

# SHENZHEN LOW CARBON CITY

A TRANSFORMATION OF CONCEPT AND PLANNING PROCESS



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## Colophon

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A transformation of Concept and Planning Process  
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# Abstract.

The rapid urbanization process of Shenzhen cause a rapid environmental degradation. A new development pattern with less energy consumption is urgently required. The new concept of Low Carbon City is proposed by the Chinese as the eco-city answer. To successful implement this concept is there a change in the development mode of Shenzhen needed; from only focusing on economic growth to an equal focus on the social and environmental aspects in the planning process as well. Importing knowledge is therefore an essential element in the development process. The aim is to describe and understand the development of the concept of Low Carbon City and the planning process, focused on the involvement and contribution of planning consultancies. An analysis of the planning process of three case studies (Guangming New Town, Qianhai Bay and Pingdi International Low Carbon City) outlines the positioning of the concept through time. The planning process in Guangming started as open and broad with a prominent role for planning consultancies due to a lack of knowledge about eco-city development. In the ongoing planning process of Pingdi is an over-emphasizing of technology visible and are the consultancies contributing on specific planning aspects. A study of the planning process of the three cases shows that the concept changed from broad to a narrow focus. This understanding of the concept made that involvement of the consultancies in the planning process is based on cooperation and specialization. Through time did the increase of knowledge results in an increase narrowness of the concept and a transforming of the planning process.

*Keywords: Low Carbon City, Planning Process, Eco-City Development, Shenzhen, Strategic Planning, Use of Urban Concepts.*



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Utrecht, August 2014





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Figure 1: Location of Shenzhen in the world  
Source: Adapted from Google Earth

# Preface.

## China declares war

February 26, 2014; the opening of the annual meeting of the Chinese parliament. The government is unveiling their detailed measures to tackle what has become a hot-button social issue. The Chinese are talking about *“a red- light-warning”* and *“an acknowledgement at the highest level that there is a crisis”*. Serious use of language from the government of 1.3 billion people. The country with the most inhabitants in the world broadcasted this speech on state television.

Chinese premier Li Keqiang continued: *“We will resolutely declare war against pollution as we declared war against poverty”* (Reuters, 2014). The topic of dealing with environmental problems is high on the political agenda.

My image of China consisted of polluted megacities with grey skies. Cities I never heard of with millions of people living in it. From my perspective, all these people were living in sky-high buildings in large urban projects. I know that the living standards in China are increasing, just like the level of pollution. The above news article confirmed my image.

As my starting point I choose to investigate the aspect I was most interested in, the use of concepts in urban planning. During my orientation, on the internet as well as talking to *“Shenzhen experts”*, it became clear to me that Shenzhen is still a booming city. Large urban projects were still part of the development modus and many of these projects had the aim of becoming sustainable. My research was formed around the question how large urban projects are actually implementing the concept of sustainability. I am personally interested and critical of both the environment pollution and the proposed solutions.

An important element of a sustainable development is that it is embedded in the local conditions, at least in my understanding. My interest was sparked when I discovered that outsiders were deeply involved in the development of the eco-city concept of the Low Carbon City. It seemed to me that many international experts were part of the development of this new Chinese concept. This was the starting point of my research.

*“Urban Renewal of Shenzhen”* is my graduation program at the University of Amsterdam for my master Urban and Regional Planning. This program has been undertaken in partnership with the International New Town Institute (INTI) as part of their larger research *“New New Towns”*. In cooperation with INTI and my interest formed during my orientation process are three study sites selected.

I had the fortunate opportunity to go to Shenzhen and see the ongoing developments in real life. During my six weeks stay, I and my colleagues had the opportunity to discover and understand Shenzhen. At the end of March 2014, an introduction program with local experts organized by INTI provides an interesting starting point. The contacts of INTI opened many doors and so did the collaboration with students from Shenzhen University. I was able to work at the Shenzhen Center for Design and my colleagues there gave me the opportunity to attend workshops and presentations. All these actors contributed to the result of this study. My time in Shenzhen has been crucial to understand the large scale Low Carbon development projects. This was an invaluable opportunity.

I am glad with the result and hope you enjoy reading my graduation thesis!

# Structure.

**This thesis is structured in three parts and consists of ten chapters.**

## Part One: Research Framework

### Chapter 1 – Introduction

The first part gives an introduction to the topic and outlines the problem statement, the aim, the sub- & central research question and the conceptual model for this project. The research and case study design and the case study selection are explained. Lastly, the methods for data collection and data analyzing and limitations for this research are outlined.

### Chapter 2 – Context

This research is positioned in the planning system and the context of Shenzhen will be outlined in this section.

### Chapter 3 – Theoretical Framework

The theory section is about the role of trends that affect the city and their theoretical abstract support. The academic approach on “*inter-city competition*” and “*strategic planning*” will be discussed where after the scope becomes focused on China in relation to the academic approach on “*use of strategic concepts*” and “*involvement of planning consultancies*”.

## Part Two: Research Findings

### Chapter 4–Low Carbon City

Firstly an outlining of the concept of eco-city will be given, thereafter the historical development of the Low Carbon City at different levels will be treated. In closing, the reasons will be explained why this concept is adopted, what the aim/definition is and the implementation of it.

### Chapter 5 – Guangming New Town

### Chapter 6 – Qianhai Bay

### Chapter 7 – Pingdi International Low Carbon City

The cases will be treated separately but structured the same. The analysis of the case studies is divided into two parts. The first part defines a description of the historical conditions, the past planning process and the current planning aims. After this descriptive part the analysis focusing on four aspects of the planning process will start; *participation model*, *political landscape*, *brief & submissions* and *contribution of consultancies*. This will be done for all the three case studies: Guangming New Town, Qianhai Bay and Pingdi International Low Carbon City.

## Part Three: Conclusions

### Chapter 8 – Results

This section will relate the case studies to each other on the four described aspects. This makes an analysis of the different aspects through time possible and certain trends can be seen.

### Chapter 9 – Conclusion

The findings in combination with the academic literature will be related and used to answer the sub- and central research question.

### Chapter 10 – Discussion & Recommendation

The research will be discussed and positioned in a broader context. Recommendations will be made.

### Chapter 11 – Reflection

Lastly, a personal reflection on the thesis project process will be given.

Figure 2: Town hall surrounded by Futian Central Business District







# PART ONE: RESEARCH FRAMEWORK



Figure 3: Location of Shenzhen in China



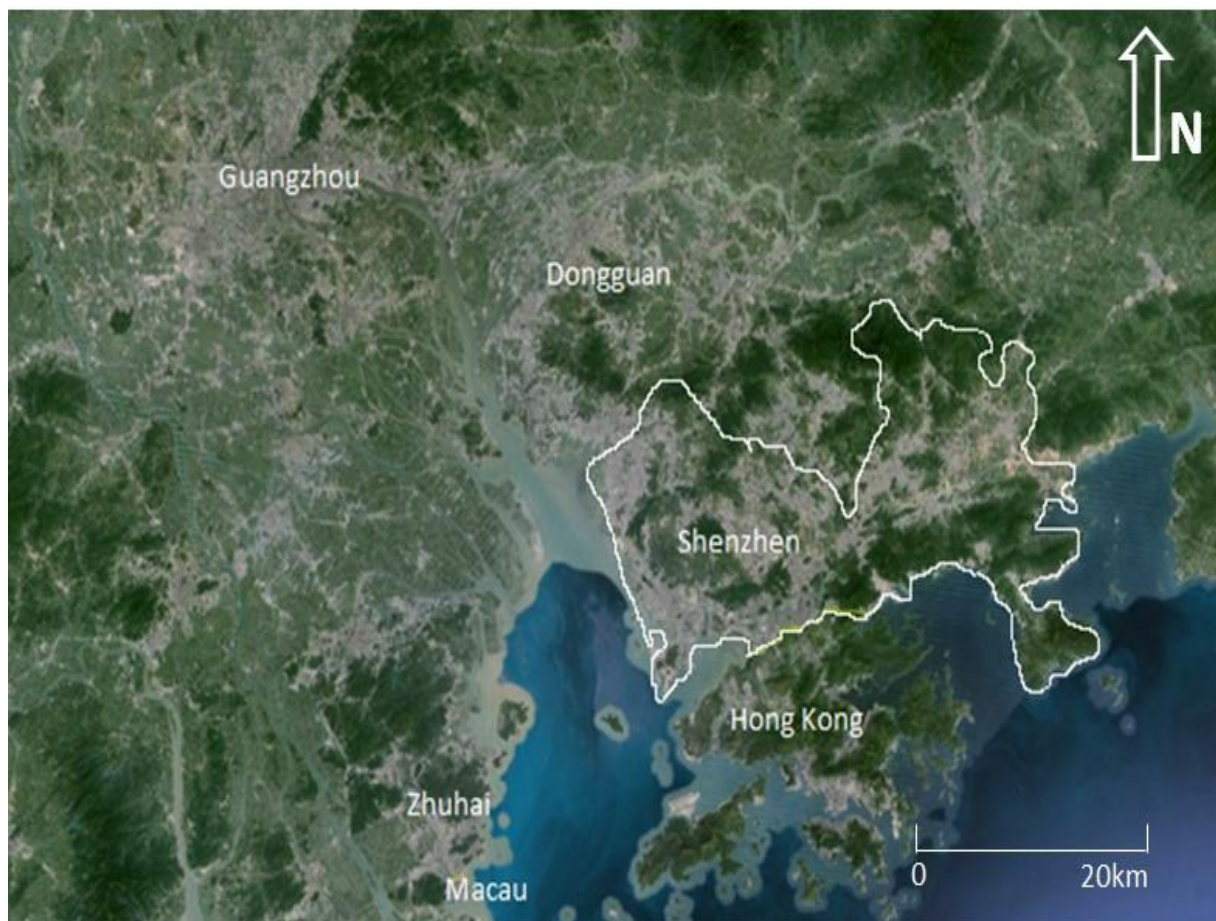
Source: Adapted from Zacharias & Tang, 2010

# [1] – Introduction.

**Outlined is an introduction to the research and the problem statement. The aim of the research, as well as the research question, the scientific & social relevance and the conceptual model are explained. The research & case study designs are introduced, as well the selection of the case studies, the data collection and the method for data analyzing. This last section discusses the limitations of the research.**

The city of Shenzhen is located between the South East coast of mainland China and the Northern edge of Hong Kong. The total land area is 2,000 km<sup>2</sup> and the city has a coastline of 230 km. On the West side the city borders the Pearl River estuary, the East side continues to the Mirs Bay. Together with the cities of Hong Kong, Dongguan, Guangzhou, Zhuhai and Macau, Shenzhen is part of the Pearl River Delta region. This new massive conurbation is linked physically and economically and was recently labeled by UN-HABITAT as the world's largest mega-urban region (Waibel & Schroder, 2011, p. 49; UN-HABITAT, 2010). In 2002, the megalopolis of these five cities was estimated at 36 million inhabitants (Koolhaas, 2002).

Figure 4: Location of Shenzhen in Pearl River Delta region



Source: Adapted from Google Earth



Shenzhen's development started when it was established as the first Special Economic Zone (SEZ) in China by socialist-leader Deng Xiaoping as part of the "opening up policy" in 1979 (see figure 5). Deng Xiaoping said:

*"the SEZ is intended as a window of technology, management, knowledge and foreign policy. We can then import technology and learn various kinds of knowledge including management techniques. The SEZ's will also be a base for economic opening and nurturing ground of human resources, hence expanding our external influences"* (Ng & Tang, 2004, p. 192).

The effects of this can be seen in the booming numbers of population and economic growth.

Figure 5: Den Xiaoping writing down: *"The development and experience of Shenzhen have proven that our policy for establishing Special Economic Zones is a correct one"* (Januray 26, 1984).

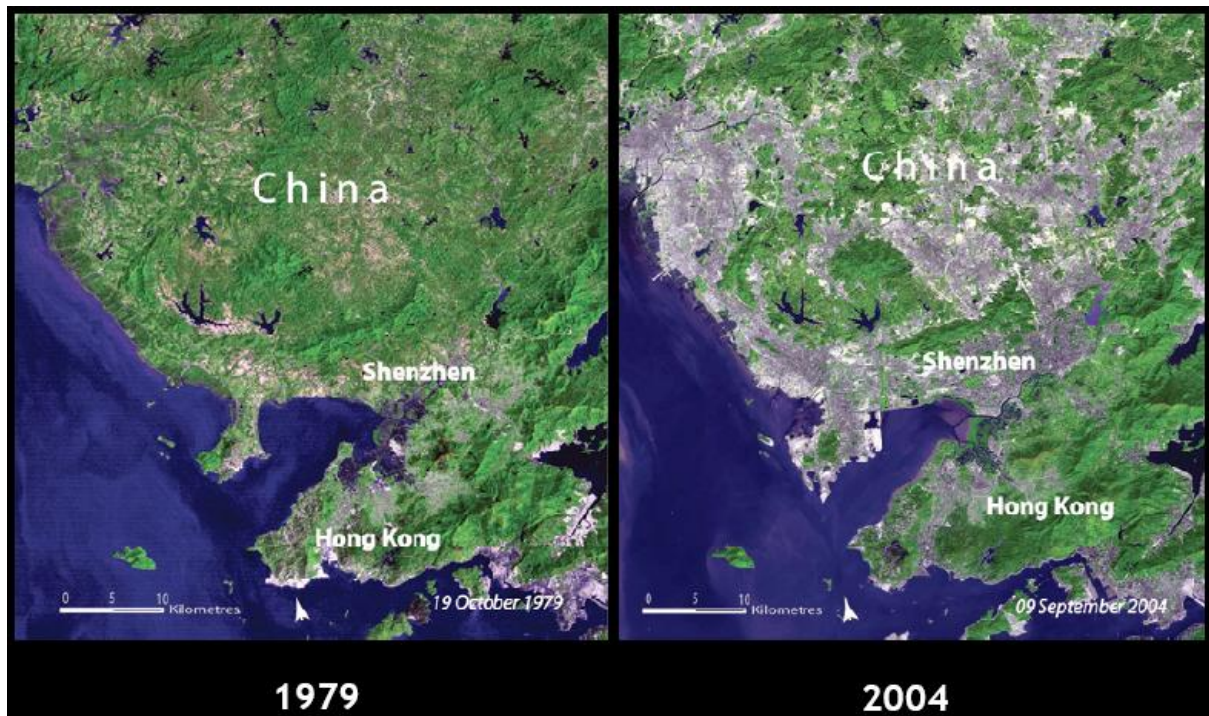


Source: Shenzhen Urban Planning & Land Administration Bureau

Prior to 1979, Shenzhen was a small fishing village with a population of around 20.000 people. This number of inhabitants of Shenzhen sky-rocketed immediately after the establishment of the SEZ. From the first Master plan on, the city achieved an annual population growth larger than the planned population growth. The currently estimated population of the city ranges from 10,5 million to 18,5 million (UPDIS, 2014; Hulshof & Roggeveen, 2011).

The first overseas bank establishment in China, the establishment of a stock exchange and the first land auction were confirmations that the city is also economically growing. From 1980 to 2001 the GDP increased by 724 times and the annual growth rate of GDP is 38,9 % per capita (Ng & Tang, 2004, p. 190).

Figure 6: Rapid urbanization of Shenzhen



Source: UPDIS, 2014-1

This booming economic and demographic growth of Shenzhen is sometimes described as a “miracle”. But it is not a fairytale in every aspect. Shenzhen has made remarkable achievements in the rapid development of economy, but this is coupled with a rapid urbanization process (see figure 6), causing an increasingly prominent position and role of cities as well as “particularly pronounced conflicts between resources and environment” (Chao & Li, 2011, p. 199). This rapid urbanization process causes a dramatic change of energy consumption (Liu, 2009).

The environmental degradation is enormous. Levels of carbon dioxide in the atmosphere have risen by more than a third since the industrial revolution and are now rising faster than ever before (Su et al., 2012, p. 1144). This is a direct result of the rapid urbanization process that is happening. Cities gather more than one half of the world population and are the center of social economy and human activity. This makes the cities the main source of carbon emission (Liu, 2009). A new development pattern with less energy consumption is urgently required in China and the world. It is up to the cities to find significant answers (Su et al, 2012, p. 1144).

A concept from the paradigm of eco-cities is therefore very attractive for these cities. This paradigm is introduced by Richard Register and has been defined as “cities that are self-reliant, minimize the demands on resources like energy and water and reduce waste” (Register, 1987), and is since considered as a framework (Roseland, 1997, p. 201). Several sustainable urban concepts became part of this paradigm; green city, sustainable city, smart city, knowledge cities (Jong et al, 2013, p. 210). The newest concept in this paradigm is the idea of the Low Carbon City (Chan et al, 2013, p. 1). Many Chinese cities have made their efforts to construct Low Carbon Cities in recent years (Su et al, 2012, p. 1145).

## Problem Statement

The transition and development of the concept of eco-cities requires to bring in “knowledge infrastructures”, according to Jong et al., (2013). Other academics even argue that international collaboration is an essential element in this development process (Chan et al, 2013). Between Chinese and foreign governments, corporations, and knowledge institutes, collaborations are established to import science and technology to develop cities with both ecological and knowledge features (Wu, 2007, p. 387; Jong et al, 2013, p. 209). This leads to an increase of planning consultation for major urban development plans in China. Planning work is no longer a design task for local planning and design institutes but it is widely used to increase publicity and utilize wider expertise (Wu, 2007, 382). Therefore, the role of planning consultancies is widespread and a common practice in Chinese megacities (Wu, 2007, p. 379).

But as Cao and Li (2011, p. 199) suggest there is, despite the involvement of external knowledge infrastructures, a bottleneck in the development and application of the Low Carbon Concept in the urban development model. They stated that efforts should be made to come to an urban development model with the integration of the target of the Low Carbon City in it.

That external experts are needed in the development of a Low Carbon City is evident, but how they are going to get involved in the local planning system is not outlined. Therefore, the Low Carbon City needs to be conceptualized. It is unclear how to involve the external experts in the planning process compatible with the requirements for the concept of the Low Carbon City.

## Aim

The aim is to describe and understand the development of the concept of Low Carbon City and the planning process, focused on the involvement and contribution of planning consultancies. The study describes how the planning process regarding planning consultancies is organized in three Low Carbon City projects in Shenzhen. By studying these cases, the concept of a Low Carbon City will be positioned. The planning process of these cases will be analyzed with the aim to describe the development of the concept and the contribution of external participants in the planning process.

## Research Question

The central research question is:

**“How did the Low Carbon City concept in Shenzhen develop and what is the role of planning consultancies in the planning process?”**

This question can be divided into two parts:

**Question 1: How did the Low Carbon City concept in Shenzhen develop?**

**Question 2: What is the role of planning consultancies in the planning process?**

In the conclusion, these two questions will be answered and it will show that an interesting dynamic takes place between these sub questions.



## Scientific and Social Relevance

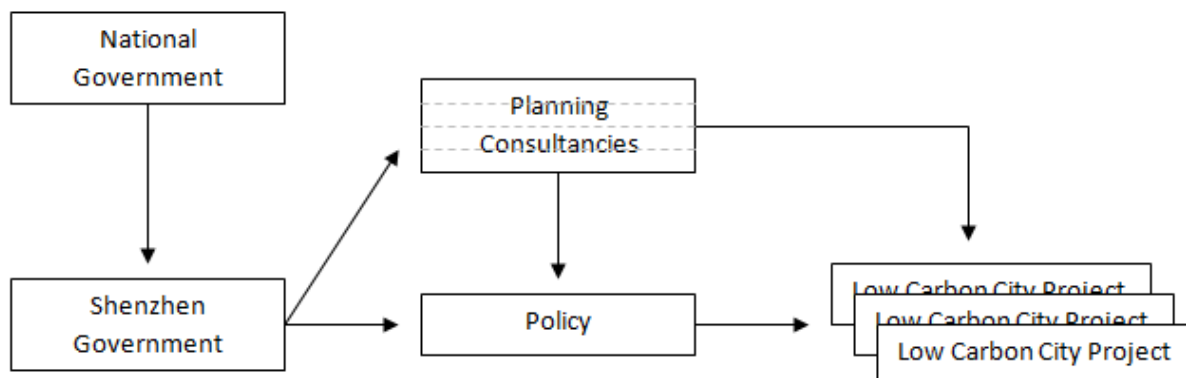
### Scientific Relevance

Scholars and scientific articles are linking and comparing the concept of the Low Carbon City to other concepts of the eco-city paradigm (Song, 2011; Jong et al, 2013). This positioned the concept but doesn't have a practical orientation. There is also academic literature that handles the theoretical development of the concept itself (Su et al, 2012; Yang & Li, 2013), but again there is no study of the application of the concept in practice. As Cao and Li (2011, p. 199) describe, scientific literature on the planning process is needed to realize a Low Carbon City. There seems to be a gap between the practice of implementation and theoretical foundations in the literature. This research wants to contribute to literature about the practice of implementation of the concept of Low Carbon City.

### Social Relevance

The concept of a Low Carbon City is becoming popular. Not only the academic world, but also internet blogs, magazines, associations and a variety of business are all discussing this concept. Creating awareness and attention doesn't seem to be necessary. But these actors are working with the concept on an abstract level. Understanding the practice and the organization of the planning process of the Low Carbon City is important. "Ecological civilization" is adopted as the achievement in the development strategy for the 12<sup>th</sup> Five Year Plan period (2011 – 2015). To achieve this "a transformation of development mode" is needed (CCICED, 2012). This research can contribute to a better understanding of the development mode of the Low Carbon City and the contribution of this process towards the aim of this concept.

## Conceptual Model



*Interpretation:* the national government have the purpose to create the Low Carbon City. Beijing influences the government of Shenzhen and they adopt the wish to become a Low Carbon City. Therefore they try to develop a policy and implement this in a few demonstration projects. The involved planning consultancies do have their influence on the policy regarding the concept of Low Carbon City and on the related projects.

*Operationalization:* according to the Cambridge dictionary a consultancy is "a company that gives advice on a particular subject" (Cambridge Dictionaries, 2014). This research uses that definition to operationalize the planning consultancies.

## Research and Case-Study Design

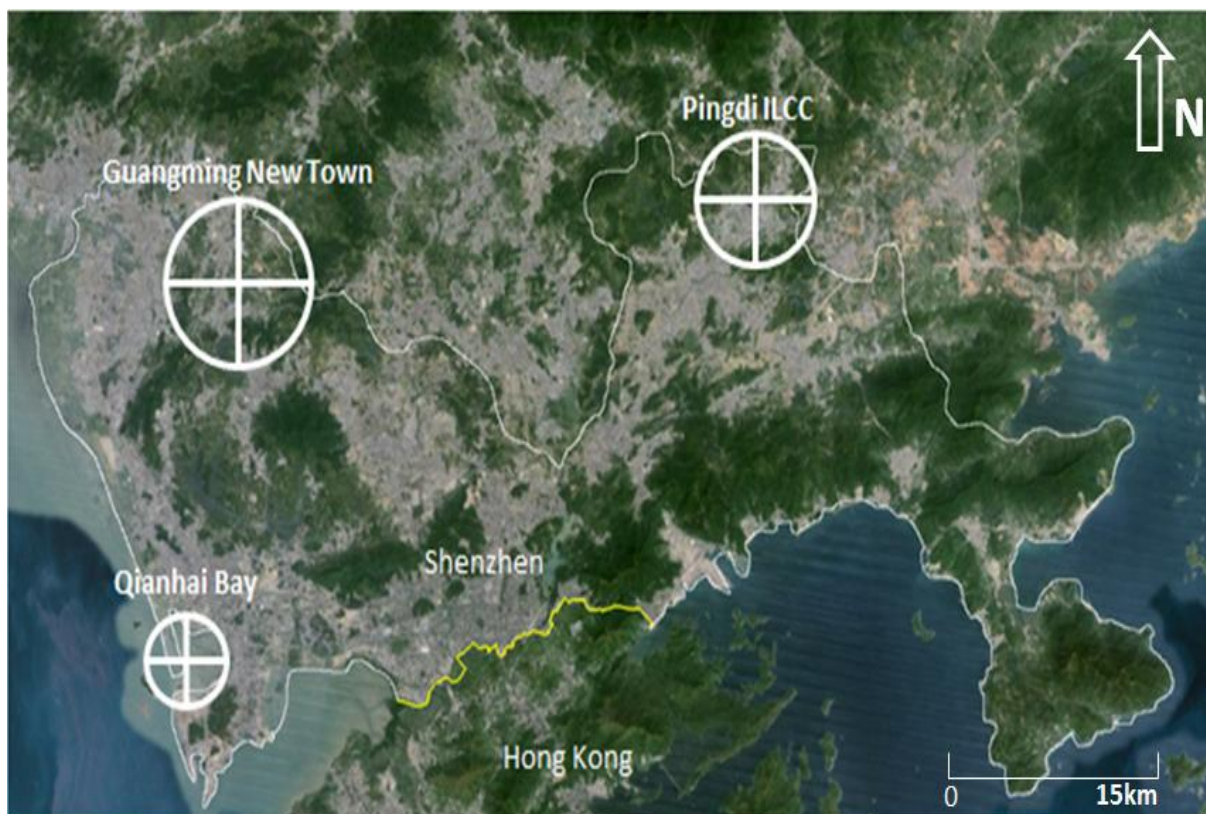
The overall methodological approach for this research is a descriptive design. The research design takes the form of a case study research. This approach brings an understanding of the complex issue of implementing the Low Carbon City through a detailed contextual analysis of the conditions and relationships (Wolsink, 2013). One of the standard critiques on the case study is that findings deriving from it cannot be generalized (Bryman, 2008, p. 71), but the purpose is to generate an intensive examination of the development of this locally based concept. Therefore, this research does have multiple case studies. As the aim is to describe the development of the concept, it is needed to select multiple cases which differ in time period. There are three cases in Shenzhen that differ enough to analyze this. A comparison between the selected cases is used to address the research question. Every case has multiple units of analysis; the role of the government and the role of the consultancies. Yin (2003, p. 46) describes this type of design as an embedded multiple case study design.

## Case Study Selection

Three case studies are selected; Guangming Central Area, Qianhai Bay and Pingdi International Low Carbon City (ILCC). Their selection is based on: (1) developing according to the Low Carbon City characteristics, (2) involvement of consultancies in the planning process and (3) time difference.

The first condition was developing the area according to the concept of the Low Carbon City. The aim of the city of Shenzhen is that the whole territory becomes Low Carbon (Shenzhen Government, 2014), which means that there were many areas to select. But the focus of this policy is on the new large scale development plots. As Shenzhen is a city which can only expand towards its borders, this is the geographical area where the case studies are located. All three sites are located at the fringes of Shenzhen (see figure 7).

Figure 7: Locations case studies in Shenzhen



Source: Adapted from Google Earth



Because an important part of this study is the contribution of planning consultancies, was it of importance to select areas where these actors were involved. The method of involvement in the planning process differs between the cases but in all three cases international planning consultancies are involved.

And as the study wants to understand the concept of the Low Carbon City and its development it was of importance to select areas in a different time period. The case of Guangming Central Area was the first case in the time lapse of Low Carbon City development, the case of Qianhai Bay followed. In both cases the planning process towards the Master Plan is already fulfilled. The development of Pingdi International Low Carbon City area started in 2012, the master plan for the first sub-area is established, the other bigger areas are still in planning.

The three case studies all fulfill the conditions of a Low Carbon City development with external consultancies involved in a different time period.

**Figure 8: Ping An Finance Center, when finished China's tallest building (660 meters)**



## Data Collection

Three different types of sources will be used to collect data. They can be divided in primary and secondary collected data. Interviews with experts and a questionnaire amongst citizens is data which is only used for this study and therefore primary collected data. Secondary data are already existing data; documentation is the source of evidence used here. PowerPoint presentations, invitation-letters, announcements, proposals and reports are all documents part of this type of source (Yin, 2003, p. 102). The combination of these three types of sources reduces the change of reflexivity, meaning that the interviewee is giving answers according to what the interviewer wants to hear.

The interviews are the most important source of information. A semi-structured interview method is applied. Because each interviewee has a different background of involvement in the process, each interview was prepared on its own. As this is a descriptive research, the method of semi-structured interview gives the interviewee the opportunity to talk about what they think is important, while I as an interviewer have the chance to ask targeted questions which focus directly on the study sites. This gives insightful information as it provides the chance to ask for an explanation of perceived causal inferences (Yin, 2003, p. 103). Fourteen oral interviews were carried out with experts which are recorded and transcribed (see table 1) and two small expert interviews are done via email contact (see table 2) (see appendix for transcription). For reasons of privacy is referred to the name of the organization, followed by the abbreviation that will be used in the rest of the thesis when information from this particular source is used. The list is presented according to the moment of interviewing.

Table 1: Interviewee list

	<b>Organization:</b>	<b>Referred to as:</b>	<b>Mainly of importance for the topic of:</b>
1.	China Development Institute	CDI, 2014	Low Carbon City
2.	Riptide	Riptide, 2014	Low Carbon City
3.	Development and Reform Commission	DRC, 2014	Low Carbon City
4.	Next Generation Infrastructures Foundation	NGIF, 2014	Pingdi ILCC
5.	Urban Planning and Design Institute of Shenzhen	UPDIS, 2014a	Qianhai Bay
6.	Urban Planning and Design Institute of Shenzhen	UPDIS, 2014b	Qianhai Bay & Pingdi ILCC
7.	Shenzhen SEZ Construction & Development Group CO.,	C&D Group, 2014a	Pingdi ILCC
8.	Shenzhen SEZ Construction & Development Group CO.,	C&D Group, 2014b	Guangming New Town & Pingdi ILCC
9.	Urban Planning and Design Institute of Shenzhen	UPDIS, 2014c	Qianhai Bay & Pingdi ILCC
10.	DRO Amsterdam	DRO, 2014	Pingdi ILCC
11.	International New Town Institute	INTI, 2014	Guangming New Town & Pingdi ILCC
12.	MVRDV	MVRDV, 2014a	Guangming New Town
13.	KuiperCompagnons	KuiperCompagnons, 2014	Qianhai Bay
14.	MVRDV	MVRDV, 2014b	Guangming New Town

There are email conversations with the following people:

Table 2: Digital interviewee list

	Organization	Referred to as:	Mainly of importance for the topic of:
1.	Inbo	Inbo, 2014	Pingdi ILCC
2.	EHOW	EHOW, 2014	Guangming New Town & Qianhai Bay

The questionnaire is used to get an understanding of the society's approach on the Low Carbon City. This is of importance to understand the context and the local embedding of the concept. The respondents are strictly randomly selected in metro stations Baishizhou and Qiaocheng North with help of a Chinese speaking student. Beside the standard questions of personal information three short open questions were asked. Twenty respondents participated in total (see appendix). With a standardized survey is it possible to compare the answers of the respondents (Boeije et al, 2009, p. 218). Although the survey was not representative, it gave a bit of insight in the societies' understanding of the Low Carbon concept and is therefore used to form the context.

The documents which will be analyzed are: the on-line announcement, the letter of intent, the strategic plan proposed by the international consultancies and the PowerPoint presentations. This research method has the advantage of being stable, it can be reviewed repeatedly, and the different case studies can be compared with each other (Yin, 2003, p. 102). It also gives exact information about the organization structure and dates. The documents are taken as a starting point for this research. These documents were gathered with the help of participating institutes. The traceability of these documents was, due to good connections, sufficient and well accessible. These documents were already present and not created for this research particularly, what makes that chance of reflexivity is smaller (Yin, 2003, p. 106). The study site of Pingdi International Low Carbon City, due to its just having started planning process and organization structure, has less documents and archival records available which can be of value for this research. This is compensated with more interviews focused on this study site.

## Data Analyzing

The collected data will be analyzed with the method of "constant comparison", meaning that *"themes and concepts that emerge from the data are constantly compared to the sensitizing concepts and to other parts of the data"* (Folmer, 2014). So between data and within one data-set, a constant comparison is made to generate, develop, and verify concepts of different levels of abstraction (Folmer, 2014).

All the qualitative data collected during the empirical research are structured with help of the software of NVivo (version 10). This makes it easier to order and analyze the data (see appendix). NVivo makes it possible to collect data with common topics in nodes that contain pointers to various sections of several documents (Edhlund, 2011, p. 11). For analyzing the data regarding the method of constant comparison and regarding to the different study sites is NVivo an appropriate tool.

## Limitations

Like in any other research, this study faced some limitations. Spending six weeks in the research area was quite a while and sufficient to do whatever planned to do before going to Shenzhen. Had the given timeframe been longer, several interviews with the same or more actors could have strengthened the results. A longer stay would have given the opportunity to redo the interviews and/or get a bigger data collection. With this type of study in China, Reflexivity is seen as the biggest danger, but this is avoidable by using different research methods.

A good thing to keep in mind is that miscommunication and misinterpretation can play a role. By almost doing all the interviews by myself in English, only one interview made use of a professional translator, the chance of miscommunication has been reduced. But for some typical vocabulary, there were some difficulties in translating from Chinese into English. Especially when studying Chinese PowerPoint presentations and trying to translate them with help of Google Translate. Miscommunication is avoidable by checking the translation after the interview with the help of a Chinese architecture student. But as most of the participants were internationally orientated professionals, they mastered the English language well.

# [2] - Context.

**This section discusses the planning system and the current local trends in Shenzhen.**

## Planning System

The most important aspect of the Shenzhen planning system is to know that the SEZ was not always as big as the whole Shenzhen territory is. The whole territory is 2000 km<sup>2</sup>, while at the beginning the Shenzhen SEZ was just 375 km<sup>2</sup> (UPDIS, 2014-I). This initial area is directly located next to the border with Hong Kong and seen as the center of the city. This area was separated by the rest of Shenzhen by an administrative "second line". In retrospect, different land use features can be related to this administrative border. In July 2010, the second line was removed and the SEZ extended to the whole territory (Huang & Xie, 2012).

Back in 1979, the planning system was set up in the experimental zone for China's Open Door policy and aiming to serve the country. It was a tool: *"to implement central economic planning with little need to address local development dynamics"* (Ng & Tang, 2004, p. 194).

From the founding of the city a series of studies led to the city's first Master plan in 1982, which was revised in 1986. The focus was on the spatial allocation of major infrastructure with a growth model of clustering urban functions along traffic corridors. This was an innovative model in China and known as the "clustered linear planning principle" (see figure 9) (Zacharias & Tang, 2010, p. 217). This plan was only focused on the original SEZ.

Figure 9: Urban structure SEZ Master Plan 1982

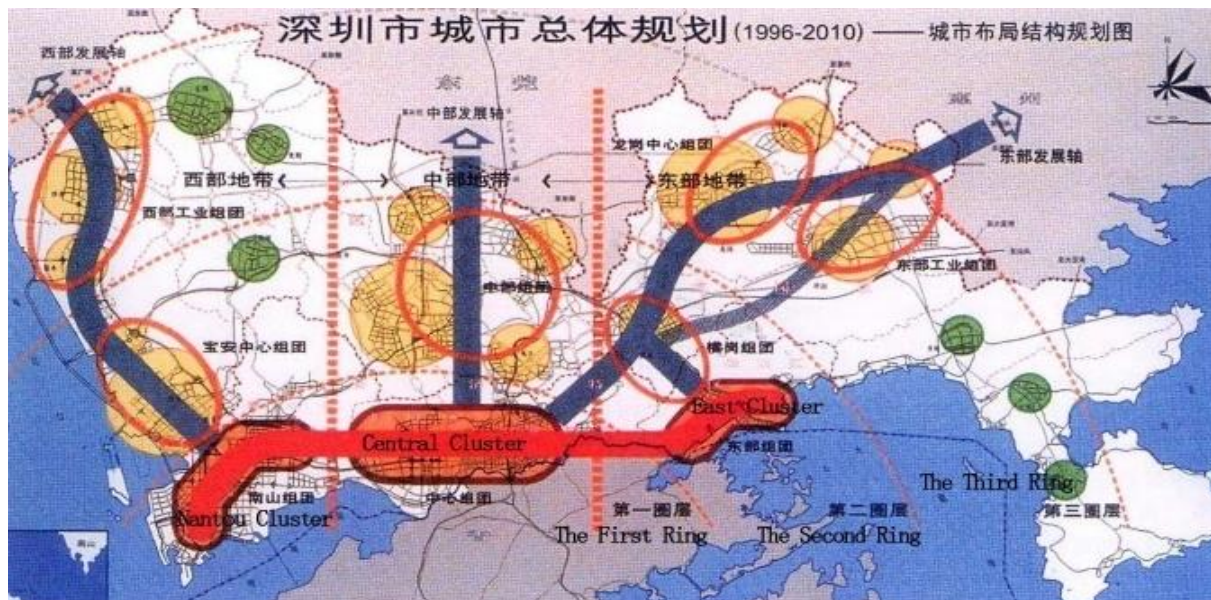


Source: Zacharias & Tang, 2010



Not only inside the SEZ but also outside that area there was increasing economic growth. A lack of monitoring in the outer area caused a largely scattered and chaotic situation. In 1996, the authorities tried to implement a networked spatial system. This plan would connect the core with the various urban areas outside the SEZ. Directing growth was the new approach (see figure 11) (Huang & Xie, 2012).

Figure 9: Urban structure of the Master Plan 1996 - 2010



Source: Zacharias & Tang, 2010

Another important document was launched in 2004 by the Shenzhen Municipal Government: the Shenzhen Development Strategy 2030. This was “an attempt to deal with urban development problems that cannot be solved through existing comprehensive planning” (Huang & Xie, 2012). This strategy did consider the SEZ, the outlying district, and development opportunities beyond the city territory. Central in this plan are the macro level and the long term.

The consideration of the macro level can also be seen in the latest Master plan of 2010. The former SEZ is the city center in the middle of a grid-like network of cores and sub-cores based on infrastructure and commercial facilities (see figure 12) (UPDIS, 2014-I).

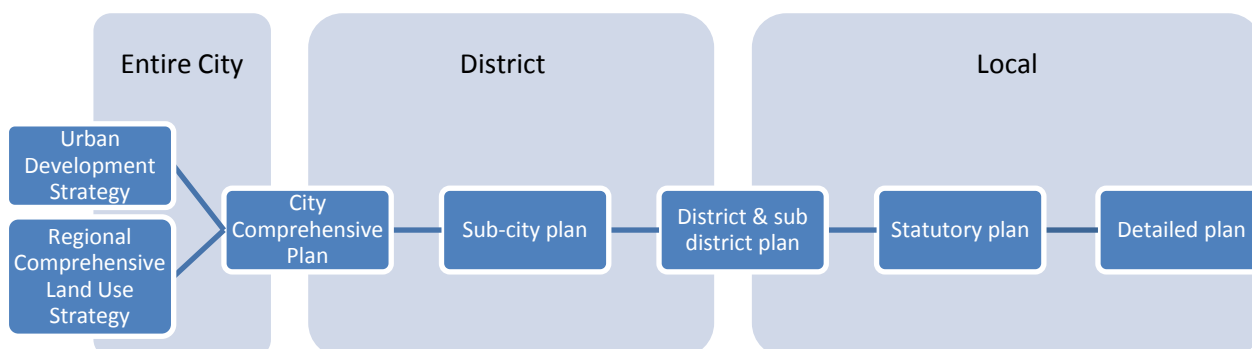
Figure 10: Urban structure of the Master Plan 2010



Source: Zacharias & Tang, 2010

Beside these changes of focus in the city, Master plans and the planning system itself changed as well. The system was reformed when land was recognized as a valuable asset for development (Ng & Tang, 2004, p. 194). The current urban planning system was introduced in 1998. The system may not seem radical from a western urban planning standard, but it was an innovative system among Chinese cities at that time. The Urban Development Strategy and the Regional Comprehensive Land Use Plan guides the system consisting of five hierarchical levels; at the top is the city comprehensive plan, the sub-city plan, the district and sub-district plan, the statutory plan and the detailed plan (see figure 13) (UPDIS, 2014-I).

Figure 11: Planning system



Source: UPDIS, 2014-I

The overview of the planning reports outlines the shift from inward focused spatial development plans to a more broadly oriented, cross border planning approach. New spatial developments are expanding to the border regions and positioned in a macro-level perspective. The planning system in Shenzhen have always been innovative and economically driven.

Figure 12: Shekou sea world





To understand the implementation of the concept of Low Carbon City it is not only needed to describe the planning process but also the context. The general trend of climate change and two local trends are relevant for this research.

### Climate Change

The last two decades, global warming has caused common concern around the world. Since 1990, many international agreements have been signed in order to deal with the global warming crisis (Yang & Li, 2013, p. 62). The world-wide most famous agreement was signed on February 2005; the Kyoto Protocol. This protocol is the most used example that the international society, in combination with the increasing scientific attention, is paying more concerns to the global problem of climate change (Yang & Li, 2013, p. 63). It is urgent that each country should take effective actions to mitigate the causes of climate change. The reduction of carbon emissions is seen as the most feasible way and objective (Su et al, 2012, p. 1144).

Research shows that carbon emissions is the world's highest in China (27%), followed by the United States (14%), the European Union (10%) and India (6%). China has become the world's biggest emitter while the countries emission is still increasing. China accounted for 71% of the global emissions growth in 2012 (Center for Global Environmental Research, 2013).

Figure 13: Suburb



### Economic Transformation

Shenzhen provides the first signs of rapid de-industrialization and economic restructuring (Zacharias & Tang, 2010, p. 210). In less than a decade, the economy of Shenzhen moved from manufacturing and distribution to a service and information economy. Shenzhen want to increase ties with Hong Kong in order to get help for this economic transition and build a regional powerbase (Zacharias & Tang, 2010, p. 222). The industry moves inland, because of new strict environment policy and due to the increasingly costly coastal areas. New large scale urban projects are needed to transform the economy of a manufacturing zone to a world city focusing on its service-sector economy (Cartier, 2002, p. 1513).



## Lack of Land Resource

The urbanization process of Shenzhen is in its last stages. In a study of remaining developable land, published by the Planning Bureau in 2001, just eight percent of the urban land within the SEZ was classified as developable. This is equivalent to 1440 hectares of developable land in the initial SEZ zone. The area outside the SEZ was for 23 percent, 11,844 hectares, classified as developable land. Since 2001, much of the potential land resources have been built up or planning to do so what made that these numbers are significantly less nowadays (Zacharias & Tang, 2010, p. 220). Shenzhen's central district is seen as technological and economically successful but as space where no urban expansion is possible (Jong et al, 2013, p. 215). The latest possibilities of expanding are at the fringes of the city. There is an enormous pressure on the city to expand to those remote areas. The suburbs are no longer the place for vegetable growing or manufacturing activities, more and more these areas have become the agglomeration of eco-city related services and residential uses (Wu, 2012, p. 170). Those are the places where Shenzhen's government wants "world-class green knowledge areas" to emerge (Jong et al, 2013, p. 215). If the current rates of development continue the construction areas in Shenzhen will have been fully built in 2017 (United Nations Environment Program and Peking University, 2007). The only approach for urban expansion can take place by intensification in the previous non-SEZ area (Huang & Xie, 2012). In the initial SEZ the former industrial zones are due to economic restructuring now available for new uses.

Figure 14: Morning gym elementary school





# [3] – Theoretical Framework.

**The theoretical framework forms the basis of this research. When getting an understanding of the theories that affect the current situation, the driving forces behind ongoing developments in Shenzhen can be better understood. There will be zoomed in from global trends to the specific influence of these trends on Shenzhen.**

## **Inter-City Competition**

The economic production of countries exceeds the nation borders and becomes increasingly globally oriented. This is the most significant result from the shift from Fordist (manufacturing) to Post-Fordist (services) economies, and is described by Lever and Turok (1999) as urban entrepreneurialism. Marketization, decentralization and globalization are driving forces which have contributed to increased global and domestic competition between cities for investments and resources. This has particularly promoted the emergence of entrepreneurial structures in local governments (Waibel & Schroder, 2013, p. 49). The way of responding to this change of increasing competitive environment depends upon the political economic system (Wu & Zhang, 2007, p. 716). The response under inter-city competition in the Western market economies was to promote “cost competition”. Methods such as tax incentives, deregulation, and privatization were used more than often. In the East Asian economies the state played a significant role in directing economic development. Municipal governments actively prepared policies to restructure the economy. The first applied strategy is to expand the overall size of the local economy by restructuring the borders. Secondly, they tried to upgrade the economy towards a service economy. Thirdly, local governments tried to expand the resource base to develop the special economic zones. And the fourth answer on the increased competition is that the city is actively engaged in city marketing to improve the image of the city and its investments and living conditions (Wu & Zhang, 2007, p. 717).

Multiple authors stated that the growing competition is the most important drive for new urban policies. These new policies can be a rescaling of the urban and intra-urban levels or decentralization, but also the application of strategic actions (Waibel & Schroder, 2013, p. 187; Wu & Barnes, 2008, p. 365). Inter-city competition requires local government to make use of strategic planning (Wu & Zhang, 2007, p. 718).

## Strategic Planning

This changing context of economies and the resulting competitive cities changed the role of planners. As Albrechts states planners have to look for a type of planning that is able to embed transformative practices (Albrechts, 2010, p. 1118). He proposes the method of strategic spatial planning:

*“a transformative and integrative public-sector-led socio-spatial process through which the visions or frames of reference, the justification for coherent actions, and the means for implementation are produced that shape and frame what a place is and what it might become”* (Albrechts, 2010, p. 1119).

The way of doing that raises some difficulties. As the focus of strategic spatial planning is on place-specific qualities and assets in a global context, the scale on which issues are going to be tackled must be taken into consideration (Balducci, 2008). Increasing mobility and new communication flows makes that cities are expanding over their borders. This new form of urban planning is *“needed because of the traditional boundaries between municipalities, provinces and regions are blurred by the spread of development”* (Balducci, 2011, p. 529). Healey agreed with this as she says that it is impossible to understand material places and social nodes as *“the city”*, *“the city-region”* and *“the region”* (Healey, 2007, p. 267). Albrechts replies to that by saying that strategic planning creates a solid, workable and long term vision on every scale, because it: *“allows for a broad (multilevel governance) and diverse (public, economic, civil society) involvement during the planning, decision making and implementation processes”* (Albrechts, 2010, p. 1120).

Another reason for the failure of traditional planning tools is that these were designed in times of stability, certainty and where the issues addressed were reasonably clear. *“All treats that are lacking in contemporary urban regions”* (Balducci, 2011, p. 530).

The outcome of strategic spatial planning is a set of concepts, procedures, and tools that must be tailored carefully to a specific situation if desirable outcomes are to be achieved (Albrechts, 2010, p. 1121).

## Use of Strategic Concepts

To understand the current planning system, it is necessary to get familiar with the history of the Chinese cities. The cities have experienced extraordinary transformations in China under reform. The Chinese Communist Party followed Mao's (1949 -1976) philosophy of agricultural production and heavy industry in the interior of the country (Cartier, 2002, p. 1514). This changed after 1979. The Chinese Communist Party adjusted its central task towards economic growth. From that moment on, realizing economic growth was the main goal of China (Wu & Zhang, 2007, p. 715). The new leader of the party, Den Xiaoping, made this the major aim of the local city government. The following economic reform and opening up towards the global economy resulted in a more competitive environment. By the late 80's and 90's the cities, due to these reforms and infrastructural investments, had to deal with rapid levels of urbanization. The built environment of the Chinese cities changed dramatically, the urban areas substantially enlarged and erupted into centers of high-rise constructions (Cartier, 2002, p. 1514).

The introduction of market reform in 1979, had a significant impact on planning practices. The challenge for the city planning is changing the institutions from an interventionist to a more entrepreneurial regime (Wu, 2007, p. 382). Wu (2007, p. 382) presents the changes in city planning before and during this ongoing reform period, he describe changes in every field of urban planning (see table 3).

**Table 3: Re-orientation of the city plan in China**

	The pre-reform period	The reform period
Planning rationale	Technical feasibility/physical design	Declaration of economic/development goals
Aims	'Serving production and facilitating the living of working class'	Enhancing economic competitiveness, branding the place, and serving inward investment
Style	Blueprint style design	Strategic statement and policy recommendation
Functionality of planning	Producing internal government documents, development guidelines, coordination among different economic sectors	Producing statements, slogans, policy recommendations, convincing investors, coordinating lower governments such as districts and suburban counties, justification for exceeding national standards
Input of the planning system	Commands from the supervisory government departments and national planning standards	Vision of political elites and the professionals, advice from purchased consultants
Output of the planning system	Master plan – detailed construction plan	'Concept plan' (strategy plan) and project-based urban design
Approach of plan-making	Internal tasks assigned to planning and design institutes	Planning consultation and design contests

Source: Wu, 2007

After the economic decentralization, planning in China became more visionary. The aim of local urban growth transforms the function of planning. City planning in China is now fulfilling the following functions: (1) conceptualizing the urban future; (2) initiating economic restructuring and (3) promoting strategic infrastructure development to enhance competitiveness (Wu, 2007, p. 382).

The inter-city competition played an enormous role in the shift from urban master plans to the use of strategic visions. Municipal governments believe that the former urban master plan is not suitable for providing strategic guidance for urban growth. The conventional master plan is more restrictive as it allocated known resources to specific areas. It doesn't promote the attractiveness that is needed to be competitive and to realize growth. In conjunction with the imperatives of global firms, the original plan's intention has diminished. No longer should a particular zone focus on a particular industry while each of them complements the others (Wu & Barnes, 2008, p. 364).

The use of strategic plans is new in China. These plans are more comprehensive. The aim of strategic planning is not to control development, but rather to promote the urban development. According to Wu & Zhang (2007) a visionary plan has a wider development agenda by including strategic formulation, spatial planning and city marketing into one package. The preparation of the strategic plan becomes a process of political and social mobilization. This shift takes place in the underlying context wherein the issue of competitiveness the imperative for city planning is (Wu & Zhang, 2007, p. 719).

There are a lot of new urban strategic concepts the Chinese planners are not familiar with. Traditionally, the local planners in China have been trained in engineering and physical design to make a conventional master plan. They do not have their background in social sciences and are not educated to create visionary plans. Because of their internal education in the past, the creation of a spatial concept, as for example a Central Business District, is something the Chinese domestic planners are not familiar with (Wu, 2007, p. 388).



It is not only the way of training but also the context of strategic concepts which plays a role in the difficulty of creating them. New urban concepts are often developed and applied for location specific circumstances. According to Albrechts, these local conditions made it hard to implement these strategic concept plans somewhere else than the place it was designed for (Albrechts, 2010, p. 1121). This made it even more difficult to really understand those visionary ideas and use them in a successful way. The influence of globalization and opening up to the market results in increasing international exchange of planning concepts. Especially in China, where the local planners are often not familiar with these strategic concepts, is the result a great demand for international consultancy in planning (Wu, 2007, p. 383).

### **Involvement Planning Consultancies**

Chinese urban planning changed the aim of the city plan from serving production and facilitating the lives of the working class to enhancing economic competitiveness, branding place and serving inward investments. Together with the shifting style of planning from blueprint to strategic concepts made that involvement of international consultancies in the planning process become widespread (Wu, 2007, p. 382). As Waibel & Schroder describe this has often led to a practice where strategic plans are designed by foreign planning bureaus or joint ventures between domestic and foreign bureaus, and subsequently integrated into master planning by domestic state-owned planning departments (Waibel & Schroder, 2013, p. 187).

The international consultancies are involved via design competitions, used to increase publicity and utilize wider expertise. The purpose of international planning competitions is often to solicit conceptualization rather than implementing concrete planning outputs. Gaining knowledge and publicity is the primary reason and therefore the involvement of international planning consultancies for prominent projects in the planning process became the norm (Wu, 2007, p. 389).

Beside the introduction of new development methods and concepts the result of the involvement of consultancies is also a so called: "quasi-open" process. According to Zhang the introduction of the strategic development plan and thus the involvement of non-local planning institutes the planning process in China opened up, although it is still far away from substantial public participation (Zhang, 2010). He even argues that expert consultation is the most meaningful form of participation in China today, his belief is that they can make a difference because experts receive more attention from the government and their decisions are often adopted (Zhang, 2010, p. 321).

# PART TWO: RESEARCH FINDINGS







# [4] – Low Carbon City.

**This chapter provides a description and analysis of the concept of Low Carbon City. After outlining, the concept of the eco-city will the Low Carbon City be examined from an international historic perspective through the development of in Shenzhen. By examining the reasons, aim, definition, and implementation, can this concept be positioned.**

## Eco-City

The term eco-city, coined by Richard Register, refers to a city that minimizes resource use (Register, 1987). There are ten principles of an eco-city: building compact and mixed use communities, encouraging non-automobile transport, restoring environment that has been damaged in development, building affordable and mixed housing, creating social justice and opportunities for all, supporting local agriculture and community greening, promoting recycling and innovative technologies to reduce pollution and waste, increasing awareness, stimulating business and the whole society to deliver an ecological economy, and follow a simple lifestyle (Roseland, 1997). These principles cover a wide range of social, economic, and environmental aspects. The concept has been further defined during the last few years from different perspectives. The varied approaches and interpretations illustrate that defining sustainable development is complicated. The objective of eco-city development must be closely associated with local challenges and characteristics (Yu, 2014, p. 103). However, these different approaches have three aspects in common, as presented by Lehmann (2010): sustainability achieved by the coordination of economic growth, social development, and environmental protection. The Low Carbon City (LCC) is the newest approach in the eco-city movement (Chan et al., 2013, p. 1).

## Worldwide History

The Low Carbon City movement started in the United Kingdom. This was the first country which began considering how to lower the production of carbon dioxide. The British Government published the "Energy White Paper" entitled "Our Future Energy: Creating a Low Carbon Economy" in 2003 (DTI, 2003). The aim was to achieve more economic output and high-quality living standards with less natural resource consumption and environmental pollution. This concept of a Low Carbon Economy quickly found advocates around the world.

Four years later, in 2007, Japan introduced the concept of a Low Carbon Society. The underlying idea was "No Low Carbon Society, No Low Carbon Technology" (Yang & Li, 2013, p. 62). Those two concepts are closely related. A Low Carbon Society attempts to transform people's consumption patterns and lifestyles, while the low carbon technology attempts to transform the energy patterns. The main idea of both concepts is the same: reduce CO<sub>2</sub> emissions while creating economic growth (Yang & Li, 2013).

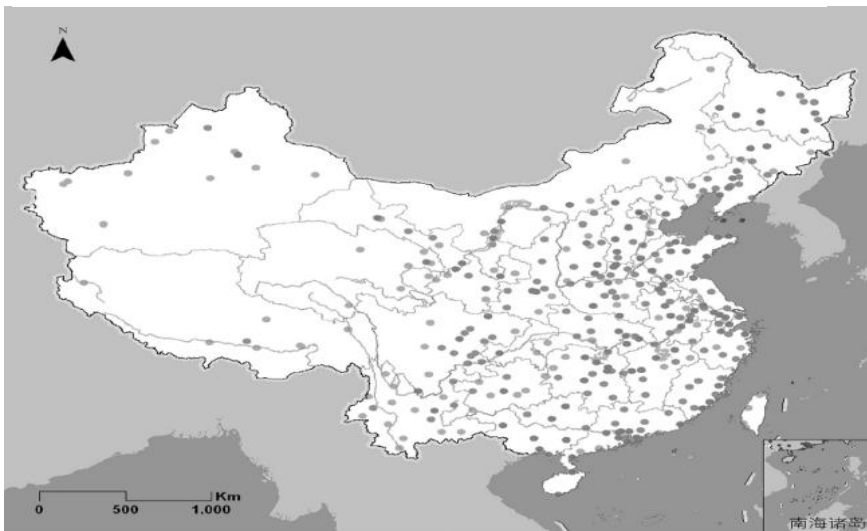
This idea continued to developed, and Chinese scholars introduced the concept of a Low Carbon City, creating a Low Carbon Economy and a Low Carbon Society via spatial interventions in cities. This must be the key point of the future development of Chinese cities (Liu, 2009). Cities are seen as the source of carbon dioxide. This concept could be the reaction to the problem of China's carbon emissions.

### China's History

In 2004, under the requirement of the Intergovernmental Panel on Climate Change (IPCC), the national government of China published an official report: "Climate Change and Carbon Dioxide". The emergent situation of carbon emissions in China was seen for the first time as critical. With emissions of carbon dioxide above six billion, China was the main contributor of carbon emissions in the world (Center for Global Environmental Research, 2013). The reduction of carbon emissions is seen as the most feasible way to reduce climate change. Since then, it has been adopted in Chinese policy. The government of China placed a high priority on winning the "war" against pollution (see the news article in the preface).

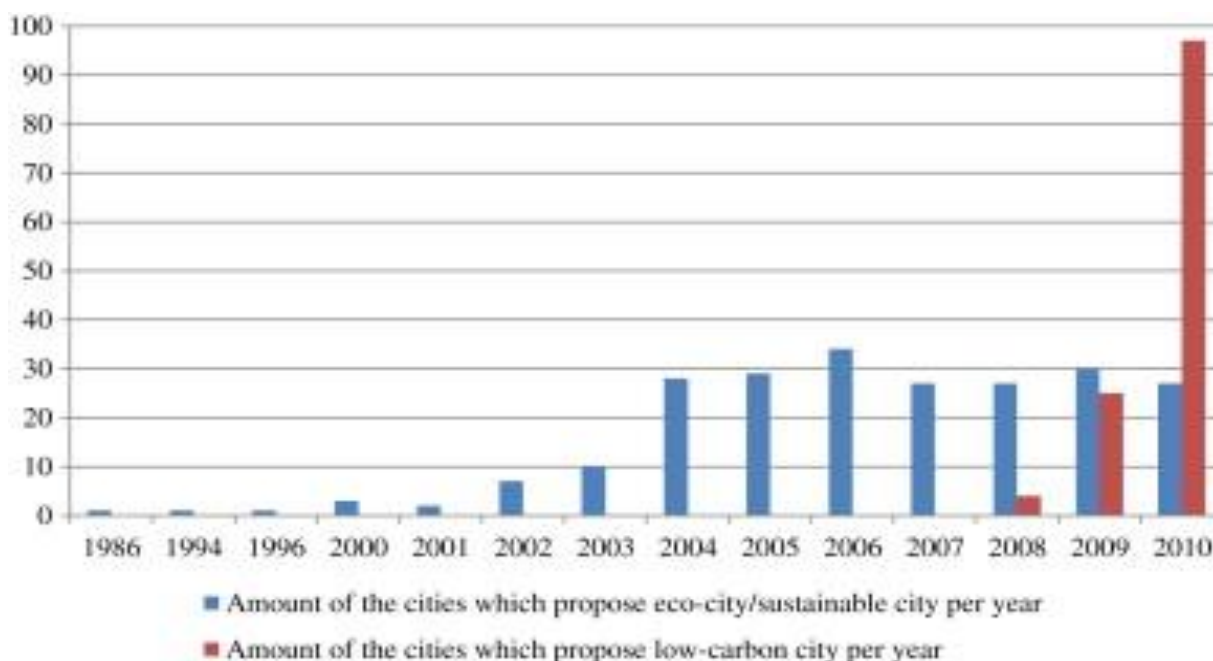
When Beijing recognized the critical situation, there was a growing number of progressive metropolises who recognized it as well. The Chinese cities adopted this approach as becoming an "eco-city/sustainable city". Since 2008, the central government adopted the new concept of a Low Carbon City. Since then, the Chinese Society of Urban Studies (CSUS) has seen a sharp increase in Low Carbon Cities (see figure 17, 18) (Jong et al, 2013, p. 210).

Figure 15: Chinese cities expressing an interest in adopting a eco-city low carbon strategy



Source: Chinese Society for Urban Studies, 2012

Figure 16: Number of cities which propose becoming eco-city versus low-carbon cities.



Source: Jong et al, 2013

The development of these cities is supported by the National Development and Reform Committee (see figure 19) (NDRC). The NDRC has the task of restructuring China's economic system and studying and formulating policies for economic and social development. They are responsible for the formulation and implementation of the National Social and Economic Development Plan, also known as the Five Year Plan (Yu, 2014). In eight locations across China, including Shenzhen, they are involved in selecting, formulating and establishing the low carbon development planning. Additionally, they have three other goals. The first is to create an industrial system with low carbon emissions. The second is to build a statistical and management system for greenhouse gas emissions, and their last goal is to advocate the low carbon living and consuming modes (SUSP, 2011).

Figure 17: NDRC approved Low Carbon Eco-City



Source: Yu, 2014

## Shenzhen's History

The low carbon movement in Shenzhen began before the NDRC was involved. Shenzhen was one of the first Chinese cities that began to consider how to lower carbon dioxide emissions. In 2005, the city mayor, Xu Zhongheng, published an article in the newspaper titled, *"Developing Low Carbon Economy is the only way leading Shenzhen to real scientific development"*. In the article, it became clear that "scientific development" was used to refer to attracting knowledge to Shenzhen. This article possessed many similarities to the policy described in the Energy White Paper in the UK in 2003. Referring to the urbanization problems and the history of an "open window and testing ground", the mayor believed that the city needed to embrace this concept. To realize this Low Carbon Economy, it would be necessary to change the development model of Shenzhen. The current system is required to focus on ecological society, industrial re-development, and being "green" in the new economic development model. This newspaper article can be seen as the beginning and introduction of the Low Carbon Economy concept in Shenzhen. It provided a direction for the future development for the city. The awareness was created and the concept in Shenzhen developed according to global development, first gaining an understanding of the Low Carbon Society, then shifting to the concept of Low Carbon Cities.

A few years later, Shenzhen, with help of the Development and Reform Committee (DRC), the local office of the NDRC, established policies regarding the Low Carbon City. They attempted to develop a catalogue of all the low carbon industries they wanted to attract; this was part of the NDRC's goal to create a low carbon industrial system (DRC, 2014). In Shenzhen, the market system of "Cap-and-Trade" was successfully introduced, in accordance with the second goal of building a statistical management system for greenhouse gas emissions (SUSP, 2011). Recently, people have been motivated to participate in Earth Hour to reach the third goal of supporting the low carbon lifestyle (CDI, 2014; SUSP, 2011). Additionally, people are motivated to use less energy by commercials (see figure 20) (CDI, 2014; SUSP, 2011).

Figure 18: Creating awareness for sustainable lifestyle



## Reasons

There are a few reasons why this concept has been adopted in China. The most obvious reason is to manage climate change. The basic underlying idea is that most of the production of carbon dioxide occurs in cities. This high share of carbon emissions can be explained by the ongoing urbanization period of China. From 1980 to 2001, Shenzhen's population increased fourteen-fold (Ng & Tang, 2004, p. 190). This rapid urbanization process will continue; there will be more rural residents migrating to the city. The new citizens will cause a rapid increase in urban population and a change in energy consumption (Yang & Li, 2013, p. 63). Developing Low Carbon Cities is, therefore, the inevitable and necessary choice for China to deal with climate change and create sustainable urbanization (Liu, 2009). There are directly two ecological motivations behind the adoption of this concept:

First, a shortage of food production. The boundaries of the Shenzhen SEZ are clear and not likely to extend. High quality farmland that is located within this area overlaps with urban construction areas. The increase in construction areas pressures the area where food is produced (Huang & Xie, 2012).

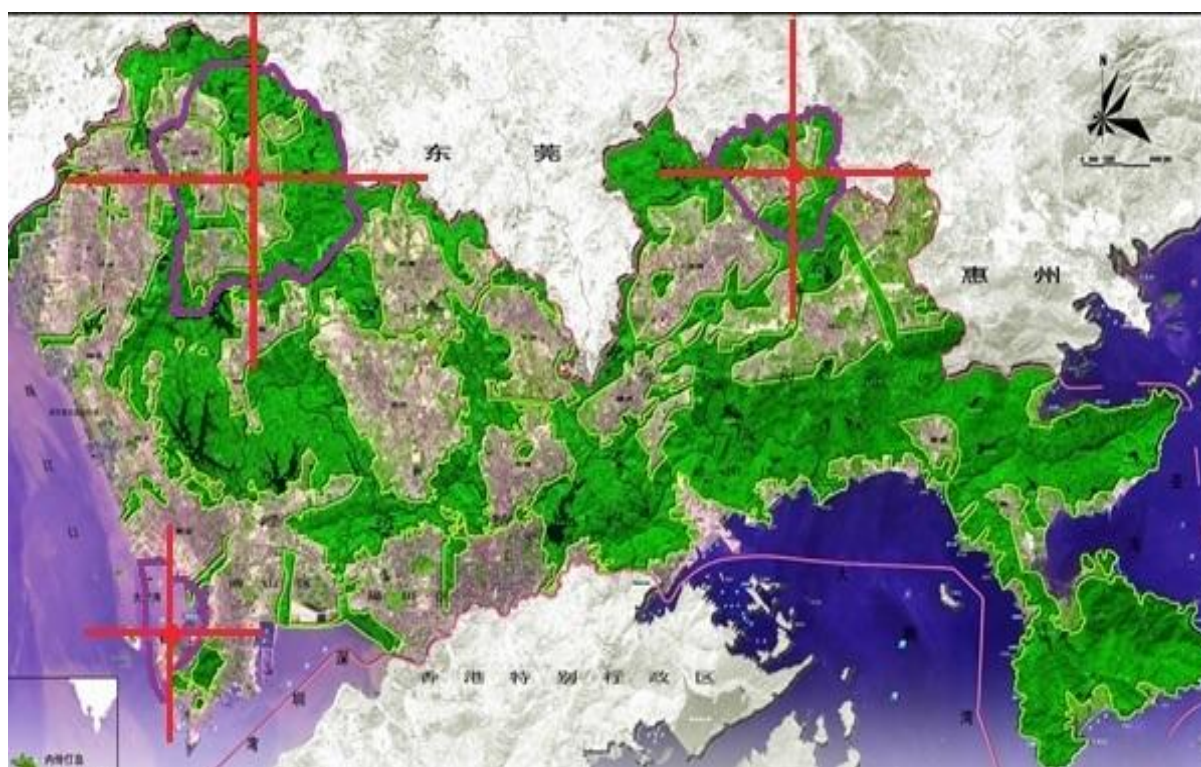
Second, Shenzhen has been encountering problems with water and natural resource supplies. Since Shenzhen is located at the estuary of many rivers originating from the hinterland, many rivers are polluted. This results in problems for drinking water and irrigation (UPDIS, 2014-I).



However, not only for ecological reasons is this a popular concept, but also for reasons of marketing and branding. Particularly in the field of real estate is this the case. It gives people a good feeling: *“It is an attractive vehicle to justify all kinds of investments”* (NGIF, 2014). The world views how China is handling its rapid urbanization. Therefore, the Chinese know they must accomplish the urbanization in a sustainable way: *“They know that they have to change their image worldwide and improve the development; the quality of life and the way to make cities”* (Riptide, 2014).

Relating to the use of this concept for branding, the concept is also used in competition with other areas in China. In mega-cities, such as Beijing and Shanghai, the problem of air pollution is a big issue. Shenzhen wished to prevent that: *“They think that that it is the most competitive aspect they will have in the future. They already see that the people who study in America and come back to China, they will first consider the environment. So now, Shenzhen wants to attract people with the clean air. They now benefit from it”* (UPDIS, 2014a). The geographical location, surrounded by the sea, is more suitable than that of Beijing and Shanghai, but to strengthen this geographic advantages, is there special policy implemented. There is the policy of relocating polluting industries into rural areas, which is actually shifting the problem and causing enormous pressure on the valuable nature in the countryside. The “ecological protection areas” (see figure 21) are part of this policy to ensure Shenzhen remains livable. Of Shenzhen’s total city domain, 49,87% is within this nature protection zone. The total area of 974 km<sup>2</sup> is protected, resulting in 41,1% of the city’s total land covered by forests. This strategy has won Shenzhen domestic and international awards and recognitions (Shenzhen Government, 2014).

Figure 19: Case studies in the ecological protection areas



Source: Adapted from Guangming District Management Committee, 2014

The main reason might be that the application of the Low Carbon City is needed for sustainable urbanization to combat climate change, but the concept is also used to brand the area and to be economically attractive in a competitive world.





## Implementation

Although a definition is absent, the concept can be positioned with help of the descriptions. The aim of becoming low carbon is not focused on one aspect but instead as a comprehensive plan: *“The government focus on energy consuming on different aspects. There are six different aspects: industry, traffic, buildings, energy production, lifestyle and land use”* (CDI, 2014). The NDRC discussed closely related aspects in constructing the Low Carbon City: clean energy, green economy, waste reclamation, green transportation, ecological restoration, green building, and water recycling. Urban and rural planning was mentioned as the tool to establish these. What all these aspects have in common, according to the China Development Institute, is *“the center of Low Carbon is focusing on lowering energy consuming”* (CDI, 2014).

However, with the speed China and Shenzhen are developing and urbanizing, it is difficult to reduce the carbon emissions in any kind of field. The Development and Reform Commission attempts to monitor when the peak of carbon emissions will be reached and arrive there as soon as possible (DRC, 2014).

The aspects where the concept of low carbon policy is applied are clear but not how to realize. The national policy provides different visions of interpretation: *“The policy seems very complicated, it has a very big structure on the national policy. It has different strategy’s according to different industries”* (CDI, 2014). As every aspect has different aims, providing refinement to the concept is difficult. This is also seen in practice: *“The very interesting thing is that the Low Carbon eco-week is an idea of the government and they really want it. But after the word is spread, they don’t know much. The question is: how to do it?”* (Riptide, 2014).

When asked if the vague definition is a problem, the reaction of an urban planner was: *“Maybe the problem is not that we don’t know about Low Carbon. The problem might be that we didn’t try to make it attractive, acceptable. To make it more clear for people how important it is”* (UPDIS, 2014a).

The government seems to be aware that the society must be involved in this process. The Low Carbon Society was studied with a short random sample (N = 20) in two metro stations. The sample provided the impression that the Low Carbon City was not completely unknown. The media, especially television, were creating awareness with commercials. The people who said that they knew the concept associated it with public transport and green energy. Logically, they had seen the commercials from the Shenzhen Metro (see figure 23).

Figure 21: Green travel low carbon



Source: Sjoerd Segijn

Also, newspapers were motivating people to change their lifestyles and lower their carbon emissions. They were informing the society how to accomplish that and sometimes appealed to the society. This was the case when there were plans of a real estate company to develop the green east side of Shenzhen. The Shenzhen Evening Newspaper said (see figure 24):

*“Hallo everyone, It’s 2014 and we are the people who stay in Shenzhen. Before 2014 Shenzhen has already build on 69 square kilometers. It is equal to 6 times the Shekou area. It’s already too much. We had 255 natural waterline areas, but now only 40 are still there. And now this group wants to develop there. It will destroy a lot” (UPDIS, 2014a).*

Figure 22: Newspaper asking for attention



Source: Shenzhen Evening Newspaper, 2014

As the article continued, it attempted to motivate the society to protest against this development. This is an example, also found in the research questionnaire, that the media has been creating awareness. Via these mediums, it becomes clear to people how important sustainable development is, or as one respondent said, *“the government needs to make it fashion”*. More voices like this were heard. Carbon is not a fashionable word; people don’t know what carbon is: *“It sounds already dirty. In China is everything very high, VIP, exclusive etcetera. High Green would already be better than Low Carbon. In Chinese culture is this concept totally wrong, bad angle”* (Riptide, 2014).



In the sample were people (N = 9) who never heard of the Low Carbon City concept. Although a small majority (N = 11) had heard of the concept and contributed, as they said themselves, by taking the public transport and separating the rubbish. It seemed that they knew that these were sustainable methods they could perform as individuals. Since there were also some respondents who had heard of the Low Carbon City, but did not act to create a sustainable environment, it seems this concept was not marketed well. During the short conversations, the government was often referred to. These quotes: *“government needs to be more specific, I don’t have the feeling the government is doing something”* (respondent 15) and *“my former city does better, Shenzhen needs strong policy like tax and price incentives. I don’t see much improvement”* (respondent 18), illustrate that there was a feeling that the government actions were not visible or not sufficient. However, others saw the government actually implementing green aspects: *“the government builds parks and trees”* (respondent 2) and *“environment is getting better, there are more trees”* (respondent 20). It seems that the society is aware that sustainability is related to certain topics and that they could contribute themselves. This survey was not representative of conclusions regarding the social ecological awareness of people, but it seemed that this awareness was lower than in western countries. Therefore, transforming the society into a Low Carbon Society seems currently unlikely, although the first signs of awareness are noticeable.

The policy of Shenzhen is focused on becoming a Low Carbon City. This developmental approach was adopted by the national government and Shenzhen wants to be the demonstration project for China. This concept must address climate problems caused by rapid urbanization, as well as being used for marketing in a global economic competition and to brand the area. This concept lacks a definition and content. It seems that it is a generic term, applicable in every field of city development, based on comparison.

Figure 23: Trade in a park  
Source: Sjoerd Segijn







The following chapters will discuss the three case studies. They will be outlined individually. The first section will contain a description of the history, the planning process, and the planning goals. The second section will explain the analysis of the planning process. There will be the focus on the following:

- I. Participation model: The organizational model of the planning process regarding the involvement of consultancies.
- II. Political landscape: The government level involved in the planning process and the tensions between parties in the planning process.
- III. Brief and submissions: An analysis of the brief introduction from the government for the consultancies, which outlines the demand from the government and the existing knowledge, and an analysis of the proposed concepts and the submissions, which provide knowledge of the interpretation of the brief and the future perspective, made by consultancies, for the area.
- IV. Contribution of consultancies: What was learned from the proposed plans and was included in the concept of the Low Carbon City.

Every aspect will be characterized in a textbox.

Area: 156,1 km<sup>2</sup>. Competition area was 7,97 km<sup>2</sup>.  
Population: 1 million  
Gross Domestic Product (GDP): RMB 38.1 billion in 2011 for all of Guangming.

Figure 25: Map Guangming area



Source: Adapted from Google Earth

Figure 26: Street scene, Source: Tadeas Rozboril



# [5] – Guangming New Town.

## Section 1.

### Geographical Conditions

Guangming New Town is situated near the border of the city of Dongguan in the north and surrounded in the southwest by Shenzhen's district of Bao'an. More broadly, it is located in the middle of the *"urban and high-tech industrial development axis"* (Shenzhen Center for Design, 2013). In this high density urban area, Guangming is surrounded by a mountainous landscape. The Maozhou River and its branches run through this area, connecting the water reservoirs and lakes.

### Area History

The area was geographically isolated, surrounded by mountains and rivers. The area became self-sufficient due to an economy based on agriculture. The population mainly consisted of farm workers. The farms were, for years, the most organized institution in the area (O'Donnell, 2012). Guangming could be described as an enormous state-owned farm district during the socialist time period.

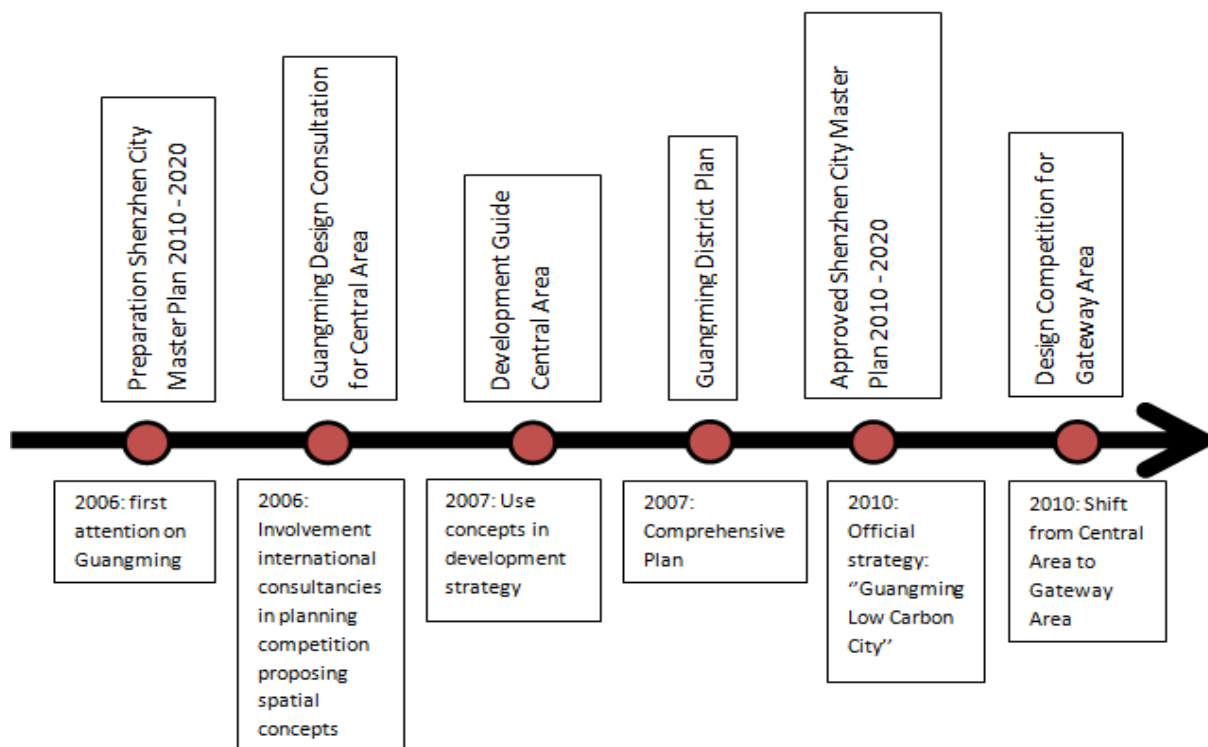
The area is known as a migrant community with inhabitants from different cultural backgrounds. In the 1950s and 1960s, the Indonesian-returned-Chinese were the first group who migrated to Guangming. An estimated number of half a million Indonesian-Chinese "returned" due to the political situation in Indonesia, and Guangming was designated as the settlement for the returnees. A comparable situation in Vietnam, during the 1980s, resulted in the Vietnamese-returned-Chinese settling in Guangming. This was a smaller group, estimated at 10,000, but politically extremely sensitive. Both groups integrated into the labor market as farmers but without losing their own cultures. These migrants caused the population in Guangming to have differing cultural backgrounds. Not surprisingly, the district was named "Guangming Overseas Chinese Farm Town" (C&D Group, 2014b; O'Donnell, 2012).

Economically, Guangming is seen as too distanced from the Shenzhen/Hong Kong border for direct investment. Because the area was not part of the original Special Economic Zone, no structural investments were completed, resulting in infrastructural facilities that were rather poor (C&D Group, 2014b).

These cultural and economic factors isolated the area, and it became underdeveloped compared to the surrounding region. Its relation to booming Shenzhen became stronger when the official Special Economic Zone was extended to Guangming in 2010. The city started to realize the extreme underdeveloped situation in their extended area. In 2006, a new model was developed to combat this underdeveloped situation (C&D Group, 2014b). When Guangming was included within the borders of the Special Economic Zone, a new district was established; Guangming became a New Town.

## Planning History

Figure 27: Graphical representation of planning process



The development of Guangming started in 2006 (see figure 27). When the city began preparations for the *City Master Plan 2010 – 2020*, for the first time, the focus of the government was on this isolated underdeveloped area. The area was, until then, not included in the urban planning range and not effectively monitored (Huang & Xie, 2012).

The planning process began with the *Guangming Design Consultation for the Central Area*. The initiative came from the Shenzhen Municipal Planning Bureau and was issued due to a lack of vision and knowledge of the area. International planning consultancies participated and used their expertise to propose a concept plan. This was the first time in Shenzhen that there were consultancies involved in a concept plan's design.

The contribution of the consultancies resulted in the *Development Guide for the Central Area* a year later. Soon after, the *Guangming District Plan* was officially established by the Shenzhen Municipal Planning Bureau for the whole new district.

When the *Shenzhen Master Plan 2010–2020* was approved in 2010, the area was officially included in the Special Economic Zone. Positioned as a high technology industrial hub, the Low Carbon City was then the approved development concept for the area.

The focus of developing the Central Area shifted to the Gateway Area. The infrastructural conditions of this area, located along the Guangzhou – Shenzhen-Hong Kong express train and the vacant land around it, caused this area to be highlighted as the first development project of the new town. For this specific plot, design consultations were held on a smaller scale and architectural level (Shenzhen Center for Design, 2013).

## Planning Objective

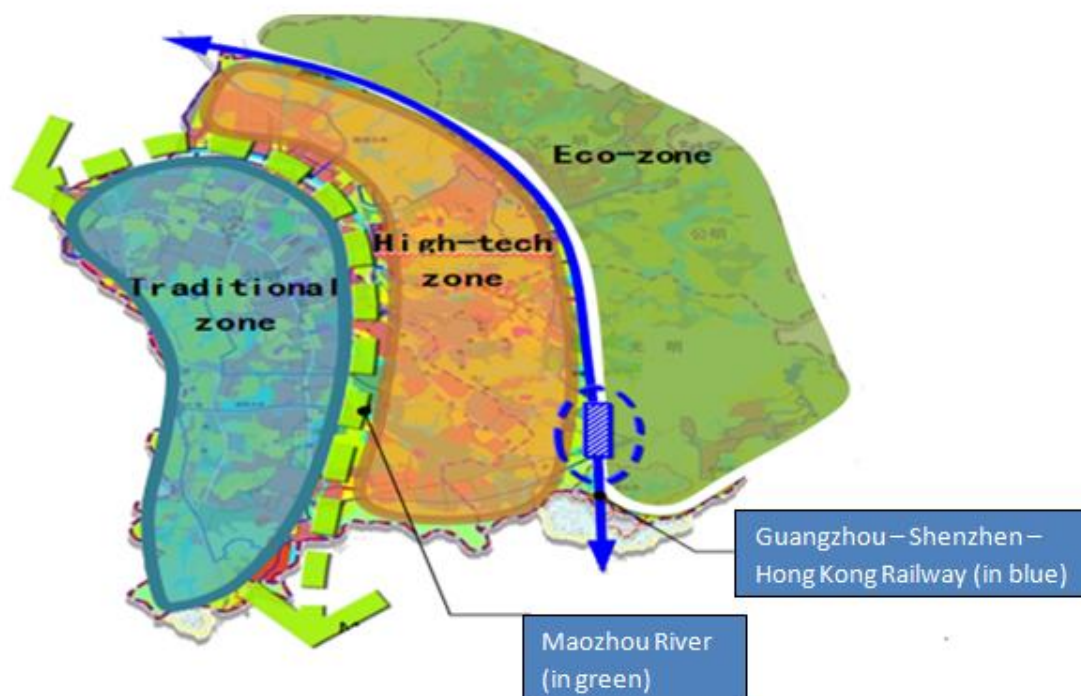
There was a clear development goal for this area: *“The new town is aimed for low-carbon ecological city, a modern and green new city, based on technological innovation, guided by scientific urban planning, led by the development of infrastructure and utilities”* (Guangming District Management Bureau, 2012).

An important element in the development plan is to overcome the infrastructural gap and to connect the new town with the Pearl River Delta and the Hong Kong border. Therefore, the high standard infrastructure facilities were developed, especially the express train located in the Gateway Area, connecting Guangzhou via Guangming with Shenzhen and Hong Kong (C&D Group, 2014b).

The Maozhou River and the train track divides the area into three zones of different utilities (see figure 28). The first zone is the “ecological industrial development zone” situated at the east side of the area. This 60 km<sup>2</sup> area functions as a modern agriculture and ecological tourism attraction. The west side of the Maozhou River must function as the “traditional industrial development zone”. At 45km<sup>2</sup>, this is the smallest zone where many existing factories are located. The goal for this area is to upgrade to more modern and green types of manufacturing industries. The central zone is the area of “high-tech industrial development zone”, an area of 50 km<sup>2</sup> focusing on flat panel display equipment and new energies (Guangming District Management Bureau, 2012; O’Donnell, 2012).

This zoning for industrial transformations must lead to an upgrade of living quality and social and economic development.

Figure 28: Zoning plan



Source: Adapted from Guangming District Management Committee, 2014



## Section 2.

### Participation Model

There was an important role for the international consultancies. The involvement of these parties was structured in a competition model. The initiative for the *Guangming Design Consultation for the Central Area* came from the Shenzhen Municipal Planning Bureau in November 2006 (Shenzhen Center for Design, 2013). Requesting that external consultancies develop concept plans was an innovative new planning model in China at that time. Seventy firms were interested in participating in this planning competition, and entries for the competition were submitted in November 2006 (Weiwen, 2007).

The selection of the consultancies was directed by the Japanese architect Mister Arata Isozaki. He was a progressive architect who was active as a critic and a jury-member in major public and private architecture commissions and competitions around the world. In Shenzhen, he worked on some large projects, including the Cultural Center and the Nanshan Cultural & Sports Center (Isozaki, 2014). He participated in many commissions as a jury member. In this competition, he was the chairman and the rest of the jury consisted of experts from different government levels: two representatives from the local government, three from the city government, and one local non-governmental expert (C&D Group, 2014b).

The selection of consultancies was made by the jury. Shenzhen has, in its short history, developed an advanced network of architects, urban designers, and planners (MVRDV, 2014b). This “database” was constructed from earlier experiences and known contacts. It seemed that only companies from that list were favored by the jury. Since no evidence was found as to which companies were on that list or how they were placed on it, this selection procedure could not be reconstructed.

From the seventy consultancies who applied, five consultancies were selected in the pre-final round (see table 4).

Table 4

Pre-final round consultation Guangming Central Area	
Consultancy firm	Originated from
Nikken Sikkei	Japan
RPAX	Austria
Studio8Architects	United Kingdom
MVRDV	The Netherlands
KHR	Denmark

All the consultancies had in common that they were non-Chinese firms. They were large brands in urban planning and, therefore, attractive to include in the planning process. The selection process of inviting these five companies utilized informal contacts. The personal contacts of an influential jury member like Mister Isozaki and Mister Maas (director of MVRDV) helped the invitation process (MVRDV, 2014). Therefore, the selection process can be described as “personal” and “off the record”. An informal network was the basis of the selection of participants.

The consultancies proposed action plans, and on the basis of these plans, a selection was made for the final round of competition. From this shortlist, three companies were selected to develop a concept plan in the final round (see table 5) (Shenzhen Center for Design, 2013).

Table 5

Final round consultation Guangming Central Area	
Consultancy firm	Originated from
RPAX	Austria
Studio8Architects	United Kingdom
MVRDV	The Netherlands

The second round of the competition consisted of three consultancies and required three months. This was considered by the participants as sufficient time to create a suitable design (MVRDV, 2014b). The consultancies in the final round were all western European. The seven jury-members selected RPAX from Austria as the winner, and MVRDV from the Netherlands finished second. Only the award for the third place, rewarded to Studio8Architect, was found: 1.2 billion U.S. dollars (Studio8Architects, 2014).

After the competition, the consultancies continued participating. It was considered difficult to integrate the proposed concepts into the local context; therefore, the Shenzhen Municipal Planning Bureau organized three forums (Weiwen, 2007). These forums concerned "Green City", "Green Infrastructure", and "Low Rise–High Density" and included the participating finalist and the jury members (MVRDV, 2014b). Also, professionals from Hong Kong University and Singapore University applied. The workshops lasted for three days with the aim of gaining an understanding of the proposed concepts and discovering if they could be implemented in the local conditions. The Low Carbon City concept was not discussed here. The discussed concepts show that the planning competition provided the direction of an ecologically sustainable development path. The low carbon concept was officially applied in the *Shenzhen Master Plan 2010–2020*. Including the first round and the subsequent workshops, the competition project lasted six months. Afterward, the winner of the competition, RPAX consultancy from Austria, was awarded an advisory role involved in the planning process. This ceased in 2011 when the owner of RPAX, died in a car accident. Henceforth, Guangming Planning Bureau assumed the lead (INTI, 2014).

**Competition and workshops.** The consultancies were included in the planning process via an international planning competition, the first official planning method for this area. The involvement of consultancies continued after the competition in advisory workshops.

## Political Landscape

With the establishment of Guangming New Town as the new district of Shenzhen, there were a lot of political changes in the government structure. Not only was the establishment of a new local government noticeable, but also a shift in existing relations.

In the development of Guangming, different levels of government were involved. The initiative for the planning competition originated with the city government of Shenzhen in 2006. At the same time, the district government of Guangming was established. The district government played a minor role in the early development phase. With start-up problems, such as a lack of services and professionals, it was necessary for the city government to assume control and play a significant role in the beginning of the development process of Guangming (C&D Group, 2014).

The district government was cooperating with the city government, but over time, the district felt ready for more control in the planning process, which caused some tension: *“Guangming New Town district used to be the only new district in town at that time. It’s like a family with one kid, the parents will spend more energy and time to this kid”* (C&D Group, 2014b). When the original SEZ was expanding, there were more new districts added to Shenzhen, or using the metaphor, the family got more kids: *“Guangming is the oldest kid. So right now, the local government can have more control there”* (C&D Group, 2014b). Currently, Guangming New Town is “grown-up” and has more control in daily affairs. Guangming New Town’s gained experience allowed the city of Shenzhen to focus on the “newest” districts. The tension regarding control between the city government and the district government has currently decreased. The political boundaries between the city and the district level are set.

The development path is still controlled at the city government, and sometimes even at a national government level. In 2010, Guangming officially became a low carbon pilot project. Shenzhen successfully applied for the construction of this area by the national government. Beijing approved the city’s application, and the area became an experiment and demonstration project of the Low Carbon City. The knowledge and policies of the national government is used to develop this area according to the Low Carbon City strategy.

The national government’s guidance is also seen in the recent change in the planning organization at the district level. In the past, the Guangming Urban Planning Bureau was always involved as the local planning party, now the Guangming New Town Office is an extra institute added to the political organization. The Guangming Urban Planning Bureau is one of the sub-offices of the Shenzhen Urban Planning Bureau, and they are responsible for every planning aspect in the area of Guangming. The goal of the New Town Office, established on behalf of the city government, is to focus particularly on the implementation of the Low Carbon City. The city was willing to develop a district according to this concept and, therefore, established this new institute. A cooperative relationship between the Guangming Urban Planning Bureau and the Guangming New Town Office was required (INTI, 2014). This cooperation had friction, which slowed down the process of the low carbon development. When the political boundaries were not clear, there was a struggle regarding who had control of what, as this was the same at the establishment of the district government. This shows that when there is a new political organization established, it requires time to discover the optimal working conditions.

**Top-down:** The higher governmental levels decided that Guangming would develop by the Low Carbon City strategy.

## Brief and Submissions

### *Brief*

There were a few basic conditions and wishes mentioned in the brief. The instructions for the consultancy at the beginning of this competition were written in Chinese.

The first condition mentioned was the existing agricultural function concentrated around a central park. Discovering a development strategy for this agricultural area was the main goal. The second condition, as written by the Shenzhen Urban Planning Bureau, was to house two million inhabitants in this area. This number of inhabitants in a new large scale urban development was, for the participating western consultancies, not a type of development scale they were experienced with. A consultant involved in the brief said, *“There wasn’t a word about the square meters, only about the number of inhabitants”* (MVRDV, 2014a). Together with the agricultural condition, this was the context in which they worked. The brief was limited and can best be described as Tabula Rasa.

Becoming sustainable is a fairly logical desire in a development process, but it was not mentioned as a requirement for the consultancies. As the project leader of one of the finalist said:

*“I think it was advised, of course a city wants to be green... Shenzhen as well. But I think it was not very obviously. It’s not like we had to do that. It’s not a very strong demand from the brief. It comes more from our proposal”* (MVRDV, 2014b).

The low carbon concept was not part of the brief and became influential in the planning process. If that would be the case, this would have been put in the design.

After analyzing the introduction brief for the consultancies, it was concluded that there were limited restrictions on the development of their concepts. The only demand was to accommodate two million prospective inhabitants. Sustainability was not the required development concept, rather it was a general wish that was not specific to this area. The limited number of restrictions allowed the brief introduction to be open to interpretation. The only demand was to create a development vision; it was never the aim to address a specific problem or develop in a certain vision. The low carbon concept did not play a role here.

### *Submissions*

The winning concept of Rainer Pirker, the Austrian architect from RPAX, proposed to develop the concept of the *“IDEA city”*. This is an integrated concept consisting of the sub-concepts *“Integration”*(I), of nature and urban environment and the new and old parts of the city; *“Density”*(D), a flexible spatial design which had to relieve the urban pressure; *“Ecology”*(E), the old ecologic and agricultural structure of the area; and *“Atmosphere”*(A), representing the urban environment. His design, the concept of the Vertical City, with Flexsize and Flexuse, was of importance. With high-rise buildings concentrated in the area, connected via public transport, it was the idea to keep the central park open for urban agriculture. Pirker presented a high-density clustered modern development plan with a continuation of nature and context. Only specific plots must develop; he used the metaphor *“urban carpet”* (Pirker, 2014; Shenzhen Center for Design, 2013). Although he wanted the central park to remain open, the concept plan was extremely focused on urban development. As the winning concept, his plans were later discussed in the forums.

The second best proposed concept in this competition was submitted by MVRDV. Their main idea was to preserve the central area and use it for agriculture. They recognized the value of the food production for this area, and they expected problems in food supply when the land use was about to change. To preserve the park and to match the housing demand, they densified the area around the park. The result was an “urban wall”, which functioned as the location for public facilities and housing. MVRDV also considered the implementation; they had the pioneering idea of a self-development approach for plots within a larger infrastructural network. Such a “Free Land” model, like they applied in Almere Oostvaarders, was new to the Chinese context. The theory of People, Planet, Profit was used to clarify that a highly dense structure was needed to generate income and preserve nature. MVRDV did not only consider urban planning, but also the social aspects of their interventions (MVRDV, 2014a; MVRDV, 2014b).

Studio8Architects, founded by C.J. Lim from the United Kingdom, created the concept of the Smart-City. Unlike the others, they did not have a plan to preserve the central park. They suggested building farms in the park location, which would be self-sufficient for the surrounding neighborhood. The connection between the suburbs would be created by green infrastructures, such as biogas sky-buses. More modern techniques were suggested when they developed the idea of reed bed water filtration in the river and vertical gardens and farms. Technology was used to increase the production of the agricultural facilities. This concept was the most technologically focused (Studio8Architects, 2014).

The finalist did not consider rejecting any concepts because of the Chinese conditions. They were sufficiently innovative to propose whatever they believed would be beneficial to this area. The broad demand for a development plan for the Guangming Central Area resulted in three different concepts. Every concept possessed attractions for the local spatial planners. To increase the ease of implementation, Weiwen suggested implementing them all; “one large central park and the plot around it divided in three areas, one for each final participant” (see figure 29) (Weiwen, 2007). This was obviously not realistic, but it outlined the difficulty of using the proposed concepts.

Figure 29: Implementing concept of all three finalist



Source: Weiwen, 2014



However, throughout the visions is a common idea, a sustainable/green city development approach: “The concept of “green city” was proposed for the first time for the Guangming district. It has become the development goal since then”(Guangming District Management Committee, 2014). The consultancies offered three different ideas to become sustainable. RPAX provided a highly metropolitan vision of the development for the area, whereas MVRDV also considered the social aspects, and Studio8Architects was more technologically oriented. As glad for the organization: “The ecological concepts are highly appreciated because no one knows exactly what ecological city planning methods are” (Weiwen, 2007). The most urban concept, proposed by RPAX, was the most attractive for the jury and, therefore, won the competition. The forums held after the competition, based on the proposed sustainability concepts, were required to gain knowledge of specific aspects and local implementation.

The three consultancies all originated in Western Europe. They focused on the future with a sustainable approach. They introduced, via the competition, that the future development process must be a sustainable process. Despite the open introduction brief, these western consultancies, in essence, proposed the same: “sustainability” as a concept for development.

**Open and Creative:** The sustainable development models were, for the first time, proposed in the planning process of Guangming, introduced by western consultancies, via a competition, provided with an open brief for every proposed future vision. No restrictions meant that consultancies could propose creative concepts.

Figure 30: Urban farming and urban development



Source: Tadeas Rozboril

## Contribution of Consultancies

The western consultancies proposed different concepts to develop the area, but all three commonly suggested a green city development approach.

Two concepts, learned from the workshops and the advisory role of the consultancies after the competition, were used in the further planning process, beginning with the park's function for urban agriculture. The first concept applied to this idea was the concept of the "Green City", developing sustainability including an accessible, open central park and local food production. The second adopted concept was named the "Vertical City" or "Radiant City", which included high density areas with mixed functions to reduce the urban pressure. Also, a public infrastructure began to develop (EHOW, 2014; Guangming District Management Committee, 2014).

At the end of 2008, two years after the end of the competition, the concept of low carbon became very popular in Chinese urban development. The urban planning concepts, such as "Green City" and "Vertical City", soon changed into the same concept of the Low Carbon City. Guangming Low Carbon City became official in the *City Master plan 2010–2020*. Guangming became a national pilot project on low carbon. This did not mean a complete change in urban planning: *"I think it's a way of explaining. I think Low Carbon is a very fashionable word the past few years. Most Chinese cities talk about that"* (MVRDV, 2014b). The development plan continued on the green development path, but was renamed Low Carbon City.

The next development phase began in the Gateway Area. The reason why they shifted the focus from the Central Area to a more peripheral area was that there were more opportunities to develop quickly. With vacant land and the regional plans for the high-speed train line from Guangzhou to Hong Kong, this was seen as the best place to begin the development of the whole area. This planning plot applied the plans of high quality infrastructure and "nature protecting" high density (C&D Group, 2014b). These were all concepts introduced by consultancies a few years earlier in the Central District competition, but this time they were presented as part of the popular concept of the Low Carbon City. Also for the Gateway Area, competitions were held, but more on a plot level and with the aim of architectural concepts. However, in these design competitions, the concept of low carbon was mentioned as a requirement in the brief for the participating consultancies.

The brief for the Gateway Area changed. Where in the Central Area competition the brief addressed spatial concepts, that knowledge was no longer necessary. The district government was now in need of the more concrete applicable technology to realize a Low Carbon City. The competitions were now organized for these specific demands. Regarding these plot competitions in Guangming Gateway area was said:

*About the Low Carbon and Eco... Chinese organizations have only twenty or thirty years history. The western, the European and American, have many more, maybe 100 or 200 years. We can learn a lot from that. We can acquire the technology about the Low Carbon and the green and eco from that. Those kind of stuff related to technology: the water treatment, the renewable energy, the solar, the green buildings. Those kind of aspects... but only on the aspects of technology"* (C&D Group, 2014b).

Where the consultancies in the Central Area were asked to propose spatial concepts and the sustainable development idea was adopted, eight years later in the Gateway Area, consultancies were asked to contribute technology to develop the low carbon strategy.

**Concepts:** The area developed according to the proposed concepts of the consultancies. Although the focus of developing the area changed to the Gateway Area, the sustainability concept, which changed later to the low carbon development path, was for the first time introduced by the consultancies and adopted by the government. Their proposed spatial concepts became part of the new "umbrella" concept of the Low Carbon City.



Area: 15km<sup>2</sup>. planning competition area was approximately the same.  
Population: 0  
GDP: unknown

Figure 24: Map Qianhai Bay



Source: Adapted from Baidu Maps

Figure 32: Street scene





# [6] – Qianhai Bay.

## Section 1.

### Geographical Conditions

Qianhai Bay is situated in the west of Shenzhen on the shore of the South China Sea. Within the planned area are two natural rivers, Shuangjie River and Xinzhen River, and three flood control channels: Chanwan Channel, Guimiao Channel, and Number 12 Channel. Located in the south are the Dananshan Mountain and Xiaonanshan Mountain on the Shekou Peninsula. In the north is the Bao'an district. The Futian Central Business District is located in the east, which means this area is situated at the west end of Shennan Boulevard. It is part of the "east-west axis" of Shenzhen.

More broadly, the area is located at a key point in the Pearl River estuary. It is located in the middle of the north-south axis of Guangzhou to Hong Kong, what makes that the area is surrounded by the world-class metropolis. Qianhai is located on the crossing of the local east-west axis of Shenzhen and the regional north-south axis of the Pearl River estuary.

### Area History

The historical development of Qianhai is limited. The area was reclaimed from the sea. The present use of the site consist primarily of infrastructure, transportation, and logistics. All the facilities in this area are focused on the Shenzhen Port. The operations of the port and its related functions define the quality of much of the Qianhai area and adjacent areas (Huang & Xie, 2012).

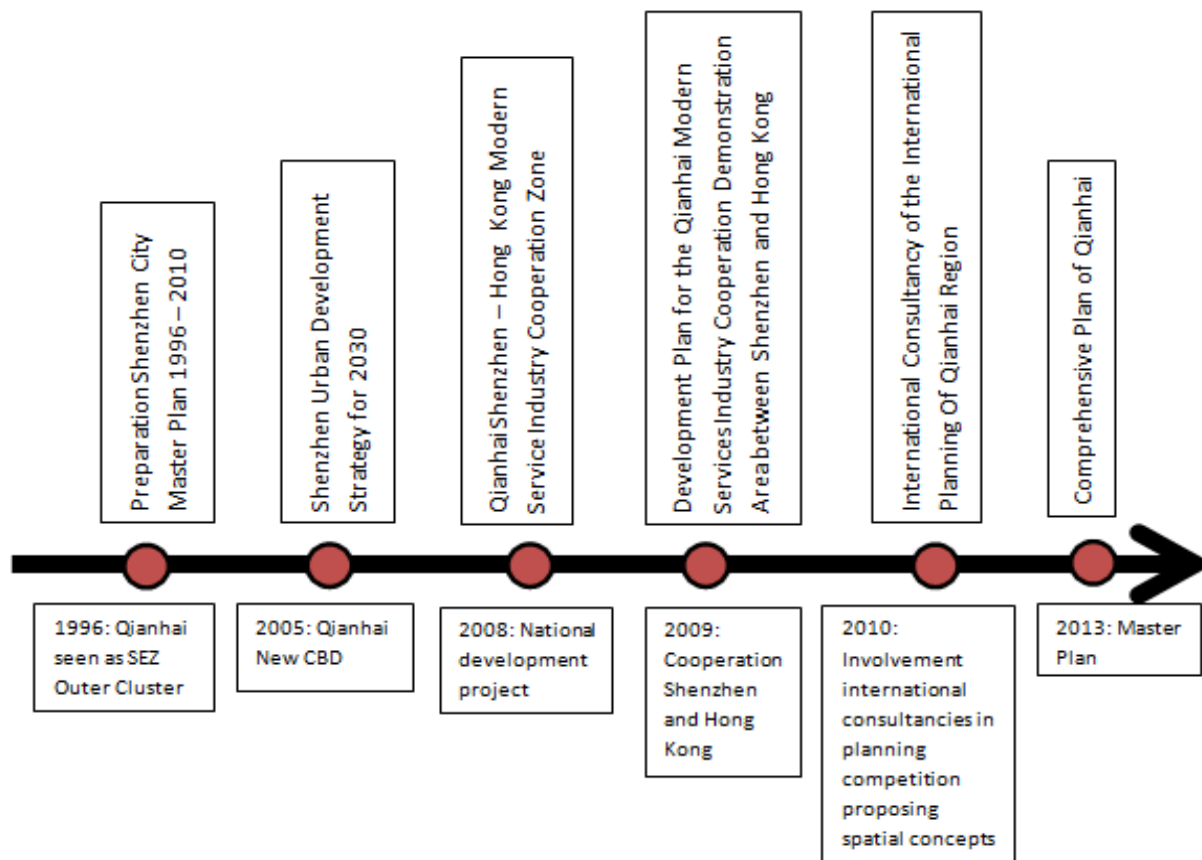
The development of the harbor began in 1979, when Shenzhen became a Special Economic Zone and the port was established along the long Shenzhen coast. With locations on the east coast of Shenzhen in the Mirs Bay and on the westcoast at the Pearl River Estuary, the harbor is spread over 260 kilometers of land. In total, the port has 140 berths with a diverse range of functions, making this the third largest harbor in the world (SZport, 2014). Due to shallow water, Qianhai was not suited for docking boats. However, as an effect of the nearby located berths in Shekou and Dachan and the container ports in Mawan and Chiwan, there are several logistic functions based in Qianhai to support the port. In the south part of the area, five power plants and oil depots are based, surrounded with port facilitating infrastructure. These locations are undergoing relocation studies due to the future development. The history of the area can be related to the harbor. Most of the area has existed for only fourteen years (Huang & Xie, 2012).

The natural conditions, wet and unpredictable soil due to floods, of the area before reclamation meant that this was never an appropriate place to live. In 2000, the reclamation began. Parts of removed hills from different locations in the city were used to reclaim the land (Zacharias & Tang, 2010, p. 220). In 2009, 10 km<sup>2</sup>of land area was created. Since then, a few temporary facilities have been located there, such as the Shenzhen Metro Depot and the mentioned port supporting facilities, while most of the area consists of vacant land.



## Planning History

Figure 253: Graphic representation planning process



The development of Qianhai Bay can be dated to 1996 (see figure 33). In that year, the *Master Plan 1996–2010* was established. Although the area was not part of the SEZ, the city recognized the area as a SEZ Outer Cluster. The location of Qianhai allowed the area to be recognized as strategically the most important area of the future development of Shenzhen. For the first time, Shenzhen began considering the future development of this area. The reclamation of the land began near the turn of the century.

The importance of Qianhai for the surrounding region continuously increased. Since 1996, this area was studied by local planning institutes. The researchers showed that this area could function as a new Central Business District focused on service economy. The area could function as the new expansion area of Shenzhen and was positioned as one of Shenzhen's two main centers. In 2005, the *Shenzhen Urban Development Strategy for 2030* was established. In this document, the importance of Qianhai is underlined.

This strategic plan changed in 2008 at the 30<sup>th</sup> anniversary of the establishment of Shenzhen Special Economic Zone. Beijing recognized the potential of the area and made the major strategic decision to establish the *Qianhai Shenzhen–Hong Kong Modern Service Industry Cooperation Zone*. The area was appointed as a collaborative project between the two cities. The former city plan was revised and became a national project. The involvement of the national government increased the development of the area.

Not long after, in 2009, the *Development Plan for the Qianhai Modern Services Industry Cooperation Demonstration Area between Shenzhen and Hong Kong* was established. Shenzhen and Hong Kong reached a preliminary agreement regarding constructing a high-end service industry at the location of Qianhai.

The *International Consultancy of the International Planning of Qianhai Region* was held in the first six months of 2010 to solicit concept plans from international consultancies.

After ten concept plans were submitted, the *Comprehensive Plan of Qianhai* was established. The Urban Planning and Development Institute Shenzhen (UPDIS) was the institute that reviewed all the proposed plans and presented the final Qianhai Plan. This comprehensive plan was completed in 2013 (UPDIS, 2014-III).

## Planning Objective

After the Futian District, this area was to be the second Central Business District in Shenzhen. Qianhai represents a number of historic missions: “to explore new avenues of reform, liberalization and scientific development; to explore new ways of close cooperation between the Mainland and Hong Kong; and to accumulate new experiences in the transformation of the mode of economic development” (HKTDC, 2014). Shenzhen was always a leader in China in political reforms, and in that context, Qianhai was the newest innovative model. New opportunities for further development and innovation of private equity funds in Shenzhen mean that this area was described as the “special zone of the special zone”. On the borders of “one country, two systems”, the connection must be made between the industries of Guangdong Province and Hong Kong. The industries they would like to attract are the so-called high-end service economy. More concrete are the companies that work on the field of innovative finance, modern logistics, information networking, science and technology services, expertise services, and headquarter economy. That the focus is on modern service professionals is supported by the requirement of creating a GDP of over 10 billion RMB per km<sup>2</sup> (HKTDC, 2014).

The spatial design of this area needed to be world-class, not only creating an economical business center, but also focusing on the low carbon standards. The international consultancies should have considered the low carbon development (EHOW, 2010, p. 35). The winning planning concept of James Corner Field Operations used the coastal resources and the five waterways to improve the water quality by utilizing green technology, which simultaneously improved the public space (see figure 34).

Figure 264: winning concept plan



Source: James Corner Field Operations, 2010

The main planning goal for this area was to create a central business district focusing on service economy but within the context of the Low Carbon City.

## Section 2.

### Participation Model

The international design competition was launched on 31 December 2009. Planning consultancies could register to participate in the process of writing a concept plan for the area. The initiative originated from the Shenzhen Urban Planning and Resources Committee. There was a jury formed to review the applications and select a winner. The jury consisted of seven experts (see table 6) (EHOW, 2010).

Table 6: Jury members

Name	Background
Arata Isozaki (Chairman)	Architectural design master, Japan
Charles Waldheim	Dean of the Landscape Department Graduate School of Design at Harvard University, USA
Phil Kim	APAC Director, Partner of JERDE International, Architecture Firm, USA
Rocco Yim	Founder of Hong Kong's Rocco Design Firm, China
Tang Zilai	Dean of the Urban Planning Department at Tongxi University, China
Ma Qingyun	Dean of the Architecture College at University of Southern California, USA
Quan Yongshen	Director of Beijing Transport Development Research Center, China

Mister Isozaki was, as in the competition of Guangming, chairman of this competition. The other members of the jury were highly ranked experts in the field of urban planning. With their international expertise, they were expected to review the proposed concept plans. It is notable that there were many scientific deans involved but no government employees.

The Urban Planning Bureau was attempting to gain attention for this competition from consultancies who participated in previous development projects. They approached international consultancies, such as MVRDV and Nikken Sikkei, known from the earlier competition in Guangming, to participate in this competition (MVDRD, 2014). Approaching consultancies and requesting they apply can be seen as a way of promoting the developments occurring there.

Figure 27: Aerial



This resulted in 62 applications, which the jury was required to review. The selection was based on a portfolio and action plan. Eight finalists applied and were screened and invited to join the planning competition (see table 7).

**Table 7: participants competition**

<b>Consultancy</b>	<b>Country</b>
BLAU Architecture and Urbanism	Spain
Conglomerate comprising: OMA, China Construction Design International, WSP Group, and McKinsey	International
James Corner Field Operations	USA
CAUPD (China Academy of Urban Planning and Design) and Ove ARUP (Commonwealth)	China and United Kingdom
Nikken Sekkei	Japan
KuiperCompagnons and Shenzhen Zubo Architectures and Engineering Design Co. Ltd.	Netherlands and China
BIG and ThrontomTomasetti (Consortium)	Denmark and USA
SWA Group	USA

Source: world landscape architects, 2010

In addition, there were other design firms welcome to participate but without getting invited. They were referred to as “volunteers”. If the jury allowed them to participate, they received the Task Book with detailed information. Finally, two consultancies applied this way and joined as volunteers (see table 8).

**Table 8: Volunteers**

<b>Consultancy</b>	<b>Country</b>
AECOM Asia Company Limited	Hong Kong
UNStudio and BuroHappold	Netherlands and United Kingdom

Source: world landscape architects, 2010

There were prizes awarded to the top three design firms. First place received two million RMB, second place was awarded 1.20 million RMB, and the third place received 0.80 million RMB. The other finalist receive design cost compensation of 0.50 million RMB. The consultancies had four months’ time to develop ideas, which was considered sufficient by the participants (EHOW, 2010).

The planning competition began on 9 March 2010, and in late June 2010, the winner was selected. This jury chose James Corner Field Operations, USA, as the winning concept plan, followed by BLAU Architecture and Urbanism. In third place was the conglomerate of OMA (UPDIS, 2014a).



When analyzing the selection of consultancies, it becomes clear that informal contacts played a significant role in selecting the participating firms for the competition. The selected finalist in the competition were only large companies with well-known names and histories in Shenzhen. Although it was an open competition and 62 consultancies applied, only companies with international experience, often with an expertise in waterfront development, became finalists. Surprisingly, James Corner Field Operations, according to their website, had no experience in China (see table 9). Their projects were usually in the USA, while they also gained international expertise with projects in Seoul, Puerto Rico, Taiwan, and Brazil. They were probably known to the jury because of their expertise in waterfront development and public space. Additionally, since three of the nine jury members consisted of Americans, they were probably familiar with the expertise of James Corner Field Operations.

**Table 9: abroad experience top three finalist (based on data of 2014)**

	<b>James Corner Field Operations</b>	<b>BLAU Architecture and Urbanism</b>	<b>OMA</b>
<b>Offices in</b>	New York City, London, and Hong Kong	Barcelona	Rotterdam, Hong Kong, New York, Beijing, and Doha
<b>Projects in China</b>	1	11	19
<b>Projects in Shenzhen</b>	1 = Qianhai Bay	4	4

Source: websites consultancies.

When analyzing the selection of consultancies, it can be stated that the informal network in Shenzhen was important to become a finalist in the competitions. Historical relations were known and formed a closed network. Not only due to satisfaction from previous projects, but also for reasons of branding there was the preference for the largest international consultancies. The selection of the finalist was, examining the history of Shenzhen, unsurprising. The “usual suspects” participated.

The international consultancy event was organized by the Shenzhen Urban Planning and Land Resources Committee. They outsourced it for the administration and organization aspects to EHOW. They prepared the documents for the consultancies and all participants involved. The personal wish of the director of EHOW was to involve more small local urban institutes in the competition, but the Committee did not allow this (EHOW, 2014). As an administrative institute, they were strictly focused on the preparation of the organization on the commissioning of the Urban Planning Committee. However, not allowing the local design companies to participate suggests more trust in the international consultancies or a view that the local companies were not suitable for the aim of branding the area.

The competition offered the Urban Planning Bureau different concepts for the development of the area. All these concepts allowed the Urban Planning and Design Institute Shenzhen (UPDIS) to create the comprehensive Master Plan. UPDIS is focused on integration and connecting the different aspects and can be seen as the top of the organization. Due to difficulties of implementing the proposed concepts and the wish for quick results, there were coordinated teams established, focusing on one aspect of planning in order to work more effectively. There were six different groups established (see table 10).

Table 10

Focus groups
(1) Economic Development
(2) Integrated Transport Team
(3) Low Carbon Ecology Team
(4) Urban Design Team
(5) Water Resources Team
(6) Environmental Protection team

Each team created their own comprehensive plan focused on a specific topic. Afterward, these plans were combined into one large master plan. This was time consuming but preferred due to a better understanding of each topic individually.

The majority of the teams are often established when creating a new urban environment, but it is the attention on sustainability in this process that is striking. Two teams focusing on different aspects, one on low carbon ecology and another on environmental protection, suggest that eco-city development was an important topic in the development of this area.

With the winning of the competition, James Corner Field Operations did not only win an amount of money. They also were included in the Urban Design Team after the competition, mainly due to their winning concept of the waterways. After they adjusted the concept to the local conditions, they implemented their concept in two of the five rivers. The team was complemented with the following companies: Nikken Sekkei, Zhubo Design Group, and Mister Busquets from Harvard University. Mister Busquets is the founder of BLAU group, which also participated in the competition.

This means that all the members of the Urban Design Team were former participants in the competition for the concept plan. They were not competing with each other but were involved in long lasting cooperation. When asked why these consultancies cooperated with each other after the competition, it was found they were selected because of long term relationships, specifically regarding the involvement of Joan Busquets. An urban planner from UPDIS said, *"He previously work with the leader of the Urban Planning Bureau in Shenzhen. So they also invite them"* (UPDIS, 2014a). Again, previous relations were of importance when participating in the planning process.

**Competition and cooperation focus groups:** The way consultancies became involved in the planning process was first via an organized international competition; later some of them were included in cooperation groups focused on specific development aspects.

## Political Landscape

This project had different levels of government involved. It was highly regulated and controlled by the central government from the moment Beijing decided that Qianhai played an important role in the entire Chinese opening-up policy: *"It's pretty much symbolic. That's why the central government is so deeply involved"* (C&D Group, 2014b).

The national government can be seen as the initiator of this plan. At the beginning of the planning process, the city was the motivator behind the development of Qianhai, but the central government took over when they recognized the value of this area for the entire region and country. Qianhai became a national development project. The orientation of Qianhai on, the service economy, was quickly adopted and institutionalized by the local, as well the regional, parties. This also concerned the establishment of the Qianhai Administrative Bureau. The bureau had thirty divisions responsible for overseeing and coordinating all relevant departments within the Shenzhen government to advance and promote the work of developing the Qianhai area (HKTDC, 2014). They had a high level of autonomy and could be seen as the district level of government for the Qianhai region. With the establishment of this bureau by the national government, the status of the area and where the developments fostered increased.

The involvement of national parties had its advantages and disadvantages for the development of Qianhai. Including the central government means that the city of Shenzhen could use the national policy and knowledge. On the other hand: *“The city lost the decision making over the area”* (C&D Group, 2014b). However, at this stage in the development of Qianhai, the involvement of the national government stimulates this project.

The role of the city, particularly the planners of UPDIS, was to execute the spatial development. Beginning in 2000, UPDIS was the research institute and was directly owned by Shenzhen’s government planning department. However, due to political and economic reforms, UPDIS was, since 2011, a 100% sub-institute of the Shenzhen Special Economic Zone Construction and Development Group. This is a large holding company, which completely owned the stock rights of four other municipal state-owned enterprises: Shum Yip Group LT (real estate and investment), Shenzhen Airport Group Co., Ltd., Shenzhen Yantian Port Group Co., Ltd., and Shenzhen Yuanzhil investment Co., Ltd. The registered capital of the company reached 30 million Yuan and the total assets surpassed 140 billion Yuan. UPDIS became a state-owned enterprise, which positioned UPDIS more as a market-oriented party with the original public goals.

The city began the development of Qianhai in 1996. Until 2010, the year the consultancies became involved, considerable research had been completed by UPDIS. A planner from UPDIS said this regarding the time before the competition:

*“We have done a lot of studies on the conditions of this place. In our department, the people who work on that, had already a lot of plans. They can do the plan by themselves. There is already a lot of work done”* (UPDIS, 2014a).

With these research and ideas in mind, the Urban Planning Bureau organized a competition. With the involvement of the national government and, probably the Qianhai Administrative Bureau in the background, the planning process was opened for participation.

The proposed concepts were analyzed and tested by UPDIS. Analyzing and integrating the concept plans into a comprehensive plan took them from July 2010 to the end of 2013. When the Urban Planning Bureau decided that consultancies must be involved in the process, they were determined to implement these concepts. However, the proposed concepts by the international consultancies conflicted with the local site conditions and the existing knowledge from the previous research. It took time to apply these concepts to the specific site conditions: *“You can see that the foreign planners do not understand the Chinese context. It’s normal you know?”* (UPDIS, 2014c). This reinforced that a plan which could be implemented immediately was never the purpose:

*“The urban planning authority is really, really smart. They didn’t put so much duties on the competition. They didn’t ask James Corner Field Operations or other consultancies to come up with many complicated researches, for example regarding water quality. They did not do that. They know they could not achieve an accurate design from the foreign consultancies. They just need one new concept”* (UPDIS, 2014c).

Integrating the winning concept of James Corner in the final comprehensive plan required several years. However, for the Urban Planning Authority, it was a successful competition: their demand for a new concept was fulfilled, applied, and implemented, although the planning process for a vacant area required more time than usual in the Chinese planning system.

**Top-down:** What started as a development initiated by the government changed into a national project. The national government began to implement their wishes, like the low carbon development. UPDIS, a preparatory institute before the competition, became an integrated institute after the competition.

## Brief and Submissions

### *Brief*

The document, “International Consultancy of Conceptual Planning of Qianhai Region”, can be considered the introduction brief, or Task Book, for the consultancies. This document was the starting point for the finalist and the basis from which they began developing their concept plan.

The brief is constructed of clearly stated requirements for the consultancies. These are divided into five themes: (1) forward-looking, (2) innovative, (3) high-quality, (4) beneficial, and (5) operable. In the second theme, “innovative”, low carbon is introduced: “Encourage advanced and pioneering urban planning concepts, give key considerations to recycling, green/low carbon development, sustainable development, people-centered development, and encourage the application of new technologies” (EHOW, 2010, p. 34).

Here, the newest technologies to implement sustainable and low carbon concepts are specifically requested. Since this was introduced under the theme of “innovation”, it can be concluded that there was already an understanding of the concept. The consultancies were asked for an innovation in the existing idea. A description of the existing idea of the Low Carbon City by the government was not given, but the quest for the newest low carbon technology provided the idea of a technologically oriented focus.

A review point of the jury was the eco-city approach of the proposed concept. Beside the introduction of technologies, consultancies were required to consider the eco-city concept in their design concepts as well. The point where the proposed concept plans were reviewed is “Create innovative design concepts, with key consideration on green, low carbon, and sustainable development” (EHOW, 2010, p. 34).

Interestingly, it appears that there is a division made between green, low carbon, and sustainable developments. The rest of the document provided the impression that “green” referred to land utilization and focused on natural resources. The mention of the term “sustainability development” in this document is particularly interesting, since there were no further uses and descriptions of this concept and the use of the word “sustainability” was always preceded by the requirement of low carbon. The reason why sustainability always followed low carbon could be to provide an explanation or an understanding of the “new” low carbon concept.

In this brief, nowhere is transforming the whole area into a “Low Carbon City” mentioned. Creating a city which is completely low carbon was not the goal. From the beginning, the goal was to create a second central business district. However, since the end of the first decade it was preferred to have low carbon characteristics included. This shows a change in the development process. For the first time in an organized planning competition for large urban developments in Shenzhen, the concept of Low Carbon Cities was included in the brief introduction. There seemed to be an understanding of the concept since pioneering new concepts with the encouragement for new technologies were requested.

### *Submissions*

The winning consultancy, James Corner Field Operations, proposed a plan named WaterCity. Compared to the other finalist, it was the smallest report with only 58 pages. They focused, in this report, on five primary operations: (1) reclaim the water, (2) define districts, (3) active edges, (4) monuments and hubs, and (5) create fabric. The concept was explained thus: the concept plan would be encircled around the area’s most important resource, the water. The five waterways would be processed and remediated and provide the area its name and “coastal water-town” character (reclaim the water). These waterways would divide the area into five districts (define districts), which would be easily manageable and not the super blocks in previous Shenzhen development blocks (create fabric). The edges of the waterways would create a diverse public space (active edges) around landmarks and transport facilities (monuments and hubs).



In the proposal, there is considerable emphasis on sustainability. The words “low carbon” are not used or referred to in this proposal. Sustainability is the concept they discussed, especially when regarding the innovative concept of improving the ecological quality of the water. They proposed, “five mega-scale water filtration fingers that function as remediation infrastructures for the entire site, processing both the water flowing through the channels and rivers, as well as the storm water run-off of the entire 1804 hectare”. This technical solution was not explained in detail, only four pages with a few related sentences accompanied the explanatory pictures. The technical concept of different layers consisting of plants, terraces, and infrastructure must treat the water. At the same time, the terraces must function as public spaces.

This plan further described the function of every district. A repeating topic in all the districts was the public space created by the waterways and the mixed use of each district (JCFO, 2010).

Second in the competition was BAU Architecture and Urbanism. Their concept was named Creative Waterfront City. Despite several attempts, the researcher did not managed to study the proposed concept from BLAU. On their website, some pictures were published which suggest that the concept of Creative City/Leisure was a prominent aspect of their proposal. However, there can be no statements made concerning this proposal.

In third place was the concept of Qianhai Port City, proposed by OMA. Their spatial design consisted of series parallel layers, running east-west. Each layer had a different type of space, varying in terms of architectural typology, density, and landscape. The layers were compared to a high-rise building: every floor was capable of supporting different functions. A circular loop connected all the stacked layers.

This concept was focused on transportation. Accessibility was the basic concept for the transport system, and this was described in detail. For every mode of transport, a specific plan was made. Maps were used to support this.

This concept plan also included the technical economic forecast of Qianhai, detailed with a description of the future number of students and prospects on the health insurance and lack of hospital beds. Regarding sustainability, there was also a detailed climate context. The concept provided options for possibilities, but real solutions were not proposed. Regarding wind energy, “Offshore wind farm can be integrated into the development of the area between Dachan Island and Xiaochan Island. Wind turbines can also be integrated with the buildings” (OMA, 2010 p.93). There were a multitude of solutions offered, but there was no best option (OMA, 2010).

This proposed concept plan was constructed like a research report. It was very descriptive and only concrete regarding the future trends and not the solutions. The new and innovative concepts were difficult to find. OMA presented a strong analysis of the prospects but was less innovative than the winning concept of James Corner Field Operations.

Figure 36: Proposed concept plans by finalist



Source: UPDIS, 2014-III

These three plans were the most influential in the further planning process (see figure 36). The other plans were not often referred to. Nowadays, some interviewees can only remember the first concept plan, sometimes the top three, but the other concept plans are not remembered. This suggests that there was a clear preference for the concept of the winning finalist and that the other concept plans were not often used when preparing the comprehensive plan.

The analysis of the area made by OMA and the concept of the layers was probably not as innovative as the Urban Planning Authority wished for. Although they did position Qianhai in a positive context, the concept was not sufficiently attractive to win the competition. The winning concept of James Corner came closest to the demand for an innovative new concept related to sustainability:

*“Actually, James Corner is still working on the corridor. We really like that idea. That the corridor is a public place and in the same way it is a function to make the water more clean. And that is really something we want to achieve there” (UPDIS, 2014a).*

**Innovation:** The brief for this competition regarding the aspect of low carbon was specifically focused on innovation. The winning submission proposed such a concept.

Figure 37: Watering riverside



Figure 38: Realized concept of James Corner Field Operations



## Contribution of Consultancies

The proposed development concepts and the involvement in the process after the competition provides evidence that the planning consultancies indeed contributed to the development of Qianhai.

One of the first realized aspects will be the water way concept of James Corner. This more sustainable technological tool will be a characteristic of the area. The local politicians are using this to show their achievements:

*“Usually a lot of politicians from other cities who come to Shenzhen want to see Qianhai. They will guide the mayors to come and see the green corridor. It’s really something we are proud of. Usually they want to see the towers to see the achievement of the politicians. But here they show the green corridor as the achievement. They actually spend a lot of energy on it” (UPDIS, 2014a).*

This shows that building green and improving the environment is becoming a new tool for the elite to make a statement and leave a positive impression.

The link between the competition and the organization after the competition can be best seen in the Urban Design Team. There was also a Low Carbon Ecology team. This team consisted of four cooperating parties: the Urban Planning and Design Institute Shenzhen, Urban Transport Planning and Design Research Centre Shenzhen, Institute of Building Sciences, and Mister Yuan Lei from Shenzhen University (UPDIS, 2014-III). There was no participant from the competition involved; in fact, it is remarkable that there were only local institutes involved in this team and no international consultancies. This team also showed that UPDIS not only participated as an integration institute in the top of the organization, but also as a research partner in this team. The institute and the city expected to gain the knowledge to contribute to this development aspect of Qianhai.

The comprehensive plan of Qianhai contained a chapter concerning low carbon technologies (Shenzhen Government, 2013). This confirms that it was not the purpose to build a Low Carbon City here but to only include specific innovative low carbon aspects, more specific in the type of technologies.

Surprisingly, the first article in the low carbon technologies chapter concerned design concepts and focused on smart city and urban density as a basic strategy and the aim of implementing a traffic-oriented development system. For the TOD system requirements were made: there must be a bus stop within every 500 meters and a complete coverage of public transport over the whole area. This seems to correspond with the detailed traffic-oriented concept proposed by OMA, the third finalist in the competition.

From the winner of the competition, effects were seen in the article regarding water. Technological systems were used to recycle water and use the rainwater. James Corner won the competition with an innovative concept on the recycling of water. An urban planner of UPDIS was asked about this: *“you cannot say copied, we say learned from. If you read the comprehensive plan of Qianhai very carefully, you can see the shape of the waterway is not accurate as that of the Concept Plan of the winner”* (UPDIS, 2014c). The input of James Corner indeed was not detailed and, therefore, could not be directly implemented. However, the combination of public space combined with technology to clean the waterways is a concept which can be seen in the comprehensive plan as a low carbon technology.

Another article in this chapter concerned the implementation of green buildings. Trees, bushes, and grass must cover the buildings to lower the carbon emissions. This concept was not proposed by the top three finalist. Wireless broadband connection was another concept not proposed in the planning competition by the finalist (Shenzhen Government, 2013).

**Innovation:** The contribution of planning consultancies was mainly in the technologically innovative concepts of the Low Carbon City.





Population: 160.000  
 Area: 57,6 km<sup>2</sup>, with 27km<sup>2</sup> for construction due to the ecological control line  
 GDP: 5.404 billion RMB in 2012

Figure 39: Map Pingdi



Source: Adapted from Google Earth

Figure 40: Commercial ILCC



Figure 41: Exhibition center



# [7] – Pingdi ILCC.

## Section 1.

### Geographical Conditions

Pingdi is a peripheral area located in Longgang District, at the north-east border of the Shenzhen Special Economic Zone. Across the borders are the municipalities of Huizhou and Dongguan. In the municipality of Huizhou, Xinxu is the closest settlement; in the municipality of Dongguan, Qingxi. All of the three cities are located at the fringes of their respective cities of Shenzhen, Dongguan, and Huizhou.

Pingdi is surrounded by green mountains and crossed by two rivers, both named after the area in which they are located: Pingdi River and Longgang River. A few motorways cross the area from south to north and make downtown Shenzhen accessible in 45 km and downtown Dongguan in 50 km. There is currently no mass public transport connection with Shenzhen, the last metro stop is in Nanliancun, a suburb between Pingdi and Shenzhen.

### Area History

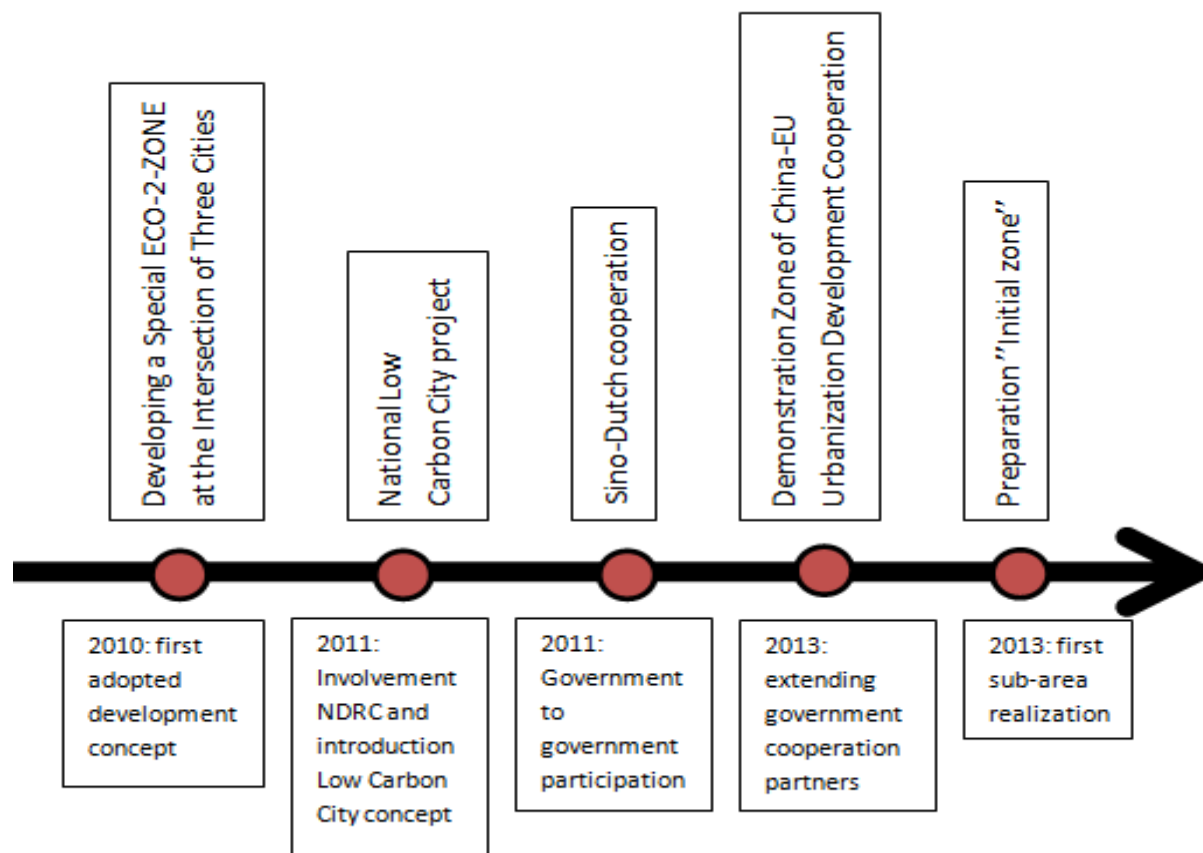
The city of Shenzhen was not interested in the town of Pingdi for many years. This caused an underdeveloped economic situation and a confusing spatial structure (Zacharias & Tang, 2010). Pingdi was once a rural village but developed by rebuilding their villages as worker dormitories and allowing industries to replace rice paddies. For migrant workers from all over China, Pingdi was often the first stop in the large metropolis of Shenzhen. The town was growing from the attraction of migrant-workers searching for work from all over China. The mid-1980s through the mid-1990s was the period of the most rapid growth in the population (Zacharias & Tang, 2010, p. 221). The area of Pingdi functions as a “come and go” area due to workers who migrate to the work. Pingdi is demographically seen as a typical suburb of Shenzhen.

In the area, a sizeable number of companies have been established, often even unexpected companies, for example, the establishment of a container storage site at this long distance from the harbor. This can be explained by the land pricing policies. Due to a lack of political attention and organizations in the area, there is a lack of zoning, which resulted in a continued sprawling and low-profile development (NGIF ET AL, 2011).

Before 2010, this town was not included as part of the Special Economic Zone. This is one of the reasons why Pingdi is one of the least developed towns in the city of Shenzhen (Huang & Xie, 2012). The town of Pingdi was less developed than the surrounding towns, which were in an economical transition period. In 2010, there was the extension of the SEZ. The whole city of Shenzhen obtained the status of Special Economic Zone, including the town of Pingdi.

## Planning History

Figure 42: Graphical representation of planning process



When the Special Economic Zone was expanded and Pingdi was included in this policy, Shenzhen and Longgang district governments saw their chance to develop the region. One initiative of the Longgang district began the development. In the beginning, there were two proposed development concepts rejected. Both were present by the local planning institutes but rejected because of not being sufficiently visionary and innovative or not sufficiently considering the social context and the connection with neighboring areas (Jong et al., 2013).

In June 2010, they invited a Dutch-oriented collaboration commissioned to generate ideas for the development of the area (see figure 42). Under the flag of a variety of different academic and professional institutions, they submitted a report, named *Developing a Special ECO-2-ZONE at the Intersection of Three Cities*.

The Longgang district adopted the findings and recommendations of this report, as did the Shenzhen city government. They supported the future vision for the area and researched implementing the ideas.

From that moment, contact was established between Shenzhen and the ministry of National Development and Reform Committee (NDRC). In the second half of 2011, there were two meetings between Dutch and Chinese participants, resulting in a positive report to the NDRC. They decided to include Shenzhen on a list of eight new nation-wide pioneering Low Carbon City projects. They sent an official request to the Dutch government for an official government-to-government collaboration between China and the Netherlands on eco-city development in Pingdi. The support of the Dutch was established and expert meetings with both countries were planned.



In November 2013, the mayor of Shenzhen, Xu Qin, proposed to designate Pingdi a *Demonstration Zone of China-EU Urbanization Development Cooperation* to help each other to achieve sustainable urbanization. The EU commission president, Mister Barroso and Chinese Prime Minister, Li Keqiang, agreed to sign a Memorandum of Understanding. From that moment, Pingdi was a flagship project between China and the EU and a national level demonstration project for China (Jong et al, 2013).

UPDIS was the executive institute that worked on this project and produced the plans for the first sub-area. This “initial zone” of 1km<sup>2</sup> was approved by the Urban Planning Authority in January 2013 and is currently under construction. The planned work on the phases of 5km<sup>2</sup> and 53km<sup>2</sup> is now in progress (see figure 43) (C&D group, 2014-I).

Figure 43: Construction plan



Source: C&D Group, 2014-I

Figure 44: Street view





## Planning Objective

The area of Pingdi has a clear developmental orientation, as is written in their folder: “to become a national comprehensive demonstration district of low carbon development”(C&D Group, 2014-II). In terms of spatial development, there was the “initiation area” of 1km<sup>2</sup> and the “expansion area” of 5km<sup>2</sup>, which would gradually develop into a 53km<sup>2</sup> Low Carbon City. The initial zone is in the last phase of construction. For further development, a draft concept plan was presented. This plan was supported by the slogan of “one axis and one belt, one core and two centers” (see figure 45) (Guangming District Management Committee, 2014). A structure of stacked mixed function layers will be connected by an infrastructure while the area in between the layers will be open space for ecological functions. The “core” and the “belt” refer to the two infrastructural transport ways running from south-west to north-east, the “axis” refers to the north-south oriented river. There is an “industry service center” and a “public service center” planned. The underlying idea is to build the overall space structure in such a way that there is a clustering of different industrial functions strengthen by mixed urban life and services (C&D Group, 2014-II).

Figure 45: Zoning plan



Source: C&D Group, 2014-I

The Low Carbon City attempts to “make the green extra green”, meaning that they want to be demonstrative and a pilot project for the whole of China. The achievements must be of extremely high class (DRC, 2014). To realize this goal some objectives were formulated in the *International Low Carbon City Promotion Folder*. In 2020, the expectation is that there will be a GDP of RMB 24.5 billion, which means enormous economic growth. There is also the carbon objective of less than five tons/person intensity of carbon emissions and carbon emissions of per RMB 10,000 GDP of less than 0.32 tons. As say themselves, this goal nears the average level of EU countries (C&D Group, 2014-II).

## Section 2.

### Participation Model

The external participation in this planning process was organized via a long term cooperation. More than 100 people were continuously working in a joint team focused around the expertise of UPDIS. The team included all kind of professions, from urban planners, landscape designers, and transportation engineers to civic engineers for water supply and power supply. Most of the involved members were employees of UPDIS, but in addition, experts from all over the world were involved. These experts originated from public or private institutes and universities. The organization was focused on specific aspects: Power supply, real estate, transportation, financial evaluation, and low impact development.

The organization of this planning process was concentrated around UPDIS as a spider in the web, focusing on a long term cooperation for the master plan. Later in the process, the planning tool of competition was included but on the scale of a specific plot and an architectural level: *“It’s more practical to do an architectural design competition rather than the entire region concept competition”* (C&D Group, 2014b). This argument was supported by saying that the area was larger than the other study sites of this research. However, on the scale of the initial zone, 1 km<sup>2</sup>, and the extension zone of 5km<sup>2</sup>, this method was not applied. The UPDIS is now designing the master plan by themselves. Another motivation given is as follows:

*“Another reason is that we did that in Qianhai Bay area and in the Guangming area. We try to do it now in another way, not as an international competition but as an international cooperation. We want to have more control with the model of cooperation and workshops instead of the competitions”* (C&D Group, 2014b).

This seems the most plausible reason for the change of organization toward a more cooperative model. UPDIS fully agreed with this when discussing the future of urban planning: *“We can cooperate. In the future cooperation is very important for urban planning”* (UPDIS, 2014c). Beside cooperation, they also viewed specialization as the key for future urban planning.

UPDIS worked together with experts on specific planning aspects when their own organization lacked information or when they thought others could perform better. A few previous contacts were participating as expert-partners in the joint team: *“We already establish a good relationship maybe years ago and we continue this in the last several years”* (UPDIS, 2014c). DTZ Zadelhoff was used as an example of a specialized cooperation partner:

*“DTZ is very familiar with real estate market. They already got a lot of data in real estate. This company is part of the joint team. We already start a cooperation with DTZ maybe five or six years or even longer ago. We cooperated on some other planning projects, for example urban renewal projects”* (UPDIS, 2014c)

For UPDIS, it was logical to include DTZ in the joint team because of previous experience. These “friendship” parties become part of the team and cooperation was established on a regular basis.

Outside this structural joint team was a second ring of experts who worked on a less regular basis with a more advisory role. Via workshops, they were invited to gather knowledge. UPDIS had the freedom to choose their partners, but sometimes they were assigned to international partners via the government-to-government relations established by the NDRC. Via workshops and meetings, it can be determined what these proposed consultancies could contribute to the existing joint team. Until now, these proposed consultancies often had an advisory role. The parties invited by UPDIS were more influential.

**Cooperation:** Having more control was the main reason why the participants are now included via cooperation.

## Political Landscape

The involvement of the national government, by the ministry of the NDRC, resulted in changes in the planning process. The NDRC is formerly the State Development Planning Commission and an influential macroeconomic institute under the State Council. The NDRC had influence on the most obvious change in the planning process: the change of name. To show the world China was committed to reducing carbon emissions, the area was renamed “Low Carbon City” replacing ECO-2-ZONE. The low carbon concept was the flagship product of this ministry. There was a political motivation behind the renaming of the area but also a strategic one. The NDRC doubted the likelihood of the Dutch to create a Low Carbon City. The Dutch were not willing to contribute large investments in Pingdi and the NDRC did not have a clear prospect of what the Dutch had to offer. As the only cooperative partner, this was expected to be sufficient to realize this city. Therefore, they proposed the German, Japanese, and American governments become involved and were “International” additions to the project name. There were more Memorandum of Understanding signed with other countries. Via the NDRC, the government-to-government relationship was established (Jong et al., 2013).

The NDRC established the Reform and Development Commission (RDC) in Shenzhen to work on Pingdi. The RDC is the government agency that is responsible for guiding and instructing all the issues related to the project. The RDC is the organization that is in contact with the external parties.

As discussed earlier, UPDIS was part of the Shenzhen SEZ Construction and Development Group. When UPDIS became part of this holding company, it was the expectation to gain business from the companies, such as the port and the airport, which were part of this holding as well. However, instead it gained business directly from the Shenzhen SEZ Construction and Development Group (UPDIS, 2014b). Pingdi International Low Carbon City was their largest project under construction. The holding company was the financing and investment body of Pingdi, and UPDIS was entirely part of this group. They were completing the concept plan and the master planning (C&D Group, 2014-II).

Additionally, this construction caused tensions between the holding group, UPDIS, and the RDC. A point they discussed was the participants in the cooperation process. They had different approaches. The demand from UPDIS to work together with other urban planning institutes was limited (C&D Group, 2014a). The incentive for UPDIS to cooperate with another urban planning institute was not present, as they were paid by the holding company to complete the whole project. Although, the holding company would have liked more cooperation:

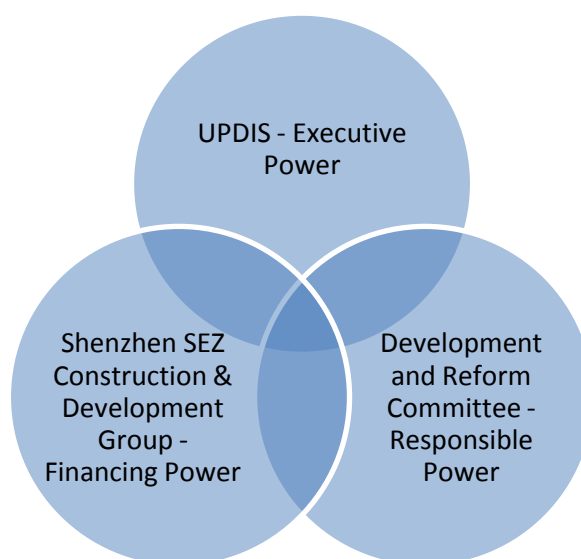
*“The Low Carbon Planning is a new kind of thing. Especially in China. We are still at the stage of manufacturing. The green concept is very, very new for us. Everything related to this concept is still developing. We have to keep searching for these new ideas, knowledge from other countries. This is what we want”*(C&D Group, 2014a).

The holding company was critical regarding the workshops organized by UPDIS resulting from the government-to-government agreement: *“The workshops organized via the governments are sometimes like daily work. It’s been scheduled within the government schedule. It’s kind of purpose driven. It’s not a target driven work”* (C&D Group, 2014a).

From the perspective of the Construction and Development Group as the financial investor in this project, it was logical that they wanted more parties to participate because they wanted the best result and market for the area. An urban planner from UPDIS said this about the proposed cooperation partners: *“It’s pushed on us by the Construction & Development Group. They are very internationally oriented, they want people to hear that we are working very hard on these things”* (UPDIS, 2014b). The more cooperating participants, the more global recognition the project would achieve.

The tension between the three parties originated from conflicting powers. The UPDIS was, as a sub-institute of the holding company SEZ Shenzhen Construction and Development Group, responsible for the executive task. The specialized cooperation partners had to work together with UPDIS but the official contact was often made by the DRC. The UPDIS had some freedom to make their own choices, which were not necessarily in line with the interest of the Construction and Development Group. The mixing of executive power, financing power, and responsible power caused tension between the three parties (see figure 46).

Figure 46: Power relationship actors



For the consultancies, it is unclear how the organization is structured and what the role of each party is. The political and financial mix of interests creates comprehension difficulty. The uncertainty is a reason why some consultancies decide not to continue participating in this project. Another aspect was that the consultancies that did want to be involved in the project required the government to participate with them as well. The Chinese consider the public-private relationship as unstable, they are afraid that a private consultant don’t understand the context and run away. A government-to-government relationship is preferred as this gives them the feeling of less risk.

After the involvement of the national government grew and years went by, the political pressure to provide results was enormous. The approving of the “initial zone” and the construction of the conference center and the surrounding area was an opportunity for the politicians to show what they established: *“That is the tragedy of Chinese politician”* (UPDIS, 2014a). It can be questioned if this 1 km<sup>2</sup> area was too focused on achieving short term success, which reduced the long term objectives.

**Top-down:** Also, it can be seen here that the development started at the city level, but soon the national government was involved via a top-down process.



## Brief and Submissions

### Brief

For the planning process in Pingdi, a single introduction brief was not established for all the participating consultancies simply because every consultancy had a different role. The brief introduction for every consultancy differed. The UPDIS, as the executive institute, decided to conduct business when they were convinced that the consultancies could contribute knowledge to the existing development model. Their demand was for specific knowledge. This was also known at the Dutch consulate where, via the government-to-government relationship, the Chinese asked for a specific expertise, for example, "How should we put the infrastructural pipes in the ground?" (INTI, 2014).

The interest from UPDIS was not focused on gaining knowledge regarding comprehensive planning. The Next Generation Infrastructure, seen as the earliest driving force of the development of Pingdi, thought that they were popular due to the wish of the Chinese to gain knowledge of comprehensive planning. Later in the process, they understood that their popularity was due to personal reasons. Also, other Dutch urban planners with experience in China saw that comprehensive planning was not the planning model that Shenzhen wanted to apply.

UPDIS requested the consultancies to be specific and work on detailed aspects: *"UPDIS focus on urban planning. You know that UPDIS is a very big institute, we have more than 400 persons. We have our own transportation experts, we just need to have more details from a specific team. Therefore, we work together"* (UPDIS, 2014c).

The early stage of the planning process also meant that the demand from UPDIS was targeted. Proposing detailed concepts which did not matter at this stage in the planning process would be listened to and possibly used later. This shows that UPDIS was in charge and that they decided what and when they needed certain knowledge.

The initiative to develop Pingdi came from the Longgang district government, and they wanted technologically advanced and GDP growth but at the same time ecological preservation/development. This was the early starting point: *"The existing knowledge was very limited, but at the same time they say that they want this and that"* (NGIF, 2014).

Figure 47: street scene "extension" zone





### *Submissions*

The ECO-2-ZONE was a visionary plan based on the local situation and enthusiastically adopted by the local government. From that moment, everything went very quickly. The proposed ECO-2-ZONE can be seen as the first planning tool for the area. The name refers to the economic and ecological development model. The plan required a fundamental greening of the economy. In 152 pages, it was proposed to have a cross-border development and a collaborative governance. With respect to the existing conditions and brown field development, Pingdi was defined as a pioneer for this concept, which would enhance the regional, national, and global competitiveness of the Pearl River Delta region: “Pingdi, Xinxu and Qingxi will be a smart and sustainable innovation hub standing out among other eco-city initiatives in China and around the world” (NGIF ET AL, 2011, p. 3). The plan included a spatial plan, based on circles or “spheres”, which created an urbanized ring within an inner green heart. The Hakka-round housing, traditional Chinese architecture, could function to provide location identity. To create this, the public-private investment model of value capturing was suggested.

The organizational model later in the process meant that the role of consultancies were structured and limited. As free to be creative as it was at the beginning of the process, it was not any longer. The organization model limited this freedom. The consultancies involved, in the joint team or in another role, had such specific tasks that they delivered what was asked from them. Because they were involved in the process due to their specific knowledge, there was not much difference between their input and output.

**Selective and focused:** The brief for the consultancies was very selective. This resulted in less freedom to create comprehensive development concepts, which made their work very focused and narrow.

### **Contribution of Consultancies**

The contribution from participating consultancies is not different than what was asked from them. The consultancies focused on what they were specialized in and what the cooperation was established for.

There are additional differences between the ongoing planning ideas and the proposed ECO-2-ZONE concept. Because the master plan was not approved when this thesis was written, a comparison between the proposed concept and the final plan cannot be made. However, the initial area’s development is in progress and walking around that area provided an impression of the implemented elements of the ECO-2-ZONE. Two things have been established: (1) an exhibition and conference hall and (2) reclaiming the polluted river. In progress are (3) re-transforming the Hakka-housing and (4) an old dormitory becoming “green”. In addition to the exhibition and conference hall, the other four ideas can be seen in the concept of ECO-2-ZONE, but at the same time, are not very typical for this concept. In almost every sustainable development plan the reclaiming of a river and brown field development was proposed. The cross-border development with Xinxu and Qinxu was typical, but that has no longer been included, likely due to the political difficulties of cooperating with areas outside the Special Economic Zone. An element which continued from the ECO-2-ZONE is the strategic economic profile of a sustainable green city. With a renaming due to the involvement of the NDRC, this basic concept is still at play.

**Specialisation:** The consultancies contributed to the aspects they specialized in.



# PART THREE: CONCLUSIONS





# [8] – Results.

After describing the three case studies and their different aspects, the case studies will be related to each other. When studying the planning process of the International Low Carbon City in Guangming New Town in 2006, Qianhai Bay in 2010, and the ongoing planning process in Pingdi, one can derive conclusions regarding the development of the concept of Low Carbon City and the contribution of planning consultancies.

## Participation Model

The involvement of the consultancies in the different case studies are characterized by the words (see table 11).

Table 11: Characterization of cases

	Guangming	Qianhai	Pingdi
Characterized	Competition and workshops	Competition and cooperation focus groups	Cooperation

The most obvious development when comparing the three case studies is the change of process beginning with a planning competition in Guangming and evolving to a process which was based on cooperation in Pingdi. Having more control is the main reason why the participants are now included via a cooperation process. This process is more long-term oriented and an intensive collaboration can lead to a better matching of demand and supply than the method of planning competition.

The time when the consultancies were involved changed as well. Where the competition in Guangming occurred in the beginning of planning process, in Qianhai, the consultancies proposed concepts in an ongoing planning process. This late inclusion resulted in difficulties in matching the ongoing process with the new proposed concept. Therefore, the consultancies were included after the competition via focus groups. The participation model of Qianhai contained a competition and cooperation element; this case study shows the transition. In Pingdi, only the external consultancies via cooperation were included. The cooperation model of Qianhai was considered successful and, therefore, applied in Pingdi from the beginning. The participants were, in all three cases, included via the informal “friendship” networks.

The cases show that the organization of the planning process was more focused on cooperative development.



### Political Landscape

The political government levels regarding the initiative to develop under the guidance of the Low Carbon City were characterized for each case study by the words (see table 12).

Table 12: Characterization of cases

	Guangming	Qianhai	Pingdi
Characterized	Top-down	Top-down	Top-down

When the highest levels of the government became more involved in the developments, an increase of the Low Carbon City character was noticeable. The highest levels of government had the policy and knowledge to develop China using the concept of low carbon. The lowest levels of government benefited from this.

The city of Shenzhen successfully applied, in Guangming and Pingdi by the national ministry of National Development and Reform Committee (NDRC) for support in the development of Low Carbon City pilot zones. Both cases are seen as national demonstration projects. Qianhai was also a national project, focused on economic development, but with the desire to include low carbon characteristics from the moment the national government was included.

The local institutes, such as the Guangming New Town Bureau, Qianhai Administrative Bureau, and the DRC in Pingdi, were established to guide the national wish of becoming low carbon.

The trend among these case studies shows that when the involvement of the higher levels of government increased, the Low Carbon City concept was introduced as the prominent development model.

### Brief and Submissions

The brief from the government and the submissions from the consultancies are described and characterized (see table 13).

Table 13: Characterization of cases

Characterized	Guangming	Qianhai	Pingdi
Brief	Open	Innovation	Selective
Submissions	Creative	Innovation	Focus

The trend is evident that the government is becoming more selective in their brief, which means the submissions from the participating consultancies are becoming more focused as well. The consultancies were less creative in the proposed concepts because the planners had a different brief for them. What started as very broad demand in Guangming from the government became focused on planning details in Pingdi. The submissions of the consultancies changed from creative idealistic proposals to detailed planning aspects.

### Contribution of Consultancies

The contribution of consultancies to the development of the Low Carbon City concept in every case study is characterized (see table 14).

Table 14: Characterization of cases

	Guangming	Qianhai	Pingdi
Characterized	Concept	Innovation	Specialization

The role of the consultancies in Guangming New Town can be best described as the “kick-start” for the area. The consultancies could implement every idea and develop the area according to the proposed concepts. However, now in Pingdi, the consultancies are contributing to innovative knowledge of specific concepts, which must contribute to the existing planning process.

In this analysis of the aspects of the planning process regarding the involvement of consultancies in the “participation model”, “political landscape”, and “brief and submission” the same trend is seen: Increased control of the Low Carbon City concept by the government, i.e., increased knowledge and increased narrowness.

The participation model changed from competition to cooperation, resulting in a long term collaboration. The brief and submissions changed from a broad open brief to a specific brief, resulting in focused submissions. Additionally, the contribution of consultancies changed from comprehensive concepts to the contribution of specific planning elements. The political landscape was the only aspect that did not change; the involvement of the national government continued to promote the Low Carbon City. The realization of a Low Carbon City is highly listed on the agenda of the national government.

Figure 48: Reading newspaper in CBD

Source: Sjoerd Segijn





# [9] – Conclusion.

**This chapter will combine the findings of this research with the academic literature to answer the sub-questions. After these two questions are answered, the central research question will be answered.**

This paper studied the planning process of the concept of Low Carbon Cities and their development. There is a focus in this research on large scale development areas in Shenzhen. Therefore, three cases were selected: Guangming New Town, Qianhai Bay, and Pingdi International Low Carbon City.

The trends of increasing regional and international inter-city competition and rapid urbanization influenced Shenzhen (Waibel & Schroder, 2013). In this context, the city wanted to address climate change and become a Low Carbon City. Consultancies were involved in this process so that the city could utilize their expertise and publicity (Wu, 2007).

The first sub question was as follows: *“How did the Low Carbon City concept in Shenzhen develop?”*

Working with development strategies was a new planning method in the Chinese top-down organized planning system. The inter-city competition and cross-border trends meant that spatial development strategies were needed (Waibel & Schroder, 2013; Balducci, 2008). The concept of the Low Carbon City was adopted to deal with environmental degradation caused by rapid urbanization. Since 1978, the absolute policy of Shenzhen was to develop economically. With the adopted spatial development concept of the Low Carbon City, the new approach was to emphasize the social and environmental aspect in the development as well (Lehmann, 2010; Yu, 2014). This was a new aspect in Chinese urban planning. To implement this concept, it was needed to import “knowledge infrastructures” from abroad (Jong et al., 2013). International collaboration was necessary in the development of the Low Carbon City (Chan et al., 2013). There was an important role for consultancies.

This research shows, by analyzing the political landscape, that the Low Carbon City was stressed by the national government. The implementation of the Low Carbon City concept has been much influenced by a top-down policy and mechanism. The influence and knowledge of the National Development and Reform Committee was applied to support the low carbon development at a local level. At this local level, institutes were established on behalf of the higher government levels to introduce their expertise and implement the national policy in the process. In all the three case studies is this trend visible and didn’t this change.

But the concept of the Low Carbon City was and is still developing. The concept was refined over time. Studying the three case studies and the planning process aspects of the participation model, brief and submission, and contribution of consultancies regarding the development of the Low Carbon City concept shows a change in planning process. These changes in the planning process are the result of changes in the understanding of the Low Carbon City concept.

At the beginning of the application of the concept in Guangming, there was a lack of knowledge regarding the content of the Low Carbon City. Earlier concepts became part of the low carbon concept. Throughout the years, the knowledge of the concept increased. This caused the most obvious change in the conceptualization of the Low Carbon City. The concept was refined from a broad spatial “umbrella” concept to a technologically oriented concept. In the planning process of the three case studies, an over-emphasizing of the implementation of technology in the Low Carbon City concept occurred.

The reason for the focus on the applying of ecological technologies is that this directly helped to minimize the use of energy and natural resources, while at the same time, providing job opportunities and an increase of GDP. The “green technology” unites the aspects of ecology and economy. Another aspect of using technology was that the results could be measured in short time periods, and as the Low Carbon City is defined by comparison, short term results are preferable.

As this trend continues and the concept keep on focusing on technology, becoming an eco-city, consisting of an equal integration of social, economic, and environmental aspects in the development (Lehmann, 2010), will not be achieved. Technological development is a sub-aspect of the economic pillar but when is it the only pillar will it not lead to an eco-city (Yu, 2014). Using technology is one aspect, but social and environmental development are important pillars as well. There is the awareness that these are important parts of a Low Carbon City, but it is difficult to include these aspects in planning. Involving the society as supporters of this concept does not appear to be successful. Only introducing the aspect of the technological solution is not sufficient, the concept must be broader to become actually sustainable.

It should be emphasized that the planning of a Low Carbon City should be approached in phases. Within each phase, priorities of development can shift. The emphasizing of innovative technologically oriented planning principles on specific aspects of planning can be a temporary phase, while later, the Low Carbon Society would be highlighted.

When studying the conceptualization of the Low Carbon City, it is seen that the concept was used more prominently in the planning process. This shows that China undertook serious efforts to reduce the carbon emissions to show the world that they are working hard. An area with a low carbon character can be branded easily as it gives everyone a good feeling or no one is against this type of development. As it is applied to prominent large scale development projects, it does creates considerable positive attention. The understanding emerged that the concept could be used as a tool to market and brand the area. The concept changed more into a vehicle to brand the area and to justify investments for the sector of real estate.

The concept is top-down implemented and applied more often to promote developments. However, the most obvious shift is the shift from a broad concept in the beginning toward a narrower, technology-focused use of the concept in its current phase.

The second sub-question is as follows: *“What is the role of planning consultancies in the planning process?”*

This shift in conceptualization of the Low Carbon City also caused changes in the way consultancies were involved in the planning process. This is not because the consultancies changed, but because the government changed the way it attracted and used the consultancies.

The studied planning process in 2007 in Guangming New Town can be described as “Made in China”. The knowledge of the development plan for the area was imported from external experts to the Chinese context. The organization of an open international planning competition resulted in creative spatial planning concepts. The contribution of the Chinese themselves to the Low Carbon City concept was limited. The international concepts were applied in China, but made abroad. At that time, the Low Carbon City was an “umbrella” concept, imposed by the national government, and used to include all kinds of different eco-city concepts. The consultancies were asked to provide basic spatial concepts. The role of consultancies was to guide the development.



This changed in Qianhai. There was previously an existing understanding of the concept and the consultancies were there to extend the Low Carbon City with innovative new technological concepts. In this development, the government was increasingly involved, assumed increased control, and limited the role of consultancies. The international consultancies were asked to create innovation instead of comprehensive low carbon plans. The role of consultancies regarding the development of a Low Carbon City in Qianhai can best be described as “extending”.

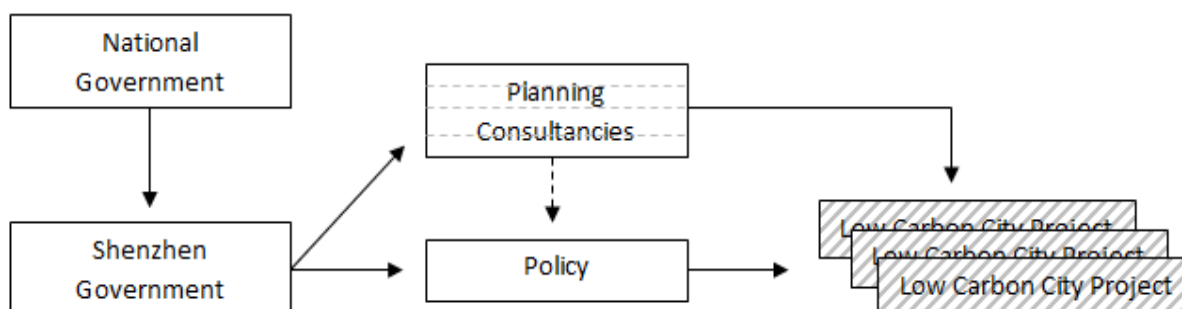
The current planning process of Pingdi International Low Carbon City can be labeled as “Made by China”. The Chinese, local as well as national institutes, were the parties who gave content to the Low Carbon City concept. They were the producers. They only included external parties when lacking knowledge regarding specialized aspects of urban planning. The process is now organized in a way so that the government acquires what it believes it needs. The self-developing government rose; a government that was, for the long term, a stakeholder in the planning process and assumed the control. The consultancies must contribute to the specific demand from the government. They were asked to bring in specialization. Because of the changing role of the government, the role of the consultancies changed to “following”.

The government do have the believe that their knowledge reached a level that they could take more control in the planning process and develop the Low Carbon City. Not the conceptual thinkers, but the creators, were becoming more involved. The Low Carbon City development in China is changing its label from “Made in China” to “Made by China”. As an effect of this change, the role of planning consultancies shifted from guiding to following.

The central research question consisted of two sub-questions: “*How did the Low Carbon City concept in Shenzhen develop, and what is the role of planning consultancies in the planning process?*”

Although both sub-questions have been answered, the central question has not been immediately answered. There is an interesting relationship between the use of the concept and the consultancies. It is clear that the concept developed from broadly oriented to a more focused applied concept. The role of consultancies changed from delivering knowledge to answering specific questions. When the initial conceptual model was redesigned, this resulted in the following model (see figure 49):

Figure 49: Updated conceptual model

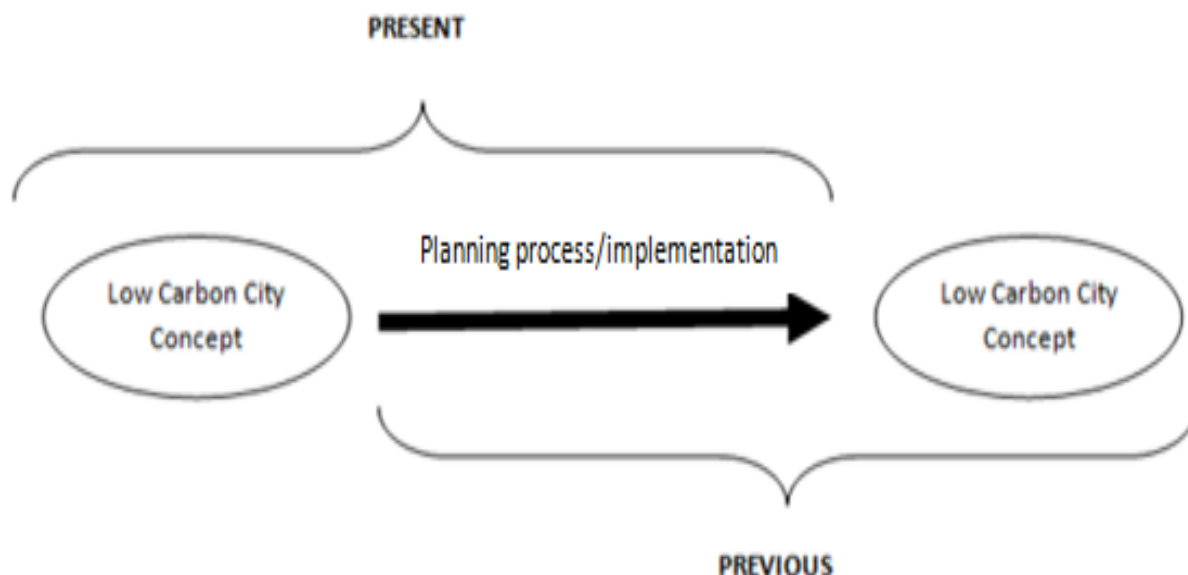


The model includes two graphic changes to describe the current situation. The first change is a dotted line between planning consultancies and policy, reflecting the decreasing influence of planning consultancies on the policy. The government reached a level of knowledge that they do not need help from international experts in determining policy; they develop the content of the concept themselves.

The second change in the model is that the Low Carbon City projects are colored because of the technologically oriented projects. The concept developed towards a technological approach and refine the concept. The planning consultancies are still involved in developing specific aspects, according to this existing idea of the Low Carbon City concept.

Due to a lack of knowledge, the planning process was open and broadly organized so that the submissions contributed to the meaning of the Low Carbon City concept (see figure 50). The consultancies from abroad provided the knowledge regarding the content of the concept. Over time, the level of knowledge by the Chinese of the Low Carbon City increased. They developed their own understanding. This increased knowledge of the concept transformed the planning process. The planning process is now organized appropriately in regard to the developed understanding of the concept. This caused the role of consultancies to change.

Figure 50: Graphical reproduction of relation concept & planning process



The imported knowledge regarding the Low Carbon City is not extended. The knowledge regarding social and environmental aspects in the development of an eco-city has been adopted from abroad but there is no further development. The existing knowledge is focused on the specific aspect of technology. When the focus shifts to technological development and the social and environmental aspects become less important, the concept becomes less broad. What happens is an "increased narrowness".

This thesis argues that the concept of the Low Carbon City developed and changed due to an increase of knowledge obtained from international planning consultancies, but that increased knowledge effected an increase of narrowness of the concept and narrower planning process.

# [10] – Discussion & Recommendations.

**This chapter will attempt to reflect on the findings of this research and place this research in perspective. As a result, this chapter will end with a recommendation based on the author's perspective.**

This research shows that the city government of Shenzhen is changing their position and exercising more control in the development. This is due to the belief that they have reached a level of knowledge that allows them to accomplish the development themselves. Considering the experience, interest, and the investments from the government in the area, it is a logical step to be part of the process as the main producing contributor. The pitfall is that closing the process for consultancies can lead, in the long term, to less innovation and creativity.

This is also related to the observed increasing narrowness as a result of obtained knowledge from previous planning processes. By focusing on one pillar in the development of a concept, the other important pillars can suffer in their development. By specializing in the development of one aspect of the planning concept results can be achieved, but the outcome will be less successful than when focusing on the broad implementation of the concept.

This possible result exemplifies the theory of increasing returns. This theory is also described as a self-reinforcing or positive feedback processes (Pierson, 2000). In an increasing returns process, the probability of further steps along the same path increases with each step down that path (Pierson, 2000, p. 252). The social process of path dependency is grounded in this dynamic (Pierson, 2000; Mahoney, 2000). The results of focusing on technology in the development of the low carbon city shall be positive; comparison will likely show that there is indeed less carbon produced than prior to the implementation of technology, which will lead to increasing focus on this development aspect. However, in the long term, a significantly better result will be achieved when the focus is on every aspect of a low carbon city.

In other words, when a concept develops and the practice narrows and focuses on one aspect, the concept can shift from its initial pillars. This results in the objectives established at the beginning of the process not being realized. This is a danger for Shenzhen regarding the Low Carbon City concept when the focus on technology is continuous or increases; the goal of a complete low carbon city will not be achieved. This pitfall is seen in this study but can also occur in additional concepts. For example, the concept of urban agriculture suggests that urban nature must produce, ignoring that nature has an aesthetic and emotional value as well. In the concept of the creative city, there is the idea that the creative parties are the drivers of the city, but diversity in the city is also an essential element. Too much focus on one pillar of the concept ensures fewer results in the long term.

Another discussion that can be held is if this concept is suitable for Shenzhen and related to the pillar of society in the eco-city. The awareness of the society is needed to create a successful eco-city. However, as the city of Shenzhen almost totally consists of farmer-migrants who are rapidly developing and climbing the economic ladder, it can be questioned if the Low Carbon Lifestyle will ever be achieved. When a society is dreaming of higher living standards, and the economic transformation of their country makes this possible, it is a contradiction for those people to begin living sustainably. A sustainable lifestyle requires fewer resources, but in an economical transition, this is difficult to achieve. The elite, on top of that ladder, are understandably, concerned with environmental degradation and climate change. However, it can be questioned whether the population supports this movement as well. More research regarding the environmental awareness among the Shenzhen citizens is needed to determine the proper actions.

Specialization is important in the development and implementation of new concepts. When there is the wish to implement a new concept, it is recommended to always have the basic pillars of the concept in mind. Without these pillars, success will not be possible or will be significantly reduced. It is also recommended to keep a broad focus when implementing a concept. Ensure that there is an understanding of all the essential pillars of the concept and develop and implement them in a balanced relation to each other and the local context.

For the consultancies, it is suggested to focus on the societal aspect of eco-cities. Since this is a struggle for the Chinese government, this is an ideal chance to become involved on this aspect of the process. The Western European consultancies appear to be further advanced in these concepts, although they are also still at the beginning. A sustainable lifestyle, particularly its implementation, should be developed. The consultancies can reestablish their "guiding" role on this aspect.

# [11] –Reflection.

**In this section, I will reflect on the process of writing this thesis and my own experience.**

When beginning this research project, there was the option to choose between different graduate programs. I decided that the extra value of conducting research in Shenzhen was studying a topic I could not in the Netherlands. I wanted to profile myself. That made it difficult and challenging sometimes but kept me motivated. Conducting master's thesis research in such a different and interesting city as Shenzhen enriched my study and myself. The extra effort and finances it required were worth it.

Since I did not have an idea of the situation in Shenzhen, I talked to several people with experience in Shenzhen. Also, internet sources and books helped me in my orientation phase. All this information combined with my own interest made me choose this topic.

Despite my preparation, once I arrived in Shenzhen, the situation was different than I expected. I planned to study strictly the planning competitions in relation to the Low Carbon City. The reality was that the competition was not part of the planning process in Pingdi, and this was too difficult to research; I decided to broaden the scope to include the involvement of consultancies in the planning process. In retrospect, this was a beneficial choice.

I am glad that my research was qualitative because this gave me the opportunity to talk to many interesting people. I had positive contact with them and learned much from them. I have the feeling that my interviewees were sincere and honest and that my collected data is representative. However, it is in the culture of China to not be direct. If I would have had more time, I would have repeated the interviews and spoken to more people, so it would be increasingly possible to understand the variety of processes and tensions.

After a few weeks and interviews in Shenzhen, I cautiously started to form some conclusions. However, in the Netherlands, I found it difficult to structure all my data, formulate conclusions, and support these on paper. This was time consuming, but in retrospect, it was part of the thesis process. As my topic continued to fascinate me, I was motivated enough to continue working hard.

I am proud of result and happy with this unique experience of studying in Shenzhen!





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