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**Interactions of urban regeneration processes, sustainability, and residential
planning and design procedures in the city of Kunming China**

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Abstract

My study aims to investigate how the urban regeneration process influenced the sustainability of residential districts, which embodied in the procedures of residential planning and design in the city of Kunming, China. I adopt an integrated investigation and research methods as an overall conceptual research methodology. I focus specifically on the impacts of the urban renewal process on the planning and design of the different residential projects implemented in Kunming. I investigate two residential districts in Kunming as the primary case study object to highlight aspects that sustainability of residential area during the process of urban renewal. I also visited some other residential areas in and around the urban areas in Kunming, such as a typical residential district and ordinary urban villages within the urban areas. Impacts of the urban regeneration process on the sustainability of residential neighborhoods were compared and analyzed after the field study and investigation. I collected data from two residential projects in Kunming: Shibo Eco-town and Taihe urban village renovation. I collected data from Taihe urban village renovation, and witnessed the establishment and development of the project and the final construction process. Moreover, site visiting was made after the residents moved in. More empirical data and information have been collected and analyzed to provide contributions to the overall conclusions.

With the second case study, a combination of participatory methods and conventional survey methods were used. I first investigated and recorded the conceptual development of Shibo Eco-town and the final construction results, and after that, investigated daily situations in the subsequent use of the residential area. Furthermore, the questionnaire was delivered and analyzed the awareness of sustainability within the planning and design of the residential district. It aimed to examine connections between design intentions and results.

Finally, the overall research could bridge the links among different roles. It could supplement the contents and information of the closed- design loop from planning and design to the final-use. Also, it could provide an excellent empirical theory for similar projects in the future, especially under the promotion of urban renewal policy. This, in turn, would contribute towards the overall success and long-term sustainability of planning and design of residential districts in the city of Kunming.

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Part I_Introduction

Chapter_1 An introduction of research aims, objectives, hypothesis, and significance

1.1 Introduction

This thesis describes the research carried out to investigate the relationship between urban regeneration and the planning and design of residential districts in the cities of China. The study aims to explore the interrelationship between the urban regeneration process and the sustainable planning and design of residential district in a Chinese city Kunming. This thesis takes actual residential planning and design projects implemented in Kunming as carriers for developing detailed empirical research. This chapter will go through to state the overall research background, identify the geographical environment of Kunming, illustrate the conceptual framework of the research, and explain the overall research design, and reveal the structure of the thesis.

1.2 The focus of the study

During the process of urban regeneration, residential planning, and design as the main subject of construction, which including new construction of residential districts, transforming the existing residential district, and urban village renovation, has implemented massive development. As the planning and design guideline, sustainable development has been attempted and practiced in many projects.

The influences of urban regeneration on residential planning and design may be contradictory as well. Some residential planning and design are ‘destroyed’ during urban regeneration, while others are ‘revitalized’ by it. However, there is no particular theory which explains the contradictory phenomena regarding the influence of urban regeneration on residential planning and design. Further explanation is needed to clarify the reasons that, in some specific situations, the urban regeneration process may exert a positive influence on residential planning and design. Such as promoting interaction of information and current requirements, improvement, and revitalization of the public environment. While in other situations, the urban regeneration process exerts a negative influence, causing massive development, and subsequent destruction and degradation. A new theoretical understanding is needed on the interrelationship between urban regeneration and residential planning and design in the era of globalization, in order to help identify the main elements that influence the interaction between urban regeneration and residential planning and design.

The construction of new housing, the renovation of old residential areas and urban villages, are still in progress, and there will be more development in the future. The main content of the study is to investigate and summarize the existing residential renovation projects from the beginning of planning and design to the final-use. The main influential elements could be summarized during the

study. The identification of the main influential elements will guide the actions and practices of relevant professionals, as well as those of decision-makers, and thus exerts a positive influence on the planning and design of residential districts to be more sustainable.

1.2.1 Urban regeneration process and residential planning and design

(1) The contents of urban regeneration progress

The blind development of cities brings about a series of problems, for example, traffic congestion, dense population, environmental pollution, land shortage. Especially after world war II, many western countries suffered devastating destruction. The population and industry in some metropolitan centers are moving to the suburbs. As a result, the old downtown began to decline. In order to revive the urban economy, ease the contradictions between social classes and racial conflict, and improve the decaying urban environment, European and American countries took the lead in starting the large-scale "urban renewal" movement.

The earliest and most authoritative definition of urban renewal was the first urban renewal study held in August 1958 in the Hague, the Netherlands. As a new concept, "urban renewal" was elaborated as follows: "People living in cities have different expectations and dissatisfaction with the buildings they live in, the surrounding environment, commuting, entertainment, and other aspects of urban life. Therefore, for the buildings they live in, the blocks they live in, the parks and green Spaces, they hope to get rid of the bad residential areas and other environmental improvements to obtain a better living environment. All the above contents belong to the scope of urban renewal. (Nesbitt, G. B., 1958, p. 64)"

E. W Burgess, an urban sociologist of the Chicago school, believes that if the city is regarded as an organic whole, the process of change will grow, mature, decline, and then appear the phenomenon of renewal and iteration (Park, R. E., & Burgess, E. W. 1925, p.47). Francoise Choay, an architectural and urban historian, and theorist, thinks urban renewal is urban planning, and is a conscious intervention, and is a process of experience accumulation in the process of urban development (Choay, F., 1969, p. 31).

Urban regeneration refers to the demolition, reconstruction, investment, and construction of a declining area in a city. It aims to make the urban area developing and flourish again. Urban regeneration contains two aspects. On the one hand, urban regeneration refers to the transformation and renewal of objectively existing entities, such as decaying streets and dilapidated buildings. On the other hand, urban regeneration also includes the renewal and continuation of the environment. Besides, it also includes the renewal and continuation of the social network structure of neighborhood relations, mental set, emotional attachment. In general, the function of urban regeneration is to research and transform the existing old urban areas from the perspective of integrated project and scientific planning, taking an integrated approach to the problems of urban development and with consideration of sustainable development of the city. In general, urban renewal includes tangible and intangible renewal, and they are closely related. The tangible aspects of urban renewal are embodied in specific urban development projects and plans. The intangible

part of urban renewal mostly refers to the strategic development plan of the city and its related ecological environment, social environment, and economic environment.

(2) Aims of urban regeneration progress

Urban renewal plans vary from city to city, but can be broadly summarized in the following aspects:

- Improve the unreasonable use of land, improve the utilization rate of land;
- Improve the physical environment of the city, the public facilities of the city, and the attractiveness of the city;
- Adjust the decaying urban areas to add new vitality to the city;
- Strengthening the city's anti-disaster capacity;
- Promote the renewal and transformation of the comprehensive plan and limit the sporadic transformation;

Beyond these practical problems, more demands to be learned about the social, economic, and political purposes of urban renewal. The primary purpose of urban renewal relating to social concerns is: to eliminate social problems caused by poverty and unbalanced development, to provide as many employment opportunities as possible, to improve living environment and standards, and to ease the contradictions between classes. The economic objectives of the urban renewal process are: urban renewal requires increased urban vitality, improved government finances, job creation, and increased investment benefits. As for the political purpose of urban renewal, it is mainly to establish the image of the government, enhance public awareness, and enhance the degree of public participation.

The problems faced by urban renewal are very complex, involving the conflicts of interests among various groups, and the relations between various parties are overlapping and affecting each other. Therefore, in order to obtain better comprehensive benefits during the urban renewal process, it is necessary to have a deeper understanding of how the interests of all parties are reflected in the actual project. Furthermore, to understand what roles each party takes on and how they influence the development of the project are also an essential factor during the urban renewal process.

(3) Types of urban regeneration

The process of urban renewal has different types according to different classification standards. According to the urban spatial configuration, urban renewal can be divided into the regeneration of central urban districts, peri-urban areas, and fringe areas. According to the land use characteristics of the city, urban renewal includes the following aspects: the renewal and transformation of the decaying urban areas, the transformation, and continuation of the historical and cultural blocks, and the renewal and transformation of the urban landscape. According to the land use of the city, types of urban renewal can be divided into the renovation of residential land, industrial land, commercial land, storage land, and mixed-use land. Moreover, according to the existing approaches of urban renewal, it can be divided into urban renewal and reconstruction based on complete reconstruction, integration, or maintenance.

(4) Residential planning and design in the process of urban renewal

The renewal of existing residence refers to measures that enhancing the value-in-use of residential buildings that have been in use for a long time. As early as 1982, the United Nations Habitat Center (habitat) held a conference on the renewal of existing housing in Delhi, India, and proposed two contents of urban housing renewal: the renewal of individual buildings and the renewal of residential areas. Among them, the renewal of residential areas includes the upgrading of the supporting facilities and the protection of historical and cultural areas. Therefore, the renewal of residential areas refers to two main characteristics: periodical characteristics and regional characteristics.

In Chinese, “renewal” refers to “remove the old and build the new.” However, it has more meanings in English. Renovation, regeneration, and rehabilitation, all three words have similar meanings. The word "renovation" refers to be improved by renewing and restoring and restored to its former good condition. The word “regeneration” refers to revitalization and reconstruction. “Rehabilitation” contains the meanings of restoring to the original condition. For the past few years, the word “intervention” is more widely used in the study field of residential area renewal. The term is subjective. It could provide more respect to the user and reduce the re-destruction, which might cause by subjective awareness.

For instance, the term "regeneration" is commonly used in Japan architectural field to express the importance of the new look and vitality of the residential district after the renewal process. In Taiwan, the word "renewal" is used more often to express the meaning of “new construction”. The term “renewal” is mostly used in China, and expressed more about “cleaning up the old constructions”. Therefore, in the process of residential renewal in China, large-scale demolition and reconstruction is the most common manifestation in the urban renewal process.

Urban renewal programs in Europe have emerged with different periods of community renewal programs. The decisions proposed, the roles assumed, and the policies implemented vary from period to period. Professor Naomi Carmon (Carmon ,1999, p.145) uses computer terminology to divide community renewal in Europe into three generations. The first generation is known as the “bulldozer” (1950-60), the second is the “Project Renewal” (1960-70), and the third as the central city revitalization (1970-90). Then, urban renewal gradually entered a new era, the one with the central concept of "sustainable renewal of urban housing." Sustainable renewal of housing also involves three aspects: first, at the social level, sustainable urban renewal advocates mixed residential mode and diversified housing type combination. The primary objective is to eliminate racial and class segregation as far as possible. Secondly, at the economic level, sustainable housing renewal should improve the city's public service facilities, improve the local employment situation, and provide urban residents with more convenient travel options. The third level refers to the environmental level. At this level, the main goal is to achieve environmentally friendly and resource recycling. In general, sustainable housing renewal is a comprehensive technical strategy with residents as the core content.

In this study, the author focuses on the research and investigation of the development of residential

renewal project in Kunming, China. Kunming is undergoing a rapid and active urban renewal process. Firstly, the author selected two residential construction projects in different areas of Kunming city for investigation and tracking study. One of them is an urban village renovation project. The residential area was an urban village in the southern urban area of Kunming before its renovation and construction. This urban village developed gradually from a native fishing village near Dianchi lake. The author recorded the whole process of the reconstruction project of the urban village. The study started with the investigation of the basic situation of the original village in the city to the working process of planning and design procedure. And then, the author visited the living conditions of the resettled communities after the whole construction process. Another case study is a residential project considered with "sustainability" as the main design concept in the northern urban area of Kunming. This residential area was a banner development project in Kunming as a concept of "sustainable residential area" at that time, which was intended to bring new concepts, information, and new thinking to the residential design of Kunming. Besides, the author also visited other ordinary residential areas in Kunming, as well as urban villages that are still "alive" in the urban built-up areas. In the process of investigation and research, the author recorded some objective conditions: the daily life of residents, that is, the primary users, in the residential area. These residential areas and projects are the most common and regular part of Kunming's urban development and renewal process. By visiting and investigating these areas, the author studies and compares with them, revealing the actual progress of residential planning and design under the current urban development and renewal strategy. Therefore, in the investigation of the actual situation, the most significant problems in the actual situation are found and summarized. The corresponding strategies are put forward, to get useful conclusions and provide a reference for similar projects in the future.

1.2.2 Sustainable development: the definitions, the efforts on planning and design of residential district

This section presents the development of the definitions of "sustainable development" in order to clarify a clear theoretical framework to understand sustainability. Based on comprehensive literature reviews and comparative studies among relevant documents, this section shows the development of studies, definitions of "sustainable development" are diverse, and the contents have covered different disciplines. Furthermore, the studies of sustainable planning and design of residential districts have been reviewed to provide the general understandings of sustainability and how it has been presented in actual residential projects. After this, analysis and discussions on sustainable development are undertaken to identify main elements on the planning and design of residential districts and its limitations to implementing in actual projects. The conclusions could provide a clear understanding to help with recognizing the current design problems.

1.2.2.1 Definitions of "sustainability", "development" and "sustainable development"

(1) Sustainability

Sustainability, as a widely known and accepted concept, can be found and learned in various ways. Like we can read plenty of documents through social media, advertisements, schools, or discussions

among the general public with different cultural backgrounds. The increasing activities which have taken place with the concept of sustainability caused many concerns among scholars that “the term ‘sustainability’ is a broad, ambiguous, and all-encompassing word” (Farley & Smith, 2014, p.5). The definition needs to be clarified to avoid that the significant meanings of sustainability would be weakened and cause various degrees of understandings leading to more ambiguity.

The theory of sustainability has gone through a long historical process. Since 50 to 60 s of the 20th century, there is no stopping arguments among various study fields and shaped the contexts of sustainability. *Silent Spring* (Carson, 2002, p.129) is the book that must be mentioned. It represents a perspective from marine biologists that unrestricted use of chemicals and fertilizers will destroy biological environments and can bring irreparable consequences for the human environment. Although standpoints in the book have been attacked and defamed by chemical manufacturers, people finally recognized the value of this book that people must rethink the concept of development. Environmental problems, from an edge problem gradually toward the center of the global political and economic agenda. In the year of 1968, Intergovernmental Conference for Rational Use and Conservation of the Biosphere (UNESCO) has been held and “Lead to an international call for interdisciplinary research focusing on global environmental problems” (Farley & Smith, 2014, p.68). In the following 1970, US President Richard Nixon, National Environmental Policy Act (NEPA) has been released and established “a standard for conducting environmental impact assessments (EIAs) before embarking upon governmental development projects” and formed a basis of global EIAs. In 1971, International Institute for Environment and Development (**IIED**) has been established, and the main achievement of IIED is to “tie economic development to environmental resource conservation in the United Kingdom” and “the initial pillars of the triple bottom line were solidly taking shape during this time period” (Farley & Smith, 2014, p.8).

With the increasing pollution problem and the emergence of the energy crisis, people gradually realized that the development patterns of separating economic, social, and environmental would only bring to devastating disasters to the Earth and human society. From the sense of crisis, the idea of sustainable development has been gradually formed in the 1980s.

After ten years of being arguing and rethinking the relationship of environment and development, the book *Only One Earth* (Barbara Ward & Rene Dubos, 1972, p.288) has been published and also promoted the ordinary consciousness of the living environment of humans sustainably. In the year of 1972, an informal international well - known academic groups - Club of Rome, presented a report *Limits to Growth*, promoted points of view of “sustainable growth” and “reasonable and lasting balanced development” (Meadows, D. H., Meadows, D. L., Randers, J., & III, W. W. B. ,1972, p.45). In the same year in June, the United Nations held its first international Conference on the Human Environment (UNEP). This conference brought countries together to discuss environmental issues and established several national environmental protection agencies and the United Nations Environment Programme (UNEP). Furthermore, more focus on developing nations to help with environment-development challenges has been made after the conference.

Since the 80s and after, the earliest appeared in the *Silent Spring* (Carson, 2002, p.145), the “sustainable development” has been brought into mainstream development concept. In the year of

1980, World Conservation Strategy (WCS) has been released by International Union for the Conservation of Nature and Natural Resources (IUCN). It has firstly promoted the concept and definition of “sustainable development” (IUCN, 1980). Moreover, the World Conservation Strategy (WCS) also served as a blueprint for the Brundtland Commission's language in *Our Common Future* in the year of 1987. United Nations World Commission on Environment and Development (also known as the Brundtland Commission) published the report *Our Common Future* in 1987. The concept of “sustainable development” has been first defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p.41). The “needs” and “limitation” are two main concepts within the definition and aroused extensive discussions. This definition was widely recognized at the 15th session of the United Nations Environment Program Governing Council in May 1989. In the year of 1992, a global consensus has emerged at the United Nations Conference on Environment and Development. In the following year of 1992, the United Nations held the Earth Summit (formally titled the United Nations Conference on Environment and Development UNCED) in Rio de Janeiro. It has been titled as the most international significance conference, which has brought together 172 governments, 2400 NGO representatives, and more than 100 heads of state, to discuss the way to achieving sustainable development. By collecting reports and documents from research members, Agenda 21 (UNCED, 1992c), the United Nations Framework Convention on Climate Change (UNFCCC - the convention that led to the development of the Kyoto Protocol), the Rio Declaration on Environment and Development (UNCED, 1992b), the Forest Principles (UNCED, 1992a), and the United Nations Convention on Biological Diversity, outcomes of the conference have clearly linked “development” and “environment” together, and became an global action as a strategy of “sustainable development”. Numbers of the concept have been identified to be the main content of sustainable development from these documents:

“- Human is the central concern for sustainable development;”

“- Humans must make changes to live in harmony with the natural environment;”

“- Eradication of poverty in developing nations and reduction of excessive consumption in affluent countries are indispensable requirements for sustainable development;”

“- Developing nations require special attention and accommodation to ensure parity across nations;”

“- The protection of the environment and increasing development are interconnected and can be mutually supportive rather than adversarial goals;”

“- Sustainable development is a mechanism for meeting the needs of both the current and future generations.” (Farley & Smith, 2014, pp.5-10)

In the year of 1993, “International symposium of China in the 21st century” has been held, and *China's Agenda 21 - White Paper on China's Population, Environment and Development in the 21st Century* were released in March 1994. The concept of “sustainable development” has become a national development strategy of China (State Council of China, 1994, p.1). Chinese Society for

Sustainable Development (CSSD) has been established to make sure the progress of *China's Agenda 21* covers. Furthermore, the concept of “sustainable development” is playing a guiding role in different research areas. In the field of energy development, the developed countries have shifted the focus of technology to hydropower, wind, solar and biomass energy, and other renewable energy development. In the field of transportation, the development of fuel cell vehicles or other clean energy vehicles has become a significant development ability in automakers' technology. In the field of agriculture, no fertilizer, no pesticide, and specialties of ecological agricultural products have become consumer's first choice. In the study field of urban planning and building industry, as far as possible to reduce the consumption of energy and water use, and improve the ecological design with fewer carbon emissions and pollution, has become mainstream development trends.

a. Developments of the term “sustainability”

The International Institute for Sustainable Development (IISD) has summarized the timeline of sustainable development (IISD, 2012)

- 1962, Rachel Carson, <Silent Spring>:
“We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road — the one less traveled by — offers our last, our only chance to reach a destination that assures the preservation of the earth.” (Carson, 2002, p.144).
- In 1968, Intergovernmental Conference for Rational Use and Conservation of the Biosphere, (UNESCO) has been held, and lead to an international call for interdisciplinary research focusing on global environmental problems (Conference Proceeding, 1968).
- 1970, US President Richard Nixon, National Environmental Policy Act (NEPA), 1970:
“NEPA established a standard for conducting environmental impact assessments (EIAs) prior to embarking upon governmental development projects, and the United States in turn set the basis for EIAs globally (Creech, 2009).”
“By mandating environmental assessments, the administration acknowledged the connection between development and environment degradation, and the role of governments in managing development programs.”
- 1971, International Institute for Environment and Development (**IIED**)
“Tie economic development to environmental resource conservation in the United Kingdom.”
“IIED sought to find solutions for countries that wanted to make economic progress without decimating the resources provided by the natural environment.”
“The initial pillars of the triple bottom line were solidly taking shape during this time period, though a clear connection with social stability was not yet articulated.”

- 1971, Rene Dubos and Barbara Ward, < Only One Earth>:
 “Served both to warn of the detrimental impact of human activity on the biosphere and to offer optimism for a common future.”
 “When concern for the planet is shared among all people, there is hope for improving our **common future**.”
 “The phrase ‘**common future**’ and the ideas that the phrase embodies were later adopted in the Brundtland Report of 1987, titled with *Our Common Future*”.

- 1972, United Nations Environment Programme (UNEP), also known as Stockholm Conference(斯德哥尔摩会议),
 “Coalesce in the following year as the United Nations held its first international Conference on the Human Environment in 1972 (UNEP, 1972)”
 “Bring countries together to discuss international environmental issues and their relationship to growth.”
 “Establishment of several national environmental protection agencies and United Nations Environment Programme (UNEP).”
 “The conference primarily focused on the environment-development relationship.”
 “The ideas development by the IED the year prior to the conference concerning environmental degradation and the connection between development and environmental resource use now became and international dialogue beyond the border of the United Kingdom.”
 “The conference also shifted international focus toward the environment-development challenges facing developing nations.”

- 1973, United States' Endangered Species Act ,(ESA):
 “Concern for the other species on our planet was institutionalized through the United States' Endangered Species Act (ESA).”
 “Made a clear statement about the US approach to protecting and preserving threatened species (United States Congress, 2005)”

- 1980, World Conservation Strategy (WCS), released by International Union for the Conservation of Nature and Natural Resources (IUCN et al., 1980):
 “The WCS go beyond identifying the causes of environmental destruction, and began to identify a positive connection between development and ecological conservation.”
 “In the WCS, the aim of development is identified as the use of the biosphere to accomplish human goals.”
 “Conservation, the document argues, has the same aim but seek to achieve human goals by managing the resource base of those goals, the biosphere, in a way that allows for continuous use.”
 “WCS also served as a blueprint for the Brundtland Commission's language in Our Common Future.”
 “The WCS defined conservation as ‘the management of human use of biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining

its potential to meet the needs and aspirations of future generations' (IUCN et al., p.2)”

- 1980, The Global 2000 Report to the President, US State Development and the US Council on Environmental Quality (Global 2000 Study, 1980):
“The findings of the report recognized that solutions to environmental problems were inherently international rather than national in nature.”
“It was becoming clear internationally that global cooperation was a critical component in addressing issues related to the environment.”

- 1987, The Brundtland Report, <Our Common Future>, released by World Commission on Environment and Development (WCED), chaired by Norwegian Prime Minister Gro Harlem Brundtland:
“The report serves as a useful reference point because of its function in popularizing the term sustainable development and bringing the concept into the mainstream.”
“*Our Common Future* suggests that sustainable development as a framework for decision making can help create a socially, environmentally, and economically stable global system that can sustain human activity and progress for man generations to come.”
“Thus, developing nations must grow, and the role of developed nations is to assist in making this growth efficient and less polluting than the growth technologies they used through the course of their own industrialization. The challenge of limits is only vaguely addressed in the context of this dual growth strategy for development.”
“While the Brundtland Report notes that sustainable development must address limits, it ultimately eschews the limits argument in its assertion that sustainable development does imply limits-not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities.”
“Further, even as the report addresses the major changes in political will and institutional collaboration necessary to accomplish the goal of sustainable development, it concedes that this cooperation and institution building will be unique from nation to nation. What this means is that there is no guiding institution for nations that can help standardize and steer the sustainability concept in a particular direction. Thus the most widely accepted and most widely cited definition of sustainability accepts that limits in a finite world are not insurmountable and rejects specific prescriptions for international institution development. It is a contradiction that has had the effect of allowing sustainability to be everything, and anything, to everyone.”

- 1992, United Nations held the Earth Summit (formally titled the United Nations Conference on Environment and Development UNCED), Rio de Janeiro (巴西里约热内卢):
“Where 172 governments, 2400 NGO representatives, and more than 100 heads of state gathered to negotiate an international approach to achieving sustainable development.”
“The documents and agreements that came out of the summit included Agenda 21 (UNCED, 1992c), The Rio Declaration on Environment and Development (UNCED,

1992b), the Forest Principles (UNCED, 1992a), the United Nations Framework Convention on Climate Change (UNFCCC - the convention that led to the development of the Kyoto Protocol), and the United Nations Convention on Biological Diversity.”

b. Development

As a concept, ‘development’ has been associated with various meanings, explanations, and theories of different scholars. "The process by which someone or something grows or changes and becomes more advanced" is probably the most common definition of the word in the Cambridge dictionary. In the past, ‘development’ was principally defined in terms of economic growth (Redclift, 1987, p. 69) and meant exploiting natural resources for economic gain, a meaning which survives in a term such as ‘development opportunity’. Development is described as "in development, all the modern advances in science, technology, democracy, values, ethics, and social organization fuse into the single humanitarian project of producing a far better world" (Peet, 1999, p.1). As the problems of environmental deterioration and poverty at the global level became increasingly evident in the 1960s-1970s, the concept of development began to include recognition of the importance of social and environmental impacts. During the 1980s-1990s, the concept of sustainable development began to be popularized (especially by the Brundtland Report in 1987) and elaborated further as environmental degradation became identified with human health problems and constraints for development. Many researchers defined development in association with social, environmental, and economic sustainability. Barton (1995), for example, stated: "development" is broader than merely economic growth. It implies improvement to "the quality of life", "health and nutritional status", "equity in access to resources and services", "per capita income", "perceived quality of the human environment". (Barton et al., 1995, p. 8)

c. Sustainable development

Sustainable development has become a buzzword in development discourse, with different definitions, meanings, and interpretations. The concept of sustainable development could be seen as a phrase consisting of the words "sustainable" and "development". The words, "sustainability" and "development", which constitute the concept of sustainable development, have been defined differently from different perspectives. The concept of "sustainable development" is also understood differently from different perspectives, leading to the proliferation of concept definitions. The term "sustainable development" originated in the 1970s (Basiago, 1995, p. 109). The publication of the World Conservation Strategy in 1980 (C., T., Trzyna, & Osborn, J. K., 1995, section. 1) was the first to promote the concept of sustainable development in the international environment and development community. The fuzzy word "sustainable development" was popularized in 1987 when the World Commission on Environment and Development published the Brundtland Report "Our Common Future", which sought integrated solutions to global environmental problems and development issues. The Brundtland Report (WCED, 1987) defined ‘sustainable development’ as: “A development that meets the need of the present without compromising the ability of future generations to meet their own needs”. (WCED, 1987, p. 8). This concept was further elaborated in two other major documents: The Protection of the Earth (1991) and Agenda 21 (1992). "Caring for the Earth: A Strategy for Sustainable Living" (IUCN, et al., 1991) defines "sustainable development"

as improving the quality of human life while living within the carrying capacity of supporting ecosystems, while "sustainability" is a characteristic of a process or state that can be maintained indefinitely (p.10). "Agenda 21", the action plan adopted by more than 150 nations at the UN Conference on Environment and Development held in Rio de Janeiro in 1992, identified a comprehensive program of action needed throughout the world to achieve a more sustainable pattern of development in the twenty-first century. Agenda 21 argues that "sustainable development" requires a reduction in the use of energy and raw materials, a reduction in the production of waste and pollution, the protection of fragile ecosystems, a sharing of wealth, and the promotion of more equal opportunities through planned, democratic, and co-operative processes (UNCED, 1992, para.9.1).

1.2.2.2 Local Agenda 21

21st Century Agenda in 1992, the United Nations Earth Summit in Rio DE Janeiro (also known as "the United Nations Conference on Environment and Development"), by the 178 government voted to the scheme, is the first time the United Nations to discuss global warming and its relevant issues of the agenda, developed number of construction on the sustainable development of the blueprint. The blueprint will be implemented by different countries and local UN organizations, governments, and significant groups around the world, and the result will directly affect the living environment of humankind in the future.

Agenda 21 was adopted by the United Nations Conference on Environment and Development in 1992, and the Chinese government has made a solemn commitment to implement Agenda 21 and other documents. On March 25, 1994, China's Agenda 21 was examined and adopted by the 16th executive meeting of the State Council.

In the process of implementing sustainable development strategy, housing construction, and sustainable development of housing have been placed in a prominent position. The strategy emphasizes several aspects during the implementation: emphasizing the popularity of housing construction, emphasizing the construction of ordinary housing, and comfortable housing project, emphasizing the improvement of the usable floor area and construction quality of housing. The sustainable development of housing should put more concern on the problems of human residence and living environment. The development of housing and improvement of the living environment should be developed based on sustainable development. The renewal and transformation of housing, residents-friendly housing functions, residential environment beautify, and sustainable development is several trends in government housing policy that are noteworthy. Therefore, more attention to human physical and mental health, and improve the living environment, has become the mainstream of housing development and construction. At present, the measures taken by sustainable residential areas in China are mainly reflected in environmental protection and providing a healthy and comfortable living ecological environment.

1.2.3 Development of sustainable planning and design of residential district

(1) The development of research on residential planning theory

Residential district, a gathering place for both locals and visitors with a specific scale, is the leading organic component of a city. The urban residential district provides residents with living space, as well as a variety of service facilities. The purpose of residential planning is to create a comfortable, convenient, hygienic, safe, and beautiful living environment for the residents, to meet people's various needs for living. At present, the theory of residential areas was put forward by the former Soviet Union in the 1950s to meet the needs of modern life and the development of transportation. Furthermore, a series of planning principles and design techniques have been formed afterward. However, the theory of residential planning emerged during the industrial revolution and urbanization in western countries. With the continuous development of the city, the planning and design content of the residential district is also changing. Relevant theories are also continuously refined and supplemented. The development of theoretical research on residential planning has also experienced the transformation from physical functions to humanistic connotation, and then to explore the way to achieve sustainability.

Beginning with the industrial revolution in the latter half of the 18th century, the urban population expanded rapidly, and the functions of cities became increasingly complex. The living conditions of urban residents are getting worse, and various social problems are gradually emerging. Under the circumstances, the 19th century Chicago world's fair launched the "urban beautiful movement" to respond to those urban problems. Since then, the city has built spacious streets, large squares, tall and magnificent buildings, and massive sculptures, which have become essential elements in the process of urban construction. However, these practices have not been widely adopted because they do not play a significant role in the economic and cultural development of a city and the improvement of the public living environment. The reason for the failure lies in the mismatch of objects served by cities and buildings under the profound social changes at that time.

Howard's "garden city" theory must be mentioned. "Garden city" is the theoretical representative of urban "decentralization". "Garden city" was proposed by Howard in 1898 (Howard, 1898, p.33), who conceived it as a city surrounded by green belts formed by nature and agriculture. The houses were built around the city center and not far from civic centers and urban parks; the inner area of the city was developed as a commercial centre; and the factory was located on the edge of the city, nearby the green belt. Such kind of city has the advantages of both urban and rural areas so that urban life and rural life attract and influence each other and continuously connect. However, theoretically, these cities are very suitable for people to live in, but in practice, there are many problems. For example, most of these cities lack vitality that old cities should have.

At the same time, theories that are similar with "garden city" theory include Wright's "broadacre city" theory and Saarinen's "organic decentralization" theory. In 1932, Wright gave an outline of the "broadacre city" theory in the book of "The Disappearing City"(Wright, 1932, p.17). He thinks the city of the future should be ubiquitous. This is a more extreme "decentralized" point of view. From the 1920s, many factors led to the emergence of many suburban areas in the United States, and then start a wave of anti-urbanization (M. Breheny,1996, pp. 13-35). The suburbanization of the United States had been achieved, but not in the way Wright had hoped. Since most suburban residents are middle class, they come to the suburbs to enjoy both the urban civilization and the

excellent natural environment of the countryside. This is due to the popularity of motor vehicles and government incentives for housing. The increasing use of suburban land and natural landscape, as well as the use of more private cars, once made suburbanization and urban sprawl a severe social problem in American cities.

The following year of 1986, the Finnish architect Saarinen explained the theory of "organic decentralization" (Saarinen,1986, p.169) theory in his book <The City - Its Growth, Its Decay, Its Future>. Saarinen proposed the idea of the urban structure of " organic decentralization". Such a structure should not only conform to the nature of the human settlement, facilitate people to live an ordinary social life and feel the vitality of the city, but not be separated from the natural environment. The theory of organic decentralization is to divide the expanded urban area into different concentration points, which can be also divided into different locations for activities. This theory provides a living mode in which the functions and facilities of residential areas need to be centrally arranged, and residential areas need to be distributed. Organic decentralization theory has two basic principles: (1) the space distance of the site should be planned and arranged according to the frequency of residents' activities. (2) Poor urban functional structure is the root that causes of traffic problems. In other words, this theory is more inclined to think that people need to spend more time on transportation every day due to the problems of urban structure and functional arrangement, which leads to various problems of urban transportation (Saarinen,1986, pp.206-209).

Le Corbusier's "The Radiant City" proposal was proposed in 1933. It is very similar to the planning philosophy of many urban planners in the 20th century. He is trying to use this theory to improve congestion in the city center, increase mobility in the city, and increase the number of parks and open spaces. "The Radiant City" (Corbusier, 1933,p.119) is the first urban design to include the classification of roads, and this scheme was developed based on the need for private cars. These ideas had a significant influence on the development of housing after world war II. Such as there are subways, highways, and high-rise houses everywhere. Corbusier's concept technically solves the problem of high-density urban planning. However, how to guarantee the safety, comfort, convenience, and intensive use of land in such a high-density urban environment is still a problem that needs to be solved well.

The Congrès International d'Architecture Modern (CIAM) has integrated these planning concepts and applied them to urban planning. Through the Athens Charter of 1933, CIAM developed Le Corbusier's ideas into a set of practical rules for the problems of overcrowding and congestion in modern cities. These principles later became the basic principles of urban planning, which is the basis of modern planning theory.

The modern urban planning practices mainly include the following contents:

- (1) Comprehensive reconstruction. Initially, CIAM advocated "rapid elimination of areas of poor housing" and constructed of new housing areas at the original site. At the same time, they believe that the construction of low-density residential areas is uneconomical, so they build high-rise residential buildings outside the traditional streets. This model of residential renewal did not produce more positive results than the practice of placing new residential blocks around

traditional streets. By building residential areas around traditional streets, the urban vitality of the area is maintained. Therefore, from a deeper perspective, the urban housing renewal mode that pushes down slums directly and starts over only transfers the increasingly apparent contradictions, but it does not substantially improve the living environment of slum residents, nor focus on how to solve some subsequent problems that may arise.

- (2) Neighbourhood unit theory. In 1929, American architect Clarence Perry proposed the theory of neighborhood units. He believes that urban traffic has brought severe disturbance to the living environment, and controlling the traffic in the area to guarantee the safety of residents and the tranquility of the environment are the basis and the starting point of the neighborhood unit theory. Therefore, he believes that there should be enough living services in the residential areas to facilitate residents to live together and socialize with each other, in order to make the neighborhood closer and safer. Therefore, the idea of neighborhood planning gradually formed and spread. Neighbourhood unit theory is used on a large scale in China. The concept of the neighborhood was introduced to China before the founding of the new China. With the construction and development of large-scale urban residential areas, how to organize the living facilities and management of residents in residential areas has become an inevitable problem in the planning and design of residential areas. At that time, some planning and design projects had begun to introduce the concept of neighborhood units to construct new residential areas. However, after the introduction of residential planning thought in the former Soviet Union, due to the political context and ideology at that time, residential planning based on the concept of neighborhood unit received some criticism. After the Cultural Revolution, China was faced with massive housing construction. How to change the appearance of residential areas and how to emphasize the diversified planning and design contributed to the implementation of pilot projects in urban communities. These projects reflect that the concept of neighborhood units, or some new planning and design ideas, which need to be combined with the national conditions of China in order to develop smoothly.
- (3) The flow of traffic. Located in the center of a traditional urban area, the street is a transportation hub as well as a communication space for the surrounding communities. As a result, many shops and services have been developed along the street. However, for modern urban planning theory, this state of what Louis Mumford presents "solid chaos" is inefficient of urban commerce. Therefore, in order to avoid the development of street commerce, viaducts and rapid access roads were built. Private car use has been encouraged, and now it has become an urban and environmental problem that we still have to face today.
- (4) The understanding of open space. Modernist planners' understanding of open space is too simple and lack of consideration and application of practical functions. Modernism often ignores the diverse requirements of different users for open space. Therefore, this may cause the space to feel boring and single, even in the process of use, gradually depression.
- (5) The definition and understanding of "overcrowding". Overcrowding in residential areas has always been a problem that urban planners need to address and avoid. Nevertheless, the concept and measure of overcrowding have also been controversial. Therefore, it is not necessary to

expand the area of land use blindly to improve the problem of overcrowding. How to use land and urban space efficiently and how to reasonably allocate the living area needed for a normal life may be able to solve the problem more flexibly.

In general, the urban renewal mode of bulldozing and rebuilding destroys the vitality of the city, so the inner city is in decline. The urban space constructed under the guidance of the modern urban planning concept does not create a more pleasant living environment. The suburbanization movement has directly led to the spread of urban areas, increased traffic pressure, the use of more private cars, environmental pollution, and a series of derived urban problems. Since then, separate from the world harmony, "utopia" theory faced the complexity of cities, the diversity of human needs and the environmental and energy crisis caused by urban development, which became the trend of architecture and urban planning in the second half of the 20th century. At the same time, it also has a profound impact on the theory of residential planning.

Besides, some other crucial residential planning theories are developing continuously, which also have a profound impact on current residential planning. The most prominent content in the charter of Athens is the functional zoning of the city, which has a profound influence on the later urban planning concept (Corbusier, 1933, para.II). According to the charter of Athens, the primary activities of the city can be proposed according to the four categories of residence, work, entertainment, and transportation, and this form the basic framework of the city. Functional zoning was of great practical significance at that time, and he put forward effective solutions to the unplanned and disorderly development of most cities at that time. It leads the urban planning and design to a more scientific way.

After the first world war, in order to solve the severe shortage of housing supply caused by war damage, it was necessary to provide many low-rent housings that low-income people could afford quickly. In ensuring that an average standard of living is available to everyone and providing as much living space as possible within a limited budget, the "minimum house" scheme was proposed and was discussed at the second CIAM conference in Frankfurt in 1929. "Minimum house" advocates the reduction of living space as much as possible to reduce rent, promote the rationalization of housing construction and planning, to improve the "livability" of housing (Corbusier, L., & Jeanneret, P., 1929, para.2).

Walter Gropius (Gropius, 1970, p.128) is committed to standardizing the construction of housing to minimize the cost of construction and to provide average housing quality. He proposed that the housing should be planned and constructed according to the pattern of the determinant layout. In the overall layout, the traditional peripheral layout should be abandoned, and the determinant layout should be advocated in order to ensure natural lighting and ventilation conditions this layout pattern refers to the layout of buildings according to the height of buildings to determine the spacing between buildings according to the requirements of a particular building density. This ensures that there is plenty of sunlight and green space between the houses. In China, determinant houses are generally composed of parallel ground floor houses facing north and south, which can meet the climatic conditions in most areas of China. Houses can fully get sunshine in winter, effectively avoid strong afternoon sunshine in summer, and meet right ventilation conditions. However, the

determinant has a relatively uniform in form, so after China's reform and opening-up, residential planning is trying to break the monotonous spatial layout in various ways. The corresponding determinant house is the peripheral house. Peripheral houses may have the following poor orientations as they need to be laid out along the existing street. Therefore, the peripheral layout will sacrifice some housing quality to ensure formal integrity. Determinants and peripheral types have their advantages and disadvantages. In the planning and design of new residential areas, the determinant is a commonly used concept. These determinant layout houses mainly adopt the pattern of ground-floor shops, to absorb and continue the advantages of a part of the surrounding residential layout, to ensure the diversity and vitality of the streets.

When it comes to the vitality of the street, Jane Jacobs must be mentioned and her explanation of "the vitality of the city". Her theory is often compared with Howard's "garden city". The reason is that, in their theory, they painted a very different picture of the city. If Howard considered a city that is away from busy downtown, it should be green and orderly. Jane Jacobs (Jacobs, 1992, p. 23) thinks of a city as one with vibrant streets, busy lives, and friendly neighborhoods. She believes they are the root of healthy communities and cities. Different from the theories of Corbusier and Wright, they believe that a proper city is built into a beautiful city through the material spatial form. Jane Jacobs argues that urban vitality is more important than looking good, and diverse society is a healthy one. However, since Jacobs' theories are derived from her own experience of life, there is an inevitable contradiction in her research: The main problems of urban decay and urban expansion need to be solved from the perspective of macro development. No matter how much we protect the community environment and more actively promote the diversity of the community, we cannot stop the trend of fragmentation of the city (Breheny, 1998, p. 209-217).

Under the influence of Jane Jacobs, "new urbanism" established a design theory and thought for regenerating the vitality of urban communities. New urbanism advocates traditional neighborhood communities and designs traditional high-density, small-scale, and pedestrianized buildings and street spaces. These principles are aimed at a series of problems arising from suburbanization and urban sprawl in the United States. For example, excessive travel time, the use of private cars; environmental pollution; the disappearance of characteristic rural landscapes. "New urbanism" advocates many design concepts, among which the most important one is the organization and construction of the community. Neighborhoods, zoning, and path are the essential organizing elements of new urbanism. The ideal housing model for the future is compact, mixed-use, walkable neighborhoods; reasonable zoning; paths connecting the natural and artificial communities. However, for China's "necessity of high residential density" and the need to improve the floor area ratio of housing to improve the efficiency of land use, some principles of garden city and new urbanism are not suitable for China's situation. The problem is how to realize the ideal living mode in the future through planning and design in the case of high living density.

In the second half of the 20th century, people's understanding of the complexity, imperfection, and openness of the urban system, as well as their attention to energy conservation and environmental protection issues, made the theory of sustainable development play an essential role in urban planning and residential area planning.

(2) The development of sustainable planning and design of residential district

The sustainable community has many similar concepts, such as Ecological residential community, green community, or healthy community. Different scholars have different emphases on the theory of sustainable residential areas.

As is often understood, sustainability is more about being self-sufficient. Some individual houses and small housing groups, has been fully self-sufficient. "These communities can generate the energy they need, and they can recycle and reuse waste, they can collect rainwater and treat water. The key to achieving this self-sufficiency is that they reduce the energy needs of the home to a point where it can be provided only from natural sources such as solar energy, rainwater recycling, garbage"(Rudlin & Falk, 1999, p. 128). Sustainable cities operate at a regional, national, and increasingly global level. The key issue is that in order to reduce the unsustainable role of urban areas on the wider system, the balance between the resources that are imported into cities and neighbouring communities and the waste that is exported must be considered. According to Rudlin, four basic principles of sustainable development could apply to large number of homes or neighborhoods: (1) reduce the input of resources; (2) use of local resources; (3) minimize the amount of garbage; (4) use urban economy. Guided by these four principles, Eco-villages that can integrate in cities need to be created. Besides, Rudlin and Falk (1999) have summarized and reviewed the factors that could be put together to effectively reduce the environmental impact of sustainable neighborhood communities (p. 153).

(1) Walkable cities. Walking and cycling should be the easiest and the safest way to get around in a sustainable neighborhood. This can be presented in a variety of design approaches.

(2) The accessibility of the community. Accessible communities are very friendly to walkers. People can easily cross an area by choosing different routes. In such a community, the entrance is important. All entrances and exits have good accessibility connecting various destinations.

(3) Personal security. Many residential communities are planned and designed as gated communities for security reasons. The streets inside and outside the neighborhood were gradually deserted. When the area of a street starts to be abandoned, the surrounding buildings will also be affected, and the supervision of the surrounding environment on the street will gradually fade. Therefore, walkable and accessible design is encouraged. Sidewalks should be vibrant, and therefore it will be safer.

(4) Identifiability. Traditional urban neighborhoods have these advantages. In other words, the structure of neighborhood community is usually easy to identify, and residents will feel more secure and friendly towards the easily identifiable community.

(5) Reduce private-car use. For most people, pedestrian-centric neighborhoods mean the rejection and abandonment of cars. However, the author prefers to advocate the suppression of cars rather than the complete abandonment. Therefore, in the design of community roads, some measures should be taken to reduce the traffic speed and provide a more friendly walking environment for pedestrians. The rejection of cars reduces the efficiency and vitality of the city, so in certain blocks,

with certain ways, it provides street space that can accommodate different modes of transportation.

(6) Creative traffic jams. When cars and other vehicles cross the road, it is necessary to design some creative "barriers" to slow down the speed, thus creating an efficient but walkable street. It is possible to maintain a safe neighborhood street by reducing the amount of traffic.

(7) Density. A walkable street will be full of vitality and mixed-used streets. Residents can walk to places they want to go, such as community parks, public activity centers, supermarkets, shops, schools and so on. One of the ways to increase the density of community life is going to develop mixed-use functions. The development of mixed functions includes the provision of sufficient employment opportunities, shops, services, schools, and other working life facilities required by community life.

(8) Public transportation. Sustainable urban neighborhoods also need efficient urban public transportation systems. For example, while promoting walkability, it is possible to reach the surrounding public transport stations just by walking. If choosing public transportation is more convenient than choosing private cars, the probability of using public transportation will gradually and significantly increase.

(9) Energy use. Urban houses have more potentials to improve energy efficiency in terms of energy use in a detached house and semi-detached house.

(10) Power generation. The lesson from Britain's experience of replacing local power plants with large ones, though economically significant, has been reduced in terms of energy efficiency. Therefore, the strategy of redeveloping local power plants is put forward. The state grid will provide storage space, and the state grid will repurchase the extra electricity. The efficiency of the system is improved by averaging the annual thermal load, which is easier to achieve in mixed-function urban areas. When power generation control and management move to the local level, there are several models for replenishing energy: household waste incinerators, wind turbines, and solar energy. The most recommended is solar energy and photovoltaic technology that can be used to generate electricity. However, if these technologies are only used in individual buildings or small buildings, their energy efficiency will be limited. Therefore, using these energy technologies on a larger scale, at least at the neighborhood and community level, is going to be more effective.

(11) Urban recycling. This refers to the recycling of commercial and household waste. Jane Jacobs imagines a scene (Jacobs, 1969, p.32). In this scenario, in addition to extracting resources from limited natural resources, we can also extract usable raw materials from urban waste. Much economic activity is already based on the extraction of municipal waste. These economic actions may not be driven by a sense of environmental crisis but by commercial law. Thus, urban economic activities have great potential and flexibility. These economic activities may be able to revive the city's decaying manufacturing industry.

(12) Water and sewage. Cities have a wide range of water sources, but water purification and transportation costs are high. Moreover, after the water is used, more energy is needed to treat the

sewage. In the mid-20th century, two sewage treatment systems were established in London (Cao, 2016, para.11). One includes a sewer system. The device can be used to nourish sewage and fertilize plants. The water could be used to irrigate vegetable gardens around the city. Besides, these water treatment cycles can be used in the neighborhood. People treat the water in bathrooms and sinks and reuse it, for example, for flushing toilets. People call this method Greywater restoration. This method involves recycling and collection of wastewaters, which is then filtered and treated and deposited in a reclaimed water reservoir.

(13) Green land. Green land is significant to urban residents from a psychological perspective. Green land also contributes to the biodiversity of flora and fauna. Sustainable neighborhood communities may not have particularly large areas of open space, but some ways should also be found to maximize the possibilities of wildlife and biodiversity. For example, these can be achieved by road trees, parks, squares, terraces, courtyards, private gardens, and rooftop gardens. The large area of public open space in the city is significant but must be implanted with certain functional facilities. Such as city parks, amusement facilities, and sports facilities. Because he must have a certain vitality to be monitored and restrained by the surrounding streets, people, and buildings. Neighborhood communities can play an important role in the immense task of greening cities. The reason is that it was able to leverage existing technologies combined with existing conditions. It is also operational and can be easily implemented without increasing costs. Combined with China's urban and community conditions, some efforts can be made by referencing those measures.

Ecologically, a sustainable residential area, is regarded as an ecosystem. Through technical means to regulate and manage the ecosystem, to achieve and realize the sustainable development of the residential area. The ecological environment here involves not only the natural environment around the residential area but also the cultural environment, economic system, and social environment of the residential area. Under the guidance of this ecological principle, multidisciplinary research is useful. For example, the research methods and technologies of contemporary architecture, architectural technology, science, ecology, and other disciplines are applied to build a house or residential area into a small ecosystem, which provides a comfortable, healthy, environmentally friendly, efficient, and beautiful living environment for the residents.

Since the United Nations convened the global summit conference on environment and development in Brazil in 1992, the new concept of sustainable development has been recognized around the world. Among them, the development and construction of housing need to adhere to the strategy of sustainable development has been win great popular support, and in the housing policies of all countries have been fully reflected. China formulated the regulations for the 21st century in 1994, which gave unprecedented attention to the living environment. Therefore, the sustainable development of housing is the leading force leading the construction and development of housing in the future. With the rapid development of the housing industry, the consumption of resources, environmental pollution, and the destruction of the ecological environment have become the major problems troubling the health, harmony, and sustainable development of human residential areas. In the planning, design, and construction of urban residential areas, there are several questions worth considering: (1) how to protect natural resources, especially the rational and economical use of non-renewable resources? (2) how to protect and continue the historical and cultural heritage and its

spiritual connotation? (3) How to investigate, explore, and integrate regional features and factors? It is meaningful and urgent to explore the living environment in line with China's national conditions with these problems.

In addition, summing up the scholars' research on the sustainable development of residential areas in China, there are several outstanding problems. In China, the amount of housing construction is huge. Almost every year, new residential areas are successfully built and put on the market. The number of buildings that fully consider the sustainability of housing is small. Developers generally consider more is the building's external image, more rely on the image of creative landscape design, concept planning, etc., the internal quality of the residence, such as the resident's lifestyle can be more sustainable attention, did not get more consideration. This is also one of the reasons for the slow development of sustainable housing construction in China. Therefore, the popularization of sustainable housing construction needs more attention. Beyond the technical implications, China needs more progress in terms of scale and social impact. Of course, many green ecological communities with sustainable living areas as the planning and design concept have been successfully built and put into the market. Although these houses have reached the advanced level in terms of quality and technical convenience, they are usually expensive and brand-oriented. These buildings are aimed at a small, high-income group of consumers, not ordinary citizens, so for this reason, such buildings and housing are difficult to popularize. The average developer considers the appearance of the building and the economic and technical indicators when processing a residential project, and does not make more efforts to design the building envelope or try more new design methods to reduce the overall energy consumption of the residential area. At the same time, most consumers do not pay much attention to energy saving when they purchase their property. Therefore, this situation further slows down the development and recognition of sustainable residential areas.

Moreover, the design problem about the ecological environment in the residential area needs to be mentioning. Landscape design is generally understood as "visual greening" to meet the visual effect, thus ignoring the ecological value of landscape design. The ecological environment of the residential area is not only reflected in the vision. The types of greening plants, the collocation of vegetation, the relationship between vegetation and buildings, and construction sites, as well as the maintenance and management of vegetation, all affect the ecological effect of greening. This is a systematic project. Blind pursuit of the so-called European landscape design, or all kinds of emphasis on "style" oriented landscape design, often leads to the lack of local environment, the lack of regional personality.

Sustainability evaluation, management system, and monitoring system are also directly related to the effectiveness of sustainable construction. In order to promote the sustainable construction of housing, China has published <Key points and technical guidelines for the construction of green ecological community>(《绿色生态小区建设要点与技术导则》) and < Chinese ecological residence technology assessment manual>(《中国生态住宅技术评估手册》). The purpose of "guidelines" is to guide the community to adopt and promote advanced technology in the construction process actively, to make efficient and reasonable use of energy and resources. At the same time, during the implementation of the project, the ecological environment should be adequately protected to achieve the goal of "energy saving, water saving, land saving, and pollution

control". "Manual" comprehensively quantifies and evaluates the five aspects of community environment planning and design, energy and environment, indoor environment quality, community water environment, materials, and resources, and gives intuitive cumulative scores. The introduction of "guidelines" and "manuals" has contributed to the development of sustainable housing construction in China. However, the development of "guidelines" still needs enough implementation, practice, monitoring, and systematic management system to ensure that residential areas in the construction, operation, and use of the process to achieve real energy conservation and environmental protection.

Examples can be referred to, the first "zero-carbon" sustainable design BedZED in the UK. After the residential area is built, the design team pays close attention to the operational performance of the residential area, which has been built, and regularly evaluates and summarizes it in a planned way. On the other hand, based on the existing experience from the project, actively research has been made for developing next-generation design products. In the process of construction, design, and development of sustainable housing, the designers are in excellent communication with the residents to help them fully understand their homes and correctly use the technical equipment in the homes. Some projects even provide detailed instructions, enabling residents to take the initiative to monitor the operating conditions of the house, such as energy consumption, water consumption, temperature, and humidity. At the same time, it can also timely provide updated technical information of the product, to ensure the efficient operation of the whole system. These are the most significant differences that compared to most residential projects in China which take sustainability as the main concept during the planning and design of the residential area.

Single-purpose planning is also responsible for the negative impact of many cities. For example, forestry planning is only for timber production, agriculture planning is only for food supply, river planning is only for flood control, parking stations are only for queuing, parks are only for recreation, and buildings are only for providing a place for daily life and work. There are long distances between living and working places, so people can only spend more time on transportation every day. If there is a long distance between the living place and the natural environment, parks, lakes, then the chances of residents living in harmony with the natural environment will be significantly reduced. As these problems gradually emerged, the residential areas need to improve. How to realize planning theory and intention in the process of planning and design implementation, how to create a comfortable environment, energy and resources saving, less pollution, close neighborhood relationship, as well as a sense of security and a sense of belonging to the residential community, all put forward higher requirements for the decision and development of residential planning. Therefore, the benign development of residential planning must be combined with the concept of sustainable residential development. In order to better solve and deal with the above problems.

Besides, in the planning and design of some residential areas, there are many simple imitations of traditional living space. This imitation is often interpreted as a consideration of regional characteristics and spatial living environment. Nevertheless, the imitation of traditional space is more in the visual similarity. The emergence of such a simple imitation problem is likely to lead to the loss of consideration of the real living environment when planning and building residential areas. This also has a negative impact on the planning and design of sustainable residential areas.

1.3 Research questions

Research questions and objectives have been set at the beginning of the project, although as the study is further developed, research questions and objectives continue to be improved and updated. In order to achieve the answers to these research questions, several aims have also been set under each question.

The overall research questions and detailed aims and activities are listed as follows:

- (1) Looking back through the residential development in China, how occupant's choice and demands have influenced the planning and design strategy (especially on housing and neighborhood)?

Aims of this research question are to understand the development background of Chinese residential design and clarify those impacts on the contemporary residential design process and essential influences on occupants. To achieve this aim of research question, three objectives have been decided to make progress:

- 1) To understand how the design practices for housing in contemporary China and evolved in the last three decades, this study will be achieved by documentary search, secondary analysis.
- 2) Through analysis to determine linkages between issues which rooted in the past and strategies of contemporary residential planning and design.
- 3) Identify linkages and address influences on contemporary residential planning and design.

- (2) Who will be involved, and what are the interrelationships among stakeholders in the design and construction process of the residential dwelling in China?

This research question is aiming to observe and clarify the inter-relationship of each stakeholder in a residential project in China. By clarifying the inter-relationship among stakeholders, it is possible to understand how it leads the directions of the whole project. Three objectives which intent on achieving the aim of the research question have been decided to make progress:

- 1) Identify stakeholders who will be evolved in the design process of residential dwelling project in China through case study and survey;
- 2) Identify roles and limitations of responsibilities of each stakeholder in sustainable residential dwelling project in China, by analyzing case study and data from the survey;
- 3) Clarify the current status of sustainable design procedures on the residential project in China, such as the current status of legislation, relationships among international standards,

national regulation, and local regulation.

- (3) To what extent the inter-relationships of occupants' choices and preferences with current design and planning could make significant contributions to improve the sustainable planning and design of residential development in China?

Aims of this research question are to clarify relations between occupants' propensity and current design and planning and to find out its influences on sustainable planning and design of residential development. Three objectives which intent on achieving the aim of the research question have been decided to make progress:

- 1) Collect and analyze what choices and preferences do occupants have in practices, through questionnaire survey and interview;
- 2) To determine the general understanding of sustainable residential districts among occupants that they can rely on to make decisions when they were purchasing a property;
- 3) To clarify the limitations of occupants' perception of sustainable residential design and what issues should be emphasized by design to make more sustainable.

1.4 Hypothesis

Through the previous studies in the planning and design of residential districts with the sustainable design concept, gaps in the study field could be pointed out. This project attempts to bridge the gap for stakeholders who are involved in the residential design process in order to make more effective design with more sustainable concerns. The overall research hypothesis of this project is presented as below:

By better understanding and integrating the needs and knowledge of stakeholders who are involved in the design and planning process of the residential district in China, it is possible to determine how to influence the decision-making process during residential planning and design to gain more sustainable outcomes through provision of suitable information.

During the research process, the researcher has made numbers of observations about residents' daily life and living environment in residential district. In the observation, it was found that design problems (lack of design strategies based on the actual situation) caused a series of problems in the process of project progress and development. These problems were concerned primarily the behavior and activities of residents and the impact of lifestyle on the newly built physical living environment. These residents passively adapted to the new living environment with their own way, and this caused several new problems. Therefore, in the early stage of the project, even though the information input is small and small changes of basic information have happened, it could be narrowed down different results and then have aroused different reactions in the gradual development process of the project. In the study, the researcher studied and recorded the development process of residential planning and design by observation and case study. In the research process, it is found

that adjusting or expanding the information which entered the process of decision-making at the early stage of project will have positive impacts on the sustainable planning and design of residential areas. In this study, the researcher tries to find out the problems in the residential planning and design process as well as the opportunities for improvement by observing impacts of entering the residential area according to the residential planning and design process on the residents.

Through the overall conclusions of this research, approaches have been provided to test the ideas that grounded information could provide positive influences to gain more sustainable outcomes during the process of planning and design of residential district. Bottom-up information relates to the stakeholders could be collected and analyzed, and integrated into the residential planning and design procedure by providing useful reference and actual information. The top-down approach is used to limit the contents and completion of each stage to achieve more effective design.

Therefore, this research will provide stakeholders with suitable information that will lead to more sustainable outcomes in future residential planning and design in a way of changing and debugging the process of residential planning and design and contents within each step.

1.5 Significance of the research

The development of residential planning in China has been closely related to the change of social, economic, and political systems. In the early 1950s and 1960s, influenced by Western Europe and the former Soviet Union, the neighborhood unit theory gradually evolved from neighborhood to community concept. However, under the principle of "production first, life later (先生产, 后生活)", the planning and development of residential areas have almost stopped. Since the social and economic recovery in the 1970s and 1990s, the planning space structure pattern of the residential district, residential quarter, and housing cluster has been formed in the planning theory. The research activity of the pilot district and comfortable residence promoted the development of the district model significantly. In 1998, the development of the commercial housing market made the planning of residential areas diversified, multipolar, and multi-variety, and the living environment and quality of residential areas were significantly improved.

With the continuous increase of the urban population and the continuous improvement of people's living standards, many old houses in the city are facing renewal and renovation. For example, urban housing, which built in the 1950s to 1980s in China, still exists in large numbers in today's cities. During their construction, China implemented the welfare housing system, and the government invested most of the employees' housing. Due to China's backward economy, volatile political situation and unstable society at that time, there were many problems in the housing built during this period: for example, lower construction standard, small living area, simple housing type, poor building material quality, and lower quality of the living environment. For another example, due to China's unique urban-rural dual system, many natural villages formed over a hundred years have been forced to become the "criticism" of cities in the process of rapid urban development. This is an unavoidable issue in the process of urban renewal in China. The reconstruction of the urban village is a complicated decision-making process, which is related to many stakeholders. Throughout the whole process, the villagers' living environment and way of life have changed

dramatically in the process of renovation. For these houses, urban houses or houses in urban villages, China generally adopts two methods: One is "massive" renewal, which means tearing down and rebuilding; The second is "small-scale" transformation, that is, tinkering. The decision to demolish and rebuild on a large scale was questioned and opposed by many scholars. Nevertheless, follow-up studies of neighborhoods that have undergone these "dramatic changes" have not received enough attention. In this study, the author tracked and investigated the reconstruction projects of villages in cities that had undergone "great changes". From the project decision in the early stage of design to the process of villagers and new residents gradually living in residential areas and the daily life after living in residential areas, the author made detailed records and real-time analysis. Throughout the whole process of urban village reconstruction that has gone through nearly a decade, every decision seems to be able to find a causal link in the later reaction of the status quo. Through recording, summarizing, and analyzing the whole process, the study tries to provide more new information for similar residential renovation projects in the future, to make specific guidance. At the same time, the author also investigated and summarized the original state of the urban village around the city, and compared it with the planning and design concept of sustainable residential areas, and found many similarities. Combined with the current situation of the city studied by the author, some guidance and suggestions can be put forward to provide more real experience for future residential planning and design, to make residential planning and design more localized and sustainable.

The concept of sustainable development is widely recognized all over the world. It is our common goal to transform and update the planning and design of residential areas from the perspective of sustainable development. By the end of the 20th century, China had formulated agenda 21 and formulated a strategy for sustainable development. The development goals of China's urban housing construction include: "the planning and layout of the housing should be reasonable, relevant supporting living facilities should be complete, conducive to work, convenient for life, and the living environment should be clean and beautiful." Under such a guiding ideology, many residential areas with a sustainable living community as the main design concept have been planned and built. The "eco-town" in Kunming was selected as a case study, and the project was tracked, recorded, and studied from the early stage of construction to the later stage of use. In the process of the study, the author recorded residents' living conditions, living environment, and the use of various facilities in the community. Even though the residential area was built according to the sustainable design guidelines and obtained green building certification, the observation study found that the residents had not developed more sustainable lifestyle and awareness in their daily life. Similar phenomena have been observed in the studies of other scholars (Liu, 2017, p. 56). The purpose of the study is to discuss and find out how to combine the concept of sustainable design with residents' information, such as daily life, living habits and local customs, to effectively promote sustainable development in Kunming. The result is a reflection on how the concept of sustainable design can be more effectively associated with residents in the process of residential planning and community construction in order to achieve the popularization of sustainable development in Kunming.

1.6 Thesis structure

Following the conceptual framework, the research question is concerned with the interrelationship

between design procedure and how residential planning and design could be optimized to be more sustainable in the city of Kunming, China, with the manner of improving future sustainable residential development. In order to answer the research question, the aim of the investigation, which is to illustrate interrelationship between design procedure and how residential planning and design could be optimized to be more sustainability, could be revealed on four key aspects: planning and design of residential district; stakeholders' connections; sustainable residential design; optimize design process and feedback mechanism. The structure of the thesis is as follows:

The introduction chapter sketches the background of the research. It illustrates how, in the past three decades, sustainable residential planning and design have been developed with a particular design procedure in the city of Kunming, China. The research question is raised based on the issues of the interrelationship between design procedure and residential planning and design with the manner of improving future sustainable residential development. A conceptual framework is drawn to explain the connection among four fundamental concepts, which are the core to the research question, which are 'locality', 'systematic approach on residential planning and design', 'sustainability', 'feedback mechanism'. Through the conceptual framework, the link between the research question and the aim of the investigation is established.

The following chapter is the literature review. There is two mainstream in this chapter. The first target of the literature review is to identify the theoretical location of the research in the whole social science disciplinary. The second target is to identify the theoretical gap between existing theory and new understanding and perspectives of residential planning and design. Relevant theoretical research of existing documents and materials has been reviewed. The first body of literature review is relevant to the understanding the hierarchy and interrelationship of residential planning and design in terms of sustainability, as well as on the four key aspects of the relationship, including 'planning and design of residential district', 'stakeholders' connections', 'sustainable residential design', 'optimize design process and feedback mechanism.' The other body of the literature review is associated with the current development of sustainable assessment methods both in China and abroad, and to what extent sustainable assessment methods are incorporated with the development of sustainable residential planning and design. A theoretical gap will be identified through the literature review. The conclusion of this topic fills the gap in this theory. Optimizing the home planning and design process can lead to more sustainable results. This is an important research topic in the field of residential design under the sustainable development model.

The following chapter 4 is methodology. This chapter explains the rationale of the research methods and case studies, interviews, and questionnaire surveys that were conducted to achieve the aim of the investigation.

Chapter 5 is case studies which focused on two kinds of the residential project during the process of planning and design. A comprehensive overview of the project will be provided in each case study. They will include the development of the planning and design concept of the project, the construction process, and the situation after the construction is completed.

Chapter 6 is the final chapter are the overall conclusions. The research question will be answered,

and the research limitation will be explained. There are still chances to do more future development, and the potential of the research to achieve a closer link between design intention and demands from final users is significant.

In order to make it clearer how the project can be built and what activities should do in a certain stage, a diagram has been made to present the overall framework of the research project. The study contains six parts in total: Introduction, literature review, background review, methodology, case study and survey, discussion, and conclusion. The framework, main research contents, aims, and activities for each part of the research, have been listed in the diagram shown below.

Q6: All the chapters should be added into the proper boxes of the left column.

<p>Part_I Introduction Chapter 1: An introduction of research aims, objectives, hypothesis, and significance.</p>	<p>Main research content</p> <ul style="list-style-type: none"> - State the general background of planning and design on residential district in China; - Outline the current situation of residential development and identify gaps of knowledge in study field; - Raise the research questions and hypothesis of overall research project; 	<p>Aims</p> <ul style="list-style-type: none"> -Establish the research boundaries; -State the importance of research project; -Illustrate research aims and steps under each question;
<p>Part_II Theoretical framework and Methodology Chapter 2: Urban regeneration, development of housing industry. Chapter 3: Towards planning and design of sustainable residential district and evaluation framework. Chapter 4: Methodology.</p>	<p>Main research content</p> <ul style="list-style-type: none"> - Review the concept development of urban renewal; - Development of planning and design of residential district in China; - Definition and connotation of sustainable residential district; - Supplement the background knowledge of research field; - Assessment methods currently available; - Address gaps in the study field; - Introduce the overall methodological approach for research questions; - Describe methods will be used in the research; - Explain how the data will be used and analyzed to contribute the overall results; 	<p>Aims</p> <ul style="list-style-type: none"> - Provide background to help understanding the study field; - Relevant studies; - Build on knowledge to the study field; - Determine linkages between design and specific policy environment; - Identify issues of project implement; - Clarify ways to achieve answers for research questions; - Make sure collected data will address the results;
<p>Part_III Case study and data analysis Chapter 5: Case studies and analysis.</p>	<p>Main research content</p> <ul style="list-style-type: none"> - Observing and analyzing implemented and implementing project in Kunming as case study; - Questionnaire survey and analysis; - Data analysis; 	<p>Aims</p> <ul style="list-style-type: none"> - Identify linkages between designs and occupants' demands; - Define problems and gaps need to be improved;
<p>Part_IV Conclusions and suggestions. Chapter 6: Conclusions</p>	<p>Main research content</p> <ul style="list-style-type: none"> - Summary conclusions in each part of research; - Make overall discussions and conclusions; 	<p>Aims</p> <ul style="list-style-type: none"> - Link conclusions in each chapter and develop overall conclusions;

and suggestions.		
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Table 1.1 Overall research structure

Part II _ Theoretical framework and methodology

Chapter_2: Urban regeneration, development of housing industry, research on peri-urban

2.1 The concept development of urban regeneration

Different phrases about “urban renewal” present subtle differences when decision-makers and academics using them. The phrase “urban renewal” in the 1960s is more relevance to the “clearance slums” rather than in the 1980s, the similar phrase “urban regeneration” presents the importance of economic and real estate development (Couch, Fraser, & Percy, 2003, p.33). This section illustrated different but similar phrases that are relevance to “urban renewal” in different periods. Differences in each phrase will be presented and reviewed.

This study is essential for three main reasons:

- (1) Understanding the concept of development about urban renewal could help the researcher to the research scale and contents. It is important to determine the accuracy of this phrase. Otherwise, it may lead to different focuses during the research.
- (2) Different phrases presented different contexts. To illustrate the historical development background, the timeline, context it contains will help the researcher determine the context that the thesis discussed.
- (3) New research work about the concept development of urban renewal in China needs to be done. A clear framework about the development of urban renewal in China will provide reference and information to the study field to define the research contents.

2.1.1 Urban renewal

Research on urban renewal firstly began in European and American countries. Cities in these countries were experiencing rapid urban reconstruction process after the Second World War. The UK government put concerns on improving living conditions for building a healthier habitable space. Meanwhile, in the American cities, newly constructed highway encouraged private car use. The resulting urban suburbanization caused the decline of the inner urban area, which also raised more urban problems.

Due to the different historical background and periods, the phrase of “urban renewal” contains different connotations, and structured the different strategies and actions in these periods. The concepts and different phrases for describing the process of “urban renewal” have been developed for four periods (Mali, Tian, & Liyan, 1995, p.43). Each period focused on different targets and actions, which have supplemented the connotation of the process of urban renewal. Reviewing

themes and contexts for each period provide different perspectives to understand the current urban development process.

The development of urban renewal in European and American countries has been presented as four periods (Mali, Tian, & Liyan, 1995, p.43):

(1) The first period was after the Second World War, in early 1960s.

The urban renewal in the early 1960s was mainly about the improvement of housing conditions. Housing shortage and very poor quality of most the residential houses are the main problems during this period (Couch, 1990, pp.29-47). Destructions of the urban environment and the rising birth rate after the war stimulated the development of urban renewal. The main discussions about the improvement have been set as “the clearance of slums” around the central urban area. <Public Health Act 1875>, meanwhile the <The Cross Act> (十字架法案) have been released in London, which marked the plans of cleansing “slum” of European countries has begun. As a method for social reform, the emergence of urban renewal is a reaction to the increasing blighted and rapidly industrializing central cities of the 19th century. With the urgent demands of improving housing conditions for people in the city, the first social housing project in London is nearby Westminster, and the project started after removing the Devil’s Acre slum. The social housing project built on the site is considered a good model for another similar project in London. This is an excellent template to reuse for other projects.

The massive demolition has been carried out after the enactment of <The Housing Act of 1930>. The local council was given the wide-range power to decide the demolition of those housing, which were unfit for a considerable quality of living. Cities with a large amount of Victoria Terraced housing have been through the most significant changes due to those housing that have been considered that have no longer fit the requirements for modern living.

“Urban renewal” as the phrase to describe the movement of improving living environment in the city has been identified in the <International Handbook on Urban Renewal> (Miller, 1959, p.11). The contents of “urban renewal” are generally about the improvement of housing conditions, physical living environment, land use, and urban functional zoning (Miller, 1959, p. 11). The following research (Priemus, 2004, p.200) has enlarged the scale of content of “urban renewal” which covers multifaceted elements: “urban renewal is a systematic effort in the field of social, economic, cultural, and environmental elements” and “urban built-up area could be preserved, improved, rebuilt or removed followed by these efforts.” The meaning of “urban renewal” is developing from “focusing on the physical environment” to “a systematic approach”.

Three policies that have been published to solve urban problems after the war had to be mentioned. Influenced by anti-urbanism as the British tradition and Garden City Movement, New Town strategy, which has been framed by Reith Committee, has been proposed. Government-led New Town project generally implemented on undeveloped land in peri-urban areas. Building self-sufficient towns, offering enough jobs opportunities, generating different

kinds of workers, and providing complete living and working facilities, are the desired results of building new towns. However, doubts and problems cannot be avoided to discuss. This strategy caused always worried that building new towns in the period when the building materials was in short supply. Therefore, the urban renewal process with single-purpose will have a chance to cause problems, and ignoring social and economic factors will lead to more complicated urban problems (Tallon, 2003, p.21).

Influenced by the Garden City Movement, the Green Belt strategy has been released to limit the development of urban sprawl (Abercrombie, 1944, p.260). Green belt is full of farmland and recreational land. It has been set around the urban area, which is not allowed to develop any constructions within it. Due to the limitation of urban sprawl, the development of inner-city area has been promoted. The processes of urban renewal have also been accelerated. However, the demand for housing has been rising since the 2000s, some critics even argue that building houses in the green belt is ultimately inevitable.

During 1945-1968, the third strategy has been released to solve the urban problems, which is the redevelopment of housing and inner urban area. The main targets of this strategy were to provide more qualified houses for people and building new residential estates after demolished slums within the urban area. In order to provide a better living environment, rising housing density, the housing building is getting higher, and the development of the shopping mall was the main feature of urban development during this period. Therefore, unsustainable issues in which relevance to social and architectural problems finally had arisen.

Three strategies still had inadequacies during the implementations, but most parts of the problems had been partially solved. At the same time, due to the implementation of these policies, the new perspective is summarized as a reference for other urban renewal campaigns. However, the term urban renewal of this period is usually associated with "bulldozing" of most buildings, which were deemed "unfit for human habitation". Moreover, this is also the primary meaning and content of the phrase "urban renewal" in this period.

(2) The second period was 1960s-1970s.

As the "bulldozer clearance" continues, there are growing calls to question this movement that Jane Jacobs (Jacobs, 1961) criticized the massive demolition and construction will bring to the inequity and economic challenges to the city (pp. 1-21). Since the 1960s, there has been a shift in the trend towards urban renewal. The public housing system has become a new development goal instead of the massive demolition and new constructions. Since the 1970s, the concept of small-scale renovation, which has been called "neighborhood renaissance" has gradually become the mainstream as the process of urban renewal. In the year of 1974, a plan, which is known as "building neighbourhoods" has been set by Rotterdam authorities for renovating and upgrading old residential areas for aborigines, which led to other plans for construction public housing in the rest of European countries. These plans have led to the construction of high-quality residential buildings and the image of the city was getting better since then. Meanwhile, HUD (U.S Department of Housing and Urban Redevelopment) has enacted two pieces of

legislation which plays important roles in the process of the renewal of historical architecture and neighbourhood: CDBG (Community Development Block Grant program) and UDAG (Urban Development Action Grant). Funds could be set to redevelop the existing neighbourhoods and provide “stimulations” to the development of industry and commerce in the depressed area (Ding & Wu, 2017, p.89).

Furthermore, this period is known as the sub-period of the early process of urban renewal (Tallon, 2017, p.4). The last stage of urban renewal, most focused on material improvements. Some typical urban problems still existed, such as the very poor living conditions in poverty-stricken areas, and the growing gap between rich and poor areas. However, compared with the urban renewal movement in the previous stage, there is a shift in some approaches during the urban renewal. Three main urban strategies dominated the urban renewal process in this period.

Started with the Urban Aid (城市援助) in the year of 1968, to the establishment of Urban areas Act (城市地区法案), Urban Programme (城市计划) has been promoted for easing social tensions in the inner city areas and bring more attention to urban problems. Furthermore, another goal of the plan is to make up for the lack of public services. Additionally, this program emphasizes the experimentation, autonomy, and take actions by combining the existing conditions. This is important that it could enhance the sustainability of the community rather than take “one size fits all” approach, which is more authoritarian and stricter. Therefore, the authorities' focus on solving urban problems has thus narrowed down to the community projects. Compared with the massive demolition and construction in the last period of the urban renewal approach, this practice is regarded as a means of optimizing urban renewal progress. The phrase of “urban renewal” during this period presented more focus on improving public housing and living conditions. Public participation has been encouraged among general residents in the community and emphasized the spontaneous activities on urban renewal (Atkinson & Moon, 1994, p. 43) (Cullingworth & Nadin, 2006, p.350).

Community Development Projects is the second strategy implemented in the year 1969 and based on the local development conditions. The original goal of the program was to eliminate feelings of alienation and depersonalization among people in poor areas. This strategy focused on how to put limited financial resources into small deviant projects. The community development project was conducted as a team which was including a local executive team and a research team from a local university. This approach led to a lot of social criticism and condemnation; therefore, the policy was ended in 1978. However, this strategy has brought a positive result that a new perspective to view the poverty problems.

Inner Area studies, as the third strategy created by Peter Walker in the year of 1972, aims to provide a total approach for the diversified urban problems (Tallon, 2017, p.38). The interpretation of urban problems shifted from individuals and communities to a broader economic structural change. In the following year 1977, inner urban area studies have been involved in the urban renewal policy and then forced implementation of <Inner Urban Area Act,1978>. The government’s view of urban problems has been changed after this policy, that many factors cause the decline of the urban area. Moreover, for these factors, four remedial

strategies have been provided to solve problems: seeking practical ways of realizing economic growth, improving the physical living environment, improving social conditions, and strike a new balance between population and employment. However, due to the change of the governing party in 1979, and the economic crisis of the 1970s, the effect of this policy on urban decay and poverty was not significant. But this period of urban renewal policy is indeed a big change.

Compared with urban renewal strategy in last period, urban renewal strategy in this period come with more welfare-oriented approach. The implementation of urban renewal strategy has been changed from “clearance slums” and “massive demolition and construction” to focusing on development of community renaissance and improving overall living environment.

(3) The Third period was 1980s-1990s.

With the advent of the global post-industrial era, the partnership between government and developers has been built to stimulate economic development. Market-oriented real estate development become the mainstream of “urban renewal” during this period. “From top to down,” urban renewal was the main strategy of this period. “Market” has been considered as the optimal path to solve urban problems. The role of government and the participation of the community are weakened in the urban renewal process. Aiming at economic benefits (Harding, 1991, p.295), which are essentially the real estate developments, has become the mainstream development model. These are the most apparent features of urban renewal at this period that compared with the urban renewal in previous periods. However, after the implementations of these strategies, some unresolved problems remain. Such as responses to current urban problems, coordination between policies implemented lacks a long-term perspective, the increasing satisfaction level with the property-driven approach to urban renewal, the lack of interest in local communities, and the following problem of urban governance. As responses, the urban renewal strategy in the fourth period mainly focused on improving the interests of marginalized communities during the urban renewal projects. Moreover, long-term, forward-looking development strategies need to be studied and proposed to achieve sustainable urban renewal.

(4) The fourth period was after 1990s.

Urban renewal strategy during this period provided efforts to respond to the criticized strategies of the previous period. Urban competition plan has been introduced to encourage cities to compete for financial support from the government; a cooperative relationship is encouraged among government, private development company, and the local community, the concept of sustainable development has been strengthened in the discussion and formulation of policy issues. Compared with the implementation of urban renewal in the 1980s, which was put more focuses on market and real estate development, strategies, and policies during this period were more focused on balancing and integrating approaches. However, the urban renewal policy in this period was also questioned by the public. These criticisms focus on the following points: financial support that available for urban renewal is dwindling; cities must compete for this support, not apply for it on demand; in the process of urban renewal, the degree of public participation in decision-making is relatively low; and there is lack of coordination among urban

renewal policies during this period.

2.1.2 Research development of “urban renewal” in China

Compared with urban renewal in European and American countries, the development process in China can be divided into several stages in Table 2.1. In the meanwhile, the urban renewal process in China can be summarized with three types in Table 2.2 (Yu & Ke, 2018, p. 13-14).

Period	Main Contents of urban renewal process
Reconstructions in 1940s	Reconstruction and expansion of old urban areas;
Urban revitalization in 1960s	Reconstruction and expansion of old urban areas;
Urban revitalization in 1970s	Revitalize the urban economy and enhance the attractiveness of the inner-city environment;
Urban revitalization in 1980s	Development and redevelopment of major projects to promote the transformation of post-industrial cities;
Urban regeneration in 1990s	Facing the international competition of globalization, policy renewal and material renewal, emphasizing social equity and sustainable development;

Table 2.1 Different stages of urban renewal in China (Yu & Ke, 2018, p. 13-14)

Types	Main content
Reconstructions	The objects of urban renewal are the existing facilities and buildings with extremely poor conditions, demolition and reconstruction is generally adopted as the urban renewal strategy;
Comprehensive improvement	An area where buildings and other urban facilities are usable but the environment is poor;
Conservation and reuse	This is a way of renewal that has the least impact on social structure. It changes the functions of some or all old buildings without changing the building appearance. And those buildings could meet the needs of the new era.

Table 2.2 Different types of urban renewal (Yu & Ke, 2018, p. 13-14)

Some scholars (Jin, 2018, p. 25-26) have suggested that urban renewal is a comprehensive renewal process. It contains not only the renewal of urban villages, reconstruction of old areas, also the old business district around them.

The purpose of urban renewal is to create a livable living environment. It includes the sustainable development of improving old buildings, ecological environment, spatial environments, cultural environment, historical humane environments, industrial structure, functions, and social psychology. Academician Wu has firstly put forward the theory of urban organic renewal. According to the requirements of the urban transformation content, organic urban renewal process aims to using appropriate development scale, dealing with the relationship between the present and the future, exploring the methods of urban renewal based on sustainable development, and continuously improve the quality of planning and design, so as to achieve the relative integrity with the overall

urban planning. In summary, the organic urban renewal process could narrow down to three principles: integrality, sustainability, and divided by different stages.

Urban village renovation as an essential part of the urban renewal process has received much attention. Jin (2018) summarized the current status of urban village in his recent research. He found that there are three main problems in urban villages: urban village construction and urban planning are not unified; inadequate public infrastructure, living, and transportation environment need to be improved; a large number of floating population and related social problems (p.25).

Urban village reconstruction also needs to be based on the contents of organic urban renewal theory. The transformation of urban villages cannot be limited to material transformation. It should contain more content, for example, optimizing the industrial structure, lifestyle in the community, population quality, and other fundamental aspects. The common way of transforming an urban village, such as many high - rise residential buildings have been built to replace the villagers' self-built houses. The new living environment has not changed much on villagers. Villagers still live on housing rent, that they have been compensated for housing demolition during the urban village renovation project. The transformed urban village has not produced many changes related to urbanization in the mode of production and lifestyle.

Except for the study of the current situation in urban villages, all the stakeholders related to the reconstruction of urban villages are also concerned by scholars. Wang and Song (2019) discussed the relationship and duties among all the stakeholders during the process of urban renewal (p.19). Mao and Chu (2005) presented the ternary governance theory (p.42). It addressed that there are three main stakeholders during the urban renewal process: government, enterprise, and society. Qian (2005) stated that there are four main stakeholders during the urban renewal process, they are: government, NOG (non-governmental organization), private enterprise, and the public (p.38). This is the theory of quaternary governance structure. Furthermore, with the diversification of urban renewal themes, multicenter governance theory has put forward by Wang (2005,p.31). It stated that the main body of urban governance is a network system which including government. Therefore, it is crucial to study the relationship among stakeholders and the roles of each stakeholders, and it decided whether the urban renewal process would proceed smoothly. In the case study of this paper, the relationship among the stakeholders during the urban village renovation project is also emphatically analyzed.

Each stakeholder has a different role to play in an urban renewal project. Central government exerts a direct influence in the process of urban renewal through the aspects of policy and law as well as the supervision of the planning scheme. However, when the central government devolves power to local governments, effect of regulation during the project will be diminished.

The city government, as the core subject in the urban renewal process, is directly responsible for and involved in many aspects. City government is the leader of the urban renewal project, provider of policies and institutions, the host of public rights, the administrator of urban public affairs, and the representative of public rights. Therefore, when city governments have held power, they need to be very careful in carrying out various policies. Meanwhile, as the core subject, the city government

can be divided into different secondary subjects: Horizontally, the secondary bodies of the city government include all the departments related to urban renewal, such as the planning bureau, construction bureau, and urban council. Vertically, the second level of city government includes the regulatory sequence of the city, city, district, and street.

Both developers and enterprises are fundamental forces during the process of urban renewal. They are the basic economic cells. Interests drive the participation of developers and enterprises in urban renewal, but it can positively promote the city and the new process. Private capital investment is an essential supplement to public sector investment. The participation of developers played an important role in solving the construction of public service facilities, the supply of social housing, and a series of market problems in the process of urban renewal. However, there need to be constraints on participation. For developers, the investment strength of the enterprise itself needs to have constraints, has ensured that the investment can be completed fitness. In the cooperation between government and business, interest distribution and negotiation need to be constrained to achieve fairness.

Public opinion has great potential in urban renewal. In most projects, most of the Chinese public is a "vulnerable group". They are direct stakeholders in the urban renewal process. From the experience of urban renewal in the west, public participation is indeed a force that cannot be ignored. In China's current urban renewal operation mechanism, information about the appeal of individual interests is relatively scattered. Therefore, in the process of urban renewal, it only acts as the "virtual subject". In other words, the public plays an important role in the process of urban renewal but fails to express their needs effectively. Therefore, research on public participation is important because public participation has excellent impacts on urban renewal program design, on the benefit structure, and the process of urban renewal.

NOG can play a better role as a bridge of communication in the process of urban renewal. They can provide an active channel for public participation and become a medium to help urban residents express information and their needs. Therefore, in the process of urban renewal, it is necessary to give full play to and make good use of the potential power of NGO. They are composed of professionals who solve similar problems with their professional knowledge.

There are different interactions among stakeholders in the process of urban renewal. If each interest subject can meet the incentive compatibility principle of mechanism theory, that is to say, each participant can achieve the goal that the mechanism needs to achieve while pursuing individual goals (Hurwicz, 1972,p.320). Only by ensuring the interests of all parties, urban renewal process could achieve win-win results in economy, environment, and society.

The research direction of urban renewal and reconstruction mainly includes three aspects (Xie, Tan, Chang, 2018, p.92): (1) Empirical research and strategic research on urban renewal. Western countries started the process of urban renewal earlier. Throughout its development, there have been successes and failures, as well as strategies that have been gradually adjusted based on lessons learned. Therefore, sorting out the logic of urban renewal and development in western countries can provide a useful reference for Chinese cities and the new process. Besides, the research summary

of urban renewal and reconstruction strategy explains the problems in the current urban renewal and reconstruction in China. Sustainable development strategy is an urban renewal model that emphasizes the coordinated development of economic and social environment. Chinese scholars also discussed the urban renewal action mode under the sustainable development strategy in recent years. In recent years, most researches on sustainable urban renewal strategies remain at the level of values, and specific operational policies and suggestions are seldom put forward. (2) Study on the process of urban renewal. In the process of urban renewal, research on the relationship between stakeholders received much attention. Urban renewal is not only the reuse of space resources and the transformation of the space environment, but also the game among stakeholders is an essential reason for the results of urban renewal and transformation. The author believes that the current discussions are aimed at the relationship between the government, developers, and property owners. In the renovation project, due to the lack of a corresponding platform to organize the opinions of all parties, the property owner is in a weak position in the whole process. The needs and opinions of property owners can hardly be collected and get well recorded. This is one of the causes of social injustice and spatial injustice. As for the research on the role of the government, some scholars believe that the role of the government is always in an extremely sensitive position, no matter it is a government-led project or a developer-led project. The role of the government is easy to cause social injustice, the feelings of space injustice. Therefore, in the process of urban and new reconstruction, how the government should adjust its role positioning according to the reconstruction goals is worth to discuss. (3) Social impact on urban renewal. Urban renewal will not only affect the urban space environment and economic development but also affect the social structure equity and justice of the city. Studies on gentrification and space justice have attracted the attention of scholars. Research on gentrification in China began in the late 1990s. The phenomenon of gentrification in China is similar to that in the west. In the process of urban reconstruction, the life of original residents has received a strong impact, and the interests of low-income groups are often ignored. Some scholars offer various Suggestions to ease gentrification. For example, improving the construction of public housing; Construction of mixed residential areas; Enhancing public participation; Protecting the interests of vulnerable groups; Avoid more demolition and construction.

The research on urban renewal is progressing and enriching. Nevertheless, some problems can also be pointed out. The study and description of government perspective have got too much attention. The results of urban renewal can only be presented after the game of multi-stakeholder, but most studies put forward the optimization strategy of urban renewal from the perspective of the government. The approach of presenting strategies from the perspective of other stakeholders has not received much attention. Therefore, the individual initiative of other stakeholders is ignored. Besides, the study of urban renewal in China's first-tier cities has received enough attention. As a result, most of the studies on second - and third-tier cities that have experienced the same process of urban renewal are ignored. Although the experience of urban renewal in first-tier cities can provide valuable case studies for the process of urban renewal in second-tier and third-tier cities, it is not possible to accurately solve the actual problems by way of one strategy covering all other projects. Therefore, it is also essential to study the process of urban renewal that second and third-tier cities are undergoing.

By reviewing the research and development of urban renewal in China, several research gaps can be proposed. The first is the study of stakeholders. In addition to the attention to the city government and developers, other stakeholders also need to be paid enough attention to — for example, citizens, NOGs, and tenants. Their role in urban renewal and the way they participate needs to be addressed. Besides, designers involved in urban renewal should also pay attention to their responsibilities and working methods in the whole process of urban renewal. In addition to transforming documents and regulations into construction drawings that can be implemented, how to extract useful design basis from stakeholders, and how to integrate various design basis to put forward better design strategies also need to be recorded and discussed. As the role of communication and translation, designers can serve as a link between stakeholders in the process of urban renewal and transformation. Through the standardized working mechanism, designers can more closely link the relationship between design and the needs of all parties.

Moreover, future urban renewal research should not only focus on the material form, living space, and built environment but also consider the spiritual and emotional needs of citizens, that is, the end-users. Therefore, it is necessary to combine urban renewal with the study of local sense and identity. Exploring the emotional process changes of relevant citizens in urban renewal can most directly reflect the results of urban renewal.

In this study, more content is arranged in the urban renewal of second and third-tier cities, as well as the study on the renovation process of residential areas. Take Kunming as an example, and an urban village project has been tracked and recorded during the process of renovation, which has been discussed and analyzed. Also, the old residential areas in Kunming and the residential areas designed with the concept of sustainable development are also recorded and analyzed. Based on the recorded situation, this study puts forward new thinking on urban renewal and reconstruction and improves the design closed loop of planning and design in the process of urban renewal and reconstruction.

2.2 Planning and design of residential district in Kunming

As a property developer in China, some procedures have to be carried out before starting a new residential project. Generally speaking, to complete a residential project needs go through five procedures, which are listed as follows: site selection(选址), project approval(立项), obtained land-use right(取得土地), planning and design(规划设计), under construction(开工建设), and completion acceptance(竣工验收). Each procedure involved different stakeholders, aims, processes, and requirements of submitted conditional-documents, to ensure the project could be carried out under conditions of control. From the approving of the project to the final in-use, the design procedures are a top-down mechanism to ensure the completion of the project.

Meanwhile, the concept of sustainable development attached great importance to the study field of residential planning, design, and construction in recent years. Labeled with terms such as ‘Green’, ‘Eco building’, or ‘Sustainable design’, an increasing number of residential projects have been implemented in different Chinese cities. With introducing cutting-edge building and design technologies and appliances, the availability of a wide range of energy-saving products, and

accessible green building assessment systems, green residential and dwelling design in China are under development based on these research achievements.

However, the gap in sustainable understanding design is existed due to the limitation of appropriate information and knowledge about sustainability. There is a large amount of information about sustainability emerging in different ways. To most of the final users of residential dwellings, the most tangible way to broadly understand sustainable design is searching keywords and images through the internet. For ‘green design (绿色设计)’, most of the information and images represented ‘green roof (屋顶绿化)’ or ‘green architectural skin (绿色建筑表皮)’, as a vision standard for ‘green design (绿色设计)’; for ‘Eco building (生态建筑)’, green natural environment, buildings with special construction are the most representative way to understand it; for ‘sustainable design (可持续设计)’, sustainable building has been described as ‘high-tech’ architecture, or building embedded with tech-futurism style. Therefore, to provide appropriate information and knowledge about sustainability for stakeholders, including urban planners, architects, designers, developers, it is necessary to build close connections among stakeholders through the process of developing sustainable residential project; and residents as the occupants of dwellings and those design technologies and appliances, feedback from their attitudes, perceptions, and demands about the post-occupancy experiences could have chances to provide useful information to improve the overall sustainability of residential development.

Residential development in China has its historical background, which is related to policy, economy, social background, technology development, and many cultural issues; and these factors have tended to determine the decisions of planning and design, and also strategy formulation to some extent. In order to improve the overall sustainability of residential planning and design, research on optimizing planning and design procedures, which need to be embedded in local issues with different design stages, shows the greatest value and impact on design industry. Studies concerning the planning and design procedures are getting more attentions in the field of architectural design industry. China has experienced a massive demolition¹ and construction during the last three decades. Although there is great investment from government of social and economical resources on rapid construction process, the quality and current conditions of post-occupancy are far from satisfaction. Demolition could be easily done by many reasons, such as, unreasonable functions of buildings, deviation of development aims, or changes in usage. This is indeed caused resource waste in different ways. Research question were raised for concerning the way to solve the design problems rather than demolishing existing buildings and rebuilding suitable ones. A feedback mechanism of design procedure has got more and more attentions that a sustainable design

¹ Cities in China have experienced rapid economic and urban development. A large population began to move into the city after the reform and opening up of China. In order to achieve the increasing demands of urban development, ‘urban expansion’, ‘urban renewal’, ‘urban infrastructure improvement’, have been implemented in most of Chinese cities. There are necessities for implemented demolition in developing Chinese cities, but negative effects from demolition still existed. However, reasons for necessities of demolition could be listed and understand: 1) to improve urban function, and promote the economic development of cities; 2) to improve the urban environment, and optimize urban planning problems caused from the past; 3) to improve the living quality, optimize dwelling design problems caused from the past; 4) to improve land use efficiency. For some of the reasons, demolition of buildings, urban villages, even larger scale of urban built-up areas, became a inevitable process during the urban development.

procedure could achieve future needs of stakeholders by rearranging and embedding certain design and assessing methods. Sustainable development has been strongly advocated in architectural and construction industry, and studies on the sustainable design procedure, however, have shown its significant.

The overall research project is carried out in the city of Kunming. In order to understand advantages, disadvantages, and limitations to do sustainable residential planning and design in Kunming, studies on local condition, which contains to historical background, urban development, climate condition, natural and social-economic resources, is a significant factor to consider at the first place. How the local condition promotes and limits sustainable residential planning and design in Kunming needs to be listed and embedded in the design procedure.

Take Kunming as an example, housing development in Kunming also follows the pace of sustainable development. Examples include research and design of sustainable housing, planning and construction of sustainable residential areas. At the same time, the government is actively promoting the use of clean energy, renewable energy, wind energy, solar energy and so on. Kunming has a unique climate. Yunnan, located in the southwest of China, is famous for its mild climate. Kunming is a subtropical mountain monsoon climate in the low latitudes of northern latitudes-plateau. Due to the influence of warm and wet air currents in the southwest Indian Ocean, the duration of natural sunshine is relatively long, the frost period is short, and the annual average temperature is 15°C. The monthly average temperature is about 19°C at the hottest and 8°C at the coldest. The highest extreme temperature in the previous year was 31.2°C, and the lowest temperature was -7.8°C. The average annual sunshine is about 2200 hours, frost-free period of more than 240 days. Kunming's climate is mild, summer without heat, winter without cold, four seasons like spring, pleasant climate. The annual precipitation of Kunming is 1035mm, which has typical temperate climate characteristics. The temperature of the city is between 0 ~ 29°C, and the annual temperature difference is the smallest in China. Such climate features are rare in the world. However, the daily temperature difference in Kunming is larger and the UV intensity is higher. The temperature is variable throughout the day and will drop whenever it rains. In winter and spring, the daily temperature difference can reach 12 ~ 20°C in winter and 4~10°C in summer.

The purpose of building climate zoning is to make the building making full use of and adapt to different climate conditions and make planning and construction by local conditions. The climate zones of various provinces and cities in China have been divided into different zones in <Design of civil buildings (民用设计通则)> (2005, p.2). China is a vast country with complex terrain. Due to the different geographical latitude, topography, and other conditions, the regional climate difference is very significant. Therefore, according to different climatic conditions, the energy-saving design of buildings in different regions have different approaches. Buildings in the hot region need shading structures. Besides, insulation and ventilation should be ensured to prevent excessive indoor temperature. Buildings in cold areas should consider the performance of cold protection and heat preservation in the design of the outer envelope, and ensure that there is enough natural light inside. In order to clarify the relationship between architecture and climate, <Design of civil buildings (民用设计通则)> divide area in China into seven main climate zones and 20 sub-climate zones, and puts forward different requirements on the architectural design of each sub-climate zone.

In China's climate regionalization, Kunming is classified as a mild area. <The design standard for energy saving of civil buildings in Yunnan province> (2011, p.6) is compiled by Yunnan Antai Engineering and Construction drawing review Center and Yunnan Provincial Design Institute together with seven units in the province. This standard applies to the energy-saving design of new, renovated, and expanded public buildings and residential buildings in the mild region of Yunnan province. In the standard, the content of how to utilize the natural conditions of the area for building layout is mentioned. For example, the layout of the complex and the plan and facade design of the building should be conducive to natural ventilation and shading of the building in summer. At the same time, the orientation of the building should be north-south or close to the north-south direction to obtain the best sunshine conditions in winter. The main room of the building should avoid the prevailing wind in winter. The standard gives frame guidance according to the climate condition of Kunming.

Besides, the understanding of the sustainability of traditional residential areas with different climatic zoning can also provide useful suggestions for the planning and design of residential areas. The layout of traditional residential areas based on climate adaptability can faithfully reflect the living customs and production needs of local people. The formation of the traditional dwellings and the environmental structure in mild areas is the result of people's long-term adaptation to the environment. People use the most economical building materials in the local area to guarantee the maximum living comfort on the premise of reducing the construction cost as much as possible. For example, there are many courtyard houses in central Yunnan, which are called "YiKeYin" dwellings. The layout of "YiKeYin" dwellings usually contains three main living-room and two small bedrooms on each side of the building. "YiKeYin" dwelling is usually two stories high with a patio in the middle. The house is built with high walls, with small windows in each room. The whole building is square in appearance, just like a Chinese seal. Due to this particular form, so this type of house is commonly known as "YiKeYin" dwelling. This form of housing is a direct response to the local climate. In order to improve the comfort of the room and promote a cool indoor environment, the courtyard of "YiKeYin" dwelling is usually tiny. There are no windows on the outer wall, or even a tiny window just in cases. The high exterior wall with few windows can protect the indoor space from wind and sand and ensure the safety of residents. The layout of the dwelling is square so that the land can be fully used on the spatial configuration. Another example is about the dwellings of Bai people in Dali, Yunnan. The stone materials for building dwellings here are taken from the local Cangshan mountain. Stonemasonry walls are very thick, it is possible to ensure a comfortable indoor temperature in winter to some extent. Most Bai dwellings are located on the slopes between Erhai lake and Cangshan mountains. In order to gain more natural sunlight and reduce the influence of wind on the buildings, these houses have absorbed the features of courtyard dwelling from Han people and created their vernacular form, "three rooms one screen wall (三坊一照壁)", which is belongs to Bai people. The main room in the Bai dwelling is usually faces the Erhai lake. The screen wall is used as a shelter against strong winds from the lake. On the one hand, the screen wall can block the impact of strong wind on daily life. On the other hand, it can also reflect more natural lighting to the yard to supplement indoor lighting. Therefore, geography and climate condition are objective factors that are affecting the formation and development of Bai dwellings.

2.2.1 The sustainable residential planning and design and the development of residential district in China

The expected result of documented research in the literature review is to provide an overall understanding of cultural and social background on the planning and design of a residential district in China. Residential development in China is usually attached to national development targets. In the period of a planned economic system, “producing” was always ahead of “living”² (Lv, J. 2003, p.143). A large scale of housing construction, which has been designed and built with unified planning, design and construction methods, has been implemented in different Chinese cities. Combined with the development of “work unit housing”³ and the “unified planning, design and construction by Chinese government”⁴ model, the housing market in China has been well developed since the housing reform and opening-up policy in 1979 (Lv, J. 2003, p.193). Housing as a product developed with new attempts to affect layout design, function, style, and the planning of residential areas; the living environment has also been improved within the residential development. Those changes brought so many choices to residents, their demands, lifestyle, and view of value and so on has been influenced to a great extent.

In general, residential development in China through history since 1949 has had great influences on residents themselves. For instance, “reasonable design, but unreasonable use”⁵, this relates to the thinking patterns during 1950s that – housing with high living standard has been seen as an expectation for residents, but due to the serious shortage of housing during that period of time, the number of families have to share one house and live together was significant. The current living condition is equally important to future development. Insufficient concerns for “the present condition” will have the potential to mislead strategy making and future development.

With rapid urbanization in China, huge pressures have been added to all forms of public services, such as energy, water use, transport, and waste. In the 12th Five-Year Plan for 2011–2015⁶, many Chinese cities are already on a high-carbon-emission growth path. The World Bank estimated that about half of the world’s new building constructions have taken place in China in the period leading

² “Living after producing (先生产, 后生活)”: Strategy of the first five-year plan of New China, encouraging placing heavy industry as the priority of development. In: Liu, Q. (2009). The first five-year plan of New China. Journal.

³ “Work unites housing (单位住宅)”: Housing which is owned and built by work unite, and only offered to unit staff. (situation stated is before the promulgation of housing reform policy). Lv, J. (2003). Modern urban housing in China, 1840-2000: Tsinghua University Press.

⁴ “Unified planning, design and construction (统代建)”: Controlled and implemented by Chinese government for all the construction project. Kai, W. Z. Y. (2005). The development of Chinese residential planning proposed in 60 years. Design Community.

⁵ “Reasonable design, but unreasonable use (合理设计, 不合理利用)”: Introduce the Soviet residential dwelling design standards without investigation of current demands. Lv, J. (2003). Modern urban housing in China, 1840-2000: Tsinghua University Press.

⁶ “12th Five-Year Plan for 2011–2015”: the twelfth five-year plan for national economic and social development program of the People's Republic of China.

up to 2015 (Baeumler, Ijjasz-Vasquez, & Mehndiratta, 2012, p.33). In response to the emerging focus on environmentally sustainable growth, many cities are already developing eco-city and low-carbon city initiatives. In the beginning of the 1990s, gradual development of the real estate market efficiently boosted China's economy, and also led to rapid development of the housing industry. Under the influence of the commodity economy era, Chinese housing was a commercial product that gathered cutting-edge technology and design theory to emphasize its market competitiveness. Housing products which have been designed with “green” concepts have appeared. Construction of green housing or low-carbon housing has become a popular trend in most housing design and planning practice in China. However, influenced and learnt by sustainable design concept from other countries, most of the developments in China reached a situation that directly following the concept is more important to design than to a current understanding of demands.

The following section reviews green building assessment methods and rating systems currently available in different countries. The methodology provides a useful reference that could help green residential design and planning in Chinese cities. Moreover, this section also reviewed the development of the residential planning of China. It shows how the current design and planning methods for residential areas have been framed and what influences have brought to the city.

2.2.1.1 Attempts of sustainable residential district and dwelling design in China

A research project which is relevant to green building and sustainable development in China started in the 1990s. In the year 2001, the first handbook, <The Technical Assessment Handbook for Ecological Residence of China relevant to green design in China(《中国生态住宅技术评估手册》)>, was compiled based on studying a green building assessment method ---- LEED from America (Nie, 2001). Since the 11th. Five-Year Plan for 2005 to 2010⁷, in the year of 2005, “energy-saving reduction strategies” have been proposed as one of an important target of China’s development plan. Meanwhile, relevant studies on green building design and technology have also been encouraged and developed, and the first guidance for green building design, <Green building technical guidance (《绿色建筑技术导则》)>, was published in 2005. After a year of summarizing, experiencing and practicing green building in China, the first green building assessment standard was been published to guide green building construction in China. First edition of <Assessment standard for green building (《绿色建筑评价标准》GB / T 50378—2006)> (ASGB) has firstly established the guiding thoughts of green building as “four saving, one environment protected(四节一环保)”⁸, and defined the general concept of green building: “in the whole life-cycle of building construction, make maximum use of resources (saving energy, saving land, saving materials, saving water), protect the environment, reduce pollution, and provide healthy, appropriate, and high-efficiency living space, the building which could be co-existing with nature” (ASGB, 2015, p.3). The latest version of ASGB was released in the year 2015. Compared with the previous version of ASGB, several changes have been made to provide more strengthened assessment for green buildings. Although efforts have been

⁷ “11th. Five-Year Plan for 2005 to 2010”: the 11th.five-year plan for national economic and social development program of the People's Republic of China.

⁸ “four saving one environment protected(四节一环保)”: saving energy, saving land, saving materials, saving water, environmental protection;

made to guide the development of green building, there are limitations on practice for projects. In this case, empirical studies have to be taken to fill in the gap of planning and implementing.

2.2.1.2 Residential development in China (Since 1949)

The Chinese urban housing construction has experienced 70 years of fast-development. Since the establishment of New China, the Chinese government made a great deal of effort and money to improve the living environment for Chinese citizens. However, along with the times that China was in a rapid growth stage, some of policies and strategies which have been made on housing constructions were seem as irrational, or lack of long-term considerations. This project concerns a number of problems with housing development. Apart from problems derived from reasons, which are including history, policy, and institution, government, society and economy, perception and cognition on housing projects from the perspective of Chinese citizens themselves are also an essential issue in housing development. Take Kunming as a case of approaching the study. Situated in Southwest China, Kunming is a city with a long-standing history and great development potentialities. It is located on the northern lakeside of Dianchi Lake, which is in the central part of Yunnan Province. The climate in Kunming is very gentle. There is no extreme hot in summer and no extreme cold in winter. For the gentle climate and suitable living environment, an increasing desire of occupants from another province to settle down in Kunming could not be ignored, because it could have a chance to impact on whole housing development in Kunming. As all we understand the city as Kunming, issues need to be considered are various.

The purposes of this project will focus on two perspectives. From a broader dimension, the interrelation between occupants and housing construction could be systematically discussed through this project. Secondly, in an in-depth approach, by focusing on the occupants' attitude and perceptions on sustainable housing, occupant as a final user of housing products could provide practical and real information on how the sustainable housing design affected their life. A guideline of constructing sustainable housing and residential district in Chinese cities like Kunming could be developed and understood, to support decision making during the process of the sustainable housing project.

Three firm footholds are insisting on the motivation for doing this project. First and foremost, a housing development in China has been through 65 years of changing and with distinct features of each decade. For instance, there are more than 20 words that could represent a certain decade about residential housing development in China. These words could be easily recognized by Chinese citizens who have experienced those times and also linked to all aspects of their life. To some extent, these phrases and events have a deep connection with residents' living environment, lifestyle, and individual consciousness. Within 65 years of housing development in China, housing type in China has changed significantly. From the traditional courtyard house to residential block (learned from Soviet since 1950s), from private housing to state-owned housing (clarified in 1956) and then to commercial housing (housing reform after 1980s), from simple house (build in 1965) to villa, from sharing house (since 1950s) till requirements from occupants are not easy to satisfy, development of housing in China is turbulent. Tracing on the reason why it is turbulent is not easy to be impersonal. Instead of tracing reason, learning things from the past could be useful to improve

understanding of what we need to face in our decade. For example, Soviet housing design standards have been introduced to China in the 1950s. With less consideration of different living conditions between two countries, “rational design, but irrational use” has been put forward. At that time, the standard of each house have been built followed by Soviet standard is higher than the actual needs. Residential buildings during this period were characterized by following features: low space standard per person; two or three families need to share one set of house and also the kitchen and small bathroom; living room has lost its importance compared with the traditional Chinese residential dwelling; external open space has not been considered properly. Families need to share most of the living space, which produced many conflicts between the neighborhood. “Rational design” has directly led to living intrusion problems. Standing at the perspective of uses, this phrase, called “rational design, but irrational use,” has challenged users’ privacy, and also revealed the fact that policy and strategies, which have been made on housing design, have strongly been driven by the state plan. Furthermore, without an active link between housing design and up-dated concerns from actual users, rational could be irrational in certain circumstances. By structuring the timeline of the residential development of China in the past 65 years, cases could be analyzed and discussed to summarize issues that contain linkages among housing policy, housing design process, and final users.

Secondly, to be the primary shelter for living, housing is undoubtedly the most important constructions in the city. Under China's rapid economic growth and urbanization, developments of the residential product are increasingly diversified. Compared with the past decades, the housing market in nowadays provides different choices of housing products for different groups of people. After the housing reform, housing as a product in the market has been attached to more attributes. Therefore, housing design seems to have assumed more responsibility than ever before.

Furthermore, Sustainable residential development and construction is one of the important issues of urban development in China. Followed by the priority principle, more and more residential development and constructions with significant concerns of sustainability have been implemented in many Chinese cities; however, its current situation has been little documented, and its implication for sustainability to occupants is not well understood. Moreover, housing is the main construction type within a city; the attempt of “sustainability” could not be approached without a large number of housing constructions. Due to the active link between housing and occupants, a large amount of residential construction could have a significant impact on occupants’ life style and consciousness. Such complex interrelation of housing development with sustainability made housing development as a systematic process more critical than housing construction itself.

The 11th. International conference on green building and building energy conservation, which has been held in Beijing on 24th -25th of March, 2015, has proposed that “with the increasing number of construction of Green building has been built in recent years, improving occupants’ perception of Green building is the priority target in the development of sustainable architecture.” The new construction area of Green building has more than one hundred million square meters since 2014. The conference also proposed that “at present, the development of green building in China has reached a bottleneck, how to popularized Green building concept is the next key attempt of sustainable development.” To find how to explain Green building design concept, and what are the

benefits that occupants could get with Green building understandably and appreciably, are also significant problems which have been mentioned in the conference. All these issues mentioned above represent that to understand and approach sustainable housing design as a complex system is inevitable. As active impact factors, occupants understanding and perception of sustainability of housing design becomes more critical in this study field.

Thirdly, in order to gain more actual information and data in the current sustainable housing project, an empirical study has to be timely attempted. Take Kunming as a case under the title to investigate occupants' attitude, and understanding of Green building and sustainable development in different residential districts could reveal the perception and understanding gap between occupants and sustainable design concepts. For the purpose of fill the research gap, case study, and tracing observation in Kunming need to be continued and deepened. On the other hand, a guideline for sustainable housing development in Kunming, which will be developed with the project, could have the chance to improve other housing projects to be more actual develops.

This whole study project could be divided into five stages: (a) understanding the housing development of China within 65 years; (b) development of housing policies implemented in each decade since the establishment of New China; (c) development of the sustainable housing design in China, based on occupants' perception proposed in the literature; (d) proceeding a survey as an empirical study to collect and test the perception and understanding of sustainable housing design in Kunming among occupants; (e) tracing observation on occupants' attitude and changes on sustainable housing product. However, the last stage could be one of the future studies derived from this project because it may take a long duration to expect significant changes.

Chart 2.1 below shows the timeline of the residential development of China in the past 70 years. It indicates housing attempts within each decade and how long the further impacts of each attempt sustained on the development timeline. This is the first stage of study, which is focusing on understanding the housing development of China within 70 years. Detailed analysis and explanation of this Chart will be given soon.

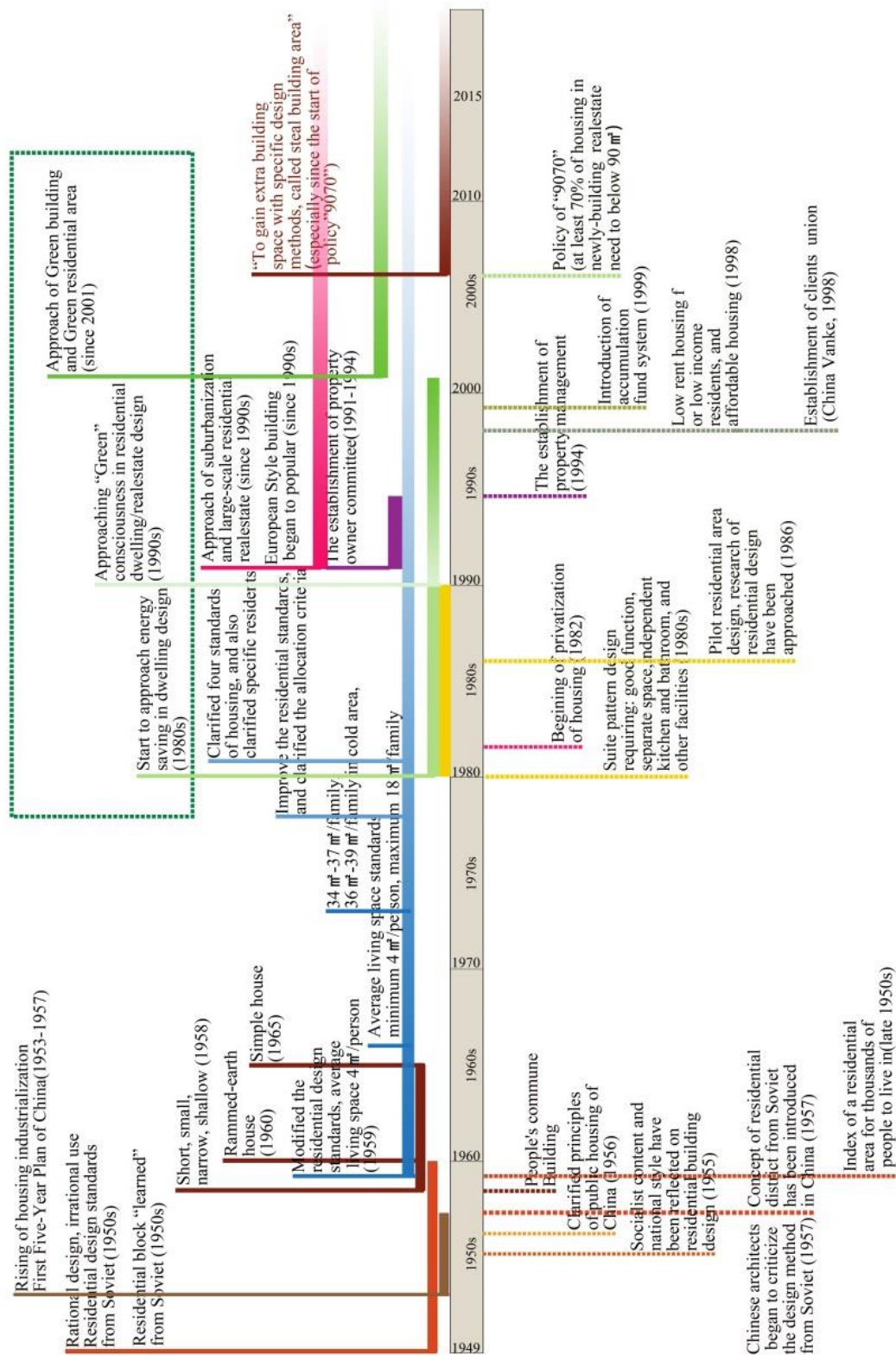


Chart 2.1 Development of dwelling design policies of China within 65 years (Drawing by Wen Jiang)

The concept of "Green building" has been proposed and developed at a time of pursuing

“sustainable development”. Conceptual understanding of “Sustainable development” was formally presented in the 1980s, and a generally accepted concept has been given:

“...sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (Brundtland, World Commission on, & Development, 1987, p.37) The word "sustainable" has roots in Latin; “sustain” means, "to hold up" or "to support from below". Oxford Word power Dictionary defines “sustain” as to keep something alive or healthy, to cause something to continue for a long period of time (Oxford Wordpower, 2006, p.781). However, the history of “green building” could be traced back to 1960s-1970s, “arcology” (Soleri, Wall, & Borek, 1971, para.13) presented by American architect Paolo Soleri, and also Ian Lennox McHarg (McHarg, 1992, pp.1-6). Promoted by “sustainable development” and attempts for improving energy-saving technology in the 1980s, “green building” was generally accepted as a series of architectural practice, which was intended to create “structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction”(USEPA, 2014, para.1). Generally speaking, green building is “...building with a conscious effort to reduce the negative impact that buildings have on the natural environment” (Floyd & Bilka, 2012, p.1). However, there is no guarantee that construction of green buildings would have no negative impacts on the environment, even if those constructions have already achieved green building criterion. This makes assessment techniques and rating methods a necessary integral part in the process of building construction with the aim to reduce environmental impacts.

Building design (and system design in general) is a top-down process which is developed from general concepts to detailed implementations. Building assessment, however, normally takes a bottom-up direction, in which the final performances are being evaluated by technical details of the systems (Aho., 1999, p.302). A numbers of purposes could be achieved by the assessment process, such as, a value judgement on a specific programme or project (existing or proposed), how to set targets and goals and provide awards and rewards, ways to monitor trends over a period of time, or anticipate problems before they arise (Pitts, 2004, ch.5). Assessment techniques and rating methods have been developed in different countries dependent on different concerns.

The first prominent green building assessment system was published in 1990 by BRE (Building Research Establishment) in the UK. BREEAM (Building Research Establishment Environment Assessment Method) became the leading and most widely used environmental assessment method for buildings and communities. Inspired by BREEAM, different versions of green building assessment methods have been launched by research organizations in different countries. HK-BEAM was introduced to Hong Kong in 1996 and is an environmental performance-based assessment scheme purpose designed for high-rise buildings. The certification scheme is completely voluntary and is owned by the HK-BEAM Society, a non-profit making organization consisting of industry professionals (Chu, 2004, p.979). The United States Green Building Council’s (USGBC’s) (established in 1993) Leadership in Energy and Environmental Design (LEED) is a program that provides third-party certification for green buildings. The first version of LEED was published in 1998.

2.2.2 Traditional dwelling design in China – Take traditional dwellings in Kunming as an example

2.2.2.1 Historical urban contexts in Kunming

This part of the section explains the dwelling development in Kunming. It contains two-time frames: the general situation of traditional dwelling design in Kunming, and the development of dwelling design in Kunming after the establishment of New China. The emphasis of historical review at the beginning of the report is intended to set a scene of the project for the reader to understand better. Kunming is a frontier city situated in the Southwest of China. Urban development of Kunming is relatively lagging in history. Some critical timing, which is essential to the development of Kunming, has been illustrated in this historical review.

How the city like Kunming achieved the current situation, and what changes and influences have been brought through the process of urban development? The answers are indispensable contents to the research of sustainable development on residential dwelling design. For instance, before the establishment of New China in 1949, the courtyard dwelling is the main form of residence in Kunming. For some historical reasons, such as Kunming has been the trading port, the opening of the railway which brought external culture into the city; moreover, during the wartime, a large number of factories and schools relocated to Kunming from the rest of the country, which speeded up the development of local education and the economy while other cities were suffering the changes caused by war. However, under this historical background, the architectural style of Kunming featured became more diverse, as it was combined with the culture from inland and from abroad. All these changes influenced peoples' lifestyle and also have reflects on residential dwelling design. Following the foundation of New China during the period of the 50s to mid-60s of the 20th century, Chinese people as the master of the whole country have a great passion for building the city. Most of the traditional street encountered demolition because of the urban renovation project during this period. After that, China's urban construction has experienced the period of the "Chinese Cultural Revolution" which slow down the process of urban and residential development. In other words, the construction of residential dwellings in Kunming imprinted with features of specific period of urban development.

As we enter the 21st Century, sustainable development as the world's attention has been widely practiced in different fields. Building energy consumption is the major energy consumption that places China on the critical stage that China has rapidly and continually grown the real-estate industry. Under the influence of commodity economy times, the commercialized residential dwelling condensed the advanced design concept and construction technology. Green House, a Low-carbon house, as the most advanced concept of residential products, has been widely spread and led the trend of housing design practice. "Sustainable is a life attitude", a sound from UN high-level political dialogue meeting of the Forum for Sustainable Development in 2013 bespeaks that sustainable development involves a broader range in the future. Attitude, as a dynamic trigger in the field of sustainable development, has got attention and is considered a feasible development direction in the future.

This research project contains three case studies, which are the residential dwelling project in Kunming. Parts of analysis and discussion of these cases are attached in the Appendix. More detailed materials, such as master plan, architectural drawing, analysis, and discussion linked with survey and investigation, will be added after the survey during site visiting in the following months. The historical review of urban content, the historical development of the city, will be used in the analysis and discussion of case studies. Besides, occupants' attitude as one of the targets during the field study of the project, certain regional culture, and historical background were needed to support the final analysis and discussion. Hence, a historical review of Kunming is necessary at the beginning of the report.

2.2.2.2 Historical background of Kunming

Situated in the southwest of China, Kunming is a historical city with a high potential for development. It is located on the northern lakeside of Dian Lake, which is also the capital city of Yunnan province. Kunming is famous for its mild climate which is not extremely hot in summer and not too cold in winter (Liu, 2002, p.1), and belongs to the mild region of the seven climate zones in China. Reputed as 'spring city' and 'flower metropolis', Kunming is also a famous historical and cultural city with abundant tourism resources.

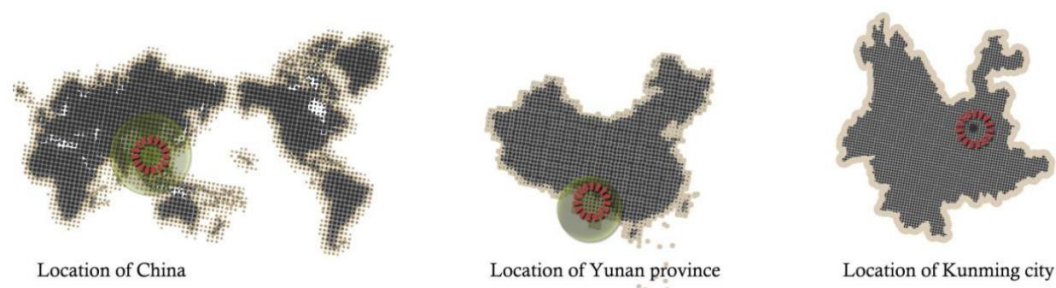


Figure 2.1 Location of Kunming city, Yunan Province (Drawn by Wen Jiang)

In the year 765 AD, beginning with the completion of the east and west temple towers in the Tang Dynasty, the clear axis of the city has been formed. This axis, which has been formed over a thousand years, is the essence of urban layout and also the unique character of the urban landscape. The history of the city founded by Kunming has been over 1200 years. Part of the old town city area has still maintained the urban layout and cityscape of the Ming and Qing dynasties.

With the establishment of the P. R. China in the middle of the 1950s-1960s, people were enthusiastic about building their own country. Kunming widened the urban road and built the top ten modern buildings during that time. These were the signals of the construction of Kunming city. Since the 90s of the 20th century, Kunming has held several domestic and regional pageants. Especially during the 99 Kunming International Horticultural Exposition held successfully, Kunming city developed rapidly, and the new economic axis has been formed gradually.

After almost 2000 years, Kunming has become the metropolis with millions of people in Yunnan province. With deep historical heritage, diverse culture, rich cultural landscape, a clear layout of the

city, and a gentle climate, Kunming became one of the Historical and Cultural City, which was first published by State Council (China) in the year of 1982. There is no denying that Kunming is a city with historical precipitation and cultural deposits. History, climate, location, and cultural development make Kunming as Kunming. The identification of a city needs to be protected, especially in the process of urban renewal. Different climate conditions shape the way the design is presented, and make the uniqueness of the city. However, the city continues to develop and expand rapidly; modern urban facilities are under active construction, construction technology is also in constant development, the characteristics of the city in these changes gradually weakened. The urban and residential forms created by the environment, climate, and history are being changed or even disintegrated.

2.2.2.3 Urbanization development in Kunming

The urbanization is a gathering process of population, property, capital, and market of a country or region. Urbanization also means the expansion of urban land, and urban culture, urban lifestyles, and sense of worth spread in rural areas. As a result and response of modern industrialized, modern urbanization can be also defined as the process that the rural population transformed into an urban population, traditional village society transformed into modern city society (Zhao, 2008, p.111).

In the Mid-18th century, Dian Lake watershed, where Kunming was located, was still a typical agricultural society. Although capitalism appeared in coastal cities of China, Kunming still maintained a countryside atmosphere. Meanwhile, industrialization had been growing rapidly in European countries, and most European countries had begun to enter a brand new era of urbanization. There was rapid development, and more significant changes had grown up than ever before.

In the 19th century, during the industrial revolution, European countries had begun to expand overseas with colonialism. Stimulated by the colonialism of these countries, and having started with coastal cities, some inland cities of the Asian continent then began to flourish in a divergent way. Although these cities were under a colonial or semi-colonial situation, the introduction of modern industry had impacted on the national economy. It had accelerated social reform and differentiation and produced a new bourgeoisie and proletariat. Due to the rise of these cities, many Asian countries had started their urbanization.

Since the 1990s, China has entered an accelerated period of urbanization. Under this megatrend, Kunming has gradually been urbanized. For historical reasons, the industrialization of modern Yunnan started the urbanization process passively, due to external forces (Zhao, 2008, p. 112).

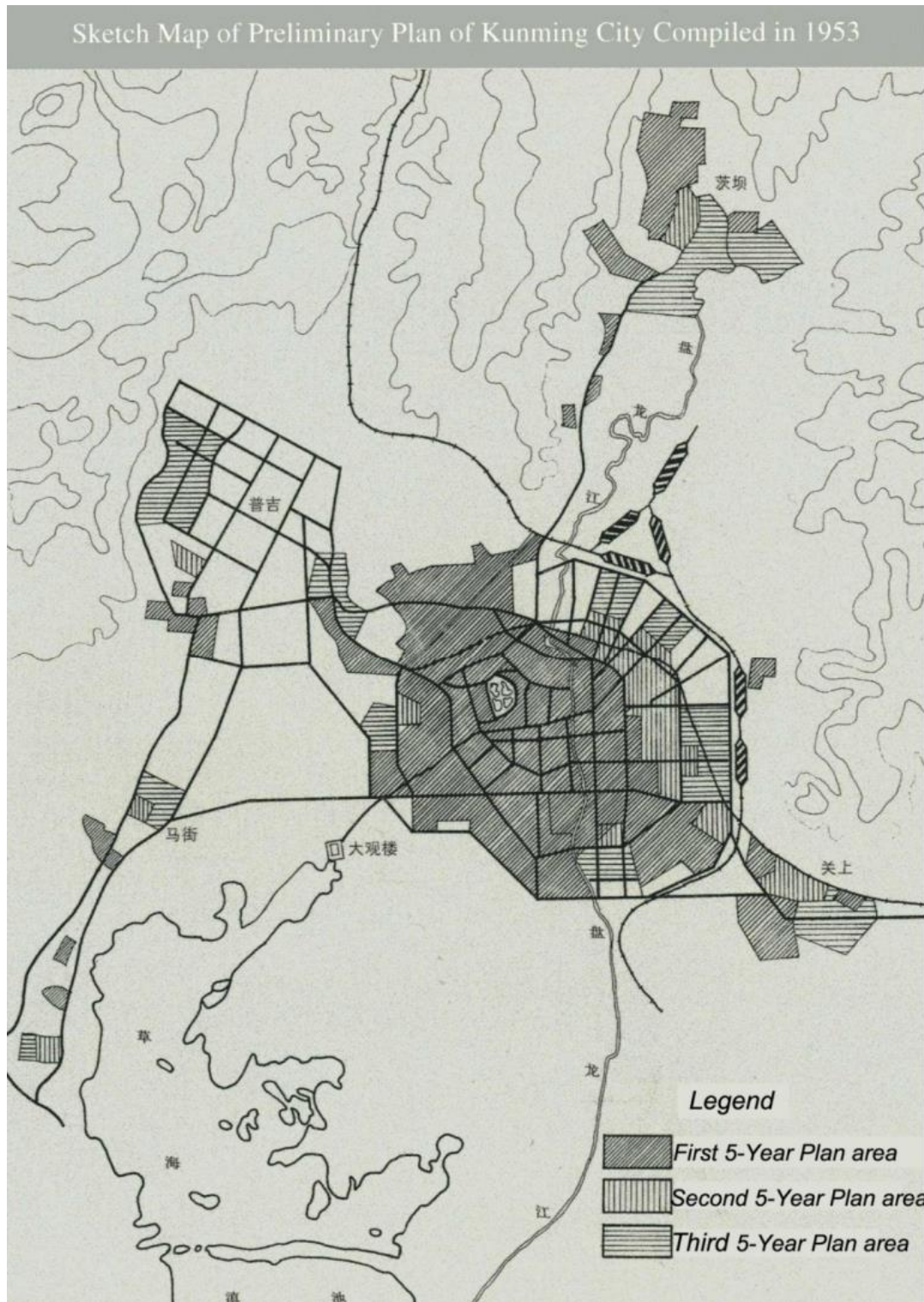
2.2.2.4 The development of urban configuration of Kunming

The city axis of Kunming plays a central role in the flexible and diverse form of space, which can lead and organize the city layout and urban spatial form. The traditional central axis of Kunming city was an axis combining the essential section with the non-essential part. It started from Wu Hua mountain and extended to the south. Along with the development of Kunming city, the axis layout remained and continued to be strengthened. With the rapid development of the economy and

urbanization, the spatial structure of Kunming city has changed a lot. A new city axis, which started from Wu Hua mountain, has formed gradually. Along with Beijing Road, this new city axis integrated the primary function of a city, which contained the central transport hub, administrative region, financial circles, cultural centers, tourist facilities, and large scale eco-space. Compared with the traditional city axis, the new economic axis strengthened the scale of the main road and enhanced the urban functions.

The road layout of ancient Kunming city is unique. It is closely related to the arrangements of important buildings. The important buildings were mostly arranged at the top of T-shape roads and projected forward to make the roads formed like the shape of a cup or bowl. Take the surrounding layout of Shengli Hall; for example, road layout was arranged like a wine-glasses. The layout of the whole area appeared like a wine-glasses, curved road on both sides of Shengli Hall and Yunrui north road were the bowl of wine-glasses, and the Yunrui park shaped as its base. This unique layout form, which started from Shengli Hall to Yongdao street are well preserved at present.

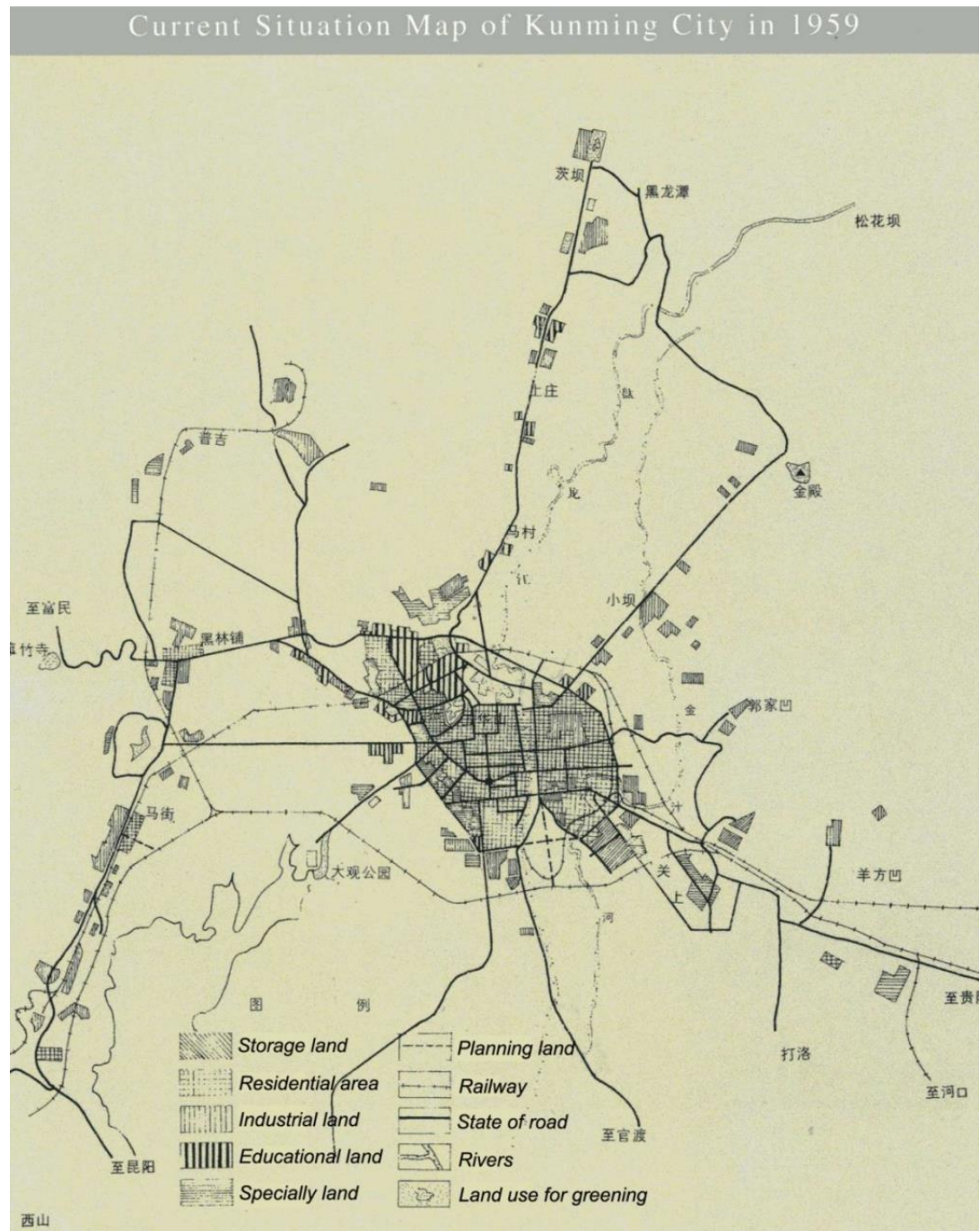
In order to protect the traditional function division as the traditional culture, preliminary planning proposed a viewpoint in 1953: 'Kunming is a city with a long history. Hence the new urban district cannot locate somewhere outside of the original city area. New urban districts should be developed and expanded based on the original city area' (Liu, 2002, p.134). Therefore, the development of urban modernization was based on the original city area and started from the central city of Kunming, City Government of Kunming has implemented a three five-year plan which accelerated the pace of urban development of Kunming.



Map 2.1 Sketch Map of Preliminary Plan of Kunming City Compiled in 1953 (1953 年示意图昆明城市初步规划) (Liu, 2002, p. 134)

The Kunming city master plan which was proposed in 1959 was firstly defined the type and scale of urban development of Kunming city. It points out that the urban patterns should be developed as monocentric mode which was also called pie-style urban development. Through the division of functional district, the major systems of the main roads and fine industrial arrangement which have

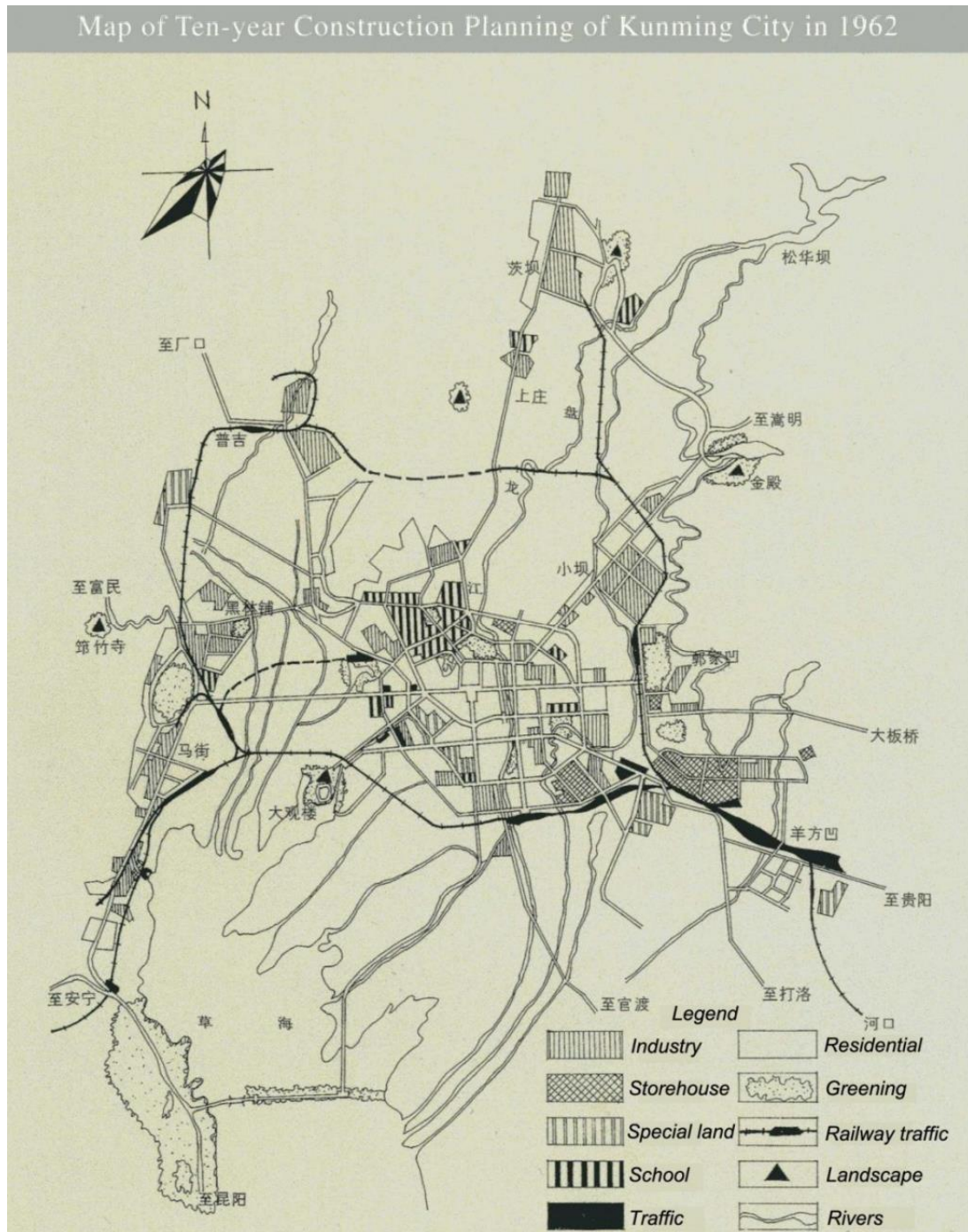
continued to today were determined. But influenced by the ‘Great Leap Forward (大跃进)’⁹, there are some problems that will be impact the future urban development in this master plan, for instance, oversize scale of planning, excessive land expropriation, extremely high standard and pursuing new development with no enough patience (Liu, 2002, p.137) .



Map 2.2 Comprehensive Planning Map of Kunming City in 1959 (1959年昆明城市现状图) (Liu, 2002, p. 136)

⁹ Great Leap Forward (大跃进): “was an economic and social campaign by the Communist Party of China (CPC) from 1958 to 1962. The campaign was led by Chairman Mao Zedong and aimed to rapidly transform the country from an agrarian economy into a socialist society through rapid industrialization and collectivization.”

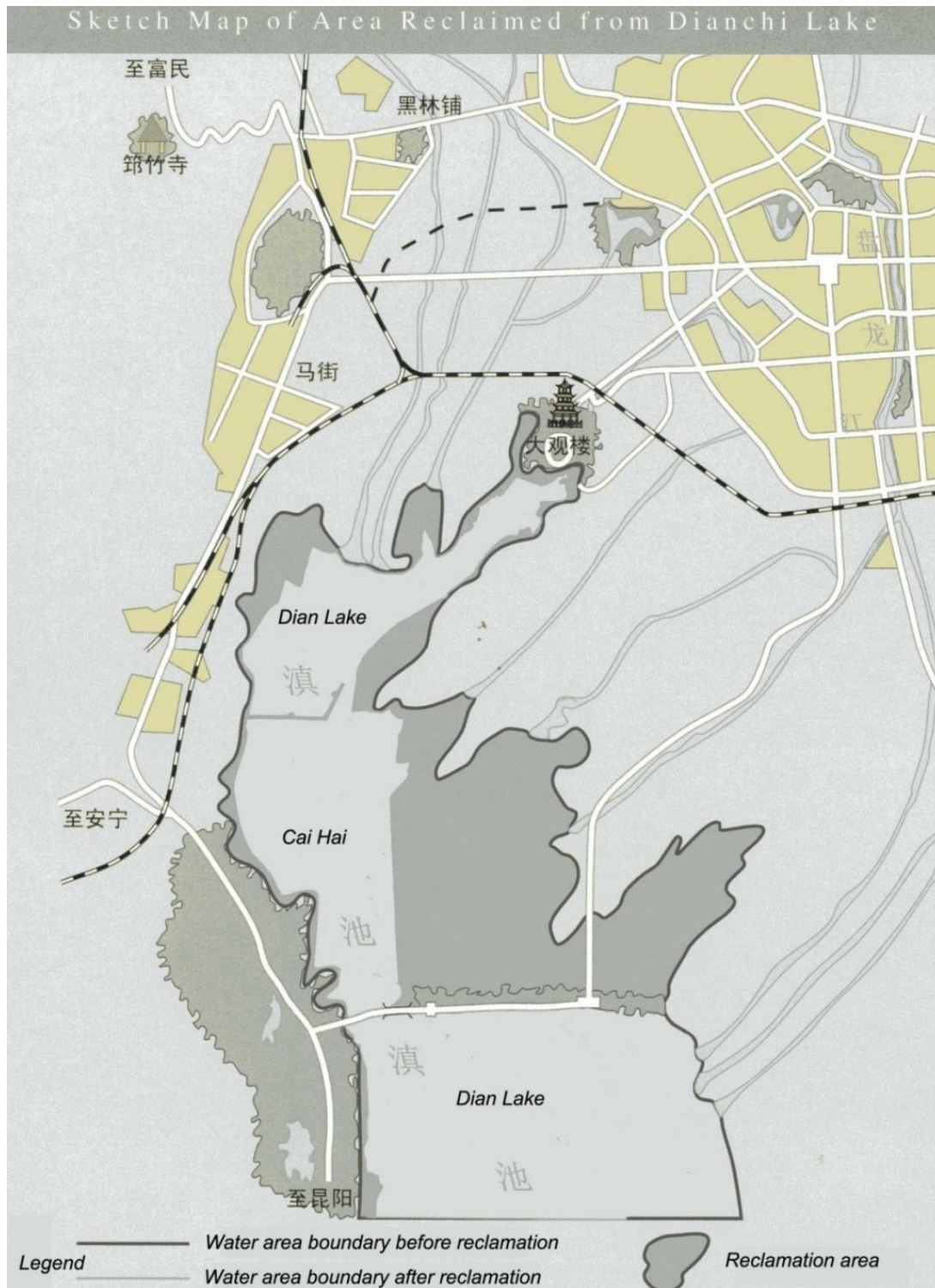
The master plan of the ten-year construction of Kunming city proposed that urban development should control the land occupation, and the urban layout should be compacted. This decision improved the problems which contain to the oversize scale of planning and too much-occupied land caused by the last master plan in 1959.



Map 2.3 Map of Ten-year Construction Planning of Kunming city in 1962 (1962 年昆明城市十年建设规划图) (Liu, 2002, p.138)

From 1966 to 1976, this decade was the lag period of urbanization, and the ‘Great Cultural

Revolution' had given massive strikes to the politics and economy of the country. The infrastructure of Kunming city was falling into aging and disrepair. (Liu, 2002, p.157) During this decade, the land reclamation from Dianchi Lake carried out by current policy and the national trend of China, which caused massive damage to the natural environment, which cannot be changed and will take a long time to fix. This reclamation action, together with the enclosed farming areas in XiShan district, ChengGong county, and JinNing county, reduced the water surface of Dianchi Lake by 35,000 mu. The action has damaged aquatic plants along the shore and at the bottom of the lake, impairing the water's ability to purify it, and accelerating the process of aging the bottom. The enclosed area of Dianchi lake is a good location for fish reproduction. As a result, the reclamation not only reduces the water surface of dianchi lake, but also directly weakens the storage capacity of Dianchi lake. The fish have lost large areas of good breeding ground. The climate of Kunming, which is like spring all the year-round, is also dry and hot.



Map 2.4 Sketch Map of Area Reclaimed from Dianchi Lake (Liu, 2002, p. 158)

After ten years ‘Great Cultural Revolution’, urbanization of Kunming entered into a revitalization period. During this period, the planning ideas of emphasizing the reconstruction of the old city town and developing the suburban industrial were implemented completely. Under the framework of keeping rural landscapes in the city, the image of Kunming had been changed a lot (Liu, 2002, p. 163). The master plan of Kunming in 1982 proposed the mode of Kunming city, urban scale direction of development, and first recognized that Kunming was a historical and cultural city and had the great

potential for tourism development.



Map 2.5 Comprehensive planning of Kunming City compiled in 1982 (Liu, 2002, p. 167)

2.2.2.5 City conservation and redevelopment of Kunming

In order to improve the living environment of residents and the physical environment which was no longer adapted to economic and social developments, the reconstruction project of Kunming city was implemented rapidly in the year 1980.

From May 1966 to October 1976, the "Cultural Revolution in China", which lasted over ten years, brought a heavy blow to the country. Urban facilities were out of repair for years, and urban development had entered a stagnation period. For the rapid development of agriculture, the government proposed a policy called 'land reclamation', but it severely damaged the ecological system of Dian Lake and the whole water environment of Kunming city. In the meantime, the

government removed the Worker's Cultural Palace, Golden Horse green jade chicken lane, and a large number of other historical sites. This decision caused irreparable damage in terms of historical heritage conservation. 'After ten years of Cultural Revolution in China, Kunming entered a revived period of urban development' (Liu, 2002, p.163). The central concept of urban planning in this period, which was focused on urban transformation and the development of sub-urban industrial areas, has dramatically changed the city image of Kunming. This period can also be seen as the beginning of the urban transformation of Kunming.

After a series of urban transformation projects carried out in that period, traditional cultural relics, historic sites, and urban patterns have been destroyed to different extents. In March of 2001, the Planning and Design Institution of Kunming surveyed the status quo of the history and culture of Kunming city. According to this research, some serious issues were listed as an alarm bell to inform people that their local culture was gradually being lost:

“ Part of the natural landscape and environment, which represented the key features of the historical and cultural city, have been damaged to varying degrees.”

“ A number of historical and cultural heritage buildings which have not been registered were damaged and misappropriated by residents.”

“ A number of traditional spaces have been damaged to varying degrees.”

“ There was a lack of protection of ancient trees, and the green environment around ancient streets and buildings suffered serious damage.”

“ A number of destructive constructions, which will damage the living environment, were still around the Dian Lake, such as a quarry, plant and some farmhouses.”

“ A number of ancient streets and buildings were out of repair because of lack of financial support.”

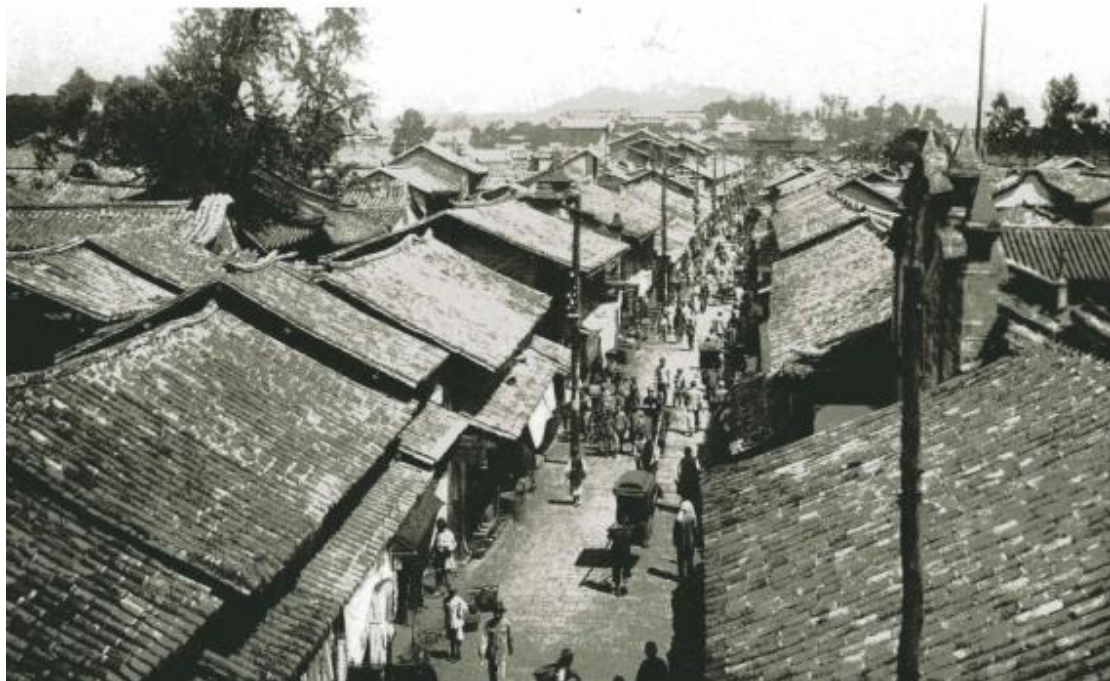
“ Rapid urban development and population growth and continued pollution were the main reasons that made the natural environment worse.” (PDIK, 2001, pp. 16-17)

Therefore, the research on residential planning and design, which puts more focus on a sustainable design procedure to achieve more sustainable outcomes, is significant. The overall design procedure on residential planning and design contains three hierarchies, which are residential planning, neighbourhood design, and interior design. Interior design, as the only hierarchy that could have the chance to build a relationship with the final user, has high values to understand users' needs and expectations. Furthermore, this feedback will have the most significant impacts on design and also the way to promote the project. Additionally, there are strong links between residential planning, neighbourhood design, and interior design. Illustrating how they influenced and linked to each other, and clarifying the relationship and responsibilities among stakeholders, these issues have great impacts on promoting the project, controlling each procedure, developing and detailing the overall project. In order to promote residential planning and design project with more concerns on locality for more sustainable outcomes, optimizing design procedure has become the main consideration for achieving sustainable residential planning and design. Therefore, a sustainable design procedure will have a positive impact on the residential design industry. Such as guidance and experiences from the previous project could have a chance to improve future development projects; more meticulous care for final users could provide useful information to form a practical working framework for the designer, urban planner, and even have a chance to impact decision-making and

form regulations. Concerning optimizing the planning and design procedure, it could be turning the aim of sustainable residential planning and design into a larger circle, which is aiming to clarify and improve the interrelationship between the built environment and lifestyle. Environment, climate, biodiversity, lifestyle, could be driving force and targets to identify the idea of sustainable development; and city, residential area, building, and housing were the carriers for presenting this change.

2.2.3 Development of dwellings in Kunming

The urban functional district of ancient Kunming city started in the Qing dynasty, and adopted Lifang Planning¹⁰. “ Four Fang (residential districts), eighteen Pu¹¹ (villages) ” were the original configuration of ancient Kunming(Liu, 2002), which were arranged with the “four Fang inside the city, and the eighteen Pus outside the city”. Integrated planning was implemented within the urban boundary, and free development was arranged outside of the city. The main feature of the traditional urban layout in ancient Kunming was its appearance as a Chessboard shape - the traditional form of urban planning in Han dynasty, Lifang represented a complex situation which combined basic units of traditional urban planning and also a residential management system from ancient China. Traditional dwellings in Kunming featured independent double-hipped roof buildings which were designed in a line-style pattern, and traditional courtyard-style residence named “Yi Ke Yin”. Furthermore, a number of buildings incorporated western styles, such as the Huize Building and Luhan Mansion, which for historical reasons, became factors influencing the overall architectural style of Kunming.



¹⁰ Lifang Planning: Traditional housing layout and management system, In: Liu Xue. (2002) *Spring City Kunming, The past, the present, and the future*. Kunming: Yunnan Fine Arts Publishing House

¹¹ Local zoning system of Qing dynasty in ancient China, In: Liu Xue. (2002) *Spring City Kunming, The past, the present, and the future*. Kunming: Yunnan Fine Arts Publishing House

Figure 2.2 Double-hipped roof building with line-style layout (Liu, 2002, p. 46)



Figure 2.3 “Yi Ke Yin”, traditional courtyard-style residents (Liu, 2002, p. 57)



Figure 2.4 Huize Building, location: Yunnan University (Photo by Wen Jiang,2013)



Figure 2.5 Luhan Mansion, Location: Green Lake Park (Liu, 2002, p. 89)

The modern urban construction of Kunming begins with being opened as a commercial transport hub in 1905, and the opening of the Yunnan-Vietnam railway. Modern western civilization entered this frontier city and influenced the local culture. As the mirror of the times the architecture of Kunming has experienced four stages and formed four types of architecture (Table 2.3):

	Stage 1	Stage 2	Stage 3	Stage 4
Type	Vernacular architecture	Traditional architecture of ancient China	Architecture style combined Chinese and Western, local and ethnic	Industrial architecture introduced from western countries (X. Zhang, 2009)
Main building style	1. Tuzhang Fang 2. Muleng Fang 3. Ganlan style	1. “Yi Ke Yin” 2. Temple architecture 3. Han style architecture	1. Western style 2. Mixed-style architecture	1. Standardized buildings with similar architecture style
Development	Developed by geographical position and environment	Local traditional vernacular has been influenced by Central Plain Culture	The opening of the Yunnan-Vietnam railway, the rise of minority industry	Due to the housing shortage, large amount standard residential buildings have been built during the short time
Culture	Disparate social	Reflect the	Reflect the	Both the rapid

	culture and ethnic groups	combination of central Chinese civilization and ethnic minority culture in border areas	combination of Chinese traditional culture and Western civilization, and the intervention between different ethnics in Yunnan	development of building industrialization and housing policy effected on residential construction
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Table 2.3 Stages of architectural style in Kunming, summarized by Wen Jiang

After the outbreak of the Japanese War in 1937, followed by a population explosion, fast economic growth, and rapid urban expansion, this period became one of the fastest growing stages in the urban development history of Kunming city (Zhu, 1998, p.10) During the wartime, the sea connections between China and international community had been cut off. Only Kunming, the city which maintained a positive contact with outside world through the Yunnan-Vietnam railway, Burma Supply Road, Ledo Road and the “Hump”, kept receiving relief supplies as a traffic hub during the war. Meanwhile, a large number of factories and schools relocated to Kunming from the rest of the country, which speeded-up the development of local education and the economy while other cities were suffering the changes caused by war. However, under this historical background, the architectural style of Kunming featured became more diverse, as it was combined with the culture from inland and from aboard.

In 1910, European Style Buildings were introduced to Kunming along with the Yunnan-Vietnam railway. At the end of the Qing dynasty, with the rise of minority industries and commerce in Yunnan, rich merchants from other areas around Kunming city, such as “Xizhou Bang” and “Tengchong Bang”, brought in minority architecture and different lifestyles to Kunming. Merchants from Guangdong Province gathered at Jinma Biji Fang, which was the reason there were streets featured with the architectural pattern of the Lingnan region from South China. During the wartime, the “western-style house” was introduced by architects, and different style mansions and villas became more and more popular. Mixed-style buildings, which combined European style in a fusion of central plains culture and the frontier minority cultures, became the exclusive architectural style in early Kunming (Fang, 1998, p.54).



Figure 2.6 Ganmei Hospital (Liu, 2002, p. 84)



Figure 2.7 Ethnic architecture style, Zhaobi, Dali (Liu, 2002, p. 93)



Figure 2.8 Lingnan architectural style, Tongren Street (Liu, 2002, p. 79)



Figure 2.9 Mixed architectural style (Liu, 2002, p. 89)

Apart from the mixed-style architecture which was caused by the above historical reasons, traditional dwellings had also developed with the demand of modern life in the city (Zhu, 1998, p.12) The existing traditional dwellings of Kunming were distributed around Wenming Street area which was situated in the central part of the city since the founding of ancient Kunming. This area used to be an ancient residential district which featuring high building densities and a strong

commercial atmosphere. Traditional dwellings in this area were arranged along the street, and most of them adopted line-style design. Nearly ten bays were grouped as a complete building which generally was separated by fire walls within each 5-7 bays. In order to maintain the commercial atmosphere in this central district of the city, rooms at ground floor in a complete building were designed as shops facing to the main street, and rooms for living and storing were arranged at the first and the second floor. Traditional residential dwellings in the Wenming street area were of courtyard style building, which was generally arranged as a traditional three-section compound, a four-section compound, or by combining two compounds together. The scale of dwelling was determined by the income level and the land size of owners. Furthermore, compared with the dwellings situated on the outskirts of the city area, traditional dwellings in Wenming street developed with the increasing demands of urban life, which reflected in the scale of garden within the dwelling, the design of stairway and windows. Therefore, traditional dwellings grew with the development of city, and with the demand of residents and the changing environment, traditional dwellings were now faced with challenges of urban development.



Figure 2.10 Fire wall, Wenming street (Photo by Wen Jiang, 2016)



Figure 2.11 Traditional layout of residential dwellings in Kunming (Liu, 2002, p. 230-231)

2.2.3.1 Sustainable value of traditional dwelling in Kunming

"YiKeYin" dwelling is a form of housing commonly used by the Han and Yi nationalities in Kunming, Yunnan. "YiKeYin" dwelling house was jointly created by the Han and Yi people. But trace back to the source, the "YiKeYin" dwelling is the manifestation of the northern courtyard in the south. However, there are many restrictions on the construction of residential buildings in the south area, such as dense population, limited construction area, mountainous terrain of Yunnan, and rainy climate. When the northern courtyard house was transferred to Yunnan, it became the form of "YiKeYin" dwelling.

The ceiling height of the main room is usually higher than the rooms on each side in "YiKeYin" dwelling. The roof of the small bedroom is an asymmetrical double sloping roof. The roof is divided into long side roof and short side roof. The long side roof faces the patio, and the short side roof faces the exterior wall. The roofs of the house do not connect with each other. The roof of the main room is the highest, and the roofs of the bedrooms on both sides overlap with the roof of the main room. Because of this roof structure, rainwater will run down quickly through the roof layer into the drain of the yard during the rainy season.

The outer wall of a "YiKeYin" dwelling is high and closed, with only one or two small windows on the second floor. The surrounding walls were very high and reaching to the eaves of the second floor. In order to adapt to the living habits of residents and facilitate farmers to do farm work in the courtyard or on the verandah, the main room in "YiKeYin" dwelling is usually open to the yard. This is differing from "YiKeYin" dwelling within the urban area; the main room in such a house is usually furnished with elaborate doors.

"YiKeYin" dwelling can be built in mountainous areas, flat land, towns, and villages. It is an independent unit that can be a individual building or can be assembled into various forms according to the terrain. In addition, it should be applicable to different users. It can be built in the simplest way, or it also can be built in the most gorgeous way. However, with the expansion of the urban area, there are fewer in "YiKeYin" dwellings within Kunming urban area.

Since the beginning of human habitation, the layout and design of houses have reflected human's ability to transform and fight against nature. The characteristics of "YiKeYin" dwellings are related to the special geographical and natural conditions of Yunnan. Although compared with urban residential buildings, traditional residential buildings lack comfort and convenience. However, in combination with natural conditions, climate, local conditions, local materials and natural materials, traditional dwellings are designed to reflect sustainable building strategies.

2.2.3.2 Urban residential district in Kunming (since 1949)

In the past 70 years of China's urbanization, China's rapid economic development, increasing population and the change of family structure, housing area per capita has been increased, and also the living quality has greatly improved. Chinese residential development can be roughly divided into four stages according to the transformation of relative policy and strategy (Zhao, Kai, 2009, pp.18-25).

(1) Stage 1: Learning from Soviet building system (1949-1957)

In 1949, central government was suffering the financial difficulties at the very beginning of foundation of New China, therefore the development strategy of "living after producing (先生产, 后生活)"¹² has been implemented for a long time. In order to promote the rapid development with limited financial support, controlling the cost of construction and building standard was the major development strategy during that period. At the beginning of 1950s, urban housing shortage was the urgent that need to remit. After the improvement of urban infrastructures for some extent, urban housing has been massive constructed in the fastest way. Meanwhile, the first five-year plan of China¹³ has been implemented and put industrialization as the priority development plan. Cooperate with the first five-year plan, building standard, standard design methods from Soviet Union have been introduced to guide the residential development of China. The first residential districts after the establishment of New China have been built. Following the concept provided by Soviet experts: that of - increasing the depth of rooms and providing independent rooms, was been considered the rational design option of improving the living quality standard of residents. However, the "rational design" did not develop from actual living condition requirements and occupant demands. Hence, the dwelling could not meet the large housing needs. Because of the unbalanced demand and supply of housing, rational design had to be used irrationally, such as two or more families sharing one dwelling unit. In fact, the rational design turned out as being irrational by

¹² "Living after producing (先生产, 后生活)": a strategy of the first five-year plan of New China, encouraging placing heavy industry as the priority of development. In: Liu, Q. (2009). The first five-year plan of New China. *Journal*.

¹³ The first five-year plan of China: (1953-1957), accelerating industrialization has been the major development plan.

blindly adopting new concepts which shares no basis in reality (Q. Zhang, 2010, pp.61-64). Residential buildings during this period were characterized by following features: low space standard per person; two or three families need to share one set of house and also the kitchen and small bathroom; living room has lost its importance compared with the traditional Chinese residential dwelling; external open space has not been considered properly. Families need to share most of living space together which produced lot of conflicts between the neighborhood. Therefore, residential design practice during this period has been viewed as “reasonable design, but unreasonable use”(Lv, 2003, p.108).

(2) Stage 2: Extremely retrenchment and slow development (1958-1978)

This period has experienced a significant difference in residential development occurred during the “Great Leap Forward”¹⁴ (1958-1961). During this period economy of building cost was the priority principle for residential development. Thus, the construction standards during this period reached what is seen as the lowest point. Moreover, this low tide of building quality status continued into the period of the “Chinese Cultural Revolution”¹⁵ (1966-1978), which was a particularly confusing construction period caused by social-political influences. At the end of “Chinese cultural Revolution”, residential building construction has been enlarged, and with the rapid population growth and relatively slow agricultural development, urban construction land has been controlled by government in order to ensure the basic food production. High-rise residence, which was seen as the way of improving efficient land utilization and controlling the urban size, has been encouraged by central government.

(3) Stage 3: Early developing stage (1979-1991)

After the period of the “Chinese Cultural Revolution”, and as a result of the third plenary session of the communist party of China, residential development entered a new era. The central government of China provided financial support for residential construction. With a positive approaching for residential construction, new types of residential layout appeared. This replaced the simple barracks type layout which has been massive constructed with fastest building methods. Furthermore, with the growing population, problems of shortage of urban land emerged and residential development had very major influences on urban design. Thus, in order to adapt to the changing condition, residential projects using high-rise residential dwellings have been encouraged to implement in several cities (such as Beijing, Shanghai) in China at that time.

With the introduction of China’s one-child policy the average residential area available for each Chinese family greatly improved. Compared with the dwelling design concern in last stage, functional division of internal space began to be taken seriously. Dwellings were designed and constructed with independent dining areas and these became popular amongst residents, private

¹⁴ “Great Leap Forward (大跃进)”: was an economic and social campaign lead by the [Communist Party of China](#) (CPC) from 1958 to 1961. The campaign was led by [Mao Zedong](#) and aimed to rapidly transform the country from an [agrarian](#) economy into a [communist](#) society through rapid [industrialization](#) and [collectivization](#).

¹⁵ “Chinese Cultural Revolution”: was a social-political movement that took place in the People's Republic of China from 1966.

kitchens and bathrooms also began to appear in the layout design of residential dwellings (Lv, 2003, p.221).

Furthermore, improving urban function and living quality has become the focus of residential research during this period. Relative residential design code have been issued during this period as well, such as <Design code for residential buildings> (1986), < Design of civil buildings> (1987), < Basic parameters of residential kitchen and related equipment> (1989), which promoted the formal design practice. Meanwhile, a series of residential building design competition has been held by Ministry of Construction of China, more concerns about living environment, diversity of residential design practice, especially the design for external open space combined with the residential area have been well practiced.

(4) Stage 4: Rapid development stage (1992-current)

In the early 1980s, shortage of China's urban housing problem is getting serious. In order to meet the huge demands of housing, large amount of residential building has been constructed in a short time. During this period of real estate industry development, it has some problems, such as irrational investment structure, unregulated market behavior, mass development without reasonable plan, enormous waste of resources, and eventually led to the emergence of housing reform(Y. Liu, 2003, p.8). In the year of 1998, the transformation of housing policy has been issued and promoted the development housing industry.

In July of 1998, document of <Improve the housing policy and accelerate the building construction>¹⁶ has been issued by State Council of China. This policy indicates that there is new housing system which promoted the period of housing commercialization. Residential building construction has accelerated, and new attempts of design concept have been introduced to fit the role of housing as a product in the continuously improved housing market. Under the market economy conditions, especially after the Housing Reform in 1998, there is risk awareness amongst real-estate developers that they must sell the housing products to occupants. This risk awareness promoted real-estate developers to collect resources and links of market and occupants' demand through market investigation, positioning the level of their housing products, early stage of the product planning, and formulating the marketing plan. After marketing plan in the early stage of design, housing projects could be designed by designers under the guiding opinions which developed by the investigation. Caused by the benign competition between developers, high quality residential products were designed to provide different choices for occupants. Meanwhile, residential building design practices during this period have been improved by introducing new design concept and developing the residential design regulation which fit to actual updated situation(Zhao, Kai, 2009, pp.18-25).

By reviewing the transformation of policy which was related to the residential development in China, housing commercialization is a final factor to promote the development of residential design, and

¹⁶ <Improve the housing policy and accelerate the building construction> (《关于进一步神话住房制度改革加快住房建设的通知》: it started from second half of 1998, stop housing real object allotment, and implement the monetize housing distribution.

to some extent influence the trend of residential development in flowing period. “Housing is a kind of special commodity, so it has special properties” (Hirsch, 1990,p.383). Housing as a product is began to show other attributes which are different from the past.

After more than 10 years development, residential design product module, including different kinds of creative design concept, developing mode, even the way of market operation, has been implemented and well developed in major cities of China. In comparison, due to the residential development is relatively backward in small and medium-sized cites, learning the development module from other projects in major cities as reference could be seen as a way to promote their own development. Furthermore, some successful brand developers has shown their strength to residents, such as new design concept and advanced management mode, which made their housing products become popular in most of cities in China. Under this development trend, Liu (L. Liu, 2012, part.3) comments that the phenomenon of standardization of residential development and brand effect of housing products will be copied and transferred to small and medium-sized cites, and it will limit the residential design innovation and also increase the negative effect that more and more Chinese cities becoming similar. In addition, disguised forms of residential product have come up continually, such as house designed for experiencing, house for the elderly people, apartment with well-decorated and ready to move in. Moreover, the change of lifestyle also influenced the internal design of houses. For example, main living space could be transferred or emphasized by the change of life style. In the traditional courtyard dwelling, principal room and courtyard were the core living space of residents; and for the dwellings which was built in 1960s, when people were sharing the kitchen and bathroom, relatively private bedroom is the principle living space; with the development of commercial housing which the living quality has been improved, living space like kitchen and bathroom have got more attention compared with the past.

Facing changes which were happened to housing itself, housing as a product in housing market, linkage problems among cities, people’s lifestyle, the transferring principle space in the house, it is therefore timely to collate together information about what is taking place to a city like Kunming. Furthermore, consider the mass residential construction has continually give pressures to environment, ideas could be developed linked to actual problems happened in place which can be enacted and which can sway or influence both occupants and residential design practice to be more sustainable.

2.2.3.3 Practices of urban residential project in early 1990s

With the recovery of the national economy, the real estate industry of Kunming started to grow gradually. Influenced by the stagnant construction period caused by the “Chinese Cultural Revolution”, and the limitation of the economic situation, housing products in the 1980s developed with the features of the times. For instance, monotonous architectural form, low standard of average living space per person, small room size, and poor landscape design all widely occurred. During the 1990s, with the development of economic reform, the real estate industry experienced rapid growth and expansion. Urban residents have demonstrated increasing demands for different housing types, which was one of the reasons leading to the large-scale development of the real estate industry.

During the 1990s, the type of residential building that most commonly constructed in Kunming was a multi-story building but relatively low storied buildings. With the rapid economic development during this period, the housing supply became more urgent. The types of residential buildings involved in the trend changed from multi-story buildings to high-rise buildings. High rise residential buildings firstly appeared in the early 1990s in Donghua real estate, Zongshu Ying real estate, Xinying real estate, Yuning garden real estate though there are other examples. This changed the image of Kunming and also relieved the demand for housing supply. However, due to the mild weather conditions of Kunming, special consideration for building construction, such as the utilization of Green building materials or structures, has not been pursued within this substantial development of residential construction.

Considering the master planning of real estate built in 1990s Kunming, unit housing has been widely applied in order to provide enough housing for residents. Put simply, unit housing has been generally defined as the type of building mainly featured as: providing independent houses in one complex building, sharing public staircase, standardized production, and low building cost. However, influenced by the traditional garden dwelling in Kunming (Xu, 2004, p.60), housing groups with gardens, public spaces, and a sense of belonging have been created in new built estates. As was implemented in Donghua real estate, the concept of the traditional Chinese “Lifang unite” has been adopted in the planning of housing groups, and each housing group was separated by dwarf walls with flowers, which is conducive to management and sustaining a quiet living environment. Furthermore, green public space has been distributed into each housing group, and green spaces in each housing group have also been connected through pedestrian routes across the whole estate area.

Besides, a small quantity of residential real estate has been built with consideration for the topography in urban built-up areas, and also created characteristic types of residential building and attached public spaces. As was implemented in Hongshan real estate in an urban built-up area of Kunming, the layout of residential buildings was located on the contour line of the site. By avoiding reshaping the original land configuration as much as possible, some different forms of architecture, such as a type of staggered floor, a semi-basement approach, and footbridges connecting to the second floor, have been adapted to fit in with the polytropic mountain ground. Moreover, the whole real estate was changed due to the difference in elevation between buildings and the public green landscape.

In order to make full use of natural resources of Kunming, adopting solar energy and natural ventilation were considered as primary sustainable design concerns during 1990s. The weather in Kunming is mild all year round, hence, issues of heat preservation of the outer protective structure and heat insulation in summer, are rarely considered. In other words, energy saving design of residential building in Kunming was deficient. By reviewing the residential projects implemented in Kunming, most multi-story residential buildings were arranged as “sitting in the north and facing the south”¹⁷, and kept distance between the same as the building height of each building in order

¹⁷ “Sitting in the north and facing the south”: this phrase is usually described orientation of traditional courtyard building in ancient China. Speaking of traditional dwellings, a good building orientation could be defined by the location and the direction of the main entrance. By using this phrase to describe modern residential building, it refers to the layout of housing plan that most of bedrooms and

to provide enough sunshine duration in a day; and issues of ventilation also can also be solved by the layout of house which aims to get cross ventilation during the summer. Furthermore, in order to ensure the requirements for sunshine, ventilation and natural light of each residential building, uniform building layout became the main feature of residential area plan during 1990s.

In terms of flexible use of indoor spaces, the unconventional large house first officially appeared in the Chunyuan estate in the year 1991. This type of house was designed for multiple usage of spaces to match different requirements from residents. The layout of indoor space was changeable and could adapt for different users.

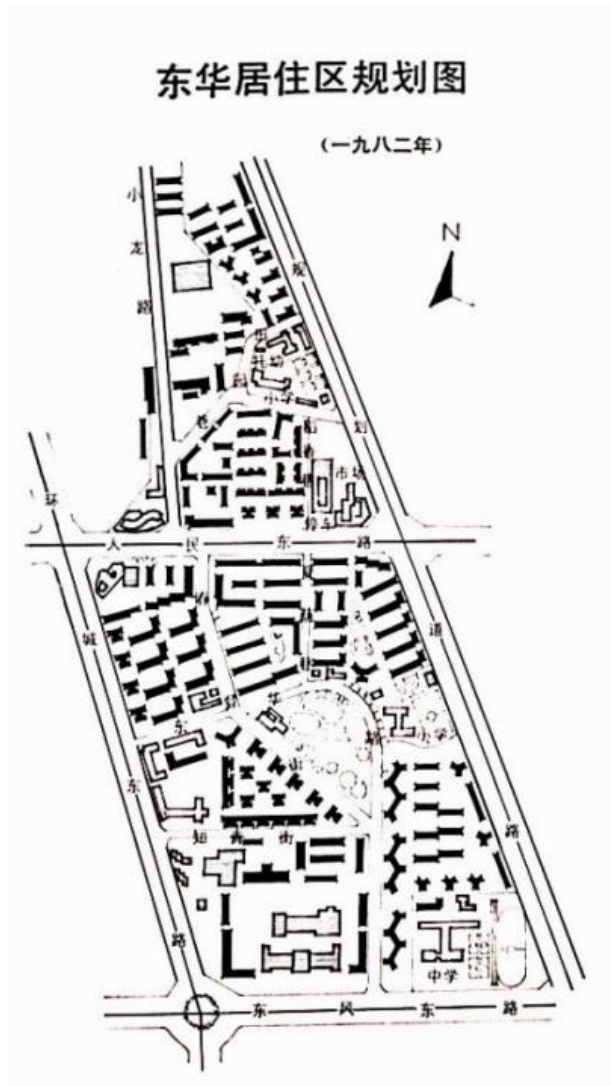


Figure 2.12 Donghua Real Estate

living rooms are arranged to face the south, and other related function rooms are arranged towards north. In: Liu, D. (1984). *History of Ancient Chinese Architecture*: China Architecture & Building Press.



Figure 2.13 Zongshu Ying Real Estate



Figure 2.14 Xinying Real Estate

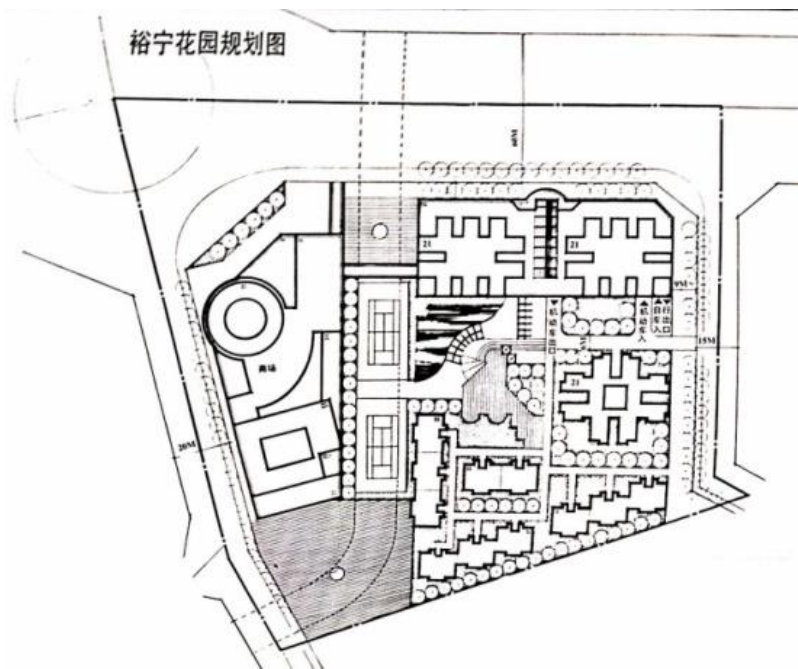


Figure 2.15 Yuning Garden Real Estate



Figure 2.16 Hongshan Real Estate

2.3 Identifications of key elements towards sustainable residential districts in Kunming city

The renewal of urban residence is the most crucial part of the process of urban renewal. The residential function is the most important in the urban area. The residence is the foundation that forms urban configuration. In addition to the development of large-scale residential areas in the suburbs, some decaying downtown blocks are facing the renovation process. Since the 1990s, some areas and communities in urban built areas have entered the process of renewal and transformation due to relative economic recession, dilapidated houses, backward allocation of municipal facilities, and differences between landscape environment and living quality. In July 2017, plan of Three-year action plan for urban renewal and micro-renovation of PanLong District (2017 and 2019), guided by the principle of "ecological restoration and urban repair", put forward requirements for the renewal and reconstruction of old residential areas, old factory areas and urban villages within the

second ring road under the jurisdiction of Kunming. This policy aims at the situation of those old blocks, old factories, and urban villages, and makes the reconstruction plan which directly targets to each area. The specific content of renovation is developed in detail, for example (1) Renovation of the building facade, restoration, and design of disordered or damaged building facade. (2) Rearrange and install the cables that are built randomly. (3) Conduct investigation on security prevention problems, add monitoring, and maintain public security. (4) Renovate and repair sewage pipes in residential areas to solve sewage problems. (5) To improve the dirty and poor environment in the old residential areas. (6) Repair the damaged roads and solve the congestion caused by narrow roads to the greatest extent. (7) Improve the functional facilities and urban supporting facilities required by the residential area. According to the "building facade improvement, environmental improvement, road renovation, cables need to be installed in underground pipes, improve urban facilities" those issues, effectively improve the issues of residence, source of clean water, the use of electricity, and travel conditions. The goal of urban renewal is to improve the urban infrastructure, improve the living environment, and present the distinctive features of the city.

Between 2017 and 2019, renovation plan for each year has been scheduled: seven city blocks will be reconfiguration and renovated; 26 old residential areas will be micro-renovated; and five urban villages will be renovated. Eight main tasks need to be completed in the process of urban renewal and reconstruction include (People's Government of Kunming Panlong District, 2017, para.6):

“(1) Comprehensive environmental improvement. The comprehensive improvement of environmental sanitation should be carried out with the emphasis on " dealing with the dirty, messy and poor living environment, and alleviating traffic congestion". The main renovation content is set to remove the disorderly building, improve the greening landscape, standardize the garbage collection system, set up public toilets, dredge and repair drainage facilities, optimize the public activity space, improve the urban facilities and so on.

(2) Road network improvement. Combined with the construction requirements of sponge city, some specific conditions should be rectified, such as the problem of flooded water on the road, uneven road surface, imperfect community greening, incomplete fire-fighting facilities and damaged lighting equipment. In addition, it is also necessary to improve the greening quality of the block and lay seepage bricks on the ground to prevent soil erosion. Parking berths and sidewalks need to be standardized to eliminate the problem of vehicles parked and mislaid. The location of small business needs to be standardized, such as the "introduction of small retails into the market" policy. This could ensure the smooth flow of roads in the community and improve the travel conditions of residents.

(3) All kinds of cables shall be arranged in underground pipelines. The cables and water supply and drainage pipes installed randomly in the urban reconstruction area should be reinstalled and updated.

(4) Building facade renovation. This transformation is mainly aimed at cleaning and repainting the building facade. Store signs along the street should be standardization with current regulation.

(5) Renovation of fire and security facilities. The target of this renovation plan included: setting up reasonable fire control facilities and public security monitoring facilities, dredging the fire escape, and increasing the number of police kiosks. This practice can improve the level of fire and public security management level, and thus it could build a safe smart community.

(6) Renovation of public service facilities. According to the actual situation of the community, public cultural activity centers and sports venues should be set up reasonably. Corresponding facilities and equipment should be configured to supplement the deficiencies of public service facilities.

(7) Repair of public facilities and buildings in the city. This regulation requires that in the process of reconstruction, the protection of historical relics should be strengthened, the cultural connotation of the area should be excavated, the features of the city's historical buildings should be repaired, the historical context should be continued, and the characteristics of the city should be well presented.

(8) Other issues. According to the actual situation of micro-renovation area, the sub-district offices should respond and arrange other contents that need improvement and renovation.”

In addition, after specifying the work content, the urban renewal office of PanLong district government also proposed five specific work procedures. In the first step, the sub-district office oversees developing the micro-renovation plan of the urban area, and provide the renovation plan for urban area to the government. The content of the micro-renovation plan for urban areas should include the basic situation of the area, existing problems, the purpose of the transformation, the content of the proposed transformation, the estimation of funds, the sources of funds. The second step of the area transformation is to entrust the design company to complete the detailed design of the transformation scheme. After the scheme design is completed, the sub-district office will organize the relevant departments to conduct a preliminary review of the design scheme, and submit it to the district government for approval after modification. After the plan is submitted to the district government for approval, in accordance with the relevant requirements for project approval, the sub-district office organize the project approval document of the urban renewal and micro-renovation project, and finally apply to the district development and reform bureau for project approval. The next stage is the construction process. The sub-district office is responsible for compiling the construction organization and implementation plan of urban renewal and micro-transformation project, selecting the third-party supervision unit, and making construction supervision and management during the whole process of the project. After the construction of the project is completed, it is the step of acceptance and review of the project. According to relevant procedures and requirements, sub-district offices shall organize concealed works, preliminary and final inspection of projects, and entrust audit units to carry out synchronous audit.

Urban renewal process provides an opportunity for the transformation of the residential areas in the old urban area. With those efforts, better living environment and richer material resources could be provided for urban residents. Every action of urban renewal and reconstruction affects the daily life of each urban resident. The top-down working mechanism enables each working step to be arranged properly. In this way, the renovation project can be implemented on time and with fixed schedule.

However, urban residents can only accept the results and raise doubts after the whole process of urban renewal. In the procedure of planning and design of a certain project, the expression of public opinions the degree of resident's participation in planning and design transformation are not clearly reflected. As a result, after the renovation project was completed, some discussions and doubts started through many channels, such as the Internet or the public media. For example, at the end of 2018, all the shops along the old street in Kunming was modified with a unified design form, and all shop signs were replaced with the "design" of black background with white characters. The merchants were not satisfied with the result of the renovation, which caused a great deal of negative comments. The content of each store is different, and those independent brands have their own unique concept that need to be presented and appreciated. So, this kind of transformation is not going to be recognized among stakeholders. This "one-size-fits-all" working mechanism did not allow merchants to participate during the renovation process, which eventually led to the demolition and re-installation of all store signs along the street. Such repetitive work not only affected the business of the merchants, but also wasted a significant amount of extra material and financial resources. In the process of "building a civilized city" in Kunming, "unified replacement of all shop signs on main road" is regarded as an important part of city improvement. The "black and white street" was created under the movement of urban upgrading and beautification. From the perspective of upgrading the appearance of the city, it is understandable to modify the shop signs. But how to fix it is a serious challenge. Another example is that, in 2010, Kunming started the movement to "build a civilized city and a healthy city". At that time, the city needed a new image and identification. The city government carried out demolition work on "anti-theft cage (防盗笼)", which was found to have affected the appearance of the city negatively. Anti-theft cage, which was built to the open balcony by residents, appeared around the 1980s. The appearance of "anti-theft cage (防盗笼)" expands the internal area of each apartment and makes better use of the limited residential area. The most important fact is that it could reduce the incidence of household theft based on safety considerations in order to maintain the safety of residents' lives and property. From the perspective of users, these urban problems caused by the active transformation of residents are the expression of "unreasonable design and incomplete design mechanism". In the process of urban renewal and transformation, residents' needs have not been effectively recognized and integrated. Therefore, the "one-size-fits-all" working mechanism can lead to conflicts between urban reconstruction and residents.

Another case is the urban village reconstruction project which was carried out at the same time. At that time, most people had a negative perception of urban villages. Most people considered that life in an urban village is chaotic in a way that it is mixed with people from different regions without rules and regulations with potential safety issues. With the hope of improving their living conditions and getting financial compensation in exchange, most of original villagers agreed with the innovation project and many urban village projects have been carried out successfully. However, the author found that the phenomenon "reasonable design, but not reasonable use" still exists after observing the urban villages that have been renovated. When the relocated villagers moved into the new residential area, the former living habits and experiences are carried on in the new community. Therefore, the relocate residents are also using their wisdom, and actively transforming their living environment according their demands and understanding of brand-new life.

The shape of the urban residential area is the epitome of society. The development and rapid renewal of modern cities have disintegrated traditional neighborhood and relationships. Many gated communities are gradually formed so that communities were isolated from each other. At the same time, the vitality of the communication space is weakening. Such a trend has a negative impact on the sustainable development of urban residential areas. As the final users, residents have the right to speak on the details of urban renewal and residential renewal. When the needs of residents do not match the living environment planned, designed, and built, villagers, will transform their homes and the community environment by themselves. These informal constructions, which developed based on residents' daily life and demands, will be included in the next round of urban problems that need to be transformed. The neglect and avoidance of these "informal" values lead to the inability to improve the needs of residents.

Chapter_3: Towards planning and design of sustainable residential district and evaluation framework

As mankind enters the 21st Century, the focus on sustainable development now holds the world's attention and has begun to be widely practiced in different fields. The building sector has been identified as that with the high energy consumption at a time when China has a rapidly and continuously growing real-estate industry. 'Green and low-carbon housing' has been recognized as one of the phrases which suggest the most advanced design concepts for residential products are being exploited in design practice.

The Green building concept has attached great importance to the study field of residential planning, design, and construction in recent years. Labeled with terms such as "Green", "Eco-friendly", or "sustainable design", an increasing number of residential projects have been implemented in different Chinese cities. With the introduction of the cutting-edge building and design technology, the availability of a wide range of energy-saving products, and accessible green building assessment systems, green residential areas and housing design in China are under development based on these research achievements. However, the development of residential design in China has its own historical background, which is related to policies, economy, social background, technology development, and cultural issues; and these factors have close relationships with the decision-making of residential planning and design and also strategies. The research and development of planning and design of Green residential district in China should be debated more vigorously at this point in history and development. It is needed to clarify challenges, which rooted in the past and growing along with the current development, to overcome the future development.

Primarily, this project has developed with the research focused on the changing configuration of Chinese residential compound. For this part of research, documentary searches, and secondary analysis will be carried out to address how specific policy environment in China influenced the evolution of planning and design procedures of residential districts. This part of the research has three study aims: firstly, to understand how the design practices for housing in contemporary China have evolved in the last three decades; secondly, what are the linkages and impacts between legislation and planning and design of residential districts; thirdly, to identify linkages that have great influences on contemporary planning and design of residential district. The historical background has created a diversified development pattern of residential housing in China. Meanwhile, the ways in which the living environment and lifestyle are influenced by the variety of novel housing developments, have been considered by the research in this study. These all matter to residents, who need to accept changes and also maintain the lifestyle that they are happy with.

By observing contemporary planning and design of residential districts (take Kunming city as an example), case studies have been developed to assess how sustainable residential design strategy could be implemented in Chinese cities. As with green residential developments in other Chinese cities, the residential project in Kunming has explored and has practiced cutting-edge green design and technologies. Beginning in 2000, specific research teams for the first green residential district

implemented in Kunming were established. An interdisciplinary approach provided forward-looking suggestions for later design stages. Due to the insufficient development of green building regulations and design standards in China during that period of time (at the end of the 1990s), referenced to green design standards from other countries could be seen as the way to improve and implement the project. However, after 10 years of been settled down by occupants, the status of the current living situation are rarely mentioned and investigated. A question remains as to what extent those green design features have changed the occupants' lifestyle? Do those green design elements provide a new lifestyle to occupants? Does the design expectation meet the actual demands of residents? To what extent have occupants in this residential area adopted broader green design and lifestyles? If there are no exact answers for these concerns, what can be improved or what suggestions could be proposed by learning from the past experiences? To answer all those questions, an empirical study needs to be well implemented and analyzed.

The purposes of the first case study are listed as follows: firstly, to investigate influences of green design on residents' daily life after 10 years of living in the 'green' residential district (adopting interview and questionnaire survey as main research methods) ; secondly, to clarify issues of what can be improved in planning and design strategies within urban scale (in order to enhance overall sustainability) by studying the current living conditions in this residential district; and thirdly, to suggest planning strategies for future development in other projects by emphasizing local features and actual demands/requirements arising directly from occupants. And at last but not least, by learning from former planning and design of the green residential district in Kunming, what can be improved to make better planning and design concepts and also to be used in the future planning.

Developed from the case studies, design problems have been discussed and linkages made with the actual living conditions within the residential area. Design problems and residential behaviors (such as outdoor activities, communications, scale within the residential area, pedestrian systems and so on) have also been investigated and determined through the survey. This part of the research had three main study aims: firstly, to what extent, the early planning and design stage could be intervened by sustainable design concepts in new residential development in Kunming; secondly, to understand and take part in the new residential area development, effectively as one of the member of the design team to observe the whole design process, to see how the design idea flows through the whole process of the project; and finally to formulate the guidance that can help residential development projects to be more sustainable and also with the aim of providing knowledge for decision-making and choice evaluation.

By combining the research on historical background and empirical study on the current residential project, it provides a multi-dimension way to understand the overall research project. Design guidelines and solutions for the green residential district could be developed from different viewpoints and make the practical improvement.

In the late 90s, the concept of Green House entered into China, and related research on improving living environment quality has been brought into China's development plans. In the year of 1994,

“China's Agenda 21st Century 《中国 21 世纪议程》¹⁸” has been published, and meanwhile, “Major science and technology industrial project of China—projects of ‘Xiao Kang’ urban and rural housing in 2000 《国家重大科技产业工程---2000 年小康型城乡住宅科技产业工程》¹⁹” has been started up. Furthermore, “Report of Human Settlements Development of the People’s Republic of China 《中华人民共和国人类住区发展报告》²⁰” has been published to strengthen the development trend on improving the living environment quality which is one of the main targets of sustainable development.

As the world's population is growing rapidly, and increasing demand of living quality, people’s demand for residential environment is getting more and more diversified. Building construction need to consume large amounts of natural resources. It always derived to environmental deterioration. How to minimize the damage which building construction could bring to the environment became world’s attention subject.

This section reviews the green building assessment system issued both in China and other countries. Features of main green building assessment system issued in different countries have been summarized, and through the comparative study of literature research, number of existing problems of green building evaluation criteria in China have been mentioned. Furthermore, more detailed cases will be provided in this section through the in-depth research.

3.1 Green building evaluation criteria in China

Green building, low-carbon house, or sustainable building, they are common phrases which appeared in many real estate brand image advertisements in recent years. Lots of housing products

¹⁸ China's Agenda 21st Century 《中国 21 世纪议程》: According to "Agenda 21", Chinese government formulated "China's Agenda 21st Century ", the agenda also known as "China in the 21st Century Population, Environment and Development White Paper". This document has been seen as guidance for the Chinese government to develop long-term plan for national economic and social development. "China's Agenda 21st Century" is a total of 20 chapters, 78 program areas, the main content is divided into four parts: First, the overall strategy and policies for sustainable development; second, social sustainable development; third, sustainable economic development; fourth, Rational use of resources and environmental protection.

¹⁹ “Major science and technology industrial project of China—projects of ‘Xiao Kang’ urban and rural housing in 2000 《国家重大科技产业工程---2000 年小康型城乡住宅科技产业工程》”: This document attempts to promote the development of real-estate industry and improvement of living environment. It also is one of the national technology industry projects in China.

²⁰ “Report of Human Settlements Development of the People’s Republic of China 《中华人民共和国人类住区发展报告》”: In order to support the convening of the United Nations General Assembly "Istanbul +5" and to continue to promote the living standards for residents in China, Chinese government organized relevant department to write the "Report of Human Settlements Development of the People’s Republic of China" (1996 and 2000). This report summarizes the achievement of sustainable development in China, improvement of living environment, and other development of policy and development strategy after the “Second United Nations Conference on Human Settlements” which held in Istanbul on June 1996.

have been labeled with “Green”, or have been introduced to occupants with “green building” during the selling process. The concept of green building, or sustainable building, in consumers' mind, doesn't have a clear definition. Meanwhile, there could lead to misunderstanding in consumers' mind that housing products with “green” concept should be a high price, or green buildings should be entirely newly-built housing.

Green building has been defined in <Evaluation standard for green building> (GB50378) as: “green building refers to the constructions that fully considered the requirements of environment protect issues during the process of design, constructing, and the utilization of building materials; it also requires to closely combining architecture with farming, agriculture, energy, environmental protection, aesthetics, high-tech construction; it also ask for designing buildings not only satisfying the demand of the function, but also providing health and environmental friendly space for living and working. (China Academy of Building Research, 2006)” <Evaluation standard for green building> (GB50378) started by concerning the basic situation of our country, and mainly contains following contents: land saving and external environment, energy conservation and energy use, water saving and water resources utilization, material saving and material resources utilization, indoor environmental quality and management (residential building), full life cycle performance, (public building). Under each catalogue, there are controlling item²¹, general items and optimized item²². Green building rating system is divided into three levels, residential buildings and public buildings have different requirements.

However, compared with evaluation standard for green building of other countries, there are problems existed inevitably. There are a lot of scholars have done a lot of comparative studies on evaluation standard for green building. For instance, Huang and Li in their research of: “Analysis of the instructive ability of the Evaluation criteria of the ecological residence in China----from the technical assessment handbook for ecological residence of China to Green building evaluation criteria” (Huang, 2006, pp.107-109) illustrated general problems of using the assessment handbook or evaluation standard in actual construction projects. In China, two handbooks are using to guide the assessment procedure in green building construction project. There are < Technical assessment handbook for ecological residence of China> (《中国生态住宅技术评估手册》) and <Evaluation standard for green building> (GB50378) (《绿色建筑评价标准》). After doing some construction cases studies, Huang and Li (Huang, 2006) found that both these two assessment manual are not only being used to evaluate the project, they are also used to guide building construction by builders. Generally speaking, < Technical assessment handbook for ecological residence of China> and <Evaluation standard for green building> (GB50378) are aimed to assess the implementation of green design. Therefore, take them as design principles to guide project will have some drawbacks that common disadvantages in evaluation system will be equally existed in the construction project.

3.2 Green building evaluation criteria in other countries

²¹ Controlling item of <Evaluation standard for green building> (GB50378): design requirements which must achieve for designing green building(China Academy of Building Research, 2006).

²² Optimized item of <Evaluation standard for green building> (GB50378): design requirement which is difficult to achieve for designing green building (China Academy of Building Research, 2006).

Many countries have established their green building assessment systems, but problems still exist. Speaking of China, the research of green building assessment system is still at an early stage, most of the sustainable buildings are demonstrative projects which have not been widely spread. Meanwhile, the mass construction of residential buildings led by the rapid development of the real-estate industry will continually bring pressure to the environment. Sustainable residential development in China is overwhelming.

Green building assessment systems have been issued in different countries with different emphasis. Based on the different development situations, the content of the evaluation is also different. In the next stage of research, a comparative study will be carried out among different sustainable residential dwelling design practices both in China and in other countries. It will discuss the differences in the process of implementation in a residential project, and try to illustrate the problems in the project which is implemented in China.

Assessment system	Year	Country	Object	Content
BREAM	1990	UK	New construction, existing buildings (commercial building, industrial building, residential building, supermarket)	Building management, health and comfort, construction energy consumption, transportation, water consumption, building materials, land use, site, ecological value, pollution
LEED	1995	US	New construction, existing buildings	Site sustainability, water efficiency, energy consumption, materials and resources protection, indoor environmental quality, innovation design and construction technology
Eco profile	1995	Norway	Existing office building, commercial building, residential building	External environment, Resource Internal environment
HK BEAM	1996	Hong Kong	Existing office building, residential building	Site, materials, resource, water resource,

				indoor environmental quality, Innovation design.
GBC	1998	Canada	New construction, renovated buildings	Energy consumption, environmental load, management, indoor environmental quality, quality of service facilities, economics, transportation.
Green building explanation and evaluation handbook of Taiwan	2001	Taiwan	All kinds of buildings	Greening index, assessment index water storage in site, water resource, energy efficiency, CO ₂ decrement, waste decrement, sewage and garbage disposal.
CASBEE	2002	Japan	New construction, existing buildings, buildings for short-term use, renovated buildings, strategy for against Urban Heat Island Effect	Q:Quality of the buildings (indoor environmental quality, service facilities quality, internal environment) L:Environmental load (energy, resources and materials, external environment) Building environment efficiency: Q/L
Evaluation standard for green building (GB/T 50378-2006)	2007	China	New construction, expand buildings (residential district, public building)	Land saving and external environment, energy conservation and energy use, water saving and water resources utilization, material saving and material resources utilization, indoor environmental

				quality and management (residential building), full life cycle performance, (public building)
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Table 3.1 Features of green building assessment system (Zheng, 2012, p. 57)

3.3 Occupants’ attitude on sustainability

The World Wide Fund for Nature (WWF) stated in < Living Planet Report 2012> that, in the past 40 years, the vitality of the earth has fell by 28%, while humans are using the equivalent of 1.5 planet's resources to sustain life. If the current trend of resources consumption cannot be changed, humanity will need two planets to meet their daily needs in 2030. China as the world's most populous country, people's attitudes towards sustainable development will directly determine the success or failure of sustainable development (Protection, 2012, para.3). In addition, the Secretary-General in Hong Kong and China Energy Fund Committee Dr He was invited by UN General Assembly President, and he elaborated culture of sustainable development, and the role of civil society in sustainable development plays. Dr He said that the principles of sustainable development should be integrated into our daily lives, and turned into real action. "It should not be just a slogan, a policy, a goal or a movement, it should be an attitude toward life"(He, 2013, para.5).

Architectural design is ultimately to provide a better living environment for residents. In the current practices of sustainable building projects, the number of new design concepts, energy-saving measures, the use of green building materials are closed to people’s daily life, and continually impacted people’s attitudes towards sustainable houses and sustainable lifestyle. However, in most Chinese cities, sustainable residential construction is still in an experimental stage. After the construction has been completed, continually research, such as the living condition of occupants in the sustainable residential district, and their perception of sustainable design has not been investigated specifically. In this case, combining the in-depth investigation among occupants in the built-up sustainable residential district, while the occupants’ attitude as a dynamic factor is getting more attention in sustainable development, valuable problems will be found to provide more close understanding on the demands of occupants and their expectations on sustainable housing. Possible ideas for sustainable dwelling design practices which developed by close investigation amongst end users of housing product could be more meaningful and practical for the sustainable residential development in place.

3.4 Sustainable dwelling design process and occupants’ attitude on sustainability--- An integrated approach

The sustainable dwelling design process should embody all the above qualities and not compromise between partial achievements of each. It is crucial to reconcile and combine them by way of integration. Nevertheless, the aim that all the efforts and practices need to be pursued is an integrated result. Residential dwelling design is an interactive system, which bears on environmental,

economic, and social issues. For example, occupants' requirements on living quality need to be achieved by considerate design methods, while the limited resources and construction cost are inevitable issues during the design process. Therefore, sustainable development would require not just new techniques but new ways of thinking about social, economic, and environmental goals and how to achieve them.

Achieving long-term sustainability in any city is a difficult task that requires knowledge input and cooperation amongst different stakeholders, which may include urban authorities, designers, and individuals who are the important end-users in the residential dwellings. It needs to be recognized that each group of stakeholders may hold different values and perceptions towards sustainability. Therefore, an integrated approach which combines the research of current residential development outcomes and occupants' attitudes and perceptions in their living experiences in order to find out current problems and develop ideas to achieve more sustainability.

3.5 Green building assessment criteria

Several assessment methods for the green building have been internationally well known, and different assessment tools covered different fields of assessing (Haapio, 2008, p.469). BREEAM is the world's leading sustainability assessment method for master planning projects, infrastructure, and buildings. It addresses a number of lifecycle stages, such as New Construction, Refurbishment, and In-Use. The LEED Green Building Rating System (LEED) is a program that provides third-party verification of green buildings. The LEED rating systems address both a wide variety of buildings types, including commercial buildings, homes, neighborhoods, retail, healthcare, and schools, as well as every phase of the building lifecycle, including design, construction, operations, and maintenance. China's ASGB, developed by researching American LEED, is the assessment method for types of civil construction, such as commercial buildings, residential buildings, offices, hotels (under examination and approval), hospital, exhibition building, schools, and so on. Hong Kong has also promoted green building assessment method. BEAM Society Limited developed HK-BEAM (Building Environmental Assessment Method), the latest version of the assessment tool covered demolition, planning, design, construction, and commissioning of a new building project. The following sub-sections will introduce each assessment methods and to clarify and understand the different system within each assessment method. BREEAM and LEED, as widely recognized green building evaluation systems, have been selected for review in this section to explore issues that are potentially suitable for China.

3.5.1 Assessment methods for residential development

Apart from the research on green building design, assessment methods have enlarged the scope to urban scale. This sub-section mainly introduce three assessment methods which developed for a community, neighborhood, and residential district.

(1) BREEAM

< Building Research Establishment Environmental Assessment Method, BREEAM >, put forward

by BRE (Building Research Establishment) of the UK in 1990, is the first comprehensive green building assessment system, and the first set of green building assessment methods applied to market and management in the world. The evaluation method is designed to provide guidance for green building practices in order to minimize the negative impact of buildings on the global and regional environment. Aiming at the demand of the British market and the development of green buildings, BREEAM's evaluation objects gradually expand from the initial office buildings to other types of buildings. In order to reflect the common progress of knowledge and market changes, as well as the adjustment of regulations and policies, BRE will regularly modify the BREEAM manual of each sub-project.

Different versions of each assessment systems and methods have been updated several times, and also the scale of assessment has been enlarged as well. BREEAM consists of a series of rating systems for a range of building types: offices, homes industrial buildings, supermarkets, courts, datacenters, school buildings, hospitals, buildings for entertainment and leisure activities, prisons, other buildings and mixed use developments, and also for communities. Buildings will be rated and certified on a scale of 'Pass', 'Good', 'Very Good', 'Excellent', and in 2008, the BRE added a fifth category of Outstanding 'Outstanding'. An extensive update of all BREEAM schemes in 2008 resulted in the introduction of mandatory post-construction reviews, minimum standards and innovation credits. International versions of BREEAM were also launched in that year. Another major update in 2011 resulted in the launch of BREEAM New Construction, which is now used to assess and certify all new UK buildings. This revision included the reclassification and consolidation of issues and criteria to further streamline the BREEAM process (Barlow, 2011, pp.1-15).

For a specific design projects, BREEAM evaluation usually starts at the final stage of detailed drawing design. The assessors are required to complete the final assessment based on the design data and results, and the building will be labeling by BRE. If the specific project wants to obtain the higher grade of BRE, BRE will suggest that designers can consider the evaluation methods of BREEAM at the early stage of project design and formulate design strategies accordingly. Of course, the evaluator can also be involved in the design process at the beginning of the design stage and provide reference for the designer. The flexibility of BREEAM's evaluation procedure fully reflects its ability to assist design and decision-making.

Assessment System	Object	Categories
BREEAM 1990 UK	New construction, Existing buildings Include: Communities, Courts, Data-centres, Education, Healthcare, Industrial, Entertainment and leisure, Office, Other buildings and mixed use developments.	Management, Energy, Transport, Water, Materials, Waste, Land Use and Ecology, Pollution, Health and Well Being.

LEED 1998 US	New construction, existing buildings including: operations and maintenance, commercial interiors, core and shell, schools, retail (including new and commercial interiors), healthcare, homes, and neighborhood development.	Sustainable sites, Water efficiency, Energy and atmosphere, Materials and resources, Indoor environmental quality, Innovation design, Regional priority.
HK-BEAM 1996 Hong Kong	“New” and “Existing” building types including: offices, residential, mall, hotel, school, hospital, institutional and mixed complexes centrally air-conditioned, naturally ventilated or mixed mode.	Site, Materials, Resource, Water resource, Indoor environmental quality, Innovation design.
ASGB Assessment Standard for Green building 2006 China (China, 2015)	New construction, extended buildings (residential building, public building)	Land saving and outdoor environment, Energy saving and energy utilization, Water saving and water resources utilization, Material saving and material resources utilization, Indoor environmental quality, Construction management,

Table 3.2 General comparison of green building assessment methods (first version of each assessment methods)

(2) BREEAM for Community

BREEAM Communities is based on the BREEAM methodology. It considers issues that affect sustainability at the earliest stage of the design process for a development. The scheme addresses key environmental, social, and economic sustainability objectives that have an impact on large-scale development projects. BREEAM for communities, awards credits in six categories (BRE, 2012):

- **“Governance (GO):** Promotes community involvement in decisions affecting the design, construction, operation and long-term stewardship of the development.”

- **“Social and economic wellbeing (SE):** Considers societal and economic factors affecting health and wellbeing such as inclusive design, cohesion, adequate housing and access to employment.”
- **“Resources and energy (RE):** Addresses the sustainable use of natural resources and the reduction of carbon emissions.”
- **“Land use and ecology (LE):** Encourages sustainable land use and ecological enhancement”
- **“Transport and movement (TM):** Addresses the design and provision of transport and movement infrastructure to encourage the use of sustainable modes of transport.”
- **“Innovation (Inn):** Recognizes and promotes the adoption of innovative solutions within the overall rating where these are likely to result in environmental, social and/or economic benefit in a way which is not recognized elsewhere in the scheme.”

To avoid negative impacts and design problems during the community development, there are three design steps will be involved in the assessment of sustainability at the master-planning level. Master-planning is an iterative process characterized by developing plans, consulting stakeholders and revising plans. BREEAM for communities will link assessment process with master-planning to make sure that issues are addressed in early design stages (Jiang, Pitts, & Gao, 2016, p. 245).

(3) LEED

The LEED rating systems address a wide variety of buildings types, including separate rating systems for new construction and existing buildings. Those include operations and maintenance, commercial buildings, core and shell, schools, retail (new and commercial interiors), healthcare, homes, neighborhoods developments. Buildings are rated at levels of ‘Certified’, ‘Silver’, ‘Gold’, and ‘Platinum’. A points based system is then used to encourage the implementation of other green and sustainable best practices, and has led to healthier, productive buildings, reduced stress on the environment by encouraging energy and resource-efficient buildings, and savings from increased building value, higher lease rates and decreased utility costs (Floyd & Bilka, 2012, chapter.3).

LEED v4 is the latest version for high-performance green buildings. This version is designed for user experience. The upgrade contents of LEED v4 include: 1) a focus on materials that goes beyond how much is used to get a better understanding of the materials specified for buildings and the effect those components have on human health and the environment; 2) takes a more performance-based approach to indoor environmental quality to aid improved occupant comfort; 3) includes a credit that rewards projects for participating in demand response programs; 4) provides a clearer picture of water efficiency by evaluating total building water use.

(Webpage: <http://www.usgbc.org/leed-v4>, access date: 10/09/2016)

(4) LEED-ND

LEED-ND (LEED for Neighborhood Development) was released in 2010 in the US. It aims to integrate the principles of “smart growth”, urbanism and green building into a nation-wide system for neighborhood design. The LEED-ND system is the collaboration between the United States Green Building Council, the Congress for New Urbanism and the Natural Resources Defense Council. It has been designed with an emphasis on site selection, design, and construction elements that link buildings and infrastructure together. This approach also promotes the relationship between the neighborhood, its landscape, and its local and regional context. It has different focuses from those in BREEAM for Communities that involves more evaluation at the master-planning level. LEED-ND has three environmental categories: smart location and linkage, neighborhood pattern and design, and green infrastructure and buildings. The main contents in each category are listed as follows to provide general understandings:

- **Smart location and Linkage:** “Focuses on site selection that minimized the adverse environmental effects of development across several categories, including transportation, air quality and preservation of environmentally-sensitive lands or ecosystems. Urban sprawl and associated low density segregated housing and commercial uses are discouraged. Preference is given to locations close to existing town and city centres, sites with good transit access, infill sites, previously developed sites and sites adjacent to existing developments. Selection of sites that are within or adjacent to existing development can minimize habitat fragmentation and also help to preserve areas for recreation. Remediation and reclamation of contaminated brownfield sites make them safer and can contribute to a social and economic revitalization of depressed neighborhoods” (Floyd & Bilka, 2012, chapter.3).
- **Neighborhood Pattern and Design:** “Emphasizes the creation of compact, walkable, mixed-used neighborhoods with convenient pedestrian connections to nearby communities. Compact communities provide opportunities to reduce driving and resultant emissions, conserve economic resources, and help reduce the spread of low-density development across a region's landscape. Public spaces, such as parks and plazas, can encourage social interaction and active recreation while helping control storm-water runoff and reducing heat island effects. Community gardens promote social interaction and physical activities while increasing access to fresh, locally grown produce. Communities with diverse housing types permit residents to live closer to their workplaces and allow families to remain in a given neighborhood as their circumstances changes” (Floyd & Bilka, 2012, chapter.3).
- **Green Infrastructure and Buildings:** “Focuses on measures that can reduce the environmental consequences of the construction and operation of buildings and infrastructure. Including certified green buildings in the project is one way to reduce negative environmental effects. Sustainable building practices reduce waste and use energy, water, and materials more efficiently than conventional building practices. Site ecology damage can be minimized during construction by confining construction activities to limited areas and restriction the development footprint” (Floyd & Bilka, 2012, chapter.3).

(5) HK-BEAM

The Building Environmental Assessment Method (HK-BEAM) scheme used in Hong Kong was established in 1996, largely based on the UK Building Research Establishment's BREEAM. There was a significant upgrade to the previous BEAM documents in 2004. Next in response to raised concerns of occupant health in buildings especially after the outbreak of SARS in 2003, the latest HK-BEAM standards have evolved to address hygiene, health and other environmental issues in a more holistic manner (Chu, 2004, pp.979-986). In 2009, in consideration of the critical state of global environmental issues, BEAM was further enhanced to meet higher expectations of the public and community. A rating is issued to a project according to the score achieved after Provisional Assessment (PA) or Final Assessment (FA). Potential outcomes are: 'Platinum', 'Gold', 'Silver', 'Bronze', and 'Unclassified'. As with other schemes, a number of benefits can be achieved by adopting HK-BEAM, such as cost-savings through the more efficient use of energy and resources; increasing occupant satisfaction from healthy and productive accommodation, enhancing corporate profile and marketability to potential building users; providing a tool to improve purchaser choice and information; integrating local and international best practice into new designs; providing increased protection against environmental liability; and establishing a clear direction for continuous improvement and optimized performance (Society, 2004, chapter.1). (Webpage: [http://www.beamsociety.org.hk/files/_4-04%20New%20Buildings%20\(Full%20Version\).pdf](http://www.beamsociety.org.hk/files/_4-04%20New%20Buildings%20(Full%20Version).pdf), access date: 10/09/2016)

The latest version of HK-BEAM is BEAM Plus for new buildings version 1.2 which is launched in the year of 2012. In response to stakeholder engagement, BEAM Plus Version 1.2 was developed which brings together a holistic component of Passive Design for residential development as an alternative method of assessment. BEAM Plus version 1.2 also contains minor amendments from the original guidelines in order to add clarity to the assessment.

(6) ASGB (<绿色建筑评价标准>)

Assessment standard of green building (ASGB, <绿色建筑评价标准>)

In China, green building has been defined through the “*Assessment standard for green building*” (GB50378) as: “constructions that fully considered the requirements of environment protection issues during the process of design, constructing, and the utilization of building materials”. It also requires assessment combining architecture with farming and agriculture, energy, environmental protection, aesthetics, and high-technology construction. It also asks for the design of buildings that not only satisfying functional demands but which also provide healthy and environmentally friendly spaces for living and working. (在全寿命期内, 最大限度地节约资源(节能、节地、节水、节材)、保护环境、减少污染,为人们提供健康、适用和高效的 使用空间,与自然和谐共生的建筑)” (China, 2015). Considering the basic needs of Chinese development, it contains sections related to the following: land preservation and outdoor environment; energy saving and energy utilization; water saving and water resources utilization; materials saving and material resources utilization; indoor environmental quality; construction management; and operation management. Under each theme, there are 'Prerequisite items'; 'General items'; and 'Optimized items'. Prerequisite items are those which must be achieved as a necessity for green building. General items are those which are difficult to achieve and generally require high levels of attainment for each target. Optimized items

denote those which are more difficult to implement in the project and with higher requirements for each target. The latest version of the “*Evaluation standard for green building*” (published in 2014) has changed ‘General items’ into ‘Scoring Items’ and removed ‘Optimized items’, which means higher standards have to be achieved as part of the process in order to get higher scores.

The main contents of new ASGB contains eleven categories (ASGB, 2015), contents in each category are listed as follows (Wang, 2011, part.2.2.3):

- (1) “General principles: address the background, scope of assessment methods, and guiding thoughts of ASGB;”
- (2) “Term: clarify the definitions for numbers of phrases that have mentioned in ASGB;”
- (3) “General regulations: mainly introduce the rules of evaluation and rating standard;”
- (4) “Land conservation and external environment: mainly evaluate the utilization of land, outdoor environment, transport facilities and public facilities, site planning, and ecological conservation of site;”
- (5) “Energy saving and utilization: mainly evaluate performance of building envelope system, heating, ventilation, and air conditioning systems, lights and appliances, and comprehensive utilization of energy resource;”
- (6) “Water saving and utilization: mainly evaluate water saving system, water-saving appliances, and utilization of the water resources;”
- (7) “Material saving and utilization: mainly evaluate material-saving design, and material selecting;”
- (8) “Indoor environmental quality: mainly evaluate indoor sonic and photic environment, indoor view sight, indoor thermal and humidity environment, and indoor air quality;”
- (9) “Construction management: mainly evaluate environmental conservation, resource conservation, and construction process management;”
- (10) “Operations Management: mainly evaluate management system, technical management, and environmental management; “
- (11) “Improvement and innovation: mainly evaluate the improvement and innovation of performance;”

(7) Green ecological residential district construction points and technical guidelines
(**<绿色生态住宅小区建设要点与技术导则>**)

China has a vast territory and a large population. Shortage of natural resources could be threat whilst the residential development has consumed a lot of resources and energy. Furthermore, the environment of build-up residential area and the quality of external and internal environment need to be improved to provide the more comfortable living environment. < Green ecological residential district construction points and technical guidelines> (<绿色生态住宅小区建设要点与技术导则>) provide eight categories contents of planning and building an ecological residential district in China. Categories: energy, water environment, air environment, acoustic and optical environment, thermal environment, green environment, waste disposition and management, and green building materials, have made relevant requirements for building and designing the green residential district.

(1) Energy

This category is to address each project has to attempt optimized scheme for energy use. New and green energy (solar energy, wind power, terrestrial heat, or other renewable energy sources) is encouraged to use as much possible. The aim is better that the use of green energy could achieve 10% of total energy consumption.

(2) Water environment

This category is to address the importance of water quality and water flow in building the green residential project. It requires: that a rainwater collection system reclaimed water system needs to be instituted; and utilization of reclaimed water need to achieve 30% of total water use in the residential district; water-saving appliances which should encourage to use by occupants; and furthermore, direct drinking water system need to be considered in cases.

(3) Air quality

This category is to address the overall air quality environment in green residential districts. Outdoor air quality needs to achieve the secondary standard²³, natural ventilation, bathroom ventilation system and flue gas emission system in the kitchen, have to be the attempt to achieve indoor air quality standard. <Ambient air quality standards> (2016) has made clear clarification that “all residential area, mixed-used of commercial and residential district, cultural district, general industrial zone, and rural area, are classified as second class functional area”, and “all second class area needs to achieve national secondary ambient air quality standard”.

(4) Acoustic and lighting environment

This category is to address methods and standards of reducing noise pollution. Noise-reduction measure needs to be attempted when ambient sound is categorized as intensely annoying to residents.

For concerning light power systems in green residential district, sunshine requirement is the priority; furthermore, natural lighting, and green electricity powerful lighting have been fully encouraged in design;

(5) Thermal environment

This category is to address the requirements for thermal comfort, building energy saving, and environmental protection requirements. Clean energy needs to be adopted for heating, and air conditioning.

(6) Landscape

²³ “<Ambient air quality standards>(《环境空气质量标准》)”, Ambient air quality standards (2016).

This category is to address standards for landscape design in the green residential district. The important indicator is the ratio of green space should be equal or greater than 35% of total land use.

(7) Waste disposal and management

This category is to address two steps of waste disposal and management, which including collection and disposal. The collection of household refuse have to be stored in closed container, and collection efficiency of household refuse need to be achieved 100%. Furthermore, all the waste from this residential district need classified collection and separated into three main parts: dangerous waste, inorganic matters, and organic matter, and the classify efficiency needs to achieve 50%.

(8) Green building materials

This category is to address the requirements of using green building materials; “three R materials” (Reusable Recycled and Renewable materials) is encouraged to use during constructions; products and building materials with the certification of green products could be the first choice of occupants.

As the environmental assessment tools mentioned in the previous sections, they are the driving factors that could have chances to decide the whole process of design and construction for residential project. Different versions of environmental assessment tools have been launched around the world based on different backgrounds and demands, and all the assessment tools are continually improved to provide new knowledge through experiences. There are lots of materials and regulations that could be reference to provide ideas or even guide other projects implemented in the future.

As the development of green building environmental tools, differences among tools need to be discussed and clarified. Apart from the ASGB in China, there are different tools available around the world and could be learnt as references in the residential project. For better understanding the differences among assessment tools and to avoid indiscriminately referencing by designers, grouping the existing green building environmental assessment tools to make clear discussions is necessary. This could strongly address differences, limitations, or even weaknesses for each tool, which could provide valuable information to guide stakeholders who will be evolved in the actual planning and design of the residential project.

Residential planning in China has a closed relationship with the social system, economic development, and the political system. In the first decades of the founding of New China (1950-1960), influenced by Western Europe and the former Soviet union, “neighborhood unit” planning theory gradually changed from “super block” (one super block contains several housing clusters) to a larger residential area which developed around the local primary school (service radius of primary school: less than or equal to 500 meters). From 1949 to the early 1970s, the central government suffered from financial difficulties associated with the very beginning of the foundation of New China, therefore the development strategy of “living after producing (先生产, 后生活)” (ie living

within immediate means) was implemented for a long time. In this period, the development of residential planning hardly changed. From the 1970s-1990s, the social and economic recovery during that time promoted the development of residential planning. The spatial pattern of planning was structured around the following hierarchy “residential areas - residential quarters - housing clusters” which are defined by sizes of inhabitants²⁴. Meanwhile, attempts for alternative pilot residential quarters and small-size comfortable residential quarters in many Chinese cities greatly promoted the development of residential areas. In 1998, a housing reform policy was issued whilst housing became products/commodities available in the market. The change of policy system promoted the competitiveness in the housing market, therefore, residential planning changed as a result of market competition, and brought some improvements to living environments and quality.

By reviewing the transformation of policy which was related to the residential development in China, housing commercialization has been identified as the main factor that has promoted the development of residential design, and to some extent influenced the trend of residential development in the following period. Housing as a product is beginning to show other attributes which are different from the past.

After more than 10 years of development, residential design product modules, including different kinds of creative design concepts, development models, even the way of market operation, have been implemented and well developed in major cities of China. In comparison, due to the residential development being relatively backward in small and medium-sized cities, learning how to improve the development models approach from other projects in major cities as a reference guide could be seen as a way to promote these cities own development style. Furthermore, some successful brand developers have shown their strength to residents, such as through new design concepts and advanced management models, which made their housing products become popular in most of the cities in China. Under this development trend, Liu (L. Liu, 2012, part.3) comments that the phenomenon of standardization of residential development and brand effect of housing products will be copied and transferred to small and medium-sized cities, and it will limit the residential design innovation and also increase the negative effect and more and more Chinese cities will look similar. Moreover, the change of lifestyle also influenced the internal design of houses. For example, main living spaces could be transferred or emphasized by the change of lifestyle. In the traditional courtyard dwelling, the principal room and courtyard were the core living space for residents; and for the dwellings which were built in the 1960s, when people were sharing the kitchen and bathroom, the relatively private bedroom was the principal living space; with the development of commercial housing which the living quality has been improved, living spaces such as kitchens and bathrooms have had more attention compared with the past.

“Popularized, universalized and perceived green building” has been presented as one of the targets of green building development in China. To enhance the perception of green building among residents, green residential planning design and practices have to be discussed with this research

²⁴ <Code for Planning and Design on Urban residential Areas GB 50180—93 > (《城市居住区规划设计规范 GB 50180—93》) (2002): “inhabitant of residential areas will be 30000-50000 residents; inhabitant of residential quarters will be 7000-15000 residents; inhabitant of housing clusters will be 1000-3000 residents;”

project based on China's certain social background, and also narrowed down to the local level. The investigation of residents, how local residents value the housing when they purchase it, what knowledge residents learnt to guide their choices and so on become features worthy of research.

Chapter_4 Methodology

4.1 Research design

This section focused on introducing the methodology of this research project; research methods which have been planned and undertaken within the research project have also been illustrating and explained. In order to provide accurate information to achieve answers for research questions and hypothesis, several research questions have been selected, and appropriate research approach has been explored and discussed.

The study explores the impacts of urban regeneration process on the sustainability of residential district embodied in the procedures of residential planning and design in the city of Kunming, China. That is to say, the depth and focus of the study is not concerned with the overall development of sustainable residential development and impacts, but with exploring the relationships between urban regeneration and the planning and design procedures embodied in the actual residential project. Cherulnik (Cherulnik, 1993, pp.3-13) presents the value of case study: "case studies can establish actual impacts on environment and behavior and offer the benefit of local contexts in terms of climate, local resources, infrastructure etc. They apply theory and research in a reciprocal relationship and can have a proselytizing function by enhancing impact on target audiences. A detailed case study permits adequate descriptions related to setting, defining problems, programming, design process, use and generation of useful behavior theory or research." A good case study should include characteristics of (Remenyi, 2002, p.4): "a. It is a story; b. It draws on multiple sources of evidence. c. Its evidence needs to be based on triangulation of these sources of evidence. d. It seeks to provide meaning in context; e. It shows both an in-depth understanding of the central issues being explored and a broad understanding of related issues and context; f. It has a clear-cut focus on an organization, a situation, or a context. g. It must be reasonably bounded. It should not stretch over too wide a canvas, either temporal or spatial. h. A case study should not require the researcher to become too immersed in the object of the research. i. A case study may draw on either quantitative or qualitative tools or both for either evidence collection and/or analysis, but it will not be exclusively quantitative. j. A case study needs to have a thoroughly articulated protocol." According to Proverbs and Gameson's (Proverbs & Gameson, 2008, chapter.9) advise that the criteria of case study design could help to establish the case study that is suitable for the specific study. The first is the timing of case studies. The first requirement is that there is sufficient time to investigate the case. Two or three visits can be made to the project under construction to get information about the different stages. The second recommendation is the rule for document acquisition related to the case. Those documents could be in the form of drawings, specifications, contractual documentation, minutes of relevant project meetings and policy documents. All documents related to the case need to be collected, unless they are sensitive or confidential. Interviews can be used when case studies involve individuals. Interviews are often considered as one of the most important sources of case study information. These were designed to target people directly involved with the cases concerned and allowed a detailed insight into the subject area. Identifying design goals determines how you will conduct your research. The respondents identified the research focus of data collection technology and its significance to the research. The purpose of

the study determines the nature and method of the investigation. The number of cases could determine the depth of the research findings. The ability to compare similar cases is very important, especially in a complex environment. Cherulnik (1993) also provides a framework for analyzing case studies involving the interrelationship of physical environments and human behavior, this is known as environmental-behavior research (E-B research) (p.13). E-B research is concerned with the decision-making process that shapes physical forms, influencing what people build and how they act in the physical environment. The content of the framework include: (1) Background analysis of setting; (2) Behavioral goals for design plan; (3) Relevant environment-behavior relationships; (4) Specific design/plan elements; (5) Overall design/plan; (6) Post occupancy evaluation (POE); (7) Impact on future design/planning and E-B knowledge. According to those achievements on research methods and guidelines, the overall research methods and methodology have been established.

4.2 Inductive and deductive approach of the project

A case study is descriptive and inductive, and—in a case study, the researcher can read the case from the outside of the insider and discover the grounded theory through reading, observing, and describing a case. A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clear (Yin, 2017, p.18). The overall research attempts to combine the inductive and deductive approaches to improving the project. The deductive approach as reasoning methods usually starts with more general study then develops to a more specific study field. With the background research of planning and design of residential districts in China, relevant documentary, policy environment, typical housing project, will be present and narrow down to raise research questions. Moreover, the inductive approach is required for more detailed and grounded data to detect a more general theoretical level. In this case, case studies and surveys of the project should analyze and improve in this way. Conclusions need to be developed through detailed “bottom-up” analysis and discussions.

To achieved and demonstrated the results of the research project, this study adopts a complementary approach that combines quantitative and qualitative research. Quantitative research will be carried out through a questionnaire survey. Qualitative research includes using methods of document survey, site visits, observation, and interview.

The qualitative research carried out before the quantitative research aimed to gain an overall understanding of study cases, including contextual conditions and the issues involved, and to guide the development of the quantitative questionnaires. The qualitative research involved document surveys, site visits, and observation. Interviews will be conducted after the questionnaire survey. Interviewees will be selected from the questionnaire survey and with contemporary design professionals.

The document survey contains the research of the planning and design documents of each study case. These documents include the master plan and architectural design drawings of each case. Moreover, planning guidance and urban design proposals for each project have been collected and

researched as well. Publicity materials of the projects are also collected to provide information on a different perspective of study cases.

4.3 Boundaries of the study

In this study, two types of residential planning and design processes were investigated as a case study. The first type of residential planning and design process is a residential project with sustainable development as the main construction concept. Shibo Eco-town in Kunming has been considered as the case for this research. Sustainable housing represents the direction of future housing development. The building features of low energy consumption, low emission, and low pollution realize the long-term vitality of the home. In the planning and design of Shibo Eco-town, many eco-residential design technologies have been adopted. For example, all the houses utilize solar, thermal, and bio-energy to maximize energy conservation. Besides, domestic sewage purification, recycling, and utilization, rainwater collection, and utilization are also adopted in the design to achieve the minimum use of resources and maximize the utility of resources. Shibo eco-town was built to provide residents a house that could present environmentally friendly and energy-efficient. In terms of the use of smart technology, the planning and design concept hopes to use technology to provide more convenient services for residents. While protecting the environment to the greatest extent, it can also comprehensively improve the convenience and comfort of life. It took four years from the beginning of 1999 to the final planning and design of the Shibo Eco-town in 2003. In the planning and design of the project, more than 100 experts who are leading by academician Li Daozeng were included, a research group. The whole planning and design process involves related disciplines including botany, landscape ecology, soil geography, site ecology and so on. This is the first time in Kunming that a real estate project can involve such a wide range of disciplines to establish and develop residential planning. This research describes and summarizes the operation of this residential area. Literature collation of the planning and design concept, analysis of the relevant design data and information, and the site visiting are the actions that have been taken with this case study. In addition, the researcher visited other residential projects in Kunming with sustainable development and environmental protection as the main construction concept and recorded and discussed the immediate operation.

The second kind of residential planning and design is about the urban village reconstruction project that implemented in Kunming. The urban village is a unique phenomenon in the process of urbanization in mainland China. Since China's reform and opening up, the process of urbanization in China has shown a trend of "rapid urbanization", but the urbanization of the population has not been faster than that of cities. The expansion of the city brings the surrounding countryside with natural villages into the planning scope of the city. Those natural villages are gradually surrounded by tall buildings in the urban area and become a "village in the city", that is, a formation of an urban village in China. Current problems of the urban village can be summarized in the following aspects: (1) There are many problems in residents and social organizations in urban villages. For example, the population density is too high, the management of public security is severe, the employment and social security of villagers is challenging to solve comprehensively, and the management of urban villages is difficult. (2) There are also many problems in the ownership of land and housing in urban villages. For example, the land use of urban villages has problems such as mixed land ownership,

unbalanced land use structure, unclear property of housing use, lack of effective management methods, generally low construction quality, and some residential buildings have hidden safety problems. (3) In the planning and construction of urban villages, there are problems such as the lack of village planning content, the difficulty in the actual implementation and construction management of the planning, the lack of public service facilities, and the generally poor living environment for villagers. Due to the emergence of these problems, as well as the trend of increasingly severe, large and medium-sized cities in China, such as Beijing, Shanghai, Guangzhou, and Shenzhen, have launched the reconstruction project of urban villages. After years of research and practice, the cities that first started to practice urban village reconstruction gradually formed different urban village reconstruction models. In the middle-sized cities, the transformation of the urban village began under the trend of urbanization. Taihe urban village in Kunming has been selected for in-depth investigation. This is an urban renovation project that entered the reconstruction process in 2010. The investigation and research work run through the planning and design process of this urban village reconstruction project: (1) Field investigation of natural village of Taihe in the early stage of project establishment; (2) In the second stage, the scheming company entered into the planning and design process and provided design suggestions for the overall planning and design; (3) Planning and design process, and project review meeting with government; (4) Construction process of the project; (5) Visit the living environment of the community after the residents move in. In addition, the researchers also visited other urban villages in Kunming that were not involved in the renovation process and recorded and analyzed the life scene and daily situations of the residents in these villages. Discussions and analysis will be provided based on the information collected from these two forms of urban villages.

4.4 Survey and data collection

4.4.1 Site visiting

Site visiting is the process of obtaining the primary source of the research project in various ways according to the investigation plans. In the process of site visiting, primary data, secondary data, and relevant information compiled by others can be well collected. Whether the site visiting is carried out smoothly or not directly affects the correctness of the investigation results. Therefore, it is necessary to attach importance to the planning and operability of site visiting to ensure that as much information as possible can be collected. For the collected data, researchers should first edit and collate these data to ensure the systematizations, integrity, and reliability of the data. Secondly, researchers should make statistics, analysis, and collation of the collected data. Thirdly, research will make a comparative analysis of the data and facts and draws some statistical data that can illustrate the relevant issues until the necessary conclusions are coming out. Hence, planning a site visit, along with the methods of data collection, is important.

In this study, the researcher has carried out three rounds of site visits to two selected cases. During the visiting, the data were collected step by step and will be used for later research. One of the cases in this study is the Shibo Eco-town. It is a gated community with very strict property management. As this residential area is known for its advanced planning and design concept, there is a unique community sharing education centre in the residential area. During the first round of field visits, the

researcher recorded and collated the information that displayed in the education centre in the community. In addition, according to the contents and information displayed in the education centre, the researcher visited and recorded relevant content in the community. Image recording has been done with the following content: the equipment adopted in the residential area, the design of open space, the layout of public service facilities, and the use of public buildings. The second round of visits was led by staff in the community. The staff provides a trip to the researcher to visit and record the use of public buildings in the community and made relevant explanations. The researcher recorded differences between the first and second rounds of site visiting during this process. The third round of visits mainly focused on the public facilities around the community. For example, the use of public transportation, image recording, and data collection are also completed by the researcher in this process. Information collected from three rounds of site visiting provides evidence for discussion and analysis of research topics. With the support of this information, the discussion on the research issues could be carried out, such as the problems encountered in the practical use of residential area design based on the concept of sustainable development, and for what extent which the concept of sustainable design has impacts on the community residents and is it clearly recognized and reached consensus among them.

The second case in this study is the urban village reconstruction project in the Taihe area. Researchers have been following the project's progress since its inception. In the initial stage of the project, the researcher has taken part in the planning and design team of the project to visit the current conditions of urban villages. During the site visiting, the researcher recorded the living conditions, architectural forms, streets, public spaces, and other environmental information of residents in the urban village with images and texts. The second round of visits was carried out when the construction of the compensation housing area was completed. From the beginning of the project, after two years of construction, the compensation housing group was completed. Residents who choose to move back have successfully moved into the newly built houses. The researcher has recorded the situation in images and texts and compared it with the first round of site visiting. The third round of field visits mainly carried out with a more in-depth observation and research on the compensation housing group. The researcher has recorded the community environment and interviewed individual residents, and the condition of public facilities, open space, greening in the community have been recorded and analyzed. The site visiting research can objectively reflect the research object, that is, the residential area, community and residence, and what changes have taken place when they are in contact with the residents. This information can provide objective evidence for the discussion of research questions.

4.4.2 Interview

A detailed interview with a smaller number of designers and occupants will be implemented after the questionnaire survey. Furthermore, ideas which developed from findings through the survey will be tested through second round interview with contemporary design professionals to see the potential to use them.

An interview is one of the most flexible methods for collecting qualitative data from numbers of participants who are willing to be involved in the research project. Information about occupants'

attitudes, requirements, views, living experiences, or feelings, could be recorded and transformed into data which could be used in the analysis. At this stage of research, due to the second case study being incomplete, time will be needed to encourage stakeholders to learn more about the development; and then, the semi-structured interview will be arranged with designers, developers, and potential users. In order to collect more useful data from stakeholders in the residential project, more semi-structured topics will be sent out to relevant participants, it is possible to do comparative studies among stakeholders, and more discussions could be made and expected. An “interview guide” with a list of questions and topics that need to be covered during the conversation and interview, has been attached in the Appendix at the end of the report.

The second case study adopted interview as one of the sources of information collection. The interview lasted three hours and was conducted in a semi-structured format. Before the interview, the researchers also listed major structural problems. These questions can guide the interviewee to provide specific information. The final interview included in the study was an interview with a key person during the urban village renovation project. The interview was planned for October 2018 at the office of the interviewee.

The purpose of this interview is to clarify some questions and details that relevant to the whole process of urban village renovation project, such as:

- How did the villagers participate in the reconstruction of Taihe village?
- Under the guidance of government policies, what is the specific implementation process and situation during the urban village renovation process?
- What is the relationship between villagers and the new living environment after the reconstruction of urban villages?
- How villagers and the new living environment adapt and influence each other?
- Is there any difference in the living conditions of the villagers before and after the reconstruction of the urban village?
- Information about villagers' thoughts and reactions to urban village reconstruction;

The interviewee is a key person who is connecting the original residents with the government, developers, and designers in the whole reconstruction project of the urban village. His job is to collect and disseminate information in real-time between several stakeholders. He grew up in Taihe district and had a deep understanding of local customs, village development, and villagers' conditions. After the interview, all the data were sorted into text files, and the significant themes and events mentioned in the interview were summarized by thematic coding.

4.4.3 Questionnaire

Questionnaire survey is a widely used research method to gather information from numbers of stakeholders by using standardized questions to simplify compilation of data. In this research, occupants' group will be planned into the questionnaire survey. This will take the form of three components. First to develop a questionnaire for pilot study; second, to use outcomes of the pilot study to develop a full questionnaire optimized to get the best responses from a larger group; third

to follow up through detailed interview with a smaller number of designers and occupants, to see what attitudes and influences exist.

The purpose of the questionnaire survey is to collect data about the living experiences and attitudes towards sustainability amongst residents in certain residential district (Eco-town) in Kunming. Eco-town is a residential district which developed in 2005 with firstly attempt of sustainable dwelling design practices in Kunming, and it is also chosen as study cases for this research project. Questionnaire A will be delivered to the occupants who are living in Eco-town. Data about the living experiences, such as current housing situation, facilities around the residential districts, external living environment, and understanding of sustainability after living in Eco-town will be collected and analyzed. Furthermore, same questionnaire will be delivered to occupants who are living in other residential districts in urban built-up area in Kunming. Collected data from two groups will be compared to see the differences and problems existed in different dwelling design practices.

The size of sample for any survey depends on the level of accuracy required balanced against the time and resources available to the researcher. As a doctoral research, time and budget are always limited. The samples in this study are chosen by the researcher based on a case study of the project. As the first attempt of sustainable design practices implemented in Kunming, Eco-town represents a different living experience to residents compared with the past. Furthermore, unlike previous design and operation management mode, new design concept and building construction have been introduced into Eco-town, unpredictable problems might be existed which have the potential to lead to the way to improve the sustainable dwelling design practices in the future in Kunming.

The main purpose of this section will be including:

- To summarize the overall attitudes and opinions on sustainable housing among residents in Kunming city, with the aim of presenting basic understanding of sustainability in general;
- To describe contemporary development situation for sustainable housing in Kunming from the view of local occupants;

Several stakeholders are involved during the implementation of a residential project. According to different positions of each stakeholder, a questionnaire survey will be implemented with a different group of stakeholders. Group 1 which has been done as the pilot survey with random residents from residential districts in Kunming, is for collecting general understanding of green residential district among ordinary residents. Attitude towards sustainable development, green building design, issues of sustainable lifestyle have been collected and analyzed.

The pilot questionnaire survey took a month to contact residents in Kunming who are willing to take part in the project. As a pilot questionnaire survey, several methods have been taken to send out the questionnaire and get the data back. Purpose of doing the pilot study is to get useful feedback from questions and then to make improvements.

Part III_ Case study and conclusion

Chapter_5 Case study and analysis

5.1 Case 1: Shibo Eco-town in Kunming city

This section presents the design and planning details of Shibo Eco-town, a residential area which was designed and planned based upon sustainable concepts in the year 2000 in Kunming. The overall proposal for this development has been described in detail within the original design document. Furthermore, the development of the design concept has been well explained, and the technologies which have been adopted within the project have also been analyzed. Suggestions for future development have been framed at the end of this part of the case study.

Shibo Eco-town is presented here as an example of residential development that takes sustainability as a key design issue along with appropriate design practice. Beginning in 2000, the Natural Resources Defense Council (NRDC) and U.S. Department of Energy worked closely with China's MoST (Ministry of Science and Technology) to develop large scale demonstration projects for green building in China. One of these projects is in the southern city of Kunming, Yunnan by the UK-based designers INTEGER.

5.1.1 Master planning

Situated in the southwest of China, Kunming is a historical city with great potential for development. It is located on the northern side of the Dian Lake, which is in the central part of Yunnan province, and it is surrounded by hills on three sides and by water on the fourth side. Kunming is famous for its gentle climate, which is not very hot in summer and not too cold in winter. The annual average temperature of Kunming is around 15.1°C, and reputed as the 'spring city' and 'flower metropolis'. Kunming is a tourist city that bears little relationship to the cycle of the seasons. However, there are many challenges that the city has had to face during rapid urban development. Its geomorphic types are varied: up to 85% of the city area is classified as a mountainous region, 13% urban flatlands, and 2% natural water systems. Limited by natural resources and environment, sustainable land use has to be addressed: for example, in future development, mountains and hills (as the dominant terrain of the city) need to be considered as development choices. Furthermore, urbanization of Kunming city is less well supported than in other Chinese cities due to a relative lack of industrial development. This is one of the reasons leading to the overload of urban functions in the central city. Moreover, the urban water environment is one of the important considerations of sustainable urban development. Water-intake, water supply, water drainage, and water resources renewal, are significant challenges to meet the present needs without compromising the future. It is the water environment in Kunming that determines the scale of the possible urban economic development and sustains the population.

By considering the natural environment and sustainable development, new approaches have been explored in Kunming. Shibo Eco-town has been one of the examples of adopting sustainable design

concepts that match with local conditions.

The Shibo Eco-town is located on the east of Kunming city. Hills are the dominant terrain, which makes the area distinctive with natural landscape features different to the built-up city centre. The site covers a total area of 255.7 ha. The planned area for the project was distributed across three surrounding areas. The total construction area of Shibo Eco-town is about 460,000 m², combining eight independent districts. Plot ratios of construction in phase one development were set between 0.3-0.4. The whole project of Shibo Eco-town includes the eight neighborhood units, (with housing on hilly areas), sports centre, golf course, commercial centre, exhibition hall of Expo INTEGER (UK-based company), and space for Government funded projects, such as International Conference Centre and the State Guest House. The first phase development of Shibo Eco-town has been fully completed; other parts of the site are still under construction.

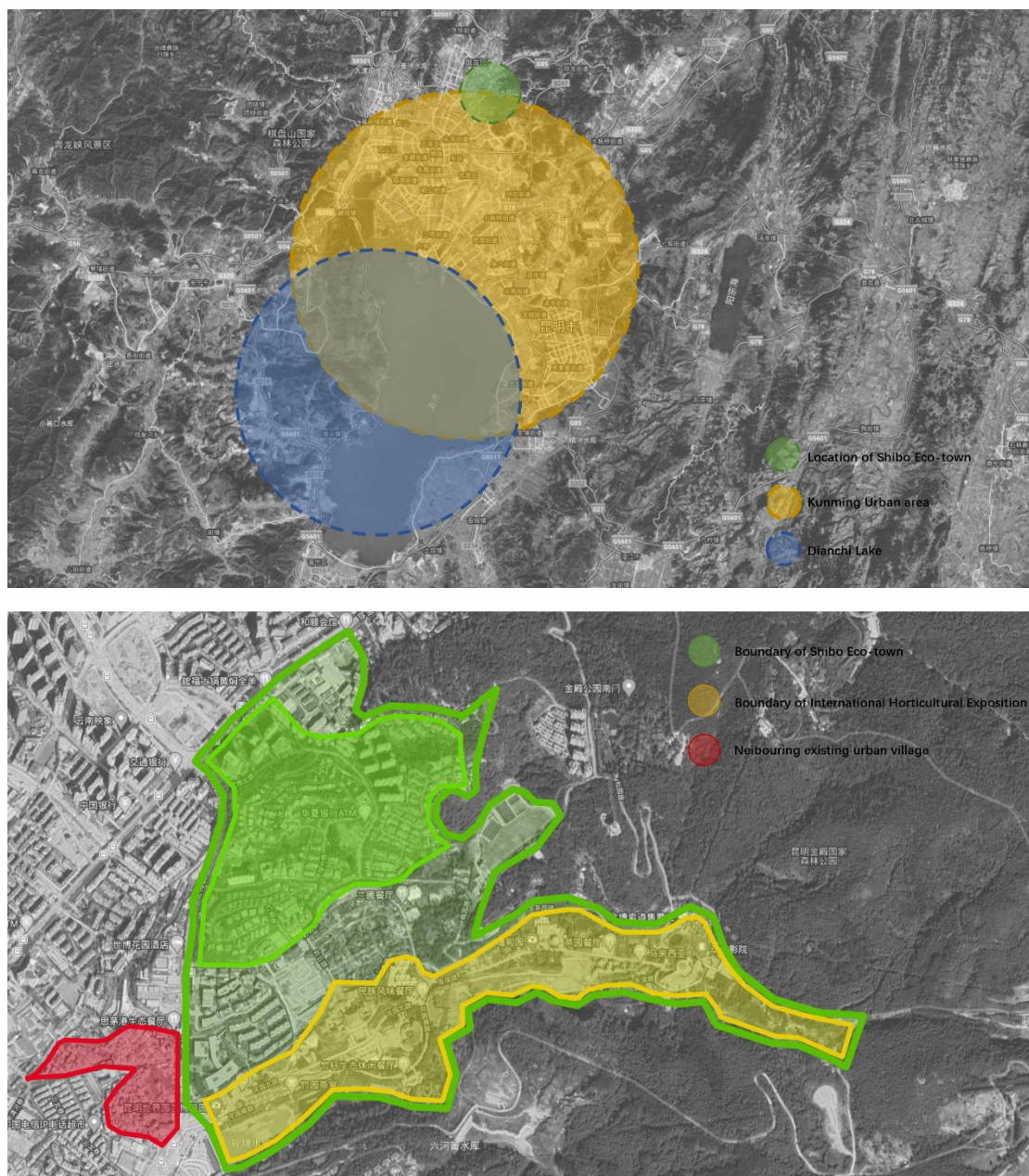


Figure 5.1: Development area of Shibo Eco-town, boundary of World Expo site of Kunming,

condition of adjacent plot, and the location of Shibo Eco-town within the map of Kunming (Jiang, 2020)²⁵

The identification of the project boundaries in figure 5.1 is based on the authors' access to project materials and on-site visits.

Seven research teams from different disciplines were involved in the primary studies for the project. The research fields included: geographic environment, architecture and urban planning, housing market demand, community management, evaluation of the geological environment, and analysis of policy and profit; encompassing a wide range of research on local conditions. Meanwhile, on the basis of previous research, "Key point of healthy residential construction technology" (<健康住宅建设技术要点>, 2004), "Key points and technical guidance of green ecological residential district construction" (<绿色生态住宅小区建设要点与技术导则(试行)>, 2001), and LEED (USGBC's Leadership in Energy and Environmental Design) Rating System have been introduced in as main design references to guide the design and construction of the project. Cooperation between SWA (Design Institute of Landscape Architecture, Planning and Urban Design) and UKbased green building design agency INTEGER enabled comprehensive planning of Shibo Eco-town to be developed.

5.1.2 Concept development

After discussions among stakeholders and researchers, several design concepts were generated, and one chosen to be finalized as a design proposal for Shibo Eco-town. The design proposal covered five areas of planning for the residential area, which could provide more sustainable lifestyles for residents. For the whole residential area, Shibo Eco-town was considered as an open area that could establish good connections among neighborhoods and with people from other residential areas around it. For neighborhoods within the Shibo Eco-town, living facilities were an important issue and were well-considered in different areas. Living resources, information resources, and energy supply have been designed to provide for a good quality of life for residents. Waste recycling, sewage treatment, and air cleaning systems have been introduced into the residential area along with Medical facilities. Earthquake resistant design has also been used to ensure a safe living environment. Further, Shibo Eco-town has been designed as an integrated community that generated various urban functions to include tourism facilities, a research centre, educational facilities, a conference centre, a sports centre, eco-homes, and other municipal facilities. To enhance the natural environment in Shibo Eco-town, the design proposal emphasized the combined consideration of the local climate and landscape in order to provide a good living environment for residents and also meet the needs of other species that inhabit there. For instance, the natural water system, the natural mountain landscape, and the forest on site have each been well protected to avoid destroying the natural habitat for other species.

"Long-lasting residential dwelling" is a slogan that delivers the message to residents that the

²⁵ Source of satellite map: downloaded from web of <http://www.cits2.com/weixingditu/kunming.html>. Drawings was finished by Wen Jiang according the content of project.

dwellings have been designed using local natural resources for sustainability. To achieve this aim, building materials with less embodied energy have been promoted in the project, and ways of recycling and reusing the available resources also have been well considered based on local conditions. Furthermore, solar energy as the main renewable energy source in Kunming has been well-developed in this project.

A concept of "self-renewal" has also been set to improve and renew facilities in time to make sure of longer term continued use and occupation. To provide alternative ways for residents to travel, a transport system was designed to encourage residents to use public transport, walk or cycle; and to regulate the use of private vehicles. An efficient management system can ensure the whole community is running well. The design proposal for Shibo Eco-town requested an optimized management system which could respond to demands from residents in good time. The management system is still committed to maintain a normal order for residents to create a community with a strong sense of belonging. Furthermore, community regulations set up a number of rules for residents (for example: residents cannot cut trees or other plants, hunt or kill animals, discharge sewage or waste, and so on). Green education has also been considered, for example, how to strengthen residents' environmental consciousness, how to encourage residents to use green building materials, and how to deliver a basic understandings of recycling waste.

The whole design proposal covers different study fields of constructing in a sustainable residential area. Starting from the planning theme through the detailed living facilities that were implemented in the end, Shibo Eco-town was seen as a cutting-edge approach that explored ways to create a vibrant residential area with more consideration for sustainability. The design proposal generated different methodologies that could enhance the level of sustainability in a residential area; however, methods that could implement intangible concepts more tangibly were not well-considered at the planning stage. Therefore, after residents have moved into the community, a number of original design concepts have lost their meaning. This is the design understanding gap that needs to be filled and requires further in-depth and empirical research on understanding the links.

5.1.3 Energy-efficient design and technology

As a pioneer project of the "Green residential area" approach in Kunming, several intelligent, green and energy-efficient building technologies have been explored and implemented. One of the principal features of this project is the site plan strategy. In order to ensure there will be fewer damages caused by construction on site, the building land-coverage proportion has been controlled within 10%. This means there will be more Greenland sustained on the site, and the natural water system has been preserved to some extent. Furthermore, there are five drainage channels for collecting rainwater for recycling and utilization. Moreover, water seepage paving stones have been used for out-door walking paths that can sustain the rainwater within site and provide more water for irrigation. After being filtered and collected, rainwater can be used for plants or stored in a reservoir. Figure 5.2 shows the location of reclaimed wastewater treatment systems of Shibo Eco-town (phase 1) and is based on-site visits by the author and information from the Design Institute.



Figure 5.2 Distribution of reclaimed wastewater treatment system in Expo Ecotown in first phase of development (using data from Kunming 2005) (Left)

Figure 5.3 Redesign the natural water system on site (Jiang 2007) (Right)



Figure 5.4 Permeable pavement design in Shibo Eco-town (Jiang 2007)

Each residential dwelling, including those buildings on hillsides, is orientated to face south to gain as much as natural light and heat as possible. Traditional means of ventilation in dwellings have been used in order to reduce the extra energy consumption for mechanical cooling and ventilation systems. Water-saving faucets, showerheads, and toilet tanks have been used. Furthermore, domestic sewage can be recycled through residential wastewater treatment systems, which have been installed in each house. Kunming is rich in solar energy resources, and in Shibo Eco-town, solar panels are mounted on the south-facing roofs to heat water for everyday use. All the residential dwellings have Low-E glass windows installed to reduce energy use and CO₂ emissions.



Figure 5.5 Solar energy ground lights and solar heat-collecting panel on the roof (Jiang 2007)

5.1.4 Discussion

From master-planning to detailed housing design, Shibo Eco-town as a pioneer project in Kunming has explored and has practiced cutting-edge designs and technologies. New approaches and technologies brought together development of sustainable residential designs, yet also led to higher cost at the initial construction stage. The design concepts and green products have verified the development of sustainable design in residential dwellings, but the impacts on residents in and around Shibo Eco-town in the long-term still needs further research. For instance, design concepts and management strategies identified Eco-town as a project to demonstrate sustainable design to the general public. It has also been considered as an area that aims to establish good connections among neighbourhood and also with other residential areas around it. But as an expensive high-end development, it has already been isolated due to residents ability to afford to live there; by contrast, residential districts around the Shibo Eco-town have accumulated residents from different social groups. The management strategy for the Shibo Eco-town is to ensure the living environment to be more safe, quiet and comfortable. As a result "good connections" with other residential areas is hard to achieve. Furthermore, as a demonstration project with educational functions, easy access for other residents of the city to visit the community is important in order to disseminate knowledge and to share the well preserved natural environment. But the gated community makes it difficult for others to visit the place. Overall, Shibo Eco-town has demonstrated possible ways for residential districts to be designed and used more sustainable in Kunming. But more detailed research and observation are needed to improve intangible design concepts, which means not only the designer conceives what the residential district will be like, but also the end users also know what the residential district should be like.

5.1.5 Challenges and successes

Arising from the post-development phase of Expo 99' Kunming, Shibo Eco-town is a new attempt for residential development in Kunming. It is different from other residential projects implemented in Kunming; the project received a lot of attention and support from government. The project has put great effort into integrating design resources and establishing connections among different disciplines. The new approaches to urban development, adopting hilly and mountainous areas in Kunming, have been implemented with the manner of sustainability. In 2000 a research team to consider post-development of Expo 99' Kunming was established and for several years examined natural resources and development strategies for land around Expo 99' . The crossover research among different disciplines provided detailed information on site, and has also done much to support decision-making during the later design processes. But there are also challenges associated with this project. As the first demo-project for green residential development implemented in Kunming, providing the environmental-friendly living space is not the only target. More significantly, this project should have provided opportunities to spread knowledge and information that could improve consciousness of sustainability in residents' daily life. For example, Shibo eco-town has well connected inner residential neighbor-hood, but the whole project basically exists as a huge "gated" residential district. Good design concept and green lifestyle cannot therefore be shared easily among

the wider group of city residents. Significantly, a high profile demo project such as this should not be developed for an isolated community.

5.1.6 Similar cases implemented in Kunming for further development

Since the Shibo Eco-town has been well established and constructed, the construction and development of some individual buildings and residential areas with clear sustainable themes are also showing their positivity. These “branded” residential compounds are defined as that residential project which developed with eye-catching ways. The first case is InnHouse, Yinshe, a small scale hotel situated in Shibo-Eco town ²⁶ (Hao,2012,p.58-69). It aims to provide architectural spaces which are combined with natural environments in Shibo-Eco town. In addition, it also provides a chance for residents to experience the design concept, which is focused on sustainable design. The second case is Yunling Neighbourhood which is located in the south of Shibo Eco-city. Being attached with the huge garden of Kunming EXPO’99²⁷, this area could be seen as the only large scale garden in the urban built-up area in Kunming. In addition, it also introduced the sustainable technologies to design the entire residential area. The third case in this section is Xingyao Water Town. It is located nearby Kunming International Airport which is reputed as the fourth largest airport in China. Xingyao Water Town has been considered as a local Tourism real estate which contains different kinds of formats, such as hotel, residential dwelling, entertainment facilities, and also a large scale of natural landscape.

The primary purpose of organizing three cases together will be that three of them are built within the same construction period (2005-till now); to some extent, they are sharing a similar background. Moreover, three cases are adopting the concept of sustainability but presenting it in different ways. At last but not least, three cases have introduced a relatively new concept into the design action. Therefore, they all are sharing similarities and presenting them in different ways. The comparative study could be implemented and will focus on the design concept and methods, social issues attached by the development of each case, current policy of Green House in China, and also the future research area, social and housing segregation.

5.1.6.1 InnHouse, Yinshe

InnHouse, Yinshe, a hotel which contains 17 different guest rooms was designed as a building which is titled by “being a part of nature” and “village senses” (Hao, 2012, p.59). Taking the strength of being around by natural environment, introducing “view of countryside” and “garden planning” (Figure 5.6) (Hao, 2012, p.60) into the landscape design of InnHouse was deemed to be the most natural way to form a “Green net” in Shibo Eco-city. Furthermore, different wild flowers, trees,

²⁶ Shibo-Eco Town: is located besides the World Expo 99’ Kunming. It developed with the concept of sustainable development, and taken Green Home as design criterion. It also is the flag project on the concept of sustainability which has firstly built in Kunming. In: Hao, L. (2009). The creative design of Shibo-Inn House. *Green Architecture*.

²⁷ Kunming EXPO’99: The 1999 World Horticultural Exposition was an A1 category international garden festival as recognised by the International Association of Horticultural Producers in Kunming, China. The theme of the exposition was "Man and Nature, marching into the 21st century."

gardens, and even local fruit and vegetables have been plant around the InnHouse; and multiple-scale of outdoor space, sharing gardens, semi-private courtyard with green roof and other leisure facilities were located in Shibo Eco-city with walking distance to InnHouse. Architectural form vocabulary has been well considered by architects, which is standing out more individual than other projects in Kunming. Different from landscape design in other residential area where was named as “something relative to western”, this project has broken away from certain style which has been popular in Kunming. These supporting facilities and landscape for a residential area could be commented by “luxury” due to the huge contrast with other residential real estates in Kunming.

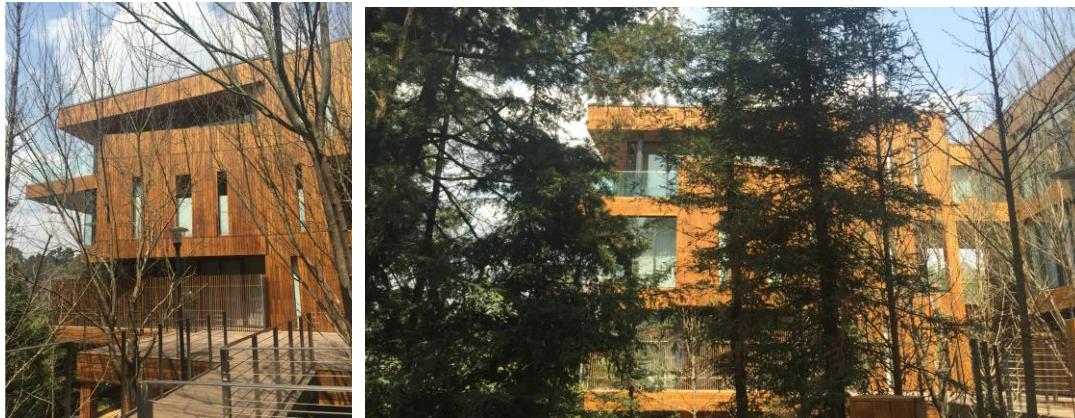


Figure. 5.6 “Being a part of nature” and “village senses” (Photo by Jiang, 2016)

Following the design concept of “the possibility of adapting local climate and using the natural resources” (Hao, 2012, p.60), a building which is “being affected by environment” (Hao, 2012, p.59) presented “nature” in the layout design with contemporary architectural vocabulary (Figure 5.6). InnHouse adopted a cedar batten plate as the primary material of architectural skin, which attempted to achieve the “communication between buildings and nature” by the designer. In addition, in order to explore the way of “harmony between human and nature”, transparent floor-to-ceiling window and semi-closed passageway have been designed to create chances for users to be with nature when they experienced here. Furthermore, getting involved with the environment has been considered in the design of the indoor layout. Views of the surrounding natural environment could “cross” the indoor space due to the flexible using of walls and non-closed indoor space. Terraces and transparent floor-to-ceiling windows, which set to face towards the south, could get natural sunlight as much as possible, which made good use of the long duration of local sunlight.

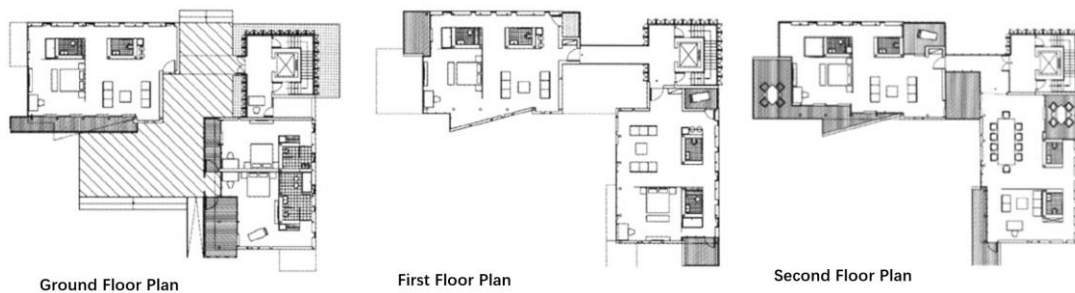


Figure. 5.7 Architectural layout of one unite (ArchDaily, published in 2015)

All the buildings in Shibo Eco-city were required natural sunlight and ventilation. Corresponding design of lighting and ventilation design also can be seen in this project. For making full use of local solar energy resource, InnHouse outfitted with solar collector panel to provide power source for everyday use. Furthermore, to maintain the traditional way of building technology and use the mild climate which characterized by cool in summer and warm in winter, all the rooms were fully considered the possibility of natural ventilation. It can reduce the cost of air conditioning and refrigeration, and also make closely interlinked between internal spaces and external spaces.

After the completion of the project, many relevant media reported a lot information about the architectural planning and design concept of InnHouse. When the client entrusted this task, he wanted to build a small hostel in a natural environment, open to a limited number of guests. During the process of communication and design, the design team received various types of feedback from the clients, such as: "is this a hotel or not?", "if the building is separated, it will be rainy" or "let's have more rooms". The owner's feedback is real, from the perspective of the project operator. But these questions also reminded the design team that the concept of sustainability expressed at the architectural and community levels was bound to face such doubts at first. People are used to accepting the improvement of quality of life brought by high technology, but they tend to ignore smart methods can also solve most problems. The example of post-industrial development in the UK or other countries shows that technology is not the fundamental solution to all the problem. All the technologies could be shown to the public, but what people want to see is how these technologies can lead to a new way of life in a house. Because the house is a place where people share their living experiences, sustainable architecture should have more life value and social significance.

5.1.6.2 Yunling neighbourhood

Yunling Neighbourhood located in the south area of Shibo Eco-city. The huge garden of Kunming EXPO'99 is situated in the northwest of this real estate, and it is also surrounded by planted forest in the east, and southeast side. The overall area of this real estate reached 70390 m², and total floor area is 57690 m². It considered to fit in some popular housing type, such as joint-row villa, two family houses, and small-sized apartment which the area is usually less than 90 m².

The whole real estate is surrounded by forestland. Considering the combination of buildings and existing natural environment, building height of joint-row villa, two family houses has been controlled under the height of existing trees. This careful thought was made to achieve the idea of "sustain the natural beauty of the original" (Ma, Shi, 2011, p.43) by designers. Furthermore, to creating connections between users and natural environment, and also considering of security issues in residential area, green pedestrian has been designed to ensure accessibility with experience of natural view from entrance of residential area to their own house; in addition, in the premise to meet the Fire Code, roads for cars on the ground have been minimized, and underground parking system provided 144 spaces for local residents.

Following the concept of the Shibo Eco-city, new building technologies, materials, and new energy resources have been adopted into the construction process. In addition, to make full use of solar energy resource which is the signature natural resource of Kunming, residential buildings in Yunling

Neighbourhood introduced solar hot water system and solar streetlight system for reducing the energy use in this residential area.

5.1.6.3 Xingyao Water Town

Located nearby Kunming International Airport which reputed as the fourth largest airport in China, Xingyao Water Town developed as a Tourism estate which is a commercial estate complex contains estate development, holiday, living, amusement, recreation and so on. The whole project covered 433 hectares which contains building floor area of 530,000 square meters. In addition, 420,000 square meters of building areas were designed for residential structure, and the rest 110,000 square meters were for public structure which comprised hotel, Golf Associations, office building, shopping street, conference centre, fishing club, Riding Clubs, sports centre and staff lodging quarters. Apart from organizing diverse business format within its development as attractive features for their consumers, various types and styles were applied with the design of villas in this site. The whole residential area is surrounded by green lake-wetland park, which improve the value of the property in this site. Furthermore, benefit from this fine natural environmental condition, cooperated with foreign enterprise in health care industry has been considered into future development.

Limited by the construct condition of the site, occupation of practicable land for residential development is littleness, which means residential land for building villas have been squeezed into tight area and resulted as high building density and less privacy. In order to introduce new concept and be differ from other real estate in Kunming, various style and architectural construction have been taken into villas' design. Featured of different colour with mixed architectural style, design method of villas was prominent; in addition, the material of building structure of villas were entirely imported from Canada, which shaped heterogeneous architectural type among real estates in Kunming.





Figure 5.8 Mixed style architecture in Xingyao Watertown, constructing process (Photo by Jiang, 2012)

Developed with different purposes compared with common real estates in Kunming, supplying enough houses to accommodate residents was no longer the target on this project. In order to balance the investment and profits of housing products, incidental commercial form and unusual operating procedures have been introduced into the development concept to sustain the vitality of this real estate. Depended on inherent geography advantage and introduced relatively new incidental commercial form (e.g. the first Horse Riding Clubs, high standard sports centre), these extra values labeled with “luxury” and “high expenditure” defined itself with a certain level. It could be an impactful marketing method to get consumers’ attention. On the other hand, it selected its certain client base and also isolated this real estate in the adjacent area.

Apart from providing various choices of being different from the lifestyle in the city, RCI (Resort Condominiums International), which originated with the concept of exchanging time-interval of vocation, was introduced by Xingyao Water Town to provide life experience in different places could be started from here. As the first commercial real estate project which introduced RCI in

Kunming, it does create chances to flourish the local tourist industry. On the other hand, instead of traditional cultural context, mixed-style architectural and landscape design are desalting the cultural context which supposed to be existed within the development of the tourist industry.

5.1.7 Random resident's questionnaire survey from residential districts in Kunming

Reasons for selecting random residents as one of the targeted respondent populations in Kunming are as follows: 1) to understand general living conditions and the way of perceptions among residents in normal residential areas in Kunming; 2) to partly investigate how residents have come to understand green residential design in recent years; 3) to understand how residents experienced housing comfort at home; 4) to understand how residents perceive the planning and detailed design of their residential quarters; 5) and to investigate how residents valued their house and residential area within which they live.

5.1.7.1 Discussions and conclusion

The questionnaire has been divided into two parts. Part one investigated the basic information of respondents, such as gender, age group, educational level and living area in Kunming.

Part two of this survey put more focuses on investigating the current living condition of residents in Kunming. Questions in this part have involved many aspects, such as transport infrastructure, the convenience of daily life, living environment, educational infrastructure, residential planning and design, residents' requests on housing, green design, and sustainable issues, and so on. Each question can reflect the residents' immediate feelings towards the living environment. Analysis and discussion are presented in the following paragraphs.

(1) How do you feel about your living experience in your current residential area?

Part 2 investigating the current living condition of residents in Kunming, and the results of the survey of part 2 are presented in the following figures. Apart from the design problems during the survey, several issues could be summarized through the results of survey. This part of survey intended to understand the general level of life-satisfaction among residents. According to the data in the chart, "generally satisfied" is almost the most common answer for each question. It represents that the current living conditions could meet the most of living standards among residents. However, any unsatisfactory parts in residents' daily life are stands out in contrasting. Such as, the number of requirements, quiet living environment, educational facilities, community renaissance, the safety facilities in residential area, and property management, can be seen as the problems which need improvement in the future development. Those issue could be put into practices: improving the performance of sound insulation during the design and construction stage; considering the optimized service radius of educational facilities to make more efficient use in the daily life at the planning stage of residential district; culture of community reflects the problem on how to design the public space in a residential district to create more chance for residents getting know each other; residential district management, the safety issues of the whole community could be the top priority at the design and planning stage.

In addition, some public facilities can also make residents show more satisfaction in their daily life. As for the reply to the traffic facilities, in recent years, the city of Kunming has implemented a large number of bike-sharing programs, and even recently there has been a sharing of electric vehicles. These plans provide residents with more convenient transportation and more options. Due to the density of parking stations for Shared bikes, they can be seen almost everywhere. Therefore, no matter what area residents live in, they can easily transfer to different types of public transportation and connect through Shared bikes.

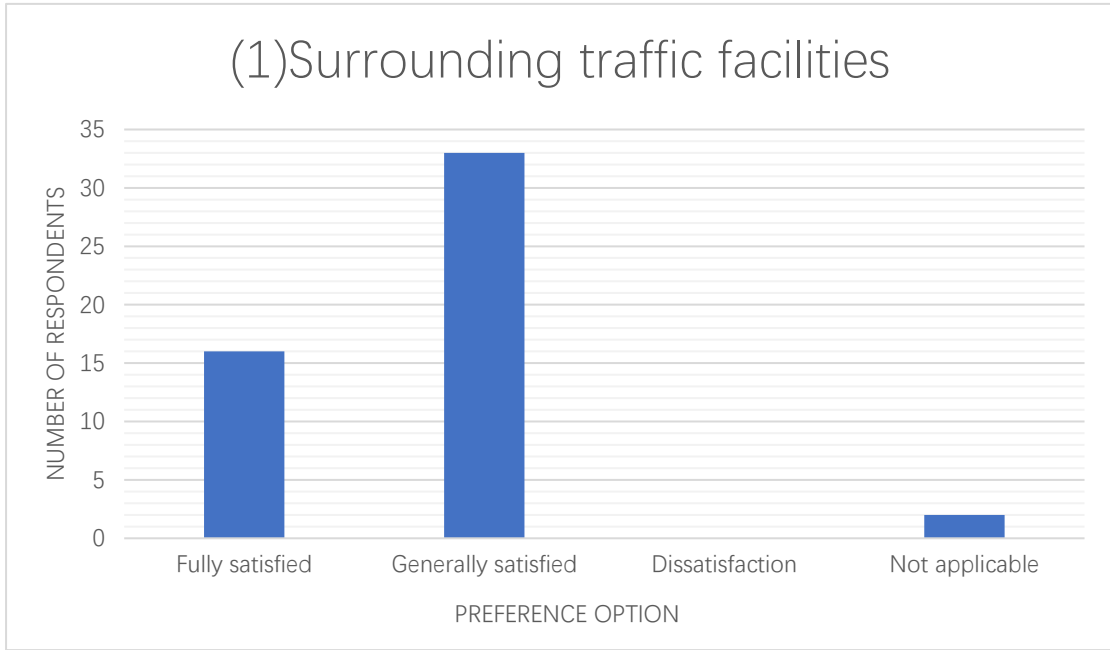
Residents who rely on online shopping are more satisfied with the convenience of shopping. Relying on the continuous development of new retail formats, most residential areas in Kunming have covered the service of supermarket delivery. In addition, almost every residential area, whether the new residential area, or the old residential area, self-service express equipment is the standard configuration of every residential area.

On the issue of community culture, this seems to be a problem that has been gradually apparent since the development of commercial housing in China. Residential groups are no longer held together by specific residents, and the old structures are reorganized and broken down. Neighborhood relationships are no longer as close as they used to be in new neighborhoods. Young couples work outside the home during the day, and older people who stay at home may have a rest in public Spaces in their neighborhoods. However, due to the lack of specific functions in the design of public space, the newly formed neighborhood relationship is not linked strongly.

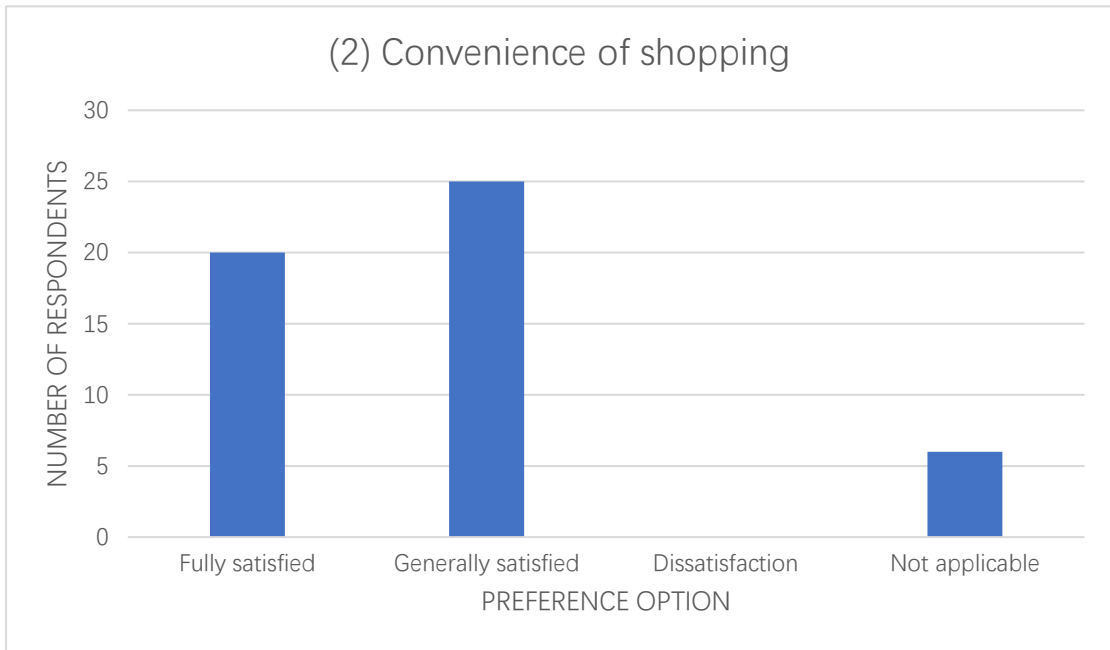
Most residents also show enthusiasm for the satisfaction of the building form. Therefore, it can be seen that the architectural form and the overall image of the residential area are the important factors influencing residents' evaluation of the residential area. In addition, for the residential security facilities, the majority of residents also made positive comments on the issue. Because most of the residential areas are gated communities, so the security of residential areas can basically meet the expectations of residents.

The response of residents shows that residents' lifestyles can be flexibly adjusted according to the new facilities and services provided by the community, with a high degree of adaptation. Although gated communities are more of an expression of isolation and information barrier from surrounding communities, in the eyes of most residents, such a form can also bring them a safer psychological feeling.

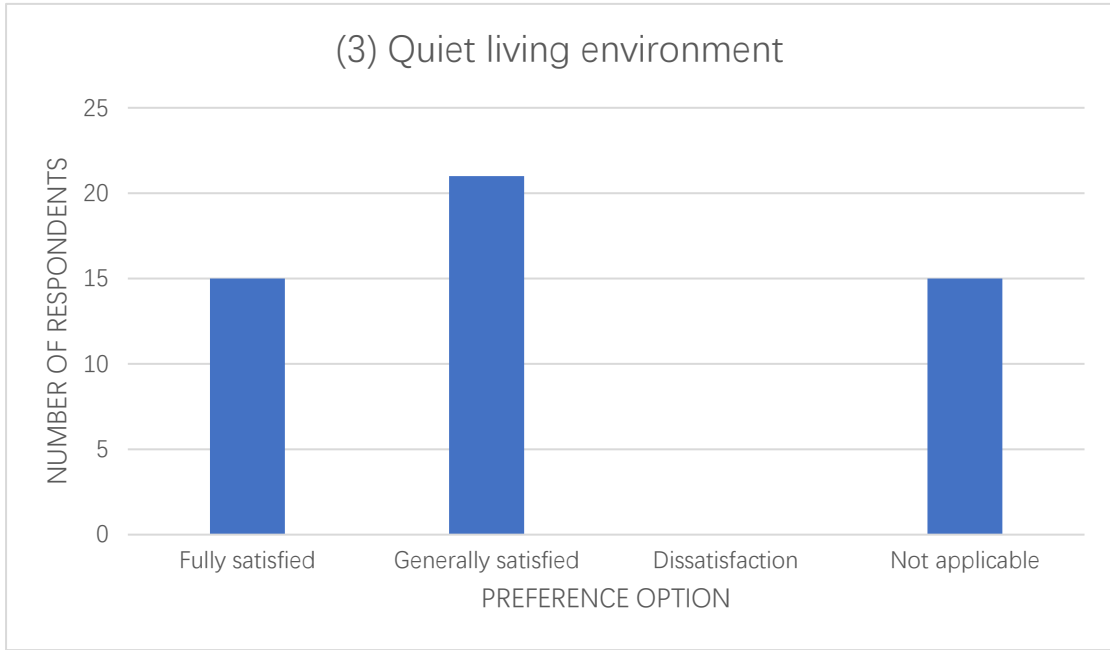
(1) Surrounding traffic facilities



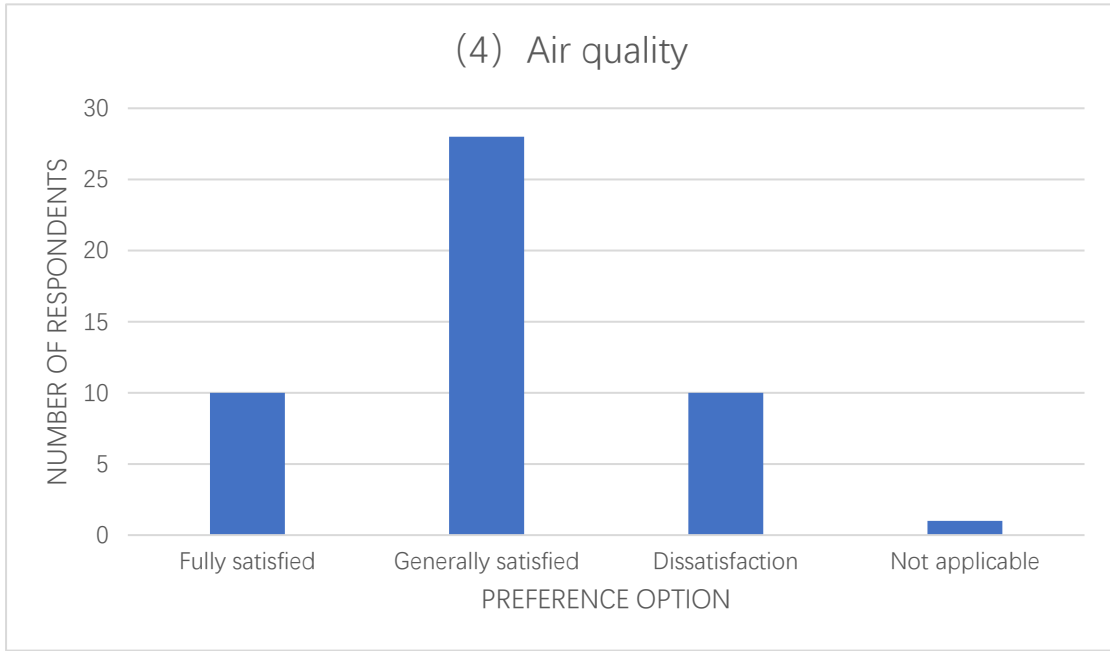
(2) Convenience of shopping



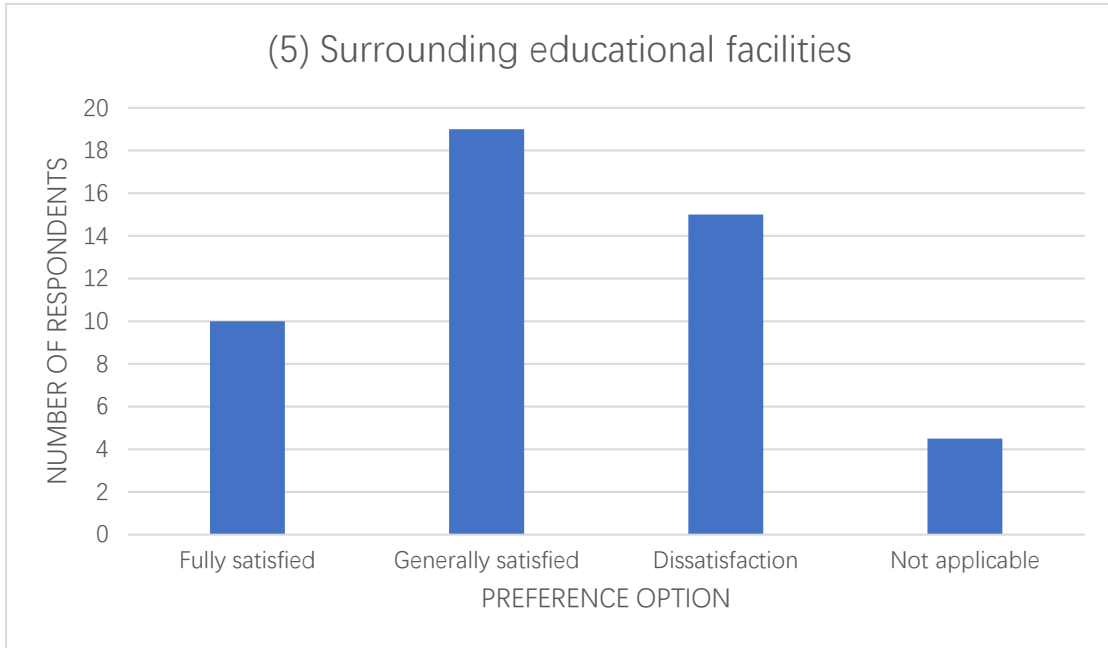
(3) Quiet living environment



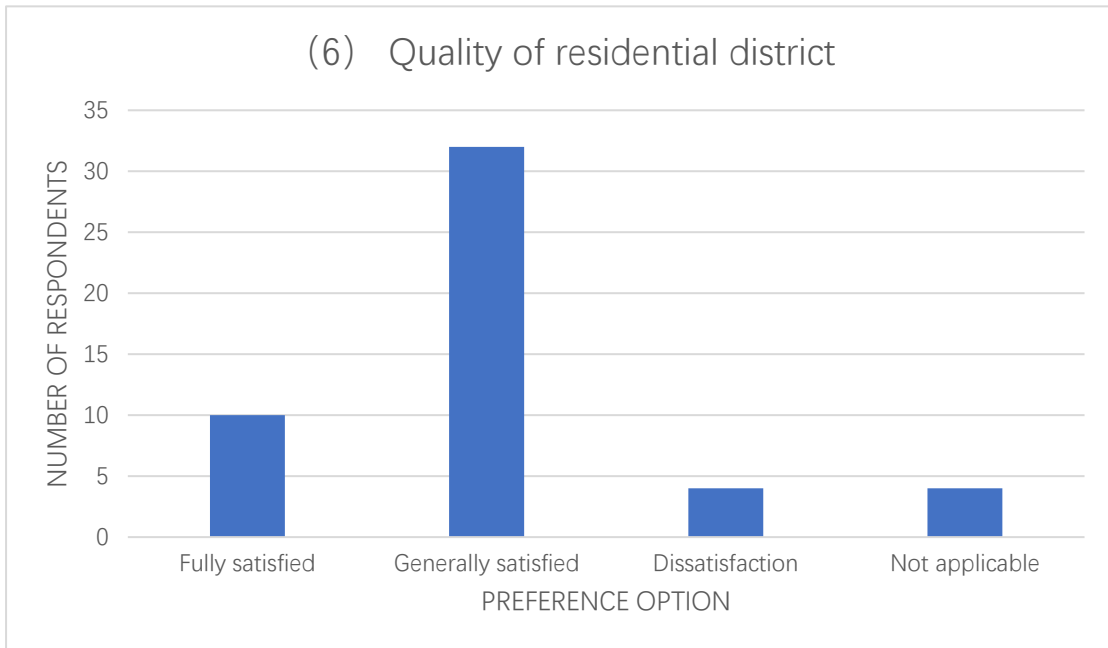
(4) Air quality



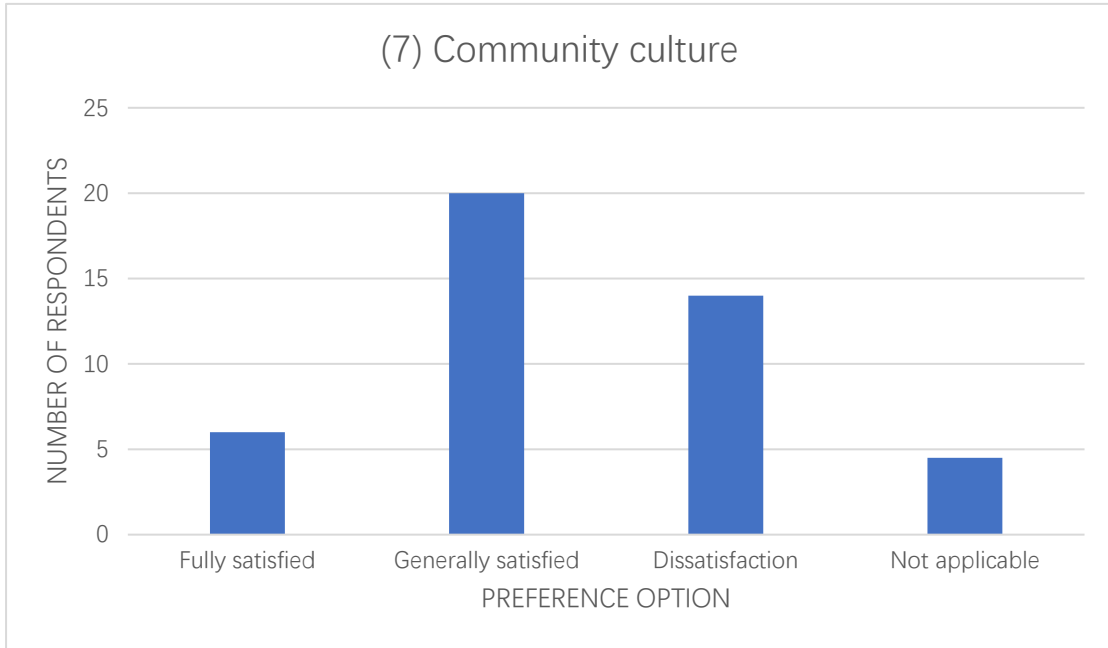
(5) Surrounding educational facilities



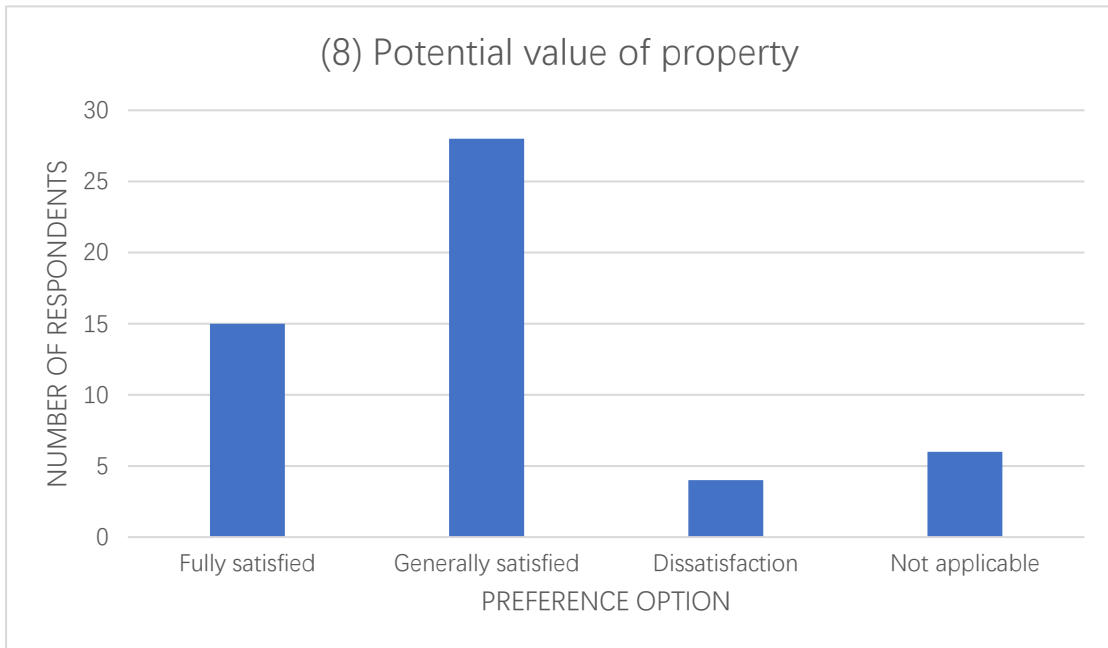
(6) Quality of residential districts



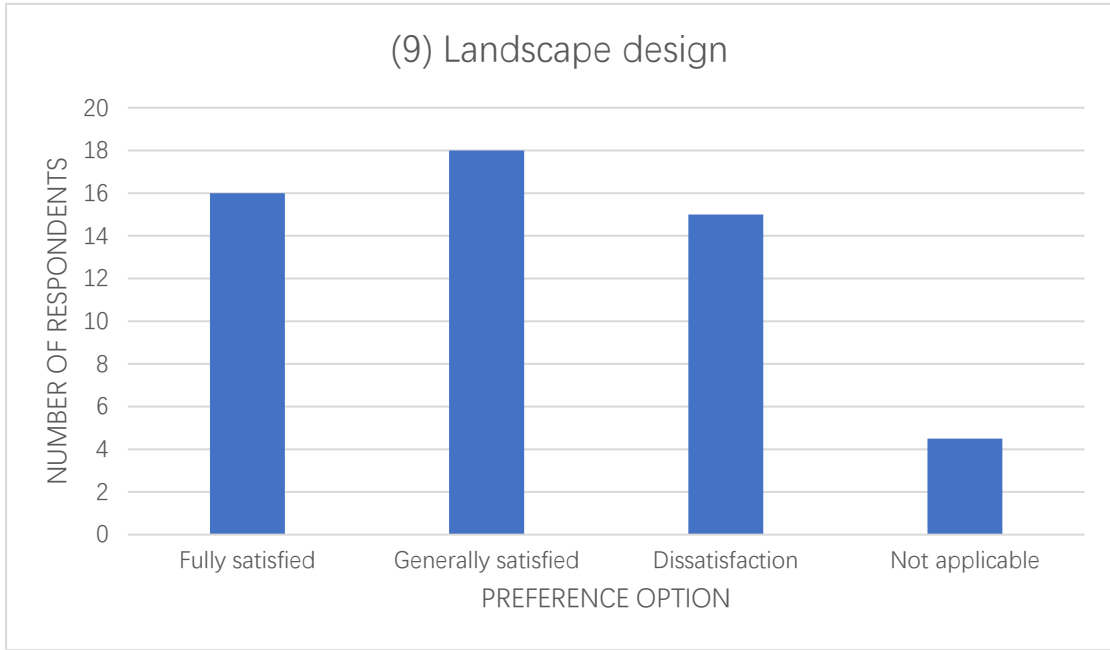
(7) Community culture



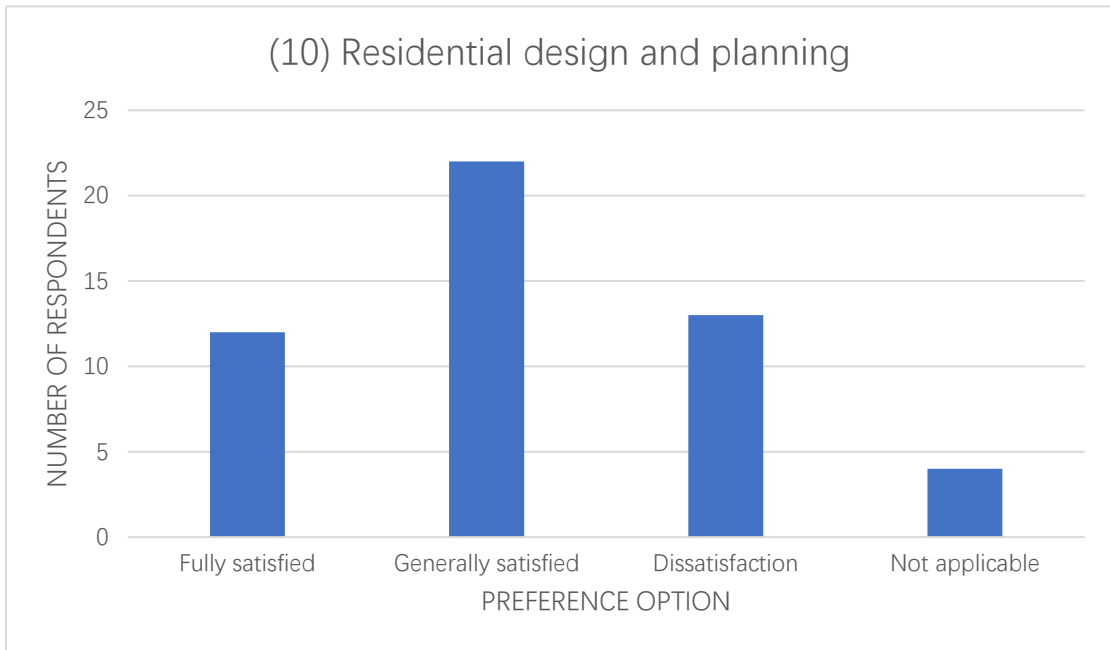
(8) Potential value of property



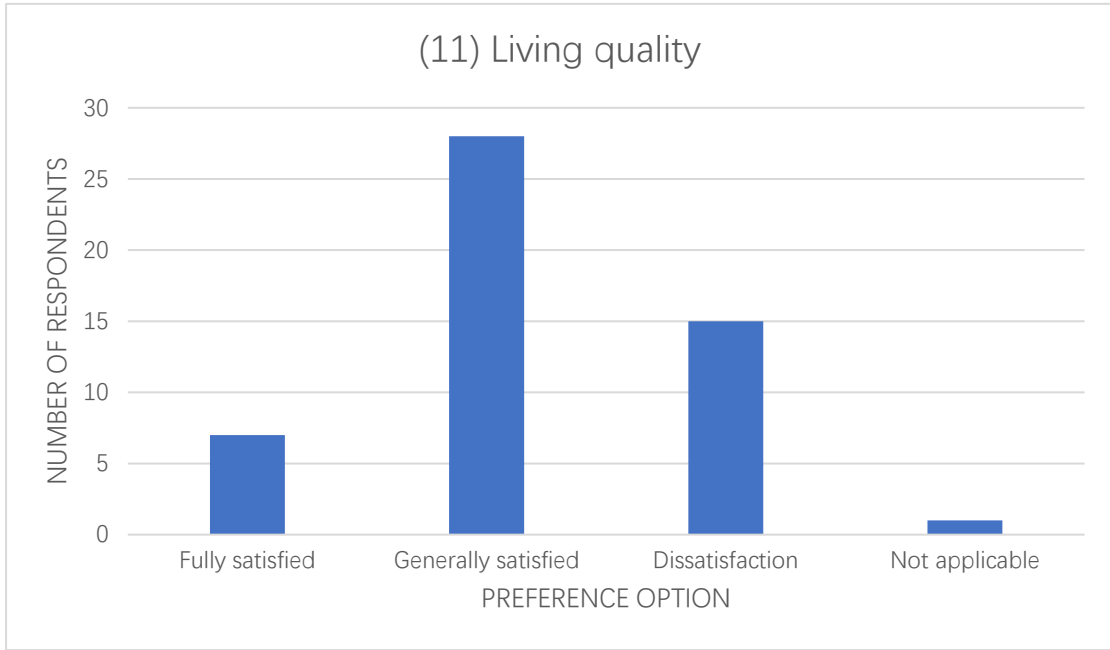
(9) Landscape design



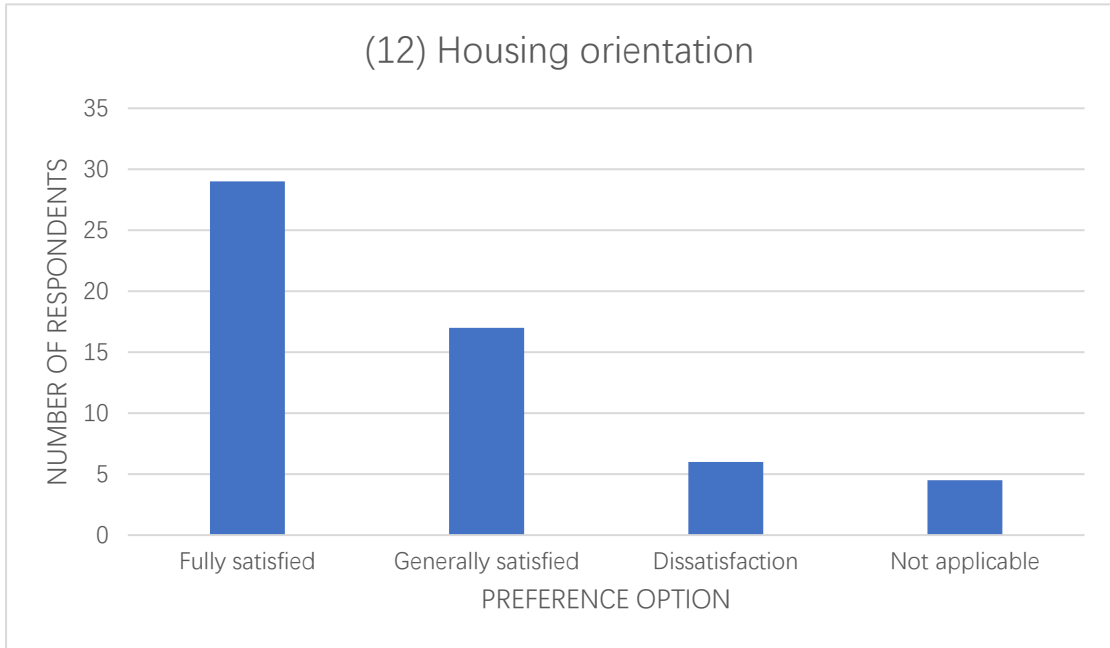
(10) Residential design and planning



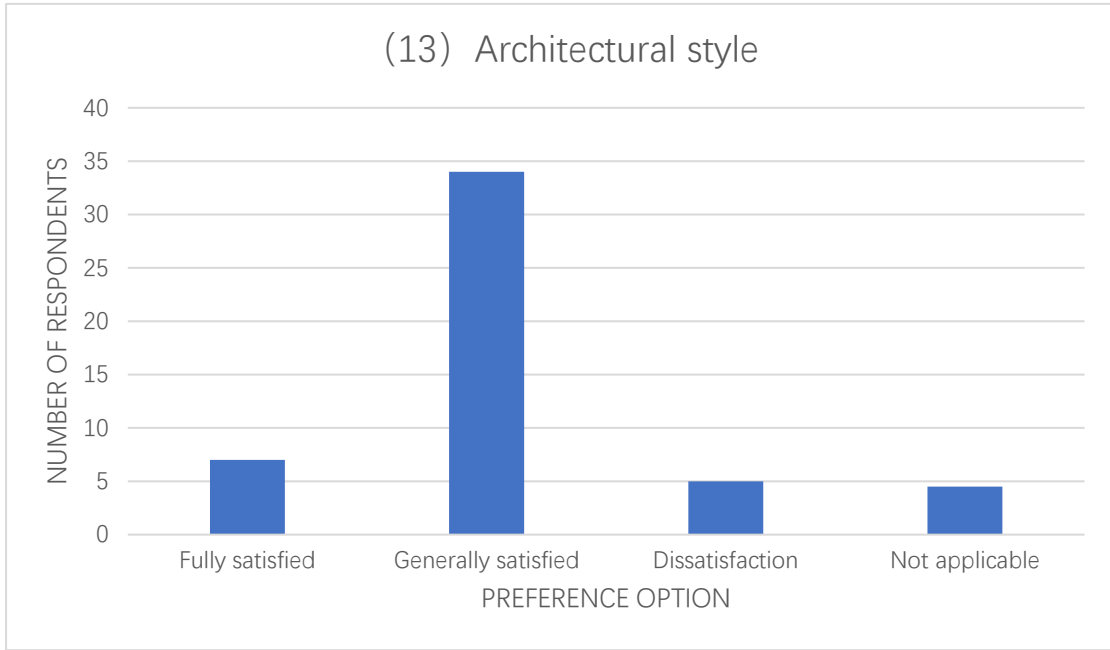
(11) Living quality



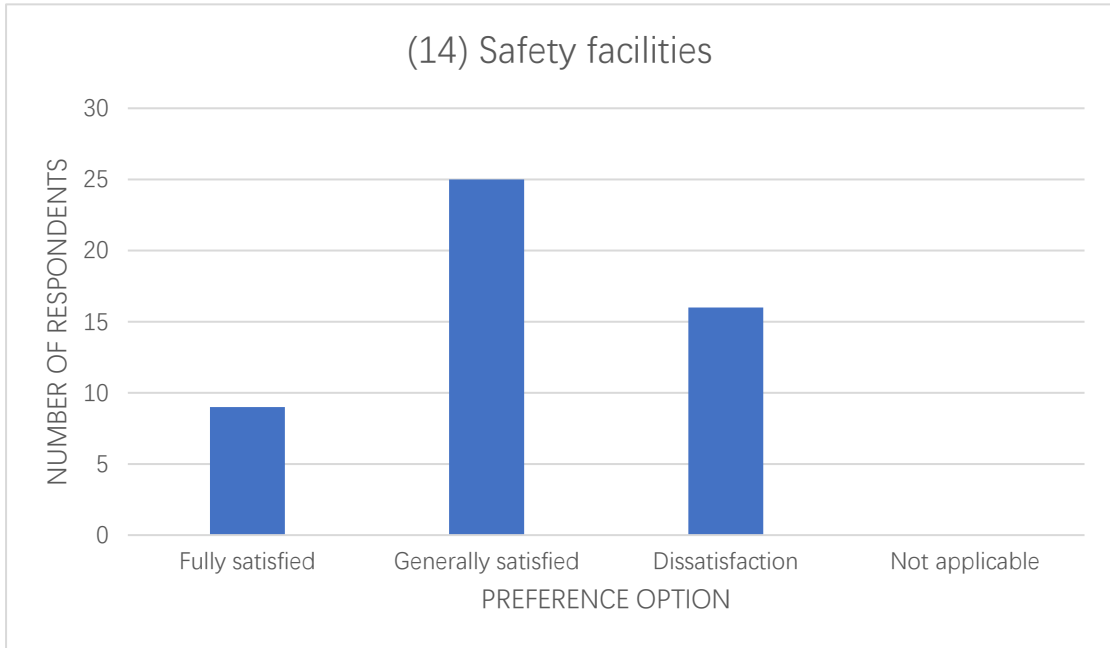
(12) Housing orientation



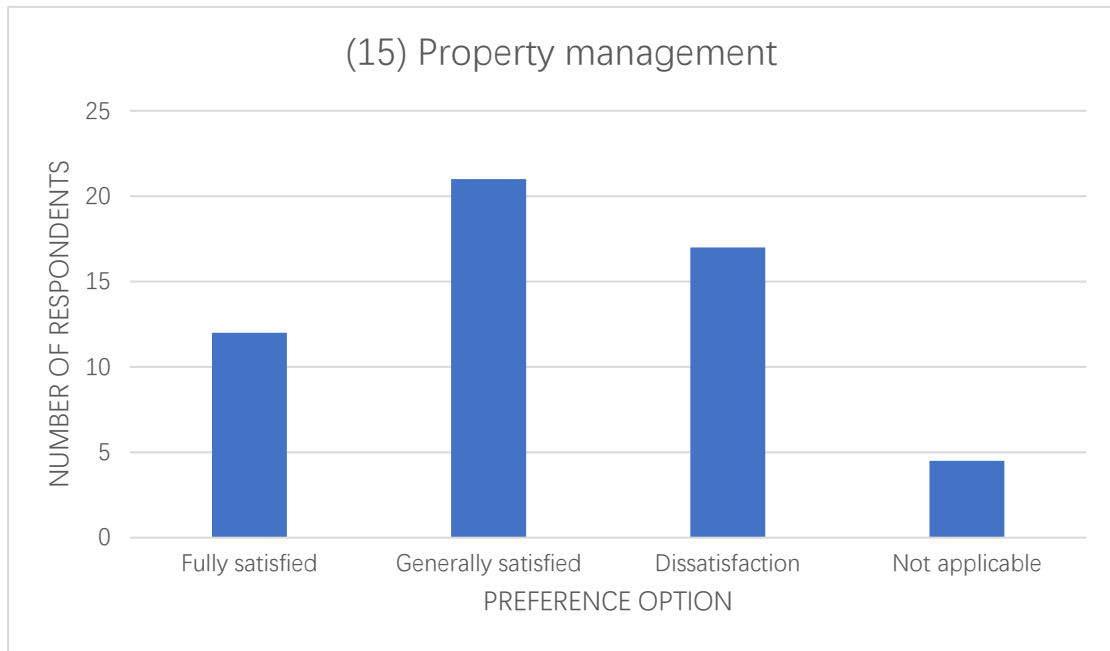
(13) Architectural style



(14) Safety facilities



(15) Property management



(16) Fees for property management

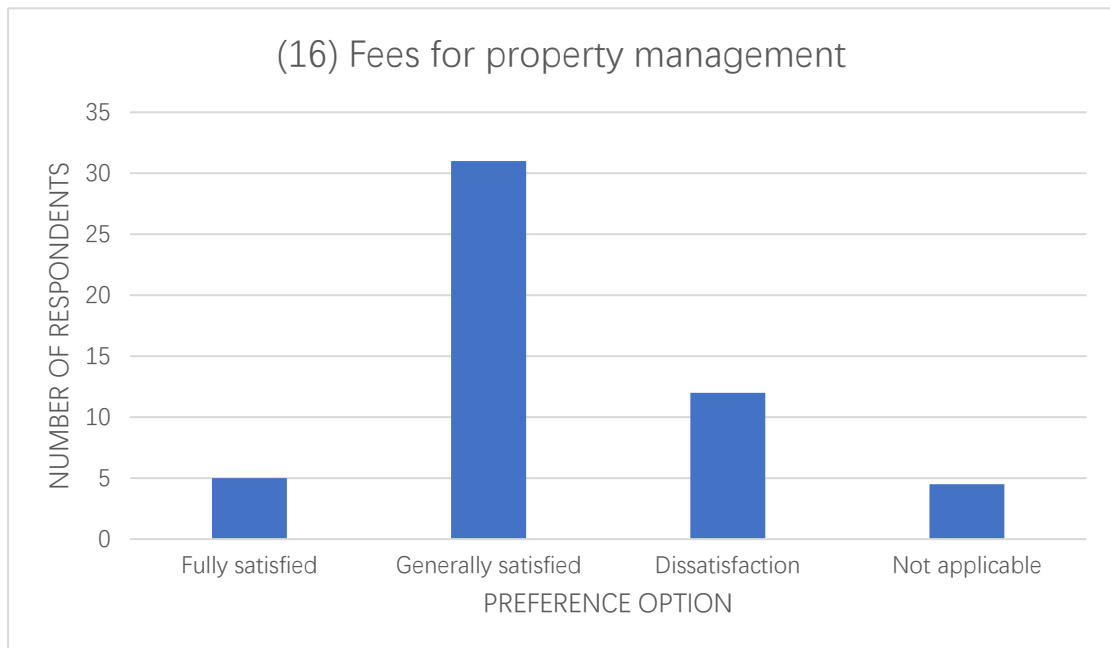
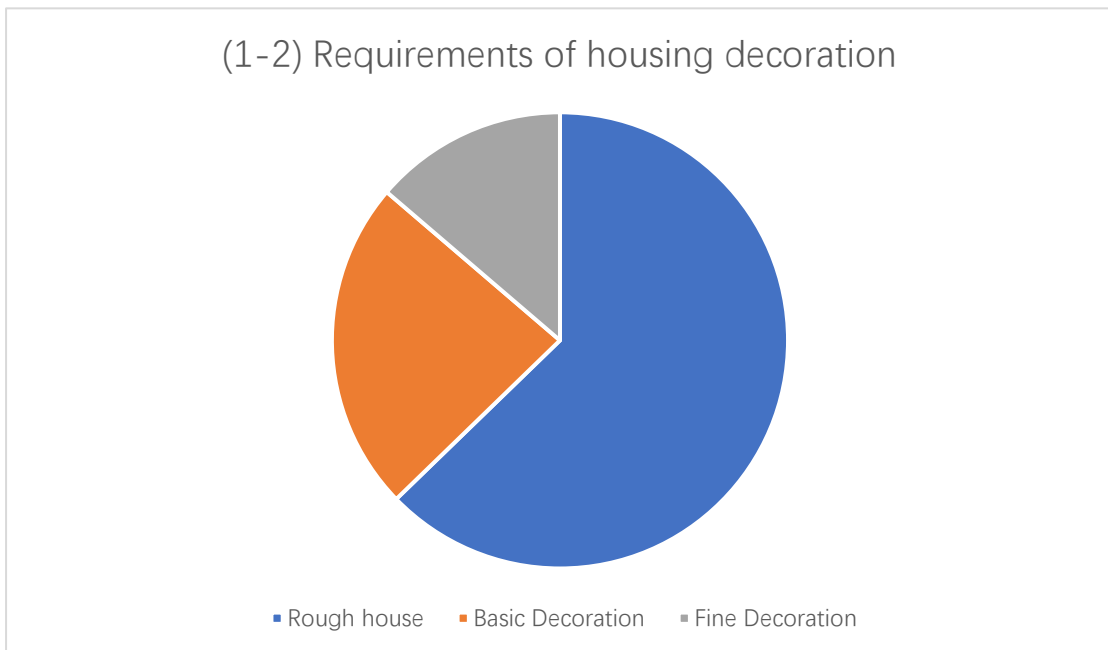
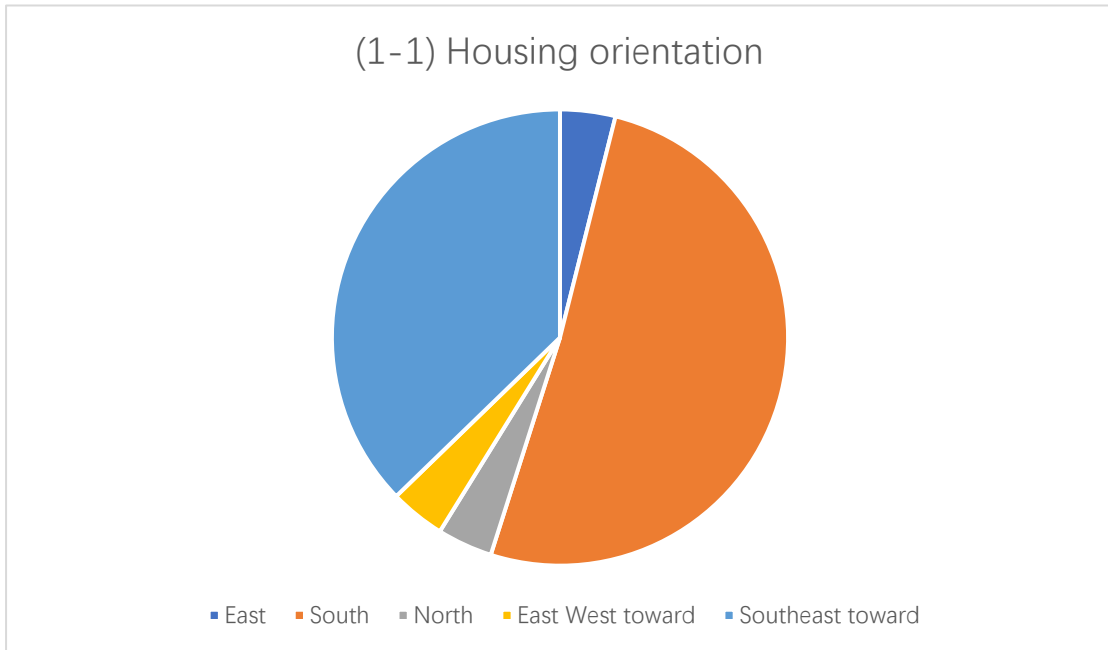


Chart 5.1 (1-16): investigation on current living condition

After a general understanding of residents' basic impression of the residential area, some questions related to daily life are also summarized in the questionnaire survey. A series of questions related to residential experience were raised. (1) About the residence: the orientation of the residence, the decoration requirements of the residence, and the residents' use of environment-friendly building materials; (2) About transportation: the use of private cars, parking requirements, walking distance to public living facilities in various communities; (3) Understanding of sustainable knowledge: channels for understanding sustainable housing knowledge; (4) Issues about residents' understanding of sustainable knowledge.

(1) About the residence.



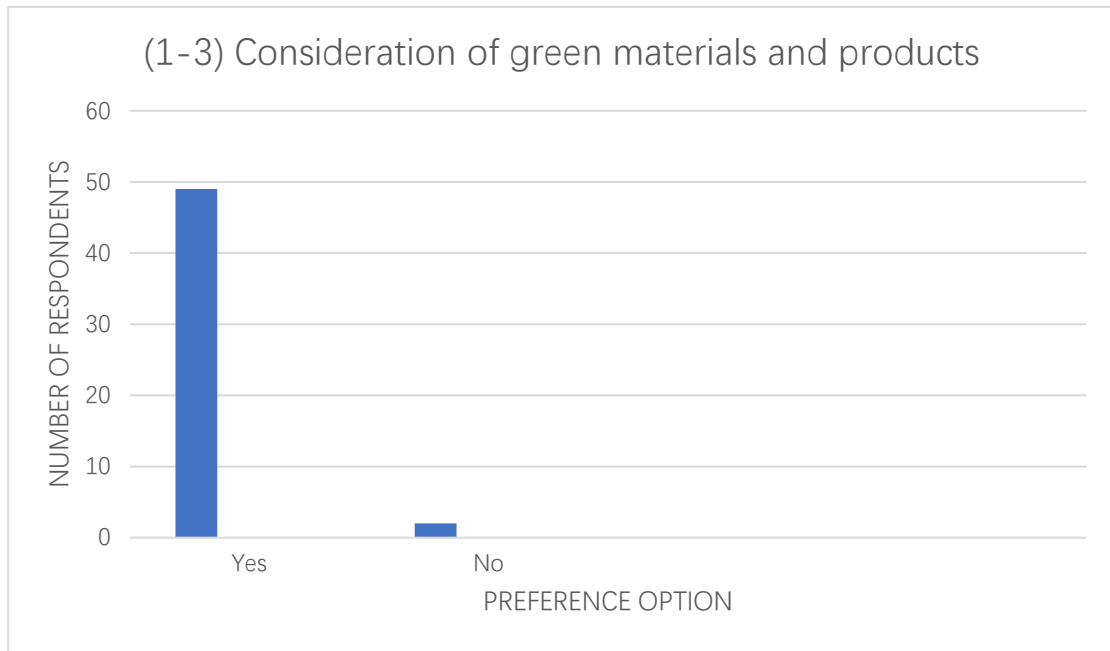


Chart 5.2 Information about the residence

These data show those requirements that residents can easily observe when they are considering their house. Over 50% of respondents preferred south-facing houses; more than 62% of residents are willing to decorate the house themselves; and over 96% of residents will consider green materials when they are decorating the house. These data can explain some questions, such as why most residents think south-facing houses are the best choice not only for good natural sunlight during the day, but also it is deeply linked to the cultural background that “facing south” traditionally present good “feng shui”. Furthermore, apartment suites, which can be orientated in an east west direction, is also becoming popular among young people who will go to work during the day. Generally, apartment suites consist of small sized rooms, in this case the price for a whole suite will be slightly lower, and thus attractive to this group.

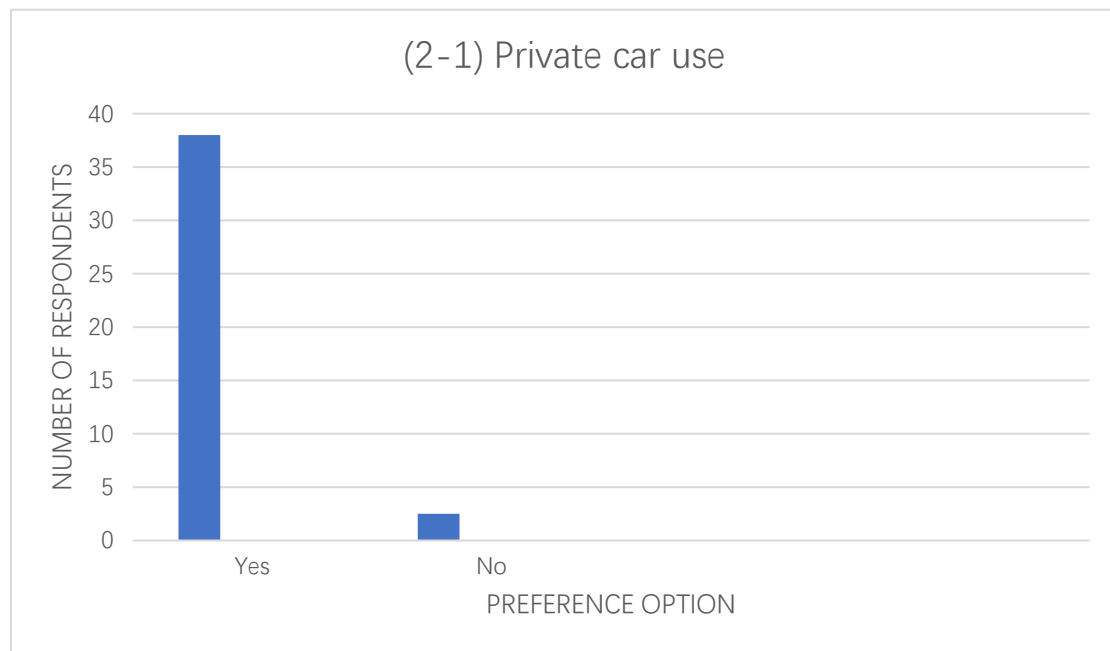
Residents will contact a designer to implement their ideas for interior spaces that shows a strong autonomous attitude. However, with different types of house being available to choose from, a house with basic decoration and even with refined decoration are becoming popular among residents. But the big price differences between rough house and house with basic and refined decoration, will still limit residents’ choice to a significant extent.

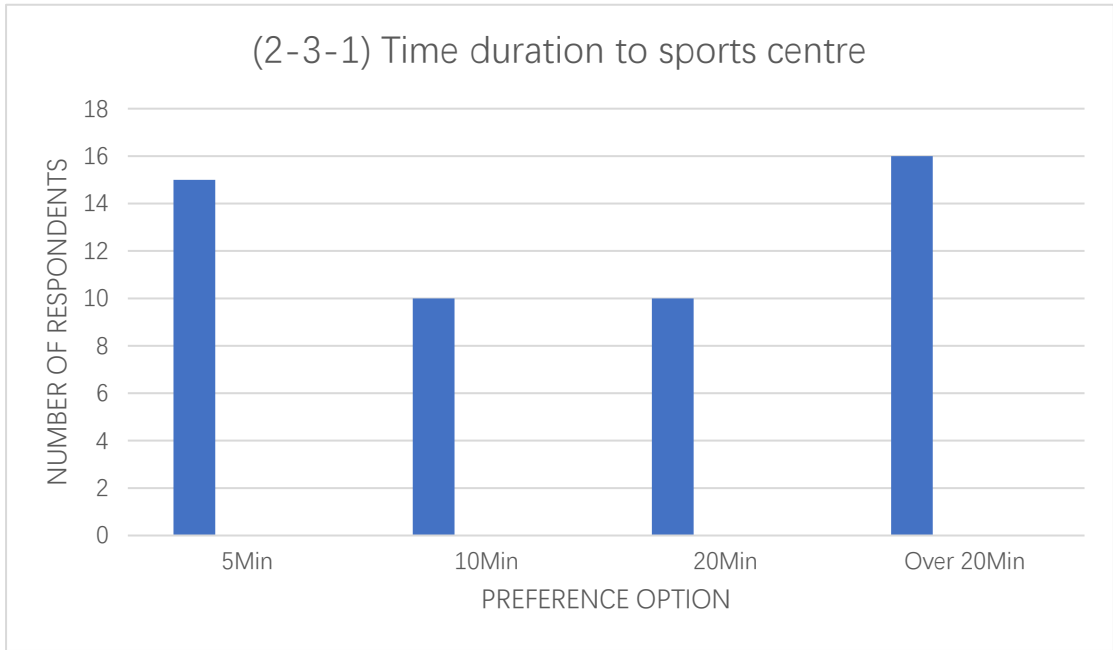
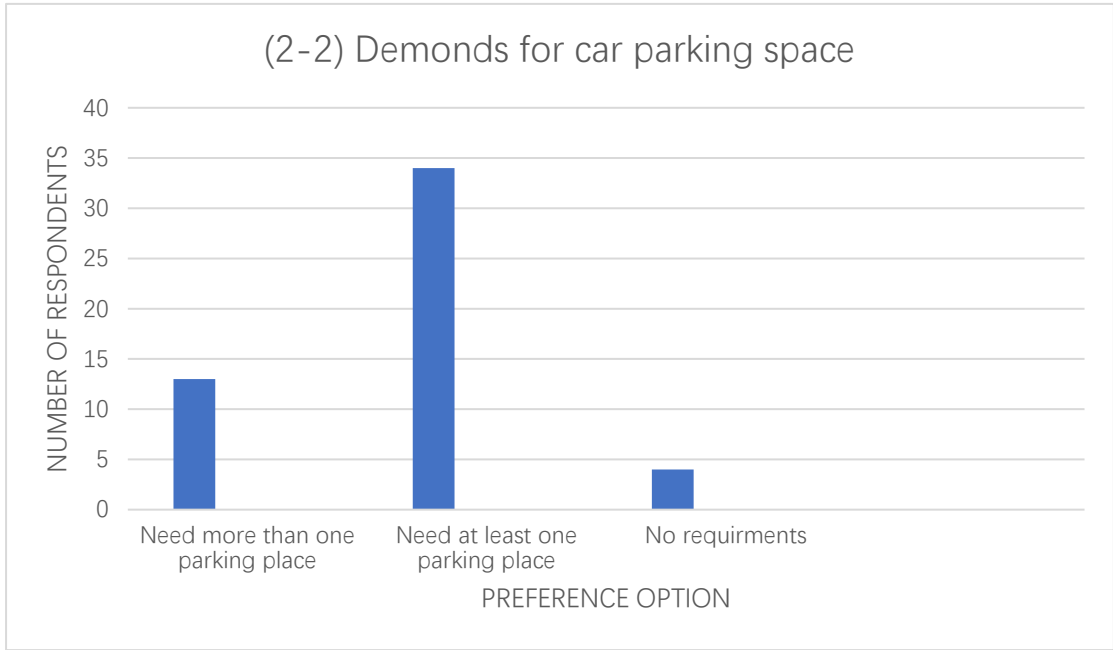
As to whether they would consider using eco-friendly products or building materials in the residential process, the majority of residents are willing to use such products, even though they are usually more expensive. According to a brief interview conducted when the questionnaire was distributed, residents' concerns were more about health problems. Especially for families with young children, these families have very high requirements for the paint, wallpaper, and flooring materials used in home decoration. These families attach great importance to whether the building materials meet the requirements of environmental protection.

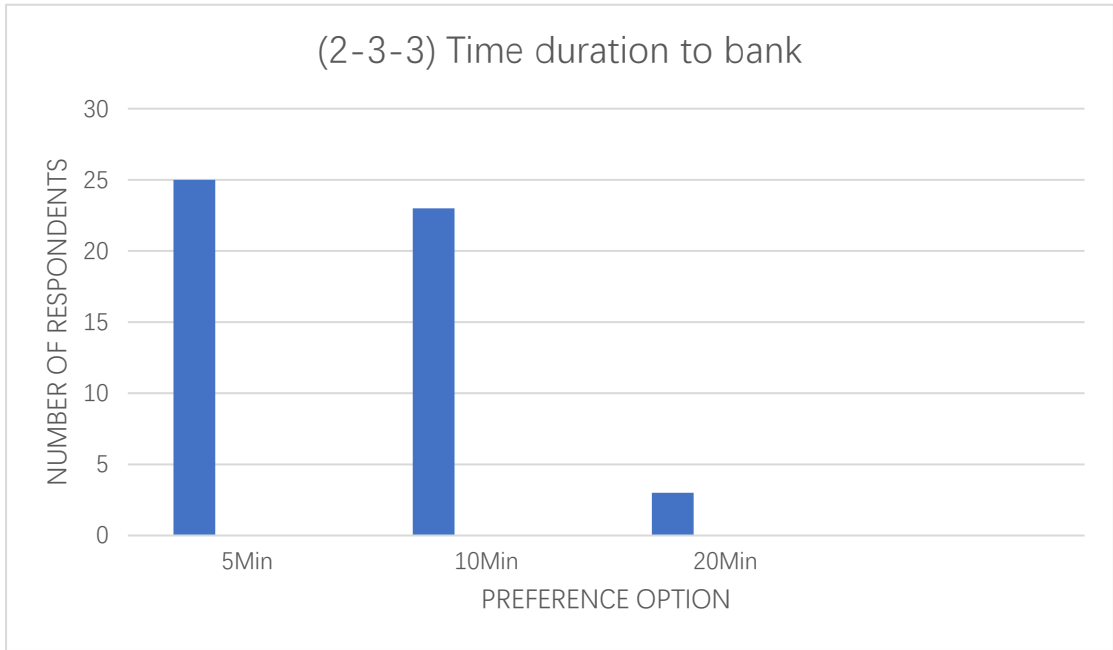
(2) About transportation.

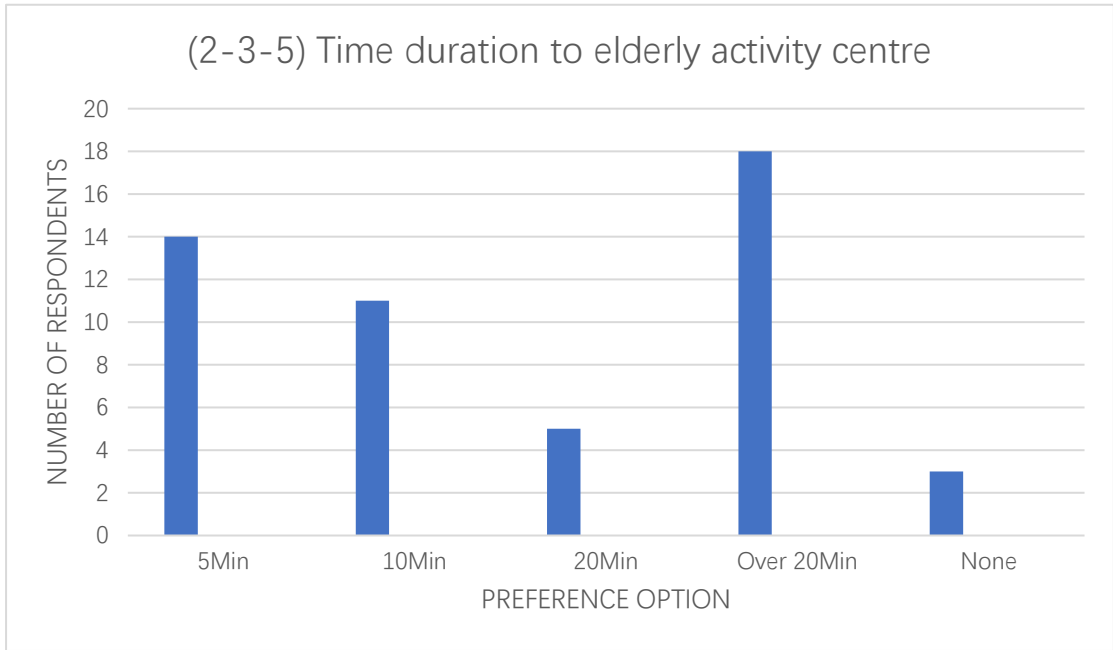
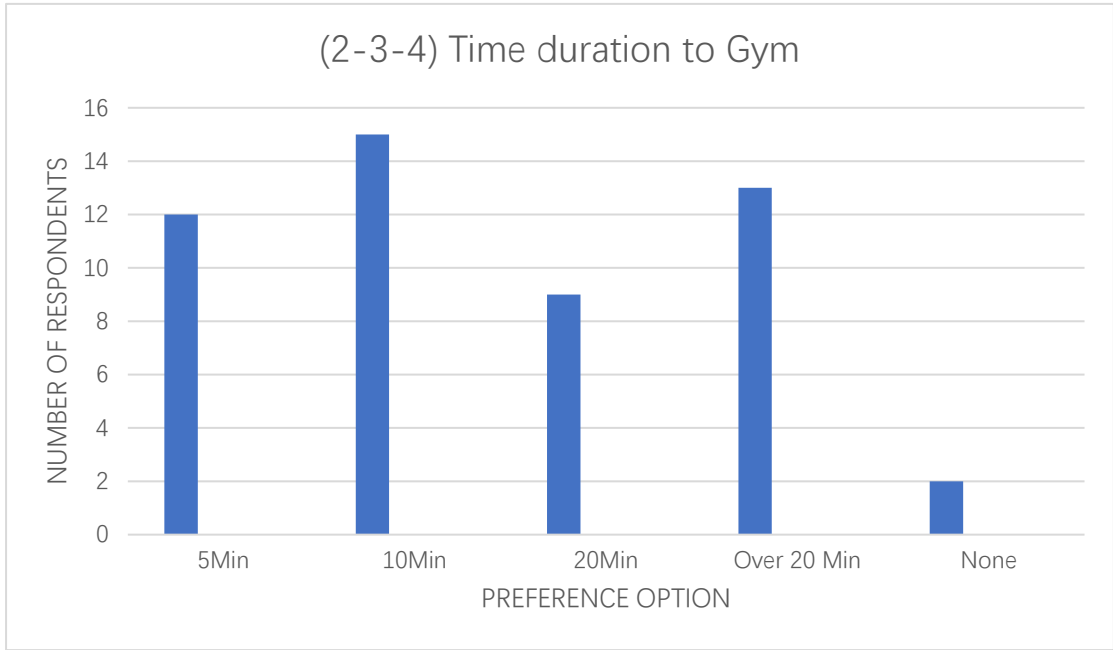
Speaking of ways for travelling, 74% of respondents have their own car for travelling daily. Then availability of at least one parking space is an issues attached to housing purchase for these residents. Some families need more than one parking spaces in their residential quarter. Even a parking space in residential area is costly.

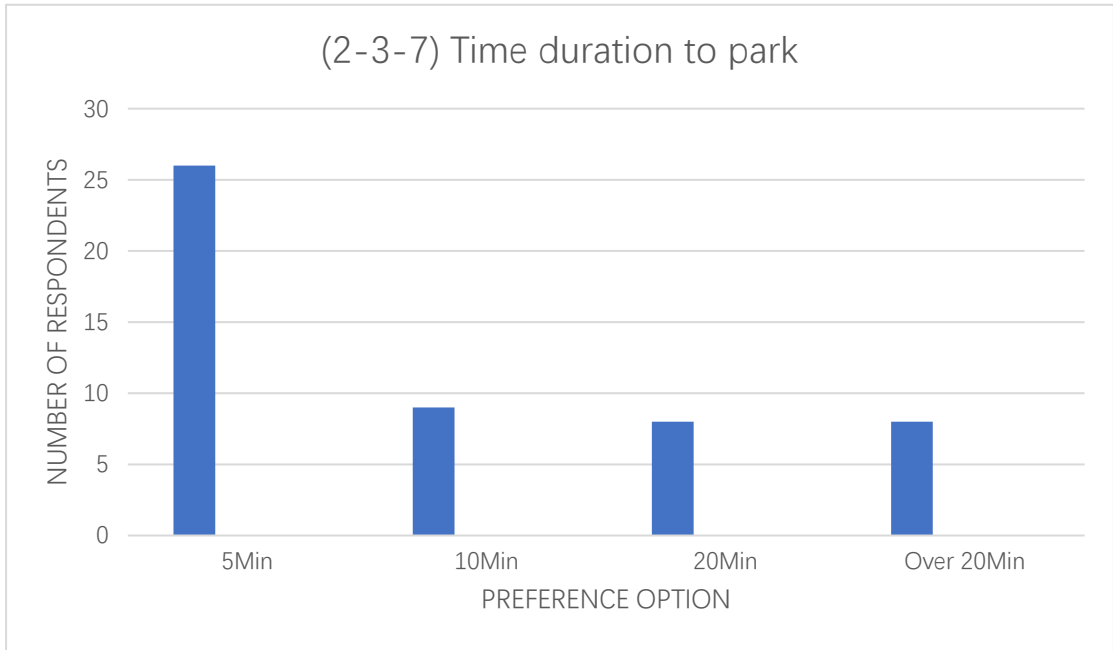
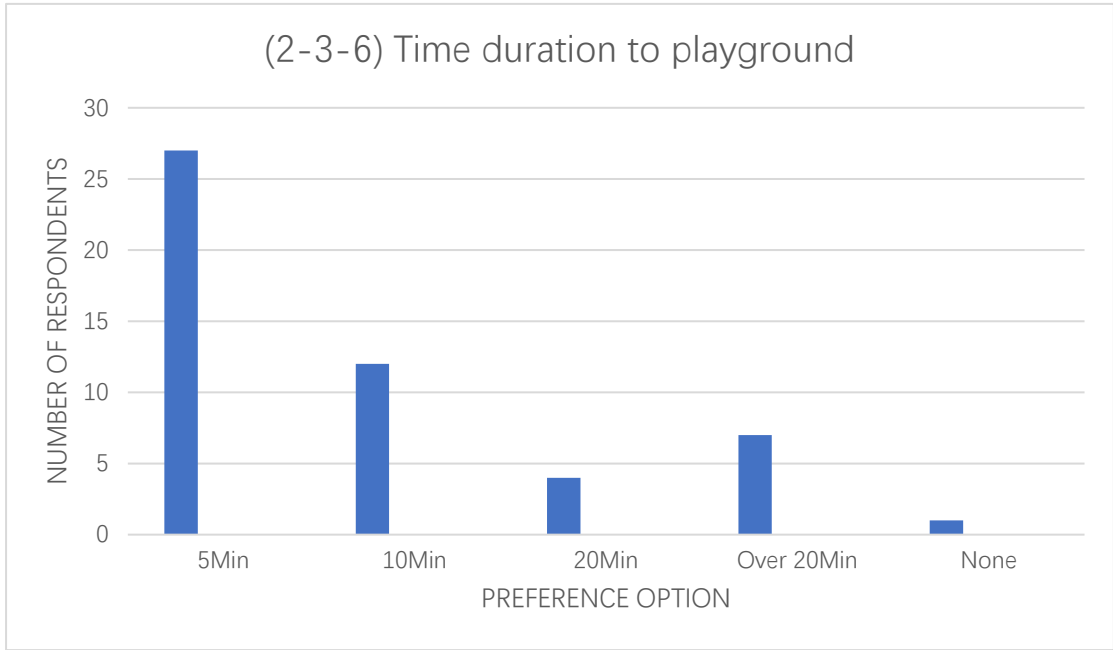
By analyzing data from this part of survey, some phenomena can be observed. At least 50% of residents can get easy access to community facilities within 10 minutes by walking. These include, sports centres, restaurants, Banks, leisure centres, playgrounds for children, small parks or public plaza, kindergarten or schools, retail stores, local markets, and also public transport stations. Most of residential areas have potential to provide complete living facilities for residents. More new residential developments have also place emphasis on concerns for centralizing different types of living facilities within the area. However, according to data shown in the diagram, big shopping malls, most of residents' work places, public hospitals, are located further away. Sometimes, residents will consider other ways to go these places rather than to walk.

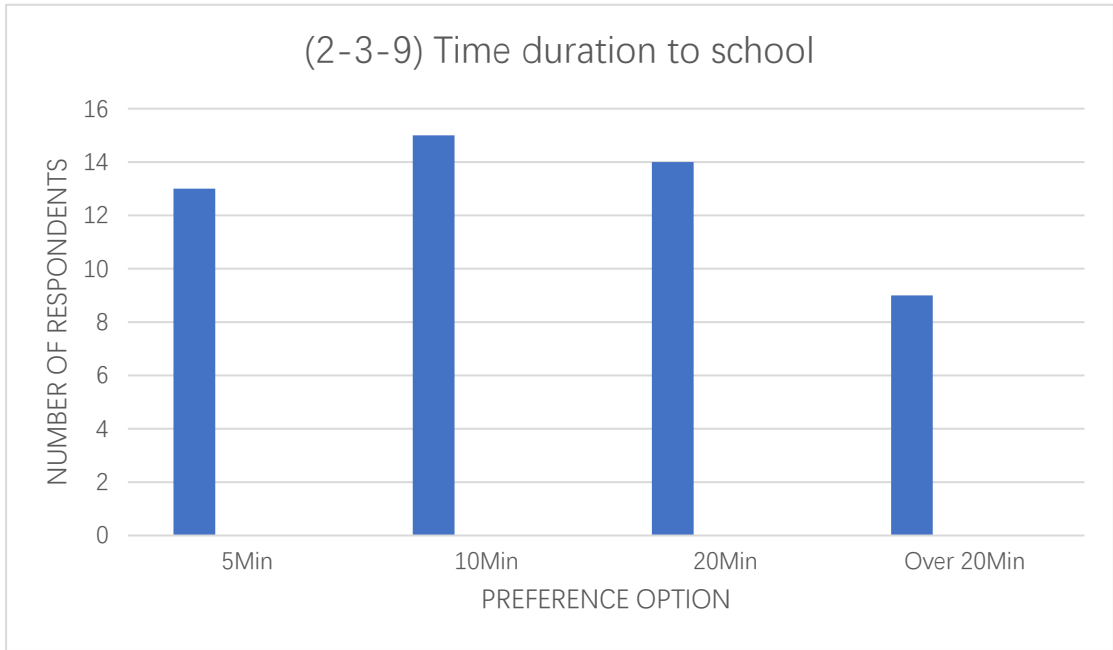
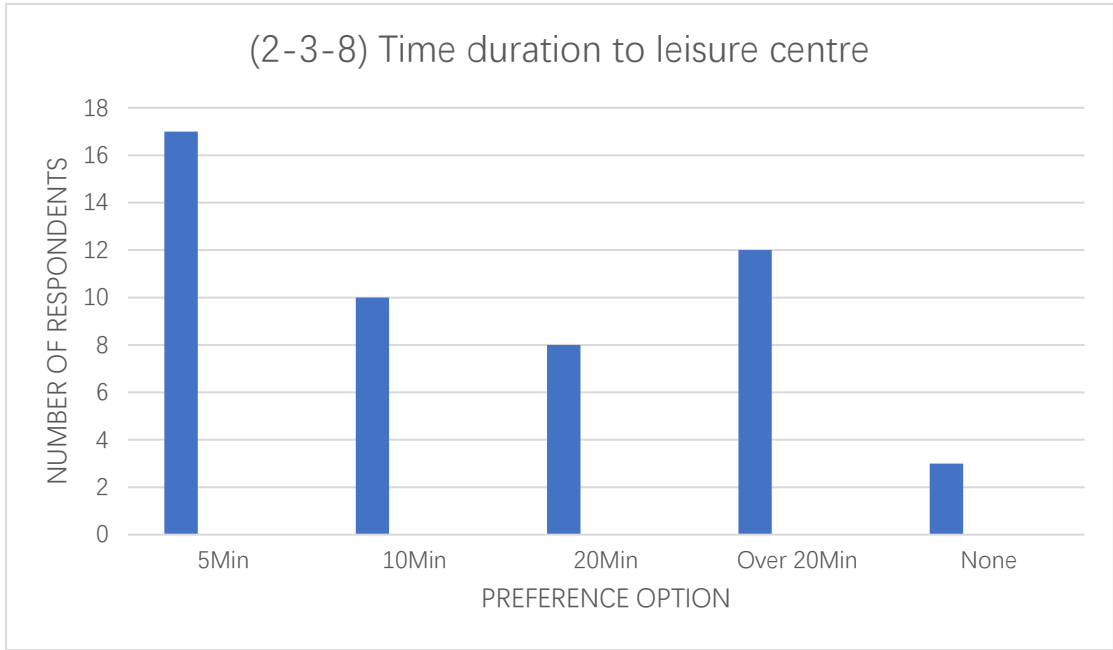


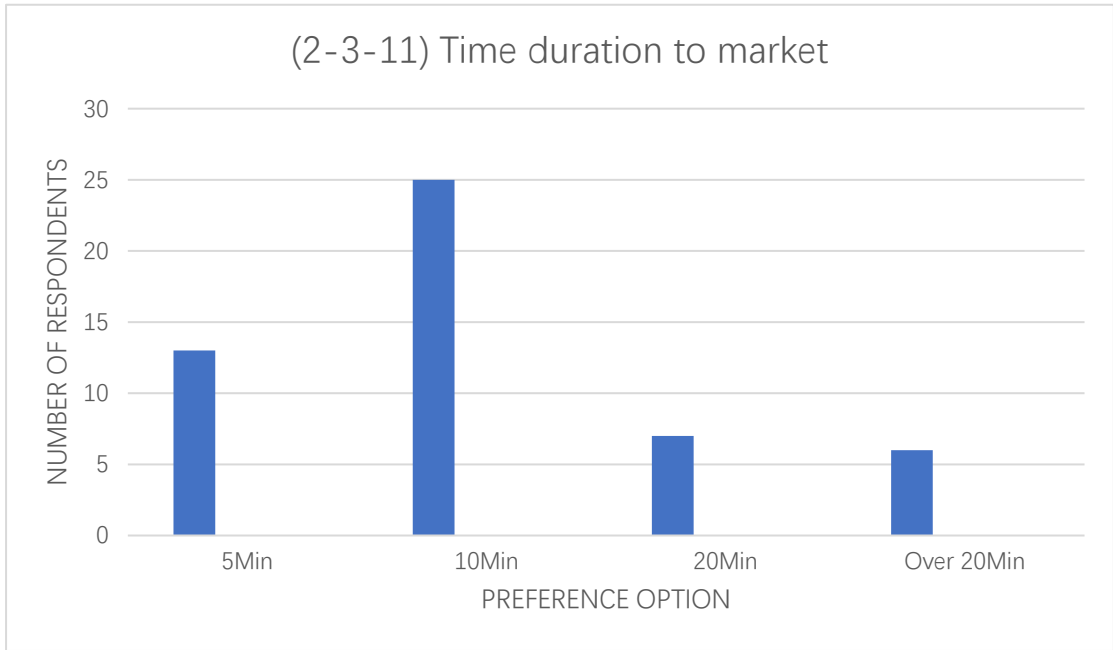
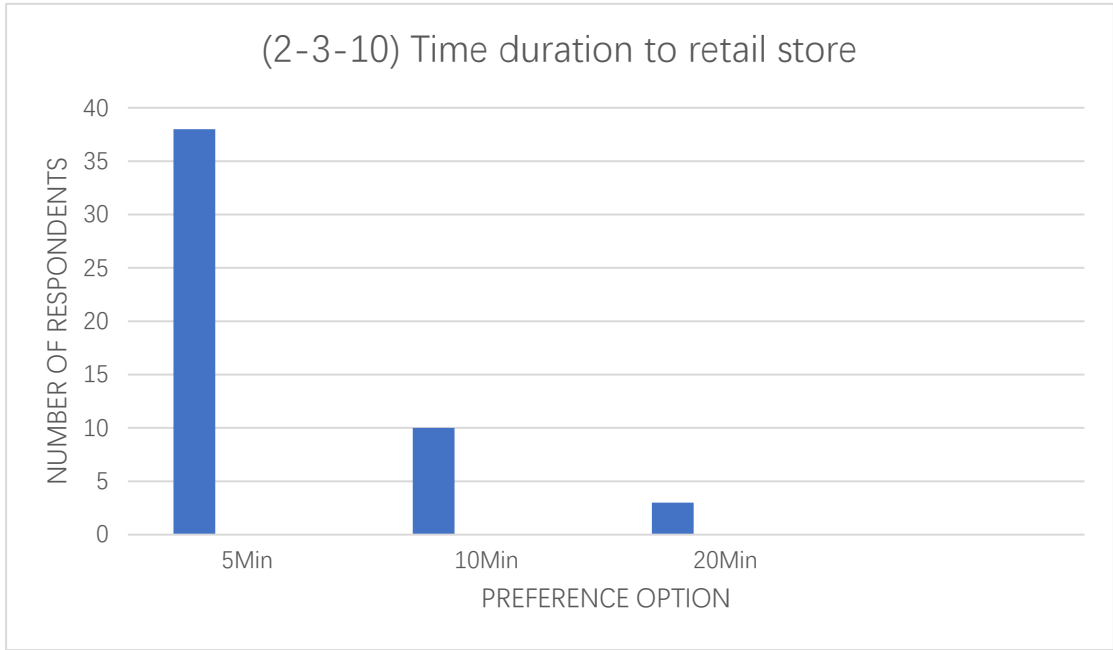


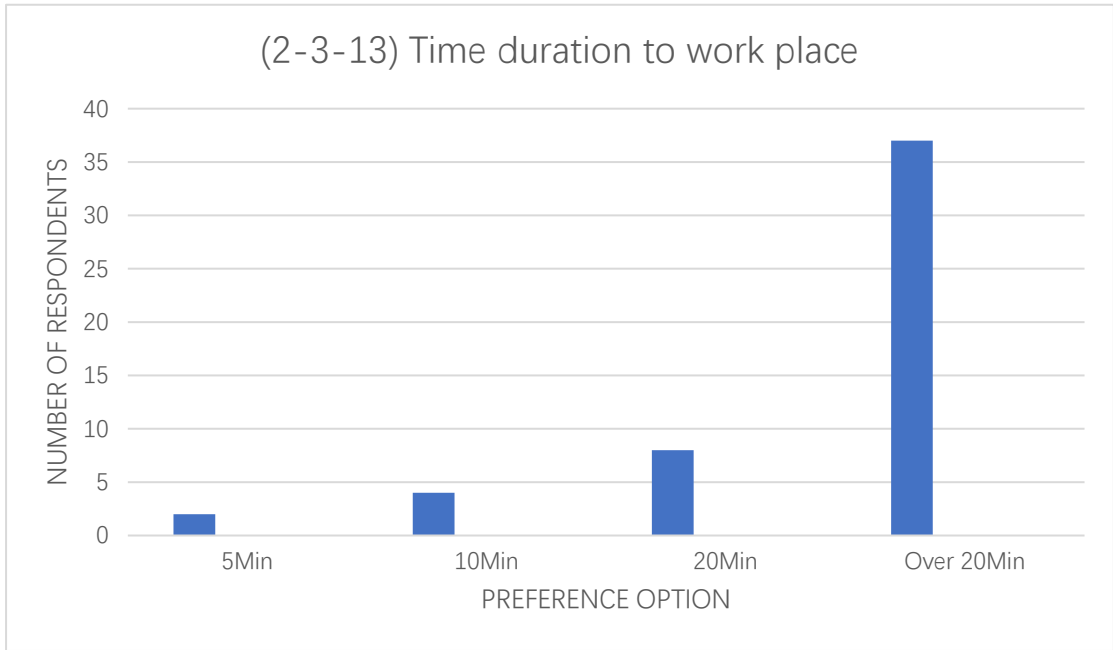
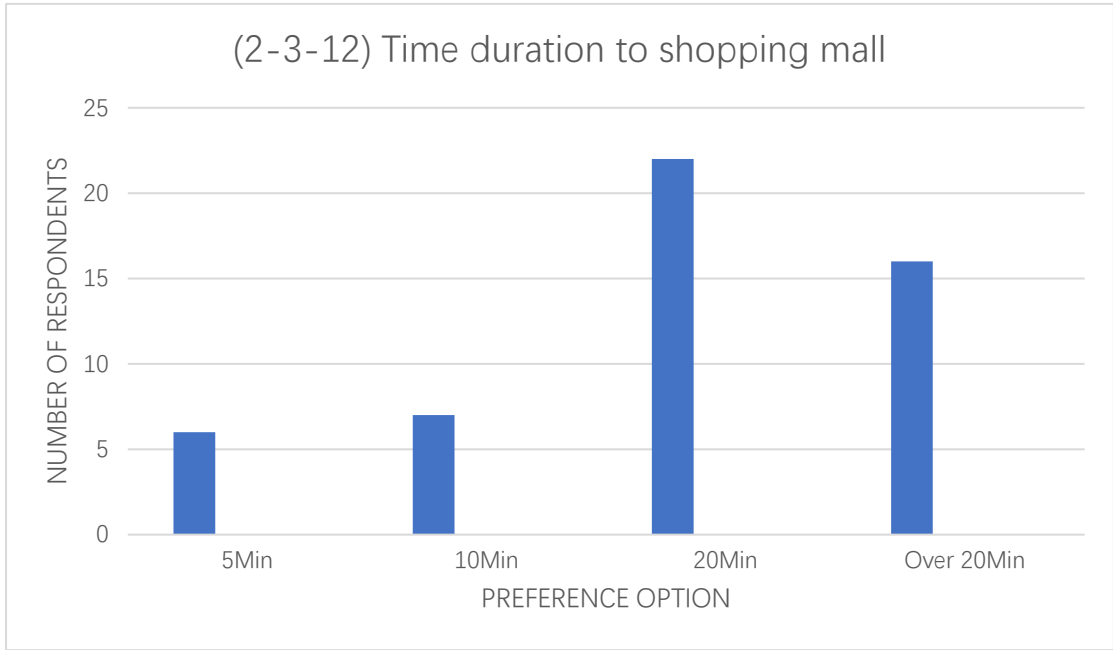












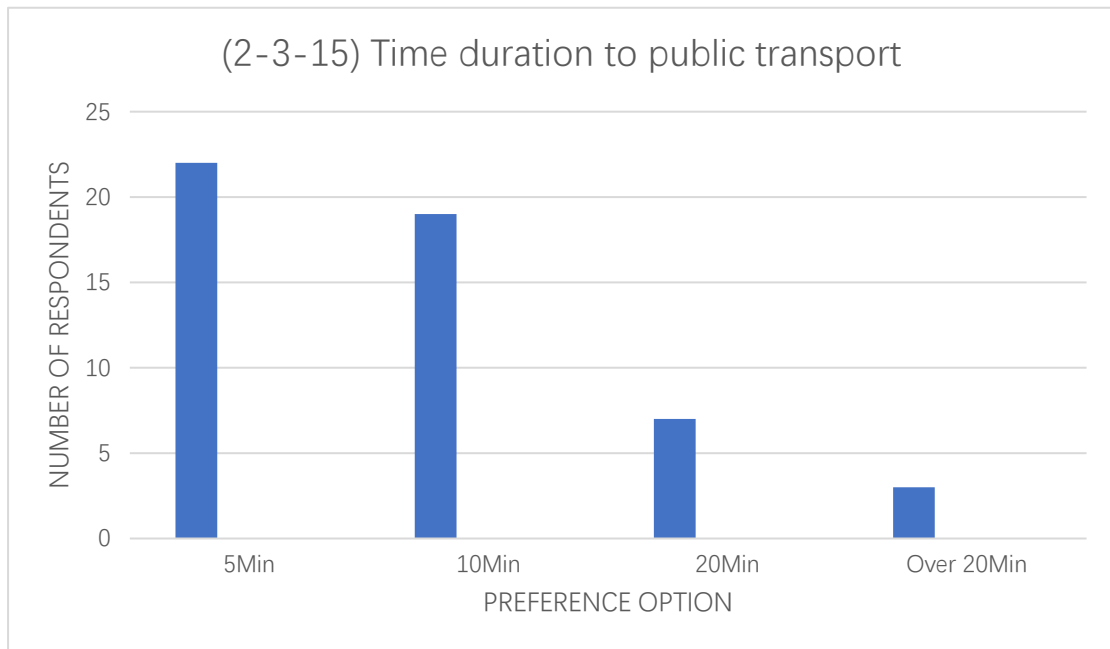
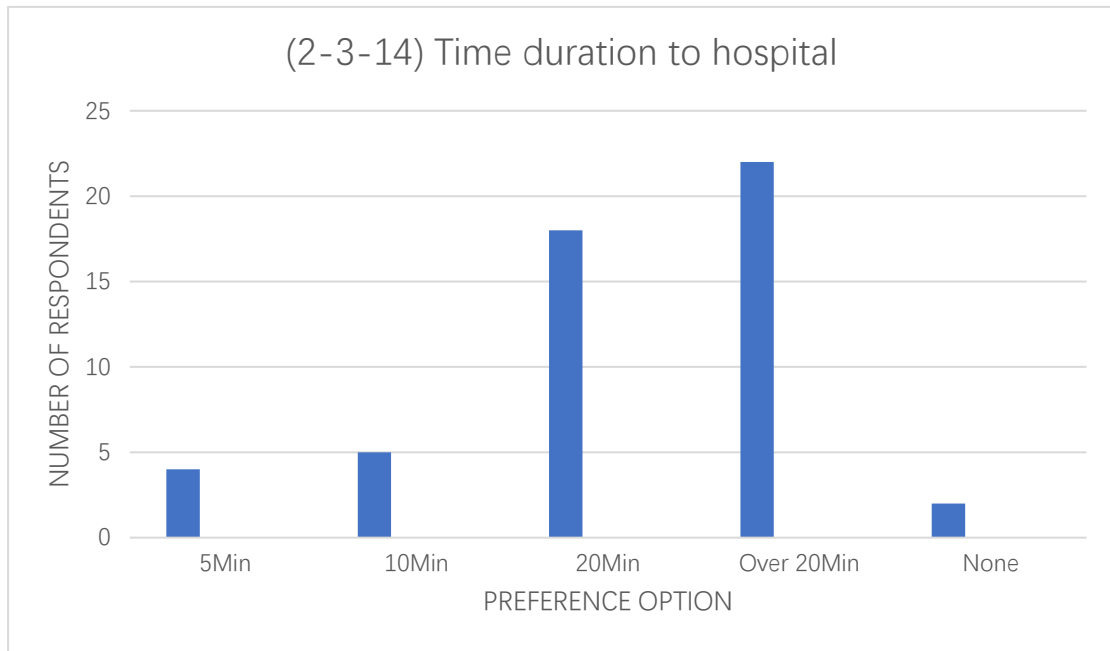
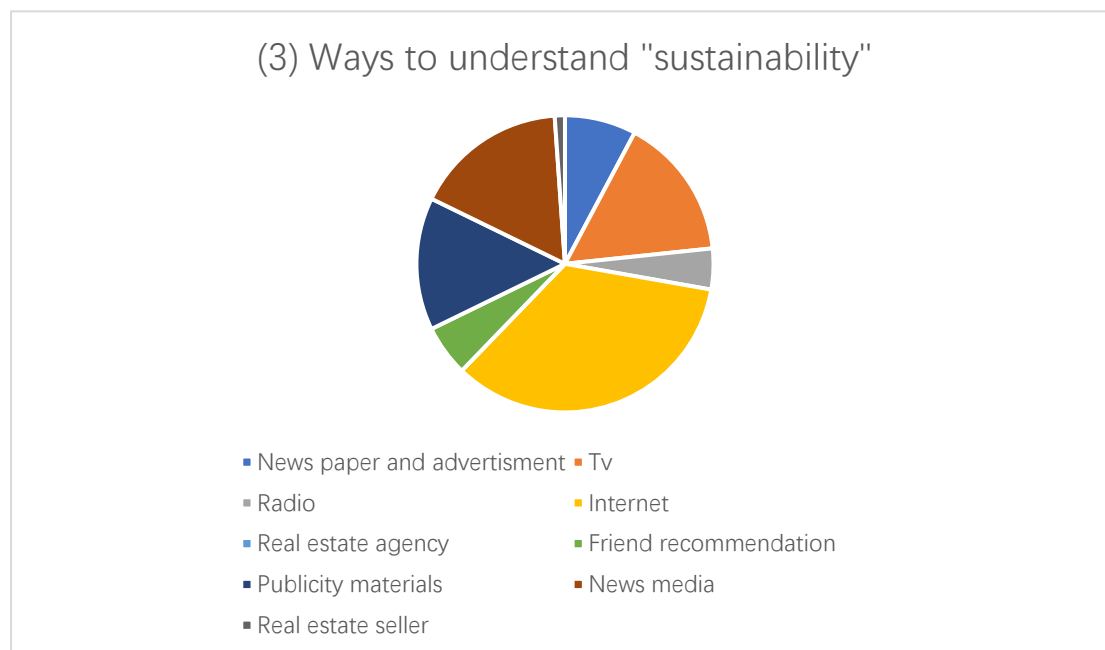


Chart 5.3 Walking distance from home to living facilities

(3) Understanding of sustainable knowledge.

The questionnaire survey has selected random residents who are living in Kunming city. Influenced by green residential development which has been built recently in Kunming, the understanding and support for sustainable residential areas and dwelling design among residents are different. By analyzing data from this part of the survey, some phenomena can be observed. Relating to the sources of information about sustainability, most of residents get information about sustainable residential design from the internet; other media also provide some sustainable information to residents, such as TV and advertisements, news media, and also publicly available material. An authoritative organization for delivering this knowledge has not yet been established. The

information available to residents is often fragmentary and superficial, including articles, advertisements, and news. There is not enough information and knowledge that can really affect every aspect of life. It's hard to change your lifestyle to deliver more sustainability messages. Perhaps new alternatives or approaches need to be adopted to improve the situation.



(3) Ways to understand “sustainability”

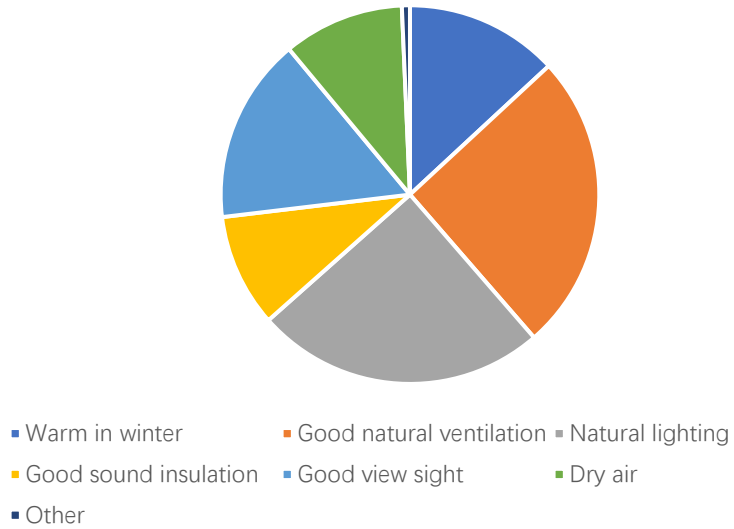
Chart 5.4 Understanding of sustainable knowledge.

(4) Issues about residents' understanding of sustainable knowledge.

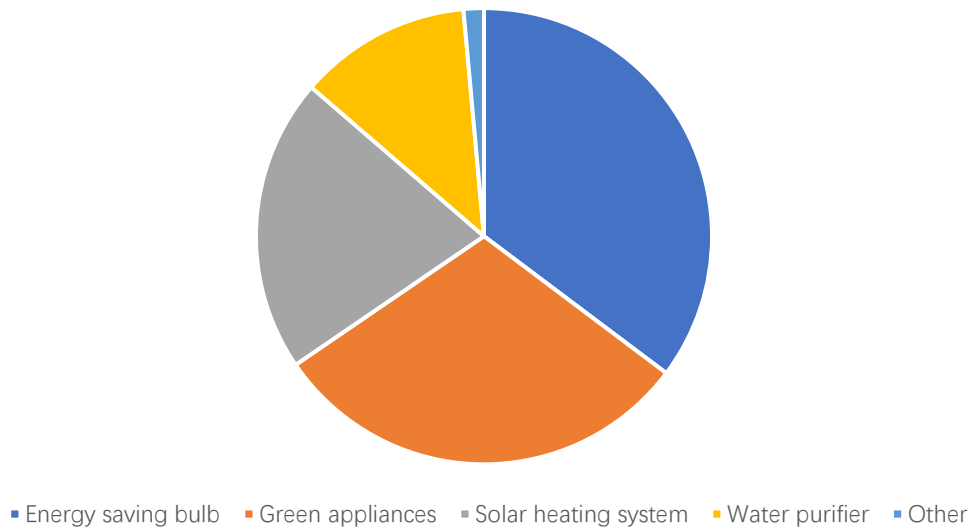
As to the actual feeling of living environments in Kunming, most residents think that most of their homes are well-ventilated, especially during the summer, and such natural ventilation could reduce excessive indoor temperatures easily. Nearly 98% of residents adopt natural ventilation systems at home; enough natural sunlight is also easy to achieve in most of homes. The lack of extreme weather in Kunming, means indoor space is usually sufficiently warm during the winter; but there is one problem on that approximately 10% of residents feel that the indoor air is usually dry, they have to use indoor humidifier to regulate this aspect of indoor comfort. For the investigation on usage of green products, energy-saving lightbulbs seem to be the most popular ‘green’ products among residents; furthermore, home appliances with energy-saving certification are also well accepted by residents; solar water heating system are also popular products in Kunming. The answer to the question of whether a renewable energy system is being used in the home is evenly distributed. Some want to use; some don't want to use. It is clear that the knowledge about energy use has not yet formed a common consensus among households. The vast majority of residents do not require the use of green building materials when decorating their houses. There are two reasons relevant to this question, those products are usually with high prices, and the market itself does not provide a good resource for households. In the residential areas where residents live, there are basically set up a garbage collection system, garbage classification garbage cans. But in fact, there are a lot of problems with management and implementation that are not controlled well. In the question of community management, most households do not have the opportunity to participate in community

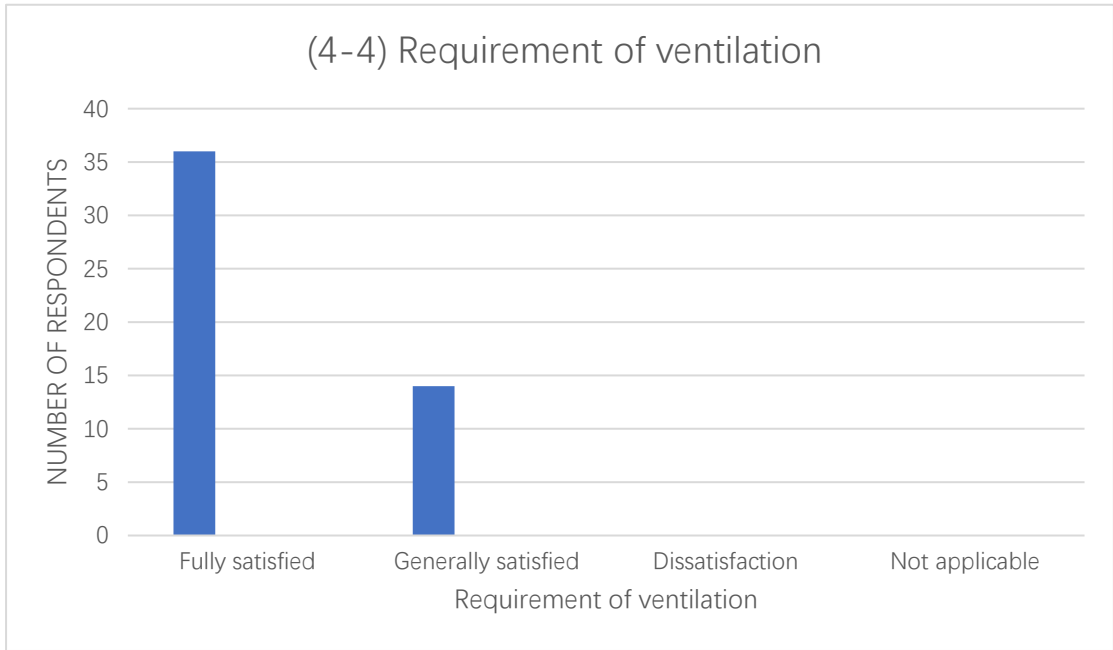
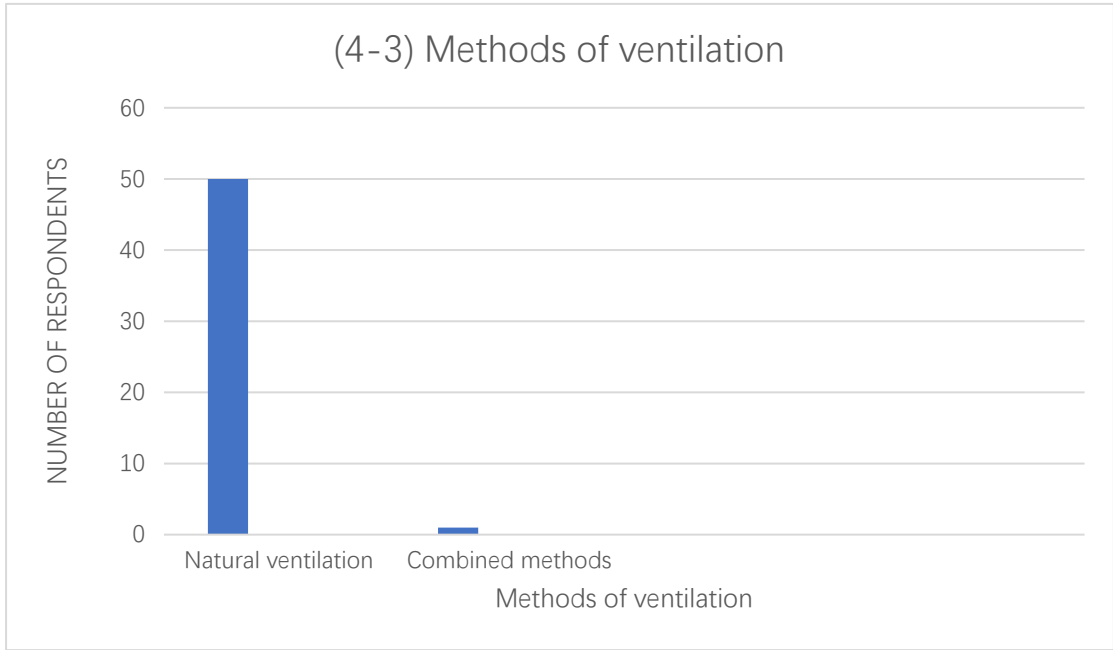
management, or do not want to participate in the process of community management. But when residents have problems, they give advice to the property (usually personal). Finally, in the residential experience, the average household does not have more awareness and consensus on whether to acquire the concept and knowledge of "sustainable design, sustainable lifestyle".

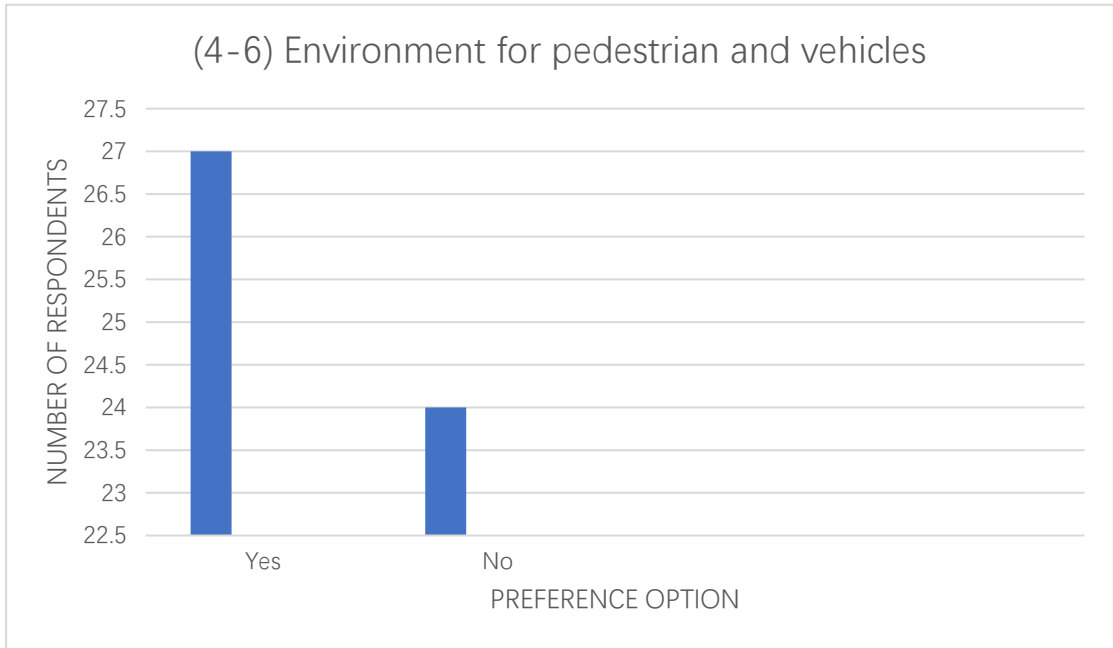
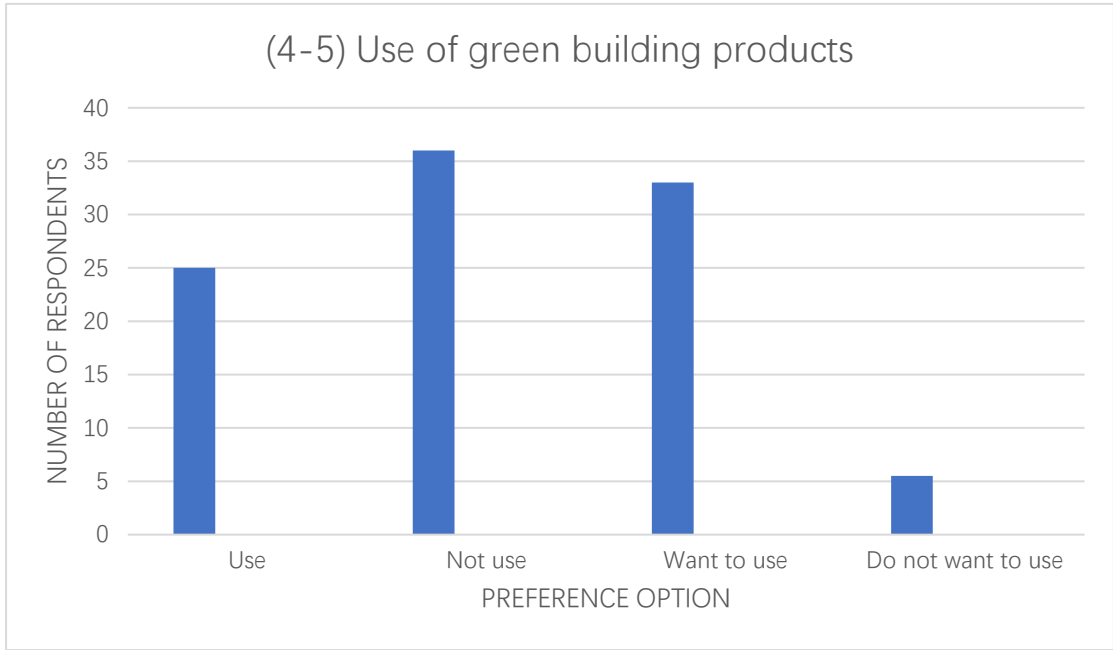
(4-1) Requirements of indoor comfort

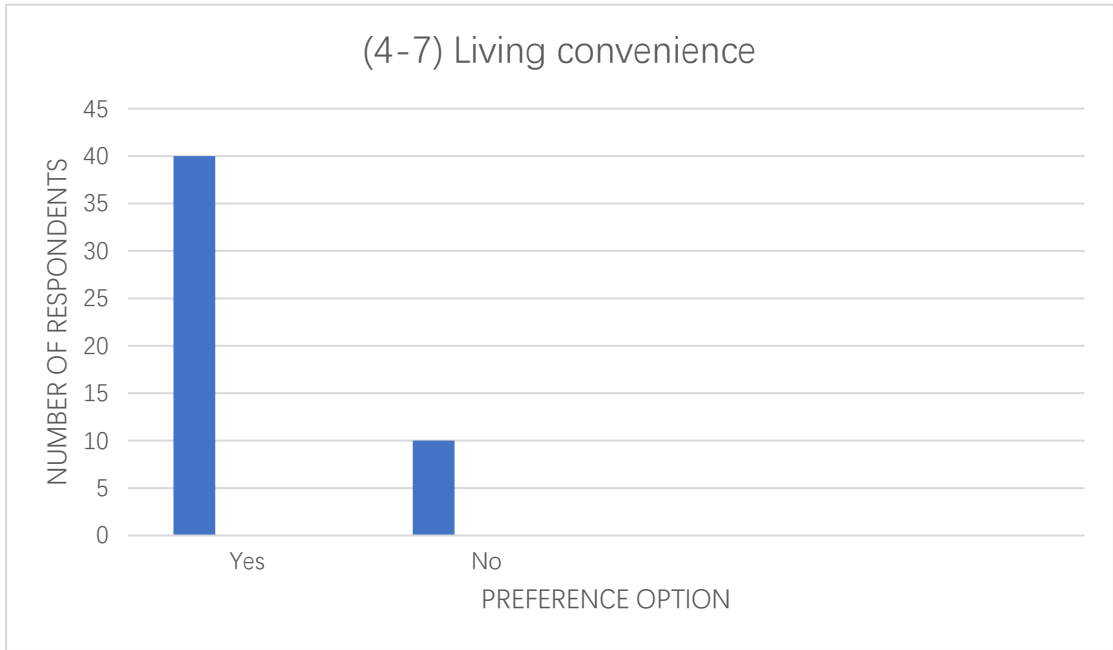
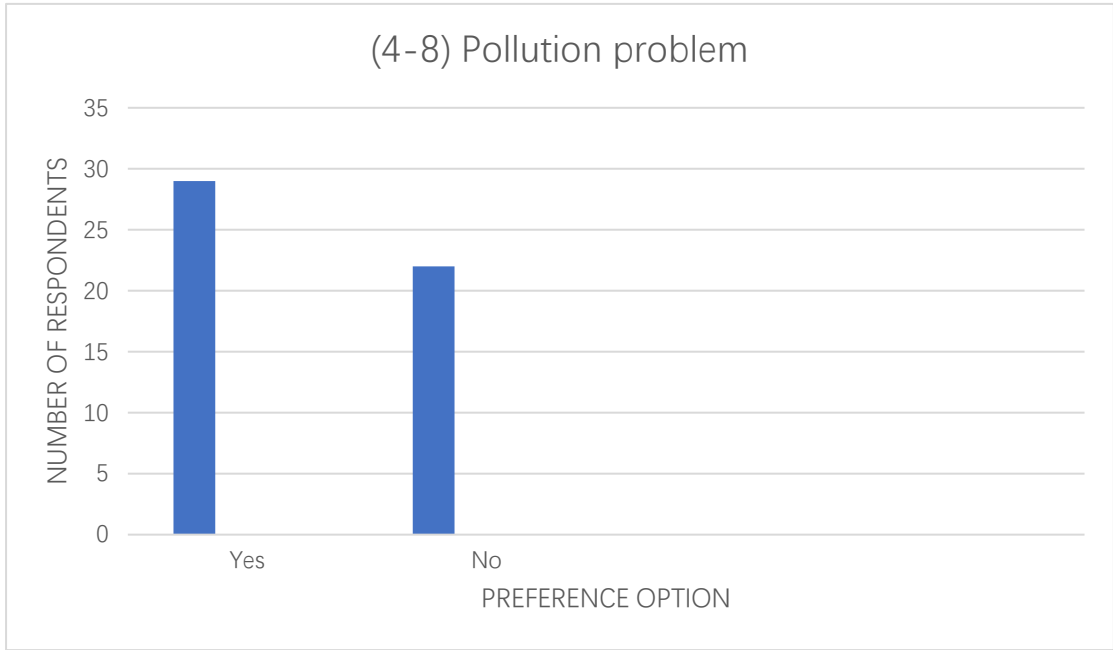


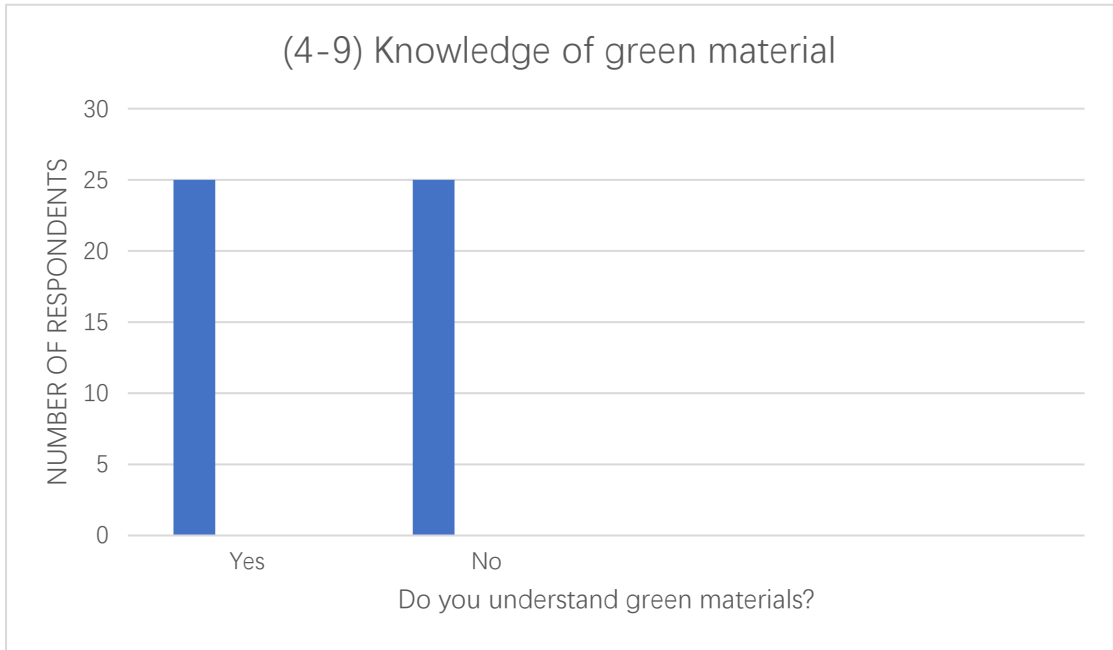
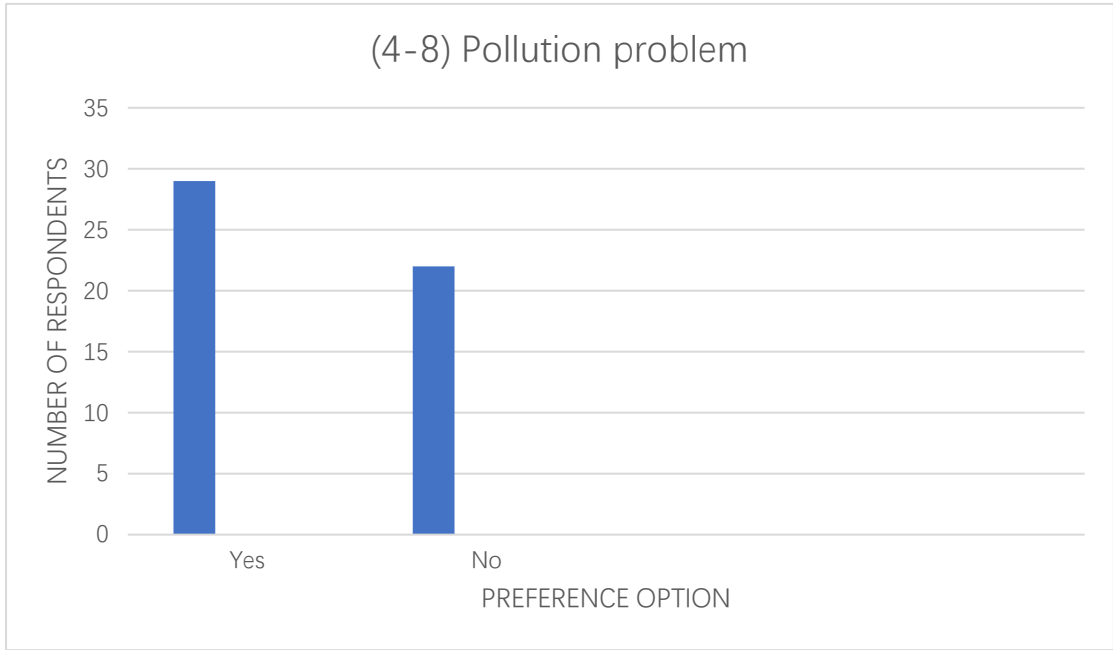
(4-2) Use of green products

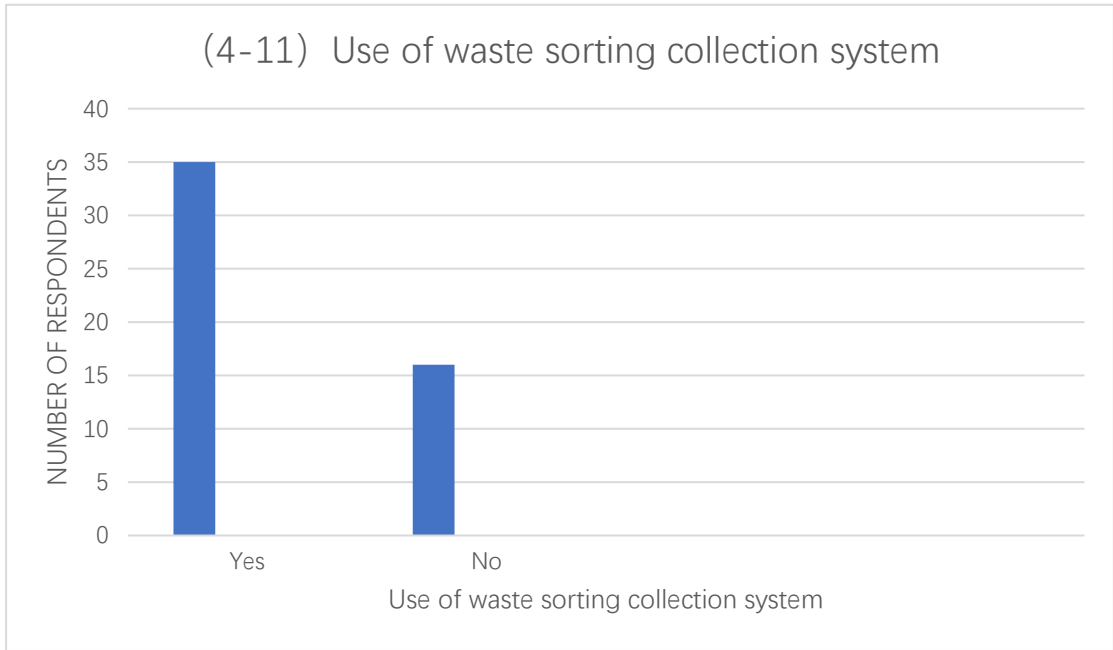
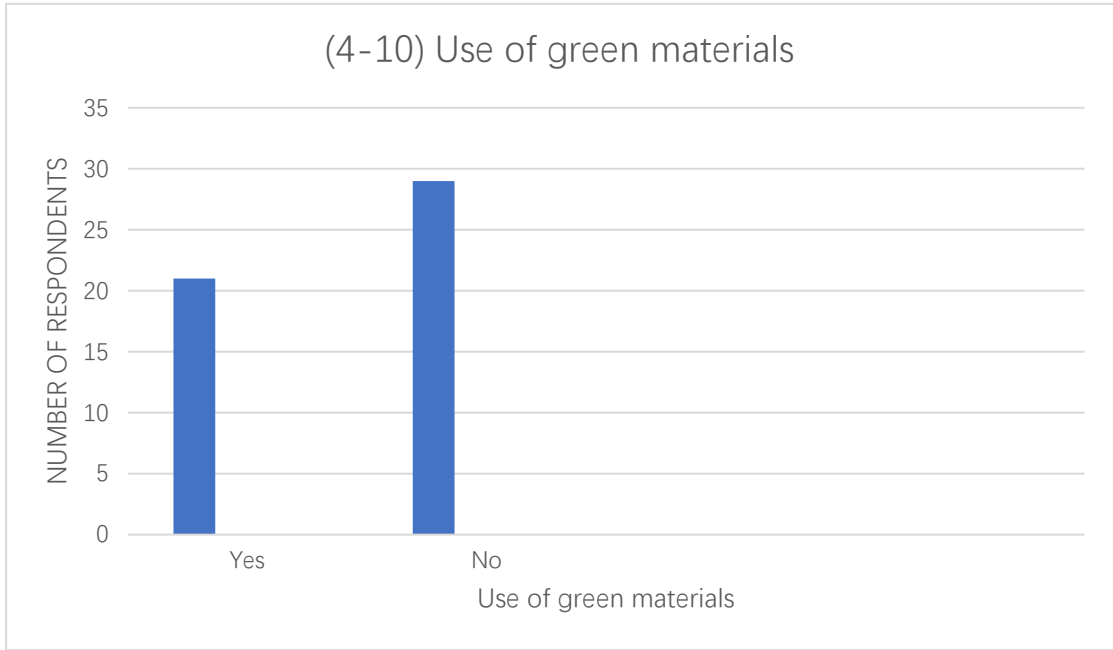


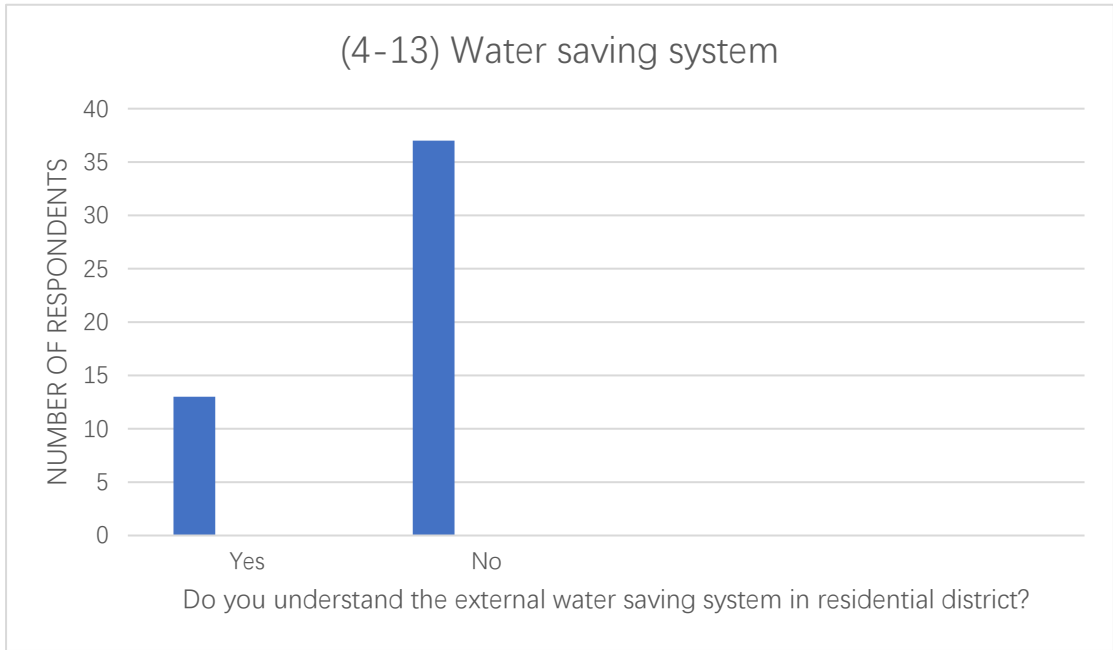
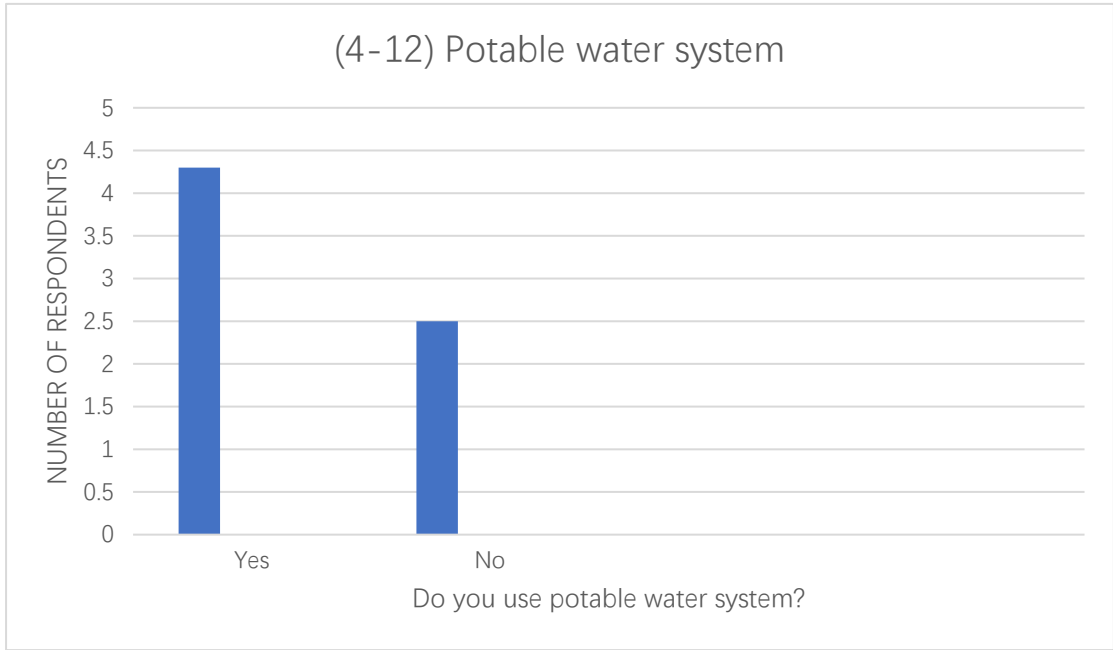


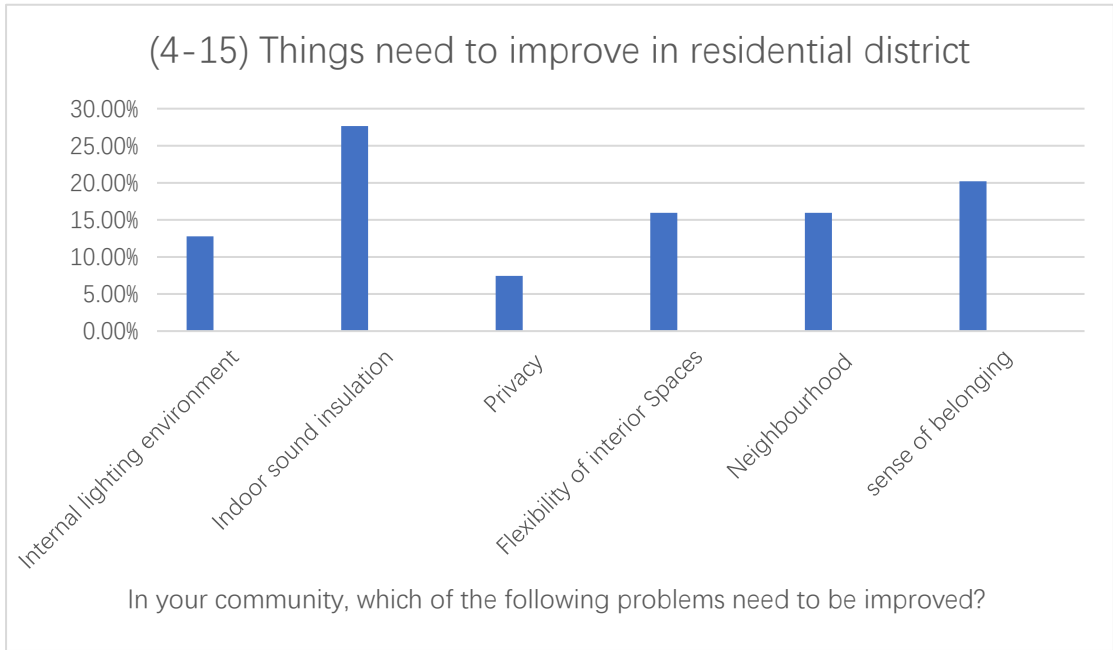
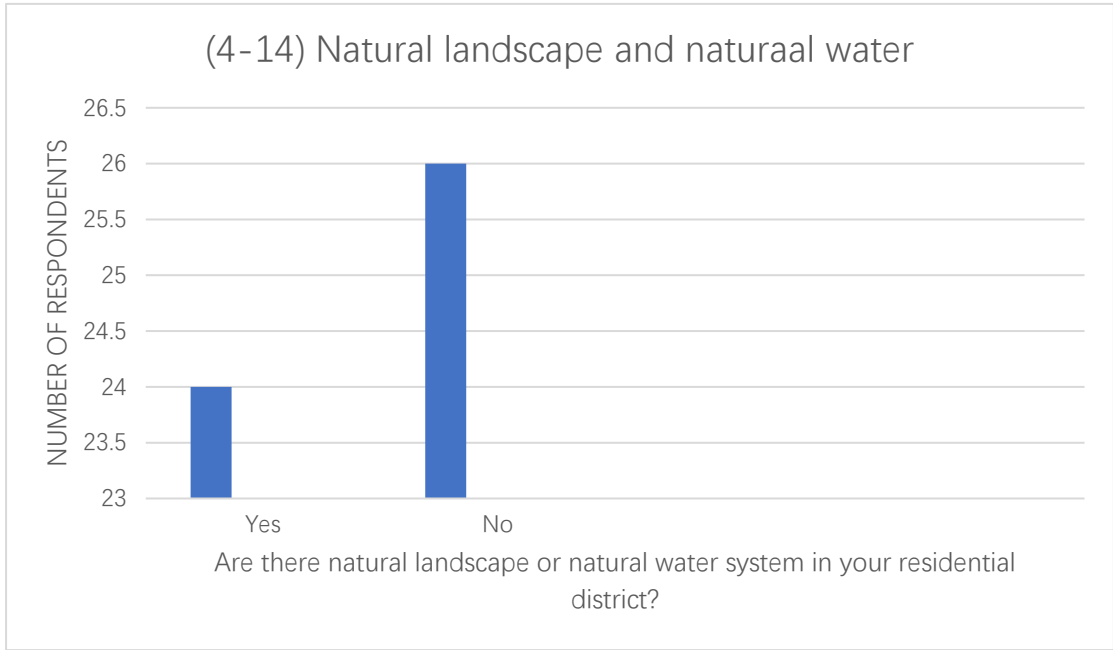




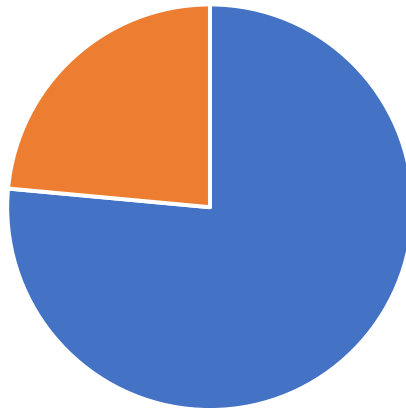






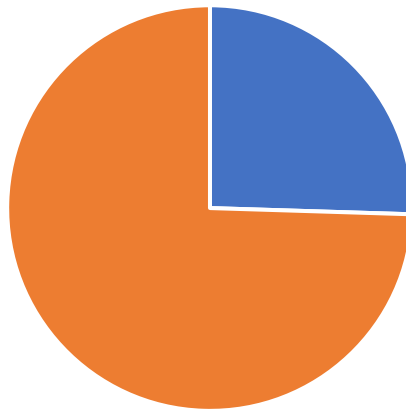


(4-16) Are you familiar with the facilities in the residential area?



■ Yes ■ No

(4-17) Do you have chances to take part in community management?



■ Yes ■ No

(4-18) Do you experience the concept of "sustainable" design in your residential area?

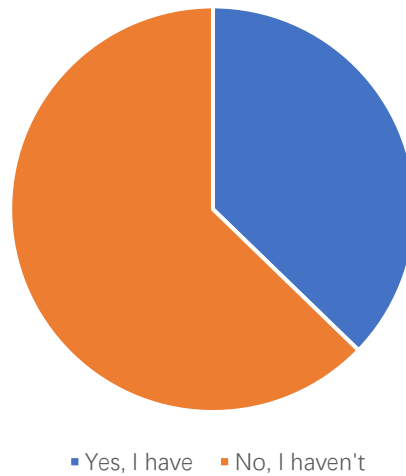


Chart 5.5 Residents' attitudes on sustainable design

There were two rounds of questionnaire survey. The first round of pilot surveys prepared many questions, and due to the large number of questions, very few residents successfully completed the questionnaire. Therefore, many of the questions in the second round of survey was deleted, leaving the questions that were relatively easy for residents to answer and quick to choose. The questionnaire aims to understand of residents' daily living conditions and experience. There are also issues related to sustainable housing, green lifestyles, and green products. Many residents are interested in the issue of sustainable lifestyles. However, due to the lack of opportunities to fully understand these knowledges, these knowledges cannot get more in-depth relations with the residents. In the survey, it was found that the residents' lifestyle would be significantly and quickly affected by the convenience. For example, the ubiquitous bike-sharing sites can most directly affect the way of travelling. Convenient and fast delivery facilities can generate the most connections between residents. And the places where these facilities are usually located are popular places. People can create a sense of neighborhood here, compared to a spacious community park. These are elements that have a greater relationship with the community, and it seems more effective to combine these elements to think about how to popularize and disseminate sustainable living styles and concepts.

5.2 Case 2: Urban village renovation in Kunming city

5.2.1 Introduction of urban village in China

5.2.1.1 Background of urban village - a special phenomenon of urbanization in China

Literally speaking, 'urban village' represents a kind of states that 'urban' and 'village' existed at the same time within the urban space. In the process of urban development, many villages that used to locate at the outskirts of urban area have been surrounded by the newly built-up urban environment.

Different from the UK “Urban Village”²⁸ concept, ‘urban village’ in China is a special phenomenon during the rapid urban development within urban area. In addition, there are numbers of factors that promoted ‘urban village’ become critical issues among academics. Rural land has been expropriated for more efficient use, which affected on all aspects of original villages, such as, the composition of local inhabitants, residential pattern, the composition of income, and living environment (Zhang, 2016). Along with the rising land values, and business incentives, different kinds of contradictions, collision, and a growing number of social conflicts have emerged. The most obvious problem as we could see in and around the urban village is the contradictions and segregations existed in the process of urban development. For an ordinary villager, losing farmland means they have to look for other ways to earn their living in the city. Providing low-rent house for migrant workers become their main source of income. On the limited homestead²⁹, extra rooms have been constructed by villagers themselves to create more space to rent, and such crowded building groups created huge contrast with a newly-built urban environment. Sacrificing a certain degree of living quality by spending less money on rent, is kind of ‘welfare’ for migrant workers living in the city. Therefore, jumbly community, lower standard building quality, and informal management system, and so on, brought different kinds of social problems to the city.

Experts and academics from different fields studied ‘urban village’ in China from different perspectives. Wang, a photographer, who was spending years walking through numbers of ‘urban villages’ in Guang Zhou, and recording the most realistic lifestyle of inhabitants in ‘urban villages’. Wang states that there is a strong sense of belonging among original villagers in the ‘urban village’, even though the living quality is not comparable with the life in the cities. For migrant workers, they could find a place to live where they could afford their daily needs in the city. However, due to the disordered residential pattern and form, numbers of social and security problems are unavoidable in the urban village. It is also one of the main reasons that triggered urban village renovation implemented in different Chinese cities (Wang, 2011, pp.22-23).

Huang (Huang, 201, p.102), the urban planner who has studied ‘urban village’ in China for more than 16 years, shared ideas and experiences about the relations between ‘urban village’ renovation and contemporary urban planning. He states that in the real ‘urban village’ renovation project, ‘urban villages’ are usually demolished instead of regenerated or improved according to the actual situation.

²⁸ “The British Urban Villages Movement was started by the Urban Village Group in late 1989. This Group was set up in response to a challenge from the Prince of Wales, who wanted to see a new form of development which would overcome the problems inherent in much of the planning and design of the previous 20 years. The main task of the Urban Village Group was thus to promote a higher quality and more sustainable urban environment.” (Kim, 2002, p.64)

²⁹ Homestead land (宅基地): Rural homestead refers to the collective construction land owned by rural villagers based on their membership in the collective economic organization (administrative village or production team), which can be used for building houses. Farmers do not have to pay any land fees which can be obtained. With the nature of welfare and social security functions, generally they cannot inherit. However, the houses built on the homestead are the personal property of the villagers and can be inherited according to law. The villagers only have the right to use the house site, not the ownership (Law of the People's Republic of China on Land Administration, 2019, p.5).

Huang discussed that the inherent value of ‘urban village’ which could be considered as a reference to analyze the development of contemporary urban planning. His study emphasized the inherent value of ‘urban village’ and provided possibilities to think and redevelop the ‘urban village’ with a bottom-up approach.

To discover and define the inner value of “urban village” to the study field of urban planning, urban design, and neighborhoods design, some discussions arisen, which explored the reasons why “urban village” became “some people’s preferences in the city” (Sun, 2018, para.2). “Urban village” has been considered as “an urban heritage from future” (Zhang, 2016, para.2). There are features observed and summarized from existing Chinese “urban villages” which could explain why it could be considered as “heritage” (Zhang, 2016, para.2): “each ‘urban village’ has its uniqueness, non-replicability, and non-reproduction”; and “‘urban village’ is the urban phenomenon in the context of contemporary history”.

“Urban village” redevelopment projects have been carried out in different Chinese cities. Strategies and redevelopment patterns have been made and implemented in the cities. The “urban village” which has been firstly transformed has provided planning and design references for other cities. However, not only the general framework of “urban village” redevelopment need to be well understood, but also the features of “uniqueness, non-replicability, and non-reproduction” in “urban village” need to be concerned in the future redevelopment project that the cultural and social issues are the critical aspects of sustainable development.

Urban village is the outcome of rapid urban development in China. And the establishment of “urban village redevelopment” in Chinese cities represents the growing problems in the city. This section discusses the relationship among “urban village” redevelopment, urban design, and neighbourhood design. And the aim of discussion has been set, that how we understand “urban village” redevelopment by identifying the contents of urban planning, urban design and neighbourhood design, and what implications could be found which could have chance to provide ideas for the development of urban research.

“Urban planning deals with physical layout of human settlements” (Taylor & Nigel, 1998, pp.3-4) . Meanwhile, “Urban planning is a technical and political process concerned with the development and design of land use and the built environment, including air, water, and the infrastructure passing into and out of urban areas, such as transportation, communications, and distribution networks.” “The primary concern is the public welfare, which includes considerations of efficiency, sanitation, protection and use of the environment, as well as effects on social and economic activities.”

Peter Webber (Urban design and new nomads, 2017, para.8) defined urban design as a process of shaping urban form through time, and it is "creating the theater of public life" urban public space, also described by Jerry Spencer (Urban design and new nomads, 2017, para.8). Peter Batchelor and David Lewis (1985, p.10) defined urban design as a design method that takes place in an urban environment in a broad sense. These design methods include economic projections, packaging new developments, negotiating public/private financial partnerships, setting up guidelines and standards

for historic revitalization, forming non-profit corporations that combine citizens with public and private sector financing resources, all are considered as design. Good urban design not only weaves together the urban area and landscape but also organizes and unites the environment and people living in the city during the process of urban design.

Buchanan (1988) has written that urban design is concerned with analyzing, organizing, and shaping urban form to elaborate as richly and as coherently as possible the lived experience of the inhabitants (pp.31-41). The essence of urban design is the creation of places. This place is not just a specific physical space, but all the activities and events it creates. Cities will be active and vibrant because of such places. Urban design can relate places and inhabitants, activities and urban forms, nature and architecture to form a dynamic and interactive place. Urban design combines many factors such as site manufacturing, environmental management, social equity, and economic vitality to create a place with unique beauty and personality. Urban design also combines these and other elements to create a scene for a region and then deploy the resources and skills needed to turn the vision into reality.

Different from the urban planning and urban design, the renewal and reconstruction of urban villages seem to need specific design considerations for specific groups with more details. For planning and design, some of the basic stages of the planning process are the same as for other types of planning. For example, collecting data, analyzing data, decision-making, implementation of plans and monitoring results. In a relatively simple planning process, these can be done simultaneously. Community planning is quite different from other planning and design process. The first stage of community planning must identify a collective set of goals, or a common vision. There are many ways to make community plans. What type of planning is chosen depends on those local needs. The selection of planning methods will become an important part of the planning process. This will affect the role of planners and citizens in the planning process, as well as the role of government planning departments in the planning process. There are five types of planning methods that can be implemented for different planning purposes and circumstances. (1) A planning approach driven by determined objectives. This is a traditional way of planning. This planning approach establishes a set of long-term goals for the community that can guide the planning process. Public participation is the most important part in the process of determining goals. (2) A trend-oriented planning approach. Trend means the possibility of change. It is not an ideal way to form a planning process. However, the tendency can provide effective reference for other planning methods. (3) Opportunity-driven planning. In local planning, citizens participate and identify development opportunities and benefits for their communities. Professional urban planners often could find opportunities, such as underutilized transportation facilities, abandoned industrial buildings large and small, and underutilized cheap energy. (4) Problem-driven planning. In a problem-driven planning process, communities identify the important issues they face and focus on solving them in a programmatic manner. This is a relatively simple and effective way to attract more citizens to participate in the planning process. (5) A common vision-driven planning. The phrase "common vision" is now often associated with the process of setting goals. It can be used more precisely to express goals that control the entire development process.

Most of the local planning is carried out by a combination of different planning methods. It is more

convenient and clearer to understand them if this comprehensive planning method is described separately. It is difficult to explain them together. When preparing a community plan, choose one or more planning methods that meet their needs. In this way, the problems that existing in the community can be solved and planned more comprehensively.

Urban villages refer to mixed communities that exist between cities and villages with typical urban-rural duality (Peilin Li, 2002, p.168). At the same time, urban village is still a rural community with collective ownership and rural management system within the urban built-up area (Deng, Wu, 2004, pp.5-7). Village in the city is also defined as a unite that combined with villagers' housing settlements and village communities during the process of urbanization, and the organization and its social relations continue in the urban village. Due to its complex group of inhabitants, urban village also is defined as a "inhabit communities of low-income" (Zhao, Chen, 2010, p.110). Due to the rapid economic development of the city, the migrant population has poured into the urban village where the urban-rural dual social and economic system still exists. The aborigines in the urban village take renting houses (rental houses and collective property) as the main source of income, forming this community dominated by the non-resident population (Nie, 2011, p.76). According to the location of urban village in the city, urban villages have also been defined as a featured business community which is located in the city centre with great commercial value (Zhou, 2019, p.667). Because of the low living cost in the urban village, a large number of migrant workers meet their requirements of urban life (Ye, 2005, p.22). Due to its special urban location, large-scale migrant workers, and the huge impact of urbanization development on urban villages, urban villages have very strong community attributes. Therefore, a more detailed and targeted reconstruction mode is needed for the reconstruction of urban villages to target at the complex community relations in urban villages.

5.2.1.2 Strategy about 'urban village'

Western scholars have begun to investigate 'urban village' in China since the nineties of the 20th century when the first 'urban village' renovation project has been implemented in Guang Zhou and Shen Zhen. Uwe and Sonia put more concerns on the policies of renovating 'urban village' in the Pearl River Delta Region. As the beginning of 'urban village' renovation in Chinese cities, Guang Zhou and Shen Zhen adopted different transformation mechanisms. Different strategies have been made locally and attached importance on the actual situation in different 'urban villages'. In terms of Guang Zhou, more in-depth field studies have been taken in 'urban villages' to collect data which are relevant to villagers' demands, lifestyle, actual living conditions, environment, and so on. According to the actual circumstance, the strategy called "one village one strategy (一村一策)" has been adopted in 'urban villages' renovation in Guang Zhou. Leading by the characteristics of the different districts, the renovation of 'urban villages' in Shen Zhen put more concerns on the diversity of the regional development. Villager's demands have been well considered, and how to implement 'urban village' renovation project by taking urban development as a clear target, is more important within the project in Shen Zhen (Schoon, 2011, pp. 63-70).

Furthermore, Sonia also paid more attention to characteristics of the political decision-making process of urban village renovation project in Chinese cities (Schoon, 2011, pp.63-70). Ways to

develop urban village renovation of the Chinese governments at different levels have to be understood to look at the challenges to other Chinese cities, which a great number of urban village renovation projects will be implemented in the future transformations of urban village project. In Sonia's study, a special form of pragmatism shows that general public is more willing to accept more practical methods even though it is not a formal approach. The pilot of urban management strategy was used for implementing 'urban village' renovation project, especially in Guang Zhou and Shen Zheng. There is no case to follow in other 'urban village' renovation project for different Chinese cities, more reference and experiences of implementing project will be learned from these pilot cities (Schoon, 2011, pp.63-70).

According to the investigation records investigated by research team from Planning and Design Institution of Kunming, existing 'urban village' in urban built-up area have been classified into three types. For each types of 'urban village' in Kunming, there is no clear boundary among them, and with the development of the city, first type 'urban village' will have chance transferring to the third type. It means the renovation of the 'urban village' will be increasingly difficult and complicated. According to the 'No.2 report of urban village in Kunming'³⁰, four development strategies have been made to implement 'urban village' renovation project. Firstly, the 'urban village' renovation project will be led by government, and then introducing developer and source of investment to start the project; secondly, the 'urban village' renovation project will be tied to the development of urban infrastructure, which also needs to consider the development plans of a neighbouring area; thirdly, 'urban village' renovation project could have a chance to lead by villagers themselves if the village collectives have enough wherewithal to implement the project; and the fourth strategy is, the whole 'urban village' renovation project will be led by the government with the collective fund to support the implementation (No.2 report of urban village in Kunming, 2008, p.28).

5.2.1.3 Questions need to be taken seriously during the 'urban village' renovation project

"In bustling cities, modern grandiose new constructed buildings arranged on both sides of the road. But the disordered cottages mixed with old and new existed behind those thriving construction." "Between the newly constructed high-rise buildings, each urban village stands like huge concrete groups of buildings which are all up to 20 meters high (normally six-story residence)" (Figure 5.9). "The buildings in urban villages were described as 'handshaking buildings' and 'kissing buildings'" (Dai, Wang, 2011, pp.24,27). These are the most common descriptions from social media report of 'urban villages' in China which are widely accepted by the public.

Urban villages are commonly inhabited by the poor and transient, and as such they are associated with squalor, overcrowding and social problems. However, they are also among the liveliest areas in some cities and are notable for affording economic opportunity to newcomers to the city. The complexity of 'urban village' have determined that 'urban village' renovation project would challenge different problems during the implementation.

³⁰ No.2 report of urban village in Kunming: a government document recording the investigation of contemporary 'urban village' within urban built-up area in Kunming. The investigation was conducted by the kunming municipal planning bureau in 2008.

‘Urban village’ in China shows an existing phenomenon of residential district that is under the transformation process between rural and urban. It caused by the rapid urbanization, and expansion of urban land which encircled the original villages and the farmland inside. Generally speaking, ‘urban village’ refers to a special phenomenon of urban development in economically developed coastal cities of China (Figure 5.9 and Figure 5.10). But, the ‘urban village’ does exist in many Chinese cities, and renovation project has been implemented significantly.

The main reason that formed ‘urban village’ is urban-rural dual land system in China. The transformation of land ownership is the precondition of ‘urban village’ renovation project, and the roots of resulting contradictions and difficulties during the project. In the process of ‘urban village’ reconstruction, many issues need to be taken seriously in respect of sustainability are constantly appearing. Such as:

- Possibilities to achieve more sustainability in residential district;
- Ways to maintain the vitality of urban spaces;
- Urban design, safe neighborhood, appropriate scale of street layout, walkable residential area, etc.
- Residential segregation in new residential district;
- The sense of belonging among original villagers move back to new residential area;
- A more reasonable way to carry out public participation;
- Levels of trust among villagers on urban village renovation;
- Responsibilities of urban village renovation project to migrant workers, low-income residents, and new residents;
- The ability of balancing profit among stakeholders;
- Defining the roles of urban planner and architects, with the aim of improving overall sustainability;



Figure 5.9 Urban villages in urban built-up area, Xian village, Guang Zhou (Dai, 2011)

The first to start the transformation of urban villages are these China's first-tier cities., like Beijing, Shanghai, Guangzhou and Shenzhen. At the same time, these cities are also the first to practice and study the strategy of urban village reconstruction. In the past 10 years, the reconstruction of villages in Guangzhou has undergone a period of discussion. "Getting rich by demolition" has become almost a famous urban legend, and perhaps the most legendary one is Xian village. Since the renovation plan was proposed in 2009, the Xian village, which is only 1 km away from the central axis of Guangzhou city, has experienced a long period of discussion and dispute. A bird's eye view of the city shows the most modern CBD on one side and the old buildings on the other. This is a huge contrast.

On July,2009, the overall reconstruction work of Xian village was officially started, and it is planned to complete the overall reconstruction work in three and a half years. In February 2010, Xian village held a general meeting of shareholders and voted to approve the compensation and settlement plan for the overall reconstruction of Xian village. In April 2010, the reconstruction work was officially started, and the relocation compensation and settlement agreement were signed with the villagers. In July 2010, the first batch of temporary relocation fees began to be paid to villagers. Demolition began on March 31, 2011. According to the statistics of the village committee, one year after signing the relocation compensation and resettlement agreement with villagers on April 1, 2010, a total of 1,141 households signed the agreement, accounting for 80.29% of the total number of households in the village. In April 2011, a few unsigned villagers had a dispute with the demolition company because of the enclosure of the construction site. The State Council's wind affairs office intervened and ordered the demolition to stop. From the date of suspension to the end of November 2011, no contract was signed, and the independent reconstruction fell into difficulties and crises.

A review of Xian village's independent reconstruction model shows that this model has made good progress in the early stage, but due to the long reconstruction time, the village company has serious financial management problems. As a result, it is difficult to continue the independent reconstruction mode which is mainly funded by the village and supplemented by the government.

Xian village, which is closer to the center of Guangzhou than LieDe village, has been stuck in the ruins for a long time. It's like a city under siege, with people inside trying to get out and people outside trying to get in. For migrant workers, there are housing with affordable rent. For locals, it is a "hometown" where they can't go back to. And for property speculators, it could become an investment opportunity at any time. Walking through the lanes of Xian village, you can see small advertisements for rental houses everywhere. Walking down the streets of Xian village, residents still gather inside the walls every day, and their lives needs continue. The whole reconstruction of Xian village starts from LieDe road in the east, Xian village road in the west, Jinsui road in the south, and Huangpu road in the north. It is divided into three plots, namely, the villagers' return plot, village collective property plot and financing plot. It is understood that the biggest substantive progress of xian village reconstruction is the compensation housing project. Phase I and phase II of the compensation house construction, the total amount of apartment is more than 1000 sets. All the houses will be used for the relocation of all the villagers' of original sites. After the reconstruction of the whole village, there will be an open market, kindergarten, ancestral hall, activity center for the elderly and other public facilities. In 2009, when Xian village announced the reconstruction, the

housing price of Zhujiang new town was only 7-8 thousand/square meters. During the eight years of reconstruction of Xian village, the housing price of Zhujiang new town has already exceeded 100,000, with a growth rate of over 12 times.

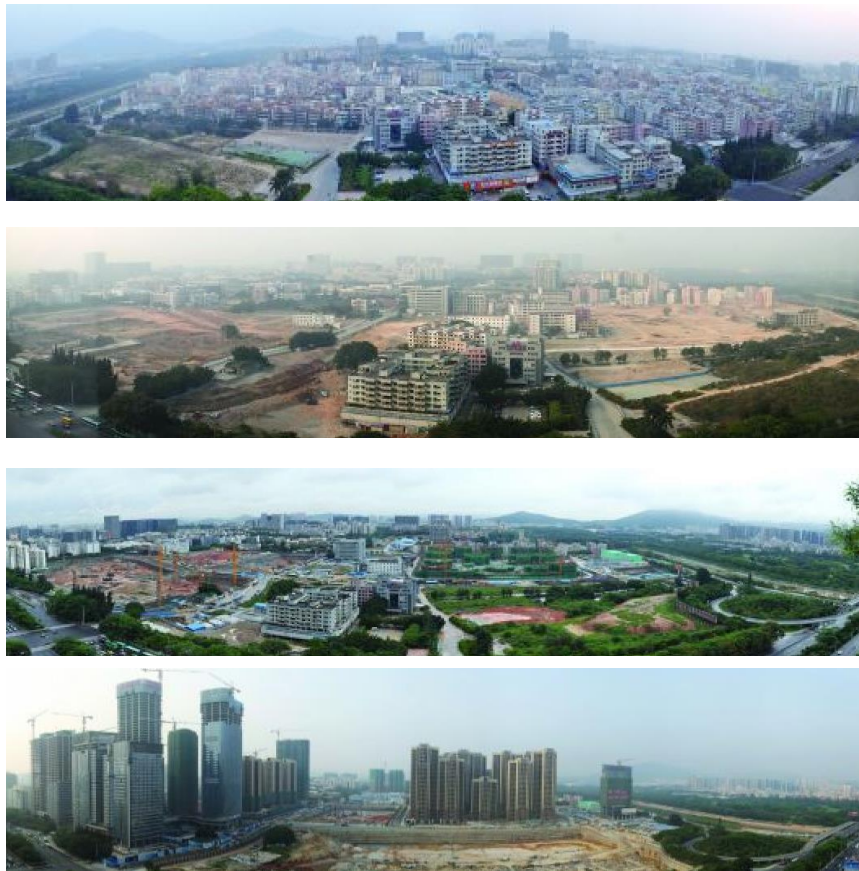


Figure 5.10 Da Chong Village, Shen Zhen

(Shenzhen City Renewal Bureau, download from internet)

Access date: 19.03.2018

Web: http://news.k618.cn/society/201708/t20170818_12433409.html

Dachong village reconstruction project is located in the eastern district of Nanshan science and technology park, next to Shennan avenue, which is the largest urban village reconstruction project in Shenzhen. The village in the city includes a 300 meter high landmark office building and ancillary office buildings, a five-star hotel, two four-star hotels, an 180,000 square meters shopping mall and 2.28 million square meters of business apartments and residences. The design of the project introduces a new business model and way of life into the reconstruction of the old village, so that the area can form a new community with international quality and show the diverse urban vitality of the future.

The reconstruction of Dachong village was put on the agenda after rural urbanization in 1992. In March 1995, the land and land bureau of the original city planning identified the old village reconstruction of Dachong village. Over the past 10 years, the reconstruction of Dachong village has been highly concerned and valued by the relevant departments of the city and district. In March 2002, Nanshan district government entrusted the city planning institute to work out the

reconstruction plan of Dachong village and set aside 2 million yuan as the starting fund. In terms of the functional layout of land, in addition to the planning of general residence and apartments, there are more related functions such as business, culture, entertainment and some research and development incubators and professional exhibition venues. The property contract of the old village reconstruction project of Dachong village has been started, with 168 households signing the contract on the first day. It is estimated that the renovation project will create 1 billion yuan households and 400 multi-millionaire families. The survey found that in order to cope with high housing prices, most of the original villagers did not choose cash compensation but property compensation.

5.2.2 Current 'urban village' renovation project in the city of Kunming

Since 2008, with the tightening policies of new area's development, urban construction, and urban renewal development in central area of Kunming is getting more tense. 'Urban village' renovation as the main development target was getting more concerns and three-years political goals were raised that "336 'urban village' within the urban built-up area need to be redeveloped and upgraded." The case study - Tai He village, has been incorporated into the renovation plan, and the project has started in the year of 2010.

In this section, the investigation of current 'urban village' renovation project in Kunming has been reviewed to show the significant amount of constructions during the redevelopment process. Huge amount of constructions and relevant mixed group of residents in new residential district, that emphasized the importance of thinking about sustainability during the process of planning and design. In addition, the procedures of implementing 'urban village' renovation project in Kunming, the local policy, and strategies have been reviewed and discussed, to see how a 'urban village' renovation project could be implemented, who will be involved, and to what extent stakeholders could influence the development of project.

Furthermore, the case - Tai He village will be reviewed, and the up-dated investigation will be discussed and analyzed. Such as the current conditions of built-up environment, the daily life of residents in the new residential district, and also the previous design intentions will be comparatively observed with the actual built-up environment around the new residential district. More importantly, the status of resident's daily life in new residential district will be observed and analyzed to present the relationship between 'built up environment after planning and design' and 'perceptions of residents', and how it matters to sustainable neighbourhood design.



Figure 5.11 Around urban village, Kunming (Wen Jiang, 2016)

Due to the duality of land ownership³¹ in 'urban village', the negotiations among stakeholders are usually complicated, and it also takes long time to defined those problems. Those land which have not been developed in the same period formed a 'strong undefined image' beside the newly-built residential district.

³¹ Duality of land ownership: Article 10 of China's 1982 Constitution clearly stipulates, "Urban land belongs to the state. Land in rural and suburban areas shall be owned by collectives, except for those which belong to the State as prescribed by law. "China's "Land Management Law" also has similar provisions. Meanwhile, the Land Administration Law stipulates that "the right to the use of land can be transferred according to law. The state may requisition land according to law and make compensation for the public interest." (<Constitution of the People's Republic of China>, 2018, para. 10; <Land Administration Law of the People's Republic of China>, 2019, chapter 2)



Figure 5.12 Farmland maintained in urban area and space in ‘urban village’, Kunming (Jiang, 2016)



Figure 5.13 Relocate villagers in new residential district, Kunming (Wen Jiang, 2016)

5.2.2.1 Reviews the current conditions of ‘urban village’ in Kunming

There are 336 ‘urban villages’ in built-up area of Kunming (**Figure. 5.14**). Residential land area is 19.5 k m² which counted for 7.8% of the whole built-up area of Kunming (249k m²). The overall building area is 38.17 million square meters, and the average plot ratio is 1.59. The total population

in all ‘urban villages’ of Kunming is 760 thousand, and the population density is 39 thousand per square kilometer.

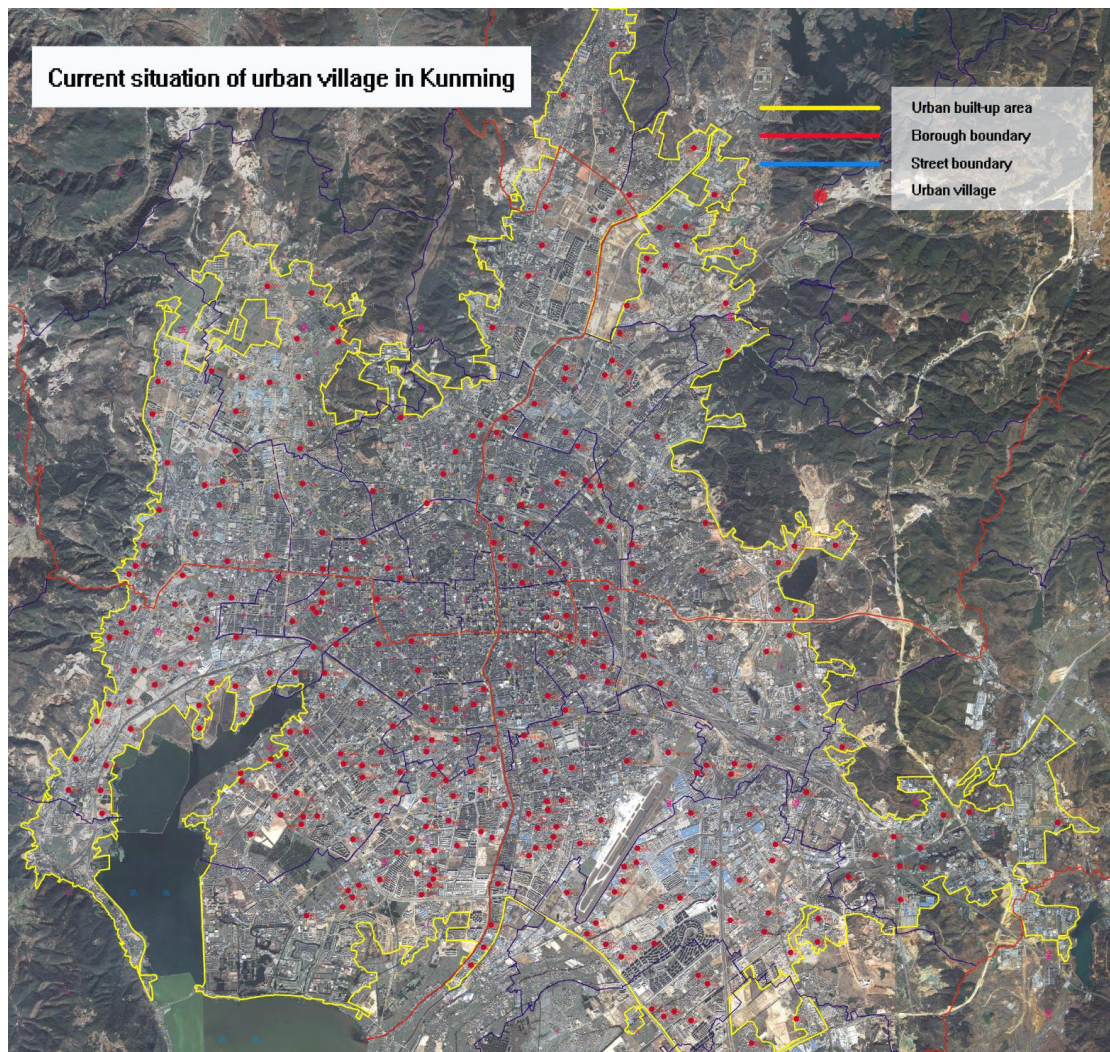


Figure. 5.14 Current situation of urban village in Kunming: the distribution of urban villages within Kunming urban area (Jiang, 2020) ³²

³² Figure. 5.14: The graph is drawn by Wen Jiang according to the published urban village list of Kunming.

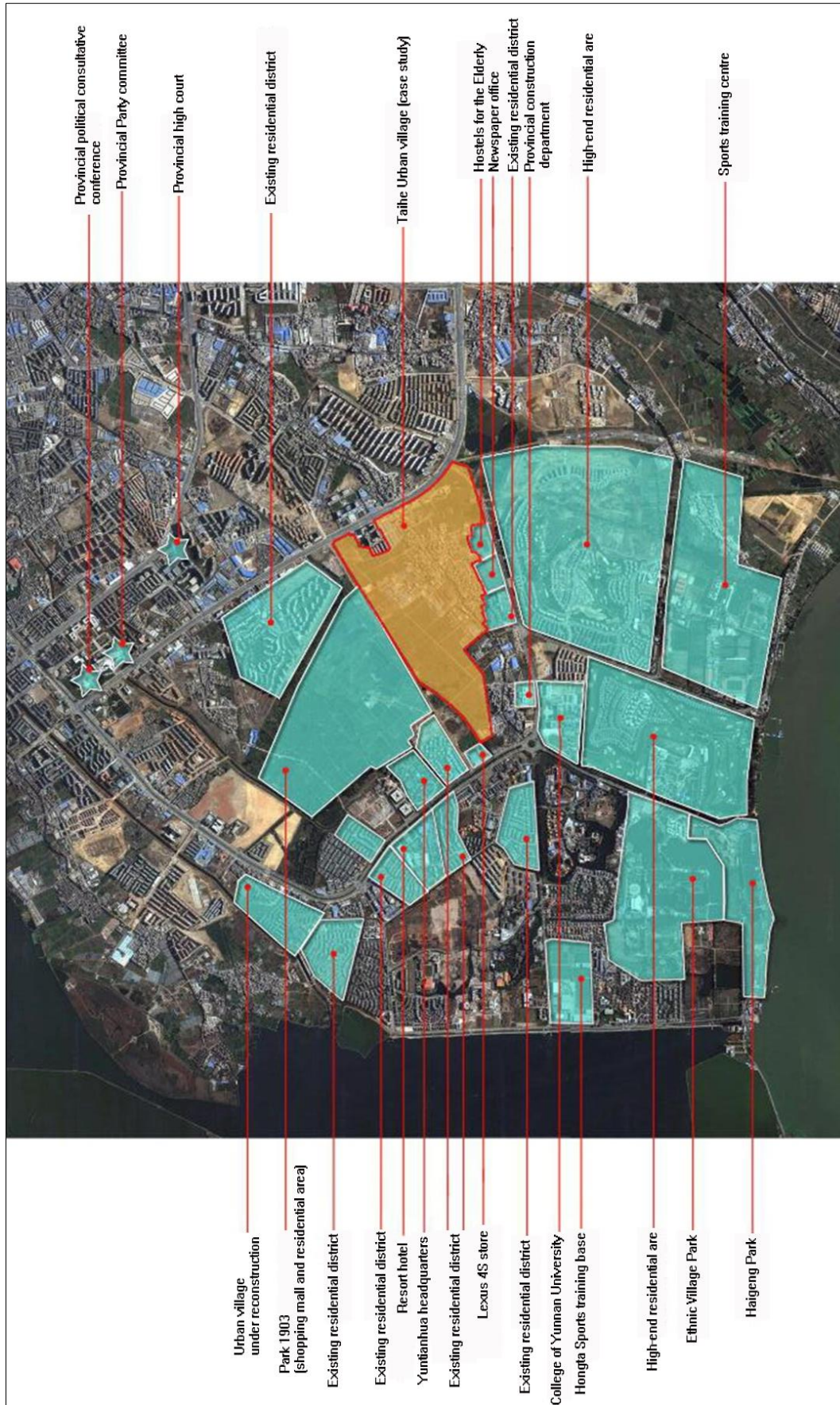


Figure. 5.15 The development around the Taihe urban village (case study) (Jiang, 2020)

There are 72 'urban villages' in the area within the second ring road. Residential land area is 1.94k m² which counted for 4.3% of the area within the second ring road (45.3k m²). The overall building area is 5.38 million square meters, and the average plot ratio is 2.48. The total population in this area is 210 thousand, and the population density is 108 thousand per square kilometer.

According to the investigation data relating to the current status of 'urban villages' in Kunming, a number of prominent characteristics shown up, and most of them are also the difficulties with the implementation of 'urban village' renovation projects. There is a large quantity of 'urban villages' have been defined by urban planning administration in Kunming, and they are widely distributed all over the urban built-up area (**Figure. 5.14**). A large area with a relatively low floor area ratio and a high building density will lead to a waste of land use. Therefore, in order to balance the urban development and improved living quality, the implementation of 'urban village' renovation project is inevitable. However, a large number of projects implemented simultaneously will put a great challenge on the consumption ability of the housing market, and also on the living environment.

1) Types of 'urban villages' in Kunming

Due to the different geographic conditions and location, the 'urban villages' within the built-up area of the central city have been impacted differently by the city's construction. As a result, the level of development and the images of these 'urban villages' have developed differently. In order to better define the problems of 'urban village' in Kunming, an investigation has been done by research team from Planning and Design institution of Kunming, and finally defined three types of 'urban village' which located in urban built-up area in central Kunming. According to the result of classification, the renovation plans and development targets for each type of 'urban village' could be defined, and relevant project development pattern will be made afterwards.

- The first type of 'urban village' was located at the outskirts of urban built-up area or connected with it. The large-scale of spontaneous constructions built by villagers has not started yet, and the situation in 'urban village', such as, self-built houses, lower living quality caused by over crowded living space, was under control and manageable. (PDIK, 2008, p.10) This kind of 'urban village' was relatively easy to transform and construct within its own development. However, with the expansion of the city, this kind of 'urban village' would turn into the second type, if it did not attract enough attention by providing appropriate guidance and suggestions.

- The second type of 'urban village' was surrounded by an urban built-up area, but the lands which have potential to be developed, do exist in the 'urban village'. According to increasingly demands of rental housing, and policy of 'methods of compensation of demolition', the self-built constructions have started gradually (PDIK, 2008, p.11). This kind of 'urban village' still had a potential for improvement, but an appropriate concept of residential planning and design with certain degree of control is needed to provide a long-term development target.

- The third type of 'urban village' was completely surrounded by a urban built-up area (PDIK, 2008, p.12) This type of 'urban village' had already been fully used by local residents. There was no land

for development and there would be lots of difficulties during the ‘urban village’ renovation projects.

2) Planning and design procedures of ‘urban village’ renovation project

The implementation process of an ‘urban village’ renovation project involves the participation of all levels of government departments, planning departments, grassroots organizations, Planning and Design Institutions, and local enterprises (developers). Due to the complicated background of the ‘urban village’ in China, the key to implementation of the project is to coordinate the opinions of all stakeholders. And the aim of coordination is to balance the profits among all stakeholders. There are several processes need to go through for the ‘urban village’ renovation projects that before it can be implemented (**Table 5.1**).

According to the major processes for approving ‘urban village’ renovation projects, ‘Specialized Planning of Urban Village Renovation Project (SPUVRP)’ is the key document throughout the whole process. The purpose of the SPUVRP could be “the main evidence for ensuring the planning control condition, technical-economical index, the way of supply land, plans for demolition and settlement plan of relevant planning plots. (Yu, 2016,p.57) SPUVRP covers number of contexts which could be divided into four parts: (1) ensuring the development boundary; (2) ensuring development model and strategy; (3) ensuring way of supply land, plans for demolition and settlement relocate villagers; (4) ensuring control requirements of land use. The first three contexts are relevant to planning strategy of the whole project which controlled by district government, and the last one is about planning management indicators, such as, urban land-use layout, function, mix-use, land use density, construction quantity and so on, and these are controlled by local municipal bureau for urban planning. Therefore, the district government's stance determined the nature and the direction of ‘urban village’ renovation project.

However, an top-down working pattern could process the project with certain order and period, and it also framed a rigid rules for detailed design. In this case, what kind of detailed planning and design could meet the needs for relocate villagers and potential tenants in newly built residential district? And what kind of evidences and information are needed for urban planner and architects to provide more solutions for better living environment for residents? These uncertain questions need certain answers to develop guidance for detailed planning and design of new residential district.

3) Roles of stakeholders

There are several stakeholders who were involved throughout the whole procedure of ‘urban village’ renovation project. As the flow chart of project implementation shows, the main stakeholders who will be involved in decision-making stage including: city government, developer (enterprise), and Municipal City Planning Bureau. Final users such as relocate villagers participated as supporting group for ensuring and negotiating the boundaries of development with city government (Chart_01). During this stage which seems like the only chance for villagers participating in design procedure, their expectations for new residential district, demands, lifestyles, are not considered and being expressed well. According to the investigation in reconstructed ‘urban village’ (such as Tai He village), relocate villagers lives a totally different way which compared with the design intention

from decision-makers and designers. Therefore, in order to bridge the mutual understanding gap between decision-maker and final users, a feedback process needs to be established to collect information from final users, and to guide them present their needs accurately.

<p>01. Municipal District Government Aim: formulate policies for developers to participate in the renovation of urban village project.</p>
<p>02. Developers who are interested in participating in the project Aim: Developers need to pay the project deposit according to the relevant policies proposed by the government. The developer and the district government need to confirmed and signed an agreement on the cooperative development of urban village renovation.</p>
<p>03. District Government Aim: Delimit the boundary of the urban village renovation project. Villager: Participate: Collecting villagers' opinions by voting to further determine the boundary of urban village renovation.</p>
<p>04. District Government Aim:</p> <ul style="list-style-type: none"> - The district government shall report to the planning Bureau the boundary of urban village renovation; - Receive the planning guidance from Planning Bureau; - In addition to the plot ratio, all planning control requirements should be identified at this stage;
<p>05. Developer should pay for the advance-fund Aim:</p> <ul style="list-style-type: none"> - Developer should pay for the advance-fund; - The developers need to assist the district government to complete the land expropriation and demolition in urban villages; - Developers need to assist the district government to complete the urban village specialized planning; - Developers need to assist the government in reporting specialized plans to the planning committee;
<p>06. Kunming Urban Planning Bureau Aim: according to the specialized plans which deliberated and approved by the planning Committee, the planning conditions for transferring land to the land reserve Center could be provided;</p>
<p>07. Developers who are interested in participating in the project Aim: After acquiring the project land, the developer will apply for the permit certificate (Land requisition permission; Planning permission) to the Planning Bureau in accordance with the planning application procedure;</p>
<p>08. Developers who are interested in participating in the project Aim: The developer should carry out the urban village renovation (construction process) in accordance with the contents of the planning project permission;</p>

Table 5.1 The Procedures of ‘Urban Village’ Renovation Project, summarized by Yu (Yu, 2016, p.57)

Through this table, it is obvious that most of ‘urban village’ renovation project in Kunming is under the pattern of government-lead. The rigid development framework will be defined by government and meanwhile, the time limits of processing project pressures planning and design institution, there will be no enough time to do more detailed investigation for generating useful information as the pre-conditions for detailed design from all groups of final users especially from relocate original villagers.

During the site visiting in the new ‘Tai He urban village’, the situation of ‘unmatched use’ with the previous design intention can be seen everywhere. It shows that the detailed planning and design cannot meet the actual needs for certain residents’ daily use to some extent. In addition, speaking of improving living quality, which is the primary purpose of the ‘urban village’ renovation project, seems like the certain design requirements that are developed from the demands of residents could help to avoid more ‘passive adaptation’ to this designed ‘built environment’. Therefore, in order to release the pressures on planning and design institutions to achieve more appropriate solutions, a pre-design investigation must be carried out to collect and transfer data and opinions from final users to a group of a certain design basis. Furthermore, feedback from final users after they moved in the new residential district, no matter direct or indirect responses, could also provide valuable information to improve the planning and design.

In this case study, a comparative study of on-site investigation has been carried out in Tai He ‘urban village’. The development process of the ‘urban village’ renovation project has been recorded from 2010-2018. Compared with the ‘urban village’ before the renovation process, the number of issues has been addressed out to present the current problems which have been brought in with the ‘urban village’ renovation development.

5.2.2.2 Back to the ‘urban villages’ ---- a site visiting of ‘urban village’ renovation project in Kunming

The case study of the ‘urban village’ renovation project has been taken in Kunming. This project has started in the year 2010. After seven years of being implemented and developed, all the original villagers relevant to this project have moved back to their new home, and most of the commercial houses are ready for the new tenants. A new residential community has gradually formed, but the actual problems have kept coming out, which need to be well discussed and analyzed.

1) Introduction of project development

Project location: Kunming, Yunnan, China

Project starting year: 2010

Photograph: Wen Jiang

Drawing: Design team from Design and planning institute of Hai Nan Yuan Zheng (2010)



Figure. 5.16 Original village, Tai He village, Kunming (Wen Jiang, 2008)



Figure. 5.17 Urban village renovation project, Tai He village, Kunming (Wen Jiang, 2015)

The location of the project is in south district of Kunming and surrounded by Guang Fu Road, Dian Lake Road, Qian Wei West Road and Hong Ta East Road. The ‘development land’ was surrounded by empty plots, farmland, and also some small factory buildings. There existing small building groups are situated at the eastern part of site. At the southern part of site are located some ‘urban villages’ where the buildings there are old self-built village houses. Most of houses are three or four story-high, and due to the lack of enough construction management, house construction quality is not controllable and most of houses are staying in a very low-level quality.

The whole project has been through massive demolition and new construction³³. As the **Figure 5.18** shows, from 2008 to 2015, original village, neighbouring small factory buildings, and farmland around the village, are demolished; and according the planning condition, the urban configuration has been totally changed to meet new development plans. Furthermore, the neighbouring site has joint the development plan as well since 2010, a new complex and residential district has been constructed by 2017.

³³ The floor space of the buildings which will be demolished in the urban village is nearly 730 thousand square metres. The floor space for demolition in the scope of the urban village renovation (Tai He Group nos. 1-4) is 540 thousand square metres (the floor space of old residential houses is 360 thousand square metres, and the floor space of industrial factory buildings is 180 thousand square metres); the floor space for new buildings is 1.17 million square metres, and the demolition and construction ratio is 1:2.15. (Tai He ‘urban village’ renovation report document, 2010)

-2008

As what we see on the map which shows the situation of original Tai He ‘urban village’ in the year of 2008, there is a clear configuration that the original village was developed along with a small river. All the streets, pedestrian paths, village houses, and local market are all laid out along with the river. Along with the both sides of the river, there used to be public spaces for sharing the daily life among villagers, and some small retailers often do small business on the street. Back to a few decades ago, neighbours who lived around the village often catch fishes in this river, and it does hold on lots of memories for most of people. Even during the approval meetings in 2010, experts (Chen, 2010) states that ‘urban planner and architect need to consider the ‘collective memory’ in original village, the layout which was developed with the small river cannot be changed for any other form of landscape.’

Developed from the river, self-built village houses are laid out along the both sides of the river, and streets are naturally formed between villagers’ homestead land. Farmland are developed at the outskirts of the village, and there are small paths linked villagers’ houses and their farmland. This is the typical configuration of the natural village.

-2010

Since 2010, a large number of ‘urban village’ project started demolition and construction. Compared with the map in 2008, most of the ‘urban village’ within Tai He area have been demolished. In order to process the construction of the compensation houses for relocate villagers as soon as possible, the whole construction process has been divided into several periods. ‘Compensation residential district’ as the first development area, eastern part of the site has been demolished very fast and cleared. Meanwhile, the neighbouring area has started their development as well. It is clear that most of the farmland has been transferred as the construction land. Furthermore, the whole construction procedure is isolated, some daily living facilities, such as small market, shops, restaurant, are not developed at the same period. This could be one of the reasons that the ‘unmatched use’ in built-up residential district, which is different from the design intention for built-up residential district (this will be described with more details in case study).

-2012

After two years of construction, ‘compensation housing district’ in Tai He ‘urban village’ renovation project has completed., and relocate villagers have gradually moved back and settled down in new residential district. Many public facilities, such as community centre, commercial centre, property management office, have started to construct. Furthermore, commercial houses in the central part of the site, have started to build as well. Meanwhile, the neighbouring district was also under development, theme park buildings (including shopping malls, gallery, restaurant), and number of commercial houses, have been built-up, a clear configuration in new residential district has gradually formed.

-2015

Update to the year of 2015, Tai He ‘urban village’ renovation has been basically completed. A new configuration on Tai He area has become more clear, previous characteristics on site has been partially sustained (like the small river crossing the site), and developed with small waterfront landscape. However, according to the updated investigation on site, due to the developers’ capital chain was broken, most of the commercial houses and facilities were not well finished and being put in use. Therefore, a sharp contrast has appeared between the two district: ‘compensation houses district for relocate villagers’ and ‘commercial houses district for new tenants in the area’. These contrasts came from the gap year of the construction process which has been divided into several phrases by developer. There were still many public facilities haven’t been completed after the relocate villagers moved back in the new residential district, but some ‘modifications’ have been made by villagers themselves to make them easy to adapt new life in new residential district. Through the in-depth investigation in ‘compensation house district’, an open market street has been spontaneously organized by relocate villagers, where the retailers could provide fresh vegetables, food, daily needs for residents, although the market street has no permissions from property management office. This represents that relocate villagers have to find their own way to meet their needs and get along with new-planned living environment which provide by designers.



Figure 5.18 ‘Urban village’ renovation project development from 2008 to 2015 (Google Earth Map)

In the following section, a brief introduction of Tai He ‘urban village’ renovation project will be made to provide a general understanding of the planning and design methods to show how the project has been implemented. Furthermore, more in-depth discussions and analysis will be made through on-site investigations, existing actual problems about the ‘urban village’ renovation project

will be summarized, and suggestions will be made afterward.

2) Design principles in 2010 and the investigation of actual situation in 2017

The design principles of this project have strong links with the indicators which made by SPUVRP. This master plan meets the several important indicators which was provided on 'SPUVRP' and 'Guidance for Specialized plan of Tai He urban village renovation project'. Several hard targets have been achieved, such as, plot ratio (容积率) (1.96), building density (建筑密度) (24.64%), ratio of green space (绿地面积) (45.98%), number of householder (户数) (7615), car parking stalls (停车位) (10820), line density of road network (路网密度) (10.55km/k m²). Achieving the hard targets is the way to successfully approval the planning and design of the project, and then the project could get permission to be constructed.



Figure. 5.19 Master plan drawings of Tai He 'urban village' renovation project, Kunming (Down by Design team, 2010)

Processing the project under this framework, to what extent it can to meet the needs and ensure the profits of different stakeholders, is a crucial question. From the perspective of the city government, improving the living environment for residents (both original villagers and potential tenants) and providing complete municipal facilities through this project are the main targets of urban development. In this case, strategies need to be planned macroscopically to maintain the urban configuration and functions, which also concerned with neighbouring area. Top-Down control and

absolute leadership are very necessary.

From the perspective of developers, a successful investment should be the main purpose throughout their participation of the 'urban village' renovation project. Furthermore, as a real estate developer, the ambition for their own reputation in this industry also needs to be achieved through the project by excellent planning and design. Therefore, to keep developers' motivation during the project, how to balance the profits and the quality of built-up environment for final users are the main targets both for city government and designers (urban planners, architects). However, more evidences as the design basis for designers are needed to help getting balance between developers' profit and built-up environment for final users.

The final master plan has achieved all the indicators from 'SPUVRP' and 'Guidance for Specialized plan of Tai He urban village renovation project'. A rigid framework has been formed to achieve the most of the basis demands for the development in this area. However, down to the detailed planning and design, more human-scale issues have to be addressed. More data and information from users, especially from relocate villagers, are needed to develop certain solutions for certain issues. And implementing this bottom-up procedure depends on whether the Planning and Design Institutions have enough time or a proper chance to process the investigation. Therefore, in order to better provide appropriate design strategy for well balancing developers' profits and residents' welfare, a bottom-up information collecting mechanism is necessary to be addressed as one of the pre-conditions to get permission for final constructions.

From the perspective of villagers, firstly, the only chance to participate in the project is to discuss the development boundary with city government by providing their opinions (Table 5.1). However, the main group of the final user, villagers' requirements for daily life, such as requirements for convenient living facilities, the relationship between the villagers and the city, source of income, needs for housing types, and some other issues are rarely discussed and considered as conditions to support planning and design process. Therefore, planning and design will be developed according to the top-down strategy and framework, and how to meet the demands from users by planning and design, is seemed as an unmentioned problem during the implementation process. On the other hand, although there is a chance for users to participate the decision-making process with other stakeholders relevant to the project, a transferring mechanism is still needed to help with users to express their concerns more accurate, and make sure those concerns could be transferred to tangible solutions by designers.

From the perspective of designer (urban planner, architect, even interior designer), as the situation that mentioned above, the role of designers is more like an implementer who will develop planning and design with the targets and meet indicators from the strategy framework. However, designers as the final implementer to finish the planning and design project, their targets is to balance the profits and demands among different group of stakeholders with careful considerations on social equity. Therefore, to deepen the planning and design for more controllable and achievable results, what kind of source and data can be used to support the design work, and to what extent the planning and design could show more concerns for users, how to improve the effectiveness of design, these questions need to be well discussed and analyzed, and provide possibilities to bridge the bridge

among different stakeholders.

Furthermore, during the development of Tai He 'urban village' renovation project, a business planning team has been introduced into the planning and design process. They suggested that the new residential district need commercial street, office buildings, food plaza, shopping mall, to enhance the vitality of the community (Figure. 5.20). Unfortunately, these plans have not been constructed which the period between 2010-2017 due to the lack of investment, commercial centre and office building are still under constructing. Housing for relocate villagers and educational facilities, as the priorities of the renovation development have been successfully constructed due to the essential condition which controlled by city government. Furthermore, most of the commercial housing is still under constructing due to the investment problems and marketing reasons (Figure. 5.21, Figure. 5.22). However, as the priorities of the renovation project, compensation house and educational facilities have been controlled and completed as required. But due to the lagged development of basic living arrangement, the early residents in this residential district have to live a life which is not convenient for a certain period of time. Therefore, the 'improvements for daily basis which has been done by residents seems like very reasonable and understandable, and these could have chance to avoid if the designers know their requirements from residents.

Finally, after 7 years of being built and developed, a comparative study in Tai He 'urban village' renovation project is continued to be recorded with the purpose for the changes of 'urban village' during the renovation development. During the field study on site, numbers of changes have been recorded and analyzed to show the differences and problems in the new residential district. Moreover, more detailed observations have been held in the compensation housing district, where original villagers have moved back and settled down. Numbers of existing problems will be listed and analyzed to show the gaps between the design intentions and actual conditions along with users.



Figure. 5.20 Functions and zones of Tai He ‘urban village’ renovation project, Kunming (Down by Design team, 2010)



Figure. 5.21 Commercial centre and house for relocate villagers, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2015)



Figure. 5.22 Commercial house and educational facilities in new residential district, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2015)

Being framed by these indicators in the ‘SPUVRP’ and ‘Guidance for specialized plan of Tai He urban village renovation project’, new development area has been divided by carriageway into several plots. Different function zones have been arranged within these blocks (Figure. 5.20). According to the diagram (Figure. 5.20), each block contains single function, such as the commercial centre (contains super market, restaurant, shopping mall) and office building has laid out at the outskirts of the site, ‘compensation housing district’ has been built along with highway, the ‘commercial housing district’ has been arranged at the central part of the site and surrounded by ‘compensation housing district’ and ‘commercial centre’, and the most expensive ‘multi-storey residential district’ has been built relatively far away from urban main road with a separate entrance. The function configuration provides a clear boundary for each type of district, the plan for separating construction period will be easy to implement. However, during the actual investigation after construction on site, separate construction caused the separation among different community. The actual open space and public facilities will have risks to loss cohesion in the community, and the characteristics of ‘gated community’ will be strengthened, meanwhile to reduce the vitality of the community. Through this investigation, existing problems will be listed to present these defects caused by the previous planning and design strategy.

3) Existing problems (comparative study in ‘urban village’ before and after renovation)

Compared with the planning and design documents of Tai He ‘urban village’ renovation project, six significant changes have been recorded and summarized during the investigation. Concerning the first tenants group (relocate villagers) who has already settled down in new residential district, villagers’ life style will be greatly changed due to the changes in their living environment. How this first tenants group adapt to the new environment could be an important question need to be considered and discussed. Six significant changes in new residential district are listed and discussed as follows:

(1) Urban configuration on site



Figure. 5.23 Urban configuration comparison with the year of 2010 and 2015, Tai He village, Kunming (Google Earth Map)

Features of original ‘urban village’ in 2010:

- Natural village configuration;
- No proper planning, developed along the main street and river which are crossed through the village;
- Blood lineage (Relatives of villagers live in the same village or nearby);
- Houses and private farmed plots framed the basic road network of original village;
- Houses built by villager themselves and are usually 2 or 3 floors;
- Small paths linked houses to farmland;
- Narrow street scale which is suitable for walking;
- Overcrowded building groups;
- Decentralized open space within the residential area;
- Lack of consideration of ventilation, daylight, and safety evacuation system;

After the comparative study between ‘original urban village’ and ‘renovation project’, it is clear that number of inherent values can be found in ‘original urban village’. There is an identification in original ‘urban village’, and the configuration on site has strong links among how are villagers living there. Although there is no proper systematic planning implementation in ‘urban village’, the order of villagers’ daily life is good and convenient due to the long-term development. Furthermore, pedestrian system has also been formed naturally between villagers’ self-built houses. Easy accessing methods could be provided to link different part of the ‘urban village’, like the walking paths are linked to the villagers’ private farmland, small business area, and each villagers’ house. And this easy accessing way create more chances among villagers to talk to each other, to meet different people and share things with them. The cohesion of the community has been enhanced in original ‘urban village’.

However, lack of upgraded urban facilities, low quality of building construction, overcrowded building groups, and uncontrolled room extensions which are encouraged by the demolition and compensation methods, these existing problems will lead to the weak ability of resist disasters to ‘urban village’. In this case, a systematic renovation plan for upgrading safety evacuation system

is the priority need to be achieved.

New residential district after ‘urban village’ renovation development in 2015:

- Planning scheme usually limited by building regulation and local standard (controlled by city government and urban planning bureau, such as plot ratio, requirements of daylighting, building distance and fire protection, etc.)
- Less identification of new residential configuration;
- There is less clear connection between planning scheme and natural village configuration;
- Widened road for cars and clear access to urban main road;
- Street which is not suitable for walking within the residential district;
- High-rise apartment;
- Evenly arranged open space (which decentralized the cohesion of open space);

After the renovation project has been implemented, numbers of previous problems have been solved. Urban facilities have been introduced to the new residential district, old and overcrowded village houses are replaced by new apartment with unified management and constructions, a relatively better living environment is ready now for relocate villagers and potential tenants. Most of the potential safety problems have been solved, and new residential district has ability to resist disasters to some extent.

However, some inherent nature of original ‘urban village’ have lost in new residential district, and this caused more problems after the relocate villagers moved back. For instance, some meaningless spaces have been created by the building layout without giving more considerations for how to use and participate from the perspective of the residents. During the on-site investigation, this phenomenon is common. Therefore, due to the lack of research on the street scale and layout of the original urban village, the newly built residential areas are less vibrant than the streets in urban village before renovation.

(2) Housing type



Figure. 5.24 Housing type comparison with the year of 2008 and 2015, Tai He village, Kunming

(Wen Jiang, 2008 and 2015)

Original housing type in urban village in 2008:

- Houses built by villager themselves are usually 2 or 3 floors ;
- Extensions of each house has been made to provide more rooms to rent;
- Ground floor is normally open for shops and public;
- Housing type is diverse, and the construction methods and quality of houses are based on the income level of the family;
- The facade of house is diverse and depends on villagers own choice and prefer;
- The layout of internal space of house is diverse and depends on demands of each family;

Speaking of city image, the original ‘urban village’ as a special area contains lots of diverse presentations which are developed from villagers’ choices and preferences. Mixed-use of residential building in ‘urban village’ provide convenient daily life for villagers, and meanwhile a vivid street life has gradually framed. Furthermore, flexibility use of each house could be achieved due to the strong intention and autonomies in ‘urban village’.

However, some worrying problems remained. Uncontrolled room extensions contained safety issues due to the informal management and constructions; and constantly building floors intensified the loss of the indoor comfort, such as lack of consideration of natural daylight, ventilation, and security issues. These are the problems need to be planned to solve.

Housing types in new residential district in 2015:

- Uniformly designed and constructed by developers;
- The layout of internal space of apartment is unified, and is limited to do extensions and re-arrangement;
- According to the rules of demolition and compensation, villagers could get new apartments, usually they can get 3-5 apartments with same internal layout;
- Small business has been arranged separately, there is no more shops designed on ground floor within the ‘gated community’;

Newly-built apartment building groups provide a tidy and well-ordered living environment for relocate villagers. Main problems which are worrying a lot by villagers, such as natural daylight, ventilation, security issues have been well considered and solved after renovation.

Through the in-depth investigation and observation on site, numbers of problems kept coming up due to the lack of care of villagers’ lifestyle and demands. Vivid street life is no longer in new residential district, instead, small parks and landscape have been introduced in the community. Through the investigation, inefficient use by villagers and tenants on designed parks and landscape is not the designers’ expectations when they think and create the design plans.

(3) Accessibility



Figure. 5.25 Accessibility in ‘urban village’, 2008, Tai He village, Kunming (Wen Jiang, 2008)

Daily status on the street in ‘urban village’ in 2008:

- Easy and flexible accessing to all parts in ‘urban village’;
- Several purpose during one trip on the street makes villagers are willing to participate in public spaces;
- Suitable street scale for walking
- Pedestrian system which formed naturally by village configuration;
- Bicycle and scooter are the most popular and efficient vehicles;
- The road in the village is suitable for car, but not depended on cars;

Due to the long-term developed mixed-use ‘urban village’, which spontaneously framed by local residents’ daily needs, easy and flexible accessing way to all facilities could be achieved in ‘urban village’. A relatively safe and slow pedestrian system has been formed with the suitable scale of road and speed-limited vehicles, although it is not the original purpose in planning ‘urban village’ configuration.

However, in order to get good connections to urban development with neighbouring area, road connections, urban facilities, living environment, need to be upgraded through a renovation development. A systematic strategy which is for generating different facilities, accessing way to these facilities and integrating recreational open space, is needed to build connections between ‘urban village’ and neighbouring area.



Figure. 5.26 Accessibility in new residential district, 2015, Tai He village, Kunming (Wen Jiang, 2015)

Daily status on the street in new residential district in 2015:

- Car dependent residential district which encouraged private car use;
- Linear and long distance pedestrian system for residents, and with less purposes through walking trip;
- Coexistence of people and vehicles, and without measures to slow down the vehicle speed;
- Usually takes 20 minutes by walking to get the public transport system which is at the outside of residential district;
- Relocate villagers and new tenants need time to adapt long-distance accessing facilities due to the single functioning zone and divided constructing period;

After renovation development, some problems have been solved. There is more accessible connections between original ‘urban village’ and neighbouring area, the boundary has gradually disappeared. Urban facilities have been re-arranged and introduced in new residential district to provide service and convenience to residents.

However, due to the lack of investigation on spatial scale in original ‘urban village’, more conversant scale has disappeared in new residential district. This may restrain purposes of residents (especially for those relocate villagers) to go outside by walking, even participate activities in any of the recreational spaces.

(4) Public space



Figure. 5.27 Public space in ‘urban village’, 2010, Tai He village, Kunming (Wen Jiang, 2010)

Status of everyday life in ‘urban village’ in 2010:

- Flourishing small market in urban villages serviced for all groups of tenants here;
- Lack of proper green space, but has farmland in sounding area;
- Sense of belongings for all groups of tenants;
- Convenient daily life;
- Decentralized and random recreational space for residents here;

- Mixed-use for all types of buildings that create purposes for residents to go outside;

In ‘urban village’, there is no specific open space for daily activities. Streets, small open space, even a small path between buildings could be a place for daily activities. Retailers, shops on ground floor of each building, independent stores are located at street and gathered nearly all groups of tenants together. Chances have been made for residents to know each other.

However, there is no enough consciousness for these mobile retailers to keep tidy of the street environment, and there is no one willing to take the responsibilities to clean the street afterwards. This may cause various negative characteristics within ‘urban village’ if there is no proper management system for planning and maintaining the daily status.



Figure. 5.28 Public space in new residential district, 2015, Tai He village, Kunming (Wen Jiang, 2015)

Status of everyday life in new residential district in 2015:

- Gated community, which separated different groups of residents in residential district;
- Enough green space (designed and controlled by planning conditions in SPUVRP) with modern landscape design;
- Exquisite landscape design but is not developed by local aesthetic;
- Lack of sense of belongings for all groups of tenants;
- Lack of chances for social interaction and activities recreations;
- Lack of cohesion in public space;

In new residential district, all streets and public spaces are tidy and clean. A proper team will take responsibilities on public sanitation. Public spaces have been planned for daily activities with well-finished landscape design. A new and well protected living environment has been created for all groups of tenants here.

However, improving living environment is not the only way to rebuild the inter-relationship between tenants and new residential district. In addition, huge changes of living environment may reduce the level of perception and recognition of new residential district among relocate villagers. They may need more time to adapt new lifestyle in new residential community. Therefore, an in-depth investigation and data collection is necessary to provide design basis for solving and reducing

these passive issues.

(17) Building form and massing



Figure. 5.29 Building types in ‘urban village’, 2008, Kunming (Wen Jiang, 2008)

Images of ‘urban village’ in 2008:

- Strong identification for each building;
- Village construction is in a condition of spontaneity;
- Random construction form which depends on income level of villagers;
- Multi-storey buildings;
- Diverse building massing developed by different demands of villagers;
- Small distance between buildings which is the main reason for serious building safe and building disaster prevention concerns;
- Lack of professional guidance for construction;
- Lack of professional guidance for layout design for internal space and reasonable functional arrangement;
- Lack of consideration of indoor comfort, such as natural daylight, ventilation, security protection issues between each building;

Building groups in ‘urban village’ have strong identification that each building came out with different layout and façade. Villagers are very familiar with the environment because that they are involved in every procedure of design and constructions.

However, due to the development of neighbouring area, villagers’ spontaneous design and construction have been encouraged to meet their increasing demands to live in the city. This uncontrolled design and construction are bound to affect their quality of living, such as the lack of consideration of indoor comfort, daylight, ventilation, security protection between each building group.



Figure. 5.30 Building types in new residential district, 2015, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2015)

Images of new residential district in 2015:

- Unified construction and building form;
- Similar building facade;
- Lack of environmental identity;
- Unified high-rise apartment with same internal layout;
- The prescribed building spacing (according to local building regulation) and orientation;

In the new residential district, most of the problems have been improved. Villagers get enough living space according to the compensation policy, and each apartment has been well designed by considering the duration of daylighting, ventilation, security protections.

However, there are still problems coming out, such as villagers have to spend more time to adapt this well planned new living environment. The identification level of the residential district for tenants is decreasing due to the most economical planning layout and configuration.

(6) Neighbourhood



Figure. 5.31 Daily life in ‘urban village’, 2008, Kunming (Wen Jiang, 2008)

Daily interactions with others in ‘urban village’ in 2008:

- Close neighbourhood relations;

- Sufficient interaction among villagers;
- Appropriate place and purposes for daily activities;
- Mixed -uses of buildings;
- Human-scale street space;
- Quick and flexible street network;
- Lack of close connections with neighbouring urban area;
- Segregation between ‘urban village’ and urban area becomes the gradual formation phenomena;

A traditional neighbourhood relations has sustained in ‘urban village’ that there is close relationship among villagers, even those mobile workers as the new tenants here have become new neighbours in ‘urban village’. In addition, there are relations between traditional neighbourhood and special scale in ‘urban village’. Mixed-use buildings create purpose for tenants to go outside, human-scale street space provides relative safe and stable place to stay, traditional neighbourhood will be encouraged and sustained due to this semi-private, closed special layout.

However, due to the unbalanced development between ‘urban village’ and the neighbouring urban area, segregation has gradually formed between these two areas. Two groups of tenants, who lived in ‘urban village’ and ‘neighbouring urban area, will keep their lifestyle and daily routine even with less connections between two areas. Such a status of stability will enhance the segregation between ‘urban village’ and the neighbouring urban area.



Figure. 5.32 Daily life in new residential district of ‘urban village’ renovation project, 2015, Kunming (Wen Jiang, 2015)

Daily interactions with others in new residential district in 2015:

- Modern urban ‘living environment’ has been designed and constructed for villagers to try to make more connections between ‘urban village’ and ‘the city’;
- Segregation has been formed among each residential district;
- Gated community;
- Car-dependent scale street space;
- Lack of suitable place to encourage social interaction and activities recreation;
- Lack of cohesion in new residential district;
- Street network mainly for car use;

In new residential district, new groups of tenants will move in and settled down finally, they will spend time to get to know each other and gradually related as neighbourhood. Upgraded urban facilities provide qualified living environment to all tenants, but due to the lack of understanding to previous living status in 'urban village' of relocate villagers, chances are needed for them to guide and organized their new life in new residential district.

However, planning and design problems are existed and even more deficient without enough design basis that collected from previous 'urban village'. 'Gated community' enhanced the residential segregation between renovated 'urban village' and neighbouring area. Lifestyle, status of daily of relocate villagers sustained in new residential district, and there are no much influences and changes of their living status even they have moved back with a new living environment. Purpose of planning and design of 'urban village' renovation have been delivered and caused misunderstanding and unordered behaviour among relocate villagers and new tenants.

(7) Source of incomes



Figure. 5.33 Daily life in 'urban village', 2008, Kunming (Wen Jiang, 2008)

Common source of income for residents in 2008:

- Mixed-use and easy access to daily demands;
- Small business;
- Self-employment;
- Rent;

In 'urban village', within the urban built-up area, villagers have many ways to earn their life without the farming which they are used to do. Due to the spontaneous formed mixed-used functional layout, villagers can run small business to support living cost, and rent which is from mobile workers is also the main part of their source of income. This flexible functional layout provided opportunities for villagers earning life in the city area, and a convenient living environment which suitable for their level of income could be achieved and encouraged among all tenant groups.

However, unbalanced development between 'urban village' and 'neighbouring urban area' is still a problem that cannot be ignored. A relatively stable and enclosed living status is still a passive

adaptation to the changing living environment.



Figure. 5.34 Daily life in new residential district of ‘urban village’ renovation project, 2015, Kunming (Wen Jiang, 2015)

Common source of income for residents in 2015

- Rent;
- Small business is not allowed in new residential area, but there is need, there is supply;
- Villagers could have service jobs in or around the new residential area;
- New development brings job opportunities;

In new residential district after renovation, relatively modern and tidy living environment has been provided to tenants, and new job opportunities have also been brought into the area. Most of the relocate villagers have got chance to make more connections to the city. A positive way of communication is gradually forming. Compared with the previous ‘enclosed but stable’ living status. Furthermore, some spontaneous activities, such as open market which is organized by tenants themselves on the street, refurbished ground floor of their new residential building as independent store providing service to all the tenants, shown the expectations and requirements from residents for building their new neighbourhood. Planning and design strategy of renovating ‘urban village’ will have chance to improve and meet most of demands of residents by collecting information through their daily life after occupancy.

The comparative study has been made between ‘original urban village’ and ‘new residential after renovation development’. The implement of planning and design from top-down strategy provide a relatively “good” living environment for all groups of tenants and try to ‘guide’ their life in the new residential district. Compared with their previous life status, the new living environment has brought them a lot of in-adaptation, such as, relocate residents prefer to stay with their former lifestyles in new residential district with these ‘upgraded’ urban facilities, and they also to do changes of current living environment to fit the daily demands for most of residents. Therefore, there are difficulties to adopt these changes in a very short period. In the next section, an in-depth investigation will be done to observe tenants’ daily life in the new

living environment in ‘compensation residential district’ (the main residents group in this district are relocate villagers and tenants). The number of study aims has been set, (1) to define the relations between main residents group and newly built-environment, (2) how they adapt the new environment with their own way, (3) how are the interactions among ingrained habits, cultural roots, and new living space. Sometimes, also the conflicts appeared as well.

(1) Site visiting and observation after occupancy in ‘compensation residential district’ in 2018

Tai He ‘urban village’ renovation project has experienced many procedures of modifications and changes on former planning and design scheme. Developer has experienced the change of equity during the period of project constructions, and this directly leads to the changes on previous planning and design. New version of planning and design scheme has been developed with less on-site information from residents, and second handed source of information is difficult to develop a new planning and design with a new design team in a limited time. Furthermore, due to the developer's capital chain adjustment, commercial houses in the new residential district has not been finished properly. The relocate zone for original villagers as the priorities of urban village renovation project has been built and most of the original villagers have already moved back. Studies in this section are undertaken by the author to discover and record the actual living situation in relocating zone with original villagers and other tenant groups. The aim of this study is to collect current information and feedback from original villagers and to examine the gap between implementation of the design scheme and actual demands of original villagers with this project. Consider the neighbourhood design in this ‘gated residential district’ with the idea of sustainability, four aspects of the actual situation in this residential district will be compared and discussed.

(1) Accessibility



Figure. 5.35 Pathway to entering the new residential district, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

The main entrance of TaiHe residential district is located on the main road on the north side of the site. Residents can drive directly into their communities. Additionally, due to the ‘shared bicycle (OFO)’ has been introduced into Kunming, bicycles have become a popular way for daily movement. But in the public space of new residential district, there is no proper place to place those ‘yellow bike’, and here come problems of random parking. On the one hand, because of the construction in phrase, part of the public facilities have not been completed. However, through on-site visits, it was found that all the access roads into the residential community were straight and long. The width of the road is set to encourage two-way traffic by cars and narrow pedestrian roads. These pathways

connect various residential groups in the residential area, and also connect some public facilities in the residential area, such as commercial complex, school, pedestrian street and so on. But roads that encourage cars to travel at a certain speed are rarely used by walking.



Figure. 5.36 Plans for car and other vehicle (underground parking space), Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

The whole residential area is divided into different groups, and each group has been planned as ‘gated community’. Every tenant needs ID to entering the community, and while improving security, it reduces the likelihood of communication and activity. This will have the possibilities to influence the development of commercial facilities which was planned for residents on site and neighboring areas. There is generally more affection for such gated communities. Because this "gated community" allows residents to form a misunderstood "sense of belonging". On the one hand, from the perspective of community security, "gated" residential communities are easier to manage. But it also blocks more neighborhood interaction. During the site visiting, it was found that the elderly living in the community preferred to live only in closed groups. This residential group is a group of relocated residents. Most of the old people living here are former residents of urban villages. They still retain their former habits in the newly built housing community. They carry their chairs and tables to the front of the door and chat with their neighbors. This is their daily life, and they only want to live in this community. The problem of segregation between communities is exacerbated by this situation.

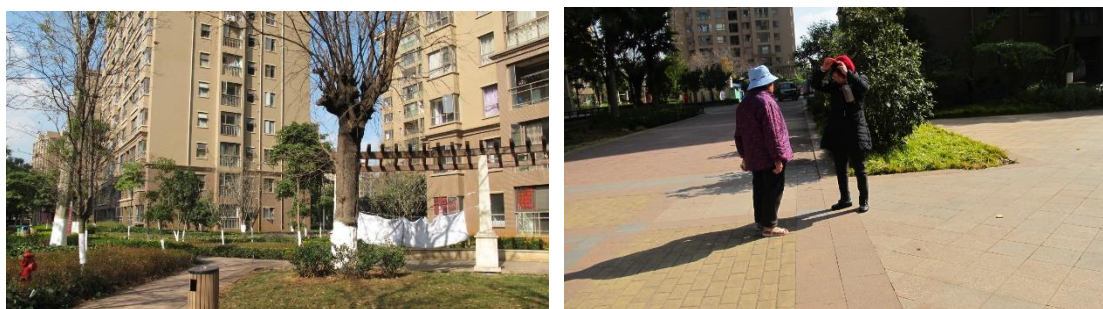


Figure. 5.37 Pedestrian system in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

Certainly, the pedestrian system has been planned and designed in this ‘gated community’ to link each residential building and facilities. In actual situation, due to the scale of the road and square is not obvious, the activities of residents in the community are relatively dispersed. The cohesion of a

community has not been considered well. Within the residential complex, each pedestrian path is very spacious. Sidewalks and cars are separated in the community, and parking spaces are all arranged underground. But for relocating to residential communities, few families use cars or even own a car. So the entrance and exit of the underground garage are occupied by residents, drying clothes. Scooter is a common means of vehicle for villagers, but because there is no special parking and charging point, residents park Scooter at random. Because there is no special charging point, many families lead the wires from their homes to the downstairs to charge the scooter, and even some households lead the wires from the sixth floor to the downstairs. The security risks are serious. The modern residential areas with urban life do not seem to have a good relationship with the residents in this community.

(2) Open space for recreational activities



Figure. 5.38 Landscape and pedestrian in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)



Figure. 5.39 Landscape and pedestrian in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

Same problems about the scale of the road and square, tenants in new residential community have lost the identity of space, which means tenants are no longer willing to get together for sharing and talking, because all these daily activities and communications are scattered throughout the community (Figure 27). And this will have chance to reduce the everyday contacts among tenants, cohesion of the community will not be improved. Each road is very spacious, compared with the road scale in original urban village, these roads are comparable to a very long square. It is difficult for residents to gather in such a large space. The scattered residents made the whole neighborhood look very empty and lifeless.



Figure. 5.40 Small plaza in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

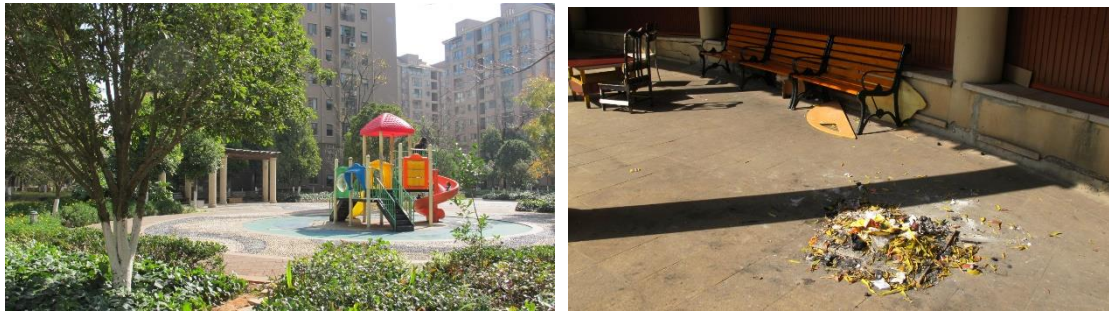


Figure. 5.41 Small parks and constructions in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

However, a proper plaza has been considered as well. Due to the ‘gated community’ mode, a clear enclosure has been set to divide different community. This proper plaza which located at the edge of the community has become ‘disordered area’, following problems are keep coming, such as, there is no one care the road is clear or not, or there is no enough concerns about the use of facilities in the community.

(3) Local shops and services



Figure. 5.42 The spontaneous commercial behavior of residents in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)



Figure. 5.43 The spontaneous small business in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

As the first community has been completely constructed, commercial facilities which were promised by the developer to the villagers are still under constructing. Therefore, in order to meet the needs for tenants’ daily life, some of the apartments on ground floor have been transformed into small shops, such as, barbershop, noodle bar, or convenience stores. The relocate tenants have voluntarily transformed their community facilities for more convenient way, and this shows their strong wills for the real needs of the living environment. These views from the villagers have no chance to be expressed because of the lack of participate process among relocate tenants. Furthermore, it is possible that the villagers may not be able to express their needs exactly, and it makes the way for doing the participation more importantly that it is necessary to help them or guide them to provide useful information to other stakeholders (urban planner, developer, city government, architect).

(4) Daily needs and reactions

A series of life scenes were recorded during the field visits. In order to provide the villagers with cleaner, and more orderly living space, this residential community was built according to the standard urban housing. In addition to the transformation and improvement of urban space, the transformation of "urbanization" of villagers is also one of its purposes. But in the field observation, the villagers continue to live in the previous way of life. Villagers still live "country life" in "urbanized" residential areas.



Figure. 5.44 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

Because there is no special parking location for electric vehicles, residents basically choose to park the vehicles at the gate of the residential building. Since there are no dedicated charging points for

scooter in the community, residents are finding ways to solve the problem themselves, such as, lead a charging cable from your home to the outside. These scenes also exist in the original urban villages. In order to meet their own living habits and needs, the villagers have made their own modifications to some of the functional facilities of the house. These problems, once regarded as "the problem of urban village", have not been solved in the new residential areas.



Figure. 5.45 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

Public Spaces provide places for residents to communicate in the new residential area. As in the old days of village life, villagers would burn garbage in public Spaces and make bonfires so that people could still get together outside in winter. Some villagers hang their laundry in public areas of the community. It can be seen that the residents have a sense of security in the community.



Figure. 5.46 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)



Figure. 5.47 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)



Figure. 5.48 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)



Figure. 5.49 Random utilities of space and facilities in new residential community, Tai He ‘urban village’ renovation project, Kunming (Wen Jiang, 2018)

Taihe village is located on the coast of Dianchi lake. So the villagers here have kept their habits, especially the elderly people. When the fishing season is coming in the Dianchi lake, the elderly people here who used to live in the urban village, salting dried fish, pickles and making local food. This used to be the custom in the village. The spacious roads in the residential area are well used by the residents. Residents can hang food here, almost every corner can be used skillfully. The residents who moved back rarely expressed any dissatisfaction with their living space. Although they are expressing themselves to visitors with their own actions, there will be better and more suitable ways to design and decorate this community.

(5) Summary

After a return visit to the urban village reconstruction project, I found and summarized some problems that need to be further discovered in the following research:

- Social trust during the transforming: urban village renovation project could be reduced into small scale of development and lead by rural collective; rather than uniformly designed and constructed by developers;
- Improve the vitality of urban spaces: sustain the mixed-use of urban land and a certain degree of flexibility; rather than simple residential area planning which mostly lead by commercial planning;
- Segregation: sharing the public resources, create the opportunities to communication among

different communities by appropriate design;

- About the public participation: maintaining the flexibility of land use and reconstruction of villager's own house, better than waiting for suggestions after the design scheme has been made;

- About the sense of belonging: advocate villagers' self-construction, and encourage villagers to participate in the construction and design process;

- Responsibilities of urban village renovation: it should provide possibilities for migrant workers to stay rather than forcing them to move out; and for low-income residents, it should provide enough flexibilities for them to earn their life; and for new residents, it should provide safe living environment and a vibrant community.

In addition, more problems could be found through many field study photos while visiting the newly built residential district. The researcher found that in the newly built residential areas, the roads were wide enough to allow two-way traffic. During the field study, there were no cars driving through the neighborhood. It appeared to be a traffic-free neighbourhood. The first reason for this is that the planning and design concept leads vehicles to underground parking at the entrance of the residential district. Furthermore, the number of parking spaces in this residential area is greater than the number of vehicles owned by residents. During the site visiting, most of the underground parking in the residential area was unoccupied. There are at least two reasons leading to this phenomenon.

First of all, it can be traced back to the decision-making stage of the planning and design of the urban village renovation. During the investigation, researcher conducted in-depth interviews and conversations with stakeholders of the project. According to the interview, the villagers received a great deal of compensation after the demolition of the old houses. At that time, many villagers chose to decorate their houses and buy vehicles. But after a while since the villagers have been compensated, they have not managed their assets properly. Many villagers even have to trade cars for cash. In the overall process of urban village renovation project, negotiating compensation and the amount of compensation are the most important contents during the discussions among stakeholders. There are no more discussions and investigations about issues regarding villagers' sources of incomes, lifestyle, levels of education, and how they deal with the shift changes of their daily life. Therefore, this phenomenon relates the decision-making stage of planning and design of residential district for some extents.

Secondly, leading by the planning and design concepts of "gated-community" and "Redburn principles", road system in the residential district has been divided into "pavement" and "roadway". This design concept ensures the safety of pedestrians, but the unreasonable street scale may make the street lose its vitality. Furthermore, instead of private car, residents would spontaneously choose to travel by scooter or public transport system. There is no parking space with charging point at underground garage for scooters, so residents will find their own way to charge them. In this case, residents will park their scooters nearby the residential building wherever convenient. Electrical wire could be routed away from their homes for charging scooters on the ground floor, and this again leads to the other round of chaotic incidents of the living environment.

For the issues of “sustainability”, the residents spontaneously look for other suitable ways to travel while the residents try to reduce the use of private cars due to some specific factors. Therefore, this has a positive impact on the sustainable design of residential areas, and it leads residents to voluntarily choose more environmentally friendly means of getting around under certain conditions.

5.3 Conclusion and suggestions

(1) The development of planning and design of residential district.

a. Conclusion and suggestion in case study one:

Based on the summary of the case study process, each case has a place to advise on the development of residential planning and design. The case study investigates residential areas designed with the concept of sustainability in mind. These are examples of community planning designs that can spread information. Planning and design based on the results of the community will be carried out to develop the subsequent planning and design. In this case, the pilot project developed with specific planning and design concept should set clear goals and design plans at the early stage of planning and design. Guidelines from commercial planning should not be used as a primary reference for the overall residential planning and design. On the contrary, the needs of the target users, the actual situation of the site and the project positioning need to be carefully investigated before determining the design guidelines. In addition, there is a difference between planning and design that focuses on locality, and planning and design that focuses on site. In addition to the discussion of the overall environment, the local planning and design should also focus on the research work of humanity, residents, cultural development stage and residents' consciousness development stage. These are important things about localism. Localization cannot be achieved without the public awareness of local residents. That's why Shibo eco-town is defined by most people as a high-end residential area, not a place to share a new lifestyle. The project was meant to be carried on advanced and pilot was superficial in such circumstances. Second, about site collection of the pilot residential project. Shibo eco-town is located in an area with good natural landscape and ecological conditions. It is essentially different from a residential area in a regular part of the city. The sustainability and ecology of residential areas under such conditions are not of universal value. The high cost of technical construction makes it impossible for the Shibo Eco-town not to be considered an expensive residential area. High prices are once again associated with sustainability and ecology. As a pilot project, this value is easy to advocate and spread. The questionnaire shows that the form of architecture, such as facade design, materials, overall image and landscape of the residential area, is indeed the first element that residents pay attention to, and opportunity for residents to have a deep understanding of the residential area. How to deal with the relationship between the meaning of the planning and design of the residential community and the architectural form, and how to deal with the contradiction between the gated community and the community with accessibility, is a question that needs to be put forward for the planning and design of the residential area.

b. Conclusion and suggestion in case study two:

As for the planning and design of the urban village renovation project, according to the case study, the design content was determined by the intervention of the commercial planning team. And the planning and design assignment is largely based on the business plan. These contents are finally combined with the planning conditions of government travel. However, in the process of commercial planning, residents of newly built residential areas are defined as residents who buy commercial housing, so all the requirements are set to cater to this group consciously. The consideration of the demands of original villagers was not mentioned in the plan. Therefore, in the final living experience, it is the residents of this group who have obvious problems. In addition, due to the lack of a good mechanism and team to convey and sort out the will of the villagers, in the process of returning visit, it was found that the residential areas dominated by relocate villagers tended to transform the housing by themselves. In the newly built residential area, the villagers made alterations to the public facilities and sites in the community based on their needs for living, to meet their living requirements. This is a new problem caused by design problems, and if it is not improved in time, this trend will develop more. Of course, this improvement does not mean strict controls.

(2) Stakeholders' connections.

a. Conclusion and suggestion in case study one:

The planning strategy, implemented by stakeholders and experts, aims to provide residents with healthy and comfortable living communities. However, after the actual investigation and visit, it was found that because the factors of end-users, that is, households, were not considered and improved, the efficiency of a series of construction was relatively low in the later use. For example, there are lakes with high maintenance costs winding paths to connect homes, and oversized suites (more than 1,000 square meters per home). Secondly, stakeholders in the sense of management are all stakeholders affected by organizational decisions and actions in the external environment. Therefore, in addition to residents of residential areas, residents of surrounding residential areas could be also defined as stakeholders. It is difficult for isolated communities to build good neighborhood relations with surrounding communities. Therefore, good resource environment and advanced knowledge concept cannot be Shared in this type of area. Thirdly, other residential projects built in the same year also adopted sustainability as the design concept and theme. Different types of residential and residential areas have been developed for different users. Because of the game between stakeholders and the difference in decision-making, these residential areas present different characteristics. In order to increase the sale of property, residential communities that developed to cater to the needs of their target users have become an outlier. Xingyao Water Town is one example. The whole neighborhood is filled with curiosity. For example, houses built with imported building materials; independent architecture of various styles. Even though the planning and design of the community is based on the site and environment, the presentation of the results has a negative impact on the formation of sustainable values.

b. Conclusion and suggestion in case study two:

According to the research on the transformation of urban villages in Guangzhou, most of the

villagers are more receptive to pragmatic transformation, although it is likely to be an informal transformation. During a visit to the urban village renovation project in Kunming, it was found that the construction of the new residential area did not bring a new and convenient way of life to the villagers and new residents. And the villagers are still trying to improve the living environment in their own way. As stakeholders, villagers' basic living interests have not been solved in the process of urban village renewal and transformation.

(3) Sustainability of residential design.

a. Conclusion and suggestion in case study one:

In the project of Shibo eco-town, it tried to use green and environment-friendly building materials, as well as renewable energy, solar energy and rainwater recovery system that were suitable for local use. It indeed provided a good reference for the planning and construction of other residential areas in Kunming. It is good sense that the household's perception of sustainability has been considered by the designers in the early stages of planning and design. However, this point of view has not been achieved in post-design and management, that is, this kind of cognition has not been extended in the real life of residents. Therefore, residents' awareness of sustainability only stays on the surface and concept, and has no positive impact on lifestyle. During the visit, it was found that the residential isolation caused by the decision of planning and design had a negative impact on the overall sustainability of the residential area. The living facilities in the community are not well utilized. Due to the decreasing utilization rate year by year, the vitality of the region is also significantly reduced. Thirdly, with the development of the pilot residential area planning and design project, some advantages were adopted by the follow-up residential areas and stable results were obtained. For example, Yunling neighborhood adopted the energy utilization plan of expo eco-city, and the energy use efficiency of residents was positively affected. Follow-up surveys and interviews with ordinary residents have consistently found that they are interested in sustainable lifestyle issues. However, due to the lack of opportunities to fully understand this knowledge, it does not lead to a deeper relationship with the inhabitants. Sustainable knowledge systems are not well extended. The survey also found that residents' lifestyles can quickly be significantly affected by the availability of facilities. The places where these facilities are located are usually popular places in the community. Compared to the spacious community park, people can create a sense of neighborhood here. These elements have a greater relationship to the community, and it seems more effective to combine them to consider how to promote and disseminate sustainable lifestyles and concepts.

b. Conclusion and suggestion in case study two:

In the process of case analysis and investigation, the comparison before and after the reconstruction of urban villages shows that there are great problems in urban facilities in the spatial planning and layout of the original villages. But there are also traditional neighborhoods, and livable layouts that deserve to be referenced and learned from by new construction projects. For example, highly permeable and accessible community organization, friendly neighborhood relations, suitable street spatial scale, safe blocks, walkable road organization, and so on. Third, as the urban village transformation in addition to the new residents, the original residents also need to be arranged in the

original site. Because the planning process did not give enough attention to this residential group, subjective planning and design schemes rearranged and combined the living communities of the indigenous people. In the planning and design stage, the villagers did not participate in and express their demands well, and communicated with the designers. They could not express their demands completely. So in this case, a specialized mechanism needs to be set up to collect and organize this information, and to be able to translate this information as an evidence for planning and design. The aim is to ensure that villagers' demands are considered and addressed during the planning and design process. Finally, during the return visit to the villages in the city, it was found that the villagers were rebuilding the newly built living environment by themselves. Such alterations are negative and unsustainable for the new living environment. Because residents are using their actions to justify the design and there are other ways to resolve the conflict between design and use.

(4) Optimize planning and design process and feedback mechanism.

a. Conclusion and suggestion in case study one:

In the residential project of Shibo eco-town, multidisciplinary experts were combined to evaluate the project site. The value of the project lies in the design process in the exchange of disciplines. According to the researchers' site visits, some of the single buildings constructed at that time reached high standards in terms of technology and aesthetics. However, since the building and the community are not open to the public, the utilization of the building are not clear. The building is fenced in to show people architecture, technology, more like a museum. Instead of showing the value of the building after it was built, for example the relationship between the building and the environment, the relationship between the occupants and the users. In the questionnaire survey, it was found that many households have a certain understanding of the concept of sustainability, but this understanding is not enough to affect their lifestyle. That the concept of sustainability does not generate much value in all aspects of people's lives. An effective communication and education mechanism need to be established to guide and disseminate this knowledge in order to make more proactive changes among users.

b. Conclusion and suggestion in case study two:

There is not a mature methodology system to carry out all the projects of urban village renovation. Experience, policy formulation, planning and design methods, and the overall conceptual framework are all learned and referenced from the urban village reconstruction projects in China's first-tier cities. The urban village reconstruction strategy implemented in Kunming lacks the collection and analysis of the empirical situation, and the "one-size-fits-all" reconstruction method is commonly used and regarded as highly efficient in planning and design of urban village renovation project. Of course, some inapplicable phenomena are also gradually revealed in the research. The report on the development of urban villages in Kunming puts forward four development strategies for the reconstruction of urban villages. It includes: The renovation mode of combining government-led and developer; the transformation mode of merging urban villages into urban infrastructure upgrading and transformation process; the transformation process that financed by the villagers themselves; the project which led by government and financed by villagers.

Government and developer led mode is the most common mode in the process of urban village reconstruction. However, as a result of this model, the villagers' right to speak is not valued, and more villagers can only accept arranged lives and plans. In the later period, the villagers made silent "protests" according to their own needs, and gradually transformed the newly built environment in the details of their lives. In the actual project process, the villagers' participation step is to delimit the transformation boundary. The villagers' demands for a new residential area were not expressed or considered. This situation leads urban planners, developers and designers to customize the design content in a more subjective manner. The problem with this process is that planned residential areas and built houses may not match residents in the final use. This mismatch has more negative consequences. In the urban village reconstruction project, on the basis of ensuring sufficient participation of the villagers, the reconstruction process and the community return visit after the reconstruction are also one of the ways to ensure the effectiveness of the design. In the return visit, we can find many problems unexpected in the early stage, and many problem residents cannot be solved just because they participate in the design. A complete feedback collection mechanism can provide more useful design references for future projects. To make the design into a closed loop, the previous experience can really provide help for the subsequent development. This is a sustainable design mechanism.

Chapter_6 Conclusions and suggestions

6.1 Key conclusions on interaction of residential of urban regeneration, sustainability, and residential planning and design procedures in Kunming

This chapter summarizes the framework and content of the overall thesis. The first part of the thesis is the research background of the subject, which explains the relationship between sustainable development, the planning and design of residential area under the process of urban renewal. The second part of the thesis is about the research framework, and methodology. In this part, the following topics are deeply discussed and reviewed:

- the research on historical evolution of urban renewal;
- the research content of sustainable development in the planning and design of residential area;
- the development of planning and design of residential area in Kunming;
- the related urban history, community, and architectural background;

The third part is the case study and the conclusion. This part focuses on the discussion and analyses of two residential planning cases in Kunming. Under the intervention and influence of urban renewal process, these two cases respectively represent the development of two types of residential planning and design projects. In the case study, detailed records and discussions were made on the progress and development of each project. Questionnaires, field visits and real-time interviews were also conducted on these two projects. In addition, due to the long duration of the project, the author also made a return visit to the later use of the project, and made a detailed record and empirical study on the problems that occurred when all the houses have been occupied by residents after the completion of the project. During the research, in addition to the discussion and analysis of the current problems, the author also found some directions worthy of in-depth discussion and further research in the future. This chapter summarizes the significant conclusions found in the research process.

6.1.1 Key conclusions: planning and design of residential areas with sustainable considerations under the process of urban regeneration in Kunming

The first conclusion concerns the sustainability of residential planning and design under the influence of the urban renewal process. This paper reviews the development history and basic situation of Kunming city, as well as the changes under the influence and intervention of urban renewal. These recorded changes formed a new round of people's memory and cognition of the city. For the residential area, in an area where is closer to the people living in the city, the change and development of the residential area directly affect their daily life, habits, and sense of belonging and cognition of the city in which they live. At the same time, people living in residential areas are responding to and adapting to these new living environments based on their own needs and personal conditions in the face of constantly changing and updating living environments. According to the review of the development history of residential areas in China, the residents always think that they can adjust their living habits according to the existing space. Residents will control their own needs based on their limited conditions, and choose to tolerate and adjust their living conditions in the

unreasonable space design. This is a special period of housing in China, which means that housing needs to be allocated and arranged according to the working background of the residents. "Reasonable design, unreasonable use" was the norm of living conditions at that time. Subsequently, the introduction of housing reform improved the situation. Residents can buy commercial housing according to their own conditions. In this period, residents can choose the houses that meet their own personal needs. The planning and construction of commercial housing also developed in the following period. Real estate has become an important industry in China. The housing market has also made great efforts to sell as many properties as possible. Due to the intervention of stress, unnecessary planning and design provide the occupant with many life possibilities. Diverse residential areas, residential buildings, and community amenities were developed during this period. Various planning and design concepts are introduced into the category of planning and design as symbols of the advancement of residential areas. It is also for this reason that Kunming, as a case study city, has made a great deal of efforts and researches on sustainable residential area planning and design. The planning and construction of new residential areas include residential project that are guided by the concept of sustainable development and design, and residential project that aimed at updating urban functions and improving living conditions of residents. From the conclusions of the case studies, some issues need to be addressed. Shibo eco-town, a residential area conceptually planned and designed for sustainable development, combines many resources, information and technologies in the planning and design to build first environmentally friendly community in Kunming. However, in the follow-up survey, it was found that only the planning and design focusing on the target residents could truly reflect the value of the community on the issue of sustainability. In another case of this study, urban village reconstruction is also an important part in the process of urban renewal. During the process of investigating and visiting, it was found that the residents who had already moved in the new residential area responded to the newly built residential environment. According to their own living needs, they made transformation in the community by themselves. In this way, residents express their need for participation in the planning and design process. It has been proven that proper mechanisms and professionals are needed to convey the real ideas of these residents. The top-down planning and design mechanism controls the overall direction of project development in the process of urban renewal to ensure that the project can proceed as planned. However, the bottom-up working mechanism, the information collection, and processing for projects and users, as well as the transformation of information into design data, can better help the top-down working mechanism to play a more accurate and greater role. Such planning and design process mechanism can ensure the future development of similar projects to a greater extent, and it also has the ability and awareness to face and deal with problems that may have negative impacts in advance at the early stage of decision-making for overall project.

6.1.2 Key conclusions: stakeholders' connections

In the process of reviewing the development history of housing development in China, urban renewal in Kunming, and urban housing development, as well as conducting empirical research on the actual cases being carried out, the following conclusions are made regarding how the relationship among stakeholders is reflected in the project process:

(1) Explain the relationship between government departments as stakeholders. The "administrative

district" mode of the city government largely determines that the city government will pay more specific attention to the local affairs and development. Due to such a system and management structure, it is easier for the city government to focus too much on the development of the region and ignore the long-term goals and interests. The central government, as the master of the whole situation and the defender of national and urban interests, guides and controls the urban renewal process of local cities through policies and laws. When the central government devolves power to the city government, the city government has some autonomy. On the one hand, based on the information update of the local situation, such a management monitoring system can have a certain degree of flexibility; On the other hand, the management and control of the construction process and results will be insufficient.

- (2) The relationship between the government and the developer. The relationship between government and developers in the process of urban development and renewal, the interest structure has three forms (Gerry stock, 1999): a. the dominant party employs specialized units or specialized units to contract for projects; b. negotiation and consultation among organizations. Organizations can use their own resources to cooperate to realize their own interests; c). system collaboration. That is, organizations work together to create a self-managed network. The first and second relationships usually exist and are practiced in different projects. The third mode of work is still being explored because it involves competing games between different organizations.
- (3) City government and city residents. The relationship between the government and the city residents is same between the principal and the agent. The individual interests of residents and the public interests concerned by the government are not necessarily identical in terms of the direction. In this case, during the decision-making, it is inevitable to have shortcomings. Therefore, when there is a game of interests, people will become vulnerable. This kind of institutional structure is reflected in the actual project. Thus, the final structure of planning, design and construction cannot better connect with users. Such planning and design mechanisms are considered unsustainable.
- (4) Relationship between developers and urban residents. For the urban public, interest protection and compensation mechanism are the key to reach a consensus.
- (5) Urban planner and designer's concern. As the main data processor of planning and design work during the project, planning and design group needs to have a deep understanding of the design information and be clear about the source of the information. Ensuring fairness and accountability is a basic requirement for the planning and design group. The planning and design group needs to ensure that the planning and design could meet the profits of the general direction. At the same time, it should keep the balance between the profits and the needs of the residents. This makes it possible to gradually reduce the amount of discontent and negative behavior in the residential area.

China's urban renewal model is generally a top-down renewal model. This shows the strong power of the government and the weak power of the residents and their right to speak. In the process of

urban renewal and transformation, it generally reflects the impetus of administrative power to urban renewal projects. Therefore, under such circumstances, these views can ensure the implementation results of urban renewal projects to a greater extent and produce relatively good follow-up effects. First, the central government needs to give full play to its regulatory role. Long-term and overall interests could be safeguarded by central government and it can also give full play to its functions of supervision and guidance. The city government occupies the leading core position. The city government has the power to make decisions and changes to the plan. Therefore, in the process of the project, the city government and all partners should take a rational cooperative attitude to ensure the fairness of the project during the implementation and decision-making process. In addition, developers and real estate developers need to be encouraged and restrained. When developers and real estate developers invest and get involved in a project, their instinct for efficiency may prompt them to use various methods to influence the formulation of policies. Therefore, the interest demands of developers need to be restricted to ensure the long-term interests of urban development. Finally, urban residents are encouraged to actively participate in the process of urban development and renewal. In most of the current decision-making process in China, urban residents are still vulnerable groups and are often excluded from the decision-making process of urban development and renewal. As being weak individuals, they lack the institutionalized ways and methods to integrate individual interests into collective interests, and cannot afford the high cost and support required by this process. Therefore, how to ensure and expand the channels and effects of urban residents' participation is the issue that needs more attention.

6.1.3 Key conclusions: optimize planning and design process and feedback mechanism

The progress of human society lies in its ability to constantly reflect on itself and to gain useful knowledge and experience from success or failure. The process of urban renewal should be understood in this way. It is important to develop and summarize problems through practice, tracking, observing, and summarizing existing facts. Then it would be possible to use these problems to integrate with the next round of update construction. It also would be possible to reduce the possibility of adverse factors causing problems and to gradually optimize the planning and design process and ensure the corresponding results step by step. In the process of tracking and studying the research project, some decisions need to be made from the beginning of the planning and design project. For example, how the design data and requirements are determined, and what evidence and premises could be based on. These questions are related to the outcome of the construction and the degree of interaction with the users. In the empirical study, it is necessary to understand the object of study, that is, the planning and design process of residential areas in Kunming. A large number of observations and data collection need to be made from several key stages. These include the initial design stage, the game stage of stakeholders, the stage of designers' intervention and information processing, and the field observation stage of residential environment after the completion of the residential area. After the acquisition of objective materials, a clear framework can be formed through the induction and connection of the connecting points that influence and promote each other in the process of the overall project. Continuously collecting and supplementing this trivial information summarized from empirical research can gradually shrink the clear context and perspective. These perspectives can guide the planning and design of similar projects in the future so that they can be carried out with a clearer line.

6.1.4 Suggestions on optimizing the current planning and design procedures

Through the contents above, the author summarizes the topic and content of the thesis. Based on these conclusions, the author makes recommendations for current residential planning and design procedures. Based on these suggestions, researcher tries to develop the interaction among stakeholders to optimize the planning and design process in order to better establish the connection between the planning and design work and user needs. In addition, a good information management and feedback mechanism is also very important in this process. Problems which encountered in each ongoing project are different, and these differences could be summarized, recorded, and fed back at the appropriate stage, so as to provide a positive reference for same kinds of projects. Taking the renovation process of urban village as an example, the researcher makes optimized suggestions according to the research contents and conclusions of the overall thesis.

Urban village renovation procedure	Optimized suggestions	Additional information
<p>01. Municipal district Government</p> <p>Aim: formulate policies for developers to participate in the renovation of urban village project.</p>	<p>01-1. In addition to formulating and proposing a series of preferential policies for developers, it is also necessary to put forward mandatory requirements and constraints on the development of the overall project and expected results.</p> <p>01-2. New information sharing and academic research are necessary for developers to understand issues such as urban village reconstruction, urban renewal, residential planning and design, and sustainable development.</p>	<p>The government considered that developers can actively participate in the renovation of urban villages and bring new life and a good environment to the city and villagers in urban villages. The specific project implementation and outcome control, as well as the interest game between developers and villagers, these pressure falls onto the developer side.</p>
<p>02. Developers who are interested in participating in the project</p> <p>Aim: Developers need to pay the project deposit according to the relevant policies proposed by the government. The developer and the district government require confirmed and signed agreement on the cooperative development of urban village renovation.</p>	<p>02-1. Provide written feedback on government requirements and constraints, and propose corresponding solutions in signed agreements.</p> <p>02-2. Recruit intention planning and design agencies, set up a special research and design team, conduct research on the project and collect systematic data (based on the data provided by the government).</p> <p>02-3. The special research and design team should do recording of the renovation process of urban villages.</p>	
<p>03. District Government</p> <p>Aim: Delimit the boundary of the urban village renovation project.</p>	<p>03-1. The research team is responsible for providing the villagers with professional, clear and neutral explanations. The</p>	<p>At this stage, a contact person usually assumes a specific position, responsible for communicating and conveying</p>

<p>Villager: participating advocacy meetings, providing opinions and sign up the contract;</p> <p>Participate: Collecting villagers' opinions by voting to further determine the boundary of urban village renovation.</p>	<p>research team will communicate with villagers in urban villages and extract information and opinions to form written texts.</p> <p>03-2. The research team and villagers could work together to study and confirm users' needs and expectations, form written texts, and organize them as the basic data for the planning and design of new settlements.</p> <p>03-3. The special research and design team should make record of the renovation process of urban villages.</p>	<p>information between the village collective and the developer and the government. This role is sensitive and important because it requires transparency and neutrality in information and policy when it comes to communicating ideas and information.</p>
<p>04. District Government</p> <p>Aim:</p> <ul style="list-style-type: none"> - The district government shall report to the planning Bureau the boundary of urban village renovation; - Receive the planning guidance from Planning Bureau; <p>In addition to the plot ratio, all planning control requirements should be identified at this stage;</p>	<p>04-1. Report together with the information collated by the research team to keep the information consistent and effective.</p> <p>04-2. The special research and design team should do recording of the renovation process of urban villages.</p>	
<p>05. Developer should pay for the advance-fund</p> <p>Aim:</p> <ul style="list-style-type: none"> - Developer should pay for the advance-fund; - The developers need to assist the district government to complete the land expropriation and demolition in urban villages; - Developers need to assist the district government to complete the urban village specialized planning; <p>Developers need to assist the government in reporting specialized plans to the planning committee;</p>	<p>05-1. The research team should be involved in the planning and design team at this time, and conduct thorough information sharing and discussion to complete the special planning of the urban village renovation project.</p> <p>05-2. Based on the completion of the special planning, the urban design team should join the design work. They should also improve and refine the urban space and residential space with urban village renovation project in order to better eliminate the inefficient use of space and those without clear use definition.</p> <p>05-3. The special research and design team should make record of the renovation process of urban villages.</p>	<p>In the case study, the researcher has made many visits and surveys to the newly built residential areas after the renovation of urban villages. The main contradiction was that planning and design did not match the daily life of the permanent residents to a large extent. Such as in the unreasonable use of space, safety hazards, the lack of space size.</p>
<p>06. Kunming Urban Planning Bureau</p> <p>Aim: according to the specialized plans which deliberated and approved by the</p>	<p>06-1. The special research team assisted the planning and design team in completing the detailed design of the</p>	

planning Committee, the planning conditions for transferring land to the Land Reserve Center could be provided;	residential area. 06-2. The special research and design team should make record of the renovation process of urban villages.	
07. Developers who are interested in participating in the project Aim: After acquiring the project land, the developer will apply for the permit certificate (Land requisition permission; Planning permission) to the Planning Bureau in accordance with the planning application procedure;	07-1. The special research and design team should make record of the renovation process of urban villages.	
08. Developers who are interested in participating in the project Aim: The developer should carry out the urban village renovation (construction process) in accordance with the contents of the planning project permission;	08-1. The research team, together with the planning and design team, shall communicate and check the construction process. 08-2. The special research and design team should make record of the renovation process of urban villages.	Usually, the reconstruction project of urban village takes a long time. In the long duration of construction process, some construction problems and details need to be supervised and guided by the planning and design team.

Figure 6.1 Optimized urban village renovation procedure

6.2 Research limitation

“The limitations of the study are those characteristics of design or methodology that impacted or influenced the interpretation of the findings from your research” (Price, James H., Judy Murnan, 2004, p.66-67). There are three main research limitations need to be mentioned as followed.

(1) Methods of data collection

During the research investigation, research methods, such as case study, field study, questionnaire survey, interview, have been adopted to present the research questions. However, in the final analysis and discussion, it was found that some problems could be optimized even if a round of pilot study had been conducted. In addition, questionnaires and semi-structured interview questions have been prepared to get information from villagers through the field study, but it has encountered many difficulties in the actual investigation. For example, the attitude of villagers towards the renovation of urban villages is gradually changing. The case in the paper, Taihe urban village, has experienced nearly ten years of transformation and construction. The attitudes of villagers towards urban village reconstruction have also changed in the past decade. In the early stage of urban village renovation, most villagers expressed their support for urban village renovation project. When the villagers have moved back to the new residential area, they have to face the new problems in their lives by themselves. As a result, they gradually became dissatisfied with the overall results of urban village renovation and the shift changes in their lives. Due to these factors, the questionnaire and interview among villagers cannot be carried out smoothly. Therefore, in the future research and investigation process, it is necessary to fully consider and understand the latest situation of the interviewees to timely adjust the research

strategy.

(2) Self-reported data

In the case study interview, the researcher conducted an in-depth interview with the key person in the urban village renovation project. Some of the data and opinions which mentioned in the interview have also been incorporated into the discussions and conclusions. The key person has undertaken the task of conveying the message among stakeholders. His work mainly covers communicating and explaining to villagers the government's requirements for the renovation of urban villages. Since there is no systematic information feedback mechanism in his working process, the expression of feedback from villagers can only be limited. Moreover, the other identity of this key person is the original villager from Taihe Village. In this case his position and the contents he talks about are also limited to a certain extent. Of course, the information which directly expressed by the respondents also needs to receive adequate attention, especially when it is different from the content in the case study.

(3) Cultural and other type of bias

In the case study 2, the author attempts to state some common problems in the renovation of urban villages in Kunming through an in-depth investigation and follow-up observation of a common project. During the study, the researcher recorded the daily life status and information of many villagers when they moved back to the new residential area by the method of documentary photos. It is believed that each urban village has its own characteristics and information that needs to be considered in the decision-making process of the renovation project. As the first round of urban village renovation in Kunming, Taihe village renovation project could provide valuable information for urban villages which will face renovation in the future. However, this information can provide useful references for other projects, but it does not mean that these references can be replicated in other projects.

6.3 Contribution to the knowledge and future research on sustainable design and planning of residential area

This study focused on case tracking for nearly a decade. The progress of the project has been fully recorded, and the problems that arose at the end of the project have been summarized by empirical research. As these fragmentary questions accumulate in ongoing empirical studies and investigations, they will gradually shrink into a clear vein. These contexts are the issues that show the problem directly in the planning and design process. This provides a good insight of working for future projects. At the beginning of a project, gathering information and giving feedback can begin simultaneously. A sustainable methodology can guide more similar projects, and consciously start the feedback effort at the beginning of the work. In this way, it can avoid more problems in the process of constant revision.

The research on this project can be continued, and I also have the intention to continue to start the observation and feedback on the residential area planning and design project in Kunming. An interesting problem was found: the traditional dwellings were called "buildings without architects" by Rudolf (Rudolf, 1973, p.1). He praises the wisdom of man against nature in order to get better

living conditions. In the process of urban renewal, the most sensitive phenomenon is the disordered construction. Whenever such situations are encountered, they will be directly reflected as urban diseases; that is, they will be severely stopped and eliminated. From the perspective of the residents, they are the ones who are transforming their living environment and fighting against it. What they're doing is reinventing the artificial living environment. "Reasonable design, unreasonable use" seems to be a topic that cannot be avoided in China's residential development. Later, more and more users are also giving voice to themselves with practical actions: this kind of design may not be what they want and expect. The actual reflection of users makes the planning, design and decision-making of residential areas and urban Spaces that need to be updated increasingly clear and gradually present to public. By summarizing and sorting out information, the closed loop of the design process can be constantly improved and supplemented in addition to proposing improvement measures for specific problems.

Further and more concrete empirical studies and interviews are ongoing. In the future research, researchers will sort out and collect more pictures and related information of "unreasonable construction for rational use" and "residents' self-modification of living environment" in cities. Based on the collection of information, more detailed design and use of contradictions could be summarized. The real and strong evidence from the urban renewal and transformation process provides useful reference and information for the future renewal, transformation and upgrading. This would be the value of the research that could make positive progress in the urban renewal and transformation.

Appendix

Part one: Questionnaire survey

Note: All the participants in the questionnaire are residents living in Kunming. All the questionnaires are provided in Chinese.

Chinese Version:



参与者同意书

住户您好，感谢您参与本项目的相关调查。

- **项目名称:**
中文: 昆明可持续住宅设计实践
英文: Sustainable dwelling design practice in Kunming
- 我是就读于英国哈德斯菲尔德大学的一名博士生。这是一份关于“公众对住宅设计的意见和对低碳/可持续设计的认识”的问卷调查。本调查问卷的目的是为了了解您对可持续住宅设计的认识以及您在选择与购买住房时主要会考虑那些问题。
- 本次调研将会以发放问卷的方式进行。研究者在调查过后将会提出一些关于昆明的可持续住宅设计实践的可能的指导意见。
- 此研究项目的所有资料，将会由我负责保存。除了本研究以外不会供别人或者别的机构使用。对您所提供的资料，我将持保密的态度，您的姓名将会用一个研究号码代替。书面的资料在储存的时候将会上锁，数位资料库将会以密码管制。除了有关机构的依法调查以外，我将维护您的隐私。
- 您可以自由决定是否填答本问卷，也可以自由决定是否中途退出，并且不需要给出退出的理由。

我_____已经阅读了来自英国哈德斯菲尔德大学艺术设计与建筑学院的姜雯提供的项目研究资料背景，并且所有的问题都是本人自愿回答。

我同意:

我允许我提供的照片被公开，用于研究项目当中。

据我所知，以观察收集的所有的信息将会被安全的保存，我的意见将会被准确的记录并且任何相关的图片，只有在征得本人同意的情况下才能被公开。

签字: _____

日期: _____

问卷：昆明的可持续住宅设计实践

受访人群：来自周边住区的住户

您愿意参加本次问卷调查过后的深入采访吗？

A. 请您提供具体的联系方式： _____

B. 不愿意。

第一部分：一些关于您的基本信息

1. 性别	2. 年龄
男 <input type="checkbox"/> 女 <input type="checkbox"/>	17-24 <input type="checkbox"/> 25-35 <input type="checkbox"/> 36-50 <input type="checkbox"/> 51-65 <input type="checkbox"/> >65 <input type="checkbox"/>
3. 受教育程度	4. 您居住在昆明主城的哪一个区？
小学毕业 <input type="checkbox"/> 中学毕业 <input type="checkbox"/> 大学本科毕业 <input type="checkbox"/> 研究生或以上学位 <input type="checkbox"/>	五华区 <input type="checkbox"/> 盘龙区 <input type="checkbox"/> 官渡区 <input type="checkbox"/> 西山区 <input type="checkbox"/>

第二部分：主要问题

1. 根据以下方面，您觉的您当前的居住情况如何？（请在相应选项后打“√”）	
住区周边的交通设施 （例：出行是否方便？住区是否有容易到达的公共交通站点？）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
住区周边的购物便捷程度 （例：是否能够步行到达购物地点）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
安静的生活环境 （例：住区生活环境是否有各类噪音会影响到日常生活，工作等等？）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
住区的空气质量	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
住区周边的教育设施 （例：幼儿园，小学，中学等等）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
您对您住区周边的住宅小区品质的评价是？	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
在您的住区中是否有独特的社区文化？	非常满意 <input type="checkbox"/>

（例：是否有感到归属感，对社区的认同感，定期的社区活动，和睦的亲近的邻里关系等等？）	一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
您的住房的升值潜力	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
景观设计 （例：主题公园设计，是否有足够的绿地，是否有室外活动广场？）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
住区的规划设计 （例：设计主题，设计理念，建筑风格，功能布置，市政设施等等）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
社区设施 （例：教育设施，医药康体中心，商业设施，社区管理以及服务设施）	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
住房的朝向 （例：您住房中主要的房间每一天是否有足够的日照，采光） 您住房的朝向是： <u>南</u>	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
建筑设计风格 您认为是什么风格： _____	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
安全设施 (例：住房的安全设施，智能报警系统等等)	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
物业管理	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>
物业管理费用	非常满意 <input type="checkbox"/> 一般 <input type="checkbox"/> 不满意 <input type="checkbox"/> 无关紧要 <input type="checkbox"/>

2. 您对于主要房间的朝向有什么要求？	3. 您在购房时对现房有何装修要求？
朝东 <input type="checkbox"/> 朝南 <input type="checkbox"/> 朝西 <input type="checkbox"/>	毛坯房 <input type="checkbox"/> (在购买前不需要任何装修装饰，我希望自行完成住房的装修)

朝北 <input type="checkbox"/> 东西朝向 <input type="checkbox"/> 东南朝向 <input type="checkbox"/>	基本装修 (不包括家具布置) <input type="checkbox"/> 精装修 (提包入住) <input type="checkbox"/>			
4. 您了解环保产品以及环保材料吗?	5. 在您装修住房的时候会考虑使用环保产品或者是环保材料吗? (例: 低碳环保家电, 低耗能的高科技建材等等)			
请给出您对环保材料以及产品的个人见解: _____	会. <input type="checkbox"/> 不会. <input type="checkbox"/> 原因: _____			
6. 您有私家车吗?	7. 在您购买住房的时候, 对停车位有什么需求?			
有. <input type="checkbox"/> 没有. <input type="checkbox"/>	没有要求. <input type="checkbox"/> 需要一个停车位. <input type="checkbox"/> 需要一个以上的停车位. <input type="checkbox"/>			
8. 如果需要步行到达以下生活设施, 大概会花去您多少时间? (请在相应选项后打“√”)				
设施类别	5 分钟	10 分钟	20 分钟	超过 20 分钟
运动场				
餐馆				
银行				
康体中心				
老年活动中心				
儿童活动场地				
社区公园/广场				
休闲活动中心				
幼儿园/学校				
零售商店/便利商店				
本地的农贸市场				
购物中心				
工作地点				
医院				
城市公共交通站点				
9. 您觉得可持续住宅/绿色住宅的发展具有什么样的优点?	10. 您通常是从什么地方了解到关于可持续住宅的信息以及知识?			
节约能源. <input type="checkbox"/> 提高环保. <input type="checkbox"/> 提高生活质量并且对健康生活有益处. <input type="checkbox"/> 保护自然环境. <input type="checkbox"/> 请谈一谈您对可持续住宅/绿色住宅的见解: _____ _____	报纸和广告. <input type="checkbox"/> 电视以及电视广告. <input type="checkbox"/> 广播以及广告. <input type="checkbox"/> 网络. <input type="checkbox"/> 房屋中介. <input type="checkbox"/> 朋友推荐. <input type="checkbox"/> 公共宣传资料. <input type="checkbox"/> 新闻媒体. <input type="checkbox"/> 房屋销售. <input type="checkbox"/>			

	其他, 例如: _____
11. 您每天怎样去工作单位?	12. 您每天去工作单位大概花多少时间在路上?
开车. <input type="checkbox"/> 搭乘公共交通工具. <input type="checkbox"/> 开车然后转乘公共交通工具. <input type="checkbox"/> 骑自行车. <input type="checkbox"/> 步行. <input type="checkbox"/> 其他: _____	5-10 分钟. <input type="checkbox"/> 10-20 分钟. <input type="checkbox"/> 20-30 分钟. <input type="checkbox"/> 30-40 分钟. <input type="checkbox"/> 40-50 分钟. <input type="checkbox"/> 通常超过一小时. <input type="checkbox"/>
13. 居民对可持续知识的理解以及态度调查	
(1) 对于您住房室内的居住环境, 以下那些比较贴近于您的亲身感受? (可以多选)	(2) 根据您的居住经历, 您是否使用过以下类型的产品? (可以多选)
冬季室内非常暖和. <input type="checkbox"/> 有很好的通风, 所以夏季室内很凉快. <input type="checkbox"/> 房间都有非常足够的室内采光以及日照. <input type="checkbox"/> 有良好的隔音. <input type="checkbox"/> 有良好的视野以及可供欣赏的室外景观. <input type="checkbox"/> 室内环境干燥, 需要使用加湿器调节舒感受。 <input type="checkbox"/> 其他: _____	节能灯泡. <input type="checkbox"/> 有认证的环保家电. (节能冰箱, 环保洗衣机等等) <input type="checkbox"/> 太阳能热水系统. <input type="checkbox"/> 饮用水过滤系统. <input type="checkbox"/> 其他: _____
(3) 您的住房主要的室内通风方式是什么?	(4) 通风系统是否能够满足您对室内舒适程度的要求?
自然通风. <input type="checkbox"/> 中央空调. <input type="checkbox"/> 自然通风与中央空调相结合. <input type="checkbox"/>	能够满足 <input type="checkbox"/> 一般 <input type="checkbox"/> 不能满足 <input type="checkbox"/> 原因: _____
(5) 您的住所是否采用了可再生能源系统? 如果没有, 您是否想要采用? (例: 太阳能热水系统, 风力能源等等, 雨水/废水回收利用)	(6) 在您所居住的小区内是否有舒适的步行车行环境?
有. <input type="checkbox"/> 没有. <input type="checkbox"/> 我想要采用. <input type="checkbox"/> 我不想采用. <input type="checkbox"/> 原因: _____	有 <input type="checkbox"/> 没有. <input type="checkbox"/>
(7) 从您居住的地方去本地周边的生活设施是否方便? (例: 本地农贸市场, 购物中心, 银行, 康体中心, 学校, 绿地公园等等)	(8) 在您所居住的小区内部是否出现有生活污染的问题? (例: 噪音污染, 生活废水排放问题, 生活垃圾等等)
方便. <input type="checkbox"/> 不方便. <input type="checkbox"/>	有. <input type="checkbox"/> 没有. <input type="checkbox"/>
(9) 您了解什么是环保/绿色的建筑材料吗?	(10) 在您装修您的住所的时候是否采用了环保/绿色建筑材料?
了解. <input type="checkbox"/>	有. <input type="checkbox"/>

<p>不了解. <input type="checkbox"/></p> <p>请给出您的个人见解</p> <p>_____</p> <p>_____</p>	<p>没有. <input type="checkbox"/></p> <p>如果采用了绿色建材, 请举例: _____</p> <p>_____</p>
<p>(11) 在您居住的小区以及住房内是否有设置垃圾回收系统?</p> <p>(例: 室内存储空间, 室外的收集空间等等)</p>	<p>(12) 在您住房内部是否使用了高效的饮水系统?</p> <p>(例: 配有相应的节水措施)</p>
<p>有. <input type="checkbox"/></p> <p>没有. <input type="checkbox"/></p>	<p>有. <input type="checkbox"/></p> <p>没有 <input type="checkbox"/></p>
<p>(13) 您知道您居住的小区是否采用了室外节水系统吗?</p> <p>(例: 使用雨水收集系统来灌溉植被, 净化污水的再利用等等)</p>	<p>(14) 在你居住的小区内是否有自然的景观植被以及自然水体?</p>
<p>知道. <input type="checkbox"/></p> <p>不知道. <input type="checkbox"/></p>	<p>有 <input type="checkbox"/></p> <p>没有 <input type="checkbox"/></p>
<p>(15) 在您居住的小区, 以下哪些问题没有得到很好的落实? 如果可以的话, 请做一些简单的解释。</p>	<p>(16) 您对您居住小区的各类生活设施是否熟悉?</p>
<p>室内光照环境。 <input type="checkbox"/></p> <p>_____</p> <p>—</p> <p>室内隔音。 <input type="checkbox"/></p> <p>_____</p> <p>—</p> <p>空间的私密性。 <input type="checkbox"/></p> <p>_____</p> <p>—</p> <p>空间使用的灵活性。</p> <p>(例: 住房设计是否考虑了足够的房间和空间以应对未来可能的空间需求, 以及灵活改变运用的可能性) <input type="checkbox"/></p> <p>_____</p> <p>—</p> <p>与周边社区 (周边住宅区) 的关系。</p> <p>(例: 是否感觉到与周边住区有隔离) <input type="checkbox"/></p> <p>_____</p> <p>—</p> <p>住宅小区的归属感。 <input type="checkbox"/></p> <p>_____</p> <p>—</p>	<p>是的。 <input type="checkbox"/></p> <p>不是。 <input type="checkbox"/></p> <p>例如: _____</p>
<p>(17) 您会经常有机会参与到关于社区管理的过程中, 并且有机会向物业管理提出自己的意见吗?</p>	<p>(18) 在您在这里居住的经验中, 是否获得了一些关于可持续设计, 以及可持续的生活方式理念的知识?</p>

是的。□ 不是。□	是的。□ 不是。□ 例如：_____
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以上便是本次研究的所有问题，非常感谢您的积极参与。

English Version:



Participant consent form

Thank you for participating in the investigation of this project.

- **Project Name:**
中文: 昆明可持续住宅设计实践
英文: Sustainable dwelling design practice in Kunming
- I am a PhD student at The University of Huddersfield in the UK. This is a questionnaire on "public opinion on residential design and awareness of low carbon/sustainable design". The purpose of this questionnaire is to understand your understanding of sustainable housing design and what questions you will consider when choosing and buying a property.
- The survey will be conducted in the form of questionnaires. After the investigation, the researcher will propose some possible guidance on the practice of sustainable housing design in Kunming.
- All the data of this research project will be kept by the researcher. It will not be used by others or other institutions rather than this study. I will keep the information you provide confidential and your name will be replaced by a research number. Written data will be locked when stored, and digital databases will be password controlled. I will maintain your privacy except for the legal investigation by the relevant authorities.
- You are free to decide whether or not to complete this questionnaire, or whether or not to withdraw from it without giving a reason.

I _____ have read the project research background provided by Jiang Wen from The School of Art design and Architecture of The University of Huddersfield in England, and I have voluntarily answered all the questions.

I agree:

I allow the photos I provide to be published for use in research projects.

To the best of my knowledge, all information collected for observation will be kept safe, my opinions will be accurately recorded and any relevant images will be made public only with my consent.

Signature: _____

Date: _____

Questionnaire: Sustainable dwelling design practice in Kunming

Respondents: residents from surrounding areas

Would you like to participate in the in-depth interview after the questionnaire survey?

Please provide contact information

: _____

C. No, thanks.

Part one: Basic information

5. Gender	6. Age
M <input type="checkbox"/> F <input type="checkbox"/>	17-24 <input type="checkbox"/> 25-35 <input type="checkbox"/> 36-50 <input type="checkbox"/> 51-65 <input type="checkbox"/> >65 <input type="checkbox"/>
7. Education	8. Which part of the city are you live in?
elementary school <input type="checkbox"/> secondary school <input type="checkbox"/> undergraduate college <input type="checkbox"/> master or above <input type="checkbox"/>	Wuhua <input type="checkbox"/> Panlong <input type="checkbox"/> Guandu <input type="checkbox"/> Xishan <input type="checkbox"/>

Part two: Main questions

14. According to the following aspects, how do you feel about your current living situation?(Please tick "√" after the corresponding option)	
Transportation facilities around the residential area (Example: Is it convenient to travel? Is there an accessible public transport station?)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Convenience of shopping (example: Can I walk to the shopping site?)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Quiet living environment (example: Are there any kinds of noise in the living environment of the residential area that will affect daily life, work, etc.?)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Air quality	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Educational facilities (e.g. Kindergarten, primary school, middle school, etc.)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
What is your ideas about the quality of the residential area around your	Fully satisfied <input type="checkbox"/>

residential area?	Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Is there a unique community culture in your neighborhood? (e.g. Do you feel a sense of belonging, identity with the community, regular community activities, harmonious and close neighborhood relationship, etc.)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
The appreciation potential of your home (example: design theme, design concept, architectural style, functional layout, municipal facilities, etc.)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Landscape design (example: Theme park design, is there enough green space, is there an outdoor plaza?)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Planning and design of residential areas	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Community facilities (e.g. Educational facilities, medical and recreation centres, commercial facilities, community management and service facilities)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Orientation of housing (example: Does the main room in your house get enough sunlight every day?) Yours are:	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Style of residential building What you think: _____	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Safety facilities (example: housing security facilities, intelligent alarm system, etc.)	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Property management	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>
Fees for management	Fully satisfied <input type="checkbox"/> Generally satisfied <input type="checkbox"/> Dissatisfaction <input type="checkbox"/> Not applicable <input type="checkbox"/>

15. What orientation do you prefer for the main room?	16. Do you have any decoration requirements for your present house?			
East <input type="checkbox"/> South <input type="checkbox"/> West <input type="checkbox"/> North <input type="checkbox"/> East and west <input type="checkbox"/> East and south <input type="checkbox"/>	Rough house <input type="checkbox"/> (I don't need any decoration before purchase. I hope to finish the decoration by myself.) Basic decoration (excluding furniture arrangement) <input type="checkbox"/> Fine decoration (checking in with bags) <input type="checkbox"/>			
17. Do you know about green products and green materials?	18. Do you consider using environmental products or materials when you decorate your house? (Examples: low-carbon environmental appliances, high-tech building materials with low energy consumption, etc.)			
Please give your personal opinion on green materials and products: _____	Yes. <input type="checkbox"/> No. <input type="checkbox"/> Because _____ :			
19. Do you have private car?	20. What is your requirements for parking space when purchase a house?			
Yes. <input type="checkbox"/> No. <input type="checkbox"/>	No. <input type="checkbox"/> Need one. <input type="checkbox"/> Need more than one. <input type="checkbox"/>			
21. If you need to walk to the following living facilities, how much time will it take you?(Please tick "√" after the corresponding option)				
Type of facilities	5Mins	10Mins	20Mins	More than 20 mins
Sports centre				
Restaurant				
Bank				
Health centre				
Senior Citizen Activity Center				
Play ground				
Parks and plaza				
Leisure activity center				
Kindergarten/School				
Retail/convenience stores				
Open market				
Shopping mall				
Work place				
Hospital				
Public transport				
22. What do you think about the advantages of sustainable housing/green housing	23. Where do you usually get your information and knowledge about sustainable housing?			

development?	
<p>saving of energy. <input type="checkbox"/></p> <p>Improve the environmental protection. <input type="checkbox"/></p> <p>Improves quality of life and contributes to healthy living. <input type="checkbox"/></p> <p>preservation of the natural environment. <input type="checkbox"/></p> <p>Say something about the sustainable development:</p> <p>_____</p> <p>_____</p>	<p>Newspapers and advertisements. <input type="checkbox"/></p> <p>Television and television advertising. <input type="checkbox"/></p> <p>Radio and advertising. <input type="checkbox"/></p> <p>Internet. <input type="checkbox"/></p> <p>letting agency. <input type="checkbox"/></p> <p>friend recommendation. <input type="checkbox"/></p> <p>Publicity materials. <input type="checkbox"/></p> <p>news media. <input type="checkbox"/></p> <p>house sale. <input type="checkbox"/></p> <p>Others, such as</p> <p>: _____</p>
24. How do you go to work everyday?	25. How much time do you spend on the way to work every day?
<p>Driving car. <input type="checkbox"/></p> <p>Public transport. <input type="checkbox"/></p> <p>Drive and transfer to public transport. <input type="checkbox"/></p> <p>Bicycle. <input type="checkbox"/></p> <p>Walking. <input type="checkbox"/></p> <p>Others: _____</p>	<p>5-10 Mins. <input type="checkbox"/></p> <p>10-20 Mins. <input type="checkbox"/></p> <p>20-30 Mins. <input type="checkbox"/></p> <p>30-40 Mins. <input type="checkbox"/></p> <p>40-50 Mins. <input type="checkbox"/></p> <p>More than a hour. <input type="checkbox"/></p>
26. Survey of residents' understanding and attitudes towards sustainable knowledge	
(19) For your indoor living environment, which of the following is close to your personal experience? (Multiple choices are available)	(20) According to your living experience, have you ever used the following types of products? (Multiple choices are available)
<p>It's very warm inside in winter. <input type="checkbox"/></p> <p>It's well ventilated, so it's cool inside in summer. <input type="checkbox"/></p> <p>The rooms are provided with sufficient indoor light and sunlight. <input type="checkbox"/></p> <p>It has good sound insulation. <input type="checkbox"/></p> <p>Good views of the outdoors. <input type="checkbox"/></p> <p>Indoor environment is dry, need to use humidifier to adjust the comfort. <input type="checkbox"/></p> <p>Others</p> <p>: _____</p>	<p>energy-saving bulb. <input type="checkbox"/></p> <p>Certified eco-friendly home appliances (energy efficient refrigerator, eco-friendly washing machine, etc.) <input type="checkbox"/></p> <p>solar water heating system. <input type="checkbox"/></p> <p>Water purifier. <input type="checkbox"/></p> <p>Others</p> <p>: _____</p>
(21) What is the main indoor ventilation mode in your house?	(22) Can the ventilation system meet your requirements for indoor comfort?
<p>natural ventilation. <input type="checkbox"/></p> <p>central air-conditioning. <input type="checkbox"/></p> <p>Combined. <input type="checkbox"/></p>	<p>Yes <input type="checkbox"/></p> <p>General degree <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>Because</p> <p>: _____</p>
(23) Does your home have a renewable energy system? If not, do you want to adopt it?	(24) Is there a comfortable walking car service environment in your residential area?

(e.g. Too much energy for hot water systems, wind power, etc., rainwater/wastewater recycling)	
Yes. <input type="checkbox"/> No. <input type="checkbox"/> I want to use it <input type="checkbox"/> I don't want to use it <input type="checkbox"/> Because : _____	Yes <input type="checkbox"/> No. <input type="checkbox"/>
(25) Is it convenient to go to the living facilities around the place you live? (example: local farmers market, shopping center, bank, recreation center, school, green park, etc.)	(26) Is there any local pollution problem in the residential area where you live? (e.g. Noise pollution, domestic wastewater discharge, domestic garbage, etc.)
Yes. <input type="checkbox"/> No. <input type="checkbox"/>	Yes. <input type="checkbox"/> No. <input type="checkbox"/>
(27) Do you know what environmental protection/green building materials are?	(28) Did you use green/green building materials when decorating your home?
Yes. <input type="checkbox"/> No. <input type="checkbox"/> Personal understanding on this issue: _____ _____	Yes. <input type="checkbox"/> No. <input type="checkbox"/> If you have adopted the green materials, please give a example: _____ _____ _
(29) Is there a garbage collection system in your residential area and housing? (example: indoor storage space, outdoor collection space, etc.)	(30) Is there an efficient drinking water system in your house? (example: Appropriate water-saving measures are provided)
Yes. <input type="checkbox"/> No. <input type="checkbox"/>	Yes. <input type="checkbox"/> No <input type="checkbox"/>
(31) Do you know whether your community has adopted outdoor water-saving system? (example: using rainwater harvesting systems to irrigate vegetation, purify sewage for reuse, etc.)	(32) Are there natural landscape vegetation and natural water bodies in your residential area?
Yes, I know. <input type="checkbox"/> No, I don't know. <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
(33) In your community, which of the following problems have not been well implemented? Please make some simple explanations if you can.	(34) Are you familiar with all kinds of living facilities in your residential area?
Indoor lighting environment. <input type="checkbox"/> _____ _ The room is soundproof. <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/> Such as : _____

<p>—</p> <p>Privacy of the space. <input type="checkbox"/></p> <p>—</p> <p>Flexibility in space use. (e.g. Has the house been designed with sufficient room and space in mind to meet the possible future space requirements, as well as the possibility of flexible utilization)<input type="checkbox"/></p> <p>—</p> <p>Relationships with surrounding communities (surrounding residential areas). (example: Do you feel isolated from the surrounding area) <input type="checkbox"/></p> <p>—</p> <p>The sense of belonging in a residential community. <input type="checkbox"/></p> <p>—</p>	
<p>(35) Do you often have the opportunity to participate in the process of community management and give your own opinions to the property management? <input type="checkbox"/></p>	<p>(36)(18) Have you gained any knowledge about sustainable design and the concept of sustainable lifestyle in your living experience here? <input type="checkbox"/></p>
<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>Such as</p> <p>: _____</p>

These are all the questions in this study. Thank you very much for your participation.

Part Two: Samples of interview (with English translation)

采访时间: 06.10.2018

Date of interview: 06.10.2018

采访地点: 云南仁泽房地产开发有限公司管理办公室

Place of interview: Administration office of Yunnan Renze Development Co. LTD

采访目的: 了解城中村改造项目的主要内容, 项目实际进行的情况, 项目进行过程中相关居民的生活日常, 以及对于城中村改造的态度等

Purpose of interview: Understand the main contents of urban village renovation; actual progress of the renovation project; daily life of related residents during the progress of the renovation project; general attitude of urban village renovation;

主要内容记录:

Recording the main contents:

1: 太主任

1: *Director Tai*

2: 我

2: *Researcher Wen Jiang*

采访对谈:

Interview:

2: 这就是太和片区的地图, 有点早, 2013 年的。

Q: This is the early map of Tai He area in 2013.

1: 太和片区, (沿着南过境的这三个地块) 这些房子是 2010 年 7 月 15 号开始拆迁, 6 月 19 号的拆迁公告(下发)。公告一出来, (城中村内的村民的房子) 就开始拆迁了。拆迁的同时, O 地块, 有一些企业, 和民房。规划过后, 以前的企业和民房都成为了项目用地。

A: Taihe area (three plots of land along with the throughway), the demolition of the buildings on the land began on 15th. July, 2010 with a demolition announcement released on 19th. June in the same year. The former residential land and the enterprise land become the project land after the planning.

2: 我记得当时是分为几个部分去开发的? 分几期开发?

Q: I remembered the project is developed in several phases, How many stages is the project divided into?

1: 回迁区是首先建设起来的片区。同时进行的也有其他地块(商品房地块, 学校区)。

A: The compensation compound is the priority during the progress. Commercial housing, school buildings are also under construction at the same time.

2: 我去现场看了, 到现在 2018 年中旬, 商品房区域的房子还没有建好, 发生了什么事情? 现在是什么情况?

Q: During the site visiting in the middle of 2018, what is the reason that the commercial housing area has not been completed?

1: 沿着南过境的都属于回迁区。公安厅有部分房子在最后面这一个地块。虽然属于回迁区，但是里面有公安厅的房子。所以现在整个西南海入住的居民，主要是回迁区，还有公安厅的居民。现在的状况是，中间商品房的区域，以及靠着 1903 的商业区部分，已经停工。主要的原因是，当时仁泽地产在做西南海整个楼盘的时候，同时还开展着其他几个项目，所以资金和精力分散了，是导致西南海商品房片区和商业片区停工的主要原因。现在主要是 N 地块和 M 地块，属于回迁区，2010 年开始建房，2012 年开始给回迁村民分房，在 2013 年 7 月份，基本上 70%-80% 的村民，都入住了。其中 N 地块，比较集中的就是城中村的原村民入住。M 地块，相对来说租住的，外地的比较多。

A: Compensation housing plot is arranged along with the main throughway. Relocated urban villagers and staffs of the public security Department are the main residents in this residential compound. The current situation is, the constructions of commercial house in the middle of the land, and those shopping malls beside the Park 1903 (large commercial residential blocks) is suspended. The main reasons for the suspension of the project are: because the real estate company carries on many projects at the same time, the capital dispersion is the main reason that causes the suspension of commercial housing area and the commercial area. The construction of compensation plot N and M started in the year of 2010, and those houses have been distributed to relocate villagers in the year of 2012. In 2013, 70%-80% of original villagers have successfully settled down in compensation plot. The relocate villagers choose to move to the plot N, while the plot M is occupied by many new tenants.

2: 相当于说 N 地块是原住民，M 地块是租户比较多（因为村民都不止一套房子，有空房就用于出租）？

A: So, original villagers prefer the houses in plot N, and most of the houses in plot M are for rent. (Since most villagers own more than one house, the spare ones are rented to increase their income.)

1: 嗯是的。20%-30% 的回迁居民住在 M 地块，剩下的就是租户了。

A: Well, yes. There are only 20%-30% of relocate villagers settle down in plot M, the rest of the residents in plot M are new tenants.

2: 住宅都配置有电梯吗？

Q: Dose all the house has elevator?

1: 嗯，都是高层，电梯房。有一梯两户的，一梯四户的，两梯八户的小户型。（45-50 平米，75-80 平米，140-150 平米的大户型）。2013 年当时开始入住，配套设施还不是很全，有些还没有完全完工。例如说花园，亭子的顶，都没有建设完成。（有一个新的问题）当时入住进去大部分的老人没有着落。

A: Yes, all the house in this project is high-rise residence building, full equipped with elevator. In order to facilitate the distribution of houses among original villagers, different types of houses are planned in the urban village renovation project (size of each type of house: 45-50 m²; 75-80 m²; 140-150 m²;). In 2013, residents moved into the new housing compound. At that time, the residential supporting facilities had not been completed, Such as, the garden, the pavilion, and the landscape.

(A new question comes up) The daily life of elderly people who moved back to the residential compound, the way they integrate into community life are not well considered.

2: 嗯，当时我们也进入到社区里观察，看到老年人基本上都是在社区内居住，平日就是在院子里晒太阳，聊天之类的。也没有特别的事情做。

A: Well yes, when we are doing the site visiting in the compensation community, we found that most of the elderly are living in the community, usually just walking in the yard, chat with neighbours and so on. There was nothing special to do in this brand new residential compound.

1: 嗯是的，老年人是没有着落。为什么说没有着落？因为没有地方可去了。除了在这些花园，过道休息一下，打打牌，没有可以逛得地方了。整个太和片区的改造，还剩下5组（鱼户村）没有进行改造。

A: Well yes, elderly really don't have anything special to do in the community. Why should we say that? They have no where to go. The living environment has changed greatly right now compared to the original urban village. All they have right now around their home are big gardens, pavilions, and small squares, there are no shops and streets where they can walk around. In the overall renovation process of Taihe area, only the fifth group has not begun the transformation process. Group number 5 is still what it was before the urban village was transformed.

2: 这也是太和片区内的一个村落吗？

Q: Is this fifth group also a part of Taihe area?

1: 是的，当时太和片区分为5个组。2010年改造的时候，只改造了1,2,3,4组。只留下了5组，鱼户村。云南滇池学院对面。太和以前的地是这样的情况，有一条河，太家河。整个太和片区内的村落都是围绕着太家河发展出来的。有河北，河南之分，相当于北边，南边。太家河当时是联通了四个大坝，以及云纺那一块。太家河当时是直通滇池的。沿着太家河，在村子里面有很多企业，例如说天使土豆片长（著名）现在已经迁走了。五组鱼户村里的太家河还是原来的样子，新整理出来的开发地块，太家河已经改过河道了。反正整个太和片区内村落，都是跟着河道走的。总的来说，5组，叫做鱼户村（至今没有开发）；4组，叫永富村；3组，叫太家地村；2组，永盛村；1组，叫赵家地村，但是分三个自然村（周家地，赵家地，西基墩）。在改造过后，1,2,3,4组的村民都集中回迁到了N，M地块。70-80%都居住在N地块。20-30%在M地块。

A: Yes. There are five groups in Taihe area. When the renovation project begun in 2010, only the first four groups have involved the renovation plan. The fifth group remained the same. The original configuration of Taihe area contains a natural reiver named Tai Jia river. Villages in Taihe area are all developed along the Tai Jia river. Taijia River divides the area into two areas, north and south. The original Taijia River connects four dikes in the region and flows into Dianchi Lake. Along the Taijia River, the village is home to many private businesses, such as a potato chip factory (well known locally in Kunming) that have been relocated due to the renovation plan. The Tai Jia river in the fifth group village still retains its original paths, and the river course in the transformed plot (the first four groups of villages) has been greatly modified. After the renovation of the urban vilalge, the relocate villagers of the first four groups have moved back to the N and M blocks.70-80% of them live on plot N.20-30% in plot M.

2: 原来是这样的情况, 那么城中村的回迁房有没有产权?

Q: Does the compensation house in the transformed residential compound have the property right?

1: 以前的房子, 最早是小产权房, 现在成为了商品房。

A: Houses with limited property rights, which means villagers do not have property ownership certificates for their houses (villager as the owner of the house cannot sell their house to a normal resident who are not belongs to the original village). And for now, their new house become the commercial houses.

2: 什么是小产权房?

Q: What is "Houses with limited property rights"?

1: 意思就是村民自己的房子。属于就是村民的宅基地, 批到以后, 村民自己建造的房子。但是在整个城中村改造过后, 就不存在这种小产权房了。回迁房建成之后, 由开发商牵头, 办理房产证, 以及相关的土地使用证。就变成了商品房, 可以上市交易的。但是到目前为止, 由于一些程序上的因素, 现在这些回迁区域还没有拿到这些证书, 证书正在办理当中。所以目前还不能买卖, 只能出租。但是现在的政策是, 两证合一了, 变为不动产证。拿到证的情况下, 这个房子是可以贷款的。变相的商品房。

A: The houses built by villagers on their homestead are called "Houses with limited property rights". However, after the renovation of urban village, such houses are gone. After the construction of the compensation house is completed, the developer takes the lead in handling the property ownership certificate for the compensation houses. Therefore, the compensation house become the commercial house, and it can be put into the real estate market for housing property transactions. So far, due to procedural reasons, the compensation house has not got the property certificate, the certificate is still in the stage of processing. As for now, all the houses owned by villagers cannot be sold, they can only be rented. So far, new policies have been introduced that Real estate ownership certificate and land use certificate merged into real estate certificate. This certificate can make the compensation house into another form of commercial housing, which means those houses could be used to apply loans.

2: 当时改造时候的补偿政策如何? 例如说平均, 每一个平米能够补偿到多少钱?

Q: How about the compensation policy? For example, How much can developers compensate per square meter?

1: 当时补偿的时候, 有三种政策。第一种方式, 货币补偿。直接给钱。房子量出来以后, 要看房子的结构, 分几种, 一种是土木结构的, 一种是砖混的, 还有一种是框架的, 那么根据房屋结构条件的不同, 补偿政策也有所不同; 另外还有一种房子叫做空气房, 也就是说, 宅基地已经批下来给这一户人家了, 但是只打了地基, 没有盖起房子来; 总共就分出这四种方式来确定补偿的金额; 例如说, 对于砖混结构的房子, 周边的价格是 3500 一平米; 当时国家有一个规定, 按照放在在几环内, 来确定房子的价格 (以区位来区分价位)。那么按照当时的规定和情况, 太和片区的房子, 砖混结构的房屋, 按照 3500 一平米来结算; 框架结构的 3600 一平米; 土木结构的老房子, 2800 一平米; 空气房, 2600 一平米 (空气房按照四层面积来结算)。这种第一种补偿方式。

A: The compensation policy contains three methods. A. Monetary compensatory. First, the area of

the existing building needs to be measured, and then the compensation amount is determined according to the structure type of the building. In practice, there are four scenarios for determining the amount of compensation. First, civil structure housing (compensation standard: 2800 Yuan/m²); Second, brick and concrete structure housing (compensation standard: 3500 Yuan/m²); Third, the frame structure of the house (compensation standard: 3600 Yuan/m²); Fourth, air housing (compensation standard: 2600 Yuan/m²). In particular, the fourth type, the air house, means a house on the homestead land that has only finished foundation, not a completed building. This is the first methods of compensation.

第二种补偿方式，房子也要，钱也要。例如说，我有四百平方的房子，我用三百平方来换新房，用100平方米来换成钱，这样子。看个人的需求和实际情况。但是当时村民们不知道如何判断周边的地块的发展情况，多数选择还是要钱。但是现在来看，周围的地价和房子都已经是消费不起的东西了。

A: B. Monetary compensatory & property. For example, if a villager has a house of 400 square meters large, he is free to allocate 400 square meters of compensation, such as 100 square meters for monetary compensation, and 300 square meters for compensation house. It totally depends on personal demands and choices. At that time, most villagers were not aware of the development plan around the Taihe urban village, and most chose monetary compensation. As for now, the urban area close to Taihe area is developing very fast now, and the housing price are already high enough that ordinary people cannot consume.

对于村民来说，太和片区的城中村改造有以下几点明显改变：

- 环境好了，周边的设施齐全了；卫生也好了；
- 治安好了；
- 但是，弊病也有：村民的生活没有着落了；村民没有事情做了。

例如说，尤其是村子里的老人。家里的经济大权基本都是儿女在控制，老人基本没有什么主动权利；

在一个，就是现在五十岁，四十，三十岁左右的中年人，这一部分人是最惨的。以前在没有城中村改造的时候，作为太和片区，入驻在村子里的企业非常多；那么这些企业就能够解决这部分剩余劳动力，他们就有一些可以工作的机会；对于那些五六十岁左右的人，以前他们是菜农，那么他们就有自己的耕地，种田，收菜，可以卖给其他人作为自己的一份收入；那么不管什么年龄段的人，都有自己的一份事情可以做，那么大家的生活基础就相对比较好一些。

但是在城中村改造过后，这部分人就出现了惰性（有钱了就什么都不做了）。从2011年开始，开始发放拆迁补偿款项。村民的状态就是，天哪，第二天一睁眼，账户上就有几十万百把万的钱，钱来的太快了，富裕的太快了；一般没有经历过什么事情的村民，会一时比较惊慌失措，不知道该干嘛。

A: In general, for the villagers, the renovation of urban villages in Taihe area has brought about some obvious changes:

- Urban villages have improved the living environment of villagers, increased urban facilities and improved urban sanitary conditions;
- Improved security conditions;
- There are also many negative effects. There is no definite plan for the villagers' life and they

have nothing to do in the city. For example, especially the old people in the village. The elderly has little active right to use the money or property they receive. Furthermore, the middle-aged group in the whole process of urban village renovation has not been well arranged and considered. Before the renovation progress, many small enterprises settled down in urban village. These small businesses can provide a lot of jobs opportunities. For people in their 50s and 60s, who may have been vegetable farmers before, they can grow and sell vegetables to get more daily income. So, people at all ages have things they can do, and the basic life of most people will be much better. But after the renovation of urban village, these people are getting lazy (if they have enough money to support their daily life, they don't want to do more work). Since 2011, compensation money for the renovation of urban villages have been released. The feeling of the villagers is that the next day there will be millions in their bank account. Money came too fast, and too fast to get rich. Most villagers will be panic and at the same time they don't know what to do with the money.

2: 那么一般村民平均会补偿到多少钱呢?

Q: How much does the average villager get?

1: 平均来说, 每一户至少有个一百万左右。

A: On the average, each household could get a million at a time.

2: 那也不够用一辈子的。

A: It is not enough for the whole life.

1: 这个钱怎么说呢, 实际上对于房子的补偿, 虽然说可以补偿几百平方, 房子分到手以后, 还需要装修, 物管费用, 各种其他的开销。每一家人基本上都是三套房的补偿 (当时每一户多数都是在 300 平米左右, 大中小的房型拼配, 140-150, 70-90, 45-60 这样的面积)。那么这一百万实际上一会儿就用完了, 没有剩下多少了。所以导致现在, 太和的现状, 对村民还是不利的。

A: Speaking about the money, for the compensation of houses, each family can get houses which the size of all houses are over 100 m² in total. When they get the house, they need to pay more money to decorate the house, pay for the management fee, and other aspects in their daily life. At that time, each household was basically compensated for three houses (most of the compensation house of each family was around 300 square meters, and will be combined with large, medium and small size of housing types, 140-150 m², 70-90 m², 45-60 m²). In fact, even with the compensation of 1 million RMB, it could be used up in a short time. Therefore, under such circumstances, the life condition of villagers in Taihe area is not good as what they expected.

以前的太和 5 组, 鱼护村, 以前的渔村, 打鱼摸虾的村子, 当时是太和片区人口最少的小村, (但是由于村民有一技之长, 有不多但是稳定的经济收入)。以前太和片区的每一个村民小组, 都会拉一些小型企业来到村子里, 那么一些剩余劳动力就可以找到一份能够上手的工作, 有一个持续的经济来源, 这是其一; 第二, 每年因为出租用地给这些企业, 每年村民小组还能够分到一定比例的租金, 承包费; 剩余的地块都是耕地。很稳当。

A: Taihe Group 5 is the smallest village in Taihe area. All the villagers are fishermen and have a stable income. Each group in Taihe area are used to introduce small businesses into their village,

and more job opportunities could be provided by those small businesses. Many villagers could get a job and get paid to support their life. Village collectives leased their land to small businesses and at the end of the year, they can get rental and every households in the village could get dividend from it. The rest of land is farmland, villagers could also get money from it. In other words, villager could get money in many ways, they will have stable life based on the stable income.

由于这个原因，这个前后差异，现在就有村民在发声，在闹，他们觉得新的生活环境里面没有着落，不知道做什么，没有收入。

当时政府以 25 万一亩的价格，征用，收了村子里的土地。之后，开发商就以招拍挂的方式从政府手里拿下这一块地，来进行城中村改造。开放商从政府手里拿地基本上是五百，六百万一亩的价格。所以，正儿八经，村民还是非常惨的，没有地了，也没有收入了，不知道今后该如何生活。虽然住进了新的小区，很干净治安也好，但是，当时的口号是“建设社会主义新农村”，“农村城市化”，村转城，农村转化成为城市社区，村民转为城镇户口。

A: Local residents start protest and advocate that their life is difficult because of the lack of work opportunities in the new community.

Government acquired the land with a price of 250,000yuan per-mu (0.17acres). Then estate developer purchased the land from the Government with a price of 5 or 6 million per-mu. Now all the farmer lost their land but gained the city resident status under two propaganda: “Build the new communist village” and “Urbanizing the village”. Even though the residents moved into a much better living condition but they have to face the problem that there are very less job opportunities provided in the new village.

2: 是的，这很重要，因为在我们作为设计方的时候，都是各种政策，条款，规划条件都被制定好了以后，我们依据这些数据来进设计，并没有了解到真是的情况和需求，所以更不用说去分析实际需要解决的问题了，所以设计才会成为一个问题的导火索。我们不知道回迁进来的村民，是不是能够融入的了城市生活，这些情况。

A: Yes, it's crucial to plan with considerable thought. However, as developers and design group, we started this project with preset policies, conditions and planning. We had to follow those policies without analysis the actual condition, for example, whether villagers wish and able to adopt the city life.

1: 不是融入或者是不融入，是必须要融入。因为已经形成事实了。然后再当村民拿到所有的补偿之后，就没有然后了，没有经济来源，相当于说只有那些了。以前的生活，例如说村民可以去打打工，种种菜，虽然收入不多，但是也能够保证一定的持续的生活状态。但是在城中村改造之后，各种钱，房子，一下子全部出现，大家头脑就发热了，不知道要做什么了。感觉很好，但是后续的生活问题就没有解决的很好。

A: Villagers have no choice now, they have to adopt the city life. Villagers can work on their land before the renovation. Nowadays, they loss their land with a considerable compensations following by some irrational decisions they made.

家里的年轻人掌握着财政大权，家里的老人就一般拿着一点生活的费用，年轻人就拿着钱出去，参与一些小额信贷（高利贷）。一旦套进去，就出不来。光太和片区这种现象，至少没在掉两几个亿。

A: Most young generation gain the control of the compensations. After kept some for household, they invested most of the money into a kind of financial loans. But the investment is unsafe and didn't paid back for most of cases. Villagers from Taihe lost at least 200 millions yuan because of the irrational investment.

2: 昆明是什么时候开始大规模的城中村改造的?

Q: When the massive urban village renovation started in Kunming?

1: 2008 年年底开始。2009 年, 对城中村开始宣传, 动员, 勘测, 总结。为了迎合符合昆明市的整个规划目标, 就启动了城中村改造项目。2010 年, 开始实施城中村改造。太和片区是比较早的。最早的是小羊肠村 (北市区, 建设社会主义新农村, 拆旧村, 建新村)。

A: It's started in the year end of 2008 and propaganda start in 2009. For meet the municipal planning goal, Taihe started the renovation work in 2010 and Taihe is one of the earliest project. The first project is Xiaoyangchang village (A northern village of Kunming city).

2: 当时是以什么模式去建设的?

Q: Describe the develop mode conducted.

1: 统一模式。也就是给你一个户型, 大家就照着建设一模一样的房子。

A: Is Unified mode, which all the identical apartments were build after a pre-built mode home.

2: 是村民自己出钱建设还是有开发商介入进行建设?

Q: Who paid for the development?

1: 有开发商介入的。

A: Real estate developers involved.

2: 建设的住宅是高层住宅还是多层住宅?

Q: What type of the residential building have been built during this period? High-rise residential building or multi-storey building?

1: 平层。但是在城村村改造过后, 我就是觉得村民的生活没有以前自由了。另外, 关于养老的问题, 当时在建设改造的时候, 是提到过的, 但是最终还是没有得到落实。最后的养老金, 还是由原来的社区出钱买养老保险, 作为一点补助, 其余的费用都是村民自己承担。

A: Most of the residential buildings are the multi-storey building. I just felt that after the renovation of urban village, life in the village is not as happy and casual as it used to be. Furthermore, something promised but not settled is the residential pension plan that require, with a little made up, resident pay for the big part.

还有就是就业的问题。以前的村民教育程度普遍比较低, 要到城市里面谋得一个体面的工作实际上是非常困难的, 包括连找一个物管保安的工作都非常难。而且还有年龄限制。所以很多人现在就成为了待业青年。现在 80,90 年代的稍微年轻的人, 文化程度稍微高一些的, 还可以找一些可以做的工作。但是对于 40 多岁的这个族群来说, 工作是非常困难的。所以说, 对于回迁村民来说, 现在唯一可以依靠的收入来源就是: 租房。

A: The urban village renovation also had huge impact on employment. Villagers who normally received less education are hard to get a job in the city, not even maintainers or securities. Plus age limit, many people are unemployed., it's easier for 80's or 90's generation, with some educations can find few jobs then their 40 years old family members. Rent collected become the only source of income for many moved back villagers.

2: 租房的多不多?

Q: How about the apartment rent market?

1: 现在太和片区回迁片区的住户，80%是回迁居民，20%是租户。租户有几个类别，第一，学校，学校的教职工，以及大学的学生。大学的学生都不爱学校宿舍，都喜欢自己出来住。第二，教育片区的孩子，家长，把这里当做学区房来入住；第三，环湖路，广福路，这里有红星美凯龙，大商汇，爱琴海，1903 里的这些商人，都会来这里租房子。这里的房子非常好租。

A: 80% of the present residents of Taihe are moved back villagers and 20% are tenants whom composed mainly by three categories, Collage staffs and students, Families with kids search for better education and business man from nearby markets. Apartments of here are popular.

2: 那么只依靠这些房租，村民的生活能不能过得来？（是否 cover 的了？）

Q: Whether the rent itself can supported villager's daily life?

1: 看情况是，有点过不来。例如说，对于小户型，50 平米左右的，一年下来，房租就是个一万八九。90 平米左右，一年也就是两万多。但是根据现在的生活标准，一家人一年也就三万多，过得下去吗？再加上入住在小区里面的费用，需要交物管费，车位费等等管理费用，生活压力是非常大的。车位，原房车位，10 万一个，有产权的，12 万。

A: Depends, but I say it's difficult. For example, the annul rent for a 50 square-meters and a 90 square-meters is around 17,000 yuan and 20,000 yuan respectively. Considering the 30,000 yuan Living standard, how to make a living for villagers? Not mention some property charges and fees.

在还没有改造以前，村民一年可以分到三次钱，每逢大的节日，都会分到一些钱（由村集体分钱）。年初，年中，年底，分三次钱，很均匀的时间分配，来自租金承包费。那么由村里面的各个小组，来自己招商引资，盘活闲置的土地，增加更多的收入。

A: Before renovation plan, villagers received share and dividend three times a year from Village Commission which operated the village owned assets. Income normally came from local business and investment.

在改造过后，村子里，组里的钱一次性发完了，就空了，那么村民后续的收入就没有了一个保障。作为小组，社区，就只能做一些福利的，服务的作用了，相当于一个居民委员会，处理家常事务了。

A: After renovation, Village Commission distributed all the assets and kept only residential service division.

2: 这一片是不是以前填海填起来的?

Q: Does this area as a whole built on filled up land on the lake?

1: 嗯, 是以前围海造田的地方。在我们小时候, 这边都是海 (滇池), 还有农户养蚕, 但是被填起来之后, 就没有了。

A: Yes, this area used to be surround by lake when I was a kids.

对于城中村呢, 我觉得就是提升了城市形象, 但是作为老百姓来说, 说句良心话, 作为政府, 就没有为老百姓考虑的特别完善, 对于后续的生存生活问题, 没有得到很好的解决。土地突然间没有了, 钱突然出现了, 你想想, 头脑发不发热? 接下来的这些上当受骗的事情也就自然而然的发生了。对于老人来说, 就是非常惨了。

A: I do believe the urban village improved the city's image. But as a resident, I also advocated that not enough consideration was given by the government, especially unemployment and a onetime lump sum compensation. The villagers lost their land and got their money. Lost purpose of life, many unemployed choose Play Mah-john and do nothing. As for the elderly, life is getting harder than ever.

以前, 不管怎么说, 生活再艰苦, 至少还有农田可以种菜, 都可以维持生计, 甚至还有一些额外的收入。从城中村改造以后, 35-50 岁这个年龄段的剩余劳动力, 非常多, 都不知道要做什么, 每天都无所事事的, 打麻将, 聊天, 吹牛, 没有生活目标。所以别看着大家都搬进了新的小区, 环境也变好了, 但是作为城郊结合部的感觉, 并不是那么太理想。导致, 人们拿到钱之后, 思维上, 产生了惰性。产生了惰性, 人一旦不动, 就是穷。

A: Before the renovation of urban villages, even if the life was hard, at least the villagers had the land to grow vegetables and earn a living. After the renovation of urban villages, many people have lost their purpose in life. Although everyone has moved into the new residential area, they are still mentally not fully integrated into the city life. Most people are gradually content with this kind of life and don't take the initiative to find a job.

但是按理来说, 拿到钱, 聪明点的人可以拿去做点生意, 赚点钱。但是农村人的思维和城市人的思维还是有差异的。作为城市居民, 最起码有工作, 就有养老保险, 退休工资, 那么以后的生活还可以有一定的保障。但是对于农村的村民来说, 虽然说身份转为了市民, 但是没有一分体面的正式的工作, 连最基本的退休工资, 福利保险都没有。所以就是没有任何的保障。

A: Because of the difference in thinking between rural and urban people, they will not take the initiative to find a job and strive for security for their future life. Although the living environment has been urbanized to a certain extent, the original villagers have not been completely urbanized. So their future life in the city will not be well protected.

2: 当时设计部门, 在做设计的时候, 有没有采访和询问过村民的意愿, 想要如何改造?

Q: Were some interviews or questionnaires conducted during the community design and planning process?

1: 当时政府是有文件的, 例如说城中村改造, 应该有多少村民签字同意, 才能够开启改造。满意程度达到 90%以上, 才能够进行城中村改造。当时是有开过这样的会议的。请村民参加了的。那些年, 怎么说, 田地多的时候确实苦的, 大家也都这么生活过来了。那么都希望, 生活环境能够通过改造, 能变得好一些。

A: Base on the government policy that project can not start until 90% of the villagers approved. We had meetings with villagers. Project approved due to many people want easier life rather than hard filed work.

2: 那么当时对于设计师来说，设计师是如何知道村民的意愿，村民的意思的？意思只有同意或者是不同意这样的参与程度吗？

Q: How about the designers who work on this project, did them communicated with villagers directly? Except agree and disagree, were any other opinions from villagers expressed?

1: 但是政府是有一份文件的，是有明确规定的。就说必须达到 90 以上的村民同意认可，才能够进行城中村改造。那么 1234 组，同时开村民大会，或者是代表大会。18 岁以上的村民都可以参加。或者是没加派一个代表来参加。那么主要的形式，就是讲政府的文件，意思，项目的内容，念给大家听，给大家感受一下。

A: There is a government document with certain regulation about the urban village renovation project. 90% of agreement among villagers could get permission of the project. Every one older than 18 are required to attend the meeting, we only read and explained the government materials on the meeting and that's all.

2: 您觉得大家能够听懂这是一回什么事吗？

Q: Do you think that all the villagers could understand those regulations?

1: 这个要慢慢的跟村民解释和说明的。比如说，一些条文条款，补偿政策，这些都是需要一条一条的教给村民认识到。教了之后，他们自己回去家里面自己开会讨论，来做一个权衡和决定。当然开会肯定不是一次就成功，一开始是有一个动员大会，动员大家参与，把信息放出去，我们将拆迁补偿方案先解释给大家听，然后大家自己回去权衡。那么差不多点的时候，再定一个时间，开会，再来动员村民来做决策和签字。

A: We did illustrations for villagers regard to each items then leave the right of approve to them. We encouraged them to sign.

2: 那么当时是由谁来做这种转译和解释工作呢？

Q: Who's responsibility to conduct the meeting and explain each item in the regulation?

1: 城中村改造呢是有一个实施主体的。实施主体是政府。作为我们是属于基层。那么是由政府召集我们基层先开会说明情况，在城中村改造之前，要把改造的计划，时间，程序等等这些先给基层的工作人员说清楚，梳理出来，日程安排表弄好，然后再继续。当时我们（基层）不是对接开发商的，主要是对接政府的，然后政府再安排我们在做其他事情。什么时候要动员，什么时候要签字认可，然后一起确认改造的边界。确定红线位置。当时还要确定的是，当村集体的土地还没有进行实质开发的时候，一律作为国有土地征收。一并纳入城中村改造。（拿地）所以当时出了个什么事，就是本来村里面拿出两百多亩地来进行新村建设的，但是由于还在申请办理当中，没有开始实质性的建设，所以新村没有盖起来，本来打算建新村的用地就被纳入到了城中村改造的范围。

A: It's Government's responsible. We (Villager commission) are the element level of government, so we did the actual work and report to municipal office. As the villager commission level, we only talk to government, we transfer the information between village commission and government. The

government will let us know what to do next.

2: 那么所以说, 村民是接触不到设计师的是吗?

Q: Which means villagers had not contact with actual project designer?

1: 是的, 没有接触到。也没发表过任何意见。只有同意或者是不同意。就是盖成什么样就是什么样了。包括连社区都没有接触到设计方。当时社区提的所有的意见, 都没有最后在设计当中体现出来。例如说, 房子的采光问题, 端头还好, 中间就没有做到这样的简单要求。还有就是建筑质量的问题, 建筑材料没有很好, 过道里面希望能够贴砖。但是也最后没有达成。

A: Yes, and no opinion expressed regard to the designing by villagers. But the community provided some suggestions and requirements, such as tiled surface in the stair aisle and the requirement of duration of sunlight per day, none of them realized though to some extent.

现在回迁区, 绿化什么的, 大致的有个样子, 但是还是有很多细节没有做到位。

And we are not satisfied with the community plantation. A lot of work still need to be finished.

2. 那么关于回迁村民的孩子上学的问题呢? 小区里的学校村民的孩子是否能够上?

Q: How about education for relocate villagers' kids? Were they given the priority to attend the newly built school?

1: 不能。现在孩子们都是自己找学校上。不能够上改造项目中建设的新学校。当时我最头疼的事情就是没有解决好这一件事情。现在脸上一个幼儿园每个月都是 2000 多块, 对于村民来说是一笔不小的开支。

A: No, parents need find a school for their kids by themself without support. I feel bad for I didn't solve this problem for our community. Current tuition fee is more then 2000 yuan for a kindergarten, it's big for a farm family.

2: 那么为什么在这个社区居住的居民不能上这个学校?

Q: Why the new schools built in Taihe area not available for local villagers?

1: 因为他是对外的呀。当时我就在想, 对于太和片区的村民的子女是否能上这个学校, 不说不收钱么, 但是至少能够优惠一点, 至少要有一个机会。但是最后还是没有做到位。现在太和片区的孩子上学唯一只有另外一所小学, 中学就要搬到其他更远的地方去上学。

A: Because it's a school with business purpose, only for whom affordable. I expected there are support for village kids but nothing provided. Currently, the only public school available for villagers is an elementary school, students need travel far for mid-school.

2: 那么孩子么怎么去上学呢? 走路还是公交车?

Q: How do those kids go to school? Do they take the bus or just walk?

1: 走路基本上都是。

A: Normally just by walking.

2: 村民平时出行方式是什么情况?

Q: How about the way of transportation?

1: 公交车。走路。公共交通还是很近的。然后现在社区内还有一条路的路灯没有安装,晚上非常危险,非常黑。

A: Take the bus and walking. Public transport is ok right here. But some basic urban facilities are not complete yet. Like street lamp at the entrance of the residential area, it is too dark at night and we feel not safe at all when we walk on the street at night.

还有就是作为仁泽学校,回迁村民都没有享受到学校的就近待遇。都是按照成绩和条件,才能够进去。所以太和片区的孩子上学都是另外的学校。

A: Furthermore, the new school has no special policy towards relocate villagers around the area. Only the villagers' kids who meet the requirements and conditions can go to this school. In this case, most of the kids here go to other schools which are a little bit farther away from here.

2: 我有没有可能做一些问卷调查呢?

Q: Can we do questionnaire survey among relocate villagers?

1: 村民都非常愤怒,不是很适合。

A: I don't think so, most villagers are not that happy talking about this.

2: 那么社区有没有想一些办法,例如说开一些培训的课啊什么的,教授一些技能,能够帮助他们找工作?

Q: Are there any suggestions provided by residential community that could help them getting job in the city? Like arrange some training course or skills?

1: 这个倒是有,例如说有茶艺班,手工艺,电工等等,希望传输一些技能,能增多一些机会帮助他们找到工作。但是还是很困难。

A: Yes, some courses are provided by the village commission, like Tea culture, hand craft, or electrician, they are trying to deliver more skills to those villagers to help them finding job as soon as possible. Finally, in the process of implementation, it is still very difficult.

2: 那么社区有没有考虑过就是开放一层,能够入住一些小的商业?

Q: Has the community ever considered like open the first floor of buildings and introduce some small businesses?

1: 不可以了。

A: No, never.

2: 就相当于说,地块是在一起的,但是相互各自的生活是完全分开的。

A: So, all residential plot is adjacent but residents here do not interact with each other in daily life.

1: 是的,包括我们自己居住的小区都不可以弄。现在小区里面也有一些房子被用来用作这些小的商业,开一点餐饮店啊超市什么的。但是基本上都是村民把房子出租给别人来做的,

对于村民来说，惰性，致使他们不愿意自己动手做事了，宁愿收取租金，然后过一般的生活。已经不想操心了。

A: Yes, we have no chance to small businesses like randomly in this residential area. But still, life is not that convenient as we thought, some houses on ground floor are rented out to set up small shops, like convenience store, small market, small restaurant, and even barber shop. These small businesses are mostly run by new tenant. Relocate villager could get rent from them and they prefer do nothing but get rent.

2: 恶性循环啊。

A: That is not good.

1: 倒是片区路边的商业之后如果做起来以后，就业的机会就会相对多一些，村民也许还能够找到一些合适的工作。就像有一些村民就在对面的小区，1903，做一些基础的工作，例如说保安啊，保洁啊，之类的简单工作。但是多数都是年青一代，80,90，甚至是00.70左右的人还是没有调动起来工作的积极性，也没有跟多的机会。

A: More job opportunities may be created if the commercial part of Taihe residential area is completed. Perhaps relocate villagers will be able to find some suitable jobs in there. Some relocate villager get jobs in Park 1903 (residential district just across the main road), like security, cleaners. Young generation like 80s, 90s, even 00' in urban village would like to grab the opportunities to get in touch with city, but most of the 70' have lost their initiatives and then lost their opportunities.

2: 是的，村民还是惨的。

A: Yes, it is not well.

我们走进社区的时候，我们看到好多村民都在腌渍咸鱼，铺的到处都是，挺有趣的。

A: When we are in the residential compound, we have noticed that villagers are making pickled fish, those fish are everywhere, on the ground, or on the top of the grass, even hung on the trees. It is interesting.

1: 农村里，这边以前靠着滇池，这是习惯。当滇池开海的时候，都会买一些回来，做一些鱼干。已经是习惯，生活方式了。

A: Yes. This is their habit for a long time in the village. Taihe area is adjacent to Dianchi Lake, so it used to be fishing villages. So, when the fishing season comes, villagers will make pickled fish and dried fish. It is their lifestyle.

2: 开海是什么时候？

Q: When is the fishing season in Dianchi Lake?

1: 九月份左右。以前这边都是渔村，然后也有一些传统的习俗和生活方式。例如说，这些渔村的姑娘，都只能招夫婿进村，不外嫁。男孩子也不能出去，只能将姑娘讨进来。所以说村民就越来越壮大，人越来越多。（5组）。

A: About September. There were many fishing villages in Taihe area, so there were many traditional customs and ways of life. For example, if a girl in the village got married, and her husband had to live in the village as well with his wife's family. Same as a boy in the village got married, his wife

had to settle down in the village as well. Therefore, the village will get stronger and the scale and number of villagers will be increased.

2: 还有一些什么以前的老习惯现在还保留着呢?

Q: Do they still have any traditions in the village?

1: 以前滇池的水还清澈的时候, 村民都会去打鱼, 然后拿回家养着, 直到周末逛街的时候, 周末拿出来在集市上买卖。

A: In the past, when dianchi Lake was still clear, villagers would go fishing and sell fish on the fish market.

当时还能够划着船进来的。以前小时候上学放学过后, 做完作业, 晚上都去打鱼。当时的河水还能喝, 非常清澈。

At that time, the Taijia River was connected to the Dianchi Lake, from which you could boat into the village. Kids could also go fishing when they have finished their homework at that time. The lake is so clear that you can drink it directly.

采访结束。

End of interview.

时间: 约 2 小时

Time Duration: about 2 hours.

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