Study on the redevelopment of Urban Villages

Case study of Futian District, Shenzhen

Zhou Shuo

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by

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Abstract

Urban village, just as its name implies, refers to the villages which are located in cites' built-up area. But these villages are not native villages in common sense. They are the special outcomes during urbanization process in most Chinese cities. They are also the expression of uncompleted urbanization under special social institution and social condition in China.

From the local government point of view, urban villages brought lots of negative impacts to urban development. These villages impact the optimization of urban structure, impact improvement of urban imagine, impact the enhancement of land price. Nevertheless, due to the lack of administration, large number of criminal groups lived in urban villages, which lead to the criminal rate is always high. Urban villages have been the breeding ground of social problems and criminal issues.

For a long time, urban village redevelopment is a hot topic concerned by the authority and academia. Alleviating negative impacts is taken as their aim to implement redevelopment programs. However, they ignored a fact that urban villages are functioned as temporary accommodations for huge number of floating (temporary) populations. The serious consequences generated by redeveloping urban villages blindly have been realized by more and more peoples. Under this circumstance, the central government put forward the strategic goal of building a harmonious socialist society. This guideline emphasized balancing benefits of different groups, especially low-income groups and vulnerable groups.

With the establishment of harmonious socialist society, the objective of local government to redevelop urban villages should be adapted accordingly. Alleviating negative impacts would not be their only aim. Their starting point of urban village redevelopment have transformed into improving the living conditions of temporary populations. However, only considering the government's concerns is not enough. Both the original resident's attitude and the developer's motivation are important essentials for redevelopment program. How to propose reasonable and feasible redevelopment strategies considering all the actors' perspective is the research problem of this thesis.

The Game Theory is a useful thinking method, which can help to analyze and stimulate the potential scenarios, especially referring to several actors. Thus, in this research, the actors' perspectives will be applied to Game Theory. Then the potential redevelopment strategies can be formulated under different scenarios. Comparing these potential redevelopment strategies to official strategies, some suggestion provided in final.

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1. Introdution

1.1. Research Background

Urban village is a peculiar outcome during China's urbanization and industrialization process (Guo, 2005). It is an expression and reflection of uncompleted urbanization, shaped under special social institution and social condition (Xie, 2005).

The existence of urban villages is a common phenomenon in most Chinese cities. For example, in the layout of Guangzhou city, there are 138 urban villages on 385 sq.km area, which means 0.36 villages per sq.km. In Shenzhen, there are 1.05 villages per sq.km distributed in built-up area. While in Xi'an city, a metropolis located in western China, there are 187 urban villages on 190 sq.km territory, which means 1 village per sq.km (Wang, 2002).

The earliest urban village emerged in Shenzhen city at the beginning of 1980s (Zhao, 2005). On that time, in order to fulfil the land demands of urban development and construction, local government expropriated plenty of lands distributed at the surroundings of built-up area. However, the authority did not have enough capital and capability to expropriate all the lands of the previous rural villages in one go. They only expropriated the farmlands. Thus, most of residential lands of native villages are been survived and transformed into present urban villages during the urbanism process.

After 1990, urbanization process continually accelerated. With the further urban development and the relaxation of Chinese population registration system, a lot of temporary residents[1] swarmed into metropolis (Chan, 2003). On that time, the urban village farmers, who not only lost their farmlands but also did not find other employment after losing their base of livelihood, grasped this opportunity. They constructed considerable numbers of buildings on the basis of their original dwellings without any allowance and permission. Through renting these houses, the farmers obtained high incomes which drive more informal and illegal constructions been planted on the ground.

At present, the "handshake buildings", "kissing buildings" stand everywhere in urban villages (Lan, 2005). The interval of two buildings is always not enough for one fire truck crossing, which brought mass of potential safety hazards from government point of view. Meanwhile, due to the congregation of lots of floating population and the special living estate of peasants in urban village, these areas have been breeding ground of social problems and criminal issues. Criminal ration in these villages are always high. Moreover, after experiencing rapid urbanization, most of the Chinese cities are

[1] Temporary resident: For a long time, China central government practiced "hukou" system for a long time. For the farmers who lived by agriculture are belonged to "rural hukou", the others who lived in cities and engaged in the other occupations are belonged to "urban hukou". In here, temporary residents included rural population and urban population whose "hukou" are not in this city.

facing with the shortage of construction land and urban spatial contracture adjustment. On behalf of ensure cities' further development and improvement, local government decided to adjust the spatial structure and achieve reasonable land conversion. Urban village are seemed as the target needed to be adjusted. Nevertheless, redeveloped urban villages can help to improve urban imagination from the government perspective.

1.1.1. Definition of Urban Village

Urban village, just as its name implies, it is the village located within built-up area, but still accompanying with some native villages' features. Actually, its definition is not simply like this. Many Chinese scholars (Jingdong, 1999; Li, 2001; Dai, 2002; Wang, 2002, Tan, 2002; He, 2002; Zhang, 2003) tried to reveal its deep meaning. So, there are more than 10 definitions of urban village focused on different aspect, such as land use, sociology and etc. Integrating these definitions, urban village can be generally defined like this: it is the village transformed from the native village by rapid urbanization and industrialization in some economic advanced regions or cities. Farmlands of these villages have been expropriated into urban construction land. The original residential land and the land delineated by government for future development composed of main land of these villages. And the communities which built on these lands are named as urban village.

1.1.2. Chinese relevant reforms

1.1.2.1. Urban-rural dual-social system

Prior to the1950s, China differs greatly from most other developing countries in mobility control. Its registered residence system rigorously differentiates urban and rural population and once served as the basis for the provision of foodstuff, employment, housing, health care, and other social welfare to urban residents (Ma, 1982). Under the planned economic system, the pace of economic development was rather slow. On one hand, because of the capitals was limited, on the other hand, in order to ensure the welfare of urban resident, government restrict some people stayed in rural area and were engaged in the agriculture production, which induce the establishment of urban-rural dual-social system and "Hukou" system[2].

Although some native villages were became central urban areas, they are still difficulty to melt into urban completely by the existing of rural-urban dual-social system. This system has been a historical obstacle for urban village transformation.

1.1.2.2. Land administration law

According to China's land administration law, urban regions and rural regions are subject to different land system. This law categorized territory mainly in terms of lands' property. Urban land is state-owned. However, in rural area, land is collective-owned by the village. Each household has its own private residential land which being part of village the collective-owned land. The state-owned land can be traded on land market formally. But the collective-owned lands and private residential land are not permitted to deal in land market. For the private residential land, the owners only are granted the

[2] "Hukou" system: Since the founding of the People's Republic of China, central government took "Hukou" system as an approach to restrict population floating freely. "Hukou" categorized population into two kinds in terms of their occupations and inhabitant. "Hukou" is a certification to distinguish urban people and rural people.

right to utilize the land for construct houses for themselves. So, all trades or commercial behaviours for these kinds of houses or lands are officially forbidden and illegal.

When local governments expropriated the farmland of native villages, these parts of farmlands are transformed into stated-owned land. However, the original villages' residential lands and future development lands which delineated by local government were kept as collective-owned land. So, majority of urban village lands are collective-owned land.

1.1.3. Policies for urban village redevelopment

1.1.3.1. Redevelopment compensation policy

During urban village redevelopment process, the interest of original farmers more or less would be damaged. Because of Chinese "hukou" system, many original farmers living in urban village do not have the permanent residential permission, which always let them be seemed as second-class citizens. So government would grant them "urban hukou" as a kind of compensation. Meanwhile, the annuities, employment opportunity and relevant social welfare would be another way to compensate the farmer's loses. On the other hand, in terms of regulation, the developers have obligation and responsibility to give the losers physical compensation, they should provide new dwelling flats or compensation fees to farmers.

1.1.3.2. Land price preferential policy

For the villages with high building density and plot ratio, the redevelopment project always need much more capital, so local government usually take market-driven approaches as the main measure. In order to assure the success of renewal project, local government instituted some preferential policies to encourage and attract developers to join redevelopment programs. Such as reducing the land price and expanding rebuild plot ratio. Different local government takes their own policies in terms of city background and current situation. Urban village problem in Zhuhai city is very serious. However, the local government take flexible redevelopment strategies and policies. For example, the land price and the planning plot ratio is not fixed, it can floated in terms of geographic locations and the quantity of redeveloped buildings (Xiang, 2005). The Shijiazhuang city government also constitute different development strategies and policies according to geographic location. For the urban villages within the city second-ring road, the land is free to developer redevelopment. Although these specific policies are not identical, but it is not difficulty to understand, from these phenomenon, that the local government support and encourage redevelopment projects.

1.2. Research Problem

The subject, urban village redevelopment, has received increasing attentions from official and academics since 1990s (Yang, 2005). Recently, most Chinese cities urbanized further, urban village and its following issues are more remarkable and deteriorated than before. Urban villages impact urban development on physical aspect in one hand, such as, impact improvement of city imagination, impact enhancement of urban land use efficiency, impact optimization of urban structure and etc. On the other hand, urban village generate series of potential social problems, such as, safety issues by lots of criminal gangs, dual-polarization issues between the landlords and renters and so on. These issues are hidden troubles for social security and stability.

For these negative impacts and potential issues, urban village redevelopment has been a hot topic. Large number of researchers devoted to study on the redevelopment subject. Some of them concentrated on urban re-image through urban village redevelopment and focused on the redevelopment policies researches (Cheng, 2003; Lu & Zhou, 2006). They tried to alleviate negative impacts from urban villages on urban construction through redevelopment programs. However, some of them ignored the existing temporary populations during redevelopment process.

Majority of temporary populations are low-income which are vulnerable groups in our society. With the progress of social civilization, public and government paid more and more attention to vulnerable groups. In China, harmonious society building and newly urban planning guidelines implementation recently are evident for this point of view. Wei and Yan (2005) pointed out for several times that the start point of urban village redevelopment should not re-image urban image or upgrade urban land efficiency. It should be consider from improving the living condition of low-income groups in urban villages. Nevertheless, original farmers' attitude and developer's motivation also influenced the redevelopment project. Based on these, redevelopment program should take more consideration on the interests of joint players to avoid potential unstable and unsafe society issues.

However, relevant factors to indicate the government perspective, which transformed from alleviate negative impact only to improve living condition, is still absent. And profound framework which can be used to analyze and assess the perspective of each actor is still vacant. So, this research starts with the living conditions evaluation, research on how to develop a rational and scientific framework to analyze each stakeholders perspective towards assisting redevelopment strategies constitution, and to provide specific evidences to decision makers.

1.3. Research Objectives

Main objective: to develop a framework to analyze and assess redevelopment strategies towards assisting local decision makers to constitute balanced urban village redevelopment.

Sub objectives:

- To analyze the current situation of urban villages in the study area
- To explore the perspectives of three main players in redevelopment programs
- To assess urban village redevelopment strategies of Futian district

1.4. Research Questions

To analyze the current situation of urban villages in the study area

- What is the historical development and current situation of urban villages in Shenzhen?
  - What are the distribution characteristics of urban villages?
  - What are the different physical characteristics of urban village inner SEZ and outer SEZ?
- What is the current situation of physical aspect and social aspect in the study area?

To explore the perspectives of three main actors in redevelopment programs

- Based on the literature review, what principles should be respected when conduct urban village redevelopment programs?
- How are the relationships of the three actors?

- Based on the relationships, what factors can be used to indicate each actor's perspectives respectively?
  - What criteria can be used to evaluate the impact factors?
  - What indicators can be used to meet these criteria?

To assess urban village redevelopment strategies of Futian district

- Based on the Game Theory, how is the actors' perspective impact urban village redevelopment?
- Based on the actors' perspective analyses, how are the potential redevelopment strategies?
- Comparing the analysis results and official redevelopment strategies, what strategic suggestions can be provide to decision makers?

1.5. Concept Framework

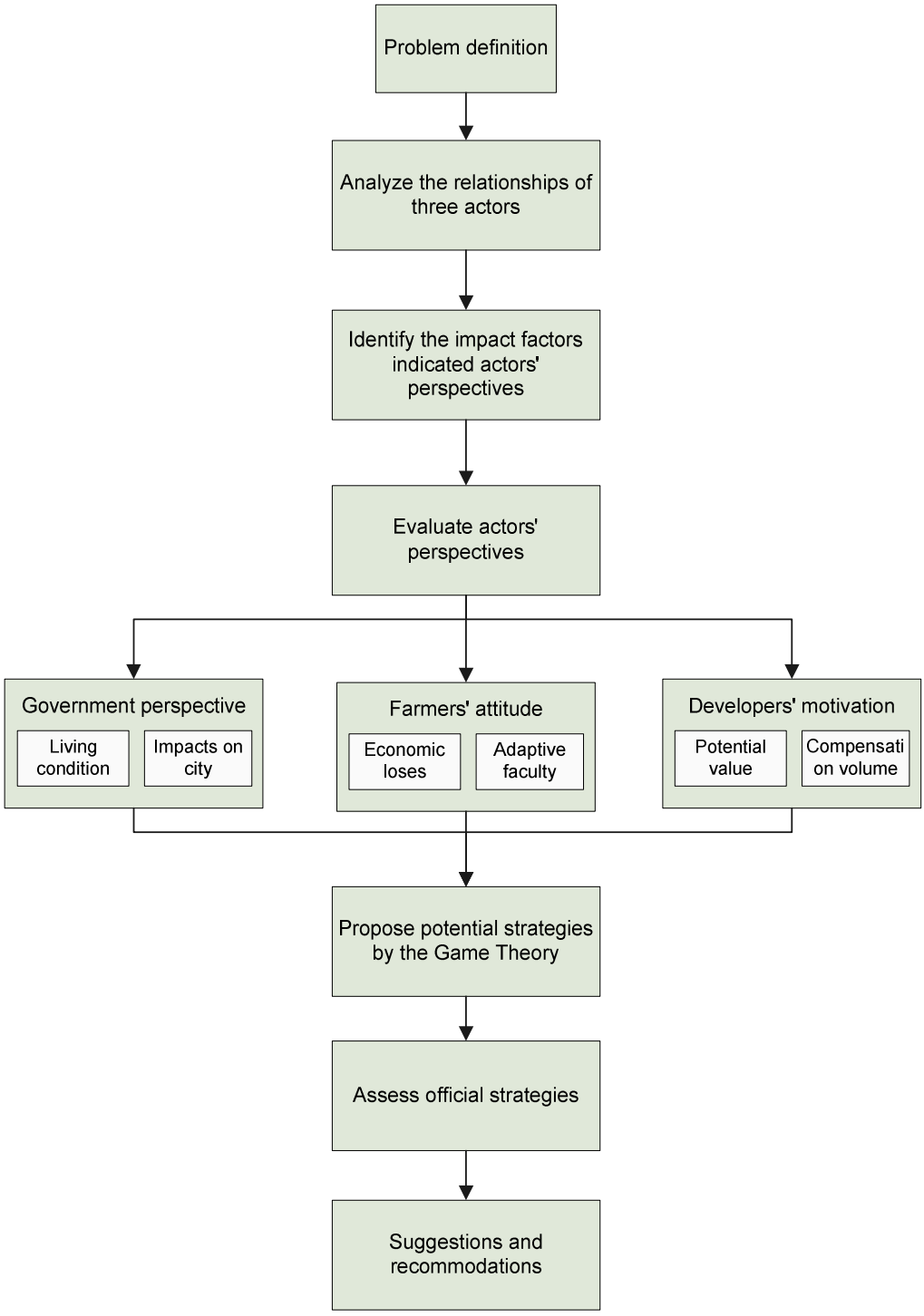


Figure 1.1 Research conceptual framework

Urban village redevelopment is a rather complicated program which not only referring to physical redevelopment but also associating with socioeconomic transformations. How to make a balanced urban village redevelopment is a problem which observed to deal with urgently.
Urban village redevelopment referred three main actors' interest, considering the three actors' perspective is an assurance for the implementation of redevelopment projects smoothly (Luo, 2005). In this research, the factors which impact the actors' perspectives will be analyzed at first by literature reviewing. Then, using GIS and MCE method to evaluate these impact factors, the government perspective, farmers' attribute and developers' motivation for each urban village can be realized. Meanwhile, combining with current situation, the realistic redevelopment strategies can be proposed by Game Theory thinking method.

Finally, the official redevelopment strategies will be compared with the findings from actors' perspective analyses, and assessed by the potential redevelopment strategies. Some suggestion will be given in the end. These analyses of actors' perspective and formulate redevelopment strategies by the Game Theory can be used as a framework to assist decision makers constitute redevelopment strategies in the future.

1.6. Research Design

- **STEP1. Review relevant literatures about urban village redevelopment**
  Reviewing the fundamental concept and background of urban village redevelopment is the first step, which as a preparation for study further. Through learning the previous related experiences, the principles should be respected under new urban development context will be identified as well. Moreover, the relationship of three main actors, the factors which impact actors' perspective researched on pervious researches will be reviewed also.

- **STEP2. Analyze current situation of urban village in study area**
  There is a crucial characteristic of urban village redevelopment which referring huge number of populations resettlement. So, it is unreality to only focus on physical redevelopment; the socioeconomic transformation is also important which should be concentrated on also. On this step, the current situation will be analyzed by socioeconomic aspect and physical aspect respectively. Current situation analysis involved population, economy, and physical aspects. Through analyzing current situation, the geographic location, the population structure, the income resources and level, and internal environment of urban villages of study area can be realized.

- **STEP3. Explore the perspective of each actor for redevelopment program**
  Based on the relationship analysis, the factors which influence the main actors' perspective can be summarized. Then, through learning pervious researches and literatures the criteria and indicators can be identified. According to the evaluation of these factors, government perspective, farmers' attribute and developers' motivation can be analyzed. All of these are significant elements which would impact the success of redevelopment project.

- **STEP4. Assess the redevelopment strategies of urban village redevelopment**
  In order to pushing the program of urban village redevelopment, Shenzhen local government constitute a series of redevelopment strategies. In this research, by using the Game Theory, the

findings of actors' perspective analyses can help to propose reasonable and realistic redevelopment strategies. Meanwhile, by using this proposed redevelopment strategies, the official strategies can be assessed.

- **STEP5. Provide strategic suggestions to decision makers**
  Some suggestions can be provided through the comparison between potential redevelopment strategies and official redevelopment strategies. Moreover, this framework to develop potential strategies can be used to assist decision makers to constitute future strategies.

1.7. Research Flowchart

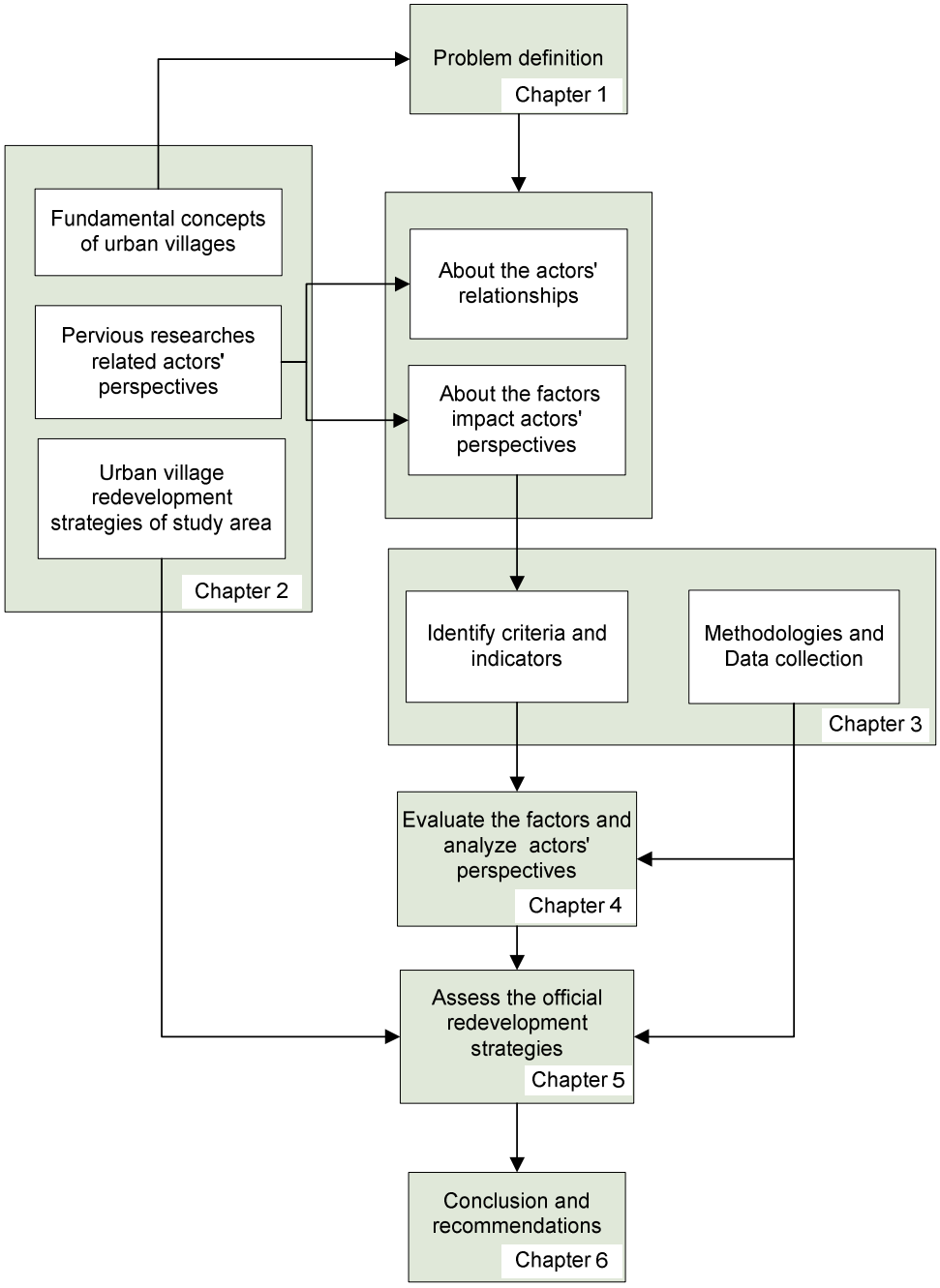


Figure 1.2 Planned research flowchart

1.8. Chapter Headlines

- **Chapter One: Introduction**
  In the first chapter, the research significant will be introduced. The research background, research problem, objectives, question will be identified. In addition, the research clue will be explained by flowchart. This chapter is an overview of entire research process.

- **Chapter Two: Related researches of urban village redevelopment**
  The fundamental concepts of urban village, such definition, development process, characteristics and typology will be given at the first part of in this chapter. Then the international urban redevelopment experience and stories will be indicated. Further, the actors in urban village redevelopment and framework of pervious researches will be described

- **Chapter Three: Research methodologies and data collection**
  The method which would be taken in this thesis will be described. Furthermore, the factors impact each actor's perspective and the criteria to evaluate these factors will be identified in this chapter. Then the study area and the selection reasons will be simply introduced. The fieldwork and data collection will be also explained followed. And the limitations would be indicated finally as well.

- **Chapter Four: Actors perspective analyses for urban village redevelopment in study area**
  Current situation analyses will be conducted in this chapter by the collected primary data and information. The general situation of urban villages in study area can be realized. Then the factors impacted the actors perspective will be evaluated by criteria and indications. In final, actors perspective can be analyze by the findings of factor evaluations.

- **Chapter Five: Assess the redevelopment strategies of urban villages**
  According to the Game Theory and current situation, the reasonable and realistic strategies will proposed in this chapter. Then compare the results and official strategies, assess the rationality of official strategies. And some suggestion will be provided.

- **Chapter Six: Conclusions and recommendations**
  In the last chapter, the pervious chapters will be concluded. And some recommendations are given to future researches.

2. Related researches of urban village redevelopment

2.1. Introdution

The phenomena of urban village has been appeared in China more than 20 years ago, but relevant studies merely started at 1998 (Zhao, 2005). In spite of research period is less than 10 years, a large number of academicians are working on this topic. Their researches, referred to concept of urban village, development process, causes etc., these are the footstones for further researches which is discussed in this chapter. Also experiences of European urban redevelopment and squatter resettlement are reviewed in order and compared with urban village redevelopment in China. In addition, the principles of urban village redevelopment will be identified. Finally, some associated content about redevelopment strategies is reviewed.

2.2. Development process of urban village

2.2.1. Definition of urban village

Urban village, just as its name implies, refers to the villages which are located in cites' built-up area. But these villages are not native villages in common sense. How to reasonably define the urban village became a research focus for many scholars.

Although the studies on urban village have started no longer than 10 years in China, these have led to almost dozens of different definitions. Almost each scholar engaging on urban village makes a new definition for urban village with reference to his own study field. Examples of such definitions are created by Yang An (1996) based on the exterior configuration of urban village, Jing Dong (1999) and Li Dao (2001) defined urban village based on the land relationship and origins. In 2002, Wang gave urban village another definition based on the formulation process of urban village in different regions. Other definition consider social relationships, or the registration system (Dai, 2002), from the land property and land tenure point of view (Tan, 2002 & He, 2002), from the location and community characteristics point of view (Zhang 2003). These definitions are coming from the theory of sociology, geography, urban planning and economics, so each definition has its own emphasis.

Among these dozens of definitions, the most interrelated definition to urban planning and land administration is the one by Jing Dong (1999). He stated that since the open door policy in some economic advanced regions or cities and due to the rapid urban growth, the land for urban construction is expanding drastically. Thus, the villages with lot of farmlands around the city were integrated into urban area. So, the property of majority lands has changed from the collective ownership to stated ownership. While land which stayed with the villages was unchanged as collective ownership, these areas are called urban village.

Another related definition is created by Han Dang (2002) standing at the point of architecture, mentioning that the urban village is a kind of special inhabitation area, with the basic characteristic of "one house for one family". These villages come of former original villages with sharp-cut contrast to the surrounding urban environments.

In this research, the definition by the urban village renewal office of Futian district, Shenzhen (2002) is adopted. Which pointed out that an urban village is the area, with out-of-order buildings, formed on the basis of original villages during the urbanization process, caused by the absence of a uniform plan. So, this thesis will mainly concentrate on the urban villages transformed from original villages, which usually are called old urban villages.

2.2.2. Comparisons of relevant concepts

2.2.2.1. Native village and urban village

As urban villages have been developing from native villages, they more or less inherited some features of native villages, especially under the lack of transformation policies. However with its development and function in the urbanization process, there has been a big gap between the concept of urban village and native village. The following table (see table 2.1) gives a comparison between urban and native villages in several aspects.

Table 2.1 Comparison of urban village and native village

	Main function	Land property	Income from	Population	Administration	Location
Urban village	Inhabitation	Collective-owned/ state-owned	Renting	Floating population and original farmers	urban districts	Downtown area/ urban-rural fringe
Native village	Agriculture	Collective-owned	Farming	Farmers	rural county	Suburb of city

(Source: Based on Xie, 2006)

2.2.2.2. Urban village and informal (squatter) settlement

In most developing countries, the formation of informal settlement is a main issue in the urban development process. Such settlements can play an important role in providing housing. Because most of these countries do not have residents' registration system like in China, so wherever the people move, they would become residents. Generally, due to the fact that they do not have enough money to buy lands and houses, they just simply constructed dwellings for temporary residence in areas which are 'available' (e.g. on public land), such areas are developing to informal settlement. Thus, these informal settlements are different with Chinese urban villages to some extent. The main differences are shown in the table below (see table 2.2)

Table 2.2 Comparison of urban village and informal settlement

	Land tenure	Landlord	Economy	Buildings	Location
Urban village	Some are legal/ some are illegal	Original farmer	Be rich by Renting houses	High density/ high plot ratio/good quality (new villages)	Downtown area/ urban-rural fringe
Informal settlement	Informal occupied	Adventive population	Mostly poor	Mostly Low quality	Central of city

(Source: Based on Xie, 2006)

2.2.2.3. Chinese urban village and American urban village

Urban village is a special outcome of urban development in China. So, there are no specific studies on urban villages in other countries. However, these concept was mentioned by the famous American economist, Athur 0' Sullivan. He gives American urban village a definition in his book《Urban Economics》(2003, P68). Urban village is the hypo-centre located in the suburb of modern cities. He also pointed out that those kinds of urban villages are an outcome of suburbanization and the decentralization of shopping malls and office buildings. The metropolis, which is composed of suburb hypo-centre, has been called urban village system. In many big cities, hypo-centres in suburbs include high office buildings, hotels, shopping centres and entertainment establishments. So, the people living around these occupation centres can choose to working, shopping and entertaining in hypo-centres. In other words, hypo-centre is the centre of urban village.

From the descriptions of urban village above, it is not difficulty to say that the definitions of these two kinds of urban villages are different. Although these two urban villages are both the outcomes of urban expanding and came from native villages, but because of different regimes, social background, and urbanization process, they are two completely different concepts. What the basic causes of Chinese urban village forming will be described on the following section.

2.2.3. Origins of urban village formulation

2.2.3.1. China's unique dual-society system

Since the implementation of urban and rural dual-society system in China, there are prodigious differences in administration, land, public establishment and household register system between urban and rural area. The basic organization of the city is the "street level and residents' committee"; the basic organization of rural areas is the "county level and villagers' committee". The land of urban areas is state-owned land, and state-owned land can come into the land market for further trade. But property of rural land is collective ownership, and collectively owned lands do not have the access to come into the land market. For the construction and management of infrastructure in urban areas the local government is responsible, but in the village, the infrastructure construction is generally invested by village organization itself.

Because of this dual-society system, when city expanded and enclosed villages during the urbanization, the city did not absorb actively but excludes the villages. During the process of urban rapid development and improvement, due to limitation of finance and capacity, the government adopted evasive attitudes towards the urban villages. They only confiscated the land surrounding villages and approved that parts of farmers could be transformed into urban citizens (only certain proportion). Meanwhile, most original farmers can not be satisfied for this kind of compensation. Although these native villages have been surrounded by city, most of farmers can not amalgamate into the city. These facts caused the formation of urban villages. With further urban development, urban villages become more and more especially when the local government did not take any measure.

2.2.3.2. Rapid urbanization and high density villages

Since the open door policy, almost all Chinese cities, especially the coastal metropolises, have experienced or are experiencing repaid urban expending. The urbanization pace of these cities is rather rapid. This is the reason why the urban village issue have been a prominent problem for most of Chinese big cities. In 1978, Chinese total urban population was 172 million. However, in 2002, the number rose to more than 502 million, which shows an increase of more than 300 million people during two decades. While the amount of built-up area increased by 1.5 times from 1986 to 2002. From the following table (see table 2.3), the three indexes show how dramatically Chinese urbanization developed.

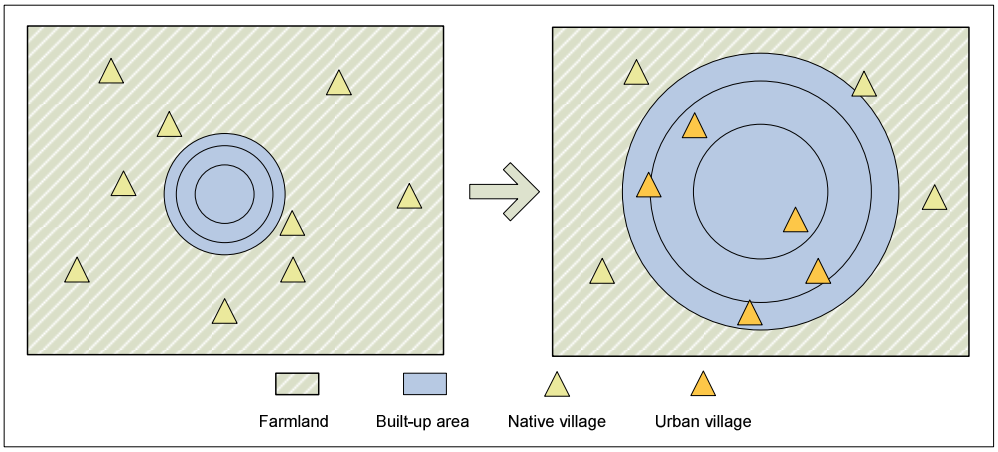
Table 2.3 Rapid urbanization in China

	Built-up area(sq.km)	Expropriated land area (sq.km)	City population density (person per sq.km)
1986	10161	619	284
2002	25973	2880	754

(Source: China Statistics, 2003)

On the other hand, China is a country with a huge number of populations and high pressure on land, the density of population and villages are very high. In economic advanced regions, density figures (of population and villages) are extremely high. In the layout of Guangzhou city, there are 138 villages on 385 sq.km area, which means 0.36 villages per sq.km. While in Xi'an city, there are 187 urban villages on 190 sq.km territory, which means 1 village per sq.km. Figure 2.1, visualise the process of this phenomenon.

Figure 2.1 Spatial transformation from native village to urban village



(Source: Guo, P8, 2005)

2.2.3.3. Urbanization lagged behind industrialization

The development of urbanization and industrialization is inter-related and inter-promoted. For a long period of time, industrialization impels the urbanization in China. On the beginning of 1950s, the industry was developed vigorously under planned economy system. The policy then was to restrict the natural movement of population. In order to maintain the development of agriculture and alleviate the requirement to the urban basic amenities, the insulation policy also prevents the farmers into the city.

With the development of urbanization, city needs a large number of populations engaged in industry, the gathering and development of production in cities consequentially result in the increasing of job positions and more labour. While the advancement of productivity causes agriculture to provide enough agriculture products for the national economy development. Meanwhile, a large number of excessive rural labours swarmed into cities; these people keep a low living level, and they formed a great driving force for the Chinese urbanization.

Much floating population gathered in the city, which formed a great requirement to the cheap shelters. However, the lands and houses of city value higher and higher, renting house become a profitable affair. The people living in urban village constructed large number of houses for renting by using their own lots, which becomes the direct reason for the over-fast development of urban villages.

2.3. Typology of urban village

2.3.1. General classification of urban village

After discussing the urban village concepts, Chinese academicians (Guo, 2005; Tu and Xie, 2006; Wu and Zhou, 2005) also looked into types of urban village to assist the development of specific redevelopment measures. In general, urban village should be classified into three types, they are potential urban village, developing urban village and mature urban village.

- Potential urban village: These villages are always located in planned urban construction area not be include into urban built-up area, so the landscape conflicts from these urban villages to urban area are not obvious. There are certain numbers of farmland and peasants lived by agriculture. Quite a number of dwelling houses in these villages are spare, so rent here is relative lower.

- Developing urban village: these villages are located in the urban fringe area and are connected with the built-up area. With the expansion of urban built-up areas, the construction land of these kind urban villages expands at the same time. So the conflicts between urban village and city images are intensified consistently. Large number of floating population dwelled and lived in these villages.

- Mature urban village: these villages are located in the built-up area; they generally are surrounded completely by urban construction. Although the area of these villages is small, they occupied the precious city territory. The spatial conflict between these villages and surrounding area appears more remarkable. Generally, these villages do not have spare space for further expansion; the buildings here only can be grown in height. Huge number of floating population concentrated in these villages. Rather high population density and building density makes these villages approximated to saturation on the physical aspect.

2.3.2. Classification in terms of land use

The above types of urban village are classified by geographic location and distance to central urban area. Excepting for this method, some academicians also categorized urban villages in terms of the ratio of land use, which is also the most apparent characteristics of urban villages. One category is be formed by the ratio of farmland, the other is be classified by the ratio of construction land.

Table 2.4 Classification in term of the ratio of farmland

Classification	Land conversion
A (area of farmland less than 66.7 sq.m per person)	Convert collective land to state-owned land; Based on urban planning, redeveloped these lands and resettle original farmers in these new residential district
B (area of farmland between 66.7 sq.m to 333 sq.m per person)	Redeveloped some lands and conserved some residential houses; Maintain parts of collective land for villages' industrial development
C (area of farmland larger than 333 sq.m per person)	Maintain these collective land as urban future development lands

(Source: Tu & Xie, 2006)

Table 2.5 Classification in term of the ratio of construction land

Classification	Basic features	Redevelopment necessity	Primary redevelopment strategies	Attitudes of indigenous peoples
Typical urban village (construction land area larger than 70 % total area)	[1] Almost be abounded by build-up area, without any agriculture production; [2] Renting is the main livelihood, occupied more than 80 percentage of total incomes; [3] Temporary population is 4 to 10 times than original residents.	[1] Should be redeveloped urgently; [2] Already are the obstacles and illnesses of urban development which impact the cities' societal, economic and environmental improvement; [3] Expenditure for redevelopment is rather high. Both Local government and rural enterprise are hardly to afford the loss.	[1] Supply preferential policies, such as reduce land price; [2] Through redevelopment, enhancing the value of house property to gain redevelopment capitals.	Passive/(in voluntary)
Transformed urban village (construction land occupied 40%- 70 % total area)	[1] Renting is increasing, occupied 40-80 percentage of total incomes; [2] Temporary population is 2 to 4 times than original residents.	[1] Should be redeveloped, the earlier the better; [2] Redevelopment expenditure is not so high.	Adapt land use planning on behalf to fit the requirement of modern urban community.	Active/(vol untary)
Urban-fringe urban village (construction land area less than 30 % total area)	[1] Maintain some agriculture activities; [2] The income from renting is less than 50 percentage; [3] The number of temporary population less than original residents.	[1] Should be controlled and managed by strictly planning; [2] prevent to be transformed to the other two kinds	Establish urban community plan, according to this plan to further construct these villages.	Waiting

(Source: Wu& Zhou, 2005)

In spite of these villages be classified into different types and been associated with different names by the different researchers, but actually, the essentials of the classification is almost identical. Most of researchers realized the typology by the same features of urban villages, such as the physical features, the population feature, the economic feature and the land use feature, etc., and using these features classified the villages further. All of them supposed that the mature urban village make massive conflicts and troubles for urban development and urban imagines. Nevertheless, these kind of typical urban villages also functioned to accommodate a large number of temporary population, and they are the roots of urban social problems (e.g. high crime rate).

2.4. Characteristics of urban village

2.4.1. Physical characteristics

- Flat structure: In order to cater the demands of the floating population, the type of flats in those buildings (in urban village) are a particular characteristic. One room flat or two rooms flat are very common in most urban villages. However, in order to save limited land and space, designation of theses flat usually can not consider about the orientation and ventilation. In the villages of poor housing conditions, some rooms can not enjoy any sunshine during the whole year. Nevertheless, several households have to share one lavatory or washroom (Qi & He, 2006).

- Building environment: Commonly, the distance between two opposite windows is only one or two meter. In most cases the distance between two buildings is not enough for one fire engine crossing which generated considerable potential hazards. Nevertheless, majority of the land is utilized to build houses, required green lands, public amenities and infrastructure equipments are lacking. So, the building environment is not only terrible but also causes danger e.g. to the health conditions of the dwellers in these urban villages (Xie, p206, 2005).

2.4.2. Socioeconomic characteristics

- Demographic: Residents in urban villages are comprised of two groups of population. One is indigenous people; the other group is temporary population. In typical and mature urban village, the percentage of temporary population to the original population is rather high. Generally, the number of temporary population is 5-8 times more than original population. Approximately 80% of the original population do not have formal occupations. However, the rent incomes are enough for them to have sufficient income. And most of the temporary population are employed in the tertiary industry. But, majority of them of low-income or medium-income. Their occupations include Technician, Taxi driver, Sales staff, Decorator, Construction worker, Carrier, Waiter and so on.

- Economy: The significant characteristic of internal economy in urban village is the existence of massive informal economy, which also is called as black economy or invisible economy (Xie, P182, 2005). Most of tenements do not possess the property right, so they are unqualified to apply the license for formal business. So majority of shops, barber shops and pubs are illegal. Usually they do not pay any tax to the local government. In other words, these urban villages do not create direct economic value to the society. The indigenous daily income comes from renting and the bonus of village enterprise.

- Culture: Li (2004) once described the life style of original farmers in urban village like this, he wrote that some of the landlords earn enough money from renting to maintain their good quality life without doing any work, just feeding their birds, playing cards, chatting, and enjoying the sceneries everyday. They are the typical exploiting classes. Because of this special lifestyle, urban villages just are like a lonely island for them. They do not have many opportunities to connect with the outside world. Although they are living in the downtown, but their social relationship still be limited to within a small circle. They do not have an evident transformation from native villages.

  From the lessees in urban village, almost 60 percentages of them stay at the bottom of society. They have to work hard everyday to maintain the basic life requirements. Nevertheless, they always have to suffer discrimination from the original residents. Intense injustice and the deep gap of richer and poorer created an unstable and insecurity social environment in urban village (Hui, 2006). Due to the fact that urban village stay in a vacuum state which is apart from formal administration, residing in urban village is the first choice for most illegal organizations and criminal gangs. Shenzhen commercial news (2006) reported that 70% to 80% crimes occurred in urban villages. Concentration of massive illegal gangs and the dual-polarization between the original residents and the temporary populations, lead urban villages to be the seedbeds of social problems and crimes.

2.5. Urban village redevelopment

2.5.1. International experiences of urban redevelopment

2.5.1.1. Urban redevelopment in western countries

Urban village redevelopment is a special kind of urban renewal which can learn from the experiences of urban renewal (Huang, 2005). After the Second World War, many European countries conducted large-scale urban renewal activities. Although some of them even lost the right way (which is mentioned in following content) during the renewal process, most of these countries accumulated lots of precious experiences, and been the precursors in urban renewal filed as well. Furthermore, their experiences can be used as references for urban village redevelopment.

Carmon (1999) summarized European urban renewal history into three main periods. He named the first generation as the era of bulldozer which advocated physical determinism and emphasized environment rebuild. On that time, the governments wished to make better use of central urban land and drive poor out of sight, examples are famous slum clearance campaigns. These slum areas were frequently replaced by shopping centres, office buildings, and cultural, entertainment centres and high quality blocks in that time. Although among these renewal projects, there existed some successful cases, such as Lincoln Centre in New York. But most of those cases where new residential neighbourhoods were built, the planners and designers were blamed for building inhuman multi-storey blocks, mainly apartments for families that could afford them, and certainly not suitable for poor families.

The second era is neighbourhood rehabilitation. Carmon (1999) called it as a comprehensive approach

emphasizing on social problems. Due to the wide criticisms of last bulldozer period, allocation for welfare purposes as the main aim of urban renewal is done in this era. The government and planners plan and implement comprehensive rehabilitation programs, aimed at improving existing housing and environments instead of demolishing them. At the same time the government treat the social problems and poor families by adding social services and enhancing their living quality. Another evident feature of this period is the emphasis put on public participation resulting in that public opinion is always been taken into consideration before plan implementation.

The last period is city centre revitalization. This era is emerged under European economic depression during 1970s to 1980s. The aim of urban renewal in this period is driven by interests in large cities of the developed countries. The very low prices of land and housing in the city centres began to attract both small and large private entrepreneurs. As a consequence, after investigating the distribution of benefit from urban renewal programme; this period was criticized by widening the gap of rich and poor.

The lessons learned from the experiences of European urban renewals are that blindly emphasize environmental rebuild is unreasonable which can lead to social dissatisfaction and injustice for poor families. Thus, public participation should be taken as a measure to ensure the success of renewal project. In addition, taking relevant groups' interest, namely stakeholders into consideration is important in redevelopment programs.

2.5.1.2. Lessons from Asian residential resettlement

According to ADB (Asian Development Bank, 1997), the residential resettlement policy aims to:

- Avoid involuntary resettlement wherever feasible.
- Minimize resettlement where population displacement is unavoidable by exploring all viable project options.
- If, nonetheless, individuals or communities must lose their land, means of livelihood, social support systems, or way of life they should be
    - Compensated for lost assets and loss of income and livelihood,
    - Assisted for relocation,
    - Assisted so that their economic and social future will generally be at least as favourable with the project as without it ,
    - Provided with appropriate land, housing, infrastructure, and other compensation, comparable to the without-project situation ,
    - Fully informed and closely consulted on resettlement and compensation options.

The Policy also specifies that lack of formal legal title to land is not an obstacle to compensation and other assistance. This may apply to a range of people affected, e.g. informal dwellers, land users with traditional or customary rights, squatters or those with adverse possession rights but no formal legal title to land and assets. Appropriate assistance provided to address the needs of the poorest affected persons such as female-headed households, and other vulnerable groups such as indigenous peoples, helps them improve their status.

2.5.2. Urban village redevelopment in China

Although the researches about urban village have been conducted since more than ten years, most of these studies are focused on fundamental concepts and origins. In recent years, the researchers began to concentrate on urban village redevelopment. However, most of these researchers put their attention on redevelopment policies studies. For example, the compensate policies, preferential policy and population registration and land property transformation. All these researches service to impel urban village's redevelopment smoothly.

So far, most researchers only focused on how to redevelop these villages, few of them concentrated on why it is necessary to redevelop urban villages. Recently, the reasons to redevelop urban villages aroused more and more academicians' concerns. Lu and Zhou (2006) concluded that urban villages made lots of negative impacts; it is direct and primary driving force to redevelop these villages. Ding (2005) listed several negative impacts of urban villages, such as damaging the urban imagine, affecting urban structure improvement, as the primary reason for redevelopment. Both researches above conclude that in order to minimize these impacts, it is necessary to redevelop urban village. Urban village redevelopment studies of Shenzhen are pioneer and example for a long time. For the first research about urban village is taken Shenzhen as the case. Reducing the negative impacts of urban villages is also emphasized as essentials for in urban village redevelopment in the 15th five year plan (2005).

In the reviewed researches, the negative impacts of urban village on the urban development are emphasised. Most researchers consider these issues from government perspectives. The positive impacts of urban villages and the interests of temporary populations are always ignored.

2.5.3. Comparison with international redevelopment experiences

Comparing with the worldwide urban redevelopment experiences, urban village redevelopment in China still stay in the initial stage. The present stage of urban village redevelopment is comparable to the era of bulldozer during urban renewal which advocated physical determinism and emphasized on rebuilding the environment in European cities. The local authority and planners generally take to rebuild the urban environment and to improve the urban image as their first duty and responsibility. Vulnerable groups' interests are ignored and forgotten by them. The experience in Western countries' story show that if only the urban image is taken as objective to redevelop urban area, enormous social conflicts could arise in the end. Consequently, it is necessary to change the focus and give more attention to low-income groups.

During the redevelopment process, the residential resettlement policy proposed by Asian Development Bank (1997) is a good reference to guide village redevelopment. When studying the related policies and redevelopment approaches, economic and social influences should consider as well. Meanwhile, a suitable accommodation should be provided to the temporary population. In sum, how to put people at first is an important issue to be considered in the urban village redevelopment process.

2.5.4. Trends of urban village redevelopment in China

2.5.4.1. Associated urban development guidelines

- **Essentials for harmonious society establishment**

World developed experiences told us, when a county's per GDP in the range of one thousand to three thousand dollars, it will experience the most serious bottlenecks in population, resources, and the environment, and face the risk of economic and social disorder and psychological imbalance. It is also in a critical period of social adjustment and reconstruction (Bo, 2006). In 2003, China's GDP was beyond one thousand dollars, and is striving to reach three thousand dollars. That means China has been come into a critical period in its modernization (Bo, 2006). The whole country has to face an upsurge challenges as well as opportunities. Under this context, the government put forward the strategic goal of building a harmonious socialist society.

Further, what is harmonious socialist society, President Hu Jingtao (2003) gave us a good answer: ***The harmonious socialist society that we are trying to build features democracy, rule of law, fairness, justice, honesty, fraternity, dynamism, stability, orderliness and harmony between man and nature.*** For this definition, fairness and justice means that the interests of various social sectors are appropriately coordinated, civil conflicts and other social conflicts are correctly handled, and social fairness and justice is defended and realized. Thus, solving conflicts between different groups and balancing benefits of different groups are essentials for harmonious society building.

In Bo's paper (2006), he also pointed out that harmonious society does not come automatically. The government must take their own responsibility during the building process. He listed five suggestions to the government. Safeguarding citizens' lawful rights is the first one, form which we can see how important this point is. Failure to safeguard citizens' rights will lead to conflicts and clashes, which will seriously challenge social stability and harmony. He also criticized that, in recent years, some local governments have not done well in this aspect and mishandled such issues as the takeover of land from farmers, urban renewal, and the reemployment of laid-off workers.

- **New principles for urban planning**

At the end of 2005, Chinese construction sector issued updated urban planning constituted regulation. The old one which was in place for almost 15 years has been abolished since April of 2006. This regulation listed several fundamental principles for urban planning which should be obeyed together by planners and related groups. According to the experts' explanation (Zhang, 2006), the significant changes between these two are that the new one pays more attention on the people's livelihood, and emphasizes the concept of 'people-first'.

The old regulation pointed out that urban planning should be formulated by the government and experts, and then be proclaimed to publics and citizens after the plan accomplishment. That means that the public only process the right to know this story. However, the sixteenth principle prescribed that ***urban planning should take an open and consultation method to hear relative departments and citizens' opinions before the plan implementation*** (UPCR, 2005). In addition, comparing to the old regulations, the new one added an item of regulation, namely the fifth one which puts forward that ***urban planning should pay attention to the peoples' demands and needs, improve living condition, facilitate the residents' life, pay more attention on low-income or medium-income groups, assist***

vulnerable groups, maintain social stability and safeguard public security (UPCR, 2005).The relevant principles and development guidelines showed that the government should put publics' interest at first when conducting urban planning or other social constructions.

2.5.4.2. Associated academic appeals

The fact, that urban village redevelopment emphasizes on physical aspect, has got more and more concerns from the academic field. Because some researchers are aware that if these redevelopment projects emphasized only environment rebuilt, but ignored social and economic impacts, a potential social crisis could emerge. They pointed out that urban village functioned has crucial effects on social mobility and the floating people accommodation (Wei & Yan, 2005). They thought urban village redevelopment should reset its objectives. The aim of urban village redevelopment by the local government should to improve the residents', especially the huge number of temporary populations' living condition. At the same time, they criticized some local government pursuit profit from good geographic location of villages through urban village redevelopment.

Wei and Yan (2005) also predicted that developers would try to maximize the value of land in urban villages and benefit from redevelopment urban villages of good geographic location.. Consequently, these cheap accommodation sites would change into locations of luxury houses and flats. Large number of low-income temporary population who can not afford expensive rents will lose their shelters. Thus, they appealed that urban village redevelopment project should be conducted with caution.

2.6. Actors in the process of urban village redevelopment

2.6.1. Actors analyses in urban village redevelopment

2.6.1.1. Fundamental relationship in the redevelopment negotiation

Urban village redevelopment programs refer normally to three players, namely the local government, farmer, and developer. The three players represent three interest groups respectively. A successful balance of the benefit relationship of these three agents guarantees successful urban village redevelopment (Zhou, 2006). So, before analyzing urban village redevelopment strategies by using the Game theory, it is necessary to understand each player's intention and interest. Figure 2.2 shows the relationship of three groups, which can help us to understand their relationships the redevelopment process. There is a special patch where the three circles overlap in figure below (see fig. 2.2). Within this small overlapping area the redeveloped system reached the most harmonious state.

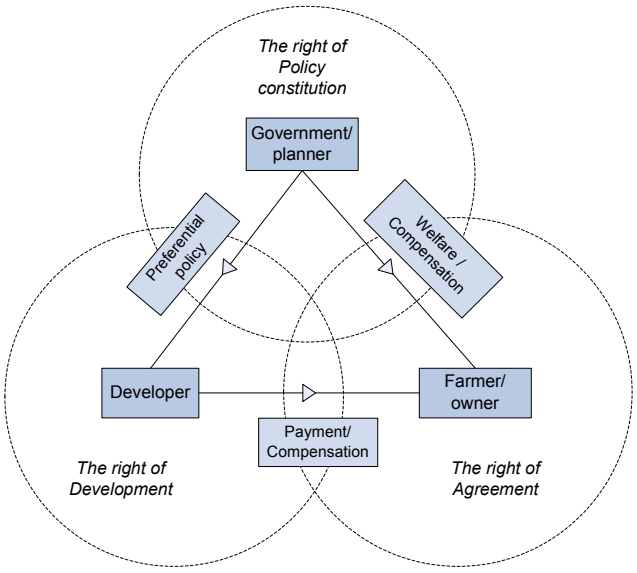


Figure 2.2 Relationships of three agents in urban village redevelopment

(Source: Luo, 2005)

- Government: Government plays a curial role in urban village redevelopment. They always play several roles, not only as the decision maker but also as advocator. In general, in order to impel and encouraging urban village redevelopment, local governments always instituted some preferential policies to developers, and provided welfare compensation to farmers. Governments' policies impact the other players' activity.
- Developer: The cost for redevelopment is rather high. Depending on government financial supplement, it is difficulty to accomplish redevelopment projects. Thus, under most circumstances, the government has to in virtue of developers' forces. In general, compensation fees or payments for farmers' lost are afforded by developers. However, developers possess the right to chose joining to these projects or not.
- Farmer: Whether the compensation and welfare are reasonable or not, the farmers' interest more or less would be damaged. Urban village redevelopment refers to private properties which is including houses, lands and etc. In addition, the farmers' future livelihood and social security is another issue which is associated with the feasibility and rationality of urban village redevelopment. Thus, farmers' attribute should be taken into more considerations. And government and developers try to compensate the farmers' losses by social welfare and compensation fees, meanwhile, they try to persuade the farmers to agree and support the redevelopment project by these compensations.

2.6.1.2. Game theory

Game theory is the formal study of conflict and cooperation. Game theoretic concepts apply whenever the actions of several agents are interdependent. These agents may be individuals, groups, firms, or any combination of these. The concepts of game theory provide a language to formulate, structure, analyze, and understand strategic scenarios (Turocy& Stengel, 2001). There are three categories of games: games of skill; games of chance; and games of strategy (Kelly, 2003). Games of skill are one player game whose can completely control this game. Games of chance are one player against nature.

The games of strategy always referred to two or more than two players which are the most complicated and common games in reality.

The researches of game theory can be traced back to the 18 century which have been developed and improved almost during two centuries. Among these works and publications of game theory, the book 'Theory of Games and Economic Behavior' by the mathematician John von Neumann and the economist Oskar Morgenstern is the most famous one, which also is recognized as a symbol of game theory formulation (Kelly, 2003). So far, game theory has been widely used in many fields not only economy but also in politics, sociology, military affairs, biology, urban planning etc.

2.6.1.3. Application of Game theory in urban village redevelopment

Game theory is providing a language to help us formulate, structure, analyze, and understand the potential results under different strategic scenarios. So, using Game theory can help to optimize decisions or strategies through analyzing different scenarios during the redevelopment process. Further, Game theory can help us to consider and analyze each player's intention and interest. Reviewing pervious studies, several researchers were using Game theory in urban village redevelopment analysis (Luo, 2006; Zhao, 2005).

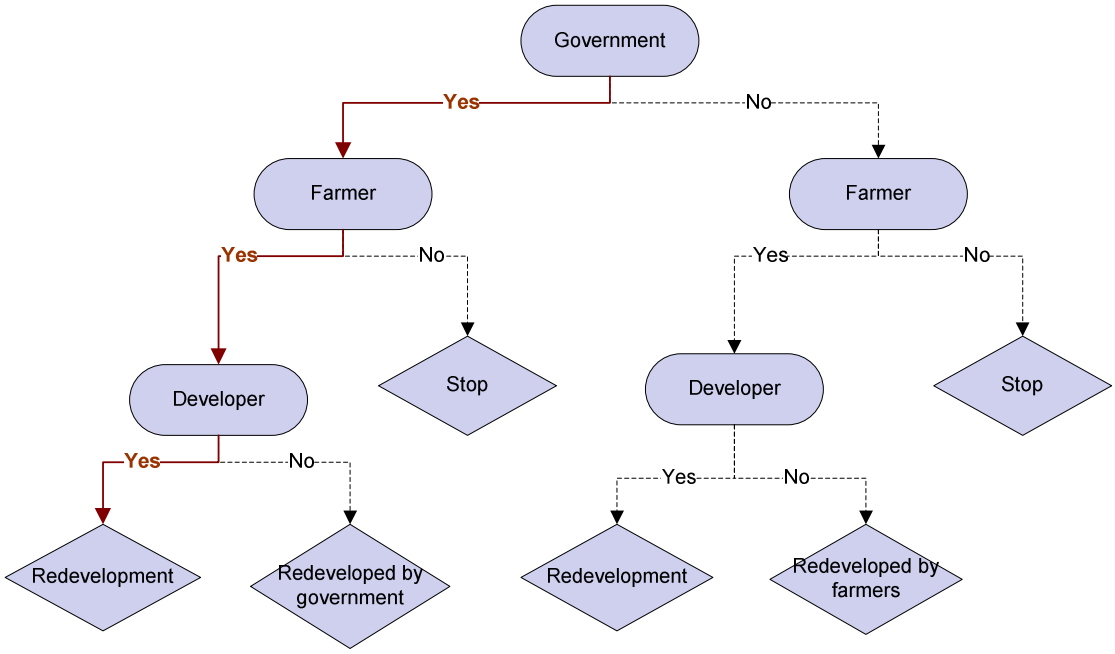


Figure 2.3 Game theory applications in urban village redevelopment

The above figure is developed for understanding the scenarios of urban village redevelopment. Just like other redevelopment programs, urban village redevelopment is always advocated by local government at first. However, due to fact that the scale of urban village is enormous in most cities and the needed expenditure for redevelopment is huge as well, local governments do not have the capability to afford the redeveloped fees alone. In general, the local government supports redevelopment projects by supplying some preferential policies and socioeconomic welfare.

On the other hand, the original farmers, especially who are living in urban villages which are sited in central urban area, generally do not want to be redeveloped. The farmers' livelihood would be damaged by the redevelopment more or less whether the compensation or welfare is enough or not. Thus, few farmers would be actively in favor of redevelop urban village. In addition, we have known that economic interest is always the starting point of developers. However, local government redevelopment capital is limited, so in most circumstance, the majority of expenditures are always undertaken by developers. Thus, the most possible approach for redevelopment is conducted by these three players together, just like the red arrows show in Figure 2.3.

- **Government concerns:** Urban village redevelopment has been implemented for several years in China. But the starting point of local government is to alleviate the negative impacts of urban villages on urban development. Thus, local government once was called the beneficiary in urban village redevelopment games. On one hand, through urban village redevelopment, governments get the opportunity to re-image the city, and transform collective land into state-owned land which will alleviate land shortage crisis in central urban area. On the other hand, government enhanced the prestige through redevelopment. More and more academicians appeal that urban village redevelopment should start from improving low-income living conditions. However, low-incomers do not easily voice their own opinions during redevelopment process. Under this circumstance, the local government must represent the interest of low-incomers. They should take more consideration of the benefits of low-income floating population as well as alleviating the negative impacts on urban development.

- **Farmers' attitude:** As mentioned in the previous section, farmer's interests are endangered in the redevelopment process. The local government and developers usually give compensations to these farmers, but still most of them are reluctant towards redevelopment driven by the high profit from renting houses. So, the renting income always impact farmer's attribute directly. On the other hand, according to surveys conducted by pervious researchers, they found that the elderly and low-educated inhabitants are the main force to against redevelopment. Most of the supporters are young and relative higher educated persons. Thus, this phenomenon indicates that the viability of elderly and low-educated people is weak and it is more difficulty for them to survive, 'loosing' their urban village. Furthermore, it also shows that the population structure impacts the farmers' attitude towards redevelopment.

- **Developers' motivation:** When local governments constitute preferential policies, they always consider the geographic location of urban village and the volume of redeveloped building simultaneously. The actual compensation method is usually in terms of the area of building, some of it is also in terms of the quality of building. So, when developers decided to participate in one redevelopment program, they have to consider the volume of redeveloped buildings on one hand. On the other hand, they are facing the big attraction of good geographic location. The developers would calculate the potential profit of this site in order to judge whether it is feasible or not to join to this project. So developer's motivation can be assessed by the volume of redeveloped buildings and the potential value of redeveloped site.

2.6.2. Learning from associated researches

2.6.2.1. Government concerns

- **Improve living conditions**

Based on above context, it is significant to analyze the current living situation of residents in urban villages. Especially, the general goal of urban redevelopment in the context of redevelop goal would be to improve the low-income groups' living conditions in China. Thus, it is necessary to pay attention to physical redevelopment, and socioeconomic redevelopment as well. Although there does not exist research on living condition in urban villages, concepts can be 'borrowed' from associated researches.

Ng, Kam and Pong (2006) developed measures of housing-related environmental factors (e.g. quality of dwelling, neighbours and community) and the feeling of place belonging. They assess living quality and belonging sense based on 576 questionnaires of dwellings designated for demolition as part of a major urban renewal programme based on people-first policy in Hong Kong. Among their research, they listed a series of housing-related environmental factors to evaluate the living environment as part of assess life quality

Table 2.6 Housing-related environmental factors for quality of life measurement

Variables	Housing-related environmental factors	Indicators
Environmental variables	Quality of dwelling	Size of floor area, ventilation, hygienic conditions, natural lighting, sleeping area, dinning and reading areas, toilet and kitchen facilities
	Quality of neighbourhood	Frequency of social interaction with neighbours, perceived helpfulness of neighbours, their satisfaction with their relationships with neighbours
	Quality of the wider community	Non-essential for living, i.e. public parks, park facilities, community centre services, availability of public libraries and recreational facilities, standard of public libraries and recreational facilities; more essential nature, i.e. public transport, health clinics and shopping

(Source: Based on Ng, Kam, & Pong, 2005)

- **Alleviate negative impacts**

Alleviating negative impacts are always considered as the starting point of urban village redevelopment by local authorities and planners. Thus, many researches are specially focus on these aspects. Ding (2005) mentioned the general negative impacts of urban villages. Such as, damaging urban image, affecting urban structure improvement, hampering the increase of land value, etc. Zhou and Lu (2005) also pointed out the negative impacts of urban villages in Shenzhen city when developing a redevelopment strategy framework. These impacts include ecological environment, urban land value, urban image etc.

Furthermore, the "urban village redevelopment planning during the 15th five year (2005-2010) plan" (SUPLAB, 2005) describes that the urban villages seriously impact urban further constructions. These

villages are seen as the key villages to be redeveloped as soon as possible. The local government prescribed some criteria to identify these key urban villages as the following aspects:

- Impact the enhancement of land price
- Impact the optimization of urban structure
- Impact the improvement of urban landscape
- Impact the residents' security

2.6.2.2. Farmers' attitude

- **Income loses**

Rent is one of the main income resources for the majority indigenous residents. Urban village redevelopment means for most of them to lose their living incomes. That is why renting income is an important reason which impacts the farmers' attitude. It is easy to understand that the higher the rent the bigger possibility to opposite the redevelopment project. So, some associated indices are be taken to reflect the renting income, such as rent fee per sq.m, the renting ratio, rent area per farmer and so on.

- **Adaptive faculty**

On the other hand, pervious researches pointed out the population structure would impact residents' attitude and the courses of redevelopment. Xie (p175, 2006) took urban villages in Shenzhen as a case, main finding was a strong relationship between age structure and residents' attitude. He described that older people are prefer to reject urban village redevelopment. In contrast, the majority who were inclined to support the redevelopment activities are always young people. This phenomenon indicates that some older people still maintain traditional ideas on one side; on the other side their capacities to adapt to changes are weaker than the youths.

In addition, (Liu and Chen, 2006) investigated urban villages in Ningbo city, and got a result that people with lower education level are inclined to maintain the current situation. These kinds of people always refuse to redevelop urban village which can be attributed to the fact that they do not possess the competitive capacity in society. Thus, population structure, such as age structure and education level, will be taken as main variable to analyse farmers' attitude.

2.6.3. Developers' motivation

2.6.3.1. Redevelopment compensation

According to Section 2.6.1 and Figure 2.2, the relationship between farmers and developers are connected by compensation. In terms of local government regulation, developers should compensate by certain payments the farmers. If the payments are too tremendous, which goes beyond developers' budget, it will impact the developers' redevelopment motivation directly?

Local government always provide same preferential policies around a certain range. For example, urban villages within the second-ring road are provided same redevelopment preferential in Shijiazhuang city. In Shenzhen, urban villages in a SEZ are given the same preferential by local government. It means the preferential policies for the villages inner SEZ is the same. Thus, it would not impact the redevelopment strategies constitution. So, in this research, preferential policies are not taken as an impact indicator to assess the developers' motivation.

In terms of general compensation regulation, the developers always compensate farmers in terms of total building area. In this thesis, data of building area is not directly available. So the two indices, building density and plot ratio will be taken as the indicators.

2.6.3.2. Potential land value

On the other side, the driving force which let developers to engage in the redevelopment activities is pursuing to maximize economic profit. In other words, it means the land potential value will be anticipated before investment.

As far as we known, potential land value is associated with site location closely. So, when researching the potential value, some significant factors should be considered. Liu (2006, P66) took accessibility, natural environment and public facility as the three factors to evaluate the potential land value. Furthermore, urban redevelopment cases can also supply some experiences for potential land value assessment. The related factors which could impact land value were studied by Yan (2005), during the old-town redevelopment capacity researches.

Table 2.7 Land potential value assessment indicators

Factors	A1	A2	A3	A4	A5	A6	Weight
	Commercial congregation	Accessibility	Infrastructure	Public facility	Landscape	Natural environment	
A1 Commercial congregation	1	2	3	5	5	9	0.3875
A2 Accessibility	1/2	1	2	4	4	8	0.2617
A3 Infrastructure	1/3	1/2	1	3	3	7	0.1725
A4 Public facility	1/5	1/4	1/3	1	1	5	0.0770
A5 Landscape	1/5	1/4	1/3	1	1	5	0.0770
A6 Natural environment	1/9	1/8	1/7	1/5	1/5	1	0.0242

(Source: Yan et al, 2005)

2.7. Strategies of urban village redevelopment

2.7.1. Researches on urban village redevelopment strategies

Urban village redevelopment strategies are researched by researchers for a long time. As far as we known, redevelopment projects are rather complicated caused by the large number of floating population, and the need of lots of capital for compensation. Thus, it is impossible and unrealistic to redevelop these villages at the same time or take the same redevelopment approaches. Furthermore, because of different current situation, redevelopment approaches, and potential land value, the leaders of redevelopment project would not do the same. So the questions is, how to redevelop these villages, what time is most suitable to redevelop these villages and who is most possible to invest or lead the redevelopment projects. Reviewing previous researches, the redevelopment strategies studies mainly focus on the following three concerns.

- Redevelopment stage: Due to the workloads of urban village redevelopment are huge, it is impossible to redevelop all the villages at a short time. So, when constituting redevelopment strategies, the villages generally are classified into different groups according to the

redevelopment stages. According to pervious researches, the villages make strong negative impacts on urban development would be redeveloped at first stage.

- Redevelopment approach: Xie (2006) mentioned that redevelopment is generally categorized by three approaches in terms of the rebuild scale. These three approaches are rebuild, rehabilitation and conservation. Therein, rebuild means demolish most of the current buildings. Rehabilitation here represents rebuilding partly or rebuilding the needed area, meanwhile improving some of the physical environment (such as infrastructure, building quality). Conservation means taking the internal environment improvement and infrastructure maintenance as the mainly actions to redevelopment.

- Redevelopment leader: In urban village redevelopment project, all these three actors, local government, original residents and developers, have opportunity to be the investor of redevelopment. Zhao (2005) analyzed the advantages and disadvantages of each actor to be the investor respectively. In general, due to the huge number of compensation fees, local government would in virtue of market force, encouraged developer to invest these projects. However, some redevelopment projects, such as conservation project, do not possess the potential value to attract developers' investment. So government have to invest by themselves. Sometimes, original farmers would undertake redevelopment capital actively if they have the economic power, such as rehabilitation project or conservation projects (Zhao, 2005). But rebuild by themselves is infrequent especially in typical urban villages. The Game theory (see Figure 2.3) can interpret this strategy exactly.

2.7.2. Frameworks to analyze urban village redevelopment in previous researches

Many researchers have been engaged in the strategy studies of urban villages' redevelopment in China. Among these researches Lu and Zhou (2006) took Shenzhen urban village as a case to explore on suitable redevelopment strategies and polices, and developed a framework (see Figure 2.4) for redeveloped prioritization based on driving force studies. In this framework, they studied the impacts which made by urban villages on urban development according to government perspective at first. Then they analyzed the developers' perspective to identify redeveloped priority. This framework generalizes most current redeveloped decision making process.

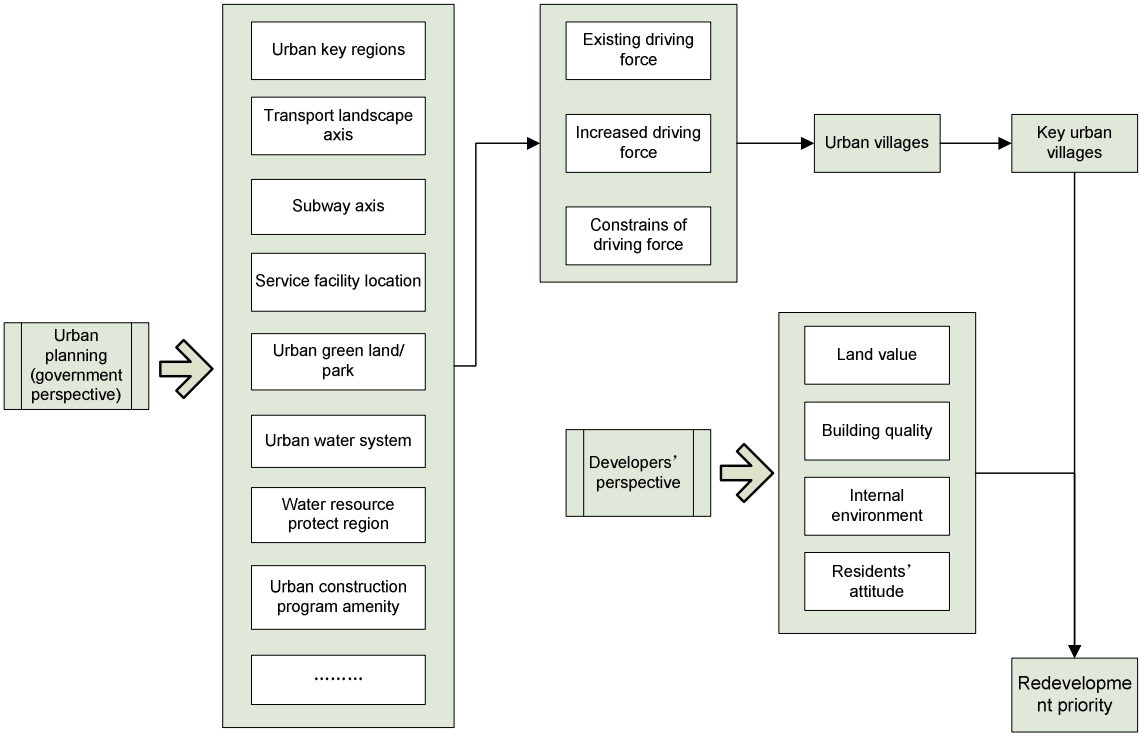


Figure 2.4 Framework of priority identification for key urban villages' redevelopment

(Source: Lu &Zhou, 2006)

2.8. Conclusion

In this chapter, fundamental concepts of urban villages are reviewed which discusses the general state of urban village researches. Then, through leaning from experiences of foreign countries urban redevelopment and the current context of Chinese urban planning as well, reasonable government concerns can be identified. The relationships of actors have also been reviewed. Meanwhile, the Game theory has been introduced in this chapter which help to simplify the redevelopment process, and simulate the possibility under certain scenarios. In addition, the previous researches which can help to assess the government perspective, farmers' attitude, and developers' motivation have been reviewed respectively. At last part, the redevelopment strategies are reviewed and summarized.

3. Research methodology and data collection

3.1. Introduction

In order to propose the potential redevelopment strategies by the Game Theory module, the actors' perspectives (government's concerns, residents' attitude and developer's motivation) should be analyzed and assessed at first. Thus, the factors impacted these perspectives should be identified at advance. Then, the actor's perspective can be assessed by the findings of impact factors evaluation. So, these methods are described at first part of this thesis. Further, a general overview of study area and primary situation of urban villages in this area are described which is followed by the introduction of the methodology. In addition, the required data and relevant information are listed at the final section in this chapter.

3.2. Research Methodology

3.2.1. Procedure of analyzing the actors' perspectives

3.2.1.1. Analyze the impact factors of actors' perspectives

According to the relationships of three main actors in urban village redevelopment programs, local authority possesses the right to decide key urban villages. Original residents have the right to support or do not support the redevelopment project. And developers have the right to invest or do not invest this project. In other words, the government concerns, residents' attitude and developers' motivation are significant in redevelopment programs which are essentials to propose the redevelopment strategies.

As the reviewing in Section 2.6.2, there are some factors (variables) to impact the actors' perspective for redevelopment. Under the context of establishing a harmonious society and paying more attention on vulnerable groups in China, the local government should not only take the negative impacts alleviation as starting point when conduct redevelopment. They should pay more attention on low-income groups' living conditions also. Thus, the concerns of governments should include alleviating negative impacts and improving living conditions.

In most redevelopment program, original residents' interests would be damaged more or less. So, in general, the resident support rate for redevelopment project is rather low. There are two main reasons let them against redevelopment. One direct reason is their renting income would be lost. The other is their lifestyle will be changed, and they have to face social survival pressures. Thus, the income loses and adaptive faculty are identified as two factors impacted residents' attitude. For developers, their pursuits are the economic profit. But, they have to afford the compensation fees if they joint into redevelopment projects. So the potential value came from land development and the compensation volumes are two main factors impacted developers' motivation.

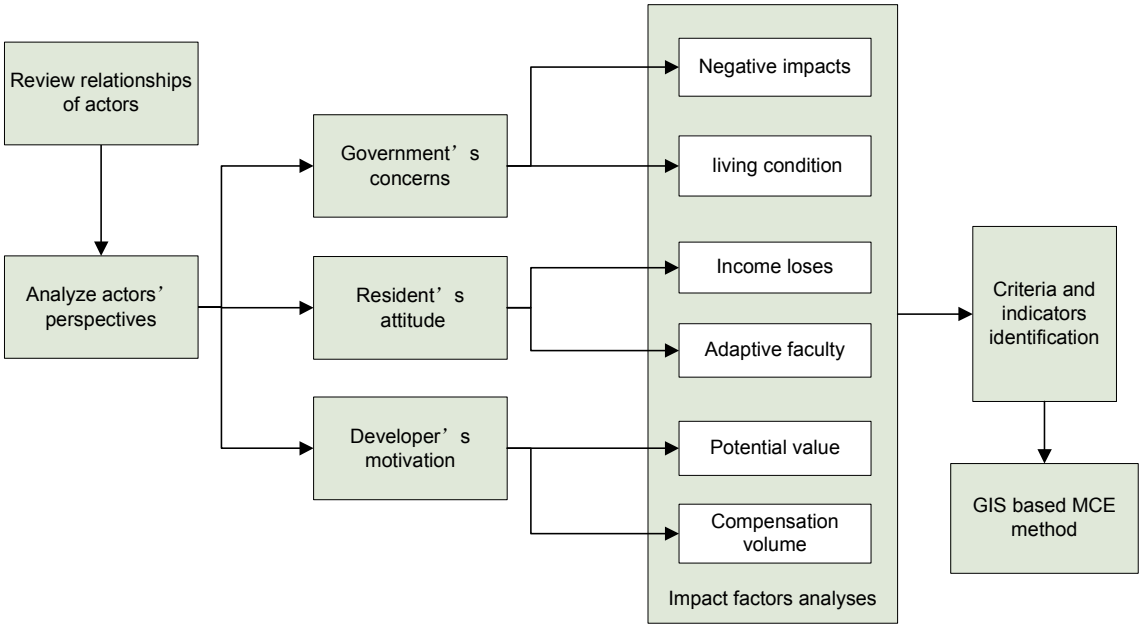


Figure 3.1 Procedure of analyzing actors' perspectives

3.2.1.2. GIS based MCE method to evaluate the impact factors

GIS has powerful functions of data management and analysis, especially for spatial data. Apart from displaying existing data and solution, GIS offers spatial modelling capabilities, such as overlying, neighbouring and networking analysis (Bastidas, 1998). Therefore, the GIS technique can be used to collect, manipulate and analyse spatial and non-spatial data within this research, in order to analyses the perspectives of the three actors' for urban village redevelopment.

The basic principle of MCE (multi-criteria evaluation) method is the construction of an evaluation matrix (two-dimensional table). The components of an evaluation matrix are (i) alternatives (regarded as the choice of possibilities) and (ii) criteria, (which allows for the realisation of the alternatives). In the context of this assignment, each strategy is evaluated separately in an evaluation. Because of the relatively powerful evaluation function of MCE, especially when variables are more than one, this method is selected to evaluate the impact factors of government's concerns, resident's attitude and developer's motivation.

As Sharifi and Herwijnen (2003) mentioned that GIS and MCE are both tools that can support the decision maker in achieving greater effectiveness and efficiency in the spatial decision-making process. In this research, GIS and MCE method are integrated for evaluate the impact factor of actors' perspectives in order to propose and assess redevelopment strategies by these actors' perspectives. The impact factors which explored in last section will be evaluated by GIS based MCE in Arc GIS module. Then, the actors' perspectives are transformed into comparable. Decision maker can compare the urban villages by these perspective analyses, and then constituted reasonable and realistic redevelopment strategies.

3.2.1.3. Identify related criteria and indicators

In terms of the literatures mentioned in Section 2.6.2, the potential criteria and indicators to evaluate the impact factors can be identified as followed. The potential criteria and indicators are listed below which can help to collect related data:

Table 3.1 Potential criteria and indicators

Actors' perspectives	Factors	Criteria	Indicators
Government's concerns	Living condition	Internal environment	ventilation, hygienic conditions, natural lighting, sleeping area, dinning and reading areas, toilet and kitchen facilities, sanitation, building quality
		External environment	public parks, park facilities, community centre services, public transport, health clinics
	Negative impacts	land price enhancement	Distance from subway stations; Distance from commercial centres
		urban structure optimization	Within ecological zone; within planned industry zone
		urban image improvement	Distance from main road; distance from CBDs; distance from
Resident's attitude	Income loses		The rate of houses been rented out; the price per sq.m; the renting area per capita
	Adaptive faculty		The proportion of older people; the proportion of low educated people
Developer's motivation	Potential value	Public facility	Distance from recreational facilities; distance from hospitals
		Accessibility	The number of bus station; the number of subway station; distance from main road
		Natrual environment	Distance from water resource; distance from green lands
		Commercial congregation	The commercial hierarchy ; the number of shops
	Compensation volume		The plot ratio; building area

3.2.2. Procedure of assessing the official redevelopment strategies

After the step of impact factors evaluation, the actors' perspectives can be analyzed. The urban villages in study area can be ranked by these perspectives analyses. As it mentioned in Section 2.6.1, the Game Theory can help to simplify the complicated issues which referred to several actors. Further, applying this theory in urban village redevelopment can help to formulate the realistic strategies by considering each actor's perspective in sequence (see Figure 2.3).

Some researchers have been used the Game Theory in urban village redevelopment studies (Luo, 2006; Zhao, 2005). However, the reality is more complicated than this model, especially, when local government has more concerns. The Game Theory will be applied in this research as the figure below.

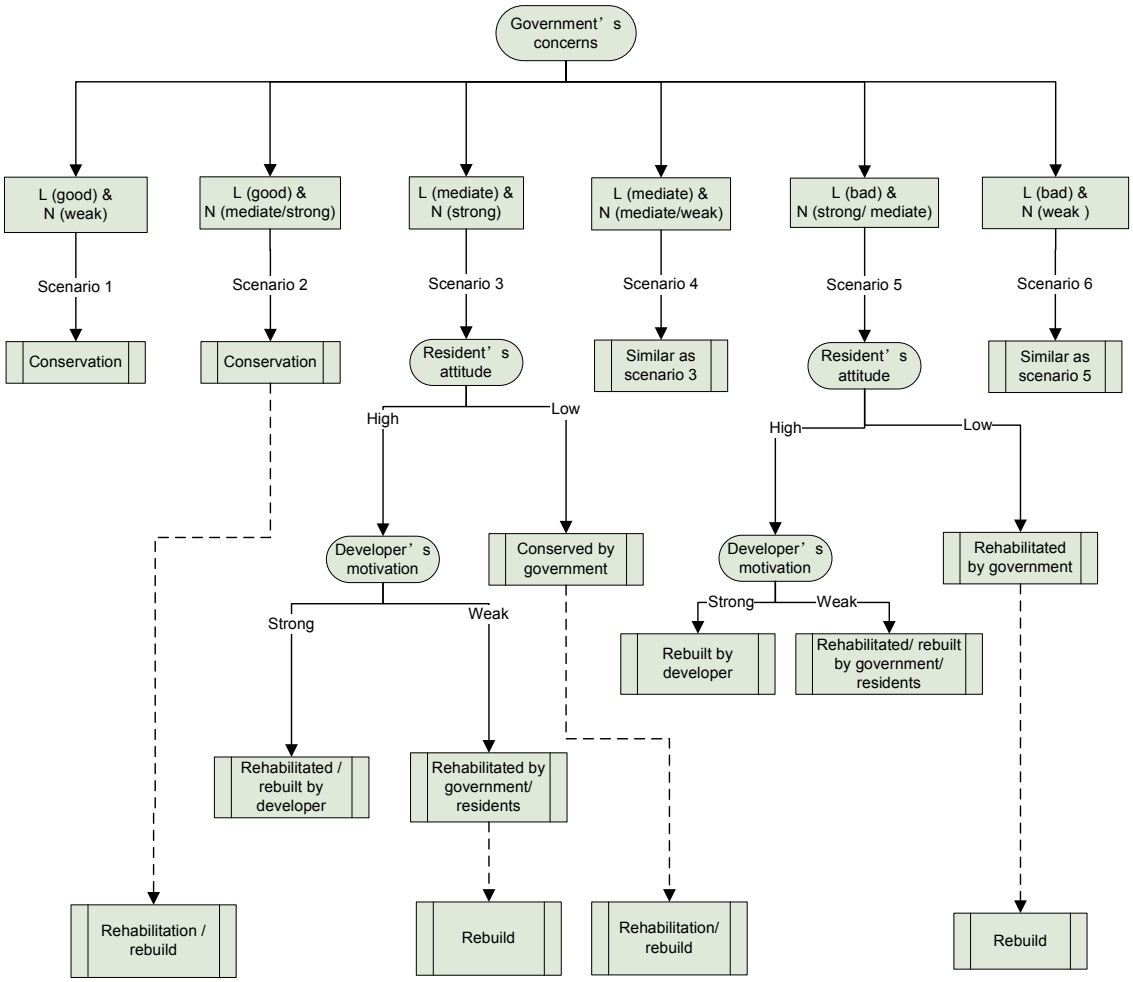


Figure 3.2 Game Theory applications in this research

Here, classified the factor living condition to good, mediate and bad in order to make it comparable. The factor negative impact is also classified into three degrees the strong, mediate and weak. And using support rate to represent residents' perspective, the support rate classified into high and low. The same as residents' attitude, developers' motivation is categorized into strong and weak. According to these different degrees, there are six scenarios can be formulated. Under these scenarios, resident's attitude and developer's motivation will be considered on sequence. As Section 2.6 mentioned, the strategies involved the redevelopment stage, approach and leader will be analyzed. In Figure 3.2, the dashed means the potential redevelopment approach in second stage.

- **Scenario 1:** if the villages with good living conditions and weak negative impact, the conservation approach can be taken. The current buildings of villages can be kept and just improving some physical conditions. If the residents' support rate is high, the conservation action can be conducted by residents themselves.
- **Scenario 2:** under this circumstance, the living condition is good. However, it makes serious negative impacts on city. Considering about large number of temporary populations have to be resettled if rebuilt this village. Thus, at the first redevelopment stage, it is better to conserve these villages. When the temporary populations are arranged at suitable settlement, these villages can be rehabilitated or rebuilt at second redevelopment stage.

- **Scenario 3:** the villages are of mediate living conditions and strong negative impacts. Under this circumstance, the resident's attitude should be taken into consideration. If the support rate is low, these villages can be conserved and just improving some physical conditions by local government. And then, in the second stage, the rehabilitation and rebuilt can be taken in terms of the situation on that time. If the support rate is high, the developer's motivation should be considered. If the attractions for developers are strong, these villages can be rehabilitated or rebuilt by developers. If the attractions are weak, the local government can rehabilitate part of the village in order to alleviate the negative impact.
- **Scenario 4:** is similar as Scenario 3. However, these kinds of villages are unnecessary to be rebuilt, because both the living conditions and negative impacts are mediate. Through rehabilitation, the current situation can be improved.
- **Scenario5:** because of the living condition is bad. At least, the rehabilitation approach should be taken. Considering about the residents' support rate, if the support rate is low, these villages should be rehabilitated by local government at the first stage. If the support rate is high, developer's motivation is taken into consideration. If the attraction is strong, these villages can be rebuilt or rehabilitated by developers. If the attraction is weak, these villages can be rehabilitated by government or resident's themselves.
- Scenario 6: is similar as Scenario 5.

3.3. Background of Study area

3.3.1. Profile of Shenzhen city

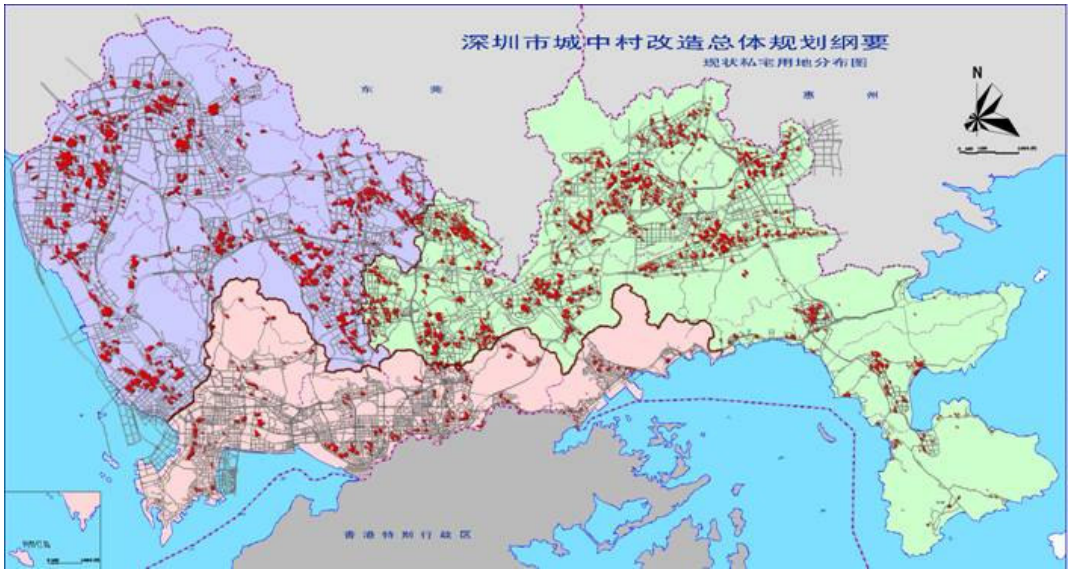
Shenzhen is a mega city situated in Guangdong province in China (Figure 3.3). It was the first Chinese special economic zone. The city is lying the north of the former British colony, Hong Kong, in southern Guangdong province (Ng, 2005). Because of its special geographic and economic location, it was functioned as a bridge and ligament for the communication between Hong Kong and mainland China for a long time. For more than two decades the development, the GDP of Shenzhen city has been ranked in the third position throughout Chinese cities, only lagging behind Beijing and Shangha.

Figure 3.3 Location of Shenzhen City

Since the open door policy in late 1978, approximate 30 years period, Shenzhen has transformed from a small native village with population size of two thousand, to a 21st century metropolis housing over four million people. This rapid transformation was seemed as a miracle during the world

urban development history (Zhao, 2004). Today's Shenzhen consists of six districts, Yantian, Luohu, Futian, Nanshan, Bao'an and Longgang. The former four districts are located within the SEZ which occupies 329 sq.km. The Pink area in Figure 4.1 shows the SEZ. And the outside are the two districts Bao'an and Longgang, they were turned into districts and formally became parts of Shenzhen in 1993. The purple area and the green area indicate Bao'an district and Longguang district respectively (Figure 3.4).

Figure 3.4 Urban village distribution Figure in Shenzhen



(Source: SUPLAB, 2005)

Shenzhen underwent a breathtaking growth from an outward processing SEZ to an aspiring world city of the 21st century (Ng, 2005). Its urbanization pace is hardly imaginable. Under this rapid urbanization, the urban village issue is rather phenomenal in Shenzhen. The first urban village in China appeared in Shenzhen at the beginning of 1980s (Wang, 2005). At present, there are 320 urban villages with 350 thousand private dwelling buildings in Shenzhen. From Figure 3.4, the red points and patches display the locations of these urban villages in Shenzhen. These villages occupy almost 93.5 sq.km areas. Relatively, the foot print area of these buildings reached 10000 sq.m (SUPLAB, 2005). So, the issue of urban villages has been an inevitable problem for Shenzhen city.

3.3.2. Development phrases of urban village in Shenzhen

The development of Shenzhen's urban village can be subdivided into the following four phrases. The initial phrase was from 1980 to 1985. At the beginning period of establishing the special economic zone, the central government did not have enough capitals and capacities to support and patronize Shenzhen's city construction. In that time, Shenzhen local government had to construct the city depending on foreign investment, so it was nearly impossible to compensate the loss of transformation from collective land to state-owned land. So without any formal administration, the farmers of urban villages built large-scale private dwelling houses as a new from of securing their livelihood.

The second phrase was from 1986 to 1991. Local government realized large amount of informal settlements that emergenced. Thus, municipality drew a red line to restrict the further development of urban village in 1986. The area within the red line was called new urban villages which were planned

by the government, so the living environment was usually better than in the original urban villages. In terms of negotiation, after new villages were built up, the local government took charge of the original villages. And the land of the original village turned into state-owned land, the local government granted the right to rebuild this area. However, due to the absence of capital and policies, the original villages did not develop in accordance to the government plan but continue to deterioration. That means the red line strategy was a complete failure.

The third phrase from 1992 to 1998 was an important stage for urban villages' development in Shenzhen. In 1992, Shenzhen government urbanized all the urban villages within SEZ. Original residents got the city "hukou" who were formally 'declared' as urban citizens from that time onwards. All the collective land was transformed into state-owned land. In 1993, Bao'an and Longgang transformed from a county to district, so the villages in these two districts were formally been transformed to urban villages. Since then, the spatial pattern of urban villages in Shenzhen has been formed.

The last phrase is counted from 1999 to present. After rapid development for a long time, Shenzhen has been one of biggest metropolis in coastal region. The investment from domestic and overseas are countless and continues, however, Shenzhen do not have more construction land for further development. Especially, there is no more vacant land for any new constructions in the inner SEZ. Under this context, the local government has to adjust the internal urban structure, to be emphasized frequently in the municipal agendas. So, it is reasonable to suppose that new redevelopment strategies are coming.

3.3.3. Historic development of urban villages in Shenzhen

After 1993, the two counties in the outer SEZ formally changed their administrative level to districts. From that time, the basic pattern and spatial distribution of urban villages in Shenzhen gradually was shaped. There are three figures which reflect the changes from 1999 to 2004 by two indexes, footprint and building area. In the figures below (see Figure 3.5 and 3.6), the red line represents the changes of building areas, and the blue line shows the changes of footprint area. In 2004, the footprint building area of has increased to 20.98sq.km compare to 1999 throughout Shenzhen city. The rate of increase reached 28.8 per year. From Figure 3.3, it is evident that with in the inner SEZ the footprint area almost did not change during these five years. Data shows among the 20.98 sq.km increase, only 0.2 sq.km area increased within the SEZ. Thus, it is easy to see that the blue line in Figure 3.4 show the sharpest rise among these three. And at the end of 2004, the increased building area is 51,920 thousand sq.km from 1999 to 2004 which consisted of 10,950 thousand sq.km from the inner SEZ and 34570 thousand sq.km from the outer SEZ (SUPLAB, 2005).

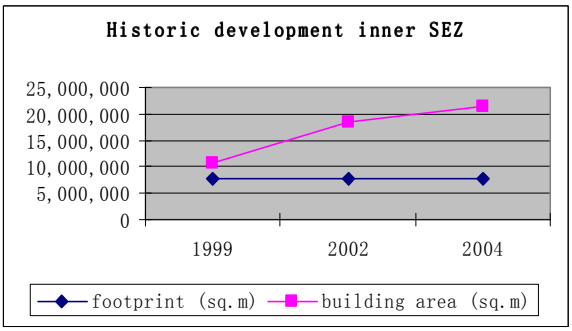


Figure 3.5 Historic development inner SEZ

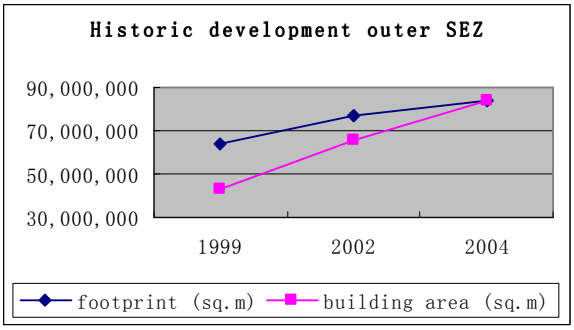


Figure 3.6 Historic development outer SEZ

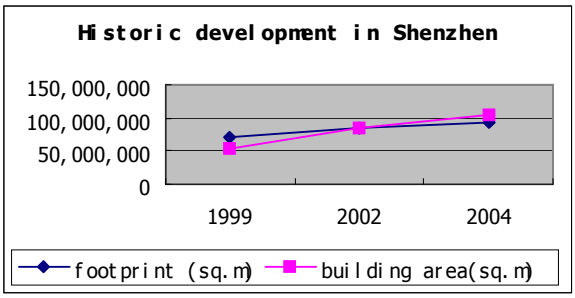


Figure 3.7 Historic development in Shenzhen

(Source: SUPLAB, 2005)

This increment can be seen in Figure 3.7, both the both blue line as well as the red line grow up. So, it can be concluded that both, the building area and the footprint were increasing during this five years. And the increment speed of building area is faster than the increase of footprint area. Consequently, it can be stated that the growth of urban villages in the inner SEZ is mainly by height growth, and the villages in the outer SEZ are growing not only through vertical development (height) but also through horizontal (area) growth.

3.3.4. Differentiations of urban village inner SEZ and outer SEZ

3.3.4.1. Statistic differentiations

Experiencing nearly 30years of development, because of the different external conditions and market demands, urban villages exhibited different features in the inner SEZ and outer SEZ. From the following figures (Figure3.8-3.10), differentiations of urban villages concerning their current situation can be observed clearly. The building density and plot ratio, footprint and building area, and average number of story are taken as the indexes respectively to reflect the differentiations among the six districts and the differentiations between inner SEZ and outer SEZ as well. As it was mentioned before, Shenzhen consists of six districts; there are four districts in the inner SEZ, and other two in the outer SEZ. In the figures below, the first four districts are within SEZ which are delineated by red dashed line. It can be seen that the differences are rather remarkable. The footprint and building area shows that the scale of urban village inner SEZ is smaller than outside. However, in contrast, the plot ratio and building density, especially the plot ratio in the inner SEZ is several times higher than outside. And the average story number is also higher then outside. From these indexes, the differences are evident. It can be concluded that although the area of urban villages in the inner SEZ is not so big, the building density and plot ratio in these areas are relative high. So many buildings stand on small patches; it can be imaged that each yard or space in such urban villages is almost filled by private houses, the green or public spaces is lacking. In contrast, from the number of stories and building area, it can be seen how low the land use efficiency of urban villages in the outer SEZ is and how much land wasted by urban villages.

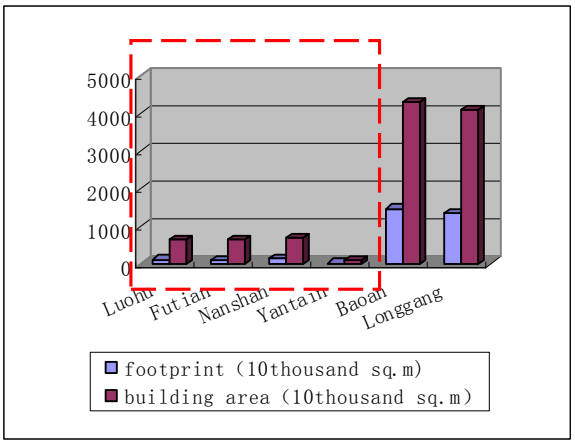


Figure 3.8 Comparisons of the building density and plot ratio in six districts of Shenzhen

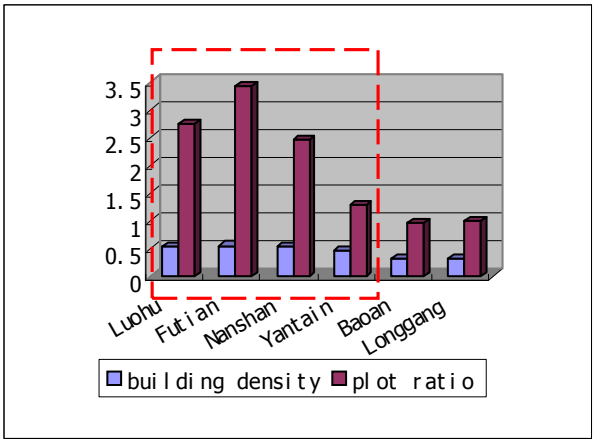


Figure 3.9 Comparisons of the footprint and building area in six districts of Shenzhen

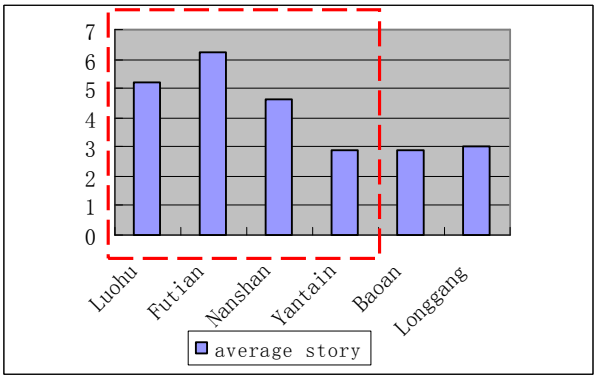


Figure 3.10 Comparison of the average stories in six districts of Shenzhen

(Source: Report of Shenzhen land use invesetigation, 2006)

3.3.4.2. Descriptive differentiations

Visually inspecting the Spot image of 2005, the differentiations of these two zones are also remarkable. In the following two Figures, the blue polygon delineates the boundary of urban village. The left one reflected the situation inner SEZ, the right one showed the outer distribution. From left Figure, the boundary of urban village is very clear. It is easy to distinguish urban image and villages in this Figure. Meanwhile, it means the gap of urban image and urban villages' image is tremendous. This Figure also shows the conflicts between urban villages and skyscrapers or modern buildings in the surrounding. In addition, urban villages in the SEZ always can be found at good geographic locations, most of them are located beside the city main roads, city centres and other city main landscapes.

Figure 3.11 Urban village inner SEZ

Figure 3.12 Urban village outer SEZ

(Source: Spot image, SUPLAB, 2005)

On the right Figure, the boundaries of urban villages outside the SEZ are not so easy to observe. Urban village outside the SEZ are spread diffusedly, they are getting close to each other. It is hard to clarify delineate the boundaries between urban village and the other areas. Because these areas transformed from county level to district level later than inner SEZ, so the urban villages in these areas are still belong to immature urban village. Outside the SEZ, urban villages are distributed along the main road and main urban development mainlines, such as national road, and freeway.

3.3.5. Selection of study area

3.3.5.1. Central area of Shenzhen city

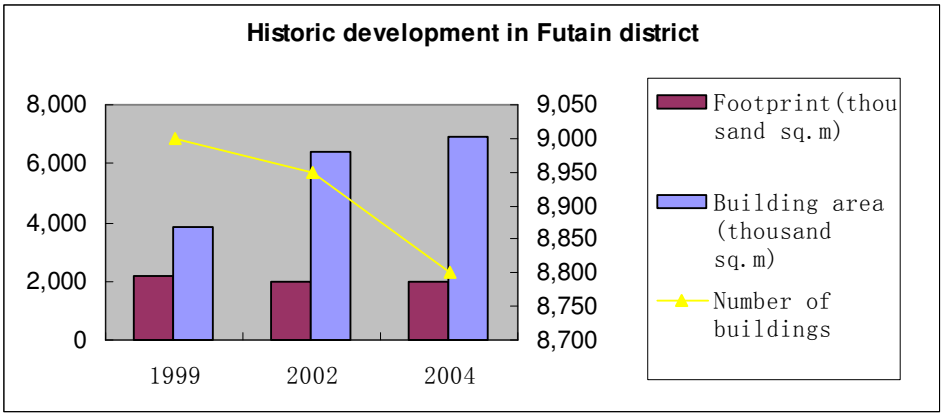
There are in totally 320 urban villages in Shenzhen city (SUPLAB, 2005). Due to the tremendous number and the limited time, this research only analyses urban villages in the Futian district. Futian is located in the central part of the SEZ, in the west of Luohu district, in the east of Longgang district. And it is adjacent to the northern part of Hong Kong. There are two open border ports to Hong Kong in Shenzhen city. One of them is located in the south of Futian district, and it named Huangguang port. Further, both CBDs and city hall are lying in the Futian district. So, Futian is not only the political and culture centre but also the finial and economic centre of Shenzhencity. Experiencing more than 20 years of development, Futian district has been the 'head of dragon' of Shenzhen on many aspects. That means this district represents Shenzhen' image and would be functioned as an example for the other districts' development.

Figure 3.13 Location of Futian District, Shenzhen

3.3.5.2. The difficulty of redevelopment

At present, there are 15 urban villages in Futian district. Although the number is not so big, both building density and plot ratio are highest among the six districts in Shenzhen (see Figure 3.9). All these villages in Futian are belonged to the group of 'mature urban village' according to the urban village classification presented in Chapter 2; consequently they need to be redeveloped urgently. Caused by the good geographic location, these villages accommodate a large number of floating populations, and have lots of negative impacts on urban development. So the redevelopment of these urban villages would encounter more difficulties than in the other districts.

Figure 3.14 Historic developments of urban villages in Futian district



(Source: SUPLAB, 2005)

Figure 3.14 shows the historic development of urban villages from 1999 to 2004. As a consequence of enhancing the management and strengthened redevelopment of urban villages in recent years by the local government, the number of buildings and the footprint area dropped down. But it is rather evident that the building area in Futian district is consistently increasing during these five years. The building area in 2004 was almost two times than 1999. It means if this increased trend is not been controlled, the consequence would be more serious and the redevelopment would be more difficult.

3.4. Data Collection

3.4.1. Interview

3.4.1.1. Topics and utilities for this research

An interview is an efficient and useful method to obtain deep insight into the study area. It is also a direct way to understand the target peoples' ideas. During the fieldwork period, through interviewing, some first hand information was collected. It provided a wide range of information from government concerns, potential social problems to redevelopment strategies. Table 3.2 gives an overview of interview topics and interviewees. Due to privacy reasons, names of the interviewees are concealed here.

Table 3.2 Interview topics and interviewee checklist

No.	Position	Organization	Topic	Utility for this research
1	Official	Shenzhen Urban Planning and Land Administration Bureau (SUPLAB)	The compensation and preferential policies of urban village redevelopment in Shenzhen	[1] Start point for urban village redevelopment [2]Potential obstacles of village redevelopment [3]Aims and objectives of compensation or preferential policies
2	Planner and Researcher	Urban Planning and Design Institute of Shenzhen (UPDIS)	Development history of urban villages in Shenzhen	[1]Urban villages development in six districts [2]Criteria to decide the key urban villages needed to be redevelopment
3	Official and researcher	The Renewal Authority of Futian (RAF)	Current situation of villages in Futian district	[1]Characteristics about villages in Futian district [2]Reasons to redevelop Yunong and Huanggang villages
4	Planner	China Academy (Shenzhen Brach) of Urban Planning and Design (CAUPD)	Redevelopment strategies of urban village redevelopment	[1]Principles should be respected in redevelopment process [2]Items generally contained in redevelopment strategies [3]General framework to constituted strategies
5	Consultant	World Union Properties Consultancy (China) Ltd.	Potential land value of urban village redevelopment	[1] Criteria and weight to evaluate the potential value of village redevelopment [2] Influences on real estate market by redevelopment
6	Researcher	Shenzhen Academy of Sociology (SAS)	Related social and culture aspects of urban village	[1] Current living state of the people in urban villages [2] Potential social problems

				aroused by urban village redevelopment

3.4.1.2. Findings of interview

Through interviewing, the government perspective became clearer. In the past, local authority focused on 're-image physical environment' as their main priority. The aim was to redevelop the urban villages in order to alleviate their negative impacts on the city. Table 3.3 lists the criteria used to decide key urban villages to be redeveloped. However, the government perspective has changed under the new policy of 'harmonious society establishment'. They also claimed to pay more attention to vulnerable groups.

In addition, the redevelopment strategies of urban villages in Futian district are mainly constituted by China Academy (Shenzhen Brach) of Urban Planning and Design (CAUPD) and the World Union Properties Consultancy (China) Ltd. The World Union Properties Consultancy (China) is an organization which is responsible for urban village redevelopment and investment consultation. The consultants of this consultancy provided general criteria and weight (Table 3.4) to evaluate the potential redevelopment value, which is helpful for this research.

Table 3.3 Criteria to decide the key urban villages needed to be redeveloped

No.	Criteria	Indicators
1	Within ecological zone	
2	Within centre business district	
3	Nearby Subway and main road	Within Subway and main road land use region
		Within the 200m buffer of subway station
		Within the 500m buffer of subway station
4	Within planned industry zone	
5	City main landscape regions	Within the range of Municipality
		Within the range of main road
		With the range of main transportation station (port, railway station)

(Source: Based on interview researcher of UPDIS)

Table 3.4 Criteria to evaluate potential value of urban village land based on interview

No.	Criteria	Weight	Indicators
1	Accessibility	0.45	Buffer 500m-0m of subway station
			Buffer 250m-0m of Main road
2	Public service	0.45	Buffer 10000m-0m of City centre
			Buffer 3500m-0m of District centre
			Buffer 500m-0m of Industry zone
3	Environment	0.1	Buffer 700m-0m of Public park
			Buffer 100m-0m Water resource

(Source: Based on interview Consultant of World Union Properties Consultancy Ltd.)

3.4.2. Data sources

In order to understand the current situation of urban villages and evaluate the factors impacted actors' perspectives, several data sources are used. The data list is shown in table 3.5. The data mentioned in this table were collected during the fieldwork period in Shenzhen in the October, 2006. Most of the data were provided from the land use survey programme which was conducted by the Urban Planning and Design Institute of Shenzhen (UPDIS) and Wuhan University. Some of the non-spatial data come from the research reports.

- Investigation report about urban villages in Futian district (SUPLAB, CAUPD and SAS, 2005): in this investigation, the surveyors are divided to three groups. Each group are composed by 7 persons (3 persons come from UPDIS; 2 come from SAS and another 2 come from World Union Properties Consultancy) and conduct four to five villages' survey. They interviewed the original residents, temporary populations and the staffs working in village committee. However, all the demographic data (age structure, gender structure, educated level and etc.), economic data (household income per month, renting area, average rent price, the renting out ratio of houses and etc.) are provided by village committees.
- Survey of the internal environment of urban villages in Shenzhen (UPDIS and SUPLAB, 2005): this survey includes the building quality, public amenity, sanitation, infrastructure and landscape of urban villages. However, each item has been classified into four degree by the surveyors. For example, the building quality is classified into all good, partly good, all common, and partly common.
- Report about the influences on real estate market from urban village redevelopment (UPDIS and World Union Properties Consultancy, 2004): the information about the reasons why temporary population selecting urban villages as their shelters are described in this report.
- Urban village redevelopment plan during the 15th five year in Shenzhen (SUPLAB, 2005): the plan is an official document which functioned as guideline for urban village redevelopment during 2005-2010. This document pointed out the urban villages with serious negative impacts should be redeveloped as soon.
- Urban village redevelopment strategies of Futian district (CAUPD, RAF and World Union Properties Consultancy, 2005): this strategies report described the redevelopment approach, redevelopment stages of each village in Futian district.

Table 3.5 Data checklist

	Data description	**year**	**Data resources**
Spatial	Spot image	2005	UPDIS
	Administrative district. shp	2005	Master plan of Shenzhen from UPDIS
	Water resource protection zone. shp	2005	
	Ecological zone. shp	2005	
	Industry development zone. shp	2005	
	City portal. shp	2005	
	Urban village. shp	2005	Land use survey from Wuhan University
	Main road. shp	2005	Source from Shenzhen Transport Bureau and website:
	Metro station. shp	2005	

	Metro line. shp	2005	http://www.zhaoditu.com/gdszhmp/)
	Bus station. shp	2005	
	Commercial centre. shp	2005	Land use survey from Wuhan University
	Public green land. shp	2005	
	Primary school. shp	2005	
	Hospital and clinic. shp	2005	
Non-spatial	Historic data of urban villages	1999/2002/2004	Information Centre of SUPLAB
	Information about urban village buildings	2005	Information Centre of SUPLAB
	Investigation report about urban villages in Futian district	2005	UPDIS, SAS and World Union Properties Consultancy (China) Ltd.
	Survey of the internal environment of urban villages in Shenzhen	2005	UPDIS and SUPLAB,
	Report about the influences on real estate market from urban village redevelopment	2004	Reported by UPDIS and World Union Properties Consultancy (China) Ltd.
	Urban village redevelopment plan during the 15th five year in Shenzhen	2005	SUPLAB
	Urban village redevelopment strategies of Futian district	2005	CAUPD, RAF and World Union Properties Consultancy (China) Ltd.
Remark: Shenzhen Urban Planning and Land Administration Bureau (SUPLAB); China Academy (Shenzhen Brach) of Urban Planning and Design (CAUPD); Shenzhen Academy of Sociology (SAS); Urban Planning and Design Institute of Shenzhen (UPDIS)			

3.4.3. Identify specific urban villages for further study

According to the administrative zoning, there are 15 administrative villages committee in Futian District (see Figure 3.15).

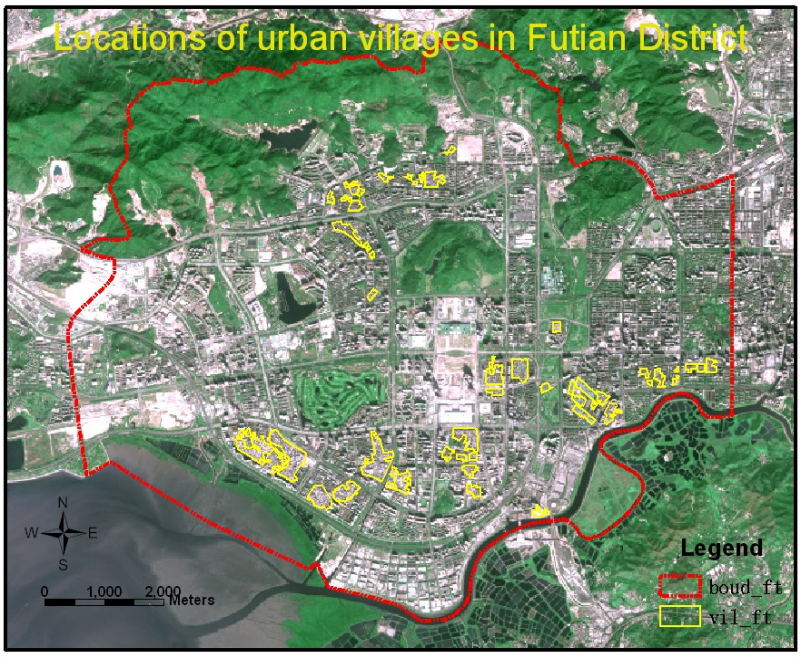


Figure 3.15 Locations of Urban villages in Futian District

(Source: Spot image, SUPLAB, 2005)

For two of them, Yunong and Huangguang which have been redeveloped; the data could not be collected, so these two villages were excluded from the further study. Due to the fact that most non-spatial data are extracted from investigation and research reports, for some villages' non-spatial data were not included in those reports. So, in order to ensure the credibility and rationality of this research, only the villages with complete data will be chose for further study. As the following table shows six villages are selected.

Table 3.6 Further study urban village identification

No.	Village name	Abbreviation	Data item				
			Indigenous population data		Economic data		
			Age structure	Education level	Rent area	Rent ratio	Rent price
1	Xiameilin	XM			√	√	
2	Shangmeilin	SM	√			√	
3	**Xiasha**	**XS**	√	√	√	√	√
4	Shangsha	SS			√	√	√
5	Shawei	SW	√		√	√	√
6	**Shazui**	**SZ**	√	√	√	√	√
7	Xinzhou	XZ			√	√	√
8	**Shisha**	**SHS**	√	√	√	√	
9	Shuiwei	SHW	√	√			
10	**Gangsha**	**GS**	√	√	√	√	√
11	**Tianmian**	**TM**	√	√	√	√	√

12	Futian	FT	√	√	√	√	√
13	Shangbu	SB	√	√	√	√	
14	Yunong	YN	Has been redeveloped				
15	Huanggang	HG	Has been redeveloped				

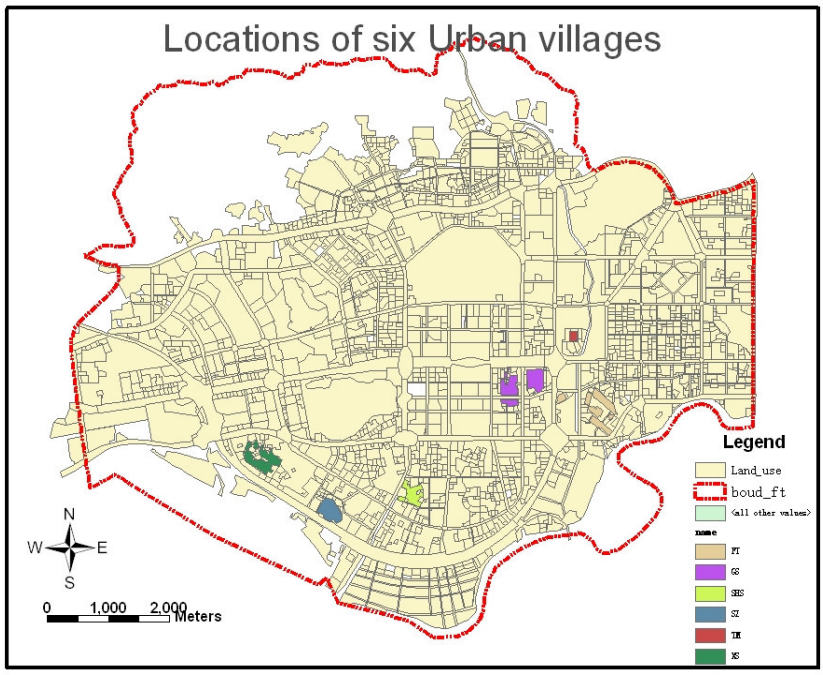


Figure 3.16 Locations of six urban villages

The locations of six urban villages which are proposed for further research have been showed in the Figure above (see Figure 3.16).

3.5. Limitations

After describing the methodology and data needed in this research, the limitations faced are listed below:

[1] All the data collected during the fieldwork period are secondary data. Because of the limited time, I did not do the investigation by myself. Most of non-spatial data (population, economic) come from *Investigation report about urban villages in Futian district (SUPLAB, CAUPD and SAS, 2005)*. They collected these data from village committees. And the internal physical situation (building quality, infrastructure and etc.) come from *Survey of the internal environment of urban villages in Shenzhen* (*UPDIS and SUPLAB, 2005)*, these items have been classified by surveyors subjectively. So, the accuracy and quality of these secondary data will influence this research directly.

[2] The data are collected according to the potential criteria and indicators (see Table 3.1). Due to the lack of data, some important indicators, such as the ventilation, natural lighting, dinning and reading areas, toilet kitchen facilities and etc. are not taken into consideration when evaluating the living conditions.

3.6. Conclusion

To realize the objective of developing a framework to establish and assess the redevelopment strategies, the research method and procedure are identified and generated in the first part of this chapter. The development history of urban village in Shenzhen is reviewed. The general situation of Futian district and the reason to select this district is introduced in the second part. According to the literature review in chapter 2, the needed data which associated with potential indicators to assess the actors' perspective are collected. Nevertheless, the interview and findings are explained in the third part. Due to the lack of data, six urban villages in Futian district are identified as the target villages for further study.

4. Actors perspective analyses for urban villages redevelopment in Futian District

4.1. Introduction

In this chapter, the research procedure described in section 3.2.1 will be applied. At first, the primary information about urban villages in Futian district will be described. The general situation of urban villages can be understood by these information. And the primary information will be explained by two aspects, the social-economic and the physical environment one. This gives the basis and preparation for the following researches. Then, according to the available data, the criteria and indicators to evaluate the factors which impact the actors' perspective will be identified. After the evaluation step, the actors' perspective can be analyzed. In final, the urban village in study area will be ranked by government's concerns, resident's attitude and developer's motivation.

4.2. Data procession

There were 15 urban villages in Futian district before 2004. In the beginning of 2005, 2 of them, Yunong and Huanggang, have been redeveloped. And the data for seven urban villages are not complete. Thus, this research will take the other six urban villages as target for further study. However, in order to know the current situation of urban villages in Futian district comprehensively, all these 13 villages will be put into the current situation analysis.

The living conditions, negative impacts and the potential development value referred to urban villages' geographic locations, so the location and boundary of each urban village need to be delineated firstly. According to the information of each village's site, the urban villages have been located in the main land use thematic Figure of Futian district and the attribute table for each case have been generated. The main attributes of these urban villages are village_id (code of the village), village_name (name of the village), village_pop (population of the village), orig_pop (original population of the village), temp_pop (temproray population in 2004), village_plot (plot ratio of the village), total_area (total building area of the village), rent_area (total rent house area of village in 2004), rent_percent (the percentage of renting area), rent_price (rent price per sq.m of village). Unfortunately, because the investigation report does not indicate the detail information about some villages, some village without specific information do not take as cases for further study in this thesis.

In addition, the integration of non-spatial data and spatial data was done by linking attribute data to geographical data. The attribute data are used from the investigation reports of 2005 conducted by SUPLAB, CAUPD and SAS. The geographical data contains the location of each administrative village. In this research, the administrative village committee has been selected as the smallest spatial unit, some of them might be contains several plots. With this operation, each record in the attribute

database can be correctly joined to the respective administrative village committee area in geographical database.

4.3. Primary information of urban villages in Futian district

4.3.1. Population structure analysis

There are1.28 million people living in Futian district. Among these people, the number of urban registered population is 0.47 million. Temporary population reached 0.81 million. According to investigation report, there are approximate 0.8 million temporary populations in urban villages in Futian district. That means, nearly more than 99% temporary populations lived in urban villages. The number of odds between indigenous populations and temporary populations is overwhelming. Seen from the Figure 4.1, the majority people in urban village are temporary populations. (see Appendix Table I)

Figure 4.1 Population structure in urban villages

(Source: Investigation report of urban villages in Futian district, 2005)

4.3.1.1. Indigenous population

- **Age structure:** In the investigation (SUPLAB, CAUPD and SAS, 2005), original residents are categorized into four degrees by age stages. Senior means the people who are older than 60 years old. Wrinkly means the group aged between 45-60 years old. Youth aged from 18 years old to 44 years old. And minor represents the population younger than 18 years old. From the age structure figures (see figure 4.2), it can be seen that the youth and wrinkly people occupied predominant numbers.

Table 4.1 Age categories of indigenous populations

	Minor	Youth	Wrinkly	Senior
Age	<18 years old	18-44 years old	45-60 years old	>60 years old

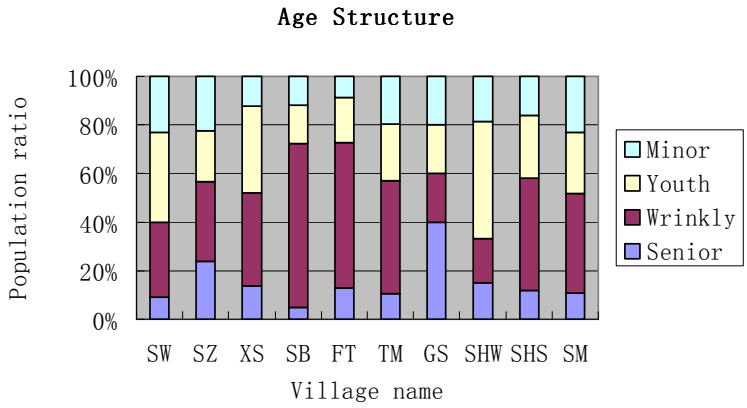


Figure 4.2 Age structure of indigenous populations

(Source: Investigation report of urban villages in Futian district, 2005)

- **Education level:** Villagers' education levels are rather lower. About 30% villagers are just accepted by primary school education or illiteracy. 40% villagers experienced junior school education. Approximate 20% villagers graduated from junior college or senior high school. Merely less than 10% villagers possessed a university diploma or higher degree. The villagers' average education levels have close relationships with their age structure. Most seniors have a lower than education level than primary school level. Majority of wrinkly have a primary school or junior school educated level. In general, youth have higher education. Most of them have senior high school or junior college level.

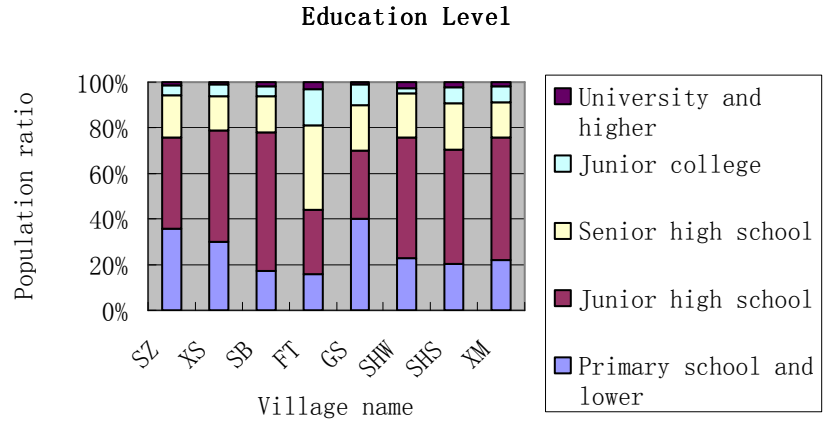


Figure 4.3 Education level of indigenous populations

(Source: Investigation report of urban villages in Futian district, 2005)

- **Household income from renting:** Commonly, villagers are stayed in a rather high income class. Majority of households' incomes are within two income classes, one is 10 to 30 thousand Yuan, and the other is 30-60 thousand Yuan. Furthermore, the income of part households beyond 60 thousand Yuan per month. In addition, approximate 20% villager households possess private cars.

All the above data explained that most villager households have already come into rich class in Shenzhen compared with the average income level (average household incomes are less than 10 thousand Yuan per month).

	Household income per month (RMB)					
	<5 thousand	**5-10 thousand**	**10-30 thousand**	**30-60 thousand**	**60-100 thousand**	**> 100 thousand**
FT	0	0	49	45	5	1
TM	5	5	30	50	10	0
GX	5	5	68	20	2	0
XS	3		59	20	2	0
SS	Approximate 10		Approximate 80		Approximate 10	
SW	Most households' income are 20-3 0thousand Yuan, 3 households are more than 100 thousand, 10 households' income less than 10 thousand Yuan.					

Table 4.2 Household income per month of indigenous populations

(Source: Investigation report of urban villages in Futian district, 2005)

4.3.1.2. Temporary population

- **Age structure:** Large number of temporary population left their home towns working in Shenzhen. So, urban villages are taken functioning as their temporary shelters. As far as we known, the people from 18 years old to 45 years old are main labour forces. That is why the majority of temporary populations lived in urban villages aged from 18 to 45. Seen from investigation report (SUPLAB, CAUPD and SAS, 2005), the population younger than 18 years old or older than 45 years old occupied merely 10 percentages.

  Furthermore, approximate 70% adults whom older than 18 years old are single, 30% are married. However, among those married people, only 30% population moved to Shenzhen with their families. That is another reason why most temporary populations' ages are concentrated on 18 to 45 years old, but younger than 18 years old or older than 45 years old.

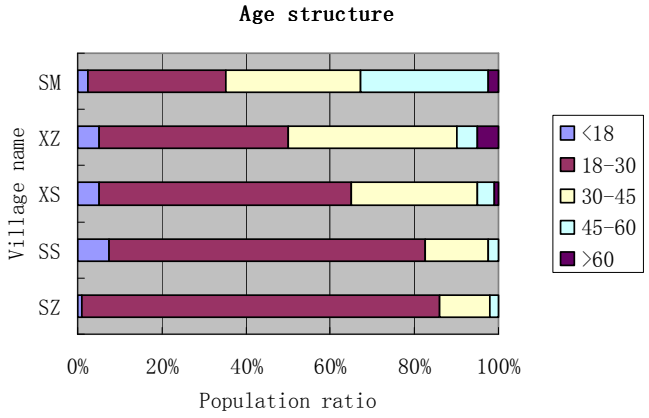


Figure 4.4 Age structure of temporary populations

(Source: Investigation report of urban villages in Futian district, 2005)

- **Occupation structure:** Futian district predominated by tertiary industry, large number of shops, restaurant, recreation places sited in this district. Thus, about half number of temporary population that live in Futian are employed by these work places. Their occupations are decorator, Carrier, Waiter, Pub dancer and Barmaid. Almost 20% temporary populations are office staffs and 5% are businessmen, they are the relative high-income groups among temporary populations.

  Excepting for above occupations, approximate 20% of the populations is unemployed. Among these people, about 5% are fended by others, 5% are hunting jobs. And additional 10% are engaged in illegal activities. They even organized some gangs, who are the main forces that generating social insecurity and instability.

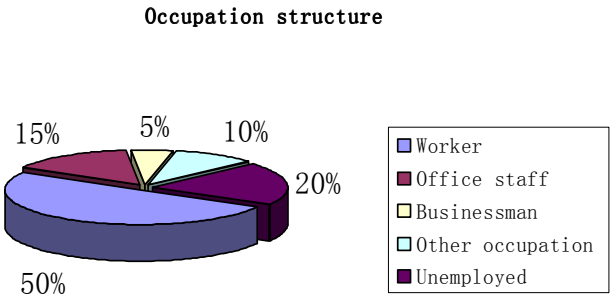


Figure 4.5 Occupation structure of temporary populations

(Source: Investigation report of urban villages in Futian district, 2005)

The table (Table 4.3) below is a list for occupation groups.

Table 4.3 Groups and occupations of temporary populations

Groups	Occupations
Worker	Decorator, Construction worker, Porter, Carrier, Waiter, Pub dancer, Barmaid, etc.
Office staff	Technician, Manager, Taxi driver, Sales staff, Journalist, Editor, etc.
Businessman	Small capitalist, Small-scale businessman, etc.
Unemployed	Number of black gangs, Smuggler, Drug traffickers, Brigands, etc.

(Source: Investigation report of urban villages in Futian district, 2005)

- **Motivations of renting houses in villages:** Futian district is located in central area of Shenzhen. Due to the advantages of geographic and traffic conditions, the average price of flat in this district is rather high. The majority of the floating population can not buy the expensive accommodations or afford the expensive rent of these kinds of common flats. Thus, urban villages become their suitable selections. According to the report about influences on real estate market from urban village redevelopment (UPDIS and World Union Properties Consultancy, 2004), the researchers once interviewed temporary populations who are living in urban villages about their motivations to select villages as their shelters.

Seen from the table below (Table 4.4), most temporary populations living in villages are in virtue of the cheap rent and convenient living environment. In other words, the cheap rent and convenient traffic facility or public facilities are real attractions which lead these villages so popular among floating populations.

Table 4.4 Motivations of temporary populations living in urban villages

Groups	***Attractive reasons***
Worker	Cheap rent, convenient living environment; some of them are arranged in villages by their employers
Office staff	Cheap rent, convenient living environment; near the working places
Businessman	Cheap rent, convenient living environment; some of them have business in urban village
Unemployed	Weakly administration; it is easy to hide in villages

(Source: Report about influences on real estate market from urban village redevelopment, 2004)

- **Income situation:** The incomes of temporary populations in urban villages are lower. In general, their average income less than 2000 Yuan RMB per month. In some urban villages, temporary peoples' incomes are even less than 1000 Yuan RMB. This is a relatively low-income level in Shenzhen, especially comparing with indigenous people. The gap between the haves and have-nots are enlarged these years. This dual- polarization phenomenon in urban villages is a significant essential for social insecurity and instability.

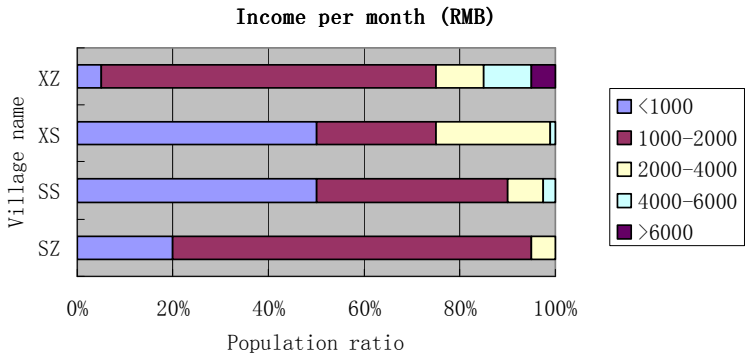


Figure 4.6 Income distribution of temporary population

(Source: Investigation report of urban villages in Futian district, 2005)

4.3.2. Economic income analysis

As mentioned in the pervious chapters, the incomes of indigenous people in urban villages mainly come from renting houses. Therefore, the income loses (generated by urban villages redevelopment) would impact original residents' attitude. Due to the different built-up scale and population number of each village, the economic loses only evaluated by renting area is not reasonable and unrealistic. Thus, the index renting area is used to divide the number of indigenous people. Then, the renting area per capita (see figure 4.7) is generated by these two indexes. The rent loses become comparable calculated by renting area per capita, but the total rent areas.

Although most houses of urban villages are rented in the inner SEZ, few of them are still idle. So the rent ratio (the rate of house rented out) concept is used as another index to evaluate the renting loses. In addition, rent price of each village is different, which is a direct factor to influence the economic loses. Thus, in terms of the price information, the mean price can be calculated which is more comparable.

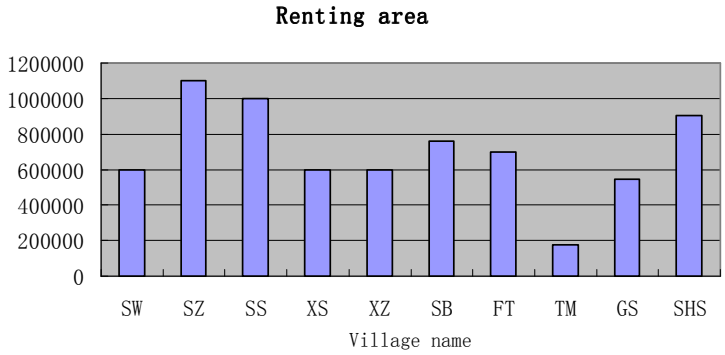


Figure 4.7 Total renting area of each village

(Source: Investigation report of urban villages in Futian district, 2005)

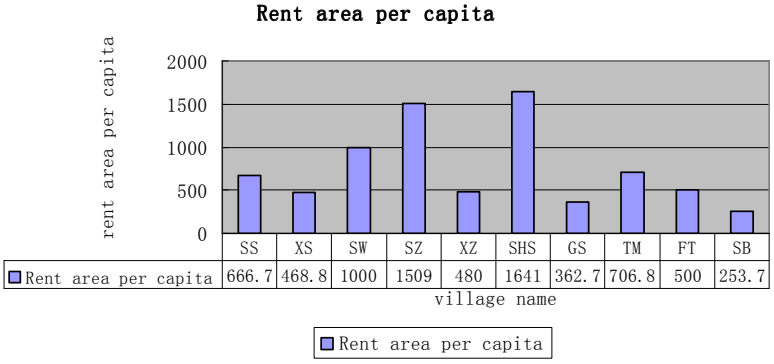


Figure 4.8 Rent areas per capita

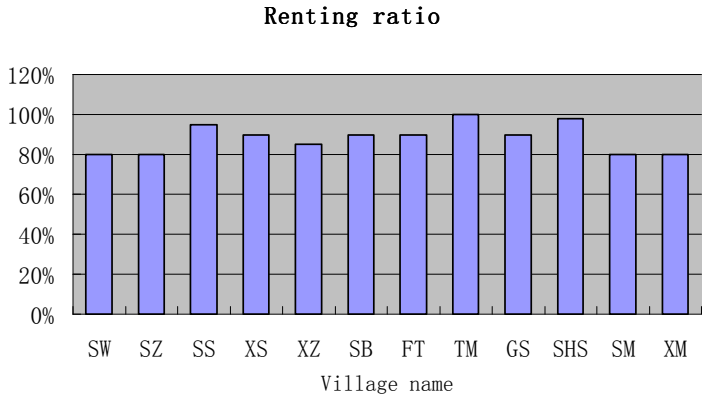


Figure 4.9 Renting out ratio of each village

(Source: Investigation report of urban villages in Futian district, 2005)

Table 4.5 Rent price of each village

Village name	SW	SZ	SS	XS	SHS	SB	FT	TM	GS
Rent price	15-20	20-30	15-25	15-25	15-25	20-30	20-30	26	20-30
Degree	Low	High	Mediate	Mediate	Mediate	High	High	High	High
Mean	17.5	25	20	20	20	10	10	26	25

(Source: Investigation report of urban villages in Futian district, 2005)

4.3.3. Physical environment analysis

In general, physical environment included lots of aspects, such as the sanitation, infrastructure, public amenity, building quality and etc. Further, the building density and plot ratio are two common and useful indexes to assess the physical environment.

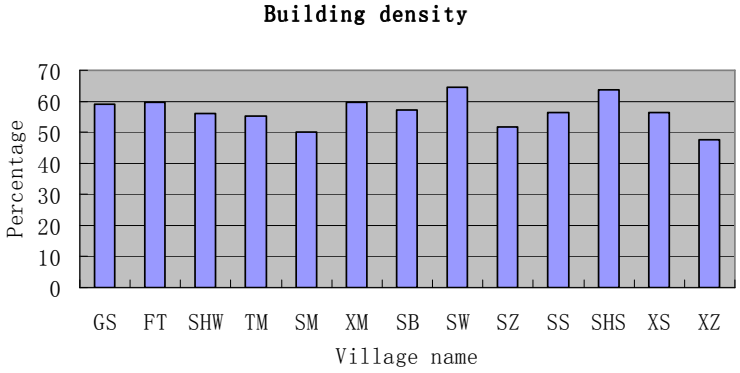


Figure 4.10 Building density of each urban village

(Source: Investigation report of urban villages in Futian district, 2005)

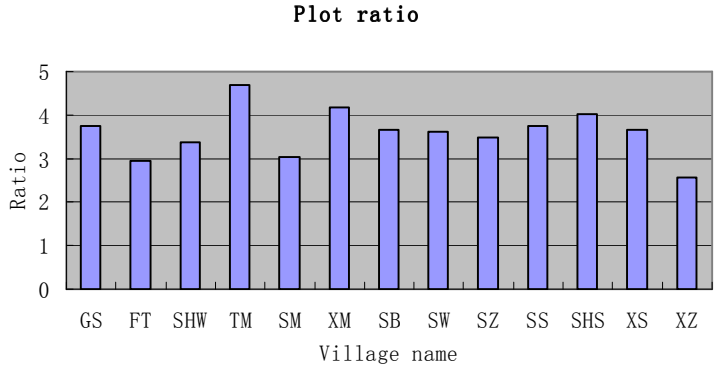


Figure 4.11 Plot ratio of each urban village

(Source: Investigation report of urban villages in Futian district, 2005)

In terms of the urban planning criterion in China (China Construction Sector, 1999), residential building is abbreviated as R. According to Shenzhen land use survey which conducted by Wuhan University in 2006, the residential buildings in urban villages is represented by symbol R4. R4 is

classified into two categorise, the R4a and R4b. R4a means the building with better quality. R4b means the buildings' quality is worse. The blue polygons show R4a, with better quality. And the green polygon show R4b, worse quality. The Figure 4.12 told the general situation about building quality.

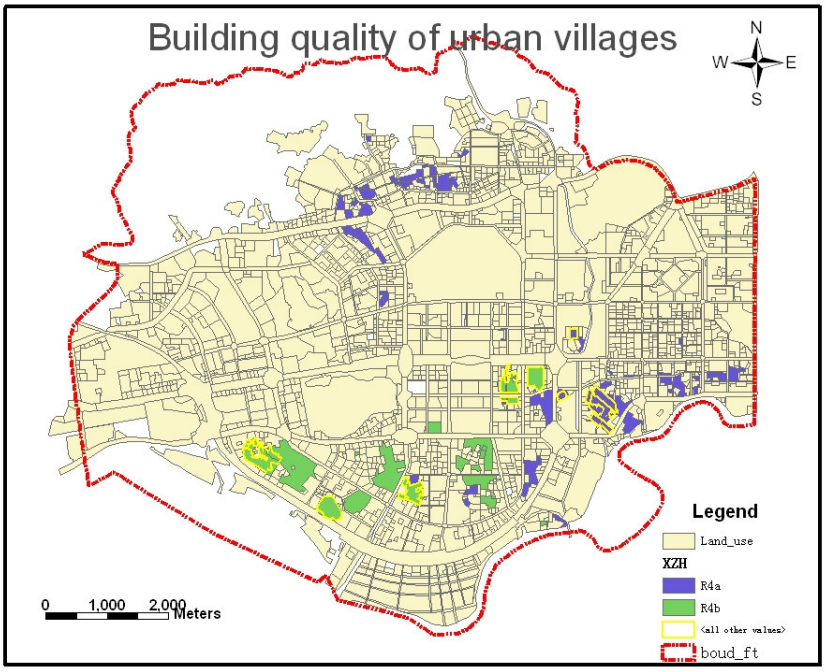


Figure 4.12 Building quality of urban villages

For the other aspects of physical environment, the survey by UPDIS and SUPLAB in 2005 is utilized to indicate the internal environment. The weakness of this part of data is they have been assessed by the surveyors. The four different items (e.g. sanitation), has been classified into four degrees, the very good, good, common and bad.

Table 4.6 Internal situation investigation table about urban villages in Futian

Items	Degree	Village name abbreviation					
		Xiasha (XS)	**Shazui** (SZ)	**Gangsha** (GS)	**Tianmian** (TM)	**Futian** (FT)	**Shisha** (SHS)
Sanitation	Very good						
	Good	√	√		√	√	
	Common			√			
	Bad						√
Building quality	All good	√	√		√		
	All common					√	
	Partly good						√
	All bad			√			
Infrastructure	Very good				√		
	Good	√	√			√	
	Bad			√			√
	None						

Public amenity	Very good	√			√		
	Good			√		√	
	Bad		√				√
	None						

(Source: Survey of the internal environment of urban villages in Shenzhen, UPDIS & SUPLAB, 2005)

4.4. Actors perspective analyses

4.4.1. Government's concerns

As mentioned in Section 3.2.1, government concerns include two aspects, one is living condition, and the other is negative impacts. These two factors are evaluated respectively in the following sections.

4.4.1.1. Living condition analysis

Table 3.1 has listed the potential criteria and indicators of living condition evaluation. The living condition is assessed by external and internal variables. However, due to the lack of ventilation, natural lighting, dinning and reading areas, toilet kitchen facilities data, only the situation of infrastructure, sanitation, public amenity and building quality are utilized as indicators to evaluate the internal environment. Furthermore, because the building quality survey by Wuhan University is general, it is hard to use this data to do the comparisons between each village. So, the building quality situation surveyed by UPDIS and SUPLAB is used in this research.

As it mentioned in Table 4.4, the motivations of temporary populations to select urban villages as their shelter, are the cheap rent, convenient living environment and near their working places. Most of them do not care much about the internal environment so much. Thus, when assess the living environment; the external environment should be given more weight than internal environment. The given weight for each criteria and indicators are shown in above table (see Table 4.7).

Table 4.7 Criteria and indicators to assess living conditions

Variables	Criteria/ weight	Indicators/ weight
External environment (0.6)	Public facility (0.5)	Area proportion of urban villages within a buffer 500mof primary school (0.3)
		Area proportion of urban villages within a buffer 1000m of hospital (0.35)
		Area proportion of urban villages within a buffer 500m of green land or park (0.35)
	Accessibility (0.5)	Number of metro stations within a buffer 500m of urban village (0.2)
		Road density within a buffer 500m of urban village (0.3)
Internal environment (0.4)	Infrastructure (0.25)	The assessed degree of infrastructure by UPDIS and SUPLAB
	Sanitation (0.25)	The assessed degree of sanitation by UPDIS and SUPLAB
	Public amenity (0.25)	The assessed degree of public amenity by UPDIS and SUPLAB
	Building quality (0.25)	The assessed degree of building quality by UPDIS and SUPLAB

- **Public facility:** According to the service catchment of primary school, hospital and green lands respectively, the following three Figures are generated (see Figure 4.13-4.15). Then the area proportion of each village within the catchment can be calculated (see Table 4.8-4.10). Through these processing, the fundamental situation of public facilities of each village can be known.

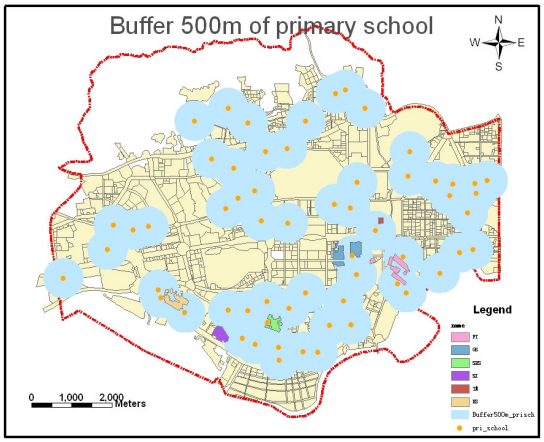


Figure 4.13 Buffer 500m of primary school

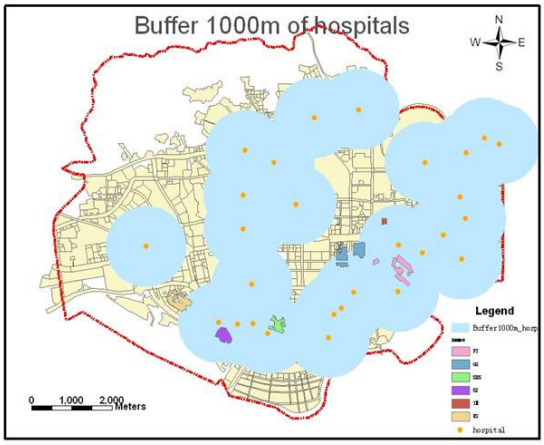


Figure 4.14 Buffer 1000m of hospitals

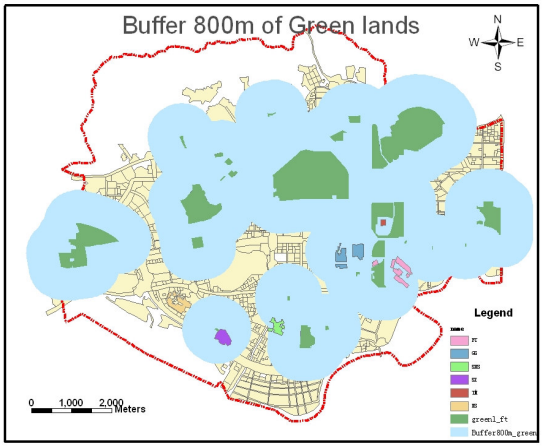


Figure 4.15 Buffer 800m of green lands

Table 4.8 Proportion of covered area by buffer 500m of primary schools

No.	Name	Area of urban village (sq.m)	Area covered by primary school buffer 500m (sq.m)	Proportion
1	FT	159943	144361	0.9
2	GS	189889	15196	0.8
3	SHS	89034	89034	1
4	SZ	103482	35831	0.3
5	TM	18265	18265	1
6	XS	145817	145817	1

Table 4.9 Proportion of covered area by buffer 1000m of hospitals

No.	Name	Area of urban village (sq.m)	Area covered by hospital buffer 1000m (sq.m)	Proportion
1	FT	159943	159943	1
2	GS	189889	117887	0.6
3	SHS	89034	89034	1
4	SZ	103482	103482	1
5	TM	18265	18265	1
6	XS	145817	42263	0.3

Table 4.10 Proportion of covered area by buffer 800m of green lands

No.	Name	Area of urban village (sq.m)	Area covered by green lands buffer 800m (sq.m)	Proportion
1	FT	159943	159943	1
2	GS	189889	189889	1
3	SHS	89034	89034	1
4	SZ	103482	103482	1
5	TM	18265	18265	1
6	XS	145817	0	0

- **Accessibility:** For evaluating the accessibility of urban villages, the number of metro stations within buffer 500m of urban villages is utilized as one indicator. In order to avoid the influences from differeniation of urban villages' area, the road density within buffer 500m of urban villages is taken as another indicator. The buffer Figure below shows the relationships between urban villages and metro stations, and urban villages and roads.

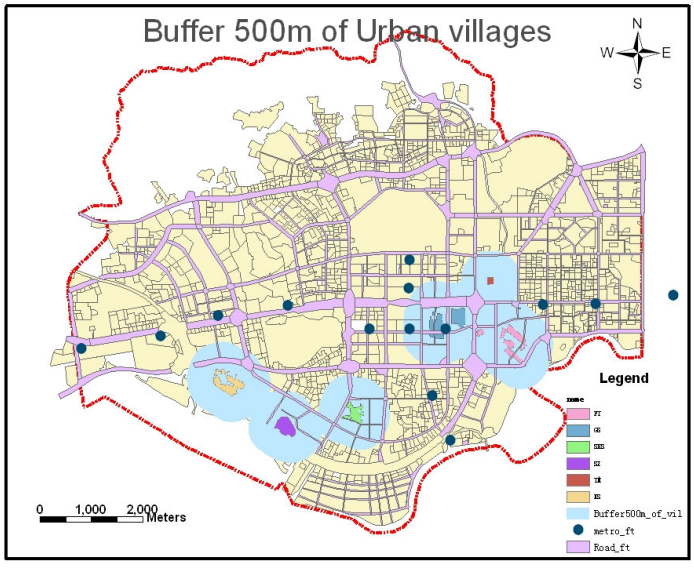


Figure 4.16 Buffer 500m of urban villages

Table 4.11 Road density within buffer 500m of urban villages

No.	Name	Area of buffer 500m (sq.m)	Road area within buffer 500m (sq.m)	Road density
1	FT	2351247	942916	0.4
2	GS	2098190	1024269	0.5
3	SHS	1526646	308899	0.2
4	SZ	1420792	145203	0.1
5	TM	1060383	670955	0.6
6	XS	1747995	423180	0.2

After buffering 500m of each urban village, it can be found that there are two metro stations within the buffer area of village GS. For the other villages, none metro stations distributed in their buffer areas. So, for this indicator, the village GS is getting one score and the others zero score. Then the urban villages are classified according to other indicators (see Table 4.12).

Table 4.12 Classified urban villages according to each indicator

Score	Area proportion within buffer range	Road density	Internal situation		
			Living sanitation	Building quality	Infrastructure/ public amenity
3	1	0.6-0.7	Very good	All good	Very good
2	0.5-0.9	0.4-0.5	Good	All common	Good
1	0.1-0.4	0.2-0.3	Common	Partly good	Bad none
0	0	0-0.1	Bad	All bad	None

Table 4.13 Ranking urban villages by living conditions

No.	Name	Score			Final score	Rank
		External environment		Internal environment		
		Public facility	Accessibility			
1	FT	2	0.6	2	1.58	2
2	GS	1.65	0.8	0.75	1.035	6
3	SHS	2.3	0.3	0.75	1.08	5
4	SZ	1.7	0	1.75	1.21	4
5	TM	1.65	0.9	2.75	1.875	1
6	XS	1.25	0.3	2.5	1.465	3

At a last step, the final score of each urban village can be calculated by weighting each indicator. In terms of final score, the situation of living condition is ranked. The living condition of village TM is best among these six villages. And GS is worst.

4.4.1.2. Negative impact on urban development

Studies of the negative impacts have been the focus of China researchers for a long time. The main researches have been review in Chapter2. The document of Shenzhen local authority, "urban village redevelopment planning during the 15th five year (2005-2010) plan" (SUPLAB, 2005),discribed that

the urban villages which negatively impact urban development should be considered as the key villages to be redeveloped urgently.

- Impact the enhancement of land price
- Impact the optimization of urban structure
- Impact the improvement of urban landscape

This document even pointed out definitely that the urban villages which located in the 250m buffer area of subway station should be rebuilted. And the villages located within the 500m buffer area of subway station should seemed be the key urban village to be redeveloped.

Combining with the potential criteria identified in Section 3.1 and the interview findings from UPDIS (see Table 3.2) , the criteria and indiators are identified in the table below.

Table 4.14 Criteria and indictors to assess negative impacts

Factor	Criteria/ weight	Indicators/ weight
Negative impacts	Land price enhancement (0.3)	Distance from subway station (0.4)
		Distance from commercial centre (0.4)
		Distance from metro line (0.2)
	Urban structure optimization (0.35)	Within the planned industry zone
		Within the ecology protection zone
	Urban image improvement (0.35)	Distance from main road (0.35)
		Distance from CBD (0.35)
		Distance from transportation terminal (0.3)

At first, the Figures used to indicate the indicators are generated. Figure 4.17, 4.18 and 4.19 show the indicators for land price enhancement. Because there is no planned industry zone in Futian district, the villages located within the ecological zone is the only indicator reflecting the impact for urban structure optimization (see Figure 4.22). And Figure 4.23, 4.24 and 4.25 shows the indictors reflecting the impact for urban image improvement.

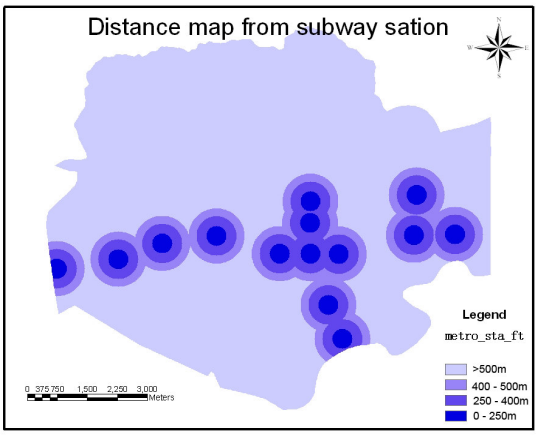


Figure 4.17 Distance map from subway station

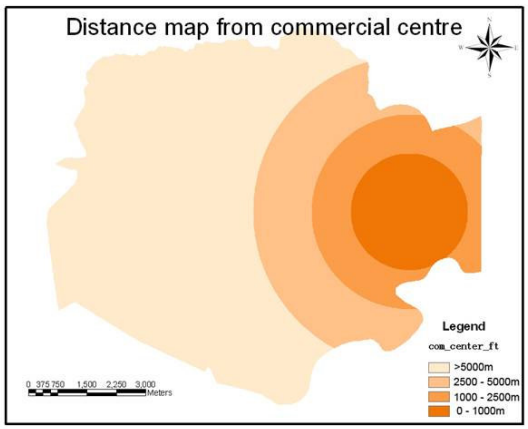


Figure 4.18 Distance map from commercial centre

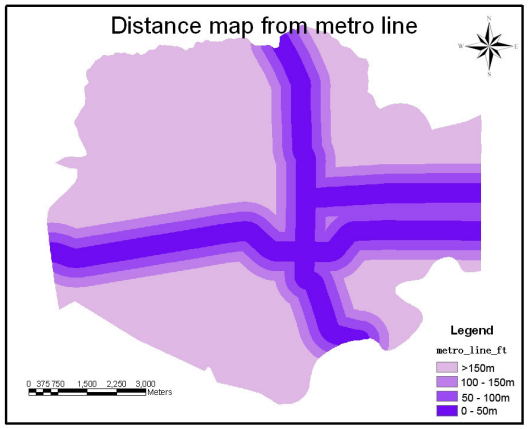


Figure 4.19 Distance map from metro line

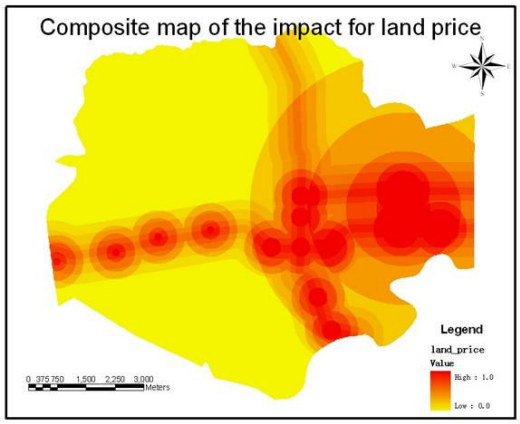


Figure 4.20 Composite map of the impact for land price

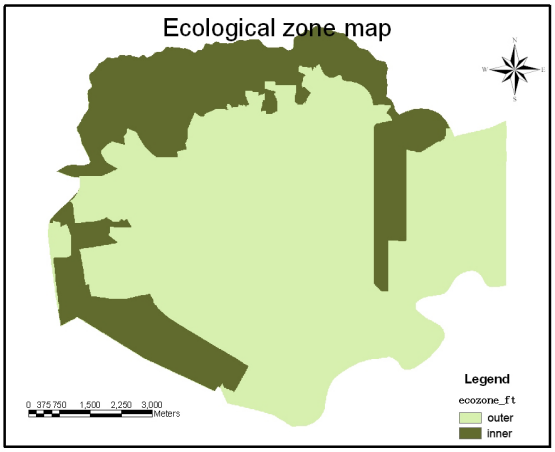


Figure 4.21 Ecological zone map

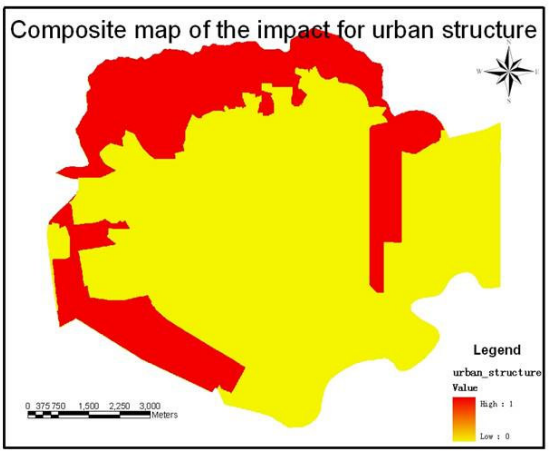


Figure 4.22 Composite map of the impact for urban structure

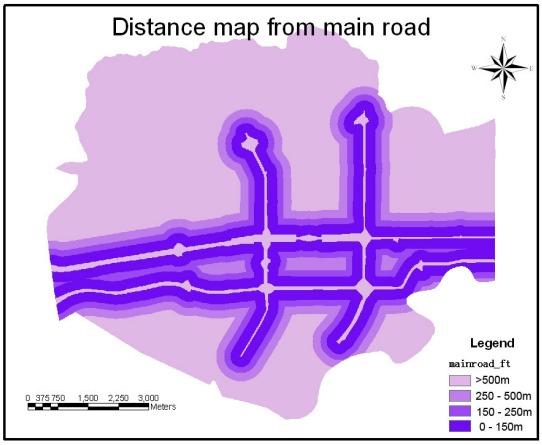


Figure 4.23 Distance map from main roads

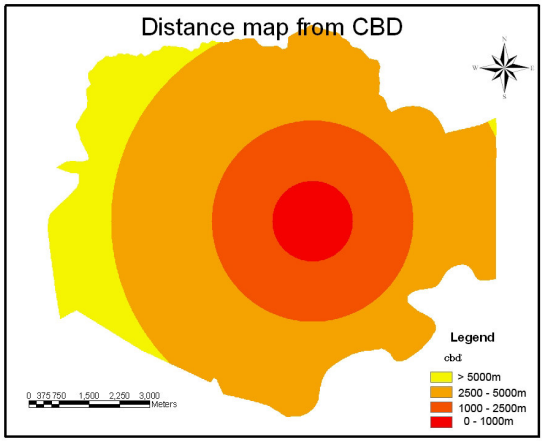


Figure 4.24 Distance map from CBD

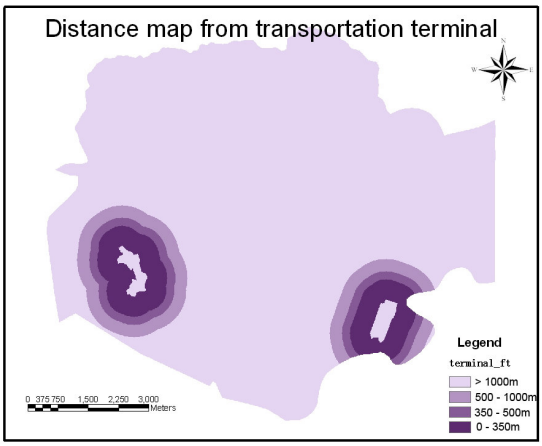


Figure 4.25 Distance map from transportation terminal

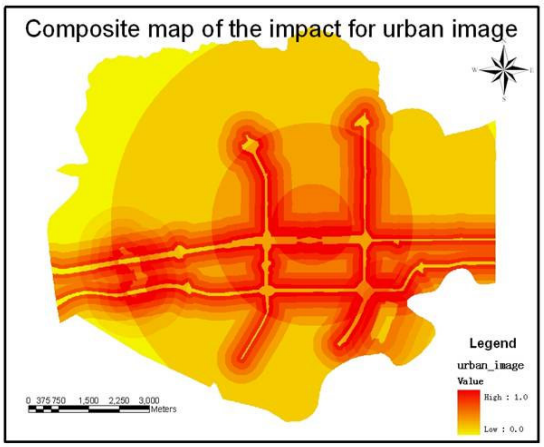


Figure 4.26 Composite map of the impact for urban village

By using the three composite Figures (Figure 4.20, Figure 4.22 and Figure 4.26), the composite Figure of negative impacts can be generated (see Figure 4.27). Under the Arcgis environment, the function Zonal Statistics can help to calculate the value of each urban village.

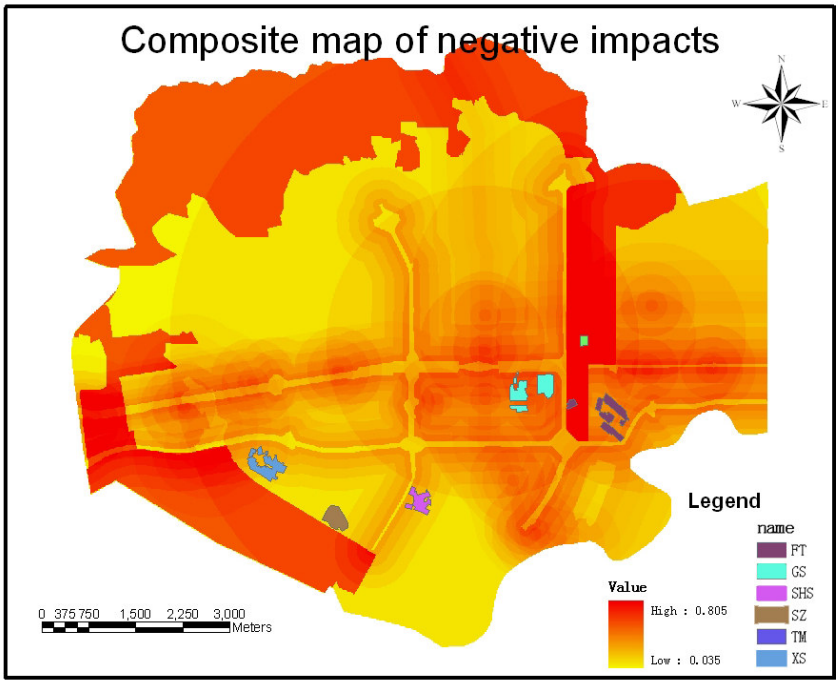


Figure 4.27 Composite map of negative impacts

Figure 4.28 shows the results of negative impacts calculation. The village with strongest negative impacts on the city is village TM. That is because TM located in ecological zone. And the maximum value of FT is also high because of the small plots of the village FT distributed in ecological zone. Comparing by the mean values, TM generated strongest negative impact, and GS followed it ranking in the second. Then FT, SHS, XS and SZ ranked on sequence.

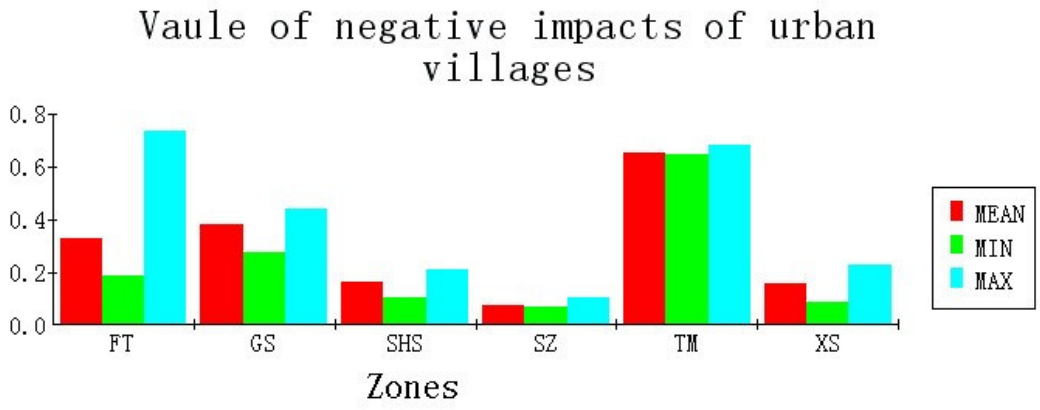


Figure 4.28 Value of negative impacts of urban villages

4.4.2. Residents' attitude

From previous researches, it is hard to find related indicators to analyze residents' attitude in the process of urban village redevelopment. According to the interests of residents in urban village redevelopment programs (Section 2.6.1.3), original residents' attitude would be impacted by the rent loses and their adaptive faculty. As it mentioned, Xie (P175, 2005) once investigated the indigenous populations in urban villages of Shenzhen, he summarized that the older the age the more possibility of a strong opposition towards against the redevelopment project. Accordingly, the lower the education levels the more possibility of a strong opposition towards redevelopment project (Liu and Chen, 2006). In fact, these two indexes are reflected the residents worried about their adaptive faculty on society.

Table 4.15 Original residents' attribution

Factors	Indicators
Income loses (0.6)	Average renting area for each indigenous person possessed
	Rent price per sq.m
	Rent out ratio
Adaptive faculty (0.4)	Age structure (proportion of older populations)
	Education level (proportion of low education level)

4.4.2.1. Income loses

Combining with existence data, the formulation to calculate the rent loses can be created like this:

Rent loses = renting area per capita × renting ratio ×rent price per sq.m (Section 4.3.2).

So the average rent loses of each urban village can be generated by this formulation.

Table 4.16 Rank urban villages by potential renting loses

No.	Name	Renting area per capita	Renting ratio	Average rent price	Score
1	FT	500	90%	10	1
2	GS	363	90%	25	2

3	SHS	1641	98%	20	6
4	SZ	480	80%	25	4
5	TM	707	100%	26	5
6	XS	480	90%	20	3

Seen from the table above, the residents lived in SHS would afforded biggest economic loses. And the economic loses of FT is smallest.

4.4.2.2. Adaptive faculty

Adaptive faculty mainly evaluated by the population structure (the age structure and education level). In this research, the people with education level lower than senior school are supposed to belong to the low-educated people. Because all minors (younger than 18 years old) are accepting school education at present. And the population number lower than senior high school is collected. In China, the common age in senior high school is younger than 18 years old. So the low-educated number can be calculated by the following formulation:

Low-educated number = total population number – (number of people lower than senior high school-number of minors)

Table 4.17 Scored urban villages according to proportion of lower education level

No.	Name	Population number	Number of Minor (<18 years old)	Population number lower than senior high school	Lower educated population	Proportion of lower education	Score
1	FT	1430	86	1158	1072	0.75	5
2	GS	1000	200	900	700	0.7	1
3	SHS	550	88	495	407	0.74	3
4	SZ	729	163	686	523	0.72	2
5	TM	250	49	234	185	0.74	3
6	XS	1319	162	1240	1078	0.82	6

Older people have accustomed to current lifestyle. Urban village redevelopment means the current social relationships will be damaged for them. Nevertheless, their adaptive faculty should be lowest. So the older people generally against these kinds of redevelopment projects. In this research, the proportion of people older than 60 years old is identified as one indicator (see Table 4.18).

Table 4.18 Scored urban village according to proportion of older people

No.	Name	Population number	Population older than 60 years old	Proportion of older people	Score
1	FT	1430	129	0.09	1
2	GS	1000	400	0.4	6
3	SHS	550	66	0.12	3
4	SZ	729	174	0.24	5
5	TM	250	26	0.1	2
6	XS	1319	182	0.14	4

After calculating, the final score can reflect the residents' attitude for urban village redevelopment. So, the higher the score is, the more possibility that residents are against redevelopment. Thus, according to the below Table 4.19, the highest support rate of original residents for redevelopment is GS. And the support rate in SHS is lowest.

Table 4.19 Final rank of resident's attitude

No.	Name	Score of economic impact	Score of culture and social impact	Final score	Rank
1	FT	1	3	1.8	2
2	GS	2	3.5	1.6	1
3	SHS	6	3	4.8	6
4	SZ	4	3.5	3.8	3
5	TM	5	2.5	4	4
6	XS	3	5	3.8	3

4.4.3. Developers' motivation

The developers' motivation has been described in Section 2.6.1.3. It is mainly decided by potential land profit and the need compensation fees. Generally, accessibility, public facility and environmental landscape are significant criteria to evaluate the potential value for one site of land development (see Section 2.6.3.2). Here, the interview findings (see Table 3.3) of criteria and indicators are taken in this research. Based on these literatures, the criteria and indicators used to assess the developers' motivation are listed in table 4.20.

Table 4.20 Criteria and indicators to assess potential land value

Factors	Criteria/ weight	Indicators/ weight
Potential value (0.7)	Accessibility (0.45)	Distance from subway stations (0.5)
		Distance from Main roads (0.5)
	Public service (0.45)	Distance from commercial centre (0.5)
		Distance from CBD (0.5)
	Environment (0.1)	Distance from Public parks (0.35)
		Distance from neighbourhood green lands (0.35)
		Distance from Water resources (0.3)
Compensation fees (0.3)	Compensation volume (1.0)	Building density (0.5)
		Plot ratio (0.5)

4.4.3.1. Potential land value

In order to evaluate the potential land value, the indicator Figures are generated at first. Then composite Figures for each criterion can be generated by these indicator Figures. At last, the final composite Figure (Figure 4.39) is created.

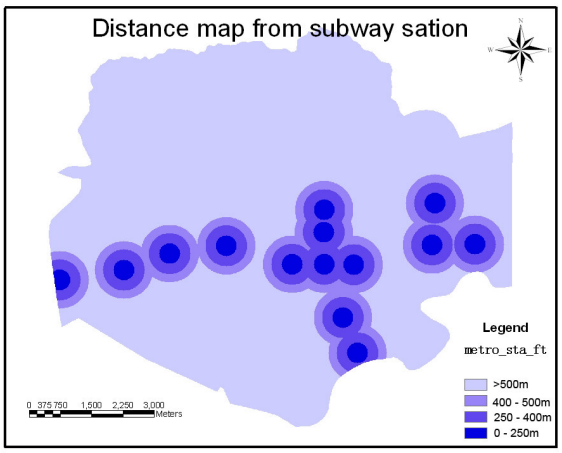


Figure 4.29 Distance map from subway stations

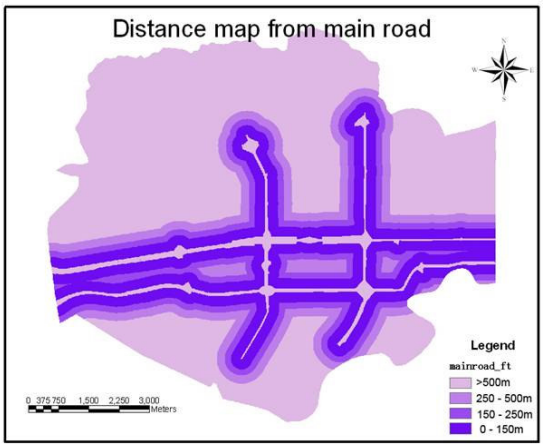


Figure 4.30 Distance map from main roads

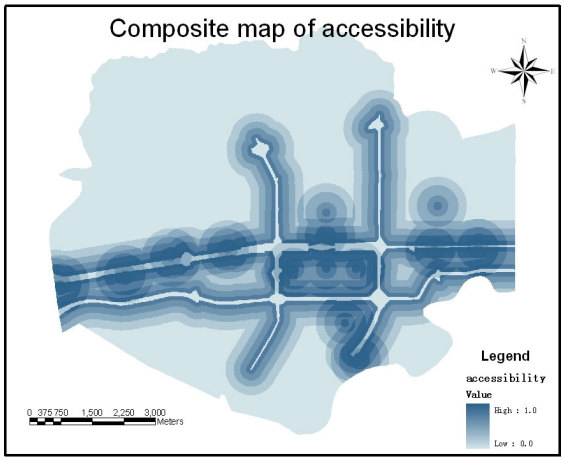


Figure 4.31 Composite map of accessibility

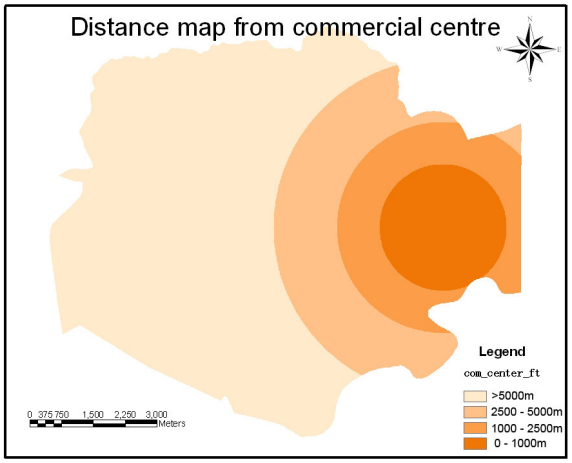


Figure 4.32 Distance map from commercial center

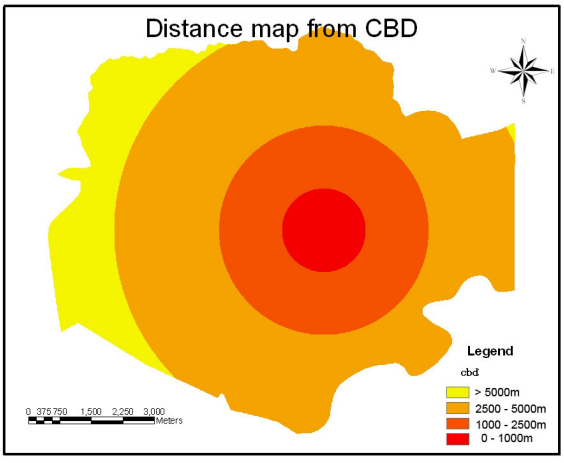


Figure 4.33 Distance map from CBD

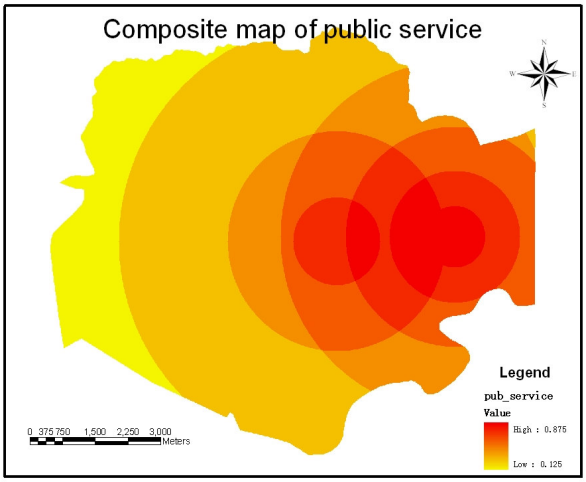


Figure 4.34 Composite map of public service

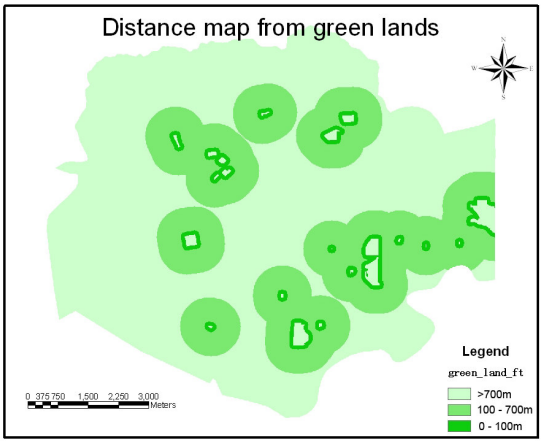


Figure 4.35 Distance map from small green lands

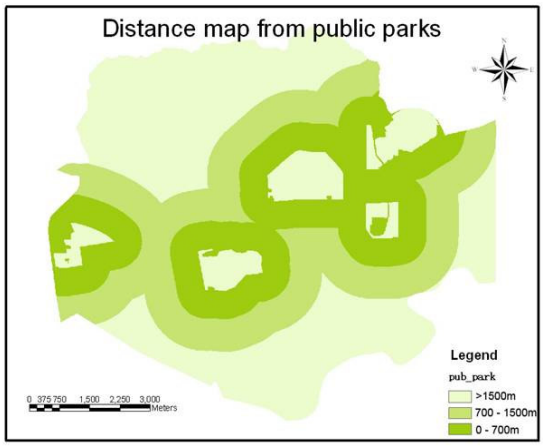


Figure 4.36 Distance map from public parks

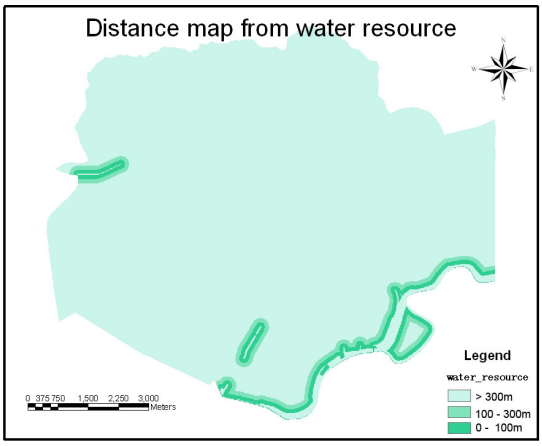


Figure 4.37 Distance map from water resource

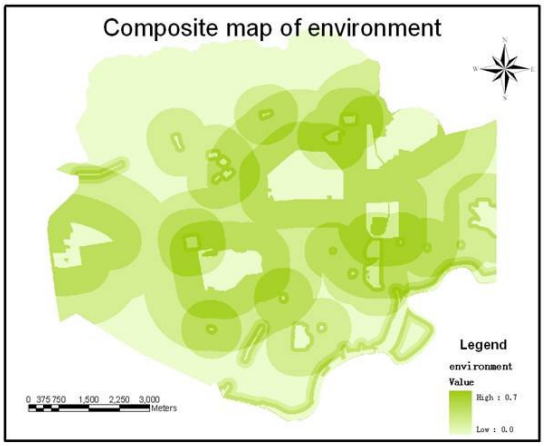


Figure 4.38 Composite map of environment

As the final composite Figure shows, the value can be used to reflect the potential land value of each village. Under Arcgis environment, the function Zonal Statistics can help to statistic the values (see Figure 4.40). There is a big gap between the min value and the max value of TM. That is because a small plot of TM is not sited together with the other plots. Seen from the mean of potential value of each village, GS has biggest redevelopment value, and the value of SZ is smallest. In other word, GS might be much more attractive for developers than the other fives.

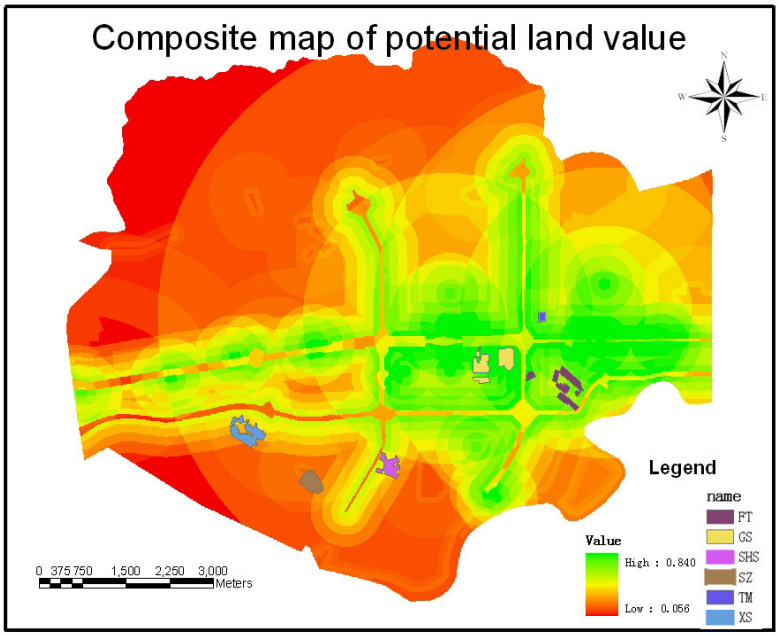


Figure 4.39 Composite map of potential land value

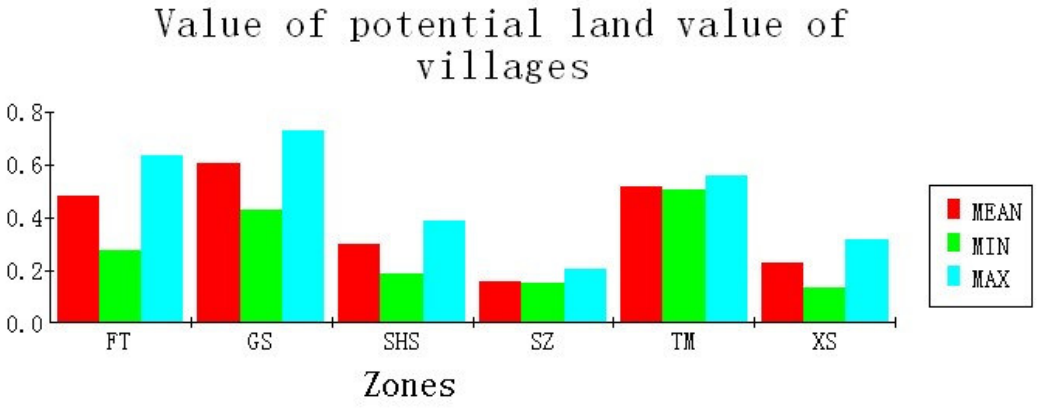


Figure 4.40 Value of negative impacts of urban villages

4.4.3.2. Compensation volume

In terms of the present compensation policy, the compensation fees always are calculated by the building area. Due to the different scale of urban village, the larger the scale, the larger the building

area. Thus, using building area directly as an indicator to assess the compensation is not very scientific. So the plot ration and building density are selected as two indices.

Table 4.21 Classified urban villages according to building density and plot ratio

Score	Building density	Plot ratio
0.75	0.51-0.55	2.1-3.0
0.5	0.56-0.60	3.1-4.0
0.25	0.61-0.65	4.1-5.0

Table 4.22 Rank urban villages by the attraction for developers

No.	Name	Compensation volume		Potential value	Final score	Rank
		Building density	Plot ratio			
1	FT	0.60	2.9	0.5	0.5	2
2	GS	0.59	3.8	0.6	0.6	1
3	SHS	0.64	4.0	0.3	0.3	3
4	SZ	0.52	3.5	0.2	0.3	3
5	TM	0.55	4.7	0.5	0.5	2
6	XS	0.56	3.7	0.2	0.3	3

Combining with the value of potential redevelopment value, the final score can be calculated. Seen from the rank, GS has biggest attraction for developers. FT and TM also have bigger attraction than the other threes.

4.5. Conclusion

At the first part of this chapter, the current situation is understood by population, economic and physical aspects data analyses. The population number gap between indigenous and temporary is rather evident. The income gap between indigenous and temporary is also tremendous. And the differentiations on economic aspect and physical aspect of each village are indicated in the first part also.

Furthermore, based on the current situation data analyses, the factors impacted the actors' perspectives are evaluated by related criteria and indicators. By using the GIS based MCE method; the urban villages are valued in terms of each factor respectively. Through analyzing, the actors' perspective for the redevelopment of each urban village can be ranked by these values.

5. Assess the redevelopment strategies of urban village in Futian District

5.1. Introduction

For the actor's perspective analyses in this last chapter, the potential redevelopment strategies, including redevelopment sequence (stage), redevelopment approach and redevelopment leader will be explored. At first, the redevelopment strategies constituted by authority are reviewed and summarized. Secondly, the research procedure mentioned in Section 3.2.2 and Figure 3.2 will be conducted. Following the assessing procedure, the potential strategies can be proposed by the Game Theory. Then, the official strategies will be assessed by the potential strategies. In final, the suggestions for reasonable and feasible redevelopment strategies will be given.

5.2. Introduction of official redevelopment strategies

Shenzhen Urban Planning and Land Administration Bureau (SUPLAB) constituted the document, urban village redevelopment planning during the 15th five year plan (2005-2010), which functioned to guide urban village redevelopment programs from a macro scope for future five years. In this document, the important urban regions are drawn according to urban development axes (main roads), planned industry zone, ecological zone, and etc. The urban villages located within these important urban regions are key urban villages. This document also pointed out that these key urban villages should be redeveloped as soon and they possess the priority to implement redevelopment project.

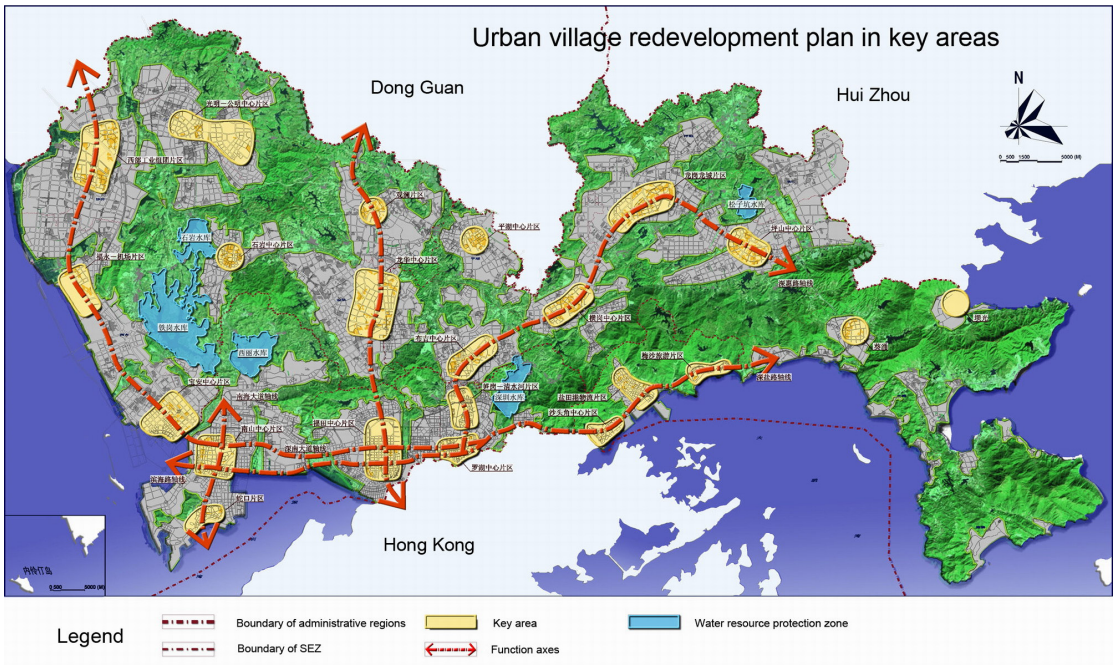


Figure 5.1 Urban village redevelopment plan in key areas

(Source from: Urban village redevelopment planning during the 15th five year period, 2005)
In Figure 5.1, the yellow polygons show the boundaries of these important urban regions. Nevertheless, it can be seen from this Figure that there are three urban development axes across Futian district. Furthermore, the majority of the area in this district is covered by one yellow polygon. Thus, it can be known that most urban villages in Futian district, especially in central area, are considered as key urban villages from local government point of view.

The plan during the 15th five year also constituted the potential redevelopment sequences after researching the negative impacts on urban development. This plan classifed urban villages into five categories (see Figure 5.2). The bule ploygen represents the redevelopment program should be finalized during the five years. The villages' redevelopment speed should be accelerated are filled by mauve color. Orange means the redevelopment project should be launched within the five year. And the other two categories are to be researched and to be conversated respectively. In Futian distict, the redevelopment sequences included to be finalized, to be accelerated and to be launched. This can be seemed as three redevelopment sequences (stages).

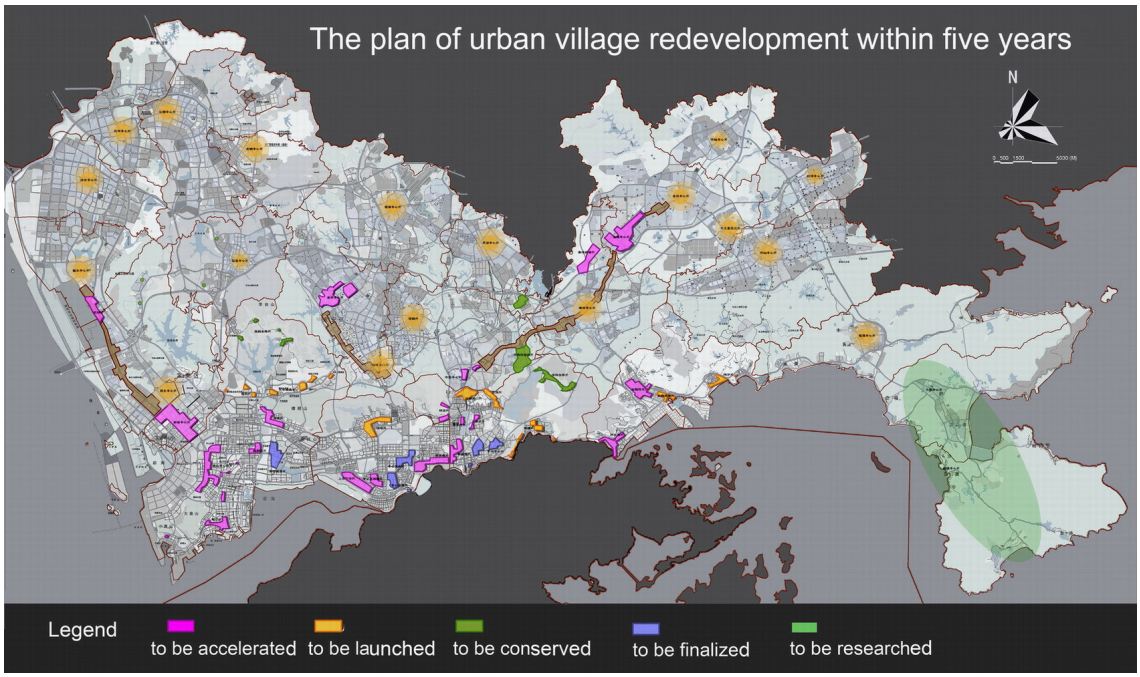


Figure 5.2 Urban village redevelopment plan within five years (2005-2010)

(Source from: Urban village redevelopment planning during the 15th five year period, 2005)
Respecting with the document constituted by SUPLAB, the Renewal Authority of Futian (RAF), China Academy (Shenzhen Branch) of Urban Planning and Design (CAUPD) and World Union Properties Consultancy (China) are consigned to propose the specific urban village redevelopment strategies of Futian district. Based on the macro guiding plan, they identified key urban villages in Futian district through geographic sites analyses. These key urban villages are located beside the first metro line, Shennan Avenue, Binhe Avenue or some other important nodes, such as commercial centre, CBD and transportation terminals (see Figure 5.3). Figure 5.3 shows that most urban villages are sited with excellent geographic locations. Many of them are distributed along the main roads. Due to the special economic and culture position of Futian district (Futian is the centre of politics, culture

and business of Shenzhen city). The main objective of these researchers to develop redevelopment strategies is improving the development of central urban area and advancing urban image (CAUPD, 2005).

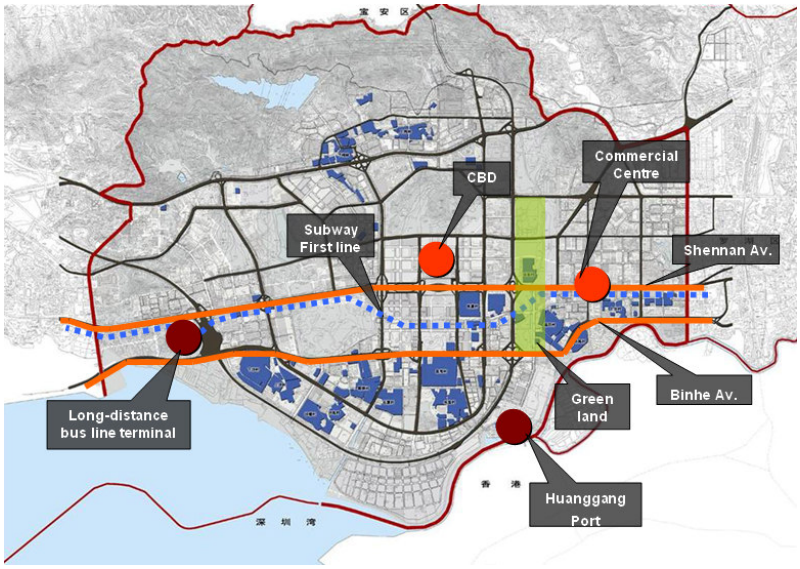


Figure 5.3 Spatial locations of impacted elements for urban village redevelopment

(Source: Report of urban village redevelopment strategies in Futian district, 2005)

In this specific redevelopment strategy, the 15urban villages in Futian district are assembled to 9 groups according to their geographic locations (see Figure 5.4). The group 1, 2 and 3 are named as centre parcel, which planned to merge into urban central distinct, and redeveloped to business, office building and advanced residential buildings. The group 4,5,6,7 and 9 are southern parcels which planned to construct residential buildings with better living environments. And the group 8 is Meilin parcel which planned to develop a large-scale and integrated residential district fitted with different population classes.

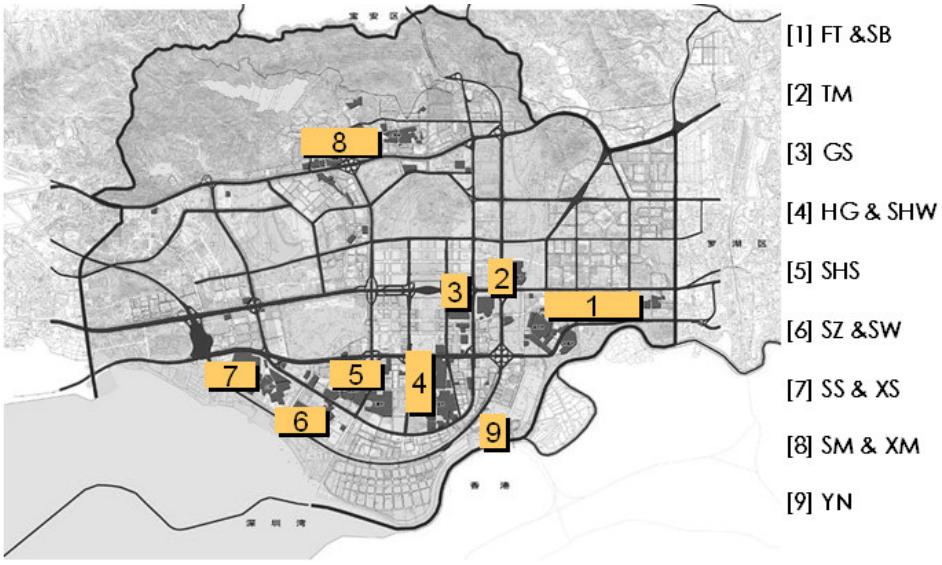


Figure 5.4 Zone Figure of urban villages in Futian district

(Source: Report of urban village redevelopment strategies in Futian district, 2005)

Accordingly, these strategies also constituted the redevelopment approaches by the parcel unit (see Figure 5.5). The villages covered by red polygons represent that these villages should be rebuilt. The brown polygons mean the villages should be rehabilitated (here, rehabilitation can be understand as improving physical environment and partly rebuilt, it means the village scale needed to be rebuilt is not too large). And the buff colour show the village needed to be conserved (conservation, means keep current situation and just improve some physical amenities).

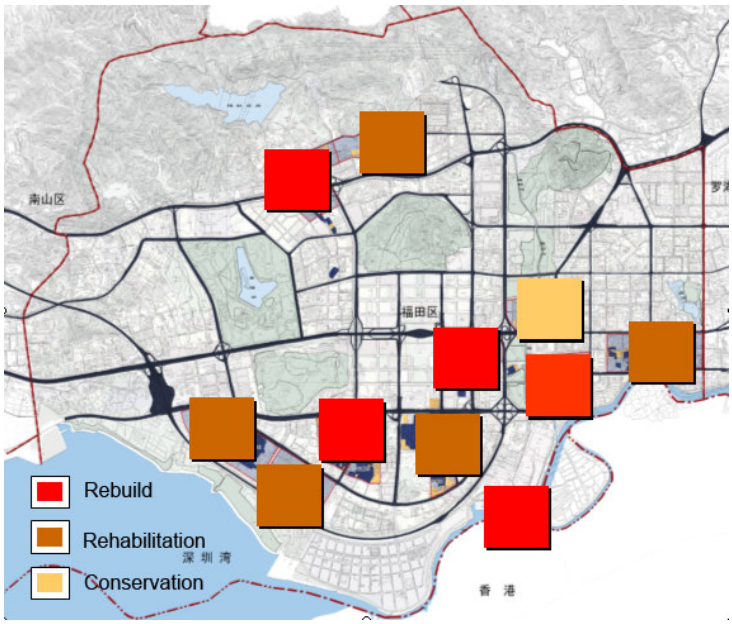


Figure 5.5 Description Figure of redevelop approaches

(Source: Report of urban village redevelopment strategies in Futian district, 2005)

This research took six urban villages as targets to study deeply. Seen from the macro redevelopment strategies (see Figure 5.1), nearly these six villages are delineated into the range of key urban villages. And their general redevelopment sequence can be known by Figure 5.2. And, the above 9 groups which associated with these six urban villages are group1, 2, 3 5, 6 and 7. So, the Figure 5.5 can tell the redevelopment approaches of these villages.

Nevertheless, in the report of Futian redevelopment strategies, the redevelopment priority is developed by potential land value evaluation considering from the developers' point of view. Here, the official redevelopment strategies of urban villages referred to this research are summarized and listed (see Table 5.1)

Table 5.1 Redevelopment strategies about six urban villages in Futian district

No.	Name	Redevelopment plan in 5 year	Redevelopment approach	Redevelopment priority
1	FT	To be finalized	Rebuild	1
2	GS	To be finalized	Rebuild	1
3	SHS	To be accelerated	Rebuild	2
4	SZ	To be accelerated	Rehabilitation	4
5	TM	To be finalized	Conversation	3

6	XS	To be accelerated	Rehabilitation	3

(Source: Based on report of urban village redevelopment strategies in Futian district, 2005)

5.3. Assess the official redevelopment strategies

Table 5.2 below is summarized from the results of chapter 4. It shows the findings of actors' perspectives analyses. Therein, the negative impacts generated by urban villages have been listed. And from this result, the rank of negative impacts is FT, GS, TM, XS, SHS and SZ. It means the FT, GS and TM villages make stronger negative impacts on city. In terms of Table 5.1, the local government planed to finalize the redevelopment program of FT, GS, and TM villages in the future 5 years. Comparing the findings of last chapter and the official redevelopment strategies, a significant phenomenon can be noticed that the redevelopment plan in future 5 years is coincident to the rank of negative impacts. FT, GS and TM make much more negative impacts, thus they will be redeveloped at first. In other words, it is evident that the local government took alleviating negative impacts as the starting point when constituted redevelopment strategies.

Table 5.2 Findings of actors' perspective analyses

No.	Name	Government concerns		Rank of the supporting possibility of residents	Rank of the attraction for developers
		Rank of Living condition	Rank of negative impacts		
1	FT	2	1	2	2
2	GS	6	2	1	1
3	SHS	5	5	6	3
4	SZ	4	6	3	3
5	TM	1	3	4	2
6	XS	3	4	3	3

When government's concerns are living condition and negative impacts, the redevelopment strategies would be different and changed. Under this circumstance, in order to formulate the potential redevelopment strategies, the Game theory is applied to simulate and analyze different scenarios. The procedure of assessing strategies (see Figure 3.2) is conducted in the following content. At first, the findings of actors' perspective analyses are transformed into more simply categories.

Table 5.3 Preparation of Game Theory application

No.	Name	Government concerns		Resident's attitude	Developer's motivation
		Living condition	Negative impacts	Support rate	Invested attraction
1	FT	Good	Strong	High	Strong
2	GS	Bad	Strong	High	Strong
3	SHS	Bad	Weak	Low	Weak
4	SZ	Mediate	Weak	Mediate	Weak
5	TM	Good	Mediate	Low	Strong
6	XS	Mediate	Mediate	Mediate	Weak

Secondly, according to the degree of living condition and negative impacts, the potential scenario (see Section 3.2.2) of each urban village redevelopment project can be simulated. The redevelopment strategies of each village are analyzed by the Game Theory in the following content.

- **FT (Scenario 2):** the living condition is good. But this village make serious negative impacts on urban development. However, at the first stage, this village should be conserved to provide accommodations to temporary populations. Furthermore, the resident's support rate is high, so the conserved action can be conducted by local government or residents themselves. At the second stage, FT can be considered to rehabilitate or rebuild.
- **GS (Scenario 5):** the living condition is bad and the negative impacts are strong. And the support rate is high. Nevertheless, the attraction is strong. Thus, rebuilt this village by developers is feasible.
- **SHS (Scenario 6):** in spite of the negative impact is weak, but it is problematic that the living condition is bad. It should be rehabilitated or rebuilt at the first stage from the government point of view. However, the residents' support rate is low. So, it is suitable to take rehabilitation approach to improve the living conditions by government investment at present. At the second stage, it might be rebuilt according to the situation on that time.
- **SZ (Scenario 4):** the degree of living condition is mediate and degree of negative impact is weak. And both the residents and developers are not very active for redevelopment. So, the realistic strategy is taken rehabilitation or conservation approach by government.
- **TM (Scenario 1):** although TM is located within a ecological zone, but the village scale is small and the living condition is rather good. In addition, considering the residents' attitude is inclined to be against a redevelopment program. Thus, the future redevelopment strategies of TM should be a conservation approach. Eliminating pollution is crucial at present stage. In the future, the rebuild approach can be considered.
- **XS (Scenario 4):** the situation of XS is similar as SZ. Both the degree of living conditions and negative impacts are mediate. And the support rate is mediate. Nevertheless, the attraction for developers are weak, thus, the redevelopment strategy is improving the living condition by government or residents at current stage.

Based on above analyses, the redevelopment program can be classified to two stages. The first stage is near future within 5 years. And the second one is long-dated (5-10 years). Accordingly, the redevelopment approaches are identified in terms of program stages. In addition, the redevelopment priority proposed by living conditions and negative impacts together.

Table 5.3 Potential redevelopment strategies

No.	Name	Redevelopment approaches		Potential leader for first stage	Redevelopment priority
		Within 5 years	5 to 10 years		
1	FT	Conversation	Rehabilitation/ Rebuild	Government/ Residents	2
2	GS	Rebuild	--	Developer	1
3	SHS	Rehabilitation	Rehabilitation/ Rebuild	Government	2
4	SZ	Rehabilitation / Conservation	Rehabilitation/ Rebuild	Government/ Resident	3

5	TM	Conservation	Rebuild	Government	1
6	XS	Rehabilitation	Rehabilitation	Government/ Resident	3

Comparing this suggestive redevelopment strategies with the official strategies (see Table 5.1); it can be found that these exist some differentiations between these two. Some suggestions can be summarized:

1. It is not the time to rebuild FT and SHS villages at present. For FT, the living condition is good. If redeveloping it now, large number of temporary population would lose their shelters. For SHS, in spite of the living condition is bad, but the support rate is rather low. So, rehabilitation approach is better at current stage.
2. The attractions of some projects are low, such as SHS, SZ and XS. The government have to invest them. If the redevelopment budget is limited, the local government should provide some special preferential policies to developers in order to attract them to invest these projects. Meanwhile, for the village which needed to be redeveloped, but the support rate is low. Such as, SHS. The local government can give better compensation policies for them in order to impel these kinds of redevelopment programs.
3. The identification of redevelopment priority is unreasonable in terms of developers' motivation. It should be identified in terms of current situation as well. For example, TM with better living condition and few negative impacts, however, it is located in ecological zone, so the conversation implementation should be taken urgently. Thus, TM possesses the redevelopment priority among these six villages.

5.4. Conclusion

In the first part of this chapter, the official redevelopment strategies are reviewed and summarized. Then, by using the Game Theory thinking method, the potential redevelopment strategies of each village are formulated according to actor's perspective analyses which conducted on last chapter. In final, some suggestions are provided. Due to the lack of living conditions consideration and resettlement for temporary populations, some strategies are unreasonable. Some rebuild projects should be postponed. Some villages should be given more preferential policies to impel redevelopment programs.

6. Conclusion and recommendations

6.1. Conclusion

The aim of this research was to analyze three actors' perspectives in the urban village redevelopment process in order to provide a reasonable and feasible framework to urban planners and decision-makers to assist them constituted redevelopment strategies and help them to assess the rationality and feasibility of current strategies. The following sections focus on the main findings of current situation analyses, actors' perspective analyses and the assessment of redevelopment strategies. And some recommendations are given for future studies.

Conclusions have been derived from the procedural analysis: current situation, including the population structure, economic situation and physical environment of urban villages that refers to the chapter 4, the analyses of each actor's perspective for redevelopment, and the assessment of official redevelopment strategies in chapter 5.

6.1.1. Current situation of urban villages

In Shenzhen, the urban villages inner SEZ and outer SEZ have different characteristics. The conflicts between urban villages and skyscrapers or modern buildings in the surrounding are evident inner SEZ. Urban villages within SEZ always can be found at good geographic locations, most of them are located beside the city main roads, city centres and other city main landscapes. However, urban villages outside the SEZ are spread diffusedly; they are getting close to each other. It is hard to clarify delineate the boundaries between urban village and the other areas. Furthermore, the footprint and building area of buildings of urban villages inner SEZ is smaller than outside. In contrast, the plot ratio and building density, especially the plot ratio in the inner SEZ is several times higher than outside. And the average story number is also higher then outside. That means, in spite of the total area of urban village inner SEZ is smaller than outer, but it is more difficulty to redevelop the villages within SEZ because of their high building density.

Urban villages in study area, Futian district, accommodated a large number of temporary populations. According to the population statistic, more than 90% temporary populations are living in urban villages in Futian district. And the number of temporary populations living in urban villages is nearly ten times to the number of indigenous populations. Excepting the gap of population numbers, the gap of incomes is also evident. The average household income of indigenous is 60 thousand Yuan (RMB) per month, but the income of temporary population is generally 2 thousand Yuan (RMB) per month in average.

Furthermore, seen from the occupation structure, most of the indigenous do not work outside of the urban villages; their occupations are landlords. And the majority of temporary populations are workers, waiters, and office staffs. The motivations of them to select urban villages as shelters are cheap rent and convenient living conditions. In addition, most original residents are low-educated which brought more trouble to adapt new lifestyle in society.

The physical environments of each urban village are different. Among the studied six villages, GS is with worst building quality and worst infrastructure situation according to the investigation.

6.1.2. Findings of actors' perspective analyses

Urban village redevelopment programs refer normally to three players, namely the local government, farmer, and developer. The three players represent three interest groups respectively. In general, in order to impel and encouraging urban village redevelopment, local governments always instituted some preferential policies to developers, and provided welfare compensation to original residents. Developers have to afford the compensations if they jointed into redevelopment project. The residents always worried about their economic loses and their future livelihood. Under these analyses, the factors impacted the actors' perspectives can be identified. They are the living condition, negative impacts, adaptive faculty, rent loses, potential land value and compensation volumes.

Through literature reviewing and experts interviews, the potential criteria and indicators (see Table 3.1) be used to evaluate the factors impacted each actor's perspective are developed. And using MCE method within ArcGIS environment, the factors impacted the actors' perspectives are evaluated respectively. By using the evaluation results, the actors' perspectives for each urban village redevelopment are analyzed. And these villages can be compared and ranked by government's concerns, resident's attitudes and developer's motivations.

The findings of the actors' perspective analyses have listed in Table 5.2. The analysis concentrated on the serious negative impacts, worse living conditions, high support rate and strong attractions for developers. All of these provide feasible conditions for urban village redevelopment. Furthermore, the actor's perspectives of the other villages are analyzed also.

6.1.3. Suggestions for urban village redevelopment strategies in Futian district

The Game theory is a good thinking method which can be used to analyze and stimulate the potential scenarios, especially when the actors are more than two. Applying this theory, the actors' perspectives can be considered on sequence. In this research, six scenarios are developed which can be used to help constituting potential redevelopment strategies.

For the official redevelopment strategies, there are some suggestions below:

1. When studying the on redevelopment strategies, government should start from improving the living condition but alleviating negative impacts only. When the living condition is good, this village should be conserved at present whether the negative impacts are strong or weak. Because, the villages afforded an important function that accommodating large number of temporary populations. Before these temporary populations are arranged in suitable places, the villages are their best choices of living. Otherwise, these redevelopment programs will bring lots of unstable elements for city development.
2. Furthermore, if the living condition is very bad of some villages. From government point of view, these kinds of villages should be redeveloped as soon. But the support rate is low or attraction for developers is not strong. Under this circumstance, local government can provide some preferential policies or compensation policies to encourage and impel redevelopment projects.
3. For some villages, the current special situation should be considered, such as, TM is located ecological protection. But the living conditions are good. So the urgent actions are implementing

conservation redevelopment approach, at the same time taking some actions to eliminate pollution urgently.

6.2. Discussion

As mentioned before, this research is an attempt to apply GIS technology in actors' perspective analyses during redevelopment process. The following are some problems encountered during research period:

1. Comprehensive attribute data about the internal physical environment are very important to analyze redevelopment strategies. For example, the ventilation, natural lighting, dinning and reading areas, toilet kitchen facilities and etc. All of them are essential data for the evaluation of living condition in urban villages. However, due to the lack of these kinds of data and they are very detailed which is hard and time-consuming to be collected. The researcher could not get all these kinds of attribute data of urban villages in Shenzhen during the fieldwork period.
2. Due to the fact that some attributes are difficult to be obtained from official statistic, such as the number of floating population. Further, parts of data which refer economic aspects are sensitive. So most of attribute data come from the survey conducted by SUPLAB, CAUPD and SAS. In their survey, the data are not so complete, so only six urban villages could be included in this analysis. Thus the redevelopment strategies research can not include all urban villages in study area, such as the Melin parcel did not take into study.
3. For some urban villages composed of several sites, however because of the statistical unit of attribute data were collected by administrative village committee level, the smallest spatial unit is identified by administrative level also. So it leads to some problems in analysis. For example, when evaluating accessibility, the road area within the buffer 500m would be impacted by the village scale, so road density is be used. And when calculating the negative impact or potential value, the gap between min value and max value might be big. For example, FT is a good case to indicate this problem.
4. The selection of indicators for government concerns, residents' attitudes and developers' motivations for urban village redevelopment are important steps involved in the process of analyzing the perspectives and assessing strategies. However, with the limitation of data, the criteria and indicators used in this research are not comprehensive.
5. When doing the assessment of actors' perspective analyses, the classification of some indicators is subjective, such as the age proportion of old people, the plot ratio of house buildings. Furthermore, although combining with the interview findings, the assigning of weights for some indictors were given in a subjective way, so it has a limitation that the analysis can be easily influenced by the researcher's subjectivity.
6. Because of the limited time, this research could not analyse the potential value in terms of different land conversion. So this research mainly regarded all potential land value assessed by same indicators. In this research, only considering the common indicators for potential value assessment.

6.3. Recommendations

Based on the above discussions and the suggestions for redevelopment strategies, some recommendations are:

1. A suggestion for the government is to build a digital database of urban village so that it can be shared and surveyed easily. What's more, the database can be renewed timely if some changes happen.
2. Develop other indicators to assess the negative impacts of urban villages, such as the criminal ratio, the feeling of people who living nearby urban villages. And for assessing the living conditions, the ventilation, natural lighting, dinning and reading areas should be developed as indicators.
3. Future studies are better focus on the different plot of urban village. It means take one piece of land as the smallest research unit, not the administrative unit. The study on one piece of land is more specific and feasible for redevelopment strategies constitution.
4. Further studies on predicting the temporary population number impacted by urban village redevelopment. Nevertheless, it is better to concentrated on developing the criteria to resettle these populations and identifying suitable sites for these kinds of people resettlement. In other words, the local government should constitute the resettlement policies and strategies before implement urban village redevelopment.
5. In order to deal with the urban village redevelopment programs better, only constituting balanced redevelopment strategies is not enough. Some other solutions, the local government should consider. One is organizing the training courses for residents to help them advance the adaptive faculty. Second is enhancing the income level and social welfare to ensure temporary populations have more money to afford better accommodations.
6. At present, nearly 70% populations are farmers in China. With the development of urbanization and technology modernization, more and more excessive rural populations will swarm into cities. How to protect the benefits of this part of people and how to improving their living levels is an important issue which observed to think more.

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Appendices

Table I Population structure of urban villages

No.	Name	Population structure		
		Registration population	Temporary population	Total
1	SW	467	19400	19867
2	SZ	729	45271	46000
3	SS	1280	78720	80000
4	XS	1319	68500	69819
5	XZ	800	48750	49550
6	SB	2800	12050	14850
7	FT	1430	52020	53450
8	TM	250	117000	117250
9	GS	1000	98500	99500
10	SHW	601	27399	28000
11	SHS	550	59450	60000
12	SM	1100	58900	60000
13	XM	1376	116886	118262
Total		13702	802846	816548

Table II Population structure of registration populations

No.	Name	Total population	Household number	Gender Structure（%）		Age structure（%）			
				Male	Female	Senior citizen	Wrinkly	Youth	Minor
1	SW	467	171	45	55	9	31	37	23
2	SZ	729	315	49.4	50.6	23.9	32.7	21.1	22.3
3	SS	1280	553	45	55				
4	XS	1319	510	50	50	13.8	38.3	35.6	12.3
5	XZ	800	450						
6	SB	2800	1000	44	56	5	69	16	12
7	FT	1430	680	45	55	9	42	13	6
8	TM	250	85	50	50	10.4	46.6	23.6	19.6
9	GS	1000	580	55	45	40	20	20	20
10	SHW	601	218	49.7	50.3	15	18.3	48.3	18.4
11	SHS	550	205	40	60	12	46	26	16
12	SM	1100	302			10.8	40.9	25.1	23.2
13	XM	1376	572	53	47				

Glossary

ADB	Asian Development Bank
CAUPD	China Academy of Urban Planning and Design (Shenzhen)
SAS	Shenzhen Academy of Sociology
SUPLAB	Shenzhen Urban Planning and Land Administration Bureau
UPCR	Urban Planning Constitution Regulation
UPDIS	Research Centre of Urban Planning and Design Institute of Shenzhen
RAF	Renewal Authority of Futian