A Study of City Branding on the Chinese Resource-based Cities – the Case of Heilongjiang Province

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Title Page

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Executive Summary

"Ecological modernization" derives from the discussion over the global warming and environmental deterioration. All these changes are accused of the over-rapid progress of urbanization. As one of the fastest-growing countries, the developmental way of China attracts wide attention. Heilongjiang lies in the northernmost part of China and possesses affluent natural resources. This, especially, requires that the local production should be based on the advanced technology to preserve environment and conserve resources.

Nowadays, the resource-based cities in Heilongjiang are confronting the down-trend economy and experiencing the industrial transformation. The problems these resource-based cities have to face derive from three aspects, namely the depletion of resources, financial difficulties of the local governments and the increasing prominent environment problems. Under the long mining and rough processing, the environment of these resource-based cities has been severely damaged, resulting in the large area of desertification and salinization. The worst thing is that the depletion of natural resources poses a great test for the future of these cities. In order to realize the sustainable development, resource-based cities must gradually get rid of the dependence on resources and develop new economic growth points through the adjustment of industrial structure. Besides, with the continuity of the grim economy, the financial difficulties of the local governments make the situation even more worse. In the resource-based cities, most taxes from the resources industry go to the central government and therefore the local governments cannot get a great deal of revenue. This brings great difficulties to the development of cities.

City branding, as a strategy to explore a city's features and position itself, has been applied in a lot of cities in China. This strategy aims to help the city establish a specific image, such as eco city or innovation city, to attract investments and talents to develop the economy. To understand the real situation of the resource-based cities in Heilongjiang and how they deal with the problems. This paper focuses on the research question below:

How do resource-based cities in the Heilongjiang province position themselves through the city branding, especially from the perspective of ecological modernization?

To explore the city branding practice of resource-based cities in Heilongjiang, five-pathway method will be applied to predict the theoretical city branding pathway from the perspective of economic development stage and position within the region. Meanwhile, the desired pathway will be determined by quantitative and qualitative methods, collecting the city descriptions and terms related with the ecological modernization from the official documents, namely 12th five-year plan, 13th five-year plan and urban master plan. Furthermore, the results of five-pathway method will be compared with the actual city branding pathways to find out the degree of which the economic stage and status affect the developmental choice these cities make. The differences during the comparison will be analyzed according to the general

information of each city. To verify whether the follow-up actions and implementation suitable for the actual pathway, the planning projects and leading strategies will be listed and analyzed in the section 5. In the conclusion part, except answers to the research questions, the influence of down-trend economy is involved in discussing the quality and impediments of city branding. Combined with the answers to the research question and the influence from the grim economy, several recommendations will be raised. The limitations of information collection and methods, also the prospect of research will be included in the final part.

In general, the results of comparison between the theoretical and actual city branding pathway complement the study of five-pathway method. In the previous study of the three mega-city regions, it shows that the city branding practices by the five-pathway method predicted nicely of the real situations and developmental pathways in terms of service and innovation-oriented cities; However, the manufacturing-dominant cities prefer to present their identities of service and innovation cities as well. In this thesis, the two variables, the economic stage and status do have certain influence on deciding the city branding pathways. Furthermore, these RBCs are likely to develop primary, secondary and tertiary sectors at the same time, which is different from the developed area in China. This is largely due to the reason that these RBCs lack the knowledge reserve for the development of high technology and other tertiary industries, so it is difficult to complete the structural reform in a short time. In this case, these cities will retain their original, resource-dependent industries to secure economic income. In order to meet the national ecological modernization strategy, these cities put emphasis on improving the processing technology level, reduce production pollution and other ways based on the content of the issued projects.

The grim economy is another consideration factor in this thesis, which is analyzed in the section 6.2 from three aspects:

· The downturn economy is a necessary progress during the early period of industrial transformation;
· The bureaucratism of the local government in Heilongjiang makes the project investment guide unable to realize the gradual transformation into the liberalization of the market-oriented investment
· The deterioration of the economy has formed a vicious circle and requires external intervention.

Considering the city branding pathways and the grim economy, three recommendations have been made finally.

· Under the situation that the institutional problems cannot solved in the short time and that the development of resource-based cities requires substantial sources of financing, tourism city positioning should be a breakthrough for these RBCs.

· A series of active fiscal policies should be executed to give these cities more financial encouragement, for example, increasing the proportion of financial reserves of resource-based cities, earmarking some resources for resource-based cities to build

environmental protection projects, infrastructure and so on. Meanwhile, assigning the professionals and talents to the certain area in Heilongjiang will also be emphasized to establish sufficient knowledge reserve for further developing the tertiary sector.

· Whether from the central government or the local government, there should be further rectification and change in the bureaucracy, as the root of the problem, in Heilongjiang regional institutions, such as the establishment of effective supervision agencies. Because of its unhealthy system, Heilongjiang committed to structural reform, will be in the economic decline for a long time and will be difficult to recover.

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1. Introduction

This thesis aims to study on the resource-based cities in Heilongjiang province, which are regarded as the backward areas considering the regional development all over China. According to the recent research statistics, the growth rate of Heilongjiang experienced a down trend in the past five years; does this have something to do with the quality of urbanization process? From the perspective of path dependency theory, the research focus will be on the identities based on the stage of economic development and the position within the region. The consideration of influence from these two factors were first proposed in the study of the city branding practices in the China's three mega-city regions. To further understand the urbanization process of other types of cities – resource-based cities in the backward area of China, the identities they position for themselves will be identified and also the projects or implementations which they prepare to achieve those identities. In the introduction, the urbanization situation in China will be briefly summarized firstly. Heilongjiang province, as the typical resource-based area among the northeast China, will be introduced on account of being the role of commissariat base and being in the grim economy. As for the resource-based cities in this area, the features and main challenges will be described, leading to the importance of involving ecological consideration into city branding for these cities.

1978 reform marked the acceleration of urbanization in China. At that time, some urbanization policies were forward to improve the situation of urban-rural separation and backward infrastructure in big cities (Baidu Wenku, 2015). At that time, the town construction was determined to be the main focus and the construction of big cities as a supplement. As has been reported widely, China is one of the fastest urbanizing countries in the world. Accompanied with a range of economic reforms since 1978, urbanization in China has increased at an astonishing rate. In 1949, the number of all levels of cities was 136 (Li, 2003)while in 2016, the number reached 656(Anon., 2016). Within 67 years, the number of cities in China increased by 520. China's level of urbanization rose from 13.3 percent in 1953 to 36.2 percent in 2000 and to 57.35 percent in 2016(Anon., 2016).

In 23th April, 2017, a conference sponsored by China International City Development Strategy Research Committee was targeted to discuss about the quality of urbanization in China (Wang & Cui, 2017). In the conference, the attendant pointed out that in China, the number of urban population is 0.77 billion which resides in 654 cities, however, only 160 cities with more than one million people and the number of cities with less than 200 thousand people are less than 18%(Wang & Cui, 2017). Compared with the situation in the USA and Japan, the number of small cities is extremely small, reflecting the unbalance of urbanization in China. Big cities with superior environment attract large number of migrants and as for the relatively backward areas, the development of urbanization process is not as expected.

In the 13th five-year plan, it is specified that Jing-Jin-Ji, Pearl River Delta and Yangtze River Delta are planned to develop into international city groups. Other 19 city groups are also listed in the long-term strategy. As can be seen in the figure 1, the areas around Harbin, the capital of Heilongjiang province, have become a new strategic center in the northeast district. It provides an opportunity for Heilongjiang and also requires the province to further optimize the process of urbanization and revive the local economy.

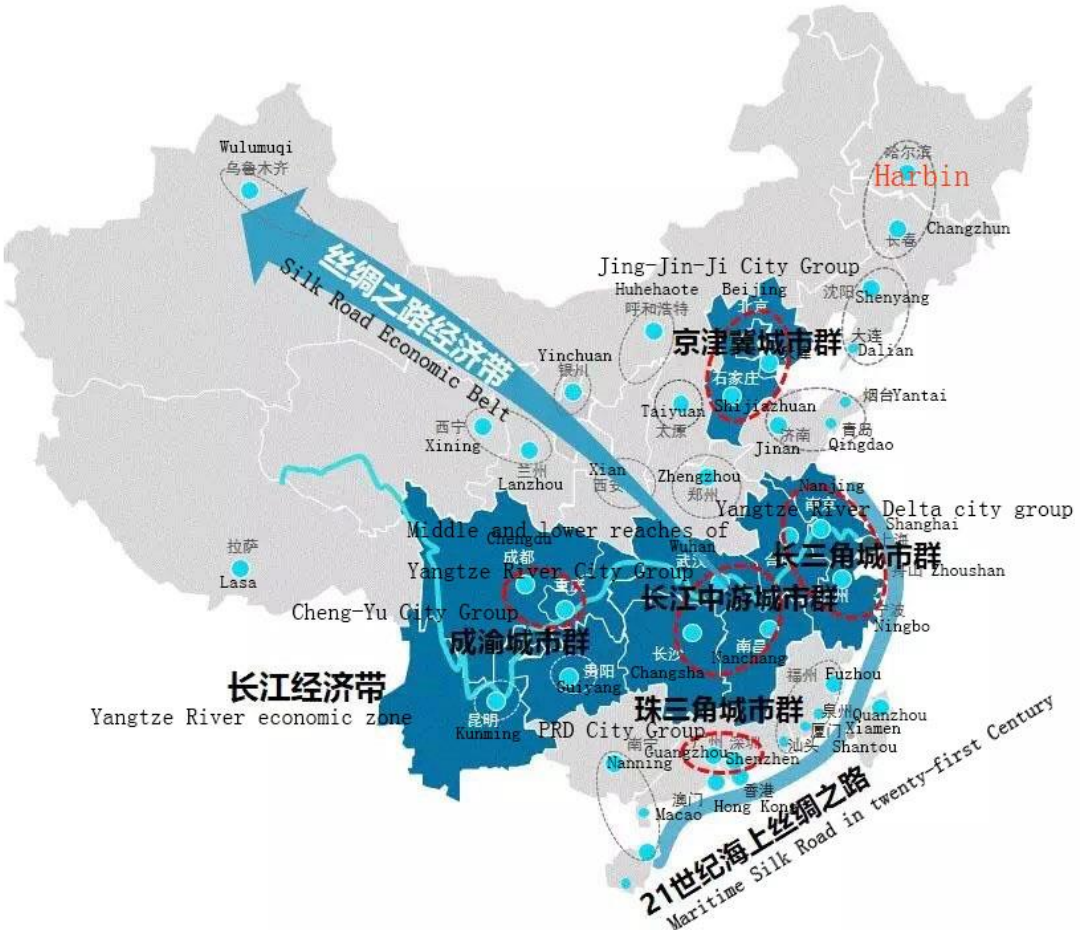


Figure1. The map of 13th Five-Year Plan in China[1]

The Heilongjiang region has always been a valuable resource for China and was once an important heavy industrial base. Heilongjiang province is especially rich in natural resources. More than 132 mineral resources have been found, which covers 56.4% of all mineral resources found in China. Besides, Heilongjiang is one of the largest forestry provinces. Natural forest resource is one of the central advantages in Heilongjiang, mainly in the Xingan Mountains, the Changbai Mountains and Wandashan. As the most important energy industry base in China, Heilongjiang is one of main coal suppliers, especially in Jixi, Hegang, Shuangyashan and Qitaihe. The Chinese biggest oil field is located in Daqing of Heilongjiang province.

[1]China Index Academy

In 2016, the urbanization rate in Heilongjiang province is 59.2%(Heilongjiang province statistical bureau, 2017) and the average urbanization rate in China is calculated to be 57.35%(State Statistical Bureau, 2017). Accordingly, the level of urbanization rate in Heilongjiang province is higher than the average level. However, this cannot reflect the real urbanization situation in this area, because in the calculation, the city population includes the population in the agricultural reclamation and forest industry system, which is attributed to two reasons. One of the reasons is that Heilongjiang province is rich in natural resources, such as large oil fields, mining areas, reclamation area and forest areas. The population in this system takes up 8.5% of the whole population in this province(Luo, 2012). This part of population plays an important role in the local industrial fields. Their life actually shows some features of urbanization, but very limited(Luo, 2012). The other reason is the rule in the present resident registration system that people who are engaged in the primary industry should also be included in the calculation of city population. Through learning identities and implementations of cities in Heilongjiang province, the level of the local urbanization can be known.

In recent years, the economic situation in the area of Heilongjiang is not optimistic. From the perspective of economic aggregate, Heilongjiang lied in the 17th location among 30 provinces in 2013 and ranked at the 21th in 2016(South Money, 2017).Considering the economic growth rate, there was a decrease tendency since 2010, even though the growth rate remained to be stable in the recent three years. Compared with other provinces in China, Heilongjiang province ranked 29th in 2016 of all 30 provinces(South Money, 2017). The urbanization rate grew far behind the average level in China. These lead to the outflow of talent and further influence the migrations to the local cities. To reposition itself effectively and further revive the local economy, it is necessary for the local government to take actions to be more competitive to attract the limited financial and human resources. The strategy of city branding becomes effective to promote the identity for the cities to some degree(Dinnie, 2004).

The grim economic situation is not just happening in Heilongjiang area. The down-trend economy is happening in all the northeastern China. Even though there is the national strategy of transformation and upgrading and revival of the old industries, a series of problems continue to exist in a long time. The problems concentrate in the resource-oriented, traditional and heavy chemical industry structure, which cannot adapt to the market changes. Furthermore, the new industry is developing slowly and cannot replace the traditional industry quickly. In the areas dominated by the state-owned enterprises, the private economy has not been fully developed and the degree of marketization is not high. All these factors put the northeast economy in the awkward position. Of the three provinces in the northeast China, Heilongjiang is especially typical because almost all cities in Heilongjiang belong to the resource-based type.

According to the criteria of resource-based cities (RBC) in China, 9 resource-based prefecture-level cities belong to Heilongjiang province (13 prefecture-level cities totally in Heilongjiang including Great Xingan Range). Resource-based city is a category of cities that possess affluent mineral, forest and other natural resources and their economy depends on these natural advantages largely. The table 1 shows the list

of cities in Heilongjiang and the type of RBC of each city. The features of the cities in this category are the single industrial structure and "boom and bust" industrial cycle (He S. Y., et al., 2017). Normally, the mining and processing task promotes the primary and secondary sectors develop quickly and play the lead roles in the local areas (Lu, Y. D. & Yu, J., 2012). However, the resources, such as coal, fossil and forestry in the resource-based cities in Heilongjiang, cannot be renewable. The unsustainability cannot take a long time mass production for the economic development (He S. Y., et al., 2017). The competitiveness of the unsustainable resources will further lose against the fast technological and market change in some products compared with other cities (Martinez-Fernandez et al., 2012). From the perspective of realizing the transformation from the traditional industry to the innovation industry, without sufficient knowledge reserve in resource-based cities will weaken the transition and demand high financial support (Martinez-Fernandez& Wu, 2007).

Although the rich resources which require certain level of knowledge become the advantages for the economic expansion in the short term, the cities which rely on the resources overly cannot develop quickly with the exhaustion and depleting coming. These resource-based cities in Heilongjiang are suffering from the threat of resource depletion and it is urgent for them to reinvent a new direction and brand for the future development.

Table1. Resource-Based cities in Heilongjiang

Cities	Resource-Based	The type of RBC
Harbin		
Qiqihar		
Jixi	√	Coal mine, Plumbago
Hegang	√	Coal mine, Forestry
Shuangyashan	√	Coal mine, Forestry
Daqing	√	Fossil oil
Yichun	√	Forestry
Jiamusi		
Qitaihe	√	Coal mine
Mudanjiang	√	Forestry
Heihe	√	Forestry
Suihua		

Specifically, the challenges the resource-based cities in Heilongjiang have to face derive from the following three aspects. First of all, after years of large - scale and high - strength mining, the exploitation of resources such as crude oil, wood, coal mine and others have declined dramatically, and the speed of resource depletion is accelerating. Heilongjiang coal resources are mainly located in the east, concentrated in Jixi, Shuangyashan, Hegang and Qitaihe. Since its exploitation in the 1950s, the reserves

have been seriously reduced, and these cities have to face the problem of coal resource depletion or even a large number of shut-in wells.

Moreover, because of the financial difficulties of the local governments, they cannot effectively invest in the public goods in resource-based cities, thus causing the cities to lose a lot of development opportunities. Most of the resource-based cities in Heilongjiang province are dedicated cities. The name of “dedicated cities” is the result of three reasons. The first reason is that the added value of products in the resource-based industry is very low. The second reason is that once the price of resource-based products changes and then the impact will be very great, which makes the country have to intervene directly in the price system of products, resulting in the outflow of the benefits of resource-based cities. The last reason takes into consideration that the economic subject of resource-based city is a large-scale state-owned enterprise, which is the main source of city finance. But as for the municipal governments, corporate tax payments to the state represents a net fiscal outflow, such as the Daqing oil field, which has paid hundreds of billions of dollars in taxes to the state, but the balance of local funds is insufficient

The third challenge is the increasingly prominent environmental problem. In the past few decades, “light weight on the ecological protection and more weight on the economic development” is the developmental track of all the resources - based city in Heilongjiang province. Now these cities are confronting the serious environmental problems. For example, Daqing has the China's largest onshore oil field, and also is the most important oil production base in China. However, after decades of high strength exploitation, Daqing oilfield has entered the production decline period with more and more damage on the landform. The area of serious salinization of soil has reached 330 thousand hectares and the desertification area up to 700 thousand hectares. The groundwater has been polluted seriously.

With all the challenges and problems emerging in the resource-based cities, the ecology-based city branding should be considered and applied here to take advantage of benefits of national strategy and optimize the city developmental plan.

2. Theoretical framework and methodology

2.1 Literature review

In this section, two main theories will be discussed, namely city branding and resource-based cities. These theories are applied in the following sections to analyze the case of resource-based cities in Heilongjiang province by city branding.

For the section of city branding, the historical development will be analyzed and the concept of city branding will be defined for the further study based on the literature reviews. As for the resource-based cities, the definition will be explained, the current

situation of sustainable development in Heilongjiang will be briefly summarized. In this part, the perspective of ecological modernization will be included as well. The study of the ecological modernization in the city branding seems to be increasingly important because more and more cities are trying to brand themselves from the eco aspect, especially in the case of resource-based cities. Finally, the five-pathway method will be introduced and applied as the method to analyze the developmental pathway of each resource-based city in Heilongjiang province in terms of the stage of economic development and economic status.

2.1.1 City branding

City branding stemmed from two hundred years ago. In the nineteenth century, the practice of city branding was carried out by the powerful groups in cities. To keep getting profits from the cities, elite groups, such as investors, entrepreneurs and landowners, exploited various resources to develop local economy(Molotch, 1976). However, the academic research on the city branding was lagged far behind the practices. Until recent three decades, the remarkable increase in studying the philosophy and theory under this topic has been established. The past few decades have witnessed a remarkable increase of the academic research work in the field of city branding (Kavaratzis, 2004; Houghton J P, 2011; Sevin, 2014).

2.1.1.1 The history of city branding

To have a deep understanding of concept "city branding", the history contributes to have a complete framework. The concept of city branding is derived from the rise of power in cities. In the beginning of the nineteenth century, 'urban elite', such as investors, entrepreneurs and landowners, they governed the direction of the city's development (Molotch, 1976; Blackmar& Harvey, 1988; Gilbert & Guglar, 1982). At that time, the reclamation of land became the approach to advance the status for the government and the elite. In 1993, Philo and Keams pointed out that "cultural and historical resources have long been manipulated by society's powerful groupings in their own economic and social self-interest" (Kearns& Philo, 1990). In this period, the traditional branding technique, such as land exploration, was used to convey grandeur and monumentality and further reinforce the power of governments and urban elites(Zukin, 1995).

The thought to establish the reputation of the local place was strengthened with the coalition of businessmen promoting the city as an alive and energetic industrial identity to attract more investors in the 1920s(Garofalo C, 1976). With the industrialization, manufacturing identity seemed to be the primary choice for the place to locate itself. It were the entrepreneurs at that period leading the development of sophisticated marketing strategies to brand cities(Goodwin, 1993). During the period of 1970s and 1980s, the concept of city image stepped into a new level. In the western countries, the public-private partnerships, the acceleration of the competitions between cities for

investment and the development of service-oriented industries stimulated the establishment of city brands(Goodwin, 1993; Grodach, 2007). In the late 1980s, image was of importance in urban planning and management and further the governments paid more attention to the city marketing (Hall & Habbard, 1998).

The city branding has been closely connected with the brand strategy in the business world, further influencing the urban economic development. With the emphasis of customer-orientation leading the product market, this idea influenced the city marketing as well. Around the early 2000, the public organizations and private enterprises branded cities targeting the needs of stakeholders(Hall, 1998). Since 2000, city branding became the necessity for cities in the western world(Dinnie, 2004; Goess, 2016). Meanwhile, a remarkable increase branding in the eastern world has been witnessed in the recent years, such as Sapporo in Japan and Shanghai in China(Dinnie K, 2010; Larsen H, 2014). Furthermore, the high mobility of people and the capital investment required the local governments to compete with other areas to maintain the high increase the economic development and sustainability(Green, 2016). The long history of city branding stresses the idea that city itself has its own personality and should act like a person to show its advantages to gain high reputation. This history also reflects that the study of city branding practice attracts scholars' attention in the long term.

2.1.1.2 The definition of city branding

Due to the fact that the study of city branding involves multidisciplinary, there is not enough exchange of ideas which makes the whole theory fragmented. Specifically, the definition for city branding and the types of marketing and branding practices are still open to discussion without a consensus (Lucarelli& Berg, 2011). In this section, several relevant terms will be explained and compared for defining "city branding" in this thesis.

From brands to branding

The word, brand, which can be traced back to the ancient Scandinavian language, represents an identity for tools or personal belongings (Briciu, 2016). What people now know about "brand" is normally applied in the business world. According to the explanation in American Marketing Association Dictionary, brand describes the differences from product to product in the form of a symbol, a design or any other features. Brands help an organization have an advantageous value over the others. Brands, as can be seen as a marketing strategy, have their own personalities (Aaker J, 1997; Aaker et al., 2001; Singh, 2013).With the deep research on brand, the brand cannot only represent the extra value for the product, it can also be seen as a separable asset for the organization and an association to strengthen the loyalty to the products (Feldwick, 2002). With the practice of city branding emerging, the marketing approach of branding is applied in the context of city. Branding is no more limited to the business world. Branding is the process that the city government takes advantages of features of the city to attract more tourism, human resources and trades. The features can range from places of historic interests to a simple vision. The research focus on the brand itself was changed into the study of the deep philosophy and theory behind the symbol

or the image (Inskip, 2004). In the context of a city, the practice of branding ranged from place promotion to how to run the cities to create an identity under the changing environment.

From city marketing to city branding

From the perspective of research theory on city branding, its investigation lagged far behind the city branding practice. The main academic research work has been progressed in the last three decades (Lucarelli, 2011).

The difference between city marketing and city branding is that city marketing only operates at the tactical level with instruments while branding is more strategic and policy-oriented. The theory of city branding began from the exploration of marketing strategy in the business world(Kavaratzis, 2004).The context of marketing was introduced in the city planning when the entrepreneurial city stood on the historic stage. This period was referred in the previous section. The entrepreneurial city was run in a more businesslike way and marketing just worked like a way of governance under these entrepreneurs. Gradually, the philosophy and methodology of marketing was regarded as an easy way to adapt and use in the city governance(Kavaratzis, 2004). In 1994, Ashworth and Voogd established the theoretical framework for place marketing based on the basic principles of corporate marketing (Ashworth &Voogd, 1994). After several years of city marketing development, the research was limited to some specific aspects of marketing. That was the beginning of the concept of city branding.

After studying the history of city branding and some relevant concepts, city branding itself should be concluded for further analysis of cities in Heilongjiang province. In this thesis, city branding can be seen as the brands for product in the commercial field in terms of form. Essentially, branding is driven by the national policies and deeper consideration for a long time than that in the commercial world.

As the description above, city branding is a strategic of city marketing. The strategy aims to compete with other cities for inward investments, tourism revenues and residents at various spatial scales intensified (Kotler, 1999). The city branding is understood as the means both for achieving competitive advantage in order to increase inward investment and tourism, and also for achieving community development, reinforcing local identity and identification of the citizens with their city and activating all social forces to avoid social exclusion and unrest(Kavaratzis, 2004).

2.1.1.3 City branding in China

The study of city branding in China started late after the western world. In 2007, some scholars analyzed the urban strategic development plan in China. This plan described the ideas and strategies from the local political leaders for developing the local competitiveness. The urban development plan opened the beginning of city marketing. In 2008, Beijing, the capital of China, held the 29th Olympic Game. The official governments took advantages of this opportunity to take a series of strategies to brand Beijing and establish a good image to the whole world (Li& Zhao, 2009).

Some scholars think that the western principles of city branding cannot make full effects in the context of China. One outstanding scholar Jacques opposes the widespread assumption that as countries modernize, they also westernize (Obeta, 2010). He argues that China cannot be understood in western terms but through its own culture as well as history. Karvelyte and Chiu 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 (Karvelyte, 2011). The concept of city branding can have slightly different meanings in the context of China and 'western' countries due to the different languages, cultures, demographics as well as governmental structure (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 getting millions of the population out of the poverty line, at the same time causing environment issues. This is why Chinese cities tend to brand themselves as eco-cities nowadays, especially in the resource-based cities. Secondly, when the central government aims to develop 'eco-cities' all around China, the regional cities have no choice but to brand themselves like that even though it might be not aligned with their practical environment and interests. As for the cities in the backward areas of China, especially in the resource-based cities, developing eco-cities means that some companies in the traditional industries face the bankruptcy and closure, leading to unemployment. Then, more people leave this city due to the backward situation. This puts forward higher requirements for the policies and management of central and local governments. 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 the performance of the city branding. 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.

2.1.2 Resource-based cities

The understanding and relevant strategies of resource-based cities

Resource-based city is a city with natural resources, such as mineral and forestry resources, exploitation and processing as the leading industry (China State Council, 2013). The development of resource-based city is closely related to the exploitation and production of the resources. Due to the resource depletion problem, in 2013, the State Council issued the national sustainable development plan (2013-2020) for resources cities for the first time, which will serve as a safeguard for the safety of energy resources.

In the national sustainable development, 262 cities were identified as the resource-based cities. Among them, 11 prefecture-level cities belonged to Heilongjiang province

(13 prefecture-level cities in Heilongjiang totally). The goal of the plan was to transform developmental modes and promotes sustainable development of resource-based cities, which was also referred to be the main focus in the 12th and 13th five-year plan of the resource-based cities in Heilongjiang province.

To achieve this goal, several policies have been issued. Based on the perspective of eco-development, the access threshold for resource exploitation enterprises have been raised, the relevant official departments examined the impact on the environment more strictly and the enterprises had to be responsible for the whole cost of the possible pollution. Some of cities plan to develop new industries and get rid of resource dependence. From the view of sustainable development, reserve bases are established to rationalize the exploitation and preserve the resources. Optimizing the processing methods promotes energy-saving, emission reduction and full utilization of resources (China State Council, 2013).

Until now, the resource-based cities in Heilongjiang province have explored transformation and upgrading actively. However, the reform cannot be achieved easily confronting the economic situation in Heilongjiang province. The cities in Heilongjiang are trying to get rid of the economic mode of relying solely on resource development. For example, in Jixi, one of the four coal cities in Heilongjiang province has added black lead, coal chemical industry, green food and biological medicine into the key industries in the next five-year plan. Besides, the eco-tourism is another developing road for Jixi. Xingkai Lake, Wusuli River, Chen-pao Island wetland, as the key beauty spots in Jixi, realized total revenue growth of 32.6% in 2015. “Ecology” and “cross-border” (Jixi is contiguous to Russia) have gradually become the two major brands of Jixi tourism(Phoenix News, 2016).

Ecological modernization in resource-based cities

With the air pollution and resource depletion issues becoming serious, the environment protection has been a hot topic in the recent decades. Especially, there is an increasing concern about the environment change with the phenomenon of global warming. It is widely believed that the urbanization is accused to be the source of the global warming. Due to the urbanization, the increase of industrialization has a negative influence on the environment. Large amount of resources will be used and may be wasted due to the non-efficient processing methods. This is when the concept of “ecological modernization” comes to the picture. Ecological modernization was first introduced by the EU’s Fourth Environmental Action Program(Baker, 1997).

Ecological modernization is an optimistic school of thought in the social sciences, which argues that the economy benefits from moves towards environmentalism(Wikipedia, n.d.). One basic assumption of this concept is to discuss how the environment responds to the economic growth and industrial development. The strategies of ecological modernization are to find out the right way of harmonious development between the environment and urbanization. Even though there are a lot of debates about the scope and the realization of ecological modernization, the common understanding concentrates that ecological modernization will result in

innovative structural change finally, which corresponds to the goal of sustainable development of the resource-based cities.

To achieve a healthy urbanization suitable for the local environment, ecological modernization should be used as the guidance for the long-term strategy. Furthermore, city branding provides the approaches to the final goal.

2.1.3 Five-pathway method

Five-pathway method is applied to determine the state of ecological modernization for each city, which can also be regarded as city branding practices (De Jong et al. 2018). It is hypothesized that the *dependent variable*, city branding practices, is determined by *two independent variables*: the stage of economic development and position within the region. As for the stage of economic development, it includes the primary industry sector oriented towards agricultural and extraction, the secondary industry sector oriented towards manufacturing and production and tertiary industry sector oriented towards trade and service oriented. The other variable, position within the region, involves the regional, national and international position into consideration. The theory of this method concentrates on that the city branding practices target to thrive the local economy and attract more people into this city based on the literature in the city branding section. To achieve this target, the city follows the local stage of development and determine their economic status across the country to choose their city branding practices. The explanation of specific application of the method in this thesis will be in the section 2.2.3.

This method has been used in studying the city branding practices in China's three mega city regions, which are referred to as the Greater Pearl River Delta, the Yangtze River Delta, and the Bohai Rim (De Jong et al. 2018). Th results in this essay show that the city branding practices by the five-pathway method predicted nicely of the real situations and developmental pathways in terms of service and innovation-oriented cities; However, the manufacturing-dominant cities prefer to present their identities of service and innovation cities as well. In this thesis, this method will be used for finding out how the stage of economic development and the economic status influence the city branding practices of resource-based cities in Heilongjiang.

Since three possible scores are distinguished for each of the two independent variables, a table of nine modes of ecological modernization is concluded below. Based on the economic stage and position, different cities follow one of five different pathways to ecological modernization and adopt city brands matching the likely realization of this pathway in the table 2 (De Jong et al. 2018).

Table 2. five-pathway method

Stage of economic development/P	Primary sector dominates	Secondary sector dominates	Tertiary sector dominates

osition within the region			
Regional orientation	PATHWAY 1 Eco-tourism (accommodating manufacturing)	PATHWAY 2 Advanced, low carbon manufacturing	PATHWAY 4 Knowledge and culture-oriented services
National orientation	n.a.	PATHWAY 2 Advanced, low carbon manufacturing	PATHWAY 4 Knowledge and culture-oriented services
International orientation	n.a.	PATHWAY 3 High-tech innovation	PATHWAY 5 Global advanced producer services

According to the study of previous literature, if the city is national-oriented, it is unlikely that this city is mainly dominant in primary sector, which leaves one blank box in the table. Moreover, some of the other boxes may lead to the similar pathway to ecological modernization. Consequently, five boxes are remained with five modes of pathways. These pathways are expected to purse the ecological modernization as below, quoted from the research of De Jong et al. (2018).

Pathway 1: As the pathway 1 cities, they should have the features of maintaining high percentage of agricultural or resource extraction activities. In the most territory of the cities, green space occupies the most part and the local government takes the green space as the most advantageous benefits. Considering lacking of knowledge development, the cities have to choose to develop clean industries, such as eco-tourism. To further vitalize the manufacturing industry and promote the economic development, the cities still keep open to green industries which cannot generate enough employment. The brand identities expected for them are *eco city, tourism city, modern agricultural city and livable/ green city*.

Pathway 2: As the pathway 2 cities, their positions within the region should be regional-oriented or national-oriented while secondary industry sector is dominant in this area. To advance the local manufacturing industry, the cities are likely to upgrade industry activities and reduce the emission of carbon dioxide. The main goal for these cities is to keep low carbon and establish the environmental friendly industries. The brand identities expected for them are *advanced manufacturing city, low carbon city and smart city*.

Pathway 3: As the pathway 3 cities, their position within the region should be international-oriented while they focus on the secondary sector with the goal of advancing the manufacturing industry under the high-tech innovation. They have plans to pursue the innovation and fuse them into one seamless whole where it is possible to maximize value added. The development of science and technology is the main task for these cities. The brand identities expected for them should be *innovation city, smart city and advanced manufacturing city*.

Pathway 4: As the pathway 4 cities, their position within the region should be regional or national-oriented while trade and service is the most alive among the industries. The future they set for themselves are consolidating the identity of service city and intensify the knowledge development, along with the advanced knowledge facilities. The possible brand identities for these cities can be *service city, innovation city, livable/green city and tourism city*.

Pathway 5: As the pathway 5 cities, their position within the region should be international-oriented while the tertiary sector is mainly focused in the future development. They have the ambition to become the global or continental service center facilitated with the first-class education and R&D organizations. These cities have enough strength to compete with other international cities in terms of the top living environment and infrastructure. The brand identities will stress the importance of international image, which can be *service city, livable/ green city, sustainable city and tourism city.*

2.2 Research Methodology

2.2.1 Selection of cases studies

This thesis focuses on the city branding practices of resource-based cities in Heilongjiang province. In the Heilongjiang statistical yearbook, the number of cities at the regional level and above is 13, namely Harbin, Qiqihaer, Jixi, Hegang, Shuangyashan, Daqing, Yichun, Jiamusi, Qitaihe, Mudanjiang, Heihe, Suihua and Great Xingan Range.

Eight cities will be included in the study. The selective standard is based on the report of Sustainable Development Plan of National Resource-based Cities, which was issued by the State Council in 2013. In the report, eight of cities in Heilongjiang were referred, namely Jixi, Hegang, Shuangyashan, Daqing, Yichun, Qitaihe, Mudanjiang and Heihe.

2.2.2 Research questions and research methods

The thesis aims to answer the research questions described as below:

How do resource-based cities in the Heilongjiang province position themselves through the city branding, especially from the perspective of ecological modernization?

To answer the research question better, three sub-questions are raised and explained step by step. For that purpose, several methods will be applied as following.

1 What are the resource types or current city profile/identity of each city in the Heilongjiang province as well as the province as a whole? Specifically, what are the dominant resources and the economic status for each city? Based on the information above, what is theoretical identity for each city based on the 5-pathway method?

This sub question will be mainly answered in the section 3 based on the literature study. This part should include the study of historic documents, online materials and other government files. Specifically, the official documents, published by the central/municipal government including Urban Master Plan and the 12th, 13th Five-Year Plan, will be the study focus. Moreover, the statistics will be collected from the provincial/municipal level statistics yearly report for the purpose of determining the dominant industries and the stage of the economic development for each city. The relevant indicators may include the basic information, such as population and territory of each city, and other economic statistics, such as GDP of each city, GDP per capita in each city, as well as the respective percentage of primary, secondary and tertiary in the economy activity. Based on the five-pathway method, each city in Heilongjiang province will be determined as one identity for the following analysis.

2 What city brands do these resource-based cities in the Heilongjiang province adopt in general to promote themselves and realize the industrial structural adjustment? Are there any differences between the theoretical identity and identity the cities choose for themselves?

This sub question will be mainly answered in section 4 according to the two official documents, namely Urban Master Plan and the Five-Year Plan. Each document will be studied qualitatively to list the major sentences related to its general city brands, which will be presented in the form of an overview table. Furthermore, a quantitative method will be adopted to explore the city branding practices related to ecological modernization. The count of some ecological modernization related city branding terms will be done in the above documents based on the city categories summarized by De Jong (2015) with some modification taking the Chinese context into account. Appling the results in the first sub question, the comparison will be done between the theoretical city branding pathway and the actual city branding pathway. Furthermore, the reasons why there are differences between the theoretical and actual identity will be discussed in this part.

3 What city branding strategies and projects has each city in Heilongjiang province adopted to promote ecological modernization and realize the industrial structural adjustment? Are the implementations suitable to the profile they choose for themselves?
This sub question will be answered in section 5 according to the online documents and official files. Based on the recent projects and policies issued from the central/municipal government, the implementations will be concluded. Whether these actions are suitable for the actual city branding will be checked in two approaches: comparing whether the projects match the city brand description and comparing the city labels following the projects with the city's actual pathways. Based on the online information, the goal of one project can reflect whether the project matches the description. Besides, in the profile of a project, the corresponding city labels can be determined by looking for terms relevant to the city labels that is identified in the section 4.2. Recommendation and reflections for further these resource-based cities will be raised following.

2.2.3 Methodological framework

Figure 2. shows the complete theoretical framework for studying the city branding of RBCs in Heilongjiang province. There are two parts totally in this study. The first part is mainly based on the comparison of theoretical and actual city branding practices. First of all, the theoretical city branding practice is explained by two independent variables, which are economic development stage and position within the region. To introduce in the perspective of mode of ecological modernization, this variable works as the intermediary element and therefore has impact on the city branding choices. In addition, the industrial structural transition of resource-based cities is the main lead to influence the real choices of actual city branding practices. After comparing the theoretical and actual ones, the reason should be analyzed why the differences exist based on the economic situation and power position.

The other part of the study is mainly about whether implementations and follow-up projects accord with the development direction chosen by the city for itself. The implementations and follow-up projects will be gathered from the official sources. According to the content of the projects, the terms related with the urban development and ecological modernization will be collected. Through the five-pathway method, the corresponding city labels can be achieved based on the collected terms in the last step. The projects will then be compared in terms of description and labels to check out whether they match the actual city branding practice or not. Finally, to improve the quality of city branding, the grim economy will be another factor that is considered for raising the recommendations.

Economic development stage

To predict the city branding practices, two independent variables should be retrieved here. As one of the independent variables, economic development stage mainly describes the characteristics of cities. The resource and economic situation reflects the advantages of the city, which may indicate the direction of its city branding. Information will be collected from different aspects of cities, namely geographical situation, economic situation and the relevant history. History would be an important content to explore the evolution and development of a city, which will include natural revolution considering the resource-based feature, the economic development and the influential policies during the last decades.

To quantify the characteristics of a city, some specific data will be collected from the Heilongjiang province statistical yearbook, which are land area, population, three dominant industries, GDP per capital, the proportion of three industries as GDP and the proportion of three industries as working population. It should be noted that the contradictory may exist between the proportion of three industries as GDP and the one as working population. Under this circumstance, both situations will be considered in the study and other parameters will be for reference as well.

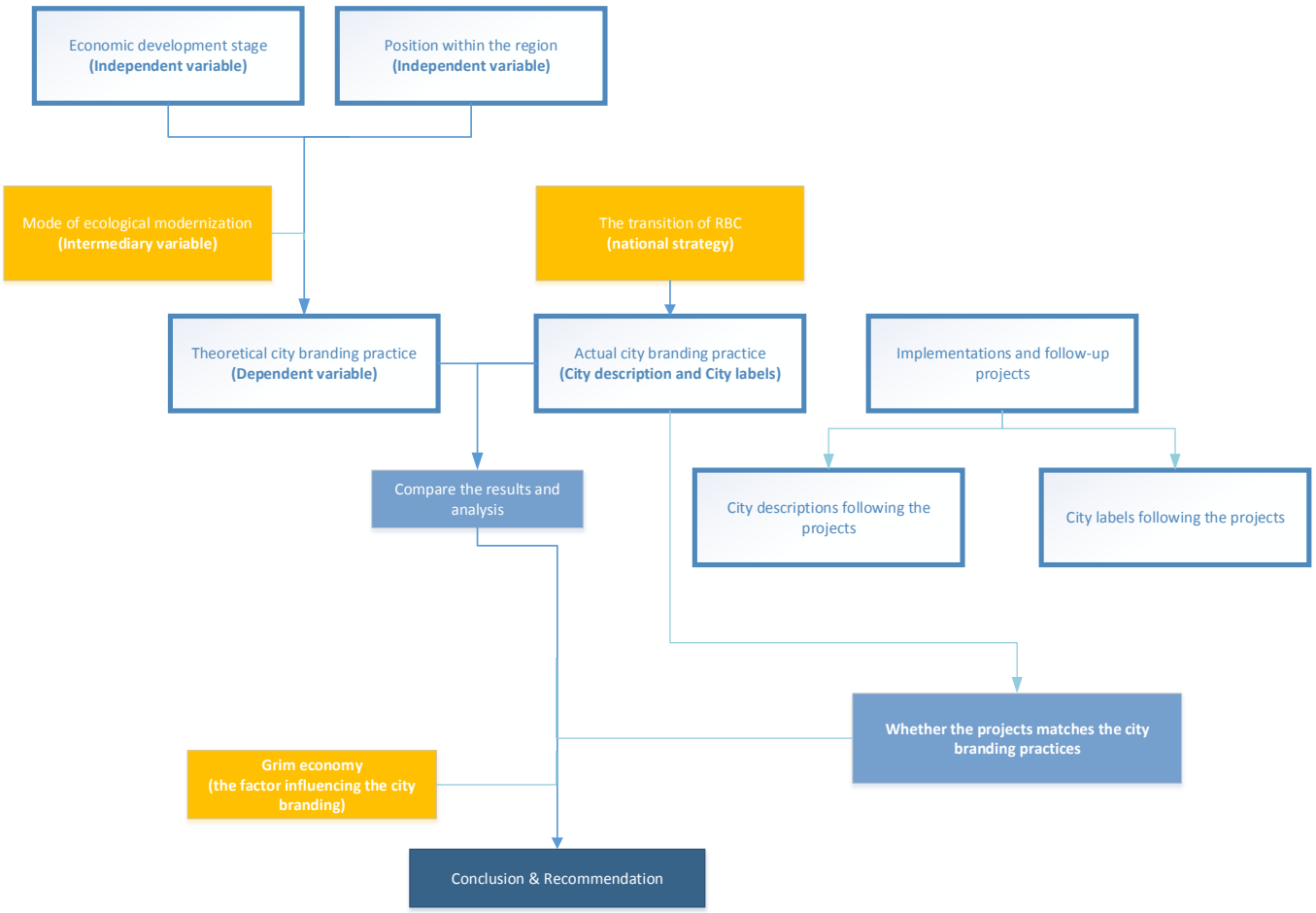


Figure 2. Theoretical framework

Position within the region

In the five-pathway method, city position within the region is classified into regional orientation, national orientation and international orientation. Heilongjiang province is regarded as the backward area in China. Only the capital of Heilongjiang province, Harbin can be regarded as the national-oriented city. Other cities are seen as the prefectural level. In this thesis, all city position should be regional oriented.

City branding practices

The theoretical city branding practices will be the results of the 5-pathway method considering the economic development stage and city position. Combined the results of two variables, the corresponding pathway can be achieved based on the table 2. The actual city branding practices are collected from the official documents of 12th Five-Year Plan, 13th Five-Year Plan and Urban Master Plan in two approaches. The first indicator, the overall city brand description, is abstracted from these documents to be compared with the result of pathway prediction.

To further understand the wish of the local government accurately, the frequency of the terms reflecting the brand positions in the official documents will be calculated and summarized for further comparison. All these terms are connected with the topic of city

branding and ecological modernization. In the thesis, these terms are called city labels. Based on the identified city labels in the research of De Jong et al. (2018), more terms will be collected in terms of RBCs in Heilongjiang. Through the calculating the frequency of each city label, the results will indicate in which pathway the city wish to establish its city brand. This will be compared with the theoretical city branding practices from the five-pathway method.

Implementations and follow-up projects

The implementations and follow-up projects are collected to determine whether the actions of the governments match their wish of city branding practices. The information will be gathered in two approaches, the official websites and the online chat. The useful official websites include the municipal government website, urban and rural planning bureau website, statistical bureau website and authoritative media coverage. The method of interview officials is realized by the column " Open government affairs to the public" on the government website. On this platform, the public can apply to assess to the information through raising up questions on the government affairs and the relevant officials will then answer these questions online.

City descriptions and city labels following the projects

The method to assess the projects is to compare the city description and city labels following the projects with that of the actual city branding practices. According to the content of projects, several key terms related with the urban development and ecological modernization can be collected. Then, by contrast, the city labels corresponding to the project can be mapped out based on the five-pathway method in the section 2.1.3. Finally, the content of the projects can be used to compare with the city descriptions of the actual city branding and it also can be checked that whether the city labels following the projects can realize their actual city branding pathways.

3 Heilongjiang province and its resource-based cities

In this section, the basic information of the whole province and eight RBCs will be stated, including the geographic characteristics, urban developmental history, resource type and the latest economic statistics. All these descriptions of each city are the preparation for the following analysis of the theoretical city branding and the reason why there is inconformity between the theoretical and actual city branding practices.

3.1 Overview of Heilongjiang province

Heilongjiang, which means ‘Black Dragon River’, is a province lies in the northeastern part of China. Heilongjiang borders Jilin in the south and inner Mongolia to the west; it also borders Russia to the north and east. Heilongjiang as an administrative entity

was established in 1683, during the Kangxi era of the ManchuQing Dynasty(Edmonds R, 1985).At the beginning of the early state, Heilongjiang included only the western portion of the present-day province, and had its capital at Qiqihar. The remaining area belonged tothe province of Songjiang; its capital was Harbin. In 1954, these two provinces were merged into the present-day Heilongjiang. During the Cultural Revolution, Heilongjiang was also expanded to include Hulunbuir League and some other areas previously in Inner Mongolia; this has since mostly been reversed.

Figure 3. The location of Heilongjiang Province

Heilongjiang province has a population of 38 million people with areas of 473,000km^2. With mountain regions as the main terrain, the average population density is comparatively low. There are 12 prefecture level cities and 1 district in Heilongjiang province, including 64 municipal districts, 18 county-level cities, 45 counties and 1 autonomous county, with Harbin as the sub provincial city, and Qiqihar as the second largest city with the local legislative power. From the perspective of the strategic position in China, Heilongjiang is the Chinese heavy industry base, including high-end manufacturing, aerospace, machinery, petroleum, coal, wood and efficient agriculture and animal husbandry and food industry.

Figure 4. The twelve cities in Heilongjiang Province

Heilongjiang province is rich in natural resources. More than 132 mineral resources have been found, which cover 56.4% of all mineral resources found in China. Meanwhile, Heilongjiang is one of the largest forestry provinces. Natural forest resource is the one of the advantages in Heilongjiang province, mainly in the Xinganmountains and the Changbai Mountains and Wandashan. As the most important energy industry base in China, Heilongjiang is one of main coal suppliers, especially in Jixi, Hegang, Shuangyashan and Qitaihe coal production areas. The Chinese biggest oil field is located in Daqing.

In recent years, the economic situation in Heilongjiang province has been facing the down trend, which can be demonstrated obviously in the ranking of Heilongjiang in the list of GDP of the 31 provinces in China within the last ten years. In the table 3, compared with the situation in 2007, the ranking of Heilongjiang has fallen to be the 21th in 2016, which indicates that the growth rate of GDP has been lower than the average level of all the 31 provinces in China. Even though the urbanization rate has increased a lot in Heilongjiang, the economic prosperity due to the urbanization was not as expected. Under this background, a series of policies and strategies has been issued by the central and local governments. These policies and strategies became the guide for the whole province developmental plan and even the city plan.

Table 3. The down trend of economy in Heilongjiang province

Year	GDP(100 million)	Growth Rate of GDP	Ranking of GDP
2007	7,104.00	12%	17th
2008	8,314.37	11.80%	17th
2009	8,587.00	11.10%	16th
2010	10,368.6	12.50%	17th
2011	12,582.00	12.20%	16th
2012	13,691.58	9.60%	17th
2013	14,454.91	8%	20th
2014	15,039.38	5.60%	20th
2015	15,083.67	5.70%	23th
2016	15,386.09	6.10%	21th

In March 28th, 2015, the National Development and Reform Commission, the Ministry of foreign affairs and the Ministry of Commerce jointly issued the vision and action to promote the construction of the Silk Road Economic Belt and the maritime Silk Road in the twenty-first century. “The Belt and Road Initiatives” determines the layout of Heilongjiang province: building the economic belt of the eastern sea and land silk road and providing cross-border transportation for the eastern coast, Japan, Korea and even North American. The Sino-Russian trade cooperation is of importance in the construction of the economic zone. Based on “The Belt and Road”, two sides have carried out several rounds of consultations, including transportation, energy, power, regional cooperation, financial and aerospace transport, et al. As has been reported, in 2020, the target will be realized that the trade volume between China and Russia will reach $200 billion. In addition, the policy of northeast revitalization strategy, which is issued by the State Council in the early 2017, further strengthened the importance of speeding up the economic development in Heilongjiang. In this policy, twenty specified measures have been published, including establishing new scenic spots, robotics manufacturing innovation center, supporting private capital investment et al.

3.2 General information in eight resource-based cities

In each city, the position in terms of resource-type and geography will be listed firstly. To understand the degree of dependence on the natural resources, the history of activities related to resource production will be introduced. Besides the dominant resources, some other industries, such as agriculture, tourism and trade, will also be referred to explain the similarities and differences among eight cities. Finally, the value of GDP and industrial structure by the end of 2016 for each city will be described for further summarization in the section 3.3. The section 3.3 will also include the data of population, land area, GRP per capital and the ratio of the industrial structure in terms of GDP and workforce. Through comparing the economic data in each city, the advantages and disadvantages for each city will be obtained.

In the following study, the information will be gathered to analyze the theoretical and actual city branding pathways, also providing the evidence for the recommendation and suggests in the last section.

3.2.1 Jixi

Jixi is one of the main cities of the old industrial base in the northeast and the largest coal city in the northeastern China with a hundred years history. It is located in the southeast of Heilongjiang Province, surrounded by mountains on three sides and bordering Muling City from the south, Qitaihe City and Baoqing county from the north, Linkou county from the west.

Jixi is an important base of coal and graphite production in China, coal as the main body and with the machinery, equipment manufacturing, metallurgy, electric power, chemical industry, building materials and other categories as the supplement.2014 Heilongjiang Provincial Department of land and resources & Investment promotion for the exploration rights in Jixi was held in Harbin and Jixi city was formally awarded with the "China graphite" by the China mining association, becoming the eleventh city awarded with the title and the only award in Heilongjiang province.

In 1906, coal mining activities has appeared in Jixi. After the foundation of China, the mining activities have entered in the formal period. In the past sixty years, the total cumulative production has reached about 1,000,000,000 tons of raw coal, Jixi has thus become a city built by the coal, which is named of a resource-based city.

The Jixi area was developed very early in the Chinese northeast border region. As early as six thousand years ago, the ancestors of the Jixi area -- Sushen began to multiply in this fertile black soil. Experiencing the ups and downs of the past dynasties, on the December 18th, 1956, Jixi was approved by the forty-first meeting of the State Council, which was the establishment of Jixi city (prefecture level) instead of Jixi County, directly under the jurisdiction of Heilongjiang province.

Besides the role of coal mining city, Jixi also has the advantage of high quality land. The farmland lies in the black soil area of temperate zone of northeast China with high organic content and good natural fertility, which makes Jixi as the high quality agricultural products' base. Jixi city is rich in rice, corn, soybeans, grain crops such as potatoes, and pumpkin, sweet corn, marigold and other economic crops.

At the end of 2016, the gross domestic product (GDP) of the whole city was 51.84 billion yuan, an increase of 6.5% over the previous year, of which the added value of the primary industry was 18.48 billion yuan, an increase of 6.8%; The added value of the secondary industry was 12.58 billion yuan, an increase of 6.3%; The added value of the tertiary industry was 20.78 billion yuan, an increase of 6.2%. The industrial structure was 35.6: 24.3: 40.1. The contribution rate of the three industries to GDP

growth is 38.3%, 25.3% and 36.4% respectively. The per capita regional gross domestic product is 28647 yuan, an increase of 7.4%.

3.2.2 Hegang

Hegang is located in the northeast of Heilongjiang Province, is one of the central cities among that area and also the national energy city. Hegang city is one of the important coal bases of China, and it is an important old industrial base in Northeast China.

The city of Hegang is named of "Cranes stand guard". It is located in the transition zone between the small Xingan Mountains and the Sanjiang plain, north to the Russia across the border of Heilongjiang province. The area of Hegang is about 15,000 km^2, with the jurisdiction among two border counties Luobei and Suibin， and six administrative districts. The population has reached1,000,000, of which the urban population of 700,000 and the urbanization rate is 84%.

Hegang is a resource-based city where coal is prosperous. Since the first coal mine was started in 1918, the mining history has been more than one hundred years. Coal, graphite, grain, timber and other important resources enrich this place. The enrichment of coal geological reserves of 26 tons, was one of the four largest coal mines, is now the important producer of high quality coal and chemical coal; Graphite reserves of 10.26 tons, ranking the highest in the Asia and also at the top of the world, with an annual output of 300,000 tons accounted for 1/3 production of China.

It has more than 800 acres of fertile black soil, with an annual output of 9,000,000,000 kg of grain, including fine processing capacity of more than 6.5 million tons of rice, accounting for 1/5 production of Heilongjiang Province; forest area covers 660,000 hectares and the urban forest coverage rate reaches 70%. In addition, the region includes abundant water resources. Except Heilong river and Songhua river , there are 126 medium-sized rivers, 10 large and medium-sized reservoirs and numerous lakes, rich in sturgeon and more than 20 kinds of aquatic resources and black Fungus, Hericium, ginseng, blueberries and other 40 kinds of forest products. There are more than 30 kinds of non-metallic mineral resources, such as ceramsite and silica.

Hegang tourism resources are very rich, with large border river, big forest, big snow, big wetland, big agriculture, large mines, large stone forest and other intact original ecology scenery. Longjiang Three Gorges is one of the top ten tourist attractions in Heilongjiang Province. There are 3 national-level primeval forest parks, National Mine Geopark, Heilongjiang River Basin Museum, Taipinggou golden town, Jindingshan forest, reed wetland and other scenic areas.

In addition to the local economy, there are five direct provincial enterprises in Hegang. Heilongjiang Coal Group Hegang Branch is one of the four major coal companies in Heilongjiang. Thecoal production reached 14 million tons and realized the tax revenue

of 870 million yuan, accounting for 17% of the financial revenue directly under the municipality. Eleven of the fourteen state-owned farms under the jurisdiction of Heilongjiang Land Reclamation Bureau—Baoquan Ridge Farm Authority are located in Hegang; Huaneng Hegang Power Generation Company with the capacity of 1.2 million kilowatts, is a national thermal power generation enterprise; CNOOC chemical company total investment of 3.68 billion yuan of fertilizer projects have been put into operation.

Hegang is the frontier position of Heilongjiang to open to Russia. It has a 235-kilometer border with Russia. There are two national first-class ports there. Luobei port has an annual throughput capacity of 430,000 tons. It is the nearest border port to Russia in Heilongjiang province. Economic and trade cooperation with Russia began after the opening of the port in 1990. In 1998, the first business representative office was set up in Russia's Jewish region, and also the Hegang Association of Russian Enterprises. The two sides have established friendly cities for 15 years. At present, 16 enterprises in Hegang have invested in and built factories in Russia's Jewish state, with 44 economic and technological cooperation projects in Russia, with a total investment of more than 1 billion yuan.

In recent years, Hegang seized the opportunity and has been included in the national strategic of "large and small Xingan Mountains forest ecological protection and economic restructuring," "adjustment and transformation of northeast old industrial base", "two plains modern agriculture comprehensive reform", "Heilongjiang Development and opening up along the northeast of Inner Mongolia "," sustainable development of resource-based cities "and" economic belt construction of land-sea-silo road in Heilongjiang" and "China-Mongolia-Russia economic corridor ". Hegang was also listed in the eastern part of Heilongjiang Province's "eight major economic zones", being part of the "Coal and Electricity Base Planning Area "," Two Great Plains: Agriculture Comprehensive Development Experimental Zone "," Northland Scenery-featured Tourism Development Zone "and" Northeast Asia Economic and Trade Development Zone ".

By the end of 2016, the gross domestic product (GDP) of Hegang has reached 26,410 million yuan, being calculated at comparable prices, decreased by 1.2%. over the previous year. The value added of the first industry increased by 9,050 million yuan, increased by 0.2%.; the value added of the second industry was 7,960 million yuan, with the decrease of 4.4%. the value added of the third industry was 9,400 million yuan, of which the growth rate was 0.2%. The industrial structure was 34.3: 30.1:35.6.

3.2.3 Shuangyashan

Shuangyashanis located in the northeast of Heilongjiang Province, facing the Wusuli River across Russia, adjacent to Jiamusi, Qitaihe, Jixi and other cities. Shuangyashan

is an important coal mine base in China. Shuangyashan’s coal mine is one of the ten mega-coal mines in China, and its coal reserve ranks first in Heilongjiang Province.

From 1931 to 1941, the Japanese invaders in Shuangyashan wantonly snatched gold, mined coal fields, leading the population concentrated in this place. On July 1st of 1947, Shuangyashan Mining Bureau was formally established. Approved by the State Council, Shuangyashan city was formally constituted in 1956. In 1999, since the city construction was far lagging behind the economic development, the city announced a large-scale expansion. It has been built of the New Square, Cultural Square, People's Square, Pedestrian Street, Shuangyashan Economic and Technological Development Zone and a series of landmarks.

Shuangyashan is rich in mineral resources. The city's coal reserves of 117 tons, accounting for the province's total reserves of 47%. Iron ore reserves of 1.2 tons, which is the largest iron mine in the province. The reserve of graphite is abundant, also the resources of Xuan Wuyan, selenium, zinc, uranium and other minerals. Relying on the abundant coal resources, a relatively complete system of coal industry has been developed with the coal production capacity of 33 million tons.

Shuangyashan is a modern agricultural leading city. The city is located in one of the three famous black fertile soil belt in the world. The arable land of Shuangyashan has an area of 13,360 thousand acres, the green and pollution-free food base area of 10 million acres. It is the important commodity grain base and the organic food based awarded by the EU certification. The grain output stabilizes at 14 billion pounds or above. It is also abundant in the soybean, rice, corn and other grain products and the famous red bean, pumpkin seeds and other economic crops. The farms are equipped with the national first-class modern agricultural machinery. The famous Friendship Farm is the state farm with the highest level of agricultural modernization in China.

Shuangyashan is a city which cooperates and trades with Russia frequently. Six first-class ports to Russia are located within 300 miles. The city lies in the core districtopen to the Russian Far East and is an important node city of the construction of the Mongolia and Russia economic corridor.

The natural ecological environment is another advantage for the economic development in Shuangyashan. Shuangyashan is the best wetland with the original conservation and biodiversity. The Red Crowned Crane, hooded crane, Oriental White Stork and other national protected birds dwell in this land. As the national forest city, the forest area covers 860 thousand hectares and the forest coverage rate is40%. Raohe county, under the jurisdiction of Shuangyashan, is one of the first nine cities named with the “natural oxygen bar ".

At the end of 2016, the annual GDP of 43.74 billion has been reached, according to the comparative price, 2.6% growth over the previous year. The first industrial added value of 15.85 billion with an increase of 2%; The second industrial added value of 9.66

billion, decreasing of 3.4%; The third industrial added value of 18.23 billion with the growth of 6.8%. The industrial structure shows to be 36.2:22.1:41.7. The contribution to GDP growth rate was 28.8%, -29.1% and 100.3% respectively. The city's per capita of GDP reached 29,959 yuan, increasing of 4.2%.

3.2.4 Daqing

Daqing, known as the oil city and city of thousands of lakes, is located in the southwest of Heilongjiang Province, and is the second important city except Harbin. Among all cities in China, Daqing is ranked at the 11th considering the comprehensive strength. Moreover, Daqing is added into the list of the second-tier cities in China.

Daqing owns the biggest oil field in China, which is also the site of the tenth oil field of the world. It is a famous industrial city with petroleum and petrochemical industry as the pillar industry with the output value reaching the second place in the Northeast China, and the per capita of GDP reaching US $ 20,000.

In 1955, Songliao Petroleum Exploration Bureau began drilling for oil resources in Anda County. On September 25th 1959, shortly before the 10th anniversary of the founding of the People's Republic of China, industrial oil flow was found in the continental sediments of the Songliao Basin in Northeast China. Daqing has a better production base. Especially with the steady production of the crude oil and the rapid development of the petrochemical industry, Daqing has a large potential market in the deep processing of petroleum and petrochemical products. As a young industrial city, the economy of the city has been developed rapidly. With the urban population agglomeration and expansion, there were increasing construction projects that should be desired to be developed in cooperation, and a large number of new energy-saving and environment-friendly building materials in demand.

The underground of Daqing contains geothermal energy equivalent to 10 thousand times the energy of Daqing oil and gas. Other solar and biomass energy reserves are also very rich. It is easy to form large-scale development and produce great economic benefits.

At the end of 2016, the annual GDP has reached 261 billion yuan, 1.7% over the previous year. The first industrial added value realized 18,710 million yuan, an increase of 2.9% compared with the previous year; the second industry added value realized 152,390 million yuan, down 0.1% over the previous year; third industrial added value realized 89,900 million yuan, an increase of 5.5%. The added value of the first industry accounts for 7.2% of the proportion of GDP, the second industry accounted for 58.4% and third industries accounted for 34.4%.

3.2.5 Yichun

Yichun lies in the northeastern part of Heilongjiang Province, named after the Yichun River, a tributary of the Tangwang River. It is an important eco-tourism city in the north of China and also a central city in the northeast of the province. Yichun has the largest original forest of Korean pine in the world, with the fame of "natural oxygen bar", "the forest capital", and "Korean pine's hometown". The large - scale development and construction began in 1948.

Yichun city is rich in animal and plant resources. The small Xingan mountain forest is the habitat of the Siberian tigers, deer, bears and other 60 kinds of rare wild animals and 260 species of birds. The special geographical location and ecological environment of the Xingan Mountains, give birth to a variety of wild herbs with high economic value and unique features. The medicine resources in Yichun account for the proportion of about 35% of all the Heilongjiang Province. There are more than 1390 kinds of plants in the forest, rich in the wild fruit and the hill potherb.

Yichun is also a city with affluent mineral resources. According to the preliminary exploration, there are more than 20 metal deposits, such as gold, silver, iron, lead, zinc, aluminum and copper. More than 100 mineral deposits and more than 100 gold reserves have been determined. Non - metallic mineral resources are distributed widely in this area, including limestone, marble, barite, agate, granite, perlite, purple clay, lignite and other 25 kinds.

At the end of 2016, the total output value of the whole city was 251,239 million yuan, up by 1% over the previous year. For specifically, the added value of the first industry increases by 2.7 %; the added value of the second industry decreases by 6.9%; the added value of the tertiary industry increased by 3.6%. The structure of three industries is calculated to be 42.4:19.5:38.1. The average per capita of GDP reached 21,043 yuan, up 2.9 % over the previous year.

3.2.6 Qitaihe

Qitaihe is a new industrial city born and developed by coal. It became a city in 1958 and promoted to be provincial municipality in 1983. It now has jurisdiction over Bree County, Xinxing District, Taoshan District, Qiezi River area and Jinsha New area. It has a total area of 6,221 km^2 and a population of 930,000. Over the past 50 years, Qitaihe has contributed more than 600 million tons of coal to China and is an important coal and electric power production base in the country. Qitaihe is the largest high-quality coking coal and coke production base in Northeast China, and the only anthracite production base in Heilongjiang Province. Furthermore, the reserves of graphite resources are abundant in Qitaihe. The preliminary exploration proved that

reserves have reached 460 million tons, and all of them are large flake graphite with high grade.

Qitaihe is located in the west of the border of Changbaishan system with mountains and rivers, leading to the forest cover rate of 48.6 %. The central district of the city is surrounded by three mountains, two lakes and one river, which forms the unique scenery of the city, awarded as the “National Garden City”.

Due to the geographical advantages, the agricultural industry in Qitaihe has been developed rapidly. The grains and crops include corn, soybean, rice and white melon seeds, etc. Qitaihe have 1,513 square kilometers of cultivated land, with food crops comprehensive production capacity of 1.2 billion kg.

Qitaihe is the pilot city of the national circular economy, the pilot market for the economic transformation of the resources exhausted city, the pilot city of the private economic reform in Northeast China and the national urban mineral demonstration base.

At the end of 2016, the total economic gross (GDP) of the whole city reached 216.64 billion yuan, up 0.6 % over the previous year. From the industrial structure, the added value of the first industry reached 3.182 billion yuan, down by 3.8 % over the previous year. The added value of the second industry reached7.912 billion yuan, increased by 1.2 % over the previous year. The added value of the tertiary industry reached 10.569 billion yuan, up 3.5 % over the previous year. From the economic structure, the proportion of three industry structure was 14.7: 36.5: 48.8. The per capita gross domestic product (GDP) was 26.5 thousand yuan, up 5.6 % over the previous year.

3.2.7 Mudanjiang

Mudanjiang is the third largest city in Heilongjiang province. It is located in the southeast of Heilongjiang province and also the deputy central city. It is an important regional central city in the eastern part of Northeast China and an important open gateway.

Mudanjiang is named after a river, one of the biggest tributaries on the Songhua River in Heilongjiang Province. The main scenic spots and cultural scenic spots in Mudanjiang are the Crater National Forest Park, Mudan Peak National Forest Park, the Xuexiang ski resort, the Mudan Peak ski resort, and snow castle built on the Mudanjiang River in winter, etc.

Mudanjiang City is listed as the first batch of new urbanization pilot areas of China. In February 2017, Mudanjiang was selected as the key city of PPP innovation in the national major municipal engineering field.

Mudanjiang, located in the coastal waters along the border, is a city with an active economy and trade. It is located in the center of the Northeast Asian economic circle, and the border line with Russia is 211 kilometers long. It is 53 kilometers away from Russia's far East traffic hub, 53 kilometers from the port of Vladivostok, and 50 kilometers from the nearest straight line to the Japan Sea. It is an important strategic fulcrum of the Longjiang Silk Road Belt of "China-Mongolia-Russia Economic Corridor" and is a bridgehead and hub station open to Russia. The trade volume to Russia accounts for more than 1/3 of the whole province, and it is a big economic and trade market between China and Russia.

The city's forest coverage has reached 64%. More than 2, 500 species of wild animals and plants inhabit here, known as "Heilongjiang Province natural gene bank". Mudanjiang is the province's second largest tourist center city, and tourism resources cover various categories, including lake, forest, snow, crater and wetland, etc. Mudanjiang is the first member city of the World Tourism Cities Federation, China's excellent tourist cities, China's top 100 cities tourism competitiveness.

Mudanjiang is located in the best belt for planting corn, the best place of the milk source and the best black soil belt. The production of edible fungi accounts for 1/2 of the whole province and the volume of the trade accounts for 2/3. Large amounts of productions here are exported to more than 40 countries and districts, including Russia, Korea and Japan. The graphite reserves the first place of the whole country. Mudanjiang is the city of the regional consumption center in Heilongjiang Province, and the annual growth of tourism income is over 20 %

At the end of 2016, the city's GDP was 123,120 million yuan, an increase of 6.6% (including Suifen River of 136,810 million yuan, an increase of 6.2%). The first industrial added value of 22,820 million yuan, an increase of 5.5%; the second industrial added value of 47,270 million yuan, an increase of 6%; the third industrial added value of 53,30 million yuan, an increase of 7.6%. The industrial structure was calculated to be 18.5:38.4:43.1 (including Suifen River16.8:35.6:47.6). The per capita of GDP was 46,997 yuan, an increase of 7% (including Suifen River was 49,618 yuan, an increase of 6.6%).

3.2.8 Heihe

Heihe is located in the Northeast China border, covering an area of 68,726 square kilometers in Heilongjiang. Across the Heilong River, the state capital of Amuro, which is the third largest city in Russia, lies in the opposite. Heihe city governs the Five-linked-great-pool Lake scenic area. There are 25 farms and 21 other units directly under the state-owned farms.

Heihe has a vast territory, where the land, forest, grassland, water, wildlife, tourism and mineral resources are very rich. Heihe is an important national commodity grain base

and green food producing area. The wetland areas of 540,000 acres have been certified by the state, making Hiehe one of the most important freshwater marshes in the province. Forest land and grassland area accounts for 61.6% of the whole city. Besides, the territory has 621 rivers. Ten hydropower stations have been built.

From the perspective of wild resources, there are red deer, moose and other wild animal 467 kinds of wild plants within the region, one of an important wildlife resource garden and the gene pool. It has been found that 350 kinds of herbs in reserves of about 17 million kg. In rivers and lakes, a large variety of fish inhabit in this area, such as the salmon in Heilong River.

Heihe is affluent in tourism resources. With Five-linked-great-pool Lake, the vast forest, the vast grassland, and the water scenery, total 5 categories of 32 kinds tourist resources entities present in the area. Specifically, the Five-linked-great-pool Lake scenic area is known as the "natural volcano museum" and "open volcano textbooks", named of the "healing spring water" and "holy water". It is a place that gathers the feature of ecological tourism, holiday recuperation, and geological studies as a whole.

The mineral resources are abundant in Heihe. At present, black, non-ferrous, valuable, rare and other metal minerals and energy, chemical raw materials have been found in the city. There are 95 kinds of non-metallic minerals, such as metallurgical recipients, scattered elements, etc.; 37 kinds of minerals have been identified; All above account for 72.5% and 48% of the province and 53.9% and 24.2% of the whole country respectively. More than 600 mineral sites have been discovered, of which 73 sites have proven reserves, and the potential economic value of the main mineral resources turns out to be more than 1,000billion yuan. Sixteen reserves of copper, molybdenum, tungsten and zeolite have been proved. Dobaoshan Copper Mine is the largest copper deposit in Northeast China, and Cuihongshan Iron Polymetallic Mine is the second largest iron ore in the province. It has been proved that the reserves of coal resources are 960 million tons. In addition, platinum group metals and pyrite are found. Perlite and other characteristics of mineral resources reserves are relatively high, which are rare in other cities of the province.

The embryonic form of Heihe city appeared in the middle of 19th century. In 1907, with the prosperity of commerce and gold mining in Russia, the basic pattern of "From east to west, ten streets, from north to south, five roads" was formed in the old city area. After the liberation of 1945, the main urban buildings have been bungalows. In the end of 1980s, after Heihe was approved as the first open city along the border of China, buildings began to increase. After entering the new century, the scale of urban area has been further expanded.

At the end of 2016, the GDP of Heihe turns out to be 47.08 billion yuan, with an increase of 6.2%. over the previous year. The first industrial added value realized 22.29 billion yuan, increasing 6.8% compare with the one in the last year. Meanwhile, the added value of the second industry realized 7.04 billion yuan, an increase of 4.4%. The

three industries accounted for the proportion of GDP was 47.4%. 14.9% and 37.7% respectively.

3.3 Summarization of statistical information in eight cities

The basic information including geographic, demographic and economic data for the eight cities in the Heilongjiang province at the end of 2016 is collected and shown in Table 4.

Table 4. Basic information for cities in the Heilongjiang province

	City	Gross Regional Product (10000 yuan)	Household Registered Population at Year-end (10000 persons)	Land area (km2)	GRP per Capita (yuan)
1	Jixi	5,146,868	181.70	22531	28222
2	Hegang	2,655,736	105.61	14679	24981
3	Shuangyashan	4,333,342	147.43	22619	29237
4	Daqing	29,834,587	275.48	21219	110113
5	Yichun	2,481,966	121.19	32800	20414
6	Qitaihe	2,126,515	83.11	6221	24823
7	Mudanjiang	13,107,000	262.00	38827	47356
8	Heihe	4,478,252	168.00	68340	26575

In the Table 4, Daqing has the highest gross regional product, following with Mudanjiang. Daqing is the most famous city in the province except Harbin, with the good fame of rich oil. The table shows apparent that the GRP of Daqing and Mudanjiang far exceeds others. The advantage of Daqing stems from the abundant and expensive oil resources, which makes GRP of the city lying in the top of the whole country. With the help of natural resources, Mudanjiang develops local tourism and makes an achievement on the tertiary industry. The economic strength of Yichun and Qitaihe seems to be the worst compared with other cities. The performance of these two cities is restricted by the limited land area and resource category. In terms of GRP per capital, though with the largest population among eight resource-based cities, Daqing ranked at the first place with the number of 110,113 yuan, more than double of that of Mudanjiang. The gross regional capital of other six cities does not reach 30,000 yuan. Yichun is ranked at the last place. From the perspective of land area, Heihe has the largest area with 68,340 km^2, while Qitaihe is the smallest city with the area of 6,221 km^2.

As the production and composition of the three industries can reflect the economic status and also the urbanization level, information of industry composition in 2016 for each city in Heilongjiang province is collected and shown in Table 5. It describes that three cities (Jixi, Shuangyashan and Mudanjiang) are dominant in the tertiary industry

both in terms of GDP and workforce. In Shuangyashan, the ratio of primary industry in terms of GDP with the least workforce occupies nearly the same ratio of tertiary industry in terms of GDP. In Hegang, Shuangyashan, Jiamusi and Qitaihe, the order of ratio of primary, secondary and tertiary industry in terms of GDP is not accordance with the order in terms of workforce. In Daqing, the secondary industry is dominant; In Yichun and Heihe, the primary industry is dominant. In Daqing, the ratio of tertiary industry in terms of workforce is 0.65%, which is extremely small. To further understand the economic situation and industry structure of each city, some details will be analyzed in the following sections.

Table 5. Industry composition of each city in the Heilongjiang province

	City	Ratio of primary, secondary and tertiary industry in terms of GDP	Ratio of primary, secondary and tertiary industry in terms of workforce
1	Jixi	36.43/25.96/37.61	26.46/32.73/40.82
2	Hegang	35.19/29.88/34.93	27.01/39.17/33.82
3	Shuangyashan	38.22/22.77/39.01	4.35/40.81/54.83
4	Daqing	6.53/64.88/28.59	0.65/50.54/48.81
5	Yichun	42.93/18.67/38.40	53.65/14.70/31.64
6	Qitaihe	16.09/36.78/47.13	3.93/60.38/35.70
7	Mudanjiang	17.08/35.81/47.11	15.04/31.32/53.64
8	Heihe	48.32/15.17/36.51	48.91/12.50/38.59

3.4 Summary

Section 3 includes the basic information of the eight RBCs and Heilongjiang province as a whole. In the overview of Heilongjiang province, the resource-based feature should be emphasized based on the forestry superiority and mineral advantage. Under the down-trend economy, the urbanization development of the province attracts more and more attention. The central government and relevant institutions have issued a series of policies for guiding the eight cities in Heilongjiang. These central strategies and policies will be the key to analyze the possible differences between theoretical and actual city branding pathways and explain the implementation and follow-up actions of these cities.

Comparing the geographical features and the developmental history of eight cities, several similarities exist. Even though each city has its own advantageous resource, the mining or/and processing industry will be their main economic focus. Due to the fertile land and abundant forestry, animals, plants and herb medicine are all involved in their production industries. With numerous beautiful scenic spots, these cities have promoted the expansion of tourism which is accordance with the requirement of industrial transformation. Moreover, all the cities refer to the cooperation with Russia. Heilongjiang borders Russia to the north and east. The cities within the province regard the import and export cooperation with Russia as the good opportunity to develop the trade industry within the tertiary sector.

The difference exists in the case of Yichun and Heihe. These two cities do not own mineral resources; however, the forestry-related activities dominate significantly.

In the summarization of statistical information, some other features are concluded in terms of geography. Daqing has the highest gross regional product, following with Mudanjiang. These two cities are bigger than the other six cities in terms of population. Heihe has the largest land area while Qitaihe ranks the least. Comparing all the data, the strength of Qitaihe shows to be the weakest.

The information above will be used in the following study. The features and similarities of these city will be favorable for judging the theoretical and actual pathways. The developmental history of dependence on resources and urbanization will help understand the determined choices for the city plan and implementations.

4 Analysis of theoretical and actual city branding

In the section 4, two indicators will be determined to analyze whether the theoretical pathways are concordance with the actual desired pathways. The first indicators are the city brand descriptions, which are retrieved from the conclusive sentences in the official documents; the second indicator will be the frequency of the city labels which are connected with the wish of the governments and ecological modernization. Through the 5-pathway method, the theoretical city branding pathway will be obtained in the section 4.1.

4.1 Theoretical city branding pathway

From the perspective of ecological modernization, 5-pathway method is applied to predict the category of pathway based on the stage of economic development and the position within the region. The city branding pathway is predicted as below in the table 6.

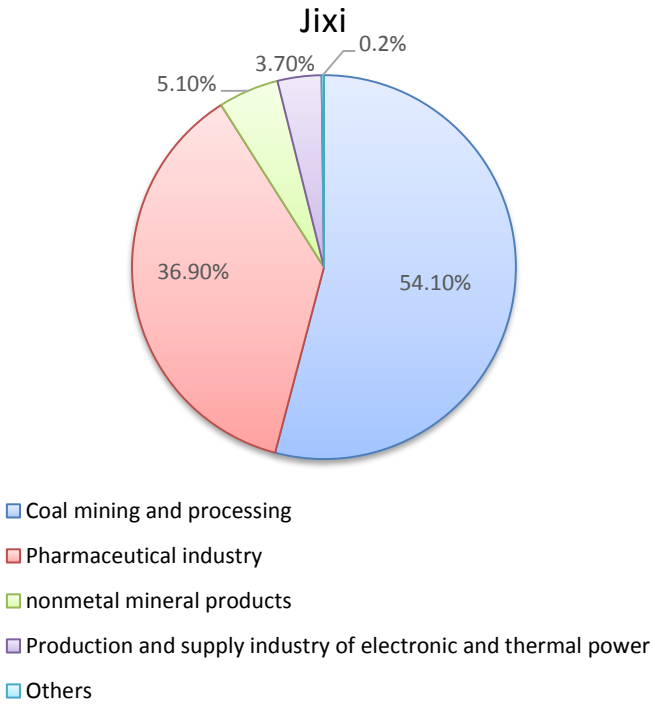
In the table 6, the data of three dominant industries, 1/2/3 as GDP and 1/2/3 as working pop. are summarized to determine the economic development stage for each city. 1/2/3 as GDP and 1/2/3 working pop. play the main roles. When there is a conflict between the indicator of 1/2/3 as GDP and 1/2/3 as working population, the results will consider the three dominant industries and refer to the specific circumstances of the city. Then combined the results of the economic development stage and regional position, the theoretical city branding pathways will be achieved in the last column according to the table 2.

The conflicts between the ratios of 1/2/3 as GDP and working population exist among four cities in the table 6, which are Jixi, Hegang, Shuangyashan and Qitaihe. The choice of the economic development stage will be analyzed in these four cities considering the city developmental and economic history and the effectiveness of the two indicators for representing the economic situation.

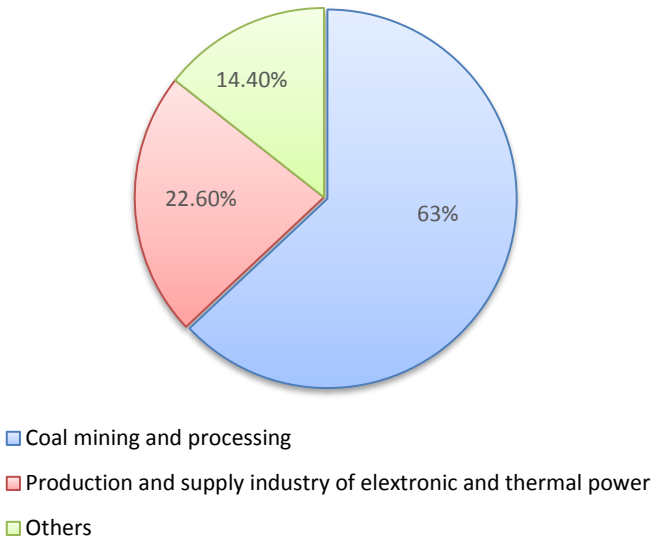
(1) Jixi

The order of ratio of 1/2/3 as GDP is calculated to be 3, 1, 2, while the ratio of 1/2/3 as working population turns out to be 3, 2, 1. The proportion of primary industry as GDP has almost the equal amount of that of tertiary industry.

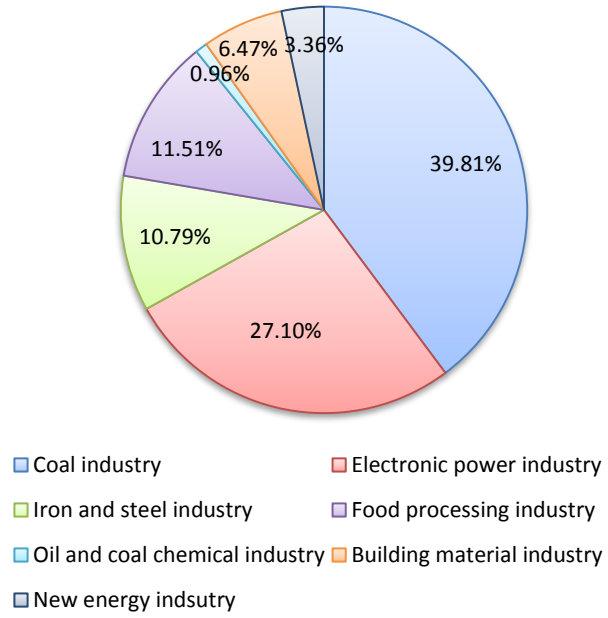
From the geographical features, the secondary industry should be dominant. Based on the introduction of Jixi in the section 3, the city is the core base of coal mining in China and owns a long mining history. Although the local government of Jixi understood the importance of reducing the dependence of resources, the activities of mining cannot be ignored in the short term. Based on the industry classification, the mining activities and the optimal processing belong to the secondary industry. The Figure 6 shows the proportion of each field's output value in the secondary industry in 2015. The figure shows clearly that coal mining and processing contributed more than 50% output value and indicates the importance of coal resources in Jixi's economy.



Hegang



Shuangyashan



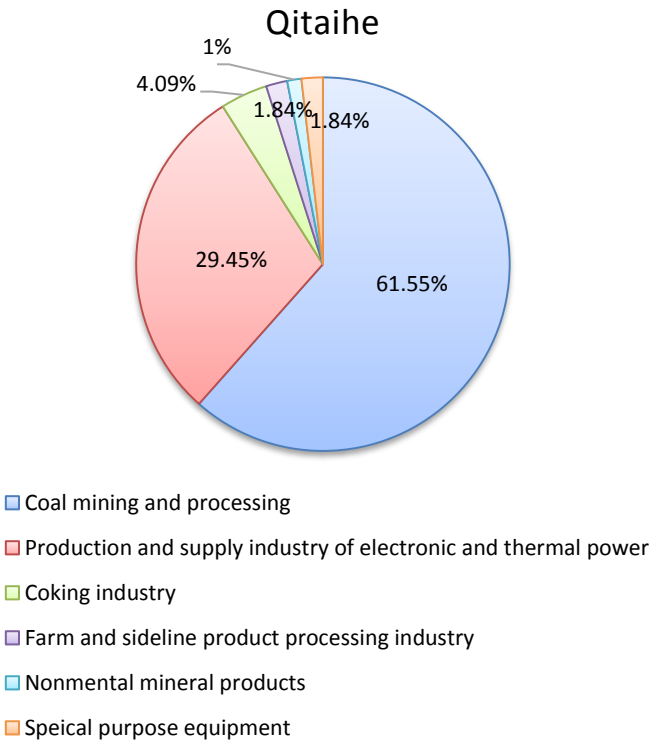


Figure 5. The ratio of each industry in the secondary sector

The dominance of tertiary industry should also be involved considering the leading policy—industrial structure transformation. Jixi is contiguous to Russia and takes advantages of geographical dominance. In the past decades, it has developed good cooperation and trade with the merchants in Russia. Meanwhile, the local officials promote the famous scenes around the area including Kahnka Lake. After a series of actions on transforming the industrial structure, some effects have been presented. The tertiary industry stands in the first place in Jixi.

After including the information on the geography, history and quantity results, the economic development stage should be determined as the tertiary industry in the first place, and also taking the secondary industry into account considering the situation that Jixi has not got rid of the role of coal mining.

(2) Hegang

In the figure 5, the proportion of the primary industry as GDP is the highest, following with the tertiary industry and then the secondary industry. However, the working population of the tertiary industry is larger than that of the primary industry, but smaller than the secondary industry.

Although the primary industry contributes more than the secondary industry, the economic development stage should be determined more of the secondary industry due to two reasons. The first reason is attributed to the resource feature of this city, which is similar to Jixi. In 1918, the first coal mine was started and since then, the coal culture has been existed for almost one hundred years. With the fame of one of the biggest coal

mines in China, the contribution of coal to the economic development of Hegang cannot be ignored easily. Besides, compared with the indicator of 1/2/3 as GDP, 1/2/3 as working population should be more persuasive considering the developmental economic stage. The calculation of GDP takes the relative price into account, leading to the bias of judgments on the economic development stage. Especially in China, the city is developed under the arrangement by the central and local government. The relative number of the working population more likely reflects the prosperous of one industry.

Two dominant industries, which belong to the tertiary industry, in Hegang occupies about 44% among all the registered companies. The secondary industry should be of the most dominant and together with the tertiary industry.

(3) Shuangyashan
The population works in the primary industry is extremely small compared with the other two groups. However, the value output of this small group turns out to contribute 38% of the whole value.

Shuangyashan is also a city with a long history of coal and ironstone. Not only has Shuangyashan a reserve of 47% coal of the whole province, the city also has the largest iron mine in Heilongjiang. However, based on the statistics and regarding the proportion of 1/2/3 as working population as the standard with more weight, the economic development stage should be the tertiary industry most probably.

(4) Qitaihe
The number of people who work in the secondary industry is extremely high compared with the other two industries. Three dominant industries in Qitaihe include public management, social security and social organization, wholesale and retail trades and manufacturing. The former two fields contribute 42.87%, leading to the tertiary industry as the first into consideration.

The view of history explains the dominance of the secondary industry. Qitaihe is one of the three major protective coal fields in China, and is a new city dominated by the coal and wood processing industry.

Therefore, the city developmental economic stage is determined to the secondary industry and also probably the tertiary industry.

Another important finding in the table 6 is that in almost all of these cities, public management, social security and social organizations have the highest number of all industries. These organizations belong to the low value-added industries. Under this circumstance, it is difficult for these cities to achieve explosive economic growth. To increase the economic value ratio of service industry, high value-added industries, such as finance, entertainment, tourism, should be offered more opportunities. Moreover, this fact also implies that the structure transformation is in the primary stage and these public organizations play a leading role in encouraging and promoting other industries. Structure transformation will be realized if some real effective industries get improved.

The theoretical city branding pathway for these resource-based cities concentrate on the pathway 2 and pathway 4. Only Yichun and Heihe should be developed in the pathway 1. Three of these cities will probably include the plan to the pathway 2 or pathway 4.

Table 6. Key geographic and economic data and theoretical pathways for 8 cities

City	Land area (km2)	Perm. Pop. (mln)	Three dominant industries	GDP/ permanent pop. (RMB)	1/2/3 as GDP (in%)	1/2/3 as working pop. (in %)	Regional position	Economic development stage	Theoretical city branding pathway
Jixi	22531	0.018	Public management, social security and social organization(23.39%) Wholesale and retail trades(16.51%) Agriculture, forestry, animal husbandry and fishery(13.95%)	28222	36.43/25.96/37.61	26.46/32.73/40.82	REG	3/2	4/2
Hegang	14679	0.011	Public management, social security and social organization(28%) Wholesale and retail trades(15.65%) Agriculture, forestry,aminal husbandry and fishery(9.81%)	24981	35.19/29.88/34.93	27.01/39.17/33.82	REG	2/3	2/4
Shuangyashan	22619	0.015	Public management, social security and social organization(39.91%) Wholesale and retail trades(14.95%) Agriculture, forestry,aminal husbandry and fishery(7.68%)	29237	38.22/22.77/39.01	4.35/40.81/54.83	REG	3	4

Daqing	21219	0.028	Wholesale and retail trades(33.84%) Public management, social security and social organization(13.92%) Manufacturing(10.58%)	110113	6.53/64.88/28.59	0.65/50.54/48.81	REG	2	2
Yichun	32800	0.012	Public management, social security and social organization(31.07%) Manufacturing(11.30%) Wholesale and retail trades(10.55%)	20414	42.93/18.67/38.40	53.65/14.70/31.64	REG	1	1
Qitaihe	6221	0.008	Public management, social security and social organization (24.55%) Wholesale and retail trades (18.32%) Manufacturing(8.39%)	24823	16.09/36.78/47.13	3.93/60.38/35.70	REG	2/3	2/4
Mudanjiang	38827	0.026	Wholesale and retail trades(19.64%) Public management, social security and social organization(17.52%) Manufacturing(17.08%)	47356	17.08/35.81/47.11	15.04/31.32/53.64	REG	3	4
Heihe	68340	0.017	Public management, social security and social organization (30.05%) Agriculture, forestry,aminal husbandry and fishery(15.41%) Wholesale and retail trades(13.71%)	26575	48.32/15.17/36.51	48.91/12.50/38.59	REG	1	1

4.2 Comparison with city brand description

The city brand descriptions state the actual city branding pathways which the cities choose for themselves. The complete and specific descriptions from three sources,

namely 12th five-year plan, 13th five-year plan and urban master plan, is compared with the results of theoretical pathways in the table 7.

The table 7 shows that the actual pathway in the official documents is almost the same as the theoretical pathway. It reveals that the plans issued by the local government have been concerned with the fact of the economic trend and political continuity. In Heilongjiang province, the actual pathway concentrates on the pathway 2 and pathway 4. Guided by the policy requirements, the resource-based cities should strengthen adjusting the industry from the natural resources to the service field, avoiding the serious ecological destruction, which is accordance with the core of pathway 4. Besides, cities with abundant mineral and forestry resources are demanded to advance the processing industry to reduce the pollution and enhance the production efficiency. For most of the eight cities, these two goals exist together.

From the results in Yichun and Heihe, Pathway 1 is avoided as a single target only in the case of Heihe. However, the sentences in the Yichun official document, pathway 1 alone is acceptable for the future plan. Within the background of adjusting the industry structure in the national strategy, these two cities will most probably attract investments to the tertiary industry, though agriculture and forestry are the main sources of income.

Table 7. Ecological modernization pathways and city brand identities

City (province)	Theoretical city branding pathways	City identity description (source)	Actual city branding pathway
Jixi	4/2	Jixi is an important energy base[2] in China, one of the regional center of the southeastern city of Heilongjiang province. Jixi aims to become a livable beautiful home with a strong comprehensive economic strength, high ecosystem carrying capacity and cultural soft power in the eastern part of Heilongjiang. (13th FPY)	4/2
Hegang	2/4	Hegang city is one of the central city in the northeast of Heilongjiang Province and also the national energy city. Hegang relies on abundant mineral resources and energy industrial advantages and further vigorously develop trade, tourism and other industries. Gradually, Hegang will be built into economic prosperity, social civilization, beautiful environment, with local characteristics of the modern city. (UMP)	2/4
Shuangyashan	4	Shuangyashan will become a resource type city model of scientific development and harmonious ecological garden city. The city identity is to be the important coal base in Northeast China, an important center city in eastern Heilongjiang province and livable ecological garden city.(UMP)	4/2
Daqing	2	Daqing is China's important oil and petrochemical industrial base, an important regional center city in the west of Heilongjiang province. The landscape for Daqing is to become the diversified development of the economic city, cultural city and the center city for promoting regional prosperity. Daqing, as an ecological garden city,	2/4

[2] Some of descriptions refer to “energy base” and also some other relevant terms. These terms point out that the city wishes to include the advanced manufacture in the future.

		owns beautiful and harmonious environment and people's sense of pride to enhance the happiness of the city. (13th FPY)	
Yichun	1	Yichun is located in the Northeast Asia important trade channel and the node. The city will be constructed as harmonious, vigorous and modernized livable forest ecology city. (UMP)	1
Qitaihe	2/4	Qitaihe is an important coal chemical base and a tourist city in Heilongjiang province, which is also one of the central cities in the Eastern Economic Zone.	2/4
Mudanjiang	4	Mudanjiang will be built into a trade city connected with Russia and Northeast Asia, become a regional center city with strong radiation force and cohesive force. (13th FPY)	4
Heihe	1	Heihe is in the middle of Heilongjiang Province, the regional center of the city, an important transport hub and logistics base in the province, green industry and modern agriculture service base, ecological livable city. The city aims to become a modern agricultural demonstration base, the supply of raw materials and processing base, an important hub in the national open border and the cooperation with Russia, an important ecological barrier for Hinggan Mountains area. (UMP)	1/4

4.3 Comparison with city labels related to ecological modernization

City label is the second indicator to further determine the actual desired pathway for each city. City labels are the terms related to ecological modernization and developmental direction of the city in the official documents, reflecting the brand positions and concluded in the table 8. For each category, several specific expressions for each city label in the documents can be gathered to present the same brand position. Through calculating the frequency of the relative terms can indicate the most inclined pathway for these cities.

These specific expressions are presented in the three official documents, including 12th five-year plan, 13th five-year plan, and urban master plan. For each city, the total number of each city label in three documents is calculated and only the city labels with the number ranking in the top will be listed in the table 9. Then the dominant city labels can be achieved. Combined with the features of each pathway in the five-pathway method and the dominant city labels, the actual city branding pathway following the city labels can be determined. These actual pathways will be used to be compared with the theoretical pathways in the section 4.1.

Table 8. The key terms of each label category

City labels	Specific expression for each city labels in the official documents
sustainable city	city of sustainable development, sustainable development capital, compact city
Smart city	Smart city, intelligent city, information city digital city

Innovation city	innovation city, innovative pilot city, science and technology innovation city, technology city, knowledge city, city for start-ups, learning city
Resilient city	Sponge city, safe city, resilient city
Tourism city	Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city
Eco city	Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city, water and maintain city
Low carbon city	Low carbon city, recycling economy advanced city
Livable city	livable city, city with good urban living environment, international friendly city for the elderly
Advanced manufacturing city	advanced manufacturing center/base, graphite capital, Modern coal machine manufacturing base, modern coal chemical industry base, national defense and military equipment base, modern eco industrial town, Large scale casting forging and heavy machinery manufacturing base, Pharmaceutical industry base, Scientific and technological cooperation and export processing base with Russia, Revitalization of northeast old industrial base, high tech base city, electronic information industrial base, equipment manufacturing, emerging industrial base, typical industrial base, coal resources city, mining - type heavy town, Raw material processing base, Coal electricity base industry, Import and export product processing base, Metallurgical base,
Service city	service center for industry, science and technology service base, Commercial and financial service center, Large social service organization, modern service industry, A financial city focusing on cooperation with Russia, Trade center, Transport hub, logistics base, transport base, financial center, e-commerce pilot city, service outsourcing demonstration city, port transport city, shipping center, exhibition center, national service innovation pilot, a city of industrial structural adjustment, Technology ceramics export base for Russia and Europe

Modern agricultural city	agriculture center, agriculture technology service base, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, National important resource and energy reserve base, China food base brand, The largest Organic Fertilizer Base in Northeast China and the important New material Industry Base in the whole Province

The accordance of pathway following the five-pathway method with the actual pathway from the city labels demonstrate to be positive as a whole considering the table 9. For example of Jixi and Shuangyashan, the degree of real desire for each pathway turns out to be different. In Jixi, the local government has more strong preference to become an advanced manufacturing city and modern agricultural city instead of a service city. This can be accused to the conservative attitude from the governments in the northeast China. The fertile black land and affluent natural resource have always been the advantages of this area. To achieve high economic value, the local government has to remain the development of the primary industry. This fact is the same as the case of Shuangyashan.

In reality, except Qitaihe and Yichun, other cities all involve the labels connected with service city as their main pathway. This has something to be with the policy issued in recent years. To revive the economic situation of the northeast district of China, the central government announced a series of guide policies, such as industrial structural adjustment. The industrial structural adjustments are meant to improve the proportion of the tertiary industry, decreasing the resources production in the city. Therefore, this guide leads these resource-based cities to get rid of the dependence of the natural resources and develop the service industry.

The labels in the three official documents emphasize the importance of the processing industry in these resource-based cities. Six of them desire to optimize the manufacturing process and target to be an advanced manufacturing city as one of their developmental pathways. Besides, Yichun and Heihe, only two of the cities following pathway 1 due to the geographic position, avoid being an eco-city or a tourism city alone, but instead they choose to make a combination of pathway 2 or 4 with the pathway 1.

Table 9. The theoretical pathway and the actual pathway in terms of labels

City	Theoretical pathway	City label as in 12th FYP	City label as in 13th FYP	City label as in UMP	Overall dominant brand label	Actual pathway
Jixi	4/2	Eco city 24 Advanced manufacture city 23 Modern agricultural city 13 Service city 12	Advanced manufacturing city 22 Modern agricultural city 17 Service city 14 Tourism city 13	Service city 3 Livable city 7	Advanced manufacturing city 45 Modern agricultural city 30 Service city 29	2/1/4

					Eco city 24 Tourism city 13 Livable city 7	
Hegang	2/4	Advanced manufacture city 26 Eco city 23 Modern agricultural city 16 Tourism city 15 Service city 11	Service city 16 Innovation city 13 Advanced manufacturing city 8 Tourism city 7	Service city 7 Advanced manufacturing city 4	Advanced manufacturing city 38 Service city 34 Eco city 23 Tourism city 23 Modern agricultural city 16 Innovation city 13	2/4
Shuangyashan	4	Eco city 23 Tourism city 13 Advanced manufacture city 13 Modern agricultural city 12 Service city 9	Eco city 11 Advanced manufacturing city 9 Service city 9 Tourism city 8	Eco city 9 Advanced manufacturing city 5 Tourism city 4	Eco city 33 Advanced manufacturing city 27 Tourism city 25 Service city 18 Modern agricultural city 12	1/2/4
Daqing	2	Eco city 24 Tourism city 9 Innovation city 8 Advanced manufacture city 8 Livable city 7	Low carbon city 25 Advanced manufacturing city 12 Administrative progress city 11 Innovation city 9	Low carbon city 53 Smart city 35 Advanced manufacturing city 21 Service city 18	Low carbon city 78 Smart city 35 Advanced manufacturing city 33 Service city 18 Administrative progress city 11	2/4
Yichun	1	Eco city 18 Tourism city 11 Low-carbon city 6	Eco city 22 Tourism city 10 Smart city 9 Livable city 8	Modern agricultural city 9 Advanced manufacturing city 8 Tourism city 8	Eco city 40 Tourism city 29 Modern agricultural city 9 Smart city 9 Advanced manufacturing city 8 Livable city 8 Low-carbon city 6	1/2
Qitaihe	2/4	Eco city 12 Advanced manufacturing city 11 Service city 10 Low carbon city 9	Advanced manufacturing city 9 Low carbon city 4 Eco city 3	Advanced manufacturing city 19 Livable city 4	Advanced manufacturing city 39 Eco city 15 Low carbon city 13 Service city 10 Livable city 4	2
Mudanjiang	4	Eco city 17 Service city 16 Advanced manufacture city 13 Tourism city 10	Service city 3 Tourism city 2	Tourism city 10 Eco city 6 Service city 3	Eco city 23 Service city 22 Tourism city 22 Advanced manufacturing city 13	4
Heihe	1	Advanced manufacture city 25 Eco city 20 Service city 19 Tourism city 16 Modern agricultural city 14	Eco city 24 Modern agricultural city 18 Service city 17 Tourism city 13	Tourism city 5 Modern agricultural city 4 Service city 3	Eco city 44 Service city 39 Modern agricultural city 36 Tourism city 34 Advanced manufacturing city 25	1/4

4.4 Summary

This section concentrates on the analysis of theoretical and actual city branding and their comparison. The theoretical city branding is based on the 5-pathway theory, while the actual city branding is obatined by the conclusive sentences and the dominant city labels in the three official documents, namely 12th five-year plan, 13th five-year plan and urban master plan.

For the theoretical city branding, these resource-based cities have some common features. Six of them target pathway 2 and pathway 4 at the same time or either one of them, while only Yichun and Heihe develop in the pathway 1. For the comparison part, the actual city branding is accordance with the theoretical ones basically. Through the conclusive description in the official documents, most resource-based cities follow the city position and economic stage. Only in the case of Heihe, the local government focus both on the pathway 1 and 4 at the same time, however, the city of Yichun will develop in the pathway 1 alone. Based on the results of the second indicator, more cities are inclined to develop in the multiple directions, involving pathway 1, 2 and 4 together. In this way, the municipal institutions can take both the guide from the central government and maintaining its own resource advantages into consideration. Namely, the desired pathways are influenced by the factors of psychology, geographical feature and the national policies.

5 Implementations in the resource-based cities of Heilongjiang

In the section 5, the urban projects for each city will be introduced through describing the guide policies from the official documents and also connected with the actual follow-up actions from the official sources based on the documents, reports and online interview.

Some policies, strategies and the actual pathways of each city will be described in the first place. Then it will be necessary to include the implementation in the 12th five-year period, for understanding the situation at the beginning of the next five years and how the effect of these implementation for the last five years. To analyze whether the follow-up actions during the 13th five-year plan suitable for realizing their city brandings, the projects will be collected and explained in terms of city brand description and city labels.

5.1 The method of collecting data on implementation

To obtain the more information and data, the implementations of eight RBCs are collected mainly from the official websites and supplemented with interviewing officials. The useful official websites include the municipal government website, urban and rural planning bureau website, statistical bureau website and authoritative media

coverage. The method of interview officials is realized by the column " Open government affairs to the public" on the government website. On this platform, the public can apply to assess to the information through raising up questions on the government affairs and the relevant officials will then answer these questions online.

Combined with these two methods, interviewing the officials can make up the information gap. The website can provide the scope of strategies and projects, the basic information of the projects and the published date of attracting investments, and progress of some major projects. Interviewing the officials can be favorable for understanding the specific progress statistics, the progress of all the projects as a whole and even some plans in the short future.

After collecting the information on implementation and the follow-up projects, they should be managed into two periods: 12th five-year period and 13th five-year period. In this thesis, implementations in the 12th five-year period are introduced mainly for explaining the effect of these implementations and the situation in various industries. In the 13th five-year period, the topic and brief introduction of each projects are the key to be abstracted. The topic can reflect to which industry this project belongs. In the brief introduction, the terms related to the city labels can be found out. These two aspects help conclude whether the project is suitable for certain city labels, further matching their actual city branding pathways. The correspondence of city labels and city branding pathways can be achieved by the definition of each pathway in the five-pathway method.

5.2 Jixi

The strategy of transformation and upgrading is the core of the 12th and 13th five-year plan in Jixi. It involves policy guides among agriculture, industrial and service fields, following pathway 1, 2 and 4. This is consistence with the results in the study of city labels.

Under the policy of transformation and upgrading, as far as agriculture industry is concerned, the transition will be realized from traditional agriculture to green brand agriculture, and also from planting to animal husbandry. The industrial restructuring has been planned, with coal, graphite, green food and medicine as the main industries. In addition, Jixi City has been awarded the title of "China's Graphite Capital" by the China Mining Association, and the development of graphite-related industries will be given priority attention. In the modern service industry, mainly ecotourism and trade circulation has been considered to be promoted.

The effect of implementations in the 12th five-year period

The improvement and completion of the local transport system projects have played a major role in developing the local business tourism industry in Jixi. With regard to the completion of the 12th five-pear plan, the Muling River Bridge, the Unity overpass, the Zuojia overpass, the Didaogong overpass have been completed and opened to traffic. The construction of Jixi-Hulin Expressway has been finished and opened to traffic, and the construction of Mishan- Khanka Expressway was speeded up. A fast and efficient

transportation network was initially formed. In addition, The Mullen River Park, which covers 200 hectares, and the urban forest park, covering 95.7 hectares, have been opened. For local residents, the optimization of the ecological environment has improved the quality of life, and meanwhile, it also played a certain role in promoting ecotourism. The added value of service industry accounted for 5.5 percentage points higher than that at the end of the 11th Five-Year Plan.

From the industrial point of view, the local government has successively introduced a number of industry leaders such as BAIC and Huiyuan. It has been vigorously promoted enterprise fission and upgraded and implemented more than 100 industrial fission projects, such as Tsing Tao Beer, Zhenbao Pharmaceutical Industry, etc. The construction of the industrial area has achieved remarkable results. Jixi Economic Development Zone and other four park infrastructure invested of 2.2 billion yuan with 106 enterprises.

Cooperation in opening up to the outside world has been continuously upgraded. The Jixi-Iman international freight line has been opened, and the Mishan Sino-Russian border trade zone has been built. Foreign economic and trade cooperation has expanded to more than 120 countries and regions, such as Russia, the United States, the European Union, etc. The total volume of foreign trade imports and exports reached US $250 million, maintaining a certain scale. The economic and technological cooperation with various regions in China has been continuously strengthened, and good results have been achieved in attracting foreign investment, with an average annual growth rate of 18.9 US dollars, with an accumulative total of US $580 million in foreign investment.

During the 12th Five-Year Plan period, 197,000 new jobs were created in the cities and towns. On average, the level of population moving out remained very high, and the number of people willing to stay for local employment was limited, reflecting that the young people held negative attitude towards the local economic development.

Analysis of projects in the 13th five-year period

In the 13th five-year plan, the industry will focus on the projects of coal petrochemical industry, graphite new materials industry, green food industry, pharmaceutical industry, tourism industry, mineral economy industry, and modern service industry. Based on these categories, six of them except mineral economy industry, follow the desired pathways of 1, 2 and 4.

To further analyze the situation of specific projects, the planning projects at the end of 2017 in the table 10 have been listed. Almost all of the projects involve the attention on the sustainable development since the projects include maintaining the resources or applying these resources in a more effective way. Even though coal petrochemical industry projects belong to the traditional sector, there is ecological consideration in the content of project plan, such as using the purifying method or fine deep processing. The proportion of mineral economy industry projects, which remain to be one of traditional sector without much ecological consideration, is relatively small, and the attention to other industries with less pollution is becoming higher, which follow the pathway 1, 2 and 4. In the modern service industry, logistics and transportation are emphasized to

develop the local trade, further strengthening the importance of developing in the pathway 4. The situation of the projects is identical with the pathway collected from the city labels, indicating that local government is trying to make process to develop in the planned pathways.

In the brand identity description of Jixi, the city intends to establish an image of important energy base and a livable beautiful home with cultural soft power and strong economic improvement. Their planning projects follow their identity accurately. Large number of projects related to the coal and raw materials will express their willing to be an energy city and the inclusion of Hu culture and beautiful scenic spots displays the cultural feature. Projects, such as Pan-China Tourism, Endowment, Real Estate Construction Project, explain that the government have actions to create a more livable environment for the local residents and the coming outsiders.

Table 10. The planning projects in Jixi and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway following the projects
Coal petrochemical industry project	•Annual production of 600000 tons of polyester project •Jixi Natural Gas and Coking Co., Ltd. cooperation project •Coal and chemical industry valley project •Annual production of 100000 tons of organic fertilizer project •Annual production of 600000 tons of ethylene glycol project	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Graphite-New Materials Industry Project	•Deep processing project of special carbon graphite products •Deep processing project of heat-resistant and flexible graphite •Isostatic pressing of homogenous graphite materials •Annual production of 5000 tons of graphite emulsion •Nuclear graphite production project •Spherical graphite and anode materials graphene production project •Deep processing production project of graphite •Lithium battery anode material project •An annual production line of 30,000 tons of high-purity graphite	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Green food industry project	•The processing project of dry oil soybean products •Construction of Edible Fungi Base and further processing project •Bee product science and technology industry meta-project •Deep processing project for wild deer	Sustainable city Eco city Modern agriculture city	Pathway 1

	•Natto and Tianpei food production project •Deep processing of black fungus-health series products •Ginseng and Panax ginseng series processing items •Deep processing of green wild vegetables project •Deep processing of tomatoes project •Deep processing of 100000 ton of soybean project •Silkworm culture and deep processing project •Deep processing of healthy drinks project •Rice deep processing project •Deep processing project of imported Russian Aquatic products		
Pharmaceutical industry project	•"Wendetang" brand series of traditional Chinese medicine products and production of health wine production project •Processing items of Chinese herbal medicine slices •North medicine deep processing project •Chondroitin sulfate project •Purification and processing of corn lutein •Development and construction project of traditional Chinese medicine decoction pieces •Isatis root injection production project	Sustainable city Eco city Advanced manufacturing city Modern agricultural city	Pathway 1/ 2
Tourism industry project	•Xingkai Lake, Wusuli River cruise ship and wharf construction project •Pan-China Tourism, Endowment, Real Estate Construction Project •General Hu Cultural Industrial Park Project •Infrastructure Construction Project of PhoenixMountain Scenic spot •Project of Red Tourism in the Camp of military enthusiasts in Hulin City •Hutou famous Town Construction Project	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4
Mineral economy industry	•Annual production line of 500 million carats of synthetic diamond and composite sheet •Construction project of 100,000 t / a stone paper production line •Construction project of diopside powder production line •High Purity Green Silicon Carbide Fine Powder Reformation Project •Ultrafine light calcium carbonate project •Comprehensive development and utilization of nepheline syenite (potassium feldspar) processing project	Advanced manufacturing city	Pathway 2
Modern service industry project	•Electronic commerce logistics project •Cold chain logistics distribution center project	Sustainable city Low carbon city	Pathway 4

	•Construction Project of cigarette logistics distribution Center in Jixi City ofHeilongjiang Tobacco Company •Brand 4S store project •Russian Water Cube Castle Project •Commercial integration construction project •China Logistics Park Project •Northern Summer Pension Base Project	Livable city Service city	

5.3 Hegang

In the 13th Five-Year Plan of Hegang, it is mentioned that the developmental goals concentrate on industrial restructuring, strengthening of infrastructure construction, social security and legal system construction. In order to achieve the goals of pathway 2 and 4, Hegang City has the following developmental strategies:

• Developing clean graphite resources: The new graphite material industry is the largest potential unit for future development of Hegang. The city has the largest graphite ore in Asia. The output and export of fine powder account for 1/3 of the whole country and the government is focusing on the construction of graphite deep processing enterprises;

•Developing green product industry: Sanjiang Plain high-quality green food processing base becomes the core of construction;

•Promoting commercial industry: the Red Army Road, Guangming Road and Zhenxing square of Xiangyang District will be built and the culture city and tourism city will be the target to achieve.

The effect of implementations in the 12th five-year period

In Hegang, the most representative area in the past five years is Xiangyang District. In this area, the completed projects during the 12th Five-Year Plan period include 9.56 billion yuan of investment and 40 projects of various types. Among these projects, there were29 projects with investment of more than 10 million yuan and 11 large projects with investment of more than 100 million yuan. The newly built industrial agglomeration park has received state financial support, and the infrastructure and functions are being gradually improved. The Wuyang Industrial Park has also been formally incorporated into the Green Food Park with more than 20 projects falling to the ground, with a total investment of 1 billion yuan. This project provides an important bearing platform for the establishment of projects in the whole area.

From the implementations above in the 12^{th} five-year period, the municipal governments made a contribution to promoting the projects progress. The infrastructure construction was the focus in the past few years. This has established a much cleaner and more sustainable environment for the future development.

Analysis of projects in the 13th five-year period

To further understand the follow-up actions of Hegang, some information has been retrieved from the Hegang government official website and the online interview. What

can be accessible are the only major projects up to now, including coal chemical industry, graphite cooperation project and green food processing base.

As for the coal chemical industry, there is not much news or information on the specific projects and only the establishment of coal chemical industry base is referred. The intention of developing coal chemical industry is to realize integrated operation for improving the production efficiency and maximize the profits through the least materials and least cost. This reflects the city labels of "sustainable city, eco city, low carbon city and advanced manufacturing city".

Table 11. The major projects in Hegang and their corresponding brand pathways

The name of projects	city labels	City branding pathway following the projects
Coal chemical industry	Sustainable city, eco city, low carbon city, advanced manufacturing city	Pathway 2
Graphite cooperation project	Sustainable city Eco city Advanced industrial city	Pathway 2
Green food processing base	Sustainable city Eco city Modern agriculture city Advanced manufacturing city	Pathway 1 and 2

（1）Graphite cooperation project

Hegang City has made great efforts to build a "100 billion graphite industry city". Since 2016, Hegang City has been actively promoting the construction of graphite projects and special investment promotion activities.

The graphite industry has been emphasized in the official website for several times. Based on the strategy of transformation of resource-based cities and the development of new material industry, Hegang city will take advantages of high reserves of graphite, promoting the graphite material base. There have been projects focus on the High purity graphite powder production. Specifically, on April 6th, 2017, the municipal government has formally signed a contract with the Suzhou Zhongshan Nonmetallic Mining Design Institute to jointly build a graphite engineering research and development center in Hegang City. Huasheng Company has cooperated with the Siberian Branch of the Russian Academy of Sciences and the University of South Australia. The technologies of graphene preparation, graphene conductive slurry, graphene lubricating oil, graphene photothermal material seawater desalination system and high-speed metallurgical purification of high purity graphite were introduced. Xinshun graphite co., Ltd and Ukrainian academy of sciences have entered the pilot-scale construction of expanded graphite project.

（2）Green food processing base

The dominant project developing in the pathway 1 is that Hegang city plans to establish the green food processing base, which will be rounded by Heilong river, Songhua river and small Hinggan Mountain. This base focus on improving the production capacity and deep processing level of green food.

In order to improve the green food processing base, Hegang city introduced a number of agricultural products processing projects as support, including rice, corn, soybean, livestock products, wine, which constitute the five leading industries.Fifteen subdivision projects are all in process and even at the closing stage. Besides these five industries, Hegang also involves the projects of vegetables and forest products, such as establishing the agricultural vegetable industry park and Yumin village ice and snow vegetable industry park. Green food industry is becoming the pillar industry supporting the economic transformation of Hegang city.

In the section 4, Hegang is desired to develop in the pathway 2 and 4. Based on what is known about the current projects, Hegang pay more attention to the pathway 1 and 2. There is no big actions on developing the tertiary sector, even though some news on the cultural establishment and cooperation with Russia. The fact is that in the latter part, there is no obvious progress at all. In one word, Hegang plans to develop in the pathway 1 and 2 based on the follow-up projects.

The developmental of graphite indicates that the city will reduce the dependence of traditional resource, and instead to explore new materials.

The ecological projects in Hegang reflects on the urban infrastructure. In 2016, in order to realize the goal of "National Water Ecological Civilization City", Hegang City invested 230 million yuan in 19 water conservancy projects, focusing on five categories: disaster prevention and mitigation, water resources guarantee, rural water conservancy, urban and rural water supply, and water environment restoration, including Heilongjiang main stream chicken farm bank protection, urban flood control, farmland and water conservancy infrastructure construction made the city to increase and restore irrigation area of 90,000 mu, increase water saving irrigation area of 23,000 mu, increase water saving capacity of 1.44 million cubic meters.

In 2017, the civil airport project of Hegang was formally incorporated into the National Civil Transport Airport layout Plan and the 13th Five-Year Plan of China's Civil Aviation Development. The construction of the civil airport has played a key role in the development of all fields in Hegang.

Overall, Hegang has not planned sufficient and suitable projects for establishing its desired city branding, which follows pathway 2 and 4. Instead, Hegang city put more focus on the pathway 1 and 2. Furthermore, it does refer to help promoting livable environment through the infrastructure projects.

5.4 Shuangyashan

In Shuangyashan, the industrial structure adjustment is the core guidance of the future plan, and the overall driving force is the project of attracting investment. The development of new projects and the derivation of the industrial chain have powerfully promoted the effective adjustment of the industrial structure and the product structure.

The effect of implementations in the 12th five-year period

During the 12th five-year plan period, Shuangyashan made big progress in developing the clean industry and applying advanced technology in the traditional industry. Therehave been 93 industrial projects with investment of more than 100 million yuan completed in the whole city, and the total investment of 25.4 billion yuan has been completed, and the proportion of coal and non-coal industries has been adjusted from 40.5: 59.5 to 38.5: 61.5. With the completion of the 11 million ton open-pit coal mine in Shenhua and the completion and commissioning of the Dongrong No. 1 Coal Mine, as well as the steady progress in the integration of the closure and renovation of local coal mines, the coal industry is transformed to large-scale and high-efficiency production, local coal mines have shrunk from 144 to 86. The completion and commissioning of the northeast natural rice husk power generation project has made important changes in the power supply structure and energy structure of the whole city. The installed capacity of new energy sources has increased by 421,000 watts, and the proportion of thermal power has decreased from 98.4% to 81.6 watts.

Shuangyashan further strengthened the new service industry. A municipal business incubator platform has been established; Sino Russian International cross-border electricity supplier industrial park began to be constructed; Tencent, suning.com, the United States Mission comprehensive and vertical business platform has landed in the city. The development of logistics industry, warehousing, distribution, settlement of international financial integration in the east international logistics center is accelerating the construction of Shuangyashan transportation hub. The financial added value increased from 430 million yuan to 3 billion 720 million-yuan, accounting for the proportion of GDP increased from 1.1% to 8.5%. The tertiary industry increased the value of the average annual growth of 4%, accounting for the proportion of GDP increased from 24.9% to 39%.

In the aspect of city infrastructure, Shuang-Jia airport, Ha-Mu rapid rail, Shuang-Bao highway and other major infrastructure projects have made significant progress. The implementation of investment has reached13 billion yuan, including public squares, parks and other 200 infrastructure projects. To intensify environmental protection efforts, one billion yuan has been invested, including the state power, Datang desulfurization and denitration project and other emission reduction projects; Investment of 770 million yuan has been made to complete the centralized drinking water source protection, industrial pollution control projects, pollution prevention and control of livestock and poultry breeding, the comprehensive improvement of regional water environment and the rural environment management project.

Jixi City has been listed as an important node city of "Longjiang Silk Road Belt", a "Sino-Russian International City" as the "key Development and Open Experimental Zone" in Heilongjiang Province. The port and customs clearance facilitation construction has been strengthened. The Raohe Port has covered an area of 300,000 square meters. The annual cargo passing capacity has been raised from 1 million tons to 2 million tons, and the annual passenger passing capacity has increased from 200,000 to 500,000 person-times. It has obtained the qualification of designated ports for meat export to Russia and has become one of the only two designated ports for meat exports to Russia in the province. Sida Customs Supervision Point and Customs Bonded Warehouse have been built. With the investment of 40 million yuan, the Rao River Sino-Russian trade zone project was started to construct.

The above indicates the important achievements in Shuangyashan during the 12th five-year plan period. Conclusively, Shuangyashan strictly developed its city following the pathway 1, 2 and 4. In terms of industry, Shuangyashan gradually shifted its emphasis from the coal industry to the non-coal industry and has already achieved certain results. In terms of tertiary industry, although the promotion of electronic platforms and logistics industry has made some achievements, the limited demand has impeded the development of related industries. Moreover, the number of e-commerce companies is far from comparable with large cities; and it is very difficult for online stores to produce high added value effect. Therefore, the contribution of online platforms to the modern service industry is limited. In terms of urban construction, Shuangyashan has been increasing the construction of projects related to environmental protection, cleanliness and energy conservation, upgrading traffic network branches, and optimizing the quality of life. As a long-term foreign port to Russia, Shuangyashan City has been continuously developed. As one of the cities with natural resources, it has a natural advantage in geographical location adjacent to Russia. To get rid of the dependence on resources, cooperation with Russia is one of the important developmental directions.

Analysis of projects in the 13th five-year period

During the 13th five-year plan, the main goal of Shuangyashan still revolves around changing the mode of development and speeding up the transformation and development as the core.

Table 12. The planning projects in Shuangyashan and their corresponding brand pathways

The category of projects	The specific projects of each category	Brand labels	City branding pathway following the projects
Green food industry project	•Deep processing of pig products project • Construction Project of Non-Pollutant vegetable base and distribution network •Deep processing of green bean project •Processing project of white melon seed oil •Pumpkin juice project •Carrot processing project	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2

	•Processing Project of apple juice in cold region •Potato cultivation and deep processing projects •Scallion processing project •Non-transgenic soybean powder grease project •Rice protein powder project •Ecological rice flour project •Processing project of corn germ oil		
Forest product processing industry	•Lavender planting and deep processing base project •Cultivation base of Chinese herbal medicine and further processing project of Chinese Herbal Medicine •Cultivation and deep processing project of heart-saving vegetable •Schisandrachinensis cultivation and processing project •Northeast black bee microbial fermented drinks and functional drinks construction project •Wild berry processing base project •Pleurotuseryngii and Pleurotusbisporus deep processing projects	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Modern coal chemical industry project	•Paper plasterboard project •Fly ash fiber product project •Humic acid organic-inorganic compound fertilizer project •Lignite humic acid basedagent project •Lignite made humic acid, lignite wax project •Coal-based dimethyl ether project •Lignite drying and quality improvement project •Coal- based natural gas project •Coal-based Oil project •Coal-based aromatics project •Coal - based olefin project	Advanced manufacturing city	Pathway 2
Mineral iron and steel industry project	•Vanadium nitrogen alloy project •Vanadium ferroalloy project •Basalt,fibre and their products Project •Graphite Deep processing Project	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Foreign trade industry project	•Russian sea fish deep processing project •Imported Russian plate processing project	Sustainable city Service city	Pathway 4

	•Raohe international timber industrial park construction project		
Tourism industry project	•Ursuli golden tourism project •Comprehensive development project of Dadingzi Mountain forest park •Hongxin reservoir development project •Beidahuang culture film and studio city project •Longhu water conservancy scenic spot project •Wetland conservation and eco-tourism Project of Qixing River national nature reserve •Russian-style towns project	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4

From the list of key recommended projects in the table 12, the number of projects following the pathway 1 and 2 is relatively higher than that for the pathway 4. Furthermore, the planning projects are identical with the brand identity of Shuangyashan, which takes advantages of resources and establish a livable ecological garden city. First of all, the green food processing industry and forest product processing industry imply that the city utilizes the geographical advantages to plant green vegetables, grains and herbs. Appling high-efficiency skills, the production will be higher and save costs, realizing the sustainable goal. The processing part is connected with the pathway 2, which makes these two industries following the pathway 1 and 2.

The goal of Shuangyashan for city branding also revolves around the construction of service cities. However, due to the actual situation, Shuangyashan arranged more projects for industrial industries, indicating that the process of city branding will be slow in a certain period of time. In addition, the image of Shuangyashan in the eyes of investors is a city developing agriculture and coal and chemical industries, so it will take a long time to transform the city image into a service-oriented city. Meanwhile, the transitional stage of this structural transformation is likely to have a negative impact on the urban economic situation itself. The city cannot position itself clearly and has to include the consideration of both typical and service industry. This may also be one of the reasons for the economic decline of resource-based cities in Heilongjiang province in recent years.

5.5 Daqing

Daqing is the richest city among all the eight cities. Its future plan involves multiple directions, such as oil-related industry, forest-related industry and tourism industry. Its strategies will follow the pathway 1, 2 and 4 accordingly.

The effect of implementation in the 12th five-year period

During the 12th Five-Year Plan period, Daqing was guided by transformation and sustainable development. Daqing's economy extremely depended on its affluent crude oil. Due to the downward trend of the macro economy and the low-price reduction of crude oil, and also other unfavorable factors, crude oil-related projects were affected. In 2015, the city's GDP decreased by 2.3 percent year-on-year.

In terms of urban construction, key urban construction projects, such as the city library, the urban youth science, technology and cultural activity center in Xicheng District, have been built and put into use. Furthermore, the functions of the city have been continuously improved. The construction of municipal infrastructure such as gardens, sanitation and other municipal infrastructure facilities has been accelerated. The capacity of public security has been continuously strengthened. The Ha-Qi high-speed railway has been opened and operated, also the highway passenger terminal station and the Daqing East Railway Station and the West Station. The Zhaoyuan New Port has realized the combined transport of rivers and seas, and the annual passenger throughput of Daqing Airport has exceeded 500,000 person-times. The comprehensive transportation system has basically formed. Specifically, 377 new urban roads and 1882 kilometers of rural roads have been rebuilt. 24 bridges have been erected, and the urban and rural road network has been upgraded as a whole. 19 lakes have been managed, 3 water trestle bridges have been built, and the waters of the Liming River have been rebuilt to a high standard. The construction of waterfront city has achieved initial results.

Even though Daqing has confronted the low-price of oil, which is the key of its development. The establishment of urban construction creates a more complete livable environment for the public. Furthermore, the improved transport system and Daqing airport brought more opportunities for logistics and tourism development.

In 2015, which is the last year of 12th five-year period, the city's total import and export volume reached US $6.44 billion, with an average annual increase of 31%. Economic and trade cooperation has been established with 104 cities and regions overseas. In the past five years, 382 projects with domestic and foreign investment of more than 100 million yuan have been introduced and 148.8 billion yuan of funds have been put in place.

Analysis of projects in the 13th five-year period

The key industries mentioned in the 13th Five-Year Plan of Daqing are as follows: while stabilizing the equivalent scale of oil and gas, it should be the focus of developing petrochemical industry, automobile manufacturing industry, aluminum industry and new materials industry, food processing industry, and equipment manufacturing industry. New and strategic industries such as biomedicine and new energy, modern service industry, will promote the industrial structure to multi-polar support, multi-point growth and multi-development transformation.

Table 13. The planning projects in Daqing and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway following the projects
petrochemical industry project	•EPDM project •Isoprene rubber project •Isodecanol project •Dipropylheptanol project •Polycarboxylic acid water reducer project •Superabsorbent resin project •ACS Automotive Modification material Project •Methacrylic acid project •Polymethyl methacrylate project •Isoprene rubber project •Propylene glycol project •Ultra high molecular weight polyethylene project •Poly α -olefin project •Production project of vehicle modified plastics	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Food processing industry	•Vinegar processing project •Fruit vinegar project •Corn beverage project •Poultry series cooked food products project •Halal beef products project •Carrot processing project •Miscellaneous grain processing project •Rice protein powder processing project •Rice deep processing project •Comprehensive processing of muny bean products •Aquatic product industry chain integration project •Maize series product deep processing project •Rice processing project •Ten thousand tons of mineral water, functional drinks project	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Service industry projects	•Hot Spring Real Estate Development and Infrastructure Construction Project in Chunlei area	Sustainable city Tourism city Eco city	Pathway 1/4

	•Project of Central Cultural Business District in front of Daqing Station •Center Hotel Project •Daqing East Station Commercial Plaza Project •High-end pension community project •Wetland tourism hot spring resort project •North pole flower valley industry park project •The continuation of the seventh people's hospital in Daqing •Honggang school medical support project •Pension service center project •Automobile trade complex project •Baihu hot spring leisure and health resort project •Crane Sea tourist resort project •Tourism project of ecological hot spring leisure park	Low carbon city Livable city Service city	
Medicine industry project	•North medicine industry park project •China Mongolia pharmaceutical factory project •North medicine cultivation and processing project	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Automobile manufacturing industry	•5000 LNG auto modification and LNG comprehensive utilization project •Car dismantling and remanufacturing base project	Sustainable city Advanced manufacturing city	Pathway 2

In the Daqing brand identity description, the city, as China's important oil and petrochemical industrial base, is eager to form the image of an ecological garden city. According to the projects in the table 13, Daqing includes multiple areas of projects. Due to the abundant oil resources, Daqing will develop petrochemical industry. Projects of forest products and tertiary industry occupies the most proportion. This indicates that the development of Daqing in all directions is relatively balanced. Further, Daqing's desired pathway is pathway 2 and 4. The projects in the table 13 show that their actions adhere to the desired pathways in terms of city labels and city identity, with some projects following pathway 1.

The situation of some project progress has also been collected here. In the first eight months of 2016, there were 298 new signed projects, with a total contract amount of 425, 200 million yuan, an increase of 79.4%. By the end of 2016, a total of 387 projects had been signed in Daqing, an increase of 22.9% over the same period of the last year, and 353 projects had been started, with a year-on-year increase of 74.8%, of which the number of the total investment of more than 100 million shows to be 107 projects.

The main party and government leaders at all levels in the Daqing have personally coordinated in major projects and in key links, accelerated the project cooperation of the cow industry chain, 200,000 tons of ethylene, 200,000 tons of propylene, 100,000 tons of benzene industrial chain deep processing, 3 million ecological pig industrial chain and other projects signed to land.

5.6 Yichun

From the study above, Yichun is a forest city that targets at taking advantages of forestry resources, instead of other cities engaging in the industrial sector. No matter in the 12th five-year period, or the 13th five-year period, ecological building is their main focus and their projects revolves this topic continuously.

The effect of implementation in the 12th five-year period

Yichun City regarded “ecological city building, industry prospering city" as the goal of the 12thfive-year plan. During this period, the main completed projects were mainly ecological related, which is accordance with the pathway 1. The construction of ecological industry has achieved some results, promoting the construction of 96 major industrial projects at or above the provincial and municipal levels, with a total investment of 22.3 billion yuan. Asia's largest Luming molybdenum mine has been completed and put into production; The construction of Taili, Cuiluan Park, Jiayin Industrial Park and other industrial parks, such as Russia's cross-border economic cooperation zone, have been accelerated. The Guangming furniture has become the national solid wood furniture online sale model; "red, blue, black and yellow forest, medicine forest, livestock" six industry chains were gradually becoming the scale; the proportion of steel and wood structure in GDP decreased from 23.4% in 2010 to 4.4 percent. The proportion of eco-tourism and forest food industry rose 5.7 and 5.2 percentage points respectively. And the e-commerce enterprises have been emerging rapidly. In order to establish optimized urban environment, it has been built of the eight major stadiums and the Huiyuan International Convention and Exhibition Center, the Water Park, the Birobijan Square, and a number of high-grade park squares, with a comprehensive display of the green Yichun image.

Analysis of projects in the 13th five-year period

In the next five years, Yichun will stick to the idea of "forest region transformation and development, green development." First, Yichun will rely on the rich forestry resources to develop structural transformation and upgrading of ecological industries, such as eco-tourism, forest food and northern medicines. Secondly, under the important

strategy of "Belt and Road", Yichun will build an important logistics node for trade with Russia and promote the opportunity of economic and trade cooperation.

Table 14. The planning projects in Yichun and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway following the projects
Nature reserve and wetland park construction project	•Protection of Pinuskoraiensis forest in Fenglin, Liangshui National Nature Reserve •Construction of Provincial Dinosaur fossil Nature Reserve in JiayinLonggu Mountain •Construction of ecological functional areas in three Watersheds of Tangwang River, Hulan River and Heilongjiang River •Construction of wild animal protection areas such as Chinese autumn sand duck, Longxiang musk deer, Xinqing white-headed crane, Wumahe ferret, etc. •Maolan Estuary Wetland Park, Xinqing National Wetland Park, MeixiQingshuihe National Wetland Park, Red Star Hodge National Wetland Park, Jiayin Taiping Island Wetland Park	Sustainable city Tourism city Eco city Low carbon city Livable city Resilient city	Pathway 1/4
Key ecological migration projects	•The first, second and third stage project of the relocation of forest workers in the deep mountains and distant mountains of the Wumahe Forestry Bureau and the withdrawal and adjustment of the forest farm •The infrastructure project of the forest farm (institute) of the Nancha Forestry Bureau •The relocation of the infrastructure facility fitness square project of the forest farm (institute) of the Jinshantun Forestry Bureau •Jinshantun Forestry Bureau forest farm (institute) relocation infrastructure road construction project •Longxiang forestry bureau forest farm (institute) layout adjustment project •The infrastructure construction of the forest farm (institute) of the Tieli Forestry Bureau,etc.	Sustainable city Resilient city Eco city Low carbon city Livable city	Pathway 1/4
Key projects of ecological environment management	•Jiayin River levee protection project • Tangwang river source soil and water conservation project	Sustainable city Resilient city Tourism city	Pathway 1/4

	• Hulan River source soil and water conservation project • The whole city's water and soil conservation monitoring network project • Soil and water conservation ecological restoration project • The project of source water protection of Tieli City • The protection project of groundwater drinking water source in Tieli City • The ecological environment protection project of source water of Tangwang River • The water conservancy project of riverside water conservancy project (water conservation)	Eco city Low carbon city Livable city	
	• Geological environment treatment project of Xilin lead-zinc mine, abandoned mine in Wuma River area and abandoned mine around Xingan Lake Reservoir (mine environment restoration)		
	• Tieli Municipal solid waste and straw recycling project • Yichun District recycling Project (Resource Recycling)		
Key projects of forest food industry and north pharmaceutical industry	Blueberries, black fungas, Edible Fungi, Wild vegetables, Nuts, Forest Animals, Mineral Springs	Sustainable city Eco city Modern agricultural city	Pathway 1
Key scenic spot project construction	• Yichun River shallow water recreation and tourism project • YichunJinji Painter Base (creating the Korean Pine School Culture Industry Project) • Shangganling Forestry Bureau tourism development Project • Wuma River Forestry Bureau Xiling forest eco-tourism resort project • Tourism product development project of Huiyuan Tourism Co., Ltd., Wuma River District	Sustainable city Resilient city Tourism city Eco city Low carbon city Livable city	Pathway 1/4

Based on the projects in the table 14, Yichun is a very unique city, which is different from other seven cities, and pays more attention to the sustainable protection of ecology, the utilization of forestry resources to develop tourism and the construction of friendly cities suitable for people to live in. Yichun adheres to the developmental pathway of city branding, applying the resource advantage and developing eco-tourism and other clean industries. Yichun is the only city that refers to the mine environment restoration project.

It is very clear that all the planning projects follow pathway 1 and only some of projects in the category of nature reserve and wetland park construction project can be regarded as following the pathway 4. The feature of tourism in the pathway 4 is that it has something to do with the knowledge and culture. Both the theoretical and desired pathway point that pathway 1 should be the ideal developmental track for Yichun. In the brand identity description, Yichun prefers to be constructed as a harmonious, vigorous and modernized livable forest ecology city. Conclusively, the projects here are consistent with the desired pathway and its willing brand identity.

The goal of these resource cities in establishing branding is basically consistent with the national strategy. The effect of projects mainly reflects from the media and feedback from the local people. It is difficult to get detailed information about the progress of the project and the final results from official information, so only from media reports.

In a recent report, On June 19th 2017, a signing ceremony was held for the 4th Sino-Russian Expo and the 28th HAC China Lindu Green Yichun Industry Investment invitation Project. A total of 25 projects were signed on site, with a total signing amount of 7.32 billion yuan. At the signing ceremony, there are 13 contract projects and 12 agreements involving forest food, forest ecotourism, medicine, infrastructure construction, chemical engineering and other fields. Of these, 16 are projects with investment of over 100 million and 9 are projects with more than 10 million. Forest food processing industry projects account for 54.4% of the total contracted amount, while forest ecotourism industry projects account for 40.4% of the total contracted amount, and two items, both with 1 billion yuan, are invested in the project of Yilin Group, Beijing Huiyuan Group and Beijing Jialong Group, which signed a total investment of 1.05 billion yuan “Strategic Cooperation Agreement on small berry drinks, food production and processing, marketing and industrialization of Auricularia bags". Shenghui Group and Shenzhen Construction Group signed a total investment of 2 billion yuan to build a small town with international cultural tourism characteristics of blueberry." Tieli City Economic Development Zone and Beijing Hezhong Group Jiuhequan Agricultural Co., Ltd. signed an investment of 500 million yuan Jiuhequan ecological agricultural planting industrialization project; Tieli Forestry Bureau and Jilin Hengshuo Group signed an investment of RMB 500 million for beer production of birch juice, and Shuangfeng Forestry Bureau and Yichun Tianlong Agricultural and Forestry Group signed an investment of RMB 500 million for industrialized breeding and processing of forest pigs. Yichun’s Government and Beijing Jialong Group signed an investment of 400 million circus town construction project; Umahe Forestry Bureau and Beijing Huiyuan Group signed an investment of RMB 400 million forest food processing project; Taoshan Forestry Bureau and SanyaYuxiang Travel Industry Development Co., Ltd. signed an investment of 320 million yuan Taoyuan Lake Scenic area comprehensive development project; Friendship Forestry Bureau and Jinchang Modern Agriculture and Animal Husbandry Technology Co., Ltd. signed an investment of 300 million yuan pig breeding and forest food processing project.This report explains that the local government has strived to promote the progress of these ecological related projects and some results have been achieved.

5.7 Qitaihe

Through studying the city description and city labels of Qitaihe, this city prefers to follow pathway 2 and 4 to show its image, but only following pathway 2 if calculated the frequency of city labels. Qitaihe is also a typical city with affluent coal resources, which indicates that in the short time, the local government still put main focus on the coal-related industry.

The effect of implementation in the 12th five-year period

The economy of Qitaihe City mainly depends on resources. During the 12th five-year period, since 2012, it has been affected by the continuous downturn in the coal coke market and restricted by the single coal economic structure. The city's economy experienced negative growth for 18 consecutive months. Since in the third quarter of 2014, the city's economy has maintained a steady trend of recovery. In the last five-year plan, structural change was the top priority. The ratio of three industries was adjusted from 9.8: 60.2: 30 in 2011 to 14.1: 36.8: 49.1 in 2016.

The comprehensive agricultural production capacity has steadily increased, and the grain output has reached 0.925 billion kilograms, realizing consecutive bumper harvest in the past 13 years. A total of 1.12 billion yuan has been invested in perfecting the park infrastructure, economic development zone, coal and chemical industry park, "urban minerals" park, and Boli development zone. The carrying capacity of the Jinsha Health Industry Park and other parks has been further enhanced, with 137 industrial projects with the value of more than 10 million yuan, with a cumulative investment of 20.35 billion yuan. Baotelong stabilized light hydrocarbons, Long Peng clean chemicals, Jiwei liquefied natural gas (LNG) and other coal chemical projects, Wantong pipe industry, Sunskite high-speed rail sleeper, Lepao bean sand, Tiantai corn, Xinfa biomass power generation and other new building materials, green food and new energy projects, Orred sapphire, Tacai Optoelectronics, New and high-tech projects such as Tai'an and explosion suppression have been put into operation or will soon be put into production. China's supply and marketing trade expo, Hongxin logistics, Wantong logistics, and Pan-Northeast Asian commodities international trading center have been put into operation. E-commerce is developing rapidly. The number of E-commerce enterprises has been developed to 115, with the online annual turnover of more than 300 million yuan.

In terms of urban infrastructure construction, the second phase of land requisition and migration of Chengtao Mountain Reservoir has reached the water storage conditions; the Wangqing Reservoir has been completed, for the preparation of opening up a reserve water source of the city. The West Ring Road, Qihua Road, East extension of Datong Street and other 11 streets have been built and renovated. The layout of the road network is more unblocked and reasonable. The seven mining companies have been fully accepted for "two supply and one industry". 32 kilometer of water supply networks and 70 kilometer of heat supply networks have been built.

Analysis of projects in the 13th five-year period

The 13th Five-year plan of Qitahe focuses on vigorously carrying out investment projects, accelerating the transfer and adjustment of structure, and enhancing the content of science and technology project.

However, the projects listed in the table 15 is a little different from the main principle in the 13th five-year plan. Even though Qitaihe is willing to adjust the industrial structure, only few of projects belong to the tertiary industry. In the table 15, only six of them follow the pathway 4. Most of the projects depend on the natural resources, such as exploring new material, and traditional industry of coal petrochemical. The processing and mining industry dominates among all the projects, which indicates the leading role of pathway 2. Besides pathway 2, pathway 1 is another focus in Qitaihe. Actually, this does not adhere to its desired pathway 2.

From the perspective of brand identity, Qitaihe is eager to be a coal and tourism city. The projects below can only realize to be a coal city, while forming a tourism city, the city has to put in more effort. Besides, the coal-related projects do not take ecological consideration which may do harm to the environment.

Table 15. The planning projects in Qitaihe and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway following the projects
New material industry	·10,000 ton Nanoporous Silicon Fiber Thermal Insulation Board Project ·Production line project of ultra-thin high-density sheet with annual production capacity of 100000 cubic meters ·Annual production of 100000 tons of crop straw fiber film manufacturing project ·Sapphire device manufacturing project for LED large size optoelectronic window ·Production of 10,000 tons of pulp board per year	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Biomedical industry	·Biopharmaceutical project ·Corn antibiotic production project ·10 tons of heparin sodium per year ·Project of 300000 tons of Bio-organic Fertilizer per year ·Straw comprehensive utilization development project	Sustainable city Eco city Advanced manufacturing city Innovation city	Pathway 2/4
Mechanical manufacturing industry	·Mine machining and manufacturing project ·Agricultural machinery manufacturing project	Sustainable city Eco city Advanced manufacturing city	Pathway 2

Green food industry	·Demonstration Project of New Technology for Oil production and Comprehensive Utilization of Rice Bran ·Annual production of 3200 tons of Pleurotus eryngii, bisporus edodes and processing items ·Yuyuan Auricularia Professional Cooperative Project ·Annual production of 25000 tons of rice bran protein isolate, 20,000 tons of protein powder project ·Natural pigment Plant Series pigment extraction and processing Project	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Coal petrochemical industry	·Annual production of 200000 tons of acetic acid ·Project with annual production of 100000 tons of dimethyl ether ·Coal tar production highway asphalt project ·LNG project of Longyang coke & electric co., Ltd ·High performance PBO Fiber industrialization Project	Advanced manufacturing city	Pathway 2
Trade and logistics industry	·Warehouse logistics park project ·Star hotel project	Service city Tourism city	Pathway 4
Culture and tourism industry	·Taoshan Lake Tourism Development Project ·Tourism Project of Jinsha New District in Qitaihe City	Sustainable city Tourism city Eco city	Pathway 1

5.8 Mudanjiang

In the analysis of city branding, both the predicted and desired city branding points to the pathway 4, however, the policies, strategies and major projects of Mudanjiang covers more fields and does not mainly pay attention to the tertiary industry. In fact, taking advantage of geographical features, this city's plan includes every industry and balance the structure.

The effect of implementation in the 12th five-year period

The growth rate of Mudanjiang was ranked first in Heilongjiang province during the 12th five-year plan, indicating the city's proven strength. 1433 industrial projects with 5 million yuan or more resumed work, with 62.3 billion yuan of investment completed, an increase of 29.5%, and the proportion of industrial investment reached 61.1%; 1,250 new industrial projects were started, an increase of 601 over the same period last year, and 53.71 billion yuan of investment was completed. Twenty-nine industrial projects with more than 100 million yuan were newly started. Four industrial projects including Budweiser InBev invested more than 1 billion yuan, with an increase of 21.8 percent in industrial investment, and foreign investment actually with the amount of 460 million dollars. The construction of the park and the promotion of investment have made new

achievements, and the city has started more than 100 million-yuan projects in the open area. Ningan, Dongning, Aimin, Xi'an, Yangming, Six counties (cities) and districts in Dongan have made substantial progress in introducing projects for the city's economic development, and Ningan has used the market mechanism to promote land storage, infrastructure and project construction in the park, which has been confirmed by the provincial government; 115 or more projects have been signed up in the city. 73.66 billion yuan of extraterritorial funds were introduced, with an increase of 17.2%. The industry has steadily increased, with 23 new enterprises and 46 enterprises under the first control oil regulation. To implement the "three-year plan of action for thousands of high-tech enterprises", 63 new high-tech enterprises with sales income of 5 million yuan or more, 9 new national high-tech enterprises, and R&D institutions at or above the provincial level, The number of provincial science and technology business incubators reached 41 and 10 respectively, while the added value of high and new technology industries increased 15. 3%.

In order to implement the strategic theme of "developing an open economy and building an open city," 80 overseas enterprises opened up their subsection here, and the overseas agricultural cooperation covered 80 acres. The import of Russian seafood has achieved a major breakthrough; the first phase of the international logistics center of the transportation hub was put into operation, the second phase of Huasheng logistics bonded warehouse was completed, and the first Sino-Russian cross-border e-commerce supervision center "China and Russia Cloud Warehouse", which is also the first Sino-Russian cross-border e-commerce supervision center, was launched in Suifenhe. The volume of cross-border container logistics in the whole city exceeded 300,000 tons, an increase of 46%. The cross-border settlement volume of RMB in the whole city was 5.85 billion yuan, ranking first in the prefectures and cities of the province. The trial of Suifenhe ruble cash use was officially launched.

Analysis of projects in the 13th five-year period

In the 13th Five-Year Plan, the municipal government determines to speed up the cultivation of the modern industrial system, focus on the development of forest paper, green food, fine chemicals, equipment manufacturing, new building materials, biomedicine, modern tourism, and modern service industry. In the table 16, it is obvious that Mudanjiang city will develop in the pathway 4. There are large number of projects that focus on the service and tourism industry, such as e-commerce platform, large shopping mall, financial cooperation with assets management company and tourism area development. Besides, Mudanjiang City also widely sets up ecological protection projects and further rebuilds and merges coal mines to reduce the pollution and increase the mining efficiency. This also reflects that the coal and mineral industry is gradually reducing, realizing the goal of industrial transformation. It can be seen in the table that projects related to the secondary industry are far less than that related to the tertiary industry. Among all the resource-based cities, the planning projects and the target matches the best in Mudanjiang.

From the perspective of city identity description, Mudanjiang will be built into a trade city connected with Russia and Northeast Asia, become a regional center city with

strong radiation force and cohesive force. In the projects, the city does have some international cooperative projects, such as expansion and processing projects of beef cattle in the cooperation with New Zealand and Northern far east new building materials industry park. To become a regional center city, the city should develop more trade and expansion of transport system and logistics industry. Actually, Mudanjiang has plans to promote the multiple trade methods, especially the e-commerce platforms project. Besides, while taking into account traditional industries, Mudanjiang has also further strengthened its concern for environmental protection and effectively implemented the national strategy on sustainable development.

Table 16. The planning projects in Mudanjiang and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway following the projects
Modern agricultural industry projects	·Expansion and processing projects of beef cattle in the cooperation with New Zealand ·Smart agricultural project ·Scientific and technological demonstration Project of Green Organic ·Recycling Agriculture and Animal Husbandry Industry ·Dalian 100 Agricultural sideline products processing Project ·Deep processing project of characteristic agricultural and sideline products in Northeast China ·Deep processing project of white melon seeds in Muling city ·Lactic acid bacteria leave embryo rice and whole bean curd development project ·Processing and warehousing project of Non-genetically modified Soybean ·The Longmu Black Niu extension Project in Mulan City ·Muling Yilong food processing Project ·Baisheng Edible Fungi whole industry chain Project ·Second Phase Project of Kunjiang Rice Industry in Mulan City ·Red Star Tianye Cow Organic Ranch Project ·Hailin Steyk beer production project	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2

Urban infrastructure projects	·Longhu Mountain, Shenshui Tan, ·Shuguang (White Tiger sentry point), ·Jiulong Tam Hydropower Station Project	Sustainable city Resilient city Eco city Low carbon city Livable city	Pathway 1/4
Natural reserve projects	·Land regulation and supplementary cultivated land project ·Production project of biodegradable plastics raw material ·Shengli Wind Power Project in Linkou County ·Xiaolianhua Hydropower Station Project	Sustainable city Tourism city Eco city Low carbon city Livable city Resilient city	Pathway 1/4
Coal and mineral industry projects	·The integrated reconstruction and trust projects in seven coal mines ·Muling City stone and artificial quartz stone project	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Service and tourism industry projects	·Project of Jinlong Automobile Inspection and maintenance City in Muling Economic Development Zone ·Red Star Mercure Commercial Project ·Yifeng International Auto Trade City used car Trading Market Project ·Food processing and Electronic Commerce Project ·Beidahuang e-commerce trading platform project ·Muling City Northeast film base construction project ·International Health treatment and Old-age Resort Project ·Tujia, Wanda group and Tencent real estate project ·Beijing Dongfang Caixing International Capital Management Co., Ltd and Mulan City financial cooperation project ·Project of Mulan City Electronic Business Start-up Park ·"Lin Hai Xueyuan" tourism special train project ·Mulan City Yuanbo expansion training Base Project ·Xi'an Da Runfa Project	Sustainable city Tourism city Eco city Low carbon city Livable city Service city	Pathway 1/4

Other processing industry projects	·Northern far east new building materials industry park ·Longmuyapin flax textile project in Muling city ·Dexin Polymer Science and Technology Project ·Xiangfeng plastic Industry Project in Mudanjiang	Sustainable city Eco city Advanced manufacturing city	Pathway 2
New material industry projects	·Demonstration Base of Biomass Energy Industry in China Paper Industry ·Keda Expansion Light aggregate Energy Saving New Insulation Building Materials Project ·Middle Energy Saving Oasis 100MW Agriculture and Light complementary Photovoltaic Power Plant Project	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Equipment manufacturing projects	·Shenbo electrical equipment manufacturing project ·Manufacturing Project of Dadong Machinery equipment in Mulan City	Advanced manufacturing city	Pathway 2
Innovation industry project	·Small and Micro Enterprise Park (Zhongchuang Space) Project	Sustainable city Innovation city	Pathway 4

5.9 Heihe

From the planning and development objectives of the 13th five-year plan, it is consistent with the state's efforts to provide ecological protection and green development, promote industrial and consumption structure upgrading, and emphasize that in the new five-year plan, a number of major projects have been completed and put into production one after another. In addition, special emphasis has been placed on the development direction of agricultural modernization, the deep integration of new industrialization and the Internet, which will give birth to new economic growth points. Finally, the main support of the new five-year plan involves cultural advantage, location advantage and resource advantage. From this point of view, Heihe still takes cooperation with Russia and natural resources as the breakthrough point during the 13th five-year plan to continue the development of ecological industry. Al these policies point that the projects will follow pathway 1,2 and 4.

The effect of implementation in the 12th five-year period

Heihe, similar as Yichun, persisted in ecological development and realized the green rise. During the 12th five-year plan, in terms of project construction in general, the city implemented 237 key industrial projects at the municipal level, with a cumulative investment of 42 billion yuan. The number of started projects and the scale of completed

investment increased by 2.2 times and 1.9 times respectively compared with the end of the 11th Five-Year Plan. Of these, 66 key provincial projects, with a cumulative investment of 21.7 billion yuan, were completed at the Dobaoshancoppermine and Shanghai electric wind power equipment manufacturing. Meanwhile, the Heihe region has also strengthened its cooperation with Russia and successfully held six sessions of Sino-Russian cultural gathering. The Sino-Russian Gemini City Exhibition has carried out 32 folk exchanges, participated in the Sino-Russian Exposition and the Russia-Kazakhstan Economic and Trade reception, and received six million four hundred and ninety-two thousand domestic and foreign tourists annually. The construction of infrastructure in urban and rural areas has achieved remarkable results. The traffic infrastructure has been continuously improved and the construction and operation of 1710 km of rural roads along 506.2 km and 1710 km of first-grade and second-class highways along the 4442.8 km expressway have been continuously improved, and 65 towns and townships have all been unimpeded.

In the process of the 12th Five-Year Plan, the following deficiencies and constraints exist: first, the level of economic development is low. Although Heihe city's economic growth rate ranked the forefront of the whole province, its economic strength is still weak. There is still a big gap between GDP per capita and the average level of the province. The real estate downturn and the lack of large financial sources affect the level of local financial revenue, resulting in insufficient public investment. Secondly, the economic structure needs to be further optimized. Rough processing products account for a relatively large proportion, with low scientific and technological content and added value. There are few leading enterprises with good development prospects, strong influence, weak competitiveness of the private economy, and weak endogenous power for economic growth. Finally, the investment in infrastructure construction is insufficient. The weak foundation of railways, ports, docks and bridges has become a bottleneck in restricting the development of trade and tourism with Russia and deepening the cooperation of production capacity.

Analysis of projects in the 13th five-year period

As can been see from the table 17, the recent listed projects in Heihe are centered around projects related to urban infrastructure and people's livelihood. The number of investment projects that cities introduce into active markets is limited. There are limited types of projects that fundamentally increase the added value of the economy. Second, projects related to the industrial industry are in the second place. Overall, the planning projects cannot realize the pathway 1 or 4 sufficiently.

According to the overall situation of the projects in 2017, there are 67 or more projects in Heihe, accounting for 52.3 percent of the total number of projects; among the new construction projects, the proportion of secondary industry projects accounts for 760.The world's top 500 enterprises, listed enterprises and central enterprises have visited the city, such as Taiwan Pacific Group. China Merchants Group, Oriental Gardens Group, Beidahuang Group, Angang, China Metallurgical and other enterprises actively docked with our city, bringing new development opportunities for Heihe. Th typical projects have been listed in the table 17.

Based on the city identity description and city labels (also including the consideration of theoretical pathway), the idea pathway for Heihe is 1 and 4. However, in the list of projects, there are more multiple directions of projects. First of all, it is clearly that pathway 4 is the main focus due to the category of service industry, new energy and innovation city and tourism industry. Besides, the planning projects also realize the target of the city to develop in the pathway 1 according to the large number of projects related to urban infrastructure, environment conserve, resource products and tourism. Overall, the projects adhere to the desired pathways in Heihe with very small ratio of industrial sectors

Table 17. The planning projects in Heihe and their corresponding brand pathways

The category of projects	The specific projects of each category	City labels	City branding pathway
Urban infrastructure projects	•Heihe Sino-Russian friendship hospital and international health center project •Relocation of water pumping station and construction project •Water Source in Urban area of Heihe City •Reconstruction of waterlogging pipe network and diversion •Project of rainwater pollution in urban area of Heihe City •Demonstration project of underground integrated pipe gallery in urban area of Heihe City •Construction project of waste and sewage treatment plant in Nenjiang County •Bei'an to Wudalianchi rail way construction project •North Black Railway (Longzhen-Heihe Section) upgrading project •Land development project in Qiaotou District of Heihe City •The development project of the bridge head area of Heilongjiang Bridge •Xunke County Hydropower Station construction project. •Aihui district - hydropower development project •Biomass power generation projects, Aihui District	Sustainable city Resilient city Eco city Low carbon city Livable city	Pathway 1/4

Ore resources development and processing related projects	•Xunke County chinastone mine development project •Aihui District humic acid series product development project •Aihui District shangmachang rock gold mine construction project •Russian iron powder, special steel processing project •Comprehensive extraction of precious metals project •Development project of lipoprotein needle •Two hydrogen quercetin processing and extraction project •Production of anhydrous oxalic acid sodium dihydrogen phosphate production project •Comprehensive utilization of carbide slag •The preparation of sodium formate from the tail gas of the closed calcium carbide furnace	Sustainable city Advanced manufacturing city	Pathway 2
Service industry	•Cross border e-commerce border warehouse project •Construction project of large building materials market •Construction project of national precious metal precious stone appraisal center •China Russia international jewelry and jade industrial park construction project •The construction project of the Bei'an Internet of things industrial base •Heihe Russian pin trans-border e-commerce platform project	Sustainable city Service city	Pathway 4
Environment conserve	•The project of land consolidation and ecological park construction in the Shi Jin River Basin •Wetland conservation and development project in Nenjiang County •Nenjiang County Kolo volcano group integrated development project	Sustainable city Resilient city Tourism city Eco city Low carbon city	Pathway 1

New energy and innovation industry	•China Russia international science and technology industry city construction project •Bei'an solar power light power production project •Aihui District cloud computing Industrial Park Project •Intelligent model of grain storage construction project •The giant JUNCAO bio energy development project •Construction project of gas film city complex •High end semiconductor laser chip development project •Gallium arsenide solar cell production project •Solar photovoltaic agricultural facilities integration project •Comprehensive utilization of biological waste •Construction project of photovoltaic ground power station	Sustainable city Innovation city Eco city Low carbon city	Pathway 4
Processing industry	•Production project of straw solidified fuel in Bei'an •Production of butanol from crop straw in Bei'an •Zheng Xing Abrasives expansion project •Production and processing of spare parts for special vehicle •New large caliber special wear slag transportation pipe processing project •Sapphire substrate processing project •Green lighting series product development project •Organic fertilizer production project in Nenjiang County •Wooden cottage processing project •Wood fiber processing project	Advanced manufacturing city Modern agricultural city	Pathway 1/2

Tourism industry	•Ice and snow test in Wudalianchi •Wudalianchi waterfront tourism new town project •Comprehensive tourism development project of Wudalianchi Yamaguchi Scenic Area •Wudalianchi ski resort construction project •Wudalianchi ice and snow sculpture World Development Project •Nenjiang County peak provincial •Forest Park upgrading and transformation project •Nenjiang County Station Road north seeking adventure driving projects •Wudalianchi scenic area full area development project •Sunwu County ruins district project experience in World War II •Sunwu County border river scenery ecological tourism project •Sunwu County of Zhengyang mountain ecological tourism development project •Sunwu County Cultural Industry Park construction project between China and Russia •The construction project of Cangshan exploration tourism area Xunke County stone •A large platform Xunke County eco tourism development project of rural rime •Bei'an DPRK folk custom garden project •Bei'an tourism complex construction project	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4
Green food and medicine industry	•Xunke County high quality mineral water project •Xunke County organic agriculture demonstration base construction project •Xunke County wild animal breeding base •Xunke County wild vegetable processing project •Sunwu County Angus beef high-end meat dish processing project •Deep processing project of Sunwu •County black fungus	Sustainable city Eco city Low carbon city Modern agricultural city	Pathway 1/2

	•Deep processing of high precision non transgenic soybean products in Sunwu County •Aihui District Chinese medicine project •Sunwu County Seabuckthorn pharmaceutical and comprehensive development project •Aihui District silymarin Jiejiu Hugan beverage project •Oat processing project of Aihui District •Aihui District blueberries, blackcurrant planting and processing project •Project of production of Aihui District organic active natto capsule		

5.10 Summary

In the section 5, eight resource-based cities are analyzed on the implementation and follow-up actions under their actual pathway. First, their core strategy is described. Then, the implementation in the 12th five-year period is concluded and what the effect they have got. Finally, to analyze the current projects, the relative information from the official sources is retrieved and listed. Each city develops multiple industries including urban infrastructure, processing and excavation, green agriculture and service.

Table 18. The overall comparison between desired pathways in terms of city identity and city labels and adopted pathways following the projects

Resource-based cities	Adopted pathway (City identity)	Adopted pathway (City labels)	Adopted pathway (Projects)
Jixi	4/2	2/1/4	1/2/4
Hegang	2/4	2/4	1/2
Shuangyashan	4/2	1/2/4	1/2/4
Daqing	2/4	2/4	2/4/1
Yichun	1	1/2	1/4
Qitaihe	2/4	2	2/4/1
Mudanjiang	4	4	4/1/2
Heihe	1/4	1/4	1/2/4

The main purpose of this section is to find out whether the planning projects suitable for realizing their actual pathways. To make the comparison clearer, the table 18 concludes the pathways following the city identity, city labels and the projects.

First of all, eight cities are guided by the strategy of transformation and upgrading. They optimized the meaning of transformation. Instead of transforming from primary

industry to tertiary industry completely, the governments choose to apply the advanced technology in the processing industry to reduce the pollution and increase the energy-saving. These cities cannot give up on the resource advantage in the short term. Under the down-trend economy, their projects focus on the resource-based industry, while they seek for the opportunity to develop new material industry. For now, there is no obvious positive effect on developing these new industries and also the high-added-value tertiary industry.

Secondly, these cities tend to develop in the multiple directions. Except Hegang and Yichun, the planning projects involves every industry, following 1, 2 and 4 at the same time. To be specific, different cities have their own emphasis. In Jixi and Shuangyashan, the projects following pathway 1 and 2 are more than those following pathway 4, while in Daqing and Qitaihe, the projects following pathway 2 and 4 are more than those following pathway 1. In Heihe, the projects related the primary, secondary and tertiary industry are balanced.

Thirdly, almost in all eight cities, the implementation adheres to their actual pathways in terms of city labels and city description. However, there are some slight variations in Hegang and Yichun. In Hegang, there is no major projects related to pathway 4. It does not mean that no projects follow pathway 4. It indicates that the local government has not paid enough attention to the development of the tertiary industry, and no large number of projects belong to the tertiary industry. In Yichun, the actual pathway based on the identity is pathway 1 and 2. However, the projects follow pathway 1 and 4. The reason is that the Yichun city set up a series of projects to create a more livable environment which is identical with the content of pathway 4.

What should be paid attention to is that even though most cities aim to develop tertiary sector, and they do corporate some projects following pathway 4. However, the number of these projects do not occupy the most ratio. Among all the cities, the best to promote the projects related to tertiary industry is Mudanjiang and Heihe.

6 Conclusion

In this section, the research questions will be answered based on the general information of RBCs, five-pathway method and analysis of theoretical and actual pathways. Combined with the follow-up actions and implementations in each city, more findings will be discovered to understand the relation of city branding and down-trend economy in Heilongjiang area. Finally, some recommendations will be raised to help recover the declining economy and promote the strategy of city branding. Limitation and prospect of the research will be concluded to imply the drawbacks and the future agenda for the study.

6.1 City branding and the resource-based cities

The goal of this study is to find out how the resource-based cities in Heilongjiang province position themselves through the city branding, especially from the perspective of ecological modernization. To answer this question, it is divided into three sub questions.

1.What are the resource types or current city profile/identity of each city in the Heilongjiang province as well as the province as a whole? Specifically, what are the dominant resources and the economic status for each city? Based on the information above, what is theoretical identity for each city based on the 5-pathway method?

The RBCs in Heilongjiang have some common characteristics. Even though they each have their pillar resource, they all have advantages of affluent forest, land, mineral resources and the superior location adjacent to Russia, which can be indicated from section 1 and 3. Compared with other cities, Yichun and Heihe show some differences. Their forest resource dominates over other industries, leading to more ecological related strategies and projects.

Due to the fact that all RBCs are in the regional level, only pathway 1, 2 and 4 can be the possible choices according to the five-pathway method. The theoretical pathways for these resource-based cities concentrate on the pathway 2 and pathway 4. Only Yichun and Heihe should be developed in the pathway 1. Either pathway 2 or pathway 4 will be a good choice for three cities, namely Jixi, Hegang and Qitaihe.

Table 19. Results of theoretical pathway and actual pathway in two indicators

Resource-based cities	Actual pathway (Desciption)	Actual pathway (City labels)	Theoretical pathway
Jixi	4/2	2/1/4	4/2
Hegang	2/4	2/4	2/4
Shuangyashan	4/2	1/2/4	4
Daqing	2/4	2/4	2
Yichun	1	1/2	1
Qitaihe	2/4	2	2/4
Mudanjiang	4	4	4
Heihe	1/4	1/4	1

2. What city brands do these resource-based cities in the Heilongjiang province adopt in general to promote themselves and realize the industrial structural adjustment? Are there any differences between the theoretical identity and identity the cities choose for themselves?

In this study, the actual city branding is retrieved in two methods. The first indicator derives from the conclusive city brand description of the official documents. The results show that the actual pathway is almost the same as the theoretical pathway. It reveals that the plans issued by the local government have been concerned with the fact of the

economic trend and political continuity. Guided by the national policy requirements, the RBCs include the industrial transformation and ecological protection through advancing the industrial processing skills. From the perspective of five-pathway method, the stage of economic development and the economic status have very strong influence on how these cities choose their city branding pathways based on the results of the city brand description.

The second indicator is collected from the frequency of city labels which is related to ecological modernization and developmental direction. Overall, the result indicates that these resource-based cities prefer to develop in the multiple directions. Besides the theoretical pathway, the city will also choose another pathway as a supplement to form the image of a comprehensive city. Moreover, the importance of the processing industry in these resource-based cities is emphasized. Six of them desire to optimize the manufacturing process and target to be an advanced manufacturing city as one of their pathways. Besides, Yichun and Heihe, only two of the cities following pathway 1 due to the geographic position, avoid being an eco-city or a tourism city alone, but instead they choose to make a combination of pathway 2 or 4 with the pathway 1. Based on the results of this comparison, the two independent variables, the stage of economic development and the economic status have certain influence on the choices these cities choose their city branding pathways. In addition to these two variables, these cities prefer to establish an image of a comprehensive city including pathway 1, 2 and 4 at the same time.

There exist some other differences between the theoretical and actual city branding. For example of Jixi and Shuangyashan, comparatively larger cities in Heilongjiang, the degree of wish to follow each pathway turns out to be differed between the theoretical and actual city branding. In Jixi, the local government has more strong preference to become an advanced manufacturing city and modern agricultural city instead of a service city. The fertile black land and affluent natural resource have always been the advantages of this area. To achieve high economic value, the local government has to remain the development of the primary industry. Meanwhile, to be a comprehensive city is an attractive concept for city branding. However, without the firm knowledge foundation and stable economic environement, it is difficult for a city to grow into a real comprehensive city. This situation is the same in the case of Shuangyashan.

3. What city branding strategies and projects has each city in Heilongjiang province adopted to promote ecological modernization and realize the industrial structural adjustment? Are the implementations suitable to the profile they choose for themselves?

The city branding strategies in the eight RBCs concentrate on one principle, which is keeping the strength of resource-based industry and promoting the service industry. All these cities focus on the ecological modernization and this idea seeps into every field. The development of each industry is connected with the environment protection and material saving. In the processing industry, the government requires the advanced technology to produce the least pollution. In the industry of agriculture, all the planting

activities should comply with the principle of maintaining the land and soil, which can be indicated evidently in the case of Yichun.

Almost in all eight cities, the implementations adhere to their actual city branding pathways. Furthermore, these cities prefer to develop in multiple areas. As for Daqing and Qitaihe, the local government has plans to include projects following pathway 1 besides its actual pathways of pathway 2 and 4. In Heihe, pathway 1 and 4 should be their main focus in the previous analysis, but the number of projects following pathway 1, 2 and 4 are balanced in fact. Besides, the situation of projects in Hegang is not as expected. The local government does not put sufficient attention on developing the tertiary industry and the major projects follow pathway 1 and 2, which is different from its actual pathway 2 and 4 achieved in the section 4. Speaking of the best to promote the projects related to tertiary industry, it should be Mudanjiang and Heihe. In these two cities, various fields of tertiary sector are included rather than just social service, which can be indicated in the section 5.8 and 5.9.

These implementations listed in the section 5 do make contribution to develop the local economy, but this contribution cannot catch up with the rate of descendent economy. The advantage of city branding is to help the city understand itself and establish a determined target. This is especially favorable when the city is facing the grim economic situation. The following section will conclude what may influence the quality of city branding.

6.2 City branding and the down-trend economy

The goal of this study is to find out how the resource-based cities in Heilongjiang province position themselves through the city branding, especially from the perspective of ecological modernization. What makes this study unique is that this area is confronting the declining economy in the recent years. This results in that besides exploring the city branding for these cities, the economic situation becomes an important view to analyze their actual pathway and the effect of their follow-up actions.

The fundamental purpose of city branding is to stimulate the local economy, attract more population and business investment. The city branding and the current negative economy may have influence on each other. Therefore, exploring the reasons of continual down-trend economy helps to improve the quality of city branding.

6.2.1 The early period of industrial transformation

Structure transformation is the lead of city branding in all RBCs in Heilongjiang. Under the circumstance of bad economic environment, the pathway related with this strategy will spend a long time to realize the final goal.

During the study of finding out the theoretical pathway, the three most dominant industries are collected. In almost all of these cities, public management, social security

and social organizations have the highest number of all industries. Even though these public organizations belong to the tertiary industry, they cannot provide sufficient contribution to the economic value. With the low value-added industries, there is a long way for these cities to realize the transformation from the industrial processing to the service industry. However, it is understandable that this phenomenon happens during the beginning of structure transformation. All these social and public organizations will lead the development of urban services, such as guiding the investor to invest in the projects as a government agency. Structure transformation will be realized if some real high value-added industries, such as finance and entertainment, get improved.

6.2.2 Policy and institutional impact

The success of city branding is conditional in economically underdeveloped areas. A sound system and loose economic policy play a key role.

In recent years, the macro-economic environment in China has not been as good as before, and the investment enterprises and financial institutions outside the province take seriously of investment choices. Since Heilongjiang lies in an underdeveloped economy, and then the capital flows are even more reluctant to flow into this region.

From the perspective of the bureaucratic system, this situation impeded the development severely. Heilongjiang region's economy opened up relatively late, and the developmental way of planned economy remains in the governmental agencies, resulting in that the capital outside the province will not easily flow into the projects in this area.

With the recent tightening of supervision on the financial institutions and a growing trend towards marketization, the tight supply of funds leads to more difficult for limited resources to enter into the underdeveloped areas. Meanwhile, these financial institutions have increased the degree of security and caution of their funds, and the three northeastern provinces have become the restricted areas.

In the section 5, even though all these resource-based cities do cooperate with some of the famous and advantageous companies outside, more of them are government-led partnerships. This cooperation, therefore, will be highly affected by the institutional impact. The government has not achieved the correct guidance to encourage foreign capital to invest in projects in the province

6.2.3 A vicious spiral

In the introduction, there is a question about whether the quality of urbanization process affects the local economy. To answer this question, the goal and concept of urbanization should be first made clear.

Urbanization refers to a historical process of its society changing from the traditional rural society based on agriculture to the modern urban society, such as industry

(secondary industry) and service industry (tertiary industry) under the development of social productive forces, the progress of science and technology and the adjustment of industrial structure in a country or region. From this definition, the development of social productive forces, the progress of science and technology and the adjustment of industrial structure are the three channels to achieve the goal of urbanization, which is the economic development.

Based on the analysis in the above research, the three channels were impeded in different levels. The labor forces are losing due to the down-trend economy; The development of technology cannot be realized without sufficient investment considering the investors outside can only bear low risk under the constrictive economic environment; The industrial structure adjustment has become the emphasis of the past ten years, especially for the resource-based cities to get rid of the dependence on natural advantages. However, the adjustment requires a long time to realize. In the current situation, the low value-added industry, such as public management, social security and social organization, were promoted. Until real economic growth is achieved, these public organizations and institutions will find it difficult to provide better services to the population Therefore, developing high value-added industries is the key to the current development of resource-based cities

According to the phenomenon in the three channels, a vicious circle is forming. Without active economic development, the well-educated labor force will be leaving. Then without contribution from these people, the local economy will be confronting the down trend continually. These two are mutually reinforcing. This situation will be same in the circumstances of the development of technology and investments.

To break the vicious circle, the central government and also the local government have launched a series of policy, such as subsidy policy for the outstanding graduates， providing tax advantages for the high-tech enterprises, etc.. The policies above are in process and it requires some time to verify the final effects.

6.3 Recommendations for resource-based cities

In the section 6.1, the results of the theoretical city branding pathway affected by the stage of economic development and economic status have been concluded. These two factors have certain influence on the RBCs' choices, however, all resource-based cities prefer to establish a city image of a comprehensive city. The local governments not only respond to the strategy of national industrial transfer-developing the tertiary sector, but also attach great importance to the development of primary and second industries. To achieve a better effect of city branding, the down trend economy in these RBCs has been analyzed in the section 6.2. It can be concluded that the establishment of city branding requires some prerequisites, such as loose market condition, sufficient capital support and rational institutional system. Especially in the down-trend economic environment, with the guide of industrial transformation, the development of resource-

based cities meets more impediments from the vicious spiral situation. The recommendations will be raised under the above conclusions.

(1) Considering that the institutional problems of the local government are difficult to be eliminated in a short period of time and that the development of resource-based cities requires substantial sources of financing, tourism city positioning should be a breakthrough for these RBCs. The first reason is that the Heilongjiang region already has a certain reputation for beautiful scenery. Then the tourism market can be developed faster than the other industries. Especially in recent years, the reality TV show chose Heilongjiang as the shooting place and a lot of publicity on the Internet. Comfortable temperature and beautiful natural landscape have become the longing of the people in the South. The annual tourist population in Heilongjiang has been increasing year by year. Taking advantages of this opportunities, the local governments should further develop the tourism vigorously.

Meanwhile, the development of tourism can improve the understanding of the investors towards Heilongjiang, and the development of tourism can also drive the corresponding improvement of other services industries.

For now, the tourism industry in Heilongjiang is not mature in its early stages and is not well managed, with the phenomenon of undue charge and insufficient equipment reported during the recent spring festival vacation. These resource-based cities should pay more attention to the development of tourism, both in facilities and in management, and need more planning and adjustment.

(2) Besides, the level of fiscal revenue and the shortage of knowledge foundation are another key point that hinders the development of these cities from a long-term perspective. The state should introduce a series of active fiscal policies to give these cities more financial encouragement, for example, increasing the proportion of financial reserves of resource-based cities, earmarking some resources for resource-based cities to build environmental protection projects, infrastructure and so on.

The reason why these RBCs prefer to be a comprehensive city is that they cannot get rid of the dependence on the resources in the short time considering the economic revenue and the transition from the industrial industry to the tertiary industry demands a firm knowledge foundation which is extremely absent in the RBCs of Heilongjiang. Introducing talents then becomes an important policy here. Recently, a large number of provinces in China have put forward strategies to encourage the introduction of talents, including a series of preferential policies such as capital subsidies and housing concessions, but in contrast, the Heilongjiang region has not given enough preferential treatment in this respect. Then it is unlikely that Heilongjiang will be able to attract talent to these resource-based cities. For the central state, more financial support should be therefore given to Heilongjiang region and relevant professionals should be assigned to the specific location of Heilongjiang to support the industrial transformation and development of the backward areas.

(3) The system reform is the root of solving the problem for the local government of the RBCs in Heilongjiang province. The marketization of RBCs in Heilongjiang province is low. During the economic downturn, the local governments should be the first leader in directing investment. However, the bureaucratism of the local government in Heilongjiang makes the project investment guide unable to realize the gradual transformation into the liberalization of the market-oriented investment. For example, Heilongjiang real estate industry has serious barriers to real estate developers outside and has a serious tendency to protect localism. In addition, corruption and bribery still exist. Then, while protecting the interests of local business owners, they also lose more opportunities and limit local development.

Whether from the central government or the local government, there should be further rectification and change in the bureaucracy in Heilongjiang regional institutions, such as the establishment of effective supervision agencies. Because of its unhealthy system, Heilongjiang committed to structural reform, will be in the economic decline for a long time and will be difficult to recover.

6.4 Limitation and prospect of the research

Limitations of the research

In this thesis, the development of eight resource-based cities are studied from the perspective of city branding. Access to adequate public information is very important. The information availability will be the factor, resulting in the limitation of the research. The information on the details of projects cannot be retrieved easily. What can be collected is confined to the project published date, the project type and contract results for some major projects. Industry macro data and the situation of project completion turn out to be the only two approaches to find out the effectiveness of implementation. Only projects which have been finished will be reported and the construction process is unavailable to the public. Therefore, the assessment of implementation in each city is deducted from the basic information of each project and relevant reports on the official website.

In the implementation part, the collects projects may also be the part of whole planning and cannot reflect the whole picture. This should also be accused of undisclosed information. Whether the city follow its desired pathway cannot depend on the collected projects only and this may influence the judgement of development of a city. Especially in Hegang, only major projects can be found through the official channels and very little information on developing the tertiary industry.

Time is another doubtable study dimension. To discover whether the five-pathway methods predict the developmental direction effectively, this method should be applied in a long period. Moreover, the special condition for this case is the down-trend economy. The period of increasing economy should also be involved to check the project implementations. The studying time should cover more periods, not only within 12th and 13th five-year plans.

From the perspective of method itself, it is subjective when deciding the stage of economic development. In this method, several economic data have been retrieved to determine the variable of stage of economic development. Sometimes, there exist contradiction between the proportion of three industries as GDP and the proportion as working population. Then in this thesis, the basic information of the resource-based city, such as the advantageous resource, proportion of the industrial economy by segment and the three dominant industries have been included into consideration. The selection of consideration standards is comparatively subjective and this may influence the judgement of the theoretical pathway results.

When identifying the city labels following the projects in the section 5, the key words in the content of the project do not necessarily correspond to the city label summarized in the previous part of the thesis. At this time, the determination of city label is more subjective, and the final determination of city label is mainly achieved through the relevance of the meaning revealed by the key words and the relevance of the project's target itself.

Prospect of the research

Due to the limitations in the thesis, the research of the resource-based cities is worth to be further studied. The city branding in this study is only limited within ten years. The next study can focus on a wider period. After some years, all the follow-up actions will result in the specific effect. Whether city branding will be valid in the context of China can be studied and the differences and special conditions for this strategy in the west and east can also be understandable deeply.

Resource-based cities are very different from others because of its natural advantages. This congenital difference may change the deciders' minds on developing their area when adopting the strategy of city branding. Comparison can be researched between different types of cities.

The results of this paper complement the application of five-pathway method, which aims to test the degree to which the stage of economic development and the economic status determine the target of city branding. In this thesis, resource-based cities in backward areas are studied. In the case of economic depression, local governments are more willing to develop agriculture, manufacturing and services at the same time, which is different from previous studies on China's three mega-city regions. In order to test the applicability of this method and to sum up the ways to deal with the subjective judgment mentioned in the limitation part, the five-pathway method should be further applied to the study of other regions in China, such as ethnic minority gathering areas. Moreover, in the subjective judgment part of the method, some other characteristics and indicators should be selected to determine whether the results are consistent or not.

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APPENDIX

(1) Jixi

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City branding pathway following the projects
Coal petrochemical industry project	•Annual production of 600000 tons of polyester project •Jixi Natural Gas and Coking Co., Ltd. cooperation project •Coal and chemical industry valley project •Annual production of 100000 tons of organic fertilizer project •Annual production of 600000 tons of ethylene glycol project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, modern coal chemical industry base, modern eco industrial town, typical industrial base, coal resources city, mining - type heavy town, raw material processing base	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Graphite-New Materials Industry Project	•Deep processing project of special carbon graphite products •Deep processing project of heat-resistant and flexible graphite •Isostatic pressing of homogenous graphite materials •Annual production of 5000 tons of graphite emulsion •Nuclear graphite production project •Spherical graphite and anode materials graphene production project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, graphite capital, emerging industrial base , modern eco industrial town, typical industrial base	Sustainable city Eco city Advanced manufacturing city	Pathway 2

	•Deep processing production project of graphite •Lithium battery anode material project •An annual production line of 30,000 tons of high-purity graphite			
Green food industry project	•The processing project of dry oil soybean products •Construction of Edible Fungi Base and further processing project •Bee product science and technology industry meta-project •Deep processing project for wild deer •Natto and Tianpei food production project •Deep processing of black fungus-health series products •Ginseng and Panax ginseng series processing items •Deep processing of green wild vegetables project •Deep processing of tomatoes project •Deep processing of 100000 ton of soybean project •Silkworm culture and deep processing project •Deep processing of healthy drinks project •Rice deep processing project •Deep processing project of imported Russian Aquatic products	agriculture center, green food base, modern agriculture city, the national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base	Modern agriculture city	Pathway 1
Pharmaceutical industry project	•"Wendetang" brand series of traditional Chinese medicine products and production of health wine production project •Processing items of Chinese herbal medicine slices •North medicine deep processing project •Chondroitin sulfate project •Purification and processing of corn lutein •Development and construction project of traditional Chinese medicine decoction pieces •Isatis root injection production project	city of sustainable development, sustainable development capital, Eco city, resource-saving city, environmental-friendly city, Pharmaceutical industry base agriculture center, green food base, modern agriculture city	Sustainable city Eco city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Tourism industry project	•Xingkai Lake, Wusuli River cruise ship and wharf construction project •Pan-China Tourism, Endowment, Real Estate Construction Project	City of sustainable development; sustainable development capital; Tourism city, eco-tourism city, history city, civilized city, culture	Sustainable city Tourism city Eco city Low carbon city	Pathway 1/4

	•General Hu Cultural Industrial Park Project •Infrastructure Construction Project of Phoenix Mountain Scenic spot •Project of Red Tourism in the Camp of military enthusiasts in Hulin City •Hutou famous Town Construction Project	city, new public culture city, water and maintain city; Eco city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city; Low carbon city, recycling economy advanced city; livable city, city with good urban living environment	Livable city	
Mineral economy industry	•Annual production line of 500 million carats of synthetic diamond and composite sheet •Construction project of 100,000 t / a stone paper production line •Construction project of diopside powder production line •High Purity Green Silicon Carbide Fine Powder Reformation Project •Ultrafine light calcium carbonate project •Comprehensive development and utilization of nepheline syenite (potassium feldspar) processing project	advanced manufacturing center/base, typical industrial base, Raw material processing base	Advanced manufacturing city	Pathway 2
Modern service industry project	•Electronic commerce logistics project •Cold chain logistics distribution center project •Construction Project of cigarette logistics distribution Center in Jixi City of •Heilongjiang Tobacco Company •Brand 4S store project •Russian Water Cube Castle Project •Commercial integration construction project •China Logistics Park Project •Northern Summer Pension Base Project	livable city, city with good urban living environment, international friendly city for the elderly; Low carbon city, recycling economy advanced city; city of sustainable development, sustainable development capital; service center for industry, Commercial and financial service center, Large social service organization, modern service industry, Trade center, Transport hub, logistics base, transport base, e-commerce pilot city	Sustainable city Low carbon city Livable city Service city	Pathway 4

(2) Shuangyashan

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City branding pathway following the projects
Green food industry project	•Deep processing of pig products project • Construction Project of Non-Pollutant vegetable base and distribution network •Deep processing of green bean project •Processing project of white melon seed oil •Pumpkin juice project •Carrot processing project •Processing Project of apple juice in cold region •Potato cultivation and deep processing projects •Scallion processing project •Non-transgenic soybean powder grease project •Rice protein powder project •Ecological rice flour project •Processing project of corn germ oil	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food base brand, advanced manufacturing center/base	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Forest product processing industry	•Lavender planting and deep processing base project •Cultivation base of Chinese herbal medicine and further processing project of Chinese Herbal Medicine •Cultivation and deep processing project of heart-saving vegetable •Schisandrachinensis cultivation and processing project •Northeast black bee microbial fermented drinks and functional drinks construction project •Wild berry processing base project •Pleurotuseryngii and Pleurotusbisporus deep processing projects	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, advanced manufacturing center/base, Pharmaceutical industry base, agriculture center, modern agriculture city, ecological agriculture city, creative agriculture city	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Modern coal chemical industry project	•Paper plasterboard project •Fly ash fiber product project •Humic acid organic-inorganic compound fertilizer project •Lignite humic acid basedagent project	advanced manufacturing center/base, Modern coal machine manufacturing base, modern coal chemical industry base, typical industrial base, coal resources city,	Advanced manufacturing city	Pathway 2

	•Lignite made humic acid, lignite wax project •Coal-based dimethyl ether project •Lignite drying and quality improvement project •Coal- based natural gas project •Coal-based Oil project •Coal-based aromatics project •Coal - based olefin project	mining - type heavy town, Raw material processing base, Coal electricity base industry		
Mineral iron and steel industry project	•Vanadium nitrogen alloy project •Vanadium ferroalloy project •Basalt,fibre and their products Project •Graphite Deep processing Project	city of sustainable development, sustainable development capital, Eco city, resource-saving city, environmental-friendly city, advanced manufacturing center/base, graphite capital, emerging industrial base, typical industrial base, Raw material processing base, Metallurgical base	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Foreign trade industry project	•Russian sea fish deep processing project •Imported Russian plate processing project •Raohe international timber industrial park construction project	city of sustainable development, sustainable development capital, service center for industry, Commercial and financial service center, modern service industry, Trade center, transport hub, port transport city, shipping cente	Sustainable city Service city	Pathway 4
Tourism industry project	•Ursuli golden tourism project •Comprehensive development project of DadingziMountainforestpark •Hongxinreservoirdevelopment project •Beidahuangculturefilm and studiocityproject •Longhuwaterconservancy scenic spot project •Wetland conservation and eco-tourism Project of Qixing River national nature reserve •Russian-style towns project	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, recycling economy advanced city, livable city, city with good urban living environment	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4

(3) Daqing

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City Branding pathway following the projects
petrochemical industry project	•EPDM project •Isoprene rubber project •Isodecanol project •Dipropylheptanol project •Polycarboxylic acid water reducer project •Superabsorbent resin project •ACS Automotive Modification material Project •Methacrylic acid project •Polymethyl methacrylate project •Isoprene rubber project •Propylene glycol project •Ultra high molecular weight polyethylene project •Poly α -olefin project •Production project of vehicle modified plastics	city of sustainable development, sustainable development capital, Low carbon city, recycling economy advanced city, advanced manufacturing center/base, modern eco industrial town, typical industrial base, mining - type heavy town, Raw material processing base	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Food processing industry	•Vinegar processing project •Fruit vinegar project •Corn beverage project •Poultry series cooked food products project •Halal beef products project •Carrot processing project •Miscellaneous grain processing project •Rice protein powder processing project •Rice deep processing project •Comprehensive processing of muny bean products •Aquatic product industry chain integration project •Maize series product deep processing project •Rice processing project	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2

	•Ten thousand tons of mineral water, functional drinks project	base brand, advanced manufacturing center/base		
Service industry projects	•Hot Spring Real Estate Development and Infrastructure Construction Project in Chunlei area •Project of Central Cultural Business District in front of Daqing Station •Center Hotel Project •Daqing East Station Commercial Plaza Project •High-end pension community project •Wetland tourism hot spring resort project •North pole flower valleyindustryparkproject •The continuation of the seventh people's hospital in Daqing •Honggangschoolmedical support project •Pension service center project •Automobile trade complex project •Baihuhotspring leisure and health resort project •Crane Sea tourist resort project •Tourism project of ecological hot spring leisure park	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, recycling economy advanced city, livable city, city with good urban living environment, international friendly city for the elderly, service center, Commercial and financial service center, Large social service organization, modern service industry, Trade cente	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4
Medicine industry project	•North medicine industry park project •China Mongolia pharmaceutical factory project •North medicine cultivation and processing project	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2

		animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food base brand, advanced manufacturing center/base		
Automobile manufacturing industry	•5000 LNG auto modification and LNG comprehensive utilization project •Car dismantling and remanufacturing base project	city of sustainable development, sustainable development capital, advanced manufacturing center/base, typical industrial base	Sustainable city Advanced manufacturing city	Pathway 2

(4) Yichun

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City branding pathway following the projects
Nature reserve and wetland park construction project	•Protection of Pinuskoraiensis forest in Fenglin, Liangshui National Nature Reserve •Construction of Provincial Dinosaur fossil Nature Reserve in JiayinLonggu Mountain •Construction of ecological functional areas in three Watersheds of Tangwang River, Hulan River and Heilongjiang River •Construction of wild animal protection areas such as Chinese autumn sand duck, Longxiang musk deer, Xinqing white-headed crane, Wumahe ferret, etc. •Maolan Estuary Wetland Park, Xinqing National Wetland Park, MeixiQingshuihe National Wetland Park, Red Star Hodge National Wetland Park, Jiayin Taiping Island Wetland Park	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment,	Sustainable city Tourism city Eco city Low carbon city Livable city Resilient city	Pathway 1/4

		Sponge city, safe city, resilient city		
Key ecological migration projects	•The first, second and third stage project of the relocation of forest workers in the deep mountains and distant mountains of the Wumahe Forestry Bureau and the withdrawal and adjustment of the forest farm •The infrastructure project of the forest farm (institute) of the Nancha Forestry Bureau •The relocation of the infrastructure facility fitness square project of the forest farm (institute) of the Jinshantun Forestry Bureau •Jinshantun Forestry Bureau forest farm (institute) relocation infrastructure road construction project •Longxiang forestry bureau forest farm (institute) layout adjustment project •The infrastructure construction of the forest farm (institute) of the Tieli Forestry Bureau,etc.	city of sustainable development, sustainable development capital, Sponge city, safe city, resilient city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment	Sustainable city Resilient city Eco city Low carbon city Livable city	Pathway 1/4
Key projects of ecological environment management	•Jiayin River levee protection project • Tangwang river source soil and water conservationproject • Hulan River source soil and water conservation project • The whole city's water and soil conservation monitoring network project • Soil and water conservation ecological restoration project • The project of source water protection of Tieli City • The protection project of groundwater drinking water source in Tieli City • The ecological environment protection project of source water of Tangwang River • The water conservancy project of riverside water conservancy project (water conservation)	city of sustainable development, sustainable development capital, Sponge city, safe city, resilient city, Tourism city, an international tourism city, eco-tourism city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment	Sustainable city Resilient city Tourism city Eco city Low carbon city Livable city	Pathway 1/4
	• Geological environment treatment project of Xilin lead-zinc mine, abandoned mine in Wuma River area and abandoned mine around Xingan Lake Reservoir (mine environment restoration)			
	• Tieli Municipal solid waste and straw recycling project • Yichun District recycling Project (Resource Recycling)			

Key projects of forest food industry and north pharmaceutical industry	Blueberries, black fungas, Edible Fungi, Wild vegetables, Nuts, Forest Animals, Mineral Springs	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products	Sustainable city Eco city Modern agricultural city	Pathway 1
Key scenic spot project construction	• Yichun River shallow water recreation and tourism project • YichunJinji Painter Base (creating the Korean Pine School Culture Industry Project) • Shangganling Forestry Bureau tourism development Project • Wuma River Forestry Bureau Xilingforest eco-tourism resort project • Tourism product development project of Huiyuan Tourism Co., Ltd., Wuma River District	city of sustainable development, sustainable development capital, Sponge city, safe city, resilient city, Tourism city, an international tourism city, eco-tourism city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city,Low carbon city, recycling economy advanced city,livable city, city with good urban living environment	Sustainable city Resilient city Tourism city Eco city Low carbon city Livable city	Pathway 1/4

(5) Qitaihe

The category of projects	**The specific projects of each category**	**Items related to the ecological modernization**	**City labels**	**City branding pathway following the projects**

New material industry	·10,000 ton Nanoporous Silicon Fiber Thermal Insulation Board Project ·Production line project of ultra-thin high-density sheet with annual production capacity of 100000 cubic meters ·Annual production of 100000 tons of crop straw fiber film manufacturing project ·Sapphire device manufacturing project for LED large size optoelectronic window ·Production of 10,000 tons of pulp board per year	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, emerging industrial base, modern eco industrial town, typical industrial base	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Biomedical industry	·Biopharmaceutical project ·Corn antibiotic production project ·10 tons of heparin sodium per year ·Project of 300000 tons of Bio-organic Fertilizer per year ·Straw comprehensive utilization development project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, emerging industrial base, modern eco industrial town, typical industrial base, science and technology innovation city, technology city, Pharmaceutical industry base	Sustainable city Eco city Advanced manufacturing city Innovation city	Pathway 2/4
Mechanical manufacturing industry	·Mine machining and manufacturing project ·Agricultural machinery manufacturing project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, modern eco industrial town, typical industrial base, Revitalization of northeast old industrial base, equipment manufacturing	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Green food industry	·Demonstration Project of New Technology for Oil production and Comprehensive Utilization of Rice Bran	city of sustainable development, sustainable development capital, Eco	Sustainable city Eco city Low carbon city	Pathway 1/2

	·Annual production of 3200 tons of Pleurotus eryngii, bisporus edodes and processing items ·Yuyuan Auricularia Professional Cooperative Project ·Annual production of 25000 tons of rice bran protein isolate, 20,000 tons of protein powder project ·Natural pigment Plant Series pigment extraction and processing Project	city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food base brand, advanced manufacturing center/base	Advanced manufacturing city Modern agricultural city	
Coal petrochemical industry	·Annual production of 200000 tons of acetic acid ·Project with annual production of 100000 tons of dimethyl ether ·Coal tar production highway asphalt project ·LNG project of Longyang coke & electric co., Ltd ·High performance PBO Fiber industrialization Project	advanced manufacturing center/base, Modern coal machine manufacturing base, modern coal chemical industry base, typical industrial base, coal resources city, mining - type heavy town, Raw material processing base	Advanced manufacturing city	Pathway 2
Trade and logistics industry	·Warehouse logistics park project ·Star hotel project	service center for industry, Commercial and financial service center, modern service industry, Transport hub, logistics base, transport base, Tourism city	Service city Tourism city	Pathway 4
Culture and tourism industry	·Taoshan Lake Tourism Development Project ·Tourism Project of Jinsha New District in Qitaihe City	city of sustainable development, sustainable development capital, Tourism city, an international tourism	Sustainable city Tourism city Eco city	Pathway 1

		city, eco-tourism city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city		

(6) Mudanjiang

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City branding pathway following the projects
Modern agricultural industry projects	·Expansion and processing projects of beef cattle in the cooperation with New Zealand ·Smart agricultural project ·Scientific and technological demonstration Project of Green Organic ·Recycling Agriculture and Animal Husbandry Industry ·Dalian 100 Agricultural sideline products processing Project ·Deep processing project of characteristic agricultural and sideline products in Northeast China ·Deep processing project of white melon seeds in Muling city ·Lactic acid bacteria leave embryo rice and whole bean curd development project ·Processing and warehousing project of Non-genetically modified Soybean ·The Longmu Black Niu extension Project in Mulan City ·Muling Yilong food processing Project ·Baisheng Edible Fungi whole industry chain Project ·Second Phase Project of Kunjiang Rice Industry in Mulan City ·Red Star Tianye Cow Organic Ranch Project ·Hailin Steyk beer production project	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food base brand, advanced manufacturing center/base	Sustainable city Eco city Low carbon city Advanced manufacturing city Modern agricultural city	Pathway 1/2
Urban infrastructure projects	·Longhu Mountain, Shenshui Tan, ·Shuguang (White Tiger sentry point), ·Jiulong Tam Hydropower Station Project	city of sustainable development, sustainable development capital,Sponge city, safe city,	Sustainable city Resilient city Eco city	Pathway 1/4

		resilient city,Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city,Low carbon city, recycling economy advanced city,livable city, city with good urban living environment	Low carbon city Livable city	
Natural reserve projects	·Land regulation and supplementary cultivated land project ·Production project of biodegradable plastics raw material ·Shengli Wind Power Project in Linkou County ·Xiaolianhua Hydropower Station Project	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment, Sponge city, safe city, resilient city	Sustainable city Tourism city Eco city Low carbon city Livable city Resilient city	Pathway 1/4
Coal and mineral industry projects	·The integrated reconstruction and trust projects in seven coal mines ·Muling City stone and artificial quartz stone project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, modern coal chemical industry base, modern eco industrial town, typical industrial base, coal resources city, mining - type heavy town, raw material processing base	Sustainable city Eco city Advanced manufacturing city	Pathway 2

Service and tourism industry projects	·Project of Jinlong Automobile Inspection and maintenance City in Muling Economic Development Zone ·Red Star Mercure Commercial Project ·Yifeng International Auto Trade City used car Trading Market Project ·Food processing and Electronic Commerce Project ·Beidahuang e-commerce trading platform project ·Muling City Northeast film base construction project ·International Health treatment and Old-age Resort Project ·Tujia, Wanda group and Tencent real estate project ·Beijing Dongfang Caixing International Capital Management Co., Ltd and Mulan City financial cooperation project ·Project of Mulan City Electronic Business Start-up Park ·"Lin Hai Xueyuan" tourism special train project ·Mulan City Yuanbo expansion training Base Project ·Xi'an Da Runfa Project	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful rural city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment,service center for industry, science and technology service base, Commercial and financial service center, Large social service organization, modern service industry, A financial city focusing on cooperation with Russia, financial center, e-commerce pilot city, a city of industrial structural adjustment	Sustainable city Tourism city Eco city Low carbon city Livable city Service city	Pathway 1/4
Other processing industry projects	·Northern far east new building materials industry park ·Longmuyapin flax textile project in Muling city ·Dexin Polymer Science and Technology Project ·Xiangfeng plastic Industry Project in Mudanjiang	city of sustainable development, sustainable development capital, Eco city, resource-saving city, environmental-friendly city,advanced manufacturing center/base, modern eco industrial town, Scientific and technological cooperation and export processing base with Russia, Revitalization of northeast old industrial base, typical industrial base, high tech base city, electronic information industrial base	Sustainable city Eco city Advanced manufacturing city	Pathway 2

New material industry projects	·Demonstration Base of Biomass Energy Industry in China Paper Industry ·Keda Expansion Light aggregate Energy Saving New Insulation Building Materials Project ·Middle Energy Saving Oasis 100MW Agriculture and Light complementary Photovoltaic Power Plant Project	city of sustainable development, sustainable development capital; Eco city, resource-saving city, environmental-friendly city; advanced manufacturing center/base, emerging industrial base, modern eco industrial town, typical industrial base	Sustainable city Eco city Advanced manufacturing city	Pathway 2
Equipment manufacturing projects	·Shenbo electrical equipment manufacturing project ·Manufacturing Project of Dadong Machinery equipment in Mulan City	advanced manufacturing center/base, national defense and military equipment base, Large scale casting forging and heavy machinery manufacturing base, Revitalization of northeast old industrial base, equipment manufacturing, typical industrial base, coal resources city	Advanced manufacturing city	Pathway 2
Innovation industry project	·Small and Micro Enterprise Park (Zhongchuang Space) Project	city of sustainable development, sustainable development capital,innovation city, innovative pilot city,knowledge city, city for start-ups,science and technology innovation city, technology city, knowledge city	Sustainable city Innovation city	Pathway 4

(7) Heihe

The category of projects	The specific projects of each category	Items related to the ecological modernization	City labels	City branding pathway following the projects
Urban infrastructure projects	•Heihe Sino-Russian friendship hospital and international health center project •Relocation of water pumping station and construction project •Water Source in Urban area of Heihe City •Reconstruction of waterlogging pipe network and diversion •Project of rainwater pollution in urban area of Heihe City •Demonstration project of underground integrated pipe gallery in urban area of Heihe City	city of sustainable development, sustainable development capital, Sponge city, safe city, resilient city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city,	Sustainable city Resilient city Eco city Low carbon city Livable city	Pathway 1/4

	•Construction project of waste and sewage treatment plant in Nenjiang County •Bei'an to Wudalianchirailwayconstruction project •North Black Railway (Longzhen-Heihe Section) upgrading project •Land development project in Qiaotou District of Heihe City •The development project of the bridge head area of Heilongjiang Bridge •Xunke County Hydropower Station construction project. •Aihui district - hydropower development project •Biomass power generation projects, Aihui District	environmental protection city, water-saving city, beautiful rural city,Low carbon city, recycling economy advanced city,livable city, city with good urban living environment		
Ore resources development and processing related projects	•Xunke County chinastone mine development project •Aihui District humic acid series product development project •Aihui District shangmachang rock gold mine construction project •Russian iron powder, special steel processing project •Comprehensive extraction of precious metals project •Development project of lipoprotein needle •Two hydrogen quercetin processing and extraction project •Production of anhydrous oxalic acid sodium dihydrogen phosphate production project •Comprehensive utilization of carbide slag •The preparation of sodium formate from the tail gas of the closed calcium carbide furnace	city of sustainable development, sustainable development capital,advanced manufacturing center/base, modern coal chemical industry base , Revitalization of northeast old industrial base, emerging industrial base, typical industrial base, coal resources city, mining - type heavy town, Raw material processing base, Metallurgical base	Sustainable city Advanced manufacturing city	Pathway 2
Service industry	•Cross border e-commerce border warehouse project •Construction project of large building materials market •Construction project of national precious metal precious stone appraisal center •China Russia international jewelry and jade industrial park construction project	city of sustainable development, sustainable development capital, service center for industry, Commercial and financial service center, modern service	Sustainable city Service city	Pathway 4

	•The construction project of the Bei'an Internet of things industrial base •Heihe Russian pin trans-border e-commerce platformproject	industry, A financial city focusing on cooperation with Russia, Trade center, Transport hub, logistics base, transport base, e-commerce pilot city, port transport city, shipping center, exhibition center		
Environment conserve	•The project of land consolidation and ecological park construction in the Shi Jin River Basin •Wetland conservation and development project in Nenjiang County •Nenjiang County Kolo volcano group integrated development project	city of sustainable development, sustainable development capital, Sponge city, safe city, resilient city, Eco city, resource-saving city, environmental-friendly city,Low carbon city, recycling economy advanced city,Tourism city, an international tourism city, eco-tourism city	Sustainable city Resilient city Tourism city Eco city Low carbon city	Pathway 1
New energy and innovation industry	•China Russia international science and technology industry city construction project •Bei'an solar power light power production project •Aihui District cloud computing Industrial Park Project •Intelligent model of grain storage construction project •The giant JUNCAO bio energy development project •Construction project of gas film city complex •High end semiconductor laser chip development project •Gallium arsenide solar cell production project •Solar photovoltaic agricultural facilities integration project	city of sustainable development, sustainable development capital, innovation city, innovative pilot city , science and technology innovation city, technology city, knowledge city, Eco city, resource-saving city, environmental-friendly city, Low carbon city, recycling economy advanced city,	Sustainable city Innovation city Eco city Low carbon city	Pathway 4

	•Comprehensive utilization of biological waste •Construction project of photovoltaic ground power station			
Processing industry	•Production project of straw solidified fuel in Bei'an •Production of butanol from crop straw in Bei'an •Zheng Xing Abrasives expansion project •Production and processing of spare parts for special vehicle •New large caliber special wear slag transportation pipe processing project •Sapphire substrate processing project •Green lighting series product development project •Organic fertilizer production project in Nenjiang County •Wooden cottage processing project •Wood fiber processing project	advanced manufacturing center/base, modern eco industrial town, emerging industrial base, typical industrial base, Raw material processing base, agriculture center,green food base, modern agriculture city	Advanced manufacturing city Modern agricultural city	Pathway 1/2
Tourism industry	•Ice and snow test in Wudalianchi •Wudalianchi waterfront tourism new town project •Comprehensive tourism development project of Wudalianchi Yamaguchi Scenic Area •Wudalianchi ski resort construction project •Wudalianchi ice and snow sculpture World Development Project •Nenjiang County peak provincial •Forest Park upgrading and transformation project •Nenjiang County Station Road north seeking adventure driving projects •Wudalianchi scenic area full area development project •Sunwu County ruins district project experience in World War II •Sunwu County border river scenery ecological tourism project •Sunwu County of Zhengyang mountain ecological tourism development project	city of sustainable development, sustainable development capital, Tourism city, an international tourism city, eco-tourism city, history city, civilized city, culture city, new public culture city, water and maintain city, Eco city, resource-saving city, environmental-friendly city, the cleanest and most beautiful city, green city, forest city, garden city, green model city, environmental protection city, water-saving city, beautiful	Sustainable city Tourism city Eco city Low carbon city Livable city	Pathway 1/4

	•Sunwu County Cultural Industry Park construction project between China and Russia •The construction project of Cangshan exploration tourism area Xunke County stone •A large platform Xunke County eco tourism development project of rural rime •Bei'an DPRK folk custom garden project •Bei'an tourism complex construction project	rural city, Low carbon city, recycling economy advanced city, livable city, city with good urban living environment		
Green food and medicine industry	•Xunke County high quality mineral water project •Xunke County organic agriculture demonstration base construction project •Xunke County wild animal breeding base •Xunke County wild vegetable processing project •Sunwu County Angus beef high-end meat dish processing project •Deep processing project of Sunwu •County black fungus •Deep processing of high precision non transgenic soybean products in Sunwu County •Aihui District Chinese medicine project •Sunwu County Seabuckthorn pharmaceutical and comprehensive development project •Aihui District silymarin Jiejiu Hugan beverage project •Oat processing project of Aihui District •Aihui District blueberries, blackcurrant planting and processing project •Project of production of Aihui District organic active natto capsule	city of sustainable development, sustainable development capital, Eco city, environmental-friendly city, recycling economy advanced city, agriculture center, green food base, modern agriculture city, agricultural circular economy demonstration area, ecological agriculture city, recycling agriculture city, creative agriculture city, The national food and animal husbandry base, Intensive processing base of agricultural products, livestock and poultry breeding base, China food base brand, advanced manufacturing center/base	Sustainable city Eco city Low carbon city Modern agricultural city	Pathway 1/2

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

	Sustainable city	Smart city	Innovation city	Resilient city	Tourism city	Eco city	Low carbon city	Livable city	Advanced manufacturing city	Service city	Modern agricultural city
Jixi	4	0	6	2	10	24	7	6	23	12	13
Hegang	2	1	6	2	15	23	5	7	26	11	16
Shuangyashan	5	1	3	1	13	23	5	7	13	9	12
Daqing	5	6	8	1	9	24	6	7	8	4	5
Yichun	2	2	2	1	11	18	6	1	4	2	4
Qitaihe	3	1	5	1	4	12	9	3	11	10	4
Mudanjiang	3	2	3	0	10	17	9	3	13	16	6
Heihe	2	3	7	1	16	20	4	4	25	19	14

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

	sustainable city	Smart city	Innovation city	Resilient city	Tourism city	Eco city	Low carbon city	Livable city	Advanced manufacturing city	Service city	Modern agricultural city
Jixi	3	10	13	2	13	26	7	11	22	14	17
Hegang	0	0	13	0	7	0	0	0	8	16	0
Shuangyashan	1	6	4	0	8	11	6	3	9	9	7
Daqing	2	5	4	2	7	15	5	6	7	8	7
Yichun	1	9	4	1	10	22	2	8	3	2	6
Qiaihe	0	0	0	0	0	3	4	0	9	0	0
Mudanjiang	0	0	0	0	2	0	0	0	0	3	0
Heihe	1	8	8	2	13	24	12	6	9	22	18

（10）City branding terms counted from the Urban Master Plan

	sustainable city	Smart city	Innovation city	Resilient city	Tourism city	Eco city	Low carbon city	Livable city	Advanced manufacturing city	Service city	Modern agricultural city
Jixi	0	0	0	0	0	0	0	7	0	3	0
Hegang	0	0	0	0	0	0	0	0	4	7	0
Shuangyashan	1	0	1	0	4	9	0	1	5	2	2
Daqing	5	5	11	0	8	36	0	1	19	4	8
Yichun	2	0	0	0	8	8	0	2	8	3	9
Qitaihe	0	0	0	0	0	3	4	4	28	0	0
Mudanjiang	0	0	0	0	10	6	0	0	2	3	2
Heihe	0	0	0	0	18	24	0	0	0	20	22