning as that for Pathway 5 city like Beijing. For the pathway 1, the term 'international' is specifically in the field of the tourism industry for targeting tourists from all over the world, while for pathway 5, it refers to be global in a wide range of fields including high-end financial service. Some cities belonging to the pathway 2 have strong intention to promote advanced manufacturing as we expected like Handan, Cangzhou, Baoding, and Tangshan.

However, other cities belonging to the pathway 2 do not promote advanced manufacturing, at least not in an explicit way. The problem is how we can explain this phenomenon. In the brand identity of Shijiazhuang, it specifically stresses its connection role between Beijing/Tianjin and the remaining cities. On the one hand, it tries to substitute as the 'third pole' economically to be close to Beijing and Tianjin. On the other hand, it aims to enhance its influence on the surrounding areas. This city identity is actually suitable for its development taking into account that it is the capital of Hebei Province. Shijiazhuang also brands itself to be a modern service base (UMP) and demonstration area for coordinative innovation and modern trade (13th FYP), which are more close to the pathway 3. Likewise, Langfang also brands itself in a way close to pathway 3 because it has explicit stress on the innovative technology/revolution and modern service. Anyang promotes itself in a more general way, such as cultural and historical city, a regional center, and upgrading its economic mode. It is hard to determine whether it matches any pathway proposed in this thesis.

6.3.2. City brand position and comparison

The frequency of city brand positions for each city in the three official documents has been counted in Chapter 5. In this section, the top three popular position terms are selected and sorted out in Table 6.10. Based on this, overall dominant brand positions for each city can be determined and the convergence between them and the expected pathway can be checked.

Table 6.10 Comparison of city brand positions between official sources and theoretical expectations

City (province)	Pathway	Most frequent brand positions in 12 th FYP	Most frequent brand positions in 13 th FYP	Most frequent brand positions in UMP	Overall dominant brand positions	Conformity with expectations
Beijing	5	Innovation city(14) eco-city(14) Service city(13)	eco-city(14) Liveable city(12) Innovation city(12)	Tourism city(32) Service city(24) Advanced manufacturing city(11)	Tourism city Service city Innovation city	Yes
Tianjin	3/5	eco-city(12) Service city(12) Tourist(5)	Service city(12) Innovation city(12) Low Carbon city(7)	Tourism city(13) eco-city(13) Service city(10)	Service city eco-city Tourism	Yes(5)
Shijiazhuang (HB)	2	Service city(31) Innovation city(18) Low carbon city(10)	Tourism(13) Smart city(12) eco-city(9)	Tourism city(7) eco-city(7) Service(4)	Service city Tourism city Innovation city	No(5)
Tangshan (HB)	2	Service city(18) eco-city(17) Low Carbon(10)	Service city(6) Liveable city(3) eco-city(3)	Low carbon city(3) Innovation city(1) Tourism city(1)	Service city eco-city Low carbon city	Half (2/3)
Langfang (HB)	2	Service city(15) Low carbon city(8) eco-city(5) Advanced Manufacturing city(5)	modern agricultural city(7) Service city(6) Low carbon city(5) eco-city(5)	eco-city(14) Tourism city(6) Advanced manufacturing city(4) Service city(4)	Service city eco-city Low carbon	Half (2/3)
Qinhuangdao (HB)	2/4	Innovation city(10) Tourism city(9) Service city(9) eco-city(9)	Tourism city(11) eco-city(5) Smart city(5)	Tourism city(17) eco-city(4) Service city(3)	Tourism city eco-city various	Mostly Yes(4)

Baoding (HB)	2	Low carbon city(9) eco-city(6) Advanced Manufacturing city(5)	Low carbon city(13) Service city(12) Tourism city(5)	Tourism city(12) eco-city(12) Advanced Manufacturing city(10)	Low carbon city eco-city Advanced manufacturing city	Yes
Chengde (HB)	1	Tourism city(15) eco-city(5) Innovation city(3)	Tourism city(16) Innovation city(6) modern agricultural city(5)	Tourism city(4) eco-city(1) Advanced manufacturing city(1)	Tourism city Innovation city eco-city	Mostly Yes
Zhangjiakou (HB)	1	eco-city(11) Advanced manufacturing city(6) modern agricultural city(5)	Low carbon city(5) modern agricultural city(4) Resilient city(4)	Tourism city(1) eco-city(1)	eco-city modern agricultural city	Yes
Cangzhou (HB)	2	Advanced manufacturing city(12) eco-city(7) Service city(7)	Low carbon city(10) Tourism city(8) Smart city(7)	eco-city(7) Service city(6) Advanced Manufacturing city(5)	eco-city Advanced manufacturing city Low carbon	Yes
Hengshui (HB)	1	eco-city(17) Liveable city(4) Service city(3)	modern agricultural city(10) Service city(9) eco-city(7)	modern agricultural city(6) Service city(6) eco-city(4)	modern agricultural city eco-city Service city	Yes(Mostly)
Xingtai (HB)	1	Tourism city(7) eco-city(6) Advanced manufacturing city(4)	modern agricultural city(13) Low carbon city(10) Smart city(6)	Tourism city(6) Advanced manufacturing city(3) Service city(3)	modern agricultural city Tourism city eco-city Various	Yes
Handan (HB)	2	eco-city(9) Low carbon city(8) Tourism city(5) Service city(5)	Low carbon city(12) modern agricultural city(10) Service city(7)	Tourism city(3) Livable city(1)	Low carbon eco-city Tourism city various	Yes(Mostly)
Anyang (HN)	2	Service city(16) eco-city(11) modern agricultural city(9)	modern agricultural city(8) Resilient city(8) Low carbon city(6)	Tourism city(5) Service city(2)	modern agricultural city Service city	No

It can be seen from Table 6.10 that most cities position themselves with the city labels that match the expected pathway. A more detailed analysis for each city is as follows.

Beijing: It is on pathway 5 based on its current economic development stage and geographical orientation. Thus, it is expected to position itself with a strong service, innovation, and tourism, and it should also focus on the image of being ‘livable’ with the air pollution taken into account. As the table shows, the overall dominant city brands are similar to what are expected. However, ‘livable’ is not chosen as the dominant city label. The comparison between the 13th FYP and 12th FYP shows that they both have a strong focus on the eco-city and innovation city, while service city in the 12 FYP has been replaced by livable city in the 13th FYP. The reason is that the air pollution problem has gotten more and more serious in the past few years. Without the basic need to be livable, it’s difficult for the city to achieve further development.

Tianjin and Qinhuangdao: These two cities are ambiguous on their pathways based on their economic development stage and geographical orientation. Tianjin is internationally oriented and Qinhuangdao is regionally oriented. In terms of the economic development stage, they are in the middle, between secondary industry dominated and tertiary industry dominated. Thus, Tianjin is on the pathway between 3 and 5. Qinhuangdao is on the pathway between 2 and 4. The overall dominant city brands for Tianjin are tourist city, eco-city and service city, which can be seen as pathway 5. The overall dominant city brands for Qinhuangdao are quite comparatively generic with the focus on tourist city and eco-city, which can be seen as pathway 4. It seems that even though advanced manufacturing is considered as advanced, it is still not as appealing as service city and tourist city. Both cities aim to position in a way that is toward a higher pathway. The actual policy implementation result still needs to be seen but it is highly understandable that both cities aim higher.

Shijiazhuang: Different from most cities on pathway 2 that position themselves with the expected city labels, Shijiazhuang positions itself with comparatively generic brands with the focus on service city and tourism city which is quite similar to pathway 4 or 5. The reason can be that Shijiazhuang is nationally oriented and has an obvious goal to differentiate itself with other regional cities in the Hebei province which are supposed to be under the control of the provincial capital city Shijiazhuang. Therefore, it aims to position itself more like the cities on pathway 4 or 5.

Langfang and Tangshan: It can be seen from the table that both cities position themselves with eco-city and low carbon city, which are consistent with their current status of being on pathway 2. At the same time they also position themselves as service city. This is because these two cities

are geographically close to both Beijing and Tianjin. They both try to position themselves like Beijing and Tianjin with a strong focus on the label of service city.

Baoding, Cangzhou, Handan: The dominant city brands for both Baoding and Cangzhou are Low carbon city, advanced manufacturing city and eco-city, which match perfectly with the expected city brands for the cities on pathway 2. Handan also positions itself as eco-city and low carbon city. However, instead of advanced manufacturing city, it chooses another major city label; service city. Despite being advanced, manufacturing still sounds less fancy as service city. Thus, cities on the pathway 2 can feel tempted to position themselves as a service city instead of advanced manufacturing city.

Anyang: It is on pathway 2. The overall dominant city brands for Anyang are modern agricultural city and service city, which are totally different than the expected city brands on the pathway 2. However, eco-city is chosen as the second most popular city brand in the 12th FYP and Low carbon city is chosen as the third most popular city brand in the 13th FYP. Even though they are not chosen as the dominant ones, they are still considered as important ones.

Chengde, Zhangjiakou, Hengshui, Xingtai: These four cities are on pathway 1. They all chose the city brands that are typically used for the cities on pathway 1. However, Chengde also tries to position itself as innovation city (typical city label for pathway 3) and Hengshui also tries to position it as service city (typical city label for pathway 5). In conclusion, all the cities on pathway 1 position themselves as expected, in general, but with a tendency to position themselves with typical city labels for pathway 3 or 5.

6.3.3. Bringing brand identity and brand position together

According to the above analysis, for both brand identity and brand position, it can be concluded that most cities brand themselves in a way that matches the pathway determined by their city profiles, while others do not. Naturally, we will come up with the further question: do the brand identity and brand position match each other for each city?

The quick answer to the above question is YES, for most cities. For the brand identity, three cities' brands do not match their expected pathway, which are namely Shijiazhuang, Langfang, and Anyang. For the brand position, the three cities do not match (or partially match) their pathway either, which is shown in table 6.11.

Table 6.11 Conformity between city brand identity and position

City (province)	Expected Pathway	Practical pathway (brand identity)	Practical pathway (brand position)	Conformity between identity and position
Beijing	5	5	5	Yes
Tianjin	3/5	3/5(More close to 3)	3/5(More close to 5)	Half

Shijiazhuang (HB)	2	3	5	No
Tangshan (HB)	2	2	2	Yes
Langfang (HB)	2	3	2/3	Yes
Qinhuangdao (HB)	2/4	4	4	Yes
Baoding (HB)	2	2	2	Yes
Chengde (HB)	1	1	1	Yes
Zhangjiakou (HB)	1	1	1	Yes
Cangzhou (HB)	2	2	2	Yes
Hengshui (HB)	1	1	1	Yes
Xingtai (HB)	1	1	1	Yes
Handan (HB)	2	2	2	Yes
Anyang (HN)	2	Unclear	Unclear (1 or 3)	/

For the brand identity, Shijiazhuang brands itself in a way highly close to pathway 3; while for the brand position it brands itself in a way close to pathway 5. Neither of them are similar to the expected pathway 2. Anyang only has a highly generic brand identity, which is not directly relevant to any one of the proposed pathways. For the brand position, the pathway is also quite unclear but can be arguably claimed to be close to either pathway 1 or pathway 3. Since both of them are unclear, it is impossible to compare the conformity. One more interesting finding is about Tianjin. The expected pathway for it is between pathway 3 and pathway 5, which are also the analysis results for both the brand identity and brand position. However, it is more closely related to pathway 3 for the brand identity, but pathway 5 for the brand position.

Overall, it can be found from table 6.11 that those cities that choose the brand identity in a way that match the determined pathway (current city profiles) tend to also choose the brand position accordingly (at least for the case study of the Jing-Jin-Ji region). For the cities whose brand identities don't match the determined pathway, their brand positions also tend to deviate from the determined pathway. In the later case scenario, for some cities their brand positions tend to match with their brand identities, while for others they can also be different.

Quick summary of the data analysis result:

Chapter 6 conducts the data analysis based on the findings in Chapter 4 and Chapter 5. More specifically, in section 6.1, the city profile data (independent variables) has been studied. The city profile includes the stage of economic development and position within the region. The score on the economic development stage is rated on the three indicators: GDP, industry ratio,

and ADI/ALE. And, the position within the region is rated on the three indicators: GaWC result, administrative level, and their own self-positioning. In section 6.2, the determined pathways are analyzed based on the results found in section 6.1. Meanwhile, the relevant brand identity and brand position for each pathway have been sorted out to facilitate the further comparison analysis in section 6.3. The comparison result shows the brand identity and brand position adopted by most cities matched with the expected pathways. For those that are not, they tend to brand themselves in a way that is higher than the expected pathway. They tend to use fancier brand positions than the lower ones. Another interesting finding is that there is high convergence between city identity and city position. For those cities whose brand positions do not match the expected pathway, the reason often lies in that their brand identities do not match the expected pathway in the first place.

7. Conclusions, recommendations and reflections

In this chapter, the answers to the research questions will be first given, based on which relevant policy recommendations have been made to both local city governments and the central government. Moreover, reflections on the research method and corresponding outcomes will be made. Furthermore, the research limitations will be mentioned and a future research agenda will be proposed.

7.1. Conclusions of the research questions

City branding has been not only an interesting academic research topic but has also been adopted by numerous city governments in practice. Cities aim to enhance their competitiveness through city branding to attract more tourists, investment, and a talented workforce, etc. Especially, in the background of increasingly serious environmental problems in China, most of the cities in China try to brand themselves from the perspective of ecological modernization. The megacity regions in China play an absolutely leading role in the Chinese city development. As one of the top 3 megacity regions in China, the Jing-Jin-Ji region is the research subject of this thesis.

One of the main challenges of this study lies in the vagueness of the concept of city branding. To facilitate the study, city branding has been decomposed into three major components, namely brand identity (reflecting how the owners of the brand want their brand to be perceived by the public), brand position (selective choice of certain city labels to demonstrate specific advantages) and brand image (how the brand is perceived by the public). City brand image is difficult to operationalize. Thus, city branding has been operationalized through city identities and city positions which have been explored in this thesis based on the three official documents, namely the 12th FYP, 13th FYP, and Urban master plan. *City brand identity tends to be more general.* For instance, many cities aim to be a regional center through achieving its economic goals and decreasing environmental pollution. *City brand positions, on the other hand, are usually related to the concept of ecological modernization.* They often take the form of eco-city, smart city, livable city, etc. Many scholars tend to use these terms interchangeably without considering the conceptual differences among them. The research results of some researchers show that the conceptual differences among them are distinct enough. Each city branding term has a unique meaning and it is suggested to use them rigorously for the policy implications to be better comprehended.

The main task of this thesis is to study the city branding practices in response to the challenge of ecological modernization. The main research question is designed as: "*How do cities in the Jing-Jin-Ji region position themselves through the EM related city branding to respond to the faced EM challenge, and what is the relationship between current city profiles and city branding*

practices?" One quick answer to it is "In the face of the EM challenge, EM has been added to the (re)positioning effort to attract talented workforce, converted investors, etc. Moreover, most cities in this case study have chosen the ecological development pathways that match their current city profiles. Other cities, however, adopted city branding practices that are considered as off-pathway." A more extended conclusion is presented in the form of answers to the designed sub-research questions as follows.

1. What is the adopted conceptual model (analytical framework) and research method to analyze the relationship between current city profiles and city branding practices?

City branding has been chosen as the core theory of this research work. Different scholars have arrived at different definitions of city branding which have still remained rather vaguely defined. Ecological modernization, on the other hand, is the challenge cities need to respond to and the role of it in city branding has been explored based on the literature review. Based on the theory literature, the main analytical framework has been proposed.

The conceptual model deals with the relation between the independent variables (economic development status and city position within the region), interdependent variables (ecological development pathway, or EM mode), and the dependent variable (city branding practices, including city identities and city positions/labels). The independent variables determine the intermediate variable, and it then influences the dependent variables. Ecological modernization has been fleshed out through five pathways, which is the core idea of the conceptual model.

More specifically, Five distinguished EM pathways are determined by the scores on the two independent variables: position of a city in the region, which can be scored as international, national or regional; economic status of a city, which can be scored as primary sector dominant (agriculture and extraction-oriented), secondary sector dominant (manufacturing and production oriented), or tertiary sector dominant (trade and service oriented). The five EM pathways can be summarized as: Pathway 1 (Eco-tourism), Pathway 2 (advanced low-carbon manufacturing), pathway 3 (high-tech innovation), pathway 4 (knowledge and culture oriented services), and pathway 5 (advanced services with global orientations).

The research method is an empirical data analysis study based on the conceptual model. On the one hand, the data on city profiles is collected and the EM mode is expected; on the other hand, the actual city branding practices are collected from the official documents directly. The expected pathways and the actual city branding practices are compared; the convergence and divergence between the two need to be analyzed.

2. What are the current city profiles of each city in the Jing-Jin-Ji region as well as the Jing-Jin-Ji region as a whole?

This question is explored in Chapter 4. Among the three megacity regions, despite its fast growth, Jing-Jin-Ji is still lagging behind the other two, YRD and PRD. Within the Jing-Jin-Ji

region, there is also significant imbalance among different cities. Beijing and Tianjin play a leading role in both GDP and GDP per capita, and Shijiazhuang, as the capital city of Hebei province, functions as connecting Beijing/Tianjin and the rest of the cities. A prominent and common feature of all the cities in the Jing-Jin-Ji region, excluding Beijing, is that the secondary industry makes up around half of their total GDP, which is in good agreement with the regional characteristic as an important heavy industry base. This feature can be seen as a great advantage if it develops on the right path, i.e., transforming into high-tech based heavy industry, such as in the case of Tianjin and Tangshan; on the other hand, it can also be a disadvantage if there is a lack of innovation incentive, i.e., dominated by traditional low-end industries, such as in the case of Hengshui and Xingtai. Another disadvantage of the latter case is the air pollution due to the high density of conventional heavy industry, as discovered both in the corresponding official documents and real life practices.

3. What city brand practices do the cities in the Jing-Jin-Ji region adopt to promote themselves?

This question has been explored in Chapter 5. The two important aspects of city brand practices, namely city brand identities and city positions have been searched and analyzed based on the three official documents.

Overall observation shows that the identities and positions of each city generally follow the two basic principles consciously. One is to make the most of their advantages of their current city profiles and the other one is trying to overcome their obvious disadvantages or position themselves in a desirable appealing way. For example, Beijing has rich cultural and historic resources and is tertiary industry dominant. Correspondingly, part of its identities is to become a ‘cultural center, world renowned historic city’ and ‘technology city’. On the other hand, Beijing is facing serious environmental issues, thus one of its core development strategies is to shift out the heavy polluting industries from within and become a ‘livable city’. One significant and interesting finding is that all cities in the Jing-Jin-Ji region try to position themselves through labels related to ecological modernization, such as eco-city, livable city, tourism city, etc.

With regard to the city positions related to EM, the frequencies are counted from the three official documents. The 12th FYP (2011-2015) shows that ‘eco-city’ and ‘service city’ are the most frequently used labels, followed by ‘tourism city’, ‘innovation city’, and ‘low carbon city’. This indicates that the Jing-Jin-Ji region as a whole emphasizes these aspects. On the other hand, ‘Resilient city’ “smart city”, and “modern agricultural city” are the least frequently used terms. A similar finding has been found for the urban master plan, which could be explained by the fact the two were made published within the same time period. A similar convergence has not been found with the 13th FYP, which shows that time period is an important factor that influences the choices of city branding terms. Compared to those in the 12th FYP, the terms in the 13th FYP (201-2020) distribute relatively more evenly among the 10 terms, with ‘low-carbon city’,

‘tourism city’, ‘modern agricultural city’, ‘eco-city’, and ‘service city’ as the first five frequently used terms. It seems in the new five-year plan, cities in the Jing-Jin-Ji region tend to adopt overall more balanced brand positions. Another interesting observation is that ‘modern agricultural city’ which ranked last in the 12th FYP enters the top 3 while ‘advanced manufacture city’ drops to the absolute last, indicating a trend that modern agriculture industry replacing the traditionally overemphasized manufacturing industry has gained more popularity. In terms of the total number of branding terms for each city there is a large variation. The reasons could be the different length of the documents and the different level of the emphasis that the city government puts on the concept of ecological modernization.

4. What influence do the current city profiles have on the city branding practices?

On the basis of the findings from Chapter 4 and Chapter 5, this question is explored in Chapter 6. The expected pathways based on the city profiles and the actual city branding practices found in the three official documents have been analyzed separately and then the convergence between them has been checked. To improve the reliability of the analysis, different indicators have been adopted for a more overall balanced analysis.

Overall, it has been found that the current profiles have a high influence on both the city brand identities and brand positions. For the city identity, only one city (Langfang) adopts the off-pathway identity and two cities (Shijiazhuang and Anyang) adopt a generic identity which is difficult to be directly related to the proposed EM pathways. For the city position, likewise, most cities brand themselves in a way that matches their determined pathway (determined by their current profiles). There are 8 cities on pathway 4 including one on a mixed pathway 2 and 4. Half of them try to brand themselves with more appealing and fancy brand terms, such as service city or tourism city. It seems that cities on the pathway 2 tend to have a desire for high-path transformation. Four cities on pathway 1, they all position themselves in the way that matches their pathway, with a tendency to combine some branding terms typical for pathway 3 or 5. For cities on pathway 3/4 /5 or a mixture of them, a convergence has also been found between the expected pathways and the actual city branding practices. However, a deciding conclusion can not be got here for these three pathways due to the limited number of cities that are on them.

One more interesting finding is that the brand identity also seems to have an influence on the city brand positions. For those cities which do not choose the brand identities matching their determined pathways, they also tend to choose brand positions that do not match the determined pathway accordingly. Moreover, the city brand positions tend to match the identities chosen in the first place. Therefore, it can be argued here that a clear and suitable city identity could possibly contribute to more reasonable choice of city positions (city labels).

7.2. Policy recommendations

In this part, the policies are recommended for the policy makers based on the research findings. As shown in Table 6.9 and Table 6.10 in the data analysis section, consistency between the expected pathways and the actual city branding practices are confirmed for most cities (10 out of 14), which verified the influence of the city profiles on the city branding practices. However, few cities (4 out of 14) show either ambiguous or deviating relations between the determined pathways and the actual city branding practices. Policy recommendations are given to these cities, especially those with divergence analysis results. To get a more overall balanced recommendation, the research results of some relevant research will also be referred to here. It is worth mentioning here that the following policy recommendations are rather academic, and in the practical implementation many more practical factors need to be taken into account.

- In general, local cities are advised to adopt unique branding choices based on an extended analysis of their current city characteristics.

Local cities should make a good analysis of their city characteristics, advantages, and disadvantages in historical, cultural, industrial, and geographical aspects. Based on this, practical branding choices should be carefully designed to make the most of their uniqueness instead of just choosing the popular city branding terms, like eco-city, tourism city or service city. Apparently, not every city is suitable for being a tourism city or a city majorly oriented toward service industry. Local cities should keep in mind that a practical city branding choice is more about discovering the unique characteristics available instead of ‘inventing’ something appealing.

- For cities with improper city branding practices, much attention should be paid to reduce the gap between their current city profiles and the desirable city branding practices.

Local cities should make a clear and intentional distinction between desirable branding choices and practical ones suitable for their current development stage. It is understandable that tourism/service cities are more attractive thus more desirable than the advanced manufacturing/low carbon cities. Take Shijiazhuang as an example. The determined EM pathway is pathway 2 (advanced low-carbon manufacturing), while the actual branding identities are on the pathway 3 (high-tech innovation), and the actual branding positions are on the pathway 5 (advanced services with global orientation). This is likely to cause a credibility crisis once the off-pathway objectives are not realized in the future. Instead, it is more sensible and safe to make good use of their advantage in manufacturing and develop into a city with advanced and low-carbon manufacture industry to resolve the EM challenge.

- ❑ For cities with unclear pathways from the actual city branding practices, it is highly advised that they should make clarifications about their developing objectives after analyzing their city profile features.

Take Anyang as an example. The determined EM pathway is pathway 2, while their city branding identities are rather general, and city branding positions are more close to pathway 1 or 3. This kind of general or ambiguous city branding makes the cities lack vivid characteristics, thus becoming less attractive and probably inferior in the city competition. It can be expected that the chance is higher for cities with clear branding strategies to implement them in practice.

- ❑ The collaboration between local cities and central government is needed to implement the relevant EM policies for practical solutions to the environmental problems.

Due to the severe environmental situations in China, especially in the Jing-Jin-Ji areas, the heavy manufacturing industries are blamed to a large extent for its pollutants. In response to this public blame, some cities seem to intentionally ignore their excellence in heavy industries and adopt off-path city brands, such as the case of Shijiazhuang and Langfang. The pollutants can be controlled or reduced by means such as applying new technology or using clean energy instead of traditional fossil energy. Through this method, the cost may go up in the short run, but the benefits will be realized in the long run. Besides, the pollution problems are difficult to be solved purely by the power of local cities, and thus central governments are advised to play a more active and involved role in the local city's EM process. De Jong (2016) pointed out that the failure of the national ecological modernization related programs in many cities lies in the lack of recognition that the programs can only be implemented successfully with the collaboration of the local governments. The local governments often tend to have different goals and interests with the central government. Furthermore, De Jong concluded that the collaboration of the local governments should not be taken as automatic, and the change of the institutional incentives is needed to make the local governments more actively engaged in these programs. Moreover, it is suggested by de Jong (2016) that the only feasible way to achieve the successful implementation of the central government policy is to reduce the dependence of the local governments on the revenues from the land use and to break through the primacy of economic growth.

- ❑ The involvement of the feedback/monitoring system is needed to prevent the EM branding from being just used as greenwashing.

Under the pressure from the central government, local cities might adopt EM branding choices to respond to the EM challenge. Without a proper feedback/monitoring system, those city branding practices are likely to just be used as greenwashing. The central government can set up an independent department to monitor the EM process of each city. Relevant reward or punishment measures can be taken to force the local cities to actually implement the promised branding choices. Moreover, the public involvement can be another good complementary feedback

system. The opinions of the public, especially the local citizens, can constitute as the “city image” which the central government can use to measure to what extent the city identity matches the reality.

- Furthermore, for cities in other parts of China and even in other countries, the current research findings can serve as a reference guideline in making sensible city branding strategies, especially when responding to EM challenge.

7.3. Reflections and future research agenda

The previous research in the field of city branding has mainly adopted the qualitative analytic method to analyze the historical evolution of the city branding theory, the city branding strategy of a specific region, as well as the stakeholder engagement in the city branding process. However, the influence of the regional positions and economic development stage remains to be accessed. Against such a backdrop, this thesis has tried to analyze this influence with a relatively comprehensive method, a mixture of qualitative analysis and quantitative analysis. First, the general city branding identities have been analyzed qualitatively; then the city branding positions related to ecological modernization have been analyzed based on a quantitative method. Overall the influence of the current city profiles (independent variables) on the city branding practices (dependent variables) has been explored in this research work through the proposed EM pathway method (expected pathways to ecological modernization as intermediate variables). The main contribution of this research work is to lay a foundation for the research in the field of exploring the factors that have the influence on the city branding practices. However, this research work is far from complete for the following reasons.

First, the EM pathway method only considers two factors, the regional position and economic development stage. Other factors could also possibly have a significant impact on the city branding practices, such as the historical, social, and political factors, as well as the international city development. Second, city brand image, the third major aspect of city branding, has been selectively dropped due to the difficulty of finding a reliable data source to indicate how the city is perceived by the public. However, the inclusion of this element in the future study will make the study more complete. The relationship among current city profiles, brand identity, brand position, and brand image can be further studied systematically, which is expected to generate interesting research results. Third, the method adopted in this thesis has only analyzed the city branding practices (results), but the city branding process has not been covered. For instance, which stakeholders are involved in that process, and why the selection of certain branding practices are in accordance with their interests? These two important questions still remain to be explored. Fourth, the data collection has been done manually, including counting the frequency of the city branding terms. This process is more or less subjective, which reduces the reliability of the analysis result. Last but not least, the research work mainly adopts a descriptive analytic

approach, while the inclusion of a prescriptive approach will be more desirable. The prescriptive approach can be done based on the proposed method, with the actions (or policies) and the consequences (feedback) of them taken into account. It will possibly contribute to both the theory and relevant policy development.

Due to the above flaws of this research work, some future work is recommended to be done. For instance, a questionnaire survey can be done to get the brand image of the cities, which is expected to be highly time-consuming, though. The stakeholders in the city branding process need to be analyzed and interviews are suggested to be done to get first-hand information if possible. The analytic method needs to be upgraded to turn it from the current descriptive model into a prescriptive model that helps it to be used to analyze the appropriateness of some policies adopted by the government for the purpose of promoting the city. The inclusion of other significant factors into the current city profiles will also end up with different pathways of ecological modernization to make the research more interesting. With the development of big data technology, the data mining techniques can be used to precess the data for getting a more objective analysis result. The data mining techniques can save a large amount of time and thus make it possible to analyze more cities if needed.

After all the above proposals have been done, a more comprehensive analysis can be done to explore the relationship among the current city profiles, city branding practices, and stakeholders involved in the city branding process. The goal of the future research work should not only focus on the academic contribution but also contribute to improving the role of ecological modernization in the city branding and urban development process.

References:

- Amin, A., & Thrift, N. (2002). *Cities : reimagining the urban* (p. 200). Cambridge: Polity Press.
- Anholt, S. (2002). Nation Branding: A continuing theme. *Journal of Brand Management*, 10(1), 59–60.
- Anttiroiko, A.-V. (2014). *The Political Economy of City Branding*. Routledge.
- Ashworth, G. (2009). The instruments of place branding: How is it done? *European Spatial Research and Policy*. Retrieved from <http://www.degruyter.com/view/j/esrp.2009.16.issue-1/v10105-009-0001-9/v10105-009-0001-9.xml>
- Balmer, J. M. T., & Greyser, S. A. (2006). Corporate marketing: Integrating corporate identity, corporate branding, corporate communications, corporate image and corporate reputation. *European Journal of Marketing*, 40(7/8), 730–741.
- Berg, P. O., & Björner, E. (2014). *Branding Chinese Mega-Cities: Policies, Practices and Positioning*. Edward Elgar Publishing.
- Blombäck, A., & Axelsson, B. (2007). The role of corporate brand image in the selection of new subcontractors. *Journal of Business & Industrial Marketing*, 22(6), 418–430.
- Braun, E. (2011). Putting city branding into practice. *Journal of Brand Management*, 19(4), 257–267.
- Bu, T. (2009). Beijing Olympics: a New Brand of China. *Asian Social Science*, 5(3), 84.
- Castells, M. (1989). The information city. *Information Technology, Economic Restructuring, and the Urban-Regional Process*.

- Chan, K. W. (2014). China's urbanization 2020: a new blueprint and direction. *Eurasian Geography and Economics*, 55(1), 1–9.
- Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, 68(1), 129–138.
- Clorfene-Casten, L., Media, N. M., & LLC. (1994). Green Washing. *Business Ethics: The Magazine of Corporate Responsibility*, 8(6), 17–17.
- Crane, K., Shatz, H. J., Nataraj, S., Popper, S. W., & Wang, X. (2012). *An Outline of Strategies for Building an Innovation System for Knowledge City*. Rand Corporation.
- Dan-lin, Y., & Han-ying, M. (2002). Regional carrying capacity: case studies of Bohai Rim area. *Journal of Geographical Sciences*, 12(2), 177–185.
- De Chernatony, L., & Dall'Olmo Riley, F. (1998). Defining a“ brand”: Beyond the literature with experts' interpretations. *Journal of Marketing Management*, 14(5), 417–443.
- de Jong, M., Joss, S., Schraven, D., Zhan, C., & Weijnen, M. (2015). Sustainable–smart–resilient–low carbon–eco–knowledge cities; making sense of a multitude of concepts promoting sustainable urbanization. *Journal of Cleaner Production*, 109, 25–38.
- Derudder, B., Taylor, P. J., Hoyler, M., Ni, P., Liu, X., Zhao, M., ... Witlox, F. (2013). Measurement and interpretation of connectivity of Chinese cities in world city network, 2010. *Chinese Geographical Science / Sponsored by Changchun Institute of Geography, Chinese Academy of Sciences*, 23(3), 261–273.
- Dinnie, K. (2004). Place branding: Overview of an emerging literature. *Place Branding*, 1(1), 106–110.

- Dinnie, K. (2011). *City Branding: Theory and Cases*. Palgrave Macmillan.
- Dobbs, R., Smit, S., Remes, J., Manyika, J., Roxburgh, C., & Restrepo, A. (2011). Urban world: Mapping the economic power of cities. *McKinsey Global Institute*. Retrieved from <http://www.mckinsey.com/global-themes/urbanization/urban-world-mapping-the-economic-power-of-cities>
- Doel, M., & Hubbard, P. (2002). Taking world cities literally: Marketing the city in a global space of flows. *Cityscape*, 6(3), 351–368.
- Du, H., Wang, D., Wang, Y., Zhao, X., Qin, F., Jiang, H., & Cai, Y. (2016). Influences of land cover types, meteorological conditions, anthropogenic heat and urban area on surface urban heat island in the Yangtze River Delta Urban Agglomeration. *The Science of the Total Environment*, 571, 461–470.
- Friedmann, J. (2005). *China's Urban Transition*. University of Minnesota Press.
- Fu, Y., & Zhang, X. (2017/2). Trajectory of urban sustainability concepts: A 35-year bibliometric analysis. *Cities*, 60, Part A, 113–123.
- Gibbs, D. (1998). 1 Ecological Modernisation: A Basis for Regional Development? Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.512.2770&rep=rep1&type=pdf>
- Gibbs, D. (2001). *Economic Geography*, 77(4), 392–393.
- Hack, G., & Simmonds, R. (2013). *Global City Regions: Their Emerging Forms*. Routledge.
- Hatch, M. J., & Schultz, M. (2009). Of Bricks and Brands:: From Corporate to Enterprise Branding. *Organizational Dynamics*, 38(2), 117–130.
- Heaton, J. (2011). The Difference Between Marketing and Branding. *Tronvig Group Blog*, 11.

Retrieved from

<http://www.tronviggroup.com/the-difference-between-marketing-and-branding/>

Hes, D., & du Plessis, C. (2014). *Designing for Hope: Pathways to Regenerative Sustainability*.

Routledge.

Hollands, R. G. (2008). Will the real smart city please stand up? Intelligent, progressive or entrepreneurial? *Cityscape*, 12(3), 303–320.

Houghton, J. P., & Stevens, A. (2011). City Branding and Stakeholder Engagement. In K. Dinnie (Ed.), *City Branding* (pp. 45–53). Palgrave Macmillan UK.

Hsing, Y.-T. (2010). *The great urban transformation: politics of land and property in China*.

Oxford University Press.

Huber, J. (1985). Die Regenbogengesellschaft: Ökologie und Sozialpolitik [The rainbow society: ecology and social policy](Fischer, Frankfurt am Main).

Huber, J. (2000). Towards industrial ecology: sustainable development as a concept of ecological modernization. *Journal of Environmental Policy & Planning*, 2(4), 269–285.

IEA. (2014). *Key World Energy Statistics 2014*.

Inskip, I. (2004). Corporate branding for small to medium-sized businesses—A missed opportunity or an indulgence? *Journal of Brand Management*, 11(5), 358–365.

Ishida, T. (2002). Digital City Kyoto. *Communications of the ACM*, 45(7), 76–81.

Jacques, M. (2009). *When China Rules the World: The End of the Western World and the Birth of a New Global Order: Second Edition*. Penguin.

Kalandides, A., Kavaratzis, M., Lucarelli, A., & Olof Berg, P. (2011). City branding: a state-of-the-art review of the research domain. *Journal of Place Management and*

- Development*, 4(1), 9–27.
- Kan, K. (2016). Jing-Jin-Ji: Integrating A Chinese Megapolis. *World Policy Journal*, 33(2), 5–10.
- Kapferer, J.-N. (2011). Paris as a Brand. In K. Dinnie (Ed.), *City Branding* (pp. 184–189). Palgrave Macmillan UK.
- Karvelyte, K., & Chiu, J.-H. (2011). Planning process of city brands: A case study of Taipei City. *Place Branding and Public Diplomacy*, 7(4), 257–270.
- Kavaratzis, M. (2005). Place branding: A review of trends and conceptual models. *The Marketing Review*. Retrieved from <http://www.ingentaconnect.com/content/westburn/tmr/2005/00000005/00000004/art00004>
- Kavaratzis, M. (2007). City Marketing: The Past, the Present and Some Unresolved Issues. *Geography Compass*, 1(3), 695–712.
- Kavaratzis, M. (2008). *From city marketing to city branding: an interdisciplinary analysis with reference to Amsterdam, Budapest and Athens*. University of Groningen.
- Kavaratzis, M. (2008). From Place marketing to Place Branding: An Interdisciplinary analysis with reference to Amsterdam, Budapest and Athens. Rijksuniversiteit Groningen.
- Kavaratzis, M. (2009). Cities and their brands: Lessons from corporate branding. *Place Branding and Public Diplomacy*, 5(1), 26–37.
- Kavaratzis, M., & Ashworth, G. J. (2005). CITY BRANDING: AN EFFECTIVE ASSERTION OF IDENTITY OR A TRANSITORY MARKETING TRICK? *Tijdschrift Voor Economische En Sociale Geografie = Journal of Economic and Social Geography = Revue de Geographie Economique et Humaine = Zeitschrift Fur Okonomische Und Soziale*

Geographie = Revista de Geografia Economica Y Social, 96(5), 506–514.

Kavaratzis, M., & Hatch, M. J. (2013). The dynamics of place brands an identity-based approach to place branding theory. *Marketing Theory*. Retrieved from

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.851.8834&rep=rep1&type=pdf>

Kloosterman, R. C., Musterd, S., & Others. (2001). The polycentric urban region: towards a research agenda. *Urban Studies*, 38(4), 623–634.

Knox, S., & Bickerton, D. (2003). The six conventions of corporate branding. *European Journal of Marketing*, 37(7/8), 998–1016.

Koller, V. (2008). “The world in one city”: Semiotic and cognitive aspects of city branding.

<https://doi.org/10.1075/jlp.7.3.05kol>

Kornberger, M. (2010). *Brand Society: How Brands Transform Management and Lifestyle*.

Cambridge University Press.

Lallanilla, M. (2013). China’s Top 6 Environmental Concerns. *Livestock Science*, 15. Retrieved from <http://www.livescience.com/27862-china-environmental-problems.html>

Laskin, D. (2006). The Great London Smog. *Weatherwise*, 59(6), 42–45.

Lee, S. H., Han, J. H., Leem, Y. T., & Yigitcanlar, T. (2008). Towards Ubiquitous City: Concept, Planning, and Experiences. *Igi Global*, 148–169.

Li F., Liu X.-S., Hu D., & Wang R.-S. (2007). [Evaluation method and index system of eco-city development: a case study in Dafeng City of Jiangsu Province, China]. *Ying yong sheng tai xue bao = The journal of applied ecology / Zhongguo sheng tai xue xue hui, Zhongguo ke xue yuan Shenyang ying yong sheng tai yan jiu suo zhu ban*, 18(9), 2006–2012.

Liu, B.-Z., & Wang, D.-W. (2012). Research on the complexity of livable city standards and the

- construction of livable city. In *2012 24th Chinese Control and Decision Conference (CCDC)*. <https://doi.org/10.1109/ccdc.2012.6244287>
- Li, X., Cao, G., Zhao, P., Xu, W., Yang, C., Song, F., & Zhao, P. (2010). China's Low-carbon Eco-city Development Strategy [J]. *Urban Studies*, 1, 009.
- Logan, J. (2011). *The New Chinese City: Globalization and Market Reform*. Wiley.
- Lohmann, G., Albers, S., Koch, B., & Pavlovich, K. (2009). From hub to tourist destination—An explorative study of Singapore and Dubai's aviation-based transformation. *Journal of Air Transport Management*. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0969699708000963>
- Loo, T., & Davies, G. (2006). Branding China: The Ultimate Challenge in Reputation Management? *Corporate Reputation Review*, 9(3), 198–210.
- Low, N. (2005). *The Green City: Sustainable Homes, Sustainable Suburbs*. UNSW Press.
- Lucarelli, A., & Olof Berg, P. (2011). City branding: a state-of-the-art review of the research domain. *Journal of Place Management and Development*, 4(1), 9–27.
- Lynch, J., & de Chernatony, L. (2007). Winning Hearts and Minds: Business-to-Business Branding and the Role of the Salesperson. *Journal of Marketing Management*, 23(1-2), 123–135.
- McManus, P. (n.d.). Eco-City Development and Urban Health Reform: The Sino-Singapore Tianjin Eco-City as a Model for Chinese and other Cities. In *Urbanization and Public Health in China* (pp. 317–336). year = 2015 edition =: IMPERIAL COLLEGE PRESS
address = year = 2015 edition =.
- Mol, A. P. J. (2006). Environment and Modernity in Transitional China: Frontiers of Ecological

- Modernization. *Development and Change*, 37(1), 29–56.
- Mol, A. P. J., & Sonnenfeld, D. A. (2000). Ecological modernisation around the world: An introduction. *Environmental Politics*, 9(1), 1–14.
- Musterd, S., & Deurloo, R. (2006). AMSTERDAM AND THE PRECONDITIONS FOR A CREATIVE KNOWLEDGE CITY. *Tijdschrift Voor Economische En Sociale Geografie = Journal of Economic and Social Geography = Revue de Geographie Economique et Humaine = Zeitschrift Fur Okonomische Und Soziale Geographie = Revista de Geografia Economica Y Social*, 97(1), 80–94.
- Parr, J. (2004). The Polycentric Urban Region: A Closer Inspection. *Regional Studies*, 38(3), 231–240.
- Pow, C.-P., & Neo, H. (n.d.). Building Ecotopia: Critical Reflections on Eco-City Development in China. In *Towards a Liveable and Sustainable Urban Environment* (pp. 91–105). year = 2012 edition =: WORLD SCIENTIFIC address = year = 2012 edition =.
- Rainisto, S. K. (2003). Success factors of place marketing: A study of place marketing practices in Northern Europe and the United States. Retrieved from <https://aaltodoc.aalto.fi/handle/123456789/2106>
- Redclift, M. (2005). Sustainable development (1987–2005): an oxymoron comes of age. *Sustainable Development*, 13(4), 212–227.
- Robinson, J., & Cole, R. J. (2015). Theoretical underpinnings of regenerative sustainability. *Building Research and Information*, 43(2), 133–143.
- Saich, T. (2011). Chinese governance seen through the people's eyes. In *East Asia Forum, July* (Vol. 24, p. 2011).

- Shifu, W. (2012). Intelligent City Research Methods For China's Urbanization [J]. *Planners*, 4, 19–23.
- Shi-mou, Z. Y.-M. Y., & Yu-jian, L. I. (2002). Study on Theory of Regional Structure of Urban Agglomerations in China [J]. *Urban Research*, 6, 011.
- Shin, H. B. (2015). Urbanization in China. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 973–979). Elsevier.
- Short, J. R., & Kim, Y.-H. (1999). *Globalization and the City*. Prentice Hall.
- Sigala, M. (2008). WeB 2.0, social marketing strategies and distribution channels for city destinations. & T. Torres-Coronas, (eds.), *ICT and City Marketing*. Retrieved from <http://www.igi-global.com/viewtitle.aspx?TitleId=39787>
- Simmonds, R., & Hack, G. (2000). *Global City Regions: Their Emerging Forms*. Taylor & Francis.
- Skinner, H. (2008). The emergence and development of place marketing's confused identity. *Journal of Marketing Management*, 24(9-10), 915–928.
- Southworth, M. (2003). Measuring the Liveable City. *Built Environment*, 29(4), 343–354.
- Sun, Q., Tang, F., & Tang, Y. (2015). An economic tie network-structure analysis of urban agglomeration in the middle reaches of Changjiang River based on SNA. *Journal of Geographical Sciences*, 25(6), 739–755.
- Tan, Y., Yang, Y., Leng, B., & Li, T. (2011). Urban Network System in Chengdu-Chongqing Region in the Perspective of Advanced Producer Service [J]. *Progress in Geography*, 6, 012.
- The Differences Between Advertising, Marketing & Branding. (n.d.). Retrieved December 25,

2016, from

<http://smallbusiness.chron.com/differences-between-advertising-marketing-branding-23337.html>

- Vale, L. J., & Campanella, T. J. (2005). *The Resilient City: How Modern Cities Recover from Disaster*. Oxford University Press, USA.
- Wang, R., & Ye, Y. (2004). Eco-city development in China. *Ambio*, 33(6), 341–342.
- Wen, C., & Sui, X. (n.d.). City branding in China: practices and professional challenges. *Branding Chinese Mega-Cities*. <https://doi.org/10.4337/9781783470334.00016>
- Wu, F. (2003). Globalization, Place Promotion and Urban Development in Shanghai. *Journal of Urban Affairs*, 25(1), 55–78.
- Wu, F., Xu, J., & Yeh, A. G. (2007). Urban Development in Post-Reform China: State, Market. *Spaceflight*, 21–24.
- Wu, Y., Hu, M., Zeng, L., Dong, H., Li, X., Lu, K., ... Zhang, Y. (2016). Seasonal variation of trace gas compounds and PM_{2.5} observed at an urban supersite in Beijing. In *EGU General Assembly Conference Abstracts* (Vol. 18, p. 12409).
- Xu, H. (2014). A Study on Relationship between Financial Development and New Urbanization--Evidence from Urban Agglomeration in the Middle Reaches of the Yangtze River. In *Proceedings of the 2014 International Conference on Social Science*. Paris, France: Atlantis Press. <https://doi.org/10.2991/icss-14.2014.11>
- Xu, J., & Yeh, A. G. O. (2005). City Repositioning and Competitiveness Building in Regional Development: New Development Strategies in Guangzhou, China. *International Journal of Urban and Regional Research*, 29(2), 283–308.

- Yang, C. (2015). Analysis of Impact of Urban Agglomeration Planning of Middle and Lower Yangtze River on International Trade Development in Central China. In *Proceedings of the 2015 International Conference on Education, Management and Computing Technology*. Paris, France: Atlantis Press. <https://doi.org/10.2991/icemct-15.2015.167>
- Zhang, D., Liu, J., & Li, B. (2014). Tackling Air Pollution in China—What do We Learn from the Great Smog of 1950s in LONDON. *Sustainability: Science Practice and Policy*, 6(8), 5322–5338.
- Zhou, L., & Wang, T. (2014/4). Social media: A new vehicle for city marketing in China. *Cities*, 37, 27–32.
- Zhu, H.-Y., Li, X.-B., & He, S.-J. (2001). Spatio-temporal change of land use in Bohai Rim. *ACTA GEOGRAPHICA SINICA-CHINESE EDITION-*, 56(3), 260–267.

Appendix

Appendix 1. Core sentences in the official sentences in Chinese

	城市总体规划 (2010-2020)	“十二五”规划 (2011-2015)	“十三五”规划 (2016-2020)
北京	城市本质：全国的政治中心、文化中心,是世界著名古都和现代国际城市。目标和职能：以建设世界城市为目标,发展首都经济,形成具有高度包容性、多元化的世界文化名城,建设空气清新、环境优美、生态良好的宜居城市。	全力推动人文北京、科技北京、绿色北京战略,进一步提高“四个服务”水平,努力打造国际活动聚集之都、世界高端企业总部聚集之都、世界高端人才聚集之都、中国特色社会主义先进文化之都、和谐宜居之都,推动北京向中国特色世界城市迈出坚实的步伐。	明确了全国政治中心、文化中心、国际交往中心、科技创新中心的城市战略定位和建设国际一流的和谐宜居之都战略目标。围绕优化提升首都核心功能,加快建设国际一流的和谐宜居之都,率先全面建成小康社会。
天津	城市性质：是环渤海地区的经济中心,要逐步建设成为国际港口城市、北方经济中心和生态城市。 天津的城市职能为：(1)现代制造和研发转化基地。(2)我国北方国际航运中心和国际物流中心,区域性综合交通枢纽和现代服务中心。(3)以近代史迹为特点的国家历史文化名城和旅游城市。(4)生态环境良好的宜居城市。	努力建设国际港口城市、北方经济中心和生态城市。主要目标为：综合实力显著增强 经济结构显著优化；社会建设显著加强；民计民生显著改善；改革开放显著加快。	主要目标是：基本实现“一基地三区”(北方国际航运核心区、金融创新展示区、改革开放先行区、先进制造研发基地)定位,全面建成高质量小康社会。
石家庄	城市性质：河北省省会,京津冀第三极,全国重要的现代服务业、生物产业基地之一。 城市定位：1、京津冀都市圈第三极 2、京津向中西部辐射的“第一中枢” 3、河北省对外竞争、交流的第一平台	努力打造京津冀第三极,强化省会在冀中南经济区主导地位和全省领先地位,加快向繁华舒适、现代一流省会城市目标迈进。	战略定位：京津冀城市群第三极；协同创新示范区；绿色发展先行区；现代商贸物流中心城市；历史文化旅游名城。确保大气质量得到明显改善,确保京津冀城市群第三极作用凸显。
唐山	城市性质：环渤海地区中心城市之一,国家新型工业化基地和港口城市。 城市职能：(1)中心城区：京津冀重要的产业服务和生活居住中心；(2)曹妃甸新城：京津冀沿海地区重要的产业服务中心；冀东区域高教科研及产业转化基地；国家级滨海生态创新发展中心。	建设成为东北亚地区经济合作的窗口城市、环渤海地区新型工业化基地和首都经济圈的重要支点,建设成为科学发展示范区和人民群众幸福之都。推动我市由传统工业城市向现代生态城市转变。	努力建成东北亚经济合作的窗口城市、环渤海新型工业化基地、首都经济圈的重要支点和靓丽繁华宜居和谐的现代化沿海强市。

廊坊	<p>城市性质：京津冀地区高新技术产业基地，环京津区域中心城市和生态宜居城市。</p> <p>区域目标定位：京津冀城镇群的重要功能节点，环京津地区发展的领跑者和新的增长极，河北省城乡统筹改革“先行先试”的典范和经济发展转型示范区。</p>	<p>发展定位：“京津冀电子信息走廊、环渤海休闲商务中心”</p> <p>发展目标：绿色人均指标争先进、环首都经济圈领唱、产业结构高端构建、城乡统筹全省示范、“幸福廊坊”品牌叫响。</p>	<p>主要战略：协同发展、科技引领、开放带动、生态支撑；加快建设科技研发创新成果转化引领区、战略性新兴产业和现代服务业聚集区、京津冀全面创新改革试验区，争当北京非首都功能集中承载地</p>
秦皇岛	<p>城市性质：我国著名的滨海旅游、休闲、度假胜地，环渤海地区重要的综合性港口城市。</p> <p>城市职能：国家历史文化名城；国家级能源输出港和北方地区重要出海口岸；京津冀北地区（大北京地区）生态屏障的组成部分和未來高新产业和高档居住扩散地之一；（六）河北省临港工业与加工制造业基地。</p>	<p>发展目标：“宜居宜业宜游、富庶文明和谐”新秦皇岛。有较强集聚辐射能力和影响力的国际旅游名城、休闲文化产业之都、全国生态文明先行区。努力打造享誉全国乃至世界的“长城滨海画廊、四季休闲天堂”。</p>	<p>战略定位：建设“一都三区一枢纽”（国际滨海休闲度假之都、国家生态文明示范区、京津冀区域融合创新先行区、现代服务业和战略性新兴产业引领区、东北亚物流枢纽），打造绿色发展“国际名片”</p>
保定	<p>城市性质：国家历史文化名城，以先进制造业和现代服务业为主的京津冀地区中心城市之一。</p> <p>城市发展战略：“以工强市”实现发展突破，“以文兴市”实现发展提升，“以绿优市”实现和谐发展。</p>	<p>发展思路：统筹推进新型工业化、新型城镇化、农业现代化进程，更加注重统筹协调发展，更加注重调整经济结构，更加注重统筹城乡发展，全力打造更具实力、活力、魅力、竞争力的新保定。</p>	<p>发展目标：把保定建成非首都功能疏解重要承载地、先进制造业和战略性新兴产业基地、京津冀协同创新试验区、全国新型城镇化和城乡统筹示范区、绿色低碳宜居生态文明新区。</p>
承德	<p>城市性质：“国家历史文化名城、国际旅游城市、山水园林城市、连接京津冀辽蒙的区域性中心城市”。</p> <p>目标定位：南部新城重点发展高新技术、高端服务、高端装备制造等产业，北部新城重点传承历史文脉，与避暑山庄外八庙优势互补，打造新的高端旅游目的地</p>	<p>发展目标：加快建设国际旅游城市，全力打造旅游目的地，到2015年，基本确立休闲旅游产业的战略支撑地位。重点打造四个经济增长极：国际休闲旅游基地，首都绿色有机农产品生产加工基地，京北清洁能源基地。</p>	<p>发展定位：京津冀水源涵养功能区、国家绿色发展先行区、环首都扶贫攻坚示范区、国际旅游城市。加快建设“生态强市、魅力承德”</p>
张家口	<p>城市性质：冀西北地区的中心城市；连接京津、沟通晋蒙的交通枢纽。</p> <p>城市总体发展目标：建成冀西北地区的金融、信息和商贸中心，发挥张家口市连接京津、沟通晋蒙的桥梁作用，为区域经济发展做出贡献；逐步建成河北省重要的能源基地和生态型旅游胜地，冀西北地区区域性现代化中心城市。</p>	<p>发展定位是“打造京津冀晋蒙交界区域中心城市”。发展目标：构建以“四大基地（装备制造基地、新型能源基地、食品加工供应保障基地、矿产品精深加工基地）、一个中心（区域物流中心）、两条产业带（环京津休闲旅游产业带、环京津高新技术产业带）”为支撑的现代产业格局。</p>	<p>发展思路：坚守发展、生态、民生三条底线，大力培育大生态、大旅游、大数据、大健康和新能源、新技术、高端制造“四大两新一高”主导产业，着力打造水源涵养功能区、绿色产业聚集区、可再生能源示范区、国际休闲运动旅游城市和奥运名城</p>

沧州	<p>城市性质：京津冀城市群重要的产业支撑基地，环渤海地区重要的交通枢纽和现代化港口城市。</p>	<p>战略定位：亚欧大陆桥新通道桥头堡；冀中南区域发展增长极和隆起带；中国石油之城、管道装备之都；环渤海湾重要的临港产业集聚区；化工新材料基地、特种钢材基地、现代物流基地；国家重要的能源保障和能源资源运输通道，现代化沿海港口城市。</p>	<p>发展定位：建设国家重要的化工和清洁能源保障基地、京津冀城市群重要的产业支撑和科技成果转化基地、北方重要的现代物流集散中心、环渤海地区重要的沿海开放城市。</p>
衡水	<p>城市性质：中国北方生态宜居滨湖名城，冀中南区域中心城市和重要的交通枢纽。 区域定位：京津冀世界级城市群重要节点城市；京津冀区域绿色农产品供应加工基地和特色产业基地；冀东南交通物流枢纽和生态宜居滨湖园林城市。</p>	<p>发展原则：加快产业结构调整和转型升级，着力统筹城乡协调发展，着力强化生态环境建设，着力推进文化大发展大繁荣 战略定位：生态宜居北方湖城</p>	<p>战略定位：京津冀区域交通物流枢纽，京津冀绿色农产品供应基地，京津生态屏障保护基地，京津技术成果转化及产业承接基地，京津教育医疗及休闲养生功能疏解基地。</p>
邢台	<p>总体功能定位为：京津冀南部重要的中心城市，国家重要的制造业基地与产业创新转型示范区，生态旅游城市与历史文化名城。</p>	<p>城市目标：具有核心竞争力的先进制造业基地，京津科技成果转化的试验区和技术创新的扩散地，冀中南地区的经济增长极和西联东出、南承北接的交通枢纽，晋冀鲁豫接壤地区的重要商贸物流中心，具有较高知名度的新兴旅游城市和历史文化名城，功能完善的区域性中心城市和环境优美的现代化城市。</p>	<p>城市目标：国家新能源产业基地、产业转型升级示范区和冀中南物流枢纽城市，新型城镇化和城乡统筹试验区，京津冀南部生态环境支撑区</p>
邯郸	<p>城市性质：国家历史文化名城，冀晋鲁豫交界地区经济中心城市 城市发展战略：着力提升邯郸的在区域中的城市竞争力、要素聚集力、辐射带动力，把邯郸建设成冀晋鲁豫交界地区的经济中心。</p>	<p>两大发展定位： 城市定位：冀中南重要经济增长极，四省交界区域中心城市。 产业定位：全国重要的精钢生产基地、装备制造基地、煤电煤化工基地、新型材料基地、文化旅游基地、现代物流综合枢纽。</p>	<p>两大发展定位： 城市定位：京津冀联动中原的区域中心城市，环渤海辐射中西部的重要门户城市。 产业定位：“五基地一中心”，即全国重要的精品钢材基地、先进装备制造基地、食品工业基地、节能环保产业基地、新能源汽车基地，中国北方重要的商贸物流中心。</p>
安阳	<p>城市性质：为国家历史文化名城，豫北区域性中心城市。 城市发展目标：为经济繁荣、三产发达、生态良好、秀美宜居的豫北区域性中心强市。</p>	<p>奋力打造富强、宜居、枢纽、创新、和谐的现代化城市。战略定位：豫北区域性中心强市，全国粮食优质高产示范基地，全省现代新型工业基地，全国有重要影响力的文化旅游名城，中原经济区重要交通物流中心，中国航空运动之都。</p>	<p>建设富强安阳、创新安阳、文明安阳、平安安阳、美丽安阳，打造安阳经济升级版、建设区域性中心强市。</p>

	城市总体规划 (2010-2020)	“十二五”规划 (2011-2015)	“十三五”规划 (2016-2020)
北京	全国的政治中心、文化中心、是世界著名古都、现代国际城市、历史文化名城、宜居城市、国际著名旅游地、古都文化旅游、国际航空枢纽、生态城市	中国特色世界城市、人文北京、科技北京、绿色北京、国家创新中心、学习型城市、首都经济(服务经济、总部经济、知识经济和绿色经济)、北京服务品牌、北京创造品牌、北京旅游品牌、现代农业、金融中心城市、科技创新中心城市、亚太地区的信心服务枢纽城市、文化古都、国际化大都市、历史文化名城、宜居绿色家园	首都城市、首都核心功能(政治中心、文化中心、国际交往中心、科技创新中心)、国际一流的和谐宜居之都、绿色低碳生态家园、低碳城市、生态文明建设、海绵城市、智慧北京、资源节约型环境友好型社会、创新城市、全国科技创新中心、历史文化名城、智慧服务社区、旅游城市、智慧奥运
天津	环渤海地区的经济中心、国际港口城市、北方经济中心、生态城市、国际航运中心、国际物流中心、历史文化名城、旅游城市、宜居城市、北方对外开放的门户、海滨城市	北方国际航运中心和国际物流中心地位 北方对外开放的门户 宜居生态型新城区 滨海新区 支柱产业基地 会展中心城市 创新型城市 智慧天津	先进制造研发基地、金融示范区、旅游示范区、创新城、宜居宜业的现代都市、国际航运核心区、智慧城市、海绵城市、园林城市/低碳城市、自贸易示范区
石家庄	现代服务业基地、生物产业基地、低碳、生态、智慧新城，创新动力之城、宜居活力之城、和滨水魅力之城	创新型城市、现代一流省会城市、中国药都、物流基地、金融中心城市、现代农业、全国文明城市、国家园林城市	创新城市、美丽宜居乡村、生态宜居绿色家园、历史文化旅游名城、智慧城市、国家森林公园城市、绿色发展先行区、商贸物流中心城市、海绵城市、绿色城市、生态城市
唐山	环渤海地区中心城市、国家新型工业化基地、和港口城市、产业服务中心、滨海生态创新发展中心	现代生态城市、国家知名旅游城市、现代农业示范区、“数字唐山”、生态宜居现代化城市、国家创新型城市	创新型城市、现代沿海强市、智慧城市、区域性金融中心、生态城、生态宜居城市
廊坊	环京津区域中心城市，生态宜居城，区域休闲服务中心	生态、智能、休闲、商务”城市，绿色发展示范区	生态文明建设先行区、海绵城市、绿色廊坊、原森林城市、创新型廊坊、生态宜居的创客新城
秦皇岛	园林式、生态型、现代化的滨海名城，滨海旅游休闲度假胜地，机械和临港工业基地，历史文化名城	全国现代服务业发展先行区，北方沿海港口物流重要节点城市，金融集聚区，临港重大装备制造基地，生物医药产业基地，创新试验区和示范区，绿色生态城市	生态城市，国家森林公园城市，国家生态文明先行示范区，生态标兵城市，创新城市，森林城市、现代农业示范区、生态农业示范市，生态宜居的创客新城，海滨风景名胜地区，历史文化名城，智慧城市，海绵城市
保定	历史文化名城，先进制造业基地，国家级园林城市，生态城市，低碳城市，领先型的产业聚集区	农业强市，低碳城市，先进制造业基地，区域性旅游中心城市，现代物流基地	创新型城市，先进制造业和战略性新兴产业基地，物流基地，金融生态市，中国历史文化名城，中国优秀旅游城市，农

			业强市，京津优质绿色农产品供应保障基地，生态城市，智能城市，国家森林城市，低碳城市，海绵城市
承德	历史文化名城、国际旅游城市、山水园林城市	区域性交通枢纽，数字承德，建设智慧城市，国家森林城市、生态园林城市和环保模范城，国际旅游城市，和合承德，平安承德	生态强市、魅力承德，国家森林城市，国际旅游城市，中国北方最大的新型建材生产基地和京津冀区域新型绿色建材产品集散地，智慧城市，先进制造集聚区，创新示范区，历史文化名城
张家口	交通枢纽，金融、信息和商贸中心，河北省重要的能源基地和生态型旅游胜地	区域中心城市，现代产业，生态休闲之都，创新型城市，区域物流中心	国家森林城市，奥运城市，旅游城市，绿色低碳生活，国际化开放城市，生态宜居城市，智慧城市，海绵城市
沧州	港口城市、绿色低碳城市、海绵城市、生态园林城市	现代化港口城市，宜居、文化、生态、休闲旅游新城	智慧城市，先进制造业基地，文化产业强市，都市圈休闲农业圈，海绵城市，园林城市，生态城市，现代农业，“沧州智造”，现代化港口城市，创新示范区
衡水	生态宜居滨湖名城，交通枢纽，园林城市，绿色农产品基地	装备制造基地、现代生态化工基地、休闲旅游度假目的地、生态宜居北方湖城，园林城市、国家级现代农业示范区	园林城市，智慧旅游城市，工业强市，商贸旅游中心，生态旅游休闲目的地
邢台	区域中心、创新基地、山水绿城、文化名都	先进制造业基地，交通枢纽，商贸物流中心，新兴旅游城市，历史文化名城	先进制造业中心、智慧城市，现代化中心城市，森林城市、绿色城市、海绵城市、历史文化名城、生态宜居新家园、绿色邢台
邯郸	国家历史文化名城，冀晋鲁豫交界地区经济中心	文化旅游基地、现代产业基地、现代农业、绿色邯郸、低碳城市、森林城、人才强市、文化强市	宜居宜业宜游富强邯郸、美丽邯郸，国家园林城市，森林城市；全国重要的精品钢材基地、先进装备制造基地、食品工业基地、节能环保产业基地、新能源汽车基地，中国北方重要的商贸物流中心
安阳	世界文化遗產地，中国优秀旅游城市、新型工业基地，豫北地区的商务信息中心、交通物流中心、教育科研中心、历史文化名城，旅游城市	先进制造业强市，服务业大市，现代农业示范市，国家生态园林城市，海绵城市，智慧城市	先进制造业强市，服务业大市，现代农业示范市，国家生态园林城市，海绵城市，智慧城市

Appendix 2. Keywords for search for each brand term

Level 1	Level 2	Level 3
1. 智慧城市 smart city		
	智慧 Smart	智慧城市/智慧+城市名/智慧之城/智慧城镇
	智能 Intelligent	智能城市
	信息 Information	信息城市/信息枢纽/信息中心/信息基地
	数字 Digital	数字城市
2. 创新城市 innovation city		
	创新 Innovation	创新城市/创新型城市/创新中心/创新文化名城/创新中心城/创新型经济强市/创新基地/创造中山/研发设计与创新服务基地/创新孵化器/创新动力之城
	知识 Knowledge	知识城市/知识产权枢纽城市/知识产权示范市
	创业 Start-up	创业城市/创业型城市/创新创业中心
	学习型 Learning	学习型城市
3. 海绵城市 Resilient city		
	海绵 Sponge/Resilient	海绵城市
	平安 Safe	平安城市
4. 旅游城市 tourism city		
	旅游 Tourism	旅游城市/旅游中心/风景城市/旅游目的地/休闲度假区/旅游胜地/旅游产业带/旅游圈/旅游服务园区
	历史 History	历史城市/历史名城/历史文化名城/历史基地
	文化 Culture	文化城市/文化名城/人文都市/岭南文化中心/文化强优城市/文化产业基地/岭南特色的城市/文化名市/文化中心
	滨海/海岸 Coastal	滨海城市/海岸休闲
5. 生态城市 eco-city		
	生态 eco	生态城市/生态示范区/生态市/生态文明城市/生态都市/生态水城/生态文明示范区/生态型城市/生态休闲区/生态公园/生态商务服务区/生态精品卫星城/生态新城
	绿色 green	绿色城市/绿色美丽家园/绿色崛起示范区/绿城/绿色经济发展示范区/低碳绿色发展示范区/绿色生态走廊/绿色生态屏障/绿色通道/生态创新发展中心/绿色服务轴
	森林/田园 Forest	森林城市/田园城市
	园林/花园/公园 Garden	园林城市/花园城市/公园城市
	绿化模范 Green model	绿化模范城市
	环保模范 Environmental protection model	环保模范城市
	节水型 Water-saving model	节水型城市

6. 低碳城市 low carbon city		
	低碳 Low carbon	低碳城市/低碳之城/生态低碳城
		清洁能源
	循环经济 Recycling economy	循环经济先进市/循环经济科学发展模式的示范区/循环经济示范区
7. 宜居城市 liveable city		
	宜居 Livable	宜居城市/生态宜居城市/宜居城乡/住有宜居
	人居环境 Good urban living environment	最佳人居环境城市/建成生态型人居环境
8. 先进制造城市 advanced manufacture city		
	制造 Manufacturing	先进制造中心/基地；现代制造业中心/基地；高端制造业基地；专业制造中心城市/先进制造城市团
	研发基地 R&D base	高新技术产业基地/全国重要的信息技术研发和产品制造基地/高新技术产业区/带
9. 服务城市 Service city		
	服务 Service	服务中心/产业服务中心/制造业服务化领头城市/服务轴/服务城市团/服务产业集群
	商贸/贸易 Trade center	商贸中心/贸易中心/商贸物流节点/国家服务贸易特色出口基地
	金融 Financial center	金融中心/金融创新中心/科技金融试点城市/金融核心区/香港国际金融中心的次中心
	交通/门户 Transport hub	交通枢纽中心/城市；交通节点；门户城市/交通圈/交通走廊
	物流 Logistics base	物流枢纽中心/物流服务中心/枢纽城市/节点城市；/“中国快递示范市”/物流示范城市/物流中心/物流基地/物流区/物流集散地
	运输 Transport base	综合运输服务示范市/综合运输服务示范城市/集装箱运输枢纽港/航空货物运输基地/公路运输枢纽/运输通道
	电子商务 E-commerce	电子商务集散中心/跨境电子商务集散中心/全国跨境电子商务进口城市试点/创建国家级电子商务示范企业基地/国家跨境电子商务综合试验区/运输走廊/中央商务区/商务中心
	港口 Port	港口城市/亚太地区综合性枢纽港/综合性港口
	航运 Shipping	国际航运服务中心
10. 现代农业城市 Modern agricultural city		
	农业 Agriculture	生态观光旅游农业区域中心/现代农业基地/城郊现代农业高新技术发展试验区/滨海生态休闲农业旅游城市/绿色食品（农产品）生产/加工基地