A CONTEXTUAL FRAMEWORK FOR SUSTAINABLE NEIGHBOURHOOD PLANNING IN TRANSITIONAL URBAN CHINA: A CASE OF CHENGDU CITY

ZHANG QI

PhD

The Hong Kong Polytechnic University

2019

The Hong Kong Polytechnic University

Department of Building and Real Estate

A Contextual Framework for Sustainable Neighbourhood Planning in Transitional Urban China: A Case of Chengdu City

Zhang Qi

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

December 2018

CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

_____ (Signed)

Zhang Qi

ABSTRACT

Two issues are challenging the role of sustainable neighbourhood planning in enhancing urban sustainability. Firstly, most sustainable neighbourhood planning practices and research have been undertaken following the global standard but little has specifically considered contextual variations among different neighbourhoods, especially the inappropriate and problematic borrowing of ideas from different contexts. Secondly, there have been increasing concerns about the disparity between sustainability and liveability under the planning for sustainability movement. In China, urban neighbourhoods have experienced substantial transitions due to significant economic, social and institutional reforms and the rapid rise of urbanization since the 1980s. These transitions span old and new neighbourhoods, from the dissolved danwei neighbourhoods and transformed resettlement neighbourhoods to emerging commodity-housing neighbourhoods. As such, numerous and diversified problems have arisen that require a more sustainable and liveable planning framework. However, both neighbourhood planning and neighbourhood sustainability assessments are still in their infancy, and there is very little comprehensive empirical research on sustainable neighbourhood planning in China. The research gaps specifically lie in identifying the barriers hindering the development of sustainable neighbourhoods and the major factors contributing to sustainable neighbourhoods. There is also a need to examine how neighbourhood sustainability and life satisfaction can be better integrated in order to develop more sustainable and liveable neighbourhoods in China.

The aim of this study was therefore to enhance sustainable neighbourhood development in transitional China by developing an adaptive sustainable planning framework that addresses the context of three typical neighbourhoods. The following three neighbourhoods in Chengdu city were selected to reflect the transitions and challenges: a traditional danwei neighbourhood, a resettlement neighbourhood, and a commodity-housing neighbourhood. The research utilized an approach that combined qualitative and quantitative methods. A comprehensive literature review was conducted to investigate the barriers hindering the practice of neighbourhood planning in China, on the basis of which a preliminary theoretical framework of sustainable neighbourhoods was constructed. Several rounds of in-depth interviews with experts in the field of urban planning and other relevant fields were conducted to verify the three major identified barriers and the proposed framework. A case study and questionnaire survey based on the proposed theoretical framework were conducted in three different neighbourhoods to obtain residents' perception of

the sustainability factors among the neighbourhood and their life satisfaction. Descriptive analysis, logistic regression and path analysis were adopted to investigate the significant associations between perceived sustainability and neighbourhood life satisfaction, as well as moving intentions.

The study revealed that the key issues hindering sustainable neighbourhood planning development in China include little support from national policy and local governance, ambiguous legislation on community management, insufficient public participation, and a weak sense of community. Although each neighbourhood has its own distinct sustainability challenges, infrastructure and public engagement were two common and significant dimensions affecting the overall sustainability of the neighbourhoods. The study also produced an adaptive framework for simultaneously considering sustainability and liveability in the three different local contexts. Findings from this study contribute to the literature on developing and adapting sustainable neighbourhood planning in China and will help decision-makers and professionals to incorporate contextual and satisfaction considerations into local planning for sustainable development. The findings also lay a foundation for future research on exploring the generalizability of the proposed sustainability framework in other parts of China and other cities around the world experiencing similar rapid urbanisation.

LIST OF RESEARCH PUBLICATIONS

Refereed Journal papers

Zhang, Q., Yung, E. H. K., & Chan, E. H. W. (2018). Towards Sustainable Neighbourhoods: Challenges and Opportunities for Neighbourhood Planning in Transitional Urban China. *Sustainability*, 10(2), 406. (SSCI, SCIE, IF=**2.075**)

Yung, E. H. K., Zhang, Q., & Chan, E. H. (2017). Underlying social factors for evaluating heritage conservation in urban renewal districts. *Habitat International*, 66, 135-148. (SSCI, IF=**3.000**)

Refereed Journal Papers Currently under Review

Zhang, Q., Yung, E. H. K., & Chan, E. H. W. (2019). Comparison of perceived sustainability among different neighbourhoods in transitional China: The case of Chengdu. *Habitat International.*

Zhang, Q., Yung, E. H. K. & Chan, E. H. (2019). Sustainability and liveability: an investigation of residents' perception in three different neighbourhoods in Chengdu, China. *Cities*.

Refereed Conference Presentations

Zhang, Q., Yung, E.H.K. and Chan, E.H.W. (2019). Comparison of perceived sustainability among different neighbourhoods in transitional China: The case of Chengdu, CIB World Building Congress 2019, 17 - 21 June, Hong Kong, China, 2019. (Paper presentation).

Zhang, Q., Yung, E.H.K. and Chan, E.H.W. (2016). Opportunities and Challenges of Sustainable Neighbourhood Planning in China: A Comparative Study of Different Countries, Urban Transitions Conference, 5-9 September, Shanghai, China, 2016.

Zhang, Q., Yung, E.H.K. and Chan, E.H.W. (2017). A Critical Review on the Improvement of Neighbourhood Sustainability Assessment Frameworks, 3rd International Conference on Urban Sustainability and Resilience, 13-14 June, London, United Kingdom, 2017.

ACKNOWLEDGEMENTS

Throughout my PhD study life, I am indebted to many people.

Firstly, I would like to express my deepest gratitude and thanks to my Chief Supervisor, Dr Esther Hiu Kwan Yung, for her valuable advices and encouragements that have always backed me up, allowing me to explore and shape ideas over the past period of my PhD study. I am also thankful to her great efforts, time, and energy in advising me on preparation of this thesis and the publications derived from this study.

My sincere gratitude also goes to my Co-Supervisor Professor Edwin Hon Wan Chan who always took every opportunity to share with me his extensive academic insights and life experience. With his excellent leadership, our research team owned constructive idea-exchange platform and harmonious group atmosphere in terms of not only academic study but also after-school life.

Additionally, I would like to thank Dr Ivy Siu Wai Wong, Prof Wang Shifu, Prof Li Xun, Dr Kao Cheng-Hsuan, for their helpful contributions to this research, especially in enhancing my understanding of social science research and developing qualitative methodologies by providing constructive perspectives and suggestions.

I also wish to thank Prof Yan Song, Prof William Rohe, and the other faculty and staff members of the Department of City and Regional Planning of the University of North Carolina at Chapel Hill for their hospitality and gracious welcome as well as adding their constructive advice and ideas to my research during my short stay in the United States.

Besides, I am deeply grateful to Department of Building and Real Estate of The Hong Kong Polytechnic University, for their all-round supports, especially for sponsoring this PhD research work by awarding me the Postgraduate Studentship Scholarship. The encouragement from this amazing community of 'Opening minds and Shaping the future' at various stage of my PhD life made this study possible.

Finally, and above all, I would like to express my sincere gratitude to my family, my parents Mr. Zhang Xianhu and Mrs. Wang Zufang for their unconditional support, encouragement and love, and to my friends and colleagues for their generous supports and suggestions without which I would not successfully complete this work.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

NSA Neighbourhood Sustainability Assessment

NP Neighbourhood Planning

CRC Community Residents' Committee

UN-HABITAT United Nations Human Settlements Program

US United States

UK United Kingdom

SPSS Statistical Package for the Social Sciences

Biodiversity Biological diversity

GHG Greenhouse gas

TOD Transit-oriented development

BREEAM Building Research Establishment Environmental Assessment Method

CASBEE Comprehensive Assessment System for Built Environment Efficiency

LEED Leadership in Energy and Environmental Design

DGNB Deutsche Gesellschaft für Nachhaltiges Bauen (The German Sustainable Building Council)

TAHER The Technical Assessment Handbook for Ecological Residence of China

Beam Plus Building Environmental Assessment Method Plus

Chapter 1 Introduction

1.1 Introduction

This chapter provides an overview of the research. To provide a quick uptake, it starts with the problem statements for this research followed by the research gap, objectives, research questions, and the significance of the study. The overall research approach, delimitation of the research and the entire structure of the thesis are also given at the end of this chapter.

1.2 Problem Statement

Sustainability and sustainable development has been the subject of academic, professional and political discussion for more than 20 years. The World Commission on Environment and Development is credited with applying sustainability concepts to guide development towards more sustainable outcomes and defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This definition encapsulates two key concepts:

·That 'meeting needs' is a central objective for sustainability.

·That there is significant emphasis on future generations — reflecting the enduring and maintaining nature of 'sustaining' something in existence.

Cities, as major spaces where human activities occur, are extremely important when sustainable development is faced, discussed and evaluated. It is predicted by United Nations that over 70% of the world's population will live in urban areas by 2050 (UN, 2008), which highlights the critical challenge of increasing global urbanization threatening sustainable urban development (Childers et al., 2014). The challenges range from inadequate or failing infrastructure and exploding population to environmental and economic disruptions. New and expanding cities have brought not only challenges but also opportunities for sustainability (Weinstein, 2010).

To achieve sustainable management, better understanding of urban sustainability and enhancing the ability of policy-makers are urgent needs of the 21st century (Birch & Wachter, 2008); (Naess, 2001); (Register, 2006). Sustainability-based urban planning has consequently become a major instrument for governments guiding urban development, and sustainability has been gradually incorporated into local urban planning. However, Medved (2016)argued that only a high level and

global simultaneous operational strategy would be powerful enough for practically shifting the direction towards more sustainable development. Comparatively, it is feasible to move forward sustainably at the local, even micro-level within low-carbon neighbourhoods. As described clearly by Jane Jacobs [1]and supported by New Urbanism[2], "a sustainable way of living should effortlessly derive from the way we design our sustainable neighbourhoods, as green neighbourhood developments are beneficial to the community and the individual as well as the environment" (Kyrkou et al., 2011). Accordingly, 'Sustainable Cities and Communities' was included as the 11th goal out of 17 goals of the 2030 Agenda for Sustainable Development adopted by world leaders in September 2015 at an historic UN summit. Enhancing inclusivity, participatory, and sustainable human settlement planning and management in all countries was articulated in the 11th goal.

The significance of neighbourhood sustainability to sustainable urban development has been highlighted by many scholars (Choguill, 2008); (Kennedy et al., 2005) who argued that a city is considered sustainable only if its components, particularly neighbourhoods and building environment, meet sustainability criteria. Neighbourhoods, as basic planning units, have always been of particular interest to planners (Rohe, 2009). Accordingly, an increasing number of new initiatives for neighbourhood planning have been developed to address local sustainable issues in foreign countries (Boyko et al., 2006); (Sharifi & Murayama, 2013) (Valentin & Spangenberg, 2000). Additionally, since the early 2000s planners and environmentalists have been designing tools for Sustainability Assessment at neighbourhood level, such as BREEAM Communities, LEED-ND and CASBEE-UD (Komeily & Srinivasan, 2015). However, the viability of widely applying global standards for neighbourhood sustainability planning and assessment in various context-specific countries were criticized. The global standards of neighbourhood sustainability have been widely developed and adopted but little has been done to address the contextual variation among different neighbourhoods. Furthermore, inappropriate borrowing of ideas from different contexts to address local challenges has actually hindered the advancement of sustainable neighbourhood development (Cable, 2008; Säynäjoki et al., 2012; Sharifi & Murayama, 2015). The occasionally contradictory benchmarks adopted reflect diversity of opinions about the

[1] Jane Jacob was an American-Canadian journalist, author, and activist who influenced urban studies, sociology, and economics.

[2] New Urbanism is an urban design movement which promotes environmentally friendly habits by creating walkable neighbourhoods containing a wide range of housing and job types.

appropriate way of addressing sustainability at the neighbourhood scale and make it difficult to achieve identical performance in different context.

China's rapid urbanization is most conspicuous with its urban population having increased from 20% in 1980 to 58.5% in 2017. This figure shows that the total built-up area in China increased from 92,151 km2 in 2000 to 118,763 km2 in 2010, an increase of 29% (Wei et al., 2017). Consequently, challenges, such as declining social capital, traffic congestion, urban sprawl, land overdevelopment, environmental deterioration, declining urban culture, and social inequality have put neighbourhood sustainability issues in the spotlight. Since the housing reforms of the1990s, urban neighbourhoods have experienced significant transitions from the work unit (danwei) era to the commodity-housing era (Yushu Zhu et al., 2012). The housing market reform has also contributed to the emergence of a more mobile, heterogeneous and economically independent urban population (Bray, 2006).

In comparison with other countries, both Neighbourhood Planning and Neighbourhood Sustainability Assessment in China are still in their infancy, even though significant social-political transformations have occurred domestically since the 1980s. To promote the sustainable development of residential areas in China, in 2007 several authorities and organizations jointly issued the Technical Assessment Handbook for Ecological Residence of China (Meisheng Nie 2007). However, it was subsequently criticized for defective generalizability, inadequate considerations of geographical character, not integrating with the planning system, lacking systematic social and economic indicators, and poor practicality and authority (Dong & Li, 2014; Qing Ye 2014; Y. YU & TIAN, 2009). The sustainability coverage of the assessment framework in China has also been criticized and the major factors contributing to sustainable neighbourhoods in China have yet to be ascertained.

To cope with these challenges, institutional reform on neighbourhood governance has been carried out in China over the past 20 years and community-building policies have been launched to remodel the old local governance institutions (work unit) and revitalize local development (Derleth & Koldyk*, 2004). ‘Sustainable development’ had been adopted as a national strategy since 1998 to politically highlight its crucial role in national development. Then the central government issued its first official National Report on Sustainable Development in 2012 (NDRC, 2012). Emerging

sustainability challenges have gradually made governmental strategies shift from focusing on economic development to achieving and balancing social and environmental aspects in urban development. However, community building played a more prominent role in reforming the local governance model whereas regular and systematic neighbourhood-based planning has not yet been initiated. The lack of relevant research on identifying the barriers hindering the development of neighbourhood planning in China has made this more challenging.

In addition, local-level sustainability institutions, strategies and mechanism have still not been effectively addressed, which has caused the sustainable neighbourhood planning and local-level (or upper-level) planning to be far from properly integrated. Sustainable neighbourhood planning cannot be well implemented and contribute to fostering sustainable neighbourhoods unless an integrated and adaptive institution can be arranged to incorporate the planning into local and regional governance. An explicit mechanism is needed that can assure neighbours' interests and promote regional development by resolving possible conflicts of interests between neighbourhoods and municipal development in terms of urban planning. Another fundamental issue is the poor sense of public participation due to the long-term effect of a planned economy on citizen's ideology and perception of active and collective participation for resolving public problems. As the soul of neighbourhood planning, public participation determines how much local input would be included into the local plan for the process to be effective and constructive. Thus, the absence of supportive institutions and poor public participation mechanisms has become barriers hindering sustainable neighbourhood development in transitional China.

Lastly, the emerging challenges hindering the realization of sustainability require translation, or operationalization, of the concept to agendas, programmes and policies in order to place a focus on tangible subject matter. The recent development of the sustainability concept has transformed the relationship between sustainability and society. Sustainability is no longer perceived to serve us by simply meeting our needs, but rather provide a benefit to societal and external systems (de Haan et al., 2014). However, the realization of sustainability faces many challenges. One of the key debates is whether there exists a gap between the concepts of sustainability and liveability. The unexplored correlation and variation between sustainability and liveability challenges the sustainable development. As they are both central to transition and public policies but have different focuses by proposing 'meeting the demand' in terms of human centric and societal system.

In other words, to what extent the two are mutually coherent and how they interact with each other. For instance, there is a temporal distinction between sustainability, which by definition is about long-term, intergenerational conditions, and liveability in which the emphasis switches to the 'here and now' and the direct delivery of benefits while retaining an expectation that these will continue in perpetuity.

While sustainability concerns itself with the maintenance of resources provided by the environment and environmental and ecological health, liveability effectively points a spotlight on the current environment. Since cities essentially contain the highest density of human settlement, the onus for liveability falls largely into the hands of cities, and there is a clear recognition of the quality of life that a city can afford its inhabitants. Given that, the association between sustainability and liveability is more intense and significant at urban neighbourhood level. Meanwhile, how the two concepts interact in different contexts is still yet to be investigated in light of an uncertain future.

1.3 Research Gaps

Although there have been studies on neighbourhood or community planning and sustainable indicators in China (Friedmann & Fang, 2011; Michael et al., 2014; L. Shen & Zhou, 2014; Shi et al., 2016; Y. Wang et al., 2009; L. Y. Wu & Li, 2010) (Jingsheng Li et al., 2008; W. Yuan et al., 2003), both the theoretical and practical development of sustainable neighbourhood planning is still at the initial exploratory stage. Three major research gaps are as follows:

- Very few studies have focused on identifying the major obstacles that hinder the development of neighbourhood planning in transitional China. Xiu-Ying (2011) identified the managerial, legislative and environmental barriers that hinder sustainable neighbourhood development. However, social and political aspects, especially community issues and planning policy design, have not been fully considered.

- A systematic and contextual framework consisting of underlying factors contributing to sustainable neighbourhoods in China is urgently needed. As stated above, the current technical handbook has been criticized for lacking systematic social, economic indicators

and poor generality and practicality (Dong & Li, 2014; Qing Ye 2014; Y. YU & TIAN, 2009).

- Very few studies have explored the association and divergence between sustainability and liveability at the neighbourhood level. This relationship between top-down sustainable planning and bottom-up perceptions of liveability has a crucial role in optimizing a much-needed local planning framework for cultivating a sustainable and satisfactory neighbourhood.

1.4 Research Objectives and Questions

1.4.1 Research Aim and Objectives

The aim of this study is to promote sustainable neighbourhood development in transitional China by developing an adaptive sustainable planning framework in the context of three typical neighbourhoods in Chengdu, China. The following are the research objectives:

1) To examine sustainable neighbourhood planning theory and identify the common characteristics shared by neighbourhood planning in widely-practiced countries and regions.
2) To evaluate the barriers and opportunities of adapting neighbourhood planning in Chinese cities.
3) To ascertain the underlying factors in neighbourhood planning that would facilitate sustainable neighbourhood development in Chinese cities.
4) To identify and compare the association between sustainability and neighbourhood satisfaction in the context of three typical neighbourhoods in China.
5) To construct and verify a theoretical framework for delivering adaptive sustainable neighbourhood planning for Chinese cities.
6) To draw policy implications for promoting sustainable neighbourhood development in China.

1.4.2 Research Questions

To achieve the objectives, the study will address the following research questions and sub-questions:

1) **Why** should sustainable neighbourhood planning be adaptively applied in China at this stage of its development?
    a. What are the unique conditions in China that make it different from other countries such that existing and commonly used neighbourhood assessment frameworks and tools cannot be directly applied?
    b. What are the opportunities and challenges for delivering sustainable neighbourhood planning in China?
2) **What** are the dominant sustainable considerations in neighbourhood planning in China?
    a. What are the major threats to achieving sustainable neighbourhoods in China?
    b. How do sustainable considerations vary by context among different neighbourhoods?
3) **How** can sustainable neighbourhood planning be effectively utilized to cultivate sustainable and satisfactory neighbourhoods simultaneously in the current context of local planning and governance?
    a. How do sustainable considerations associate with residential satisfaction in neighbourhood life in China?
    b. What are the institutional arrangements conducive to effectively incorporating the association between sustainability and liveability within a policy framework?

1.5 Research Significance and Value

This study fills a research gap created by the very limited research directly related to sustainable neighbourhood planning in China. For planning theory, this study explored a comprehensive theoretical scope and structure for research related to the sustainable impact of neighbourhood planning on local residential development in contemporary China. It identified the barriers to neighbourhood planning development in China, and examined the critical factors addressing the social, economic and environmental needs of the local people from three selected neighbourhood cases. The study contributes to a deeper understanding of significant contextual factors affecting the achievement of sustainable and satisfactory neighbourhoods and provides an integrated strategy for enhancing local adaptability of a sustainable neighbourhood-planning framework by incorporating local inputs during the planning and decision-making processes.

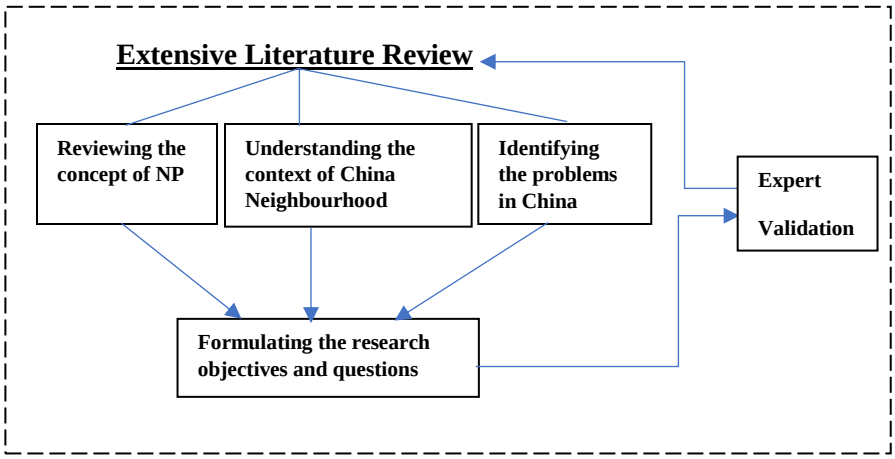
The study not only proposes a sustainable neighbourhood-planning framework for practically guiding or assessing neighbourhood development in China, but also identifies and verifies the mechanisms involved in the whole cycle of sustainable neighbourhood planning. The latter enhances the rationality, comprehensiveness and applicability of the theoretical framework, which ultimately provides insights for decision-making in urban planning and governance activities in China.

The study's practical value is that it provides institutional suggestions for government regulators and urban planners charged with addressing the barriers hindering sustainable neighbourhood planning, and a checklist for measuring the effectiveness of neighbourhood planning in terms of its economic, environmental and social success in achieving harmonious living. The framework provides clarification of the respective roles and responsibilities of the local authorities and other sectors during the provision of services and could be used to monitor key neighbourhood planning indicators to enable new residential developments or renewal projects to address issues as early as possible.

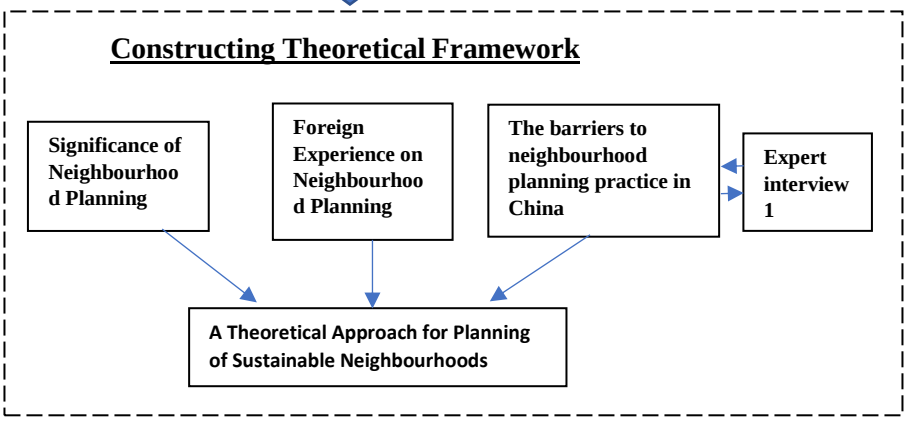
The public can also benefit from this framework by having greater opportunity for input in the decisions-making process affecting the neighbourhood development, and a model could be developed for municipal involvement in responding to social issues within the context of maintaining and enhancing the wellbeing of neighbourhoods. By implementing the framework, residential satisfaction with neighbourhood life would be better integrated with sustainable requirements, and the prioritization of current issues and the integration of residential needs and sustainability would be facilitated as they evolve.

1.6 Overall Approach for Addressing Research Objectives

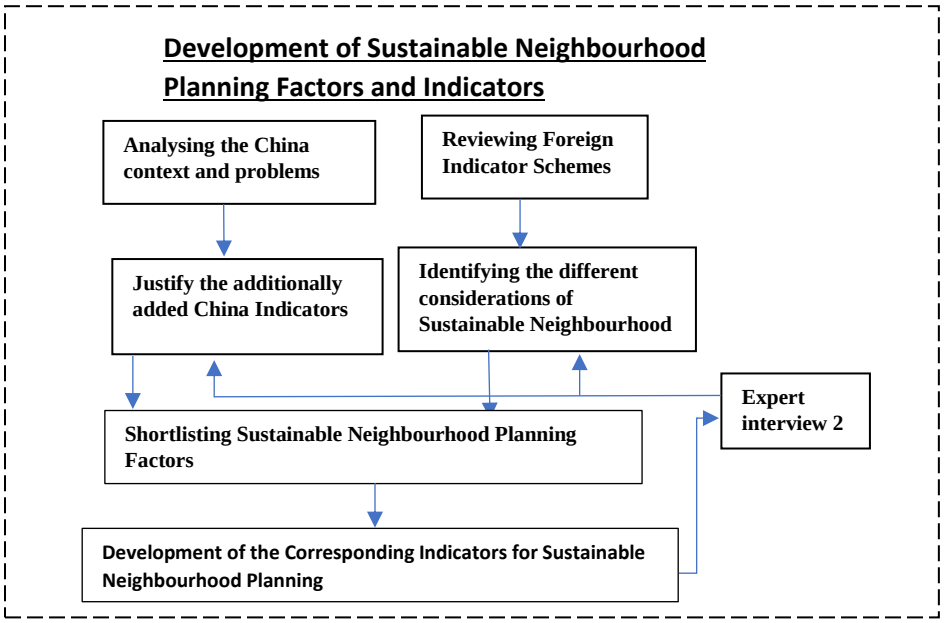
Objective 1) To examine the sustainable neighbourhood planning theory and identify the common characteristics shared by neighbourhood planning in widely-practiced countries/region;



Objective 2) To evaluate the barriers and opportunities of adapting neighbourhood planning in Chinese cities



Objective 3) To ascertain the underlying factors in the neighbourhood planning which would facilitate sustainable neighbourhood development in Chinese cities



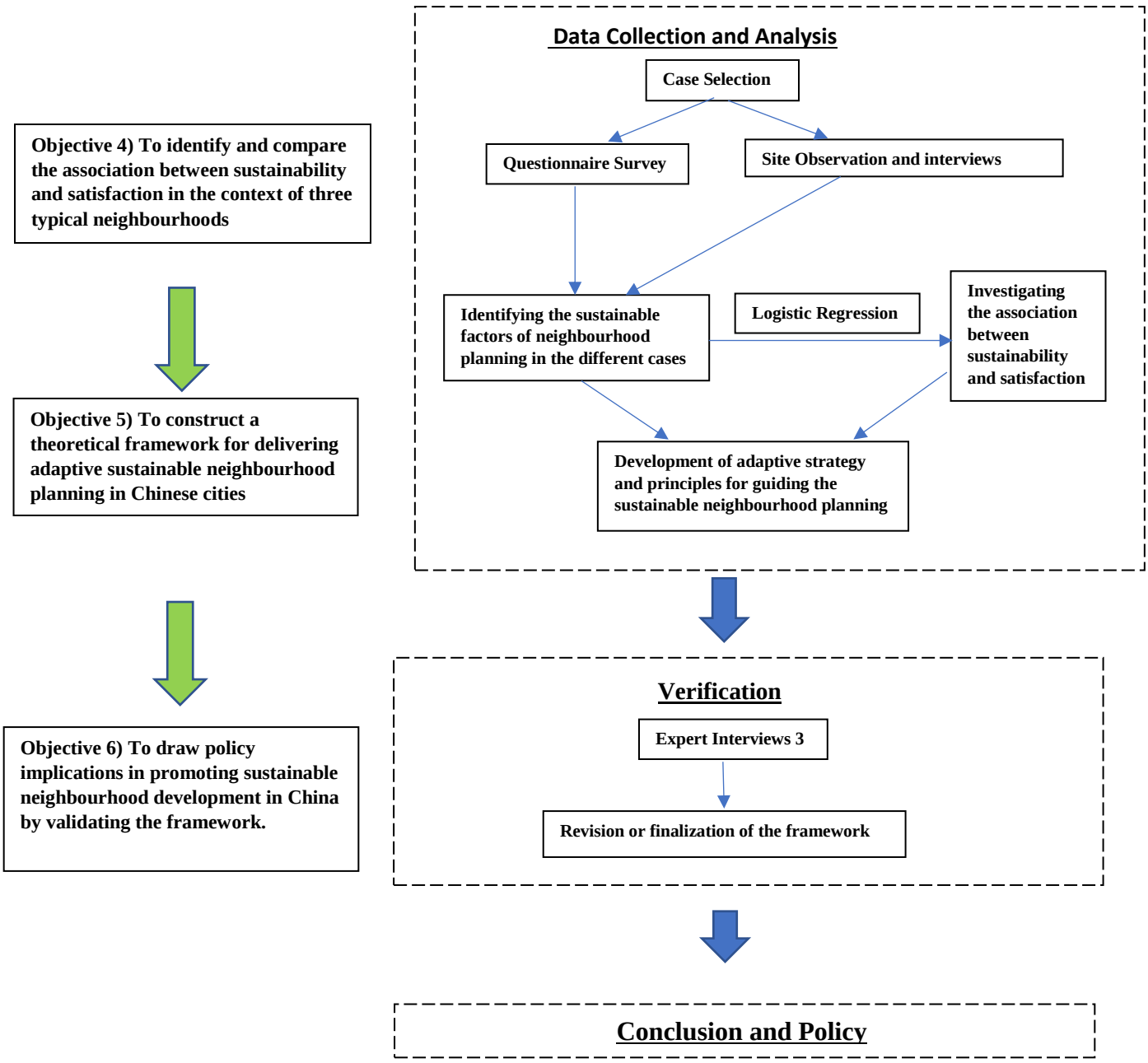


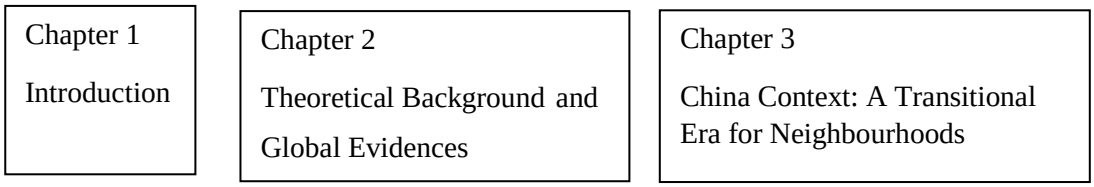
Figure 1. 1 Overall Research Flow

The overall research flow was illustrated in figure 1.1 and the corresponding research objective that each step aims to achieve was put on the step's left side.

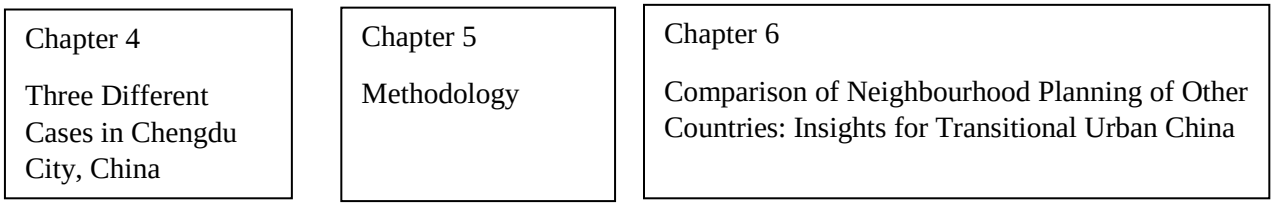
1.7 Thesis Structure

According to the research objectives, methodology, and the research sequence, the thesis is divided into three major parts.

First Part



Second Part



Third Part

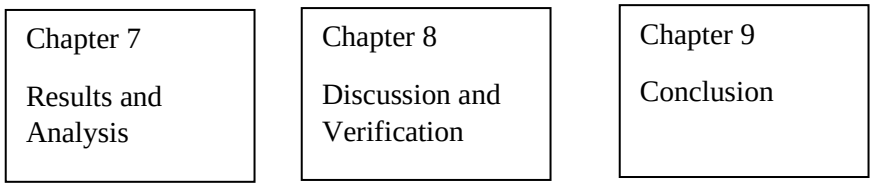


Figure 1. 2 Structure of Thesis

Chapter 1 provides an overview of the thesis. It demonstrates the problems, research gaps, research objectives and questions, significance, overall approach, and delimitations of the study.

Chapter 2 states the theoretical background and global evidences of the research area. All key concepts and theories addressed in this research are reviewed for better understanding; the research background is elaborated upon; a big picture of the research is described; and global evidence is provided to highlight the significance of enhancing neighbourhood sustainability.

Chapter 3 provides the social, economic and political context of China, the country in which the study occurred. It introduces the challenges faced by neighbourhoods in transitional China,

highlighting China's special character in local governance, current urban planning mechanisms, major issues concerning planning institutions, and the three different types of urban neighbourhoods in China.

Chapter 4 depicts the background issues of Chengdu and the selected three cases. A comprehensive introduction is given through literature review and field study to identify the practical sustainability issues and showcase how these three typical and different transitional neighbourhoods differ from each other even within the same city.

Chapter 5 elaborates upon the research methodology, including the adopted methods such as literature review, expert interview, questionnaire survey, data collection and analysis, and verification.

Chapter 6 investigates the challenges and opportunities for neighbourhood planning in China. The common characters of foreign experience in neighbourhood planning are first identified through desktop review and then, by adopting expert interview to verify the characters' application in China, institutional barriers hindering neighbourhood planning are identified for facilitating sustainable neighbourhood planning.

Chapter 7 shows the results of the questionnaire survey and data analysis. The respondents' social-economic characteristics and the sustainability performance of each case are first elaborated upon and then the association between sustainability and liveability is investigated by adopting logic regression modelling.

Chapter 8 contains a discussion of the results and verification of the proposed planning framework. The sustainability issues of the three neighbourhoods are introduced and then the associations between sustainability and satisfaction and the association between sustainability and moving intentions are discussed. Finally, the sustainable neighbourhood-planning framework is proposed based on the previous analytical results and verified by expert interviews.

Chapter 9 draws the conclusions of the study. The chapter first revisits the research objectives and then highlights the research findings, policy implications and proposes a planning strategy. The contributions and limitations of study are also provided as are recommendations for future research. Final remarks wrap up the thesis.

Chapter 2 Theoretical Background and Global Evidence

2.1 Introduction

This Chapter comprehensively reviews the literature on the theoretical background and global context of sustainable neighbourhood development. The key terms used in this study are firstly defined to clarify the core concepts. The research background includes an examination of five main topics: 1) growing concerns over sustainable development at neighbourhood level; 2) the concept of neighbourhood and neighbourhood planning; 3) how neighbourhood planning relates to local sustainability; 4) four dimensions of sustainable neighbourhoods; and 5) why neighbourhoods should simultaneously promote sustainability and satisfaction. The significance and deficiencies of global neighbourhood planning practices are also reviewed and neighbourhood sustainability assessment tools are discussed.

It is necessary to first clarify the implications of involved concepts and issues in this study. They are briefly defined in this section, and where necessary, a term or concept is discussed and amplified further in the literature review section.

2.2 Sustainability and Sustainable Development

The concept of sustainability dates back to the 1970s. A literal interpretation of sustainability is 'the ability to sustain', based on the assumption that the adjectives of sustain and ability can be separated out from sustainability as a noun. To sustain is defined as 'to support or nourish', which implies a relation and flow of resources (i.e. something supporting or nourishing something else). Ability is the quality that permits or facilitates accomplishment. Its specific meaning varies widely between contexts but is often interpreted as the skills and resources needed to get something done (Manderson, 2006). Since the report of 'our common future' written by Brundtland (1987) was published, the terms 'sustainability' and 'sustainable development' have attracted growing attention from both public and private sectors. The debate over their definitions (Gibson, 2006; Hopwood et al., 2005; Robinson, 2004) is seemingly endless with new ones being constantly introduced, which makes the concept of sustainability more ambiguous and complicated (Berardi, 2013; Doughty & Hammond, 2004; J. Evans & Jones, 2008). Robinson (2004)argued that the ambiguity of the definition is constructive, as leaving this key term undefined and open would be beneficial in achieving a better definition.

Generally, the broad consensus on the concept of sustainability is a three dimensional one which consists of environmental, economic and social aspects (Elkington, 1998). These three elements are normally regarded as the three pillars of sustainability. Environmental sustainability refers to making decisions with ecological considerations to protect the natural environment. Social sustainability is about improving the capacity of present and future generations to foster liveable, healthy and vibrant communities by promoting inclusiveness, equity, liveability, democracy, diversity, etc. Economic sustainability relates to using resources wisely, efficiently, and responsibly for long-term benefits (Komeily & Srinivasan, 2015). Another dimension of sustainability is 'institutional', which refers to policies, governing principles and structures, and regulations that some consider to be the fourth pillar of sustainability (Valentin & Spangenberg, 2000) (Van Wijngaarden, 2001).

Basically, sustainable development aims to balance the effects of overall development in terms of three dimensions: social, economic and environmental. The definition of sustainable development promoted by Gro Brundtland, which is "development which meets the needs of the present without compromising the ability of future generations to meet their own needs", has led to a broadly shared agreement of sustainability principles (Devuyst et al., 2001; Environment & Development, 1987). Haughton (1999) summarized the ideas of sustainable development in five principles based on 1) equity: futurity - intergenerational equity; 2) social justice - intragenerational equity; 3) trans-frontier responsibility - geographical equity; 4) procedural equity - people treated openly and fairly; 5) inter-species equity - importance of biodiversity.

This concept has been comprehensively adopted by most politicians and decision makers when making developmental goals (Andriantiatsaholiniaina et al., 2004). However, the concept experienced a reframing after being criticized as being too vague and abstract to have a practical meaning in the 1990s (S. Baker et al., 1997) (Briassoulis, 1999). Rather than being regarded as a static long-term goal to be pursued in a linear fashion, sustainable development was proposed as a more general direction for inspiring change via an adaptive process of learning-by-doing (Ahern, 2011) (Carpenter et al., 2001) (Folke et al., 2002) (B. Walker et al., 2004). Currently it is adopted as a general direction for evaluating and adjusting policies and plans, and eventually, urban structures and functions (Pupphachai & Zuidema, 2017).

Although the four pillars of sustainability have been comprehensively accepted for evaluating the content of sustainability, the definition of each dimension varies due to different approaches or perspectives of those discussing the concept of sustainability. The concept of each pillar is briefly explained in the following.

2.2.1 Social Sustainability

The major aim of social sustainability is to maintain the health (i.e. vitality, resilience and organization) and reduce the vulnerability of social and cultural systems (Bohle et al., 1994; Chambers, 1989; Ribot et al., 1996). Similarly, there are diverse approaches to achieving social sustainability. A particular definition of social sustainability is less explicit (Martin, 2001). This circumstance was explained by several scholars with the consideration of the diverse economic, social and cultural conditions, which makes it very difficult to uniformly define social sustainability (Moldan et al., 2012). Another definition was proposed by Gilbert et al. (2013)as follows: "Social sustainability requires that the cohesion of society and its ability to work towards common goals be maintained. Individual needs, such as those of health and well-being, nutrition, shelter, education and cultural expression should be met". In addition, Black (2004) defined social sustainability as "the extent to which social values, social identities, social relationships and social institutions can continue into the future". Torjman (2000) perceived social sustainability as follows: "From a social perspective, in particular, human well-being cannot be sustained without a healthy environment and is equally unlikely in the absence of a vibrant economy". In his insightful study of societies, Jared Diamond argued that Social sustainability is probably the most important and critical for the long-term societal development (Diamond, 2005). Another finding supporting this view is from the authors of The Wealth of Nations (Kirk Hamilton, 2006), who demonstrated that human and social capital plays the most important role in creating national wealth. Lastly, it should be noted that the question of what the critical factors of social unsustainability really are has not as yet been clearly answered (Moldan et al., 2012).

2.2.2 Economic Sustainability

Economic sustainability means using resources efficiently, wisely and responsibly for long-term benefits (Komeily & Srinivasan, 2015). There are different approaches to the definition of

economic sustainability. Economists focus on various kinds of "capital" (man-made, natural, human, social) that should be sustained (Kirk Hamilton, 2006). Besides, Goodland and Ledec (1987) elaborated the term by specifying the concept of sustainable development as the use of renewable natural resources in a way that does not diminish their usefulness for future generations. Barbier et al. (1990) argued that economic sustainability focuses on optimal resource management. According to their definition, the resources consumed today should be at the cost of reducing the real incomes in the future because sustainability needs that equal access to necessary conditions should be met in each subsequent generation.

A range of strategy shifts has been proposed for achieving economic sustainability. For instance, the shift from the use of non-renewable energy to renewable energy, and from waste production to recycling has occurred in the construction industry (Kibert & Kibert, 2008). The recent global economic crisis highlighted the possible profound negative impact of the economic pillar on the sustainability of development based on economic progress. Achieving economic sustainability is also difficult since it is hard to predict the resource preferences of future generations.

2.2.3 Environmental Sustainability

Originally, the term "environmentally responsible development" was used to refer to the general concept of environment sustainability (Kirk Hamilton, 2006). Then another term "environmentally sustainable development" was employed to better describe the concept (Serageldin & Streeter, 1993). Eventually, the concept of environmental sustainability was developed as a common term, which is currently accepted throughout the world (Goodland, 1995).

Accordingly, environmental sustainability "seeks to improve human welfare by protecting the sources of raw materials used for human needs and ensuring that the sinks for human wastes are not exceeded, to prevent harm to humans" (Goodland, 1995). Holdren et al. (1995) defined environmental sustainability by emphasizing its bio-geophysical dimension, which refers to maintaining or enhancing the integrity of lives and supporting earth systems.

A recent and significant contribution to the concept of environmental sustainability was provided by the Organisation for Economic Co-operation and Development's Environmental Strategy for the First Decade of the 21st Century (Co-operation & Development, 2001). This strategy specified four sub-criteria under environmental sustainability: 'regeneration' (renewable resources shall be

efficiently used and their use shall not be permitted to exceed their long-term rates of natural regeneration), 'assimilation' (releases of hazardous or polluting substances into the environment shall not exceed their assimilative capacity), 'substitutability' (non-renewable resources shall be used efficiently and their use limited to levels which can be offset by substitution with renewable resources or other forms of capital), and 'avoiding irreversibility'.

2.2.4 Institutional Sustainability

Institutions "are the rules of the game in a society, or more formally, are the humanly devised constraints that shape human interaction" (North, 1997). Basically, institutional sustainability refers to the institutional stance, such as agreements and strategies, involved in the sustainable development concept that has been reached by institutional consensus.

Helm (1998) highlighted the significance of institutions and their competences to the implementation of any policy. Hagedorn (2008) emphasized the importance of good institution design in realizing sustainable development by elaborating how the institution motivated preferences by taking actions from the decision maker's perspective. Thus, implementation of a sustainable development policy needs the assessment of the institutional dimension of sustainability, since effective and properly operating institutions are essential to achieving the social, economic, and environmental objectives of sustainable development.

Grybaite and Tvaronavičiene (2008) argued that sustainable development requires emergence at the institutional level. Institutional structuring of ecologically sustainable programs refers to making normatively oriented decisions on different levels of social institutions and organizations by combining various functional decisions. Those functional decisions should consider the environmental requirements and alternative scenarios of development (R Ciegis, 2004). Remigijus Ciegis et al. (2009) highlighted the ignorance of institutional dimensions and institutional capital as one of the biggest weakness of the management of sustainable development implementation. A 3-D sustainability model for activity evaluation was proposed by Mauerhofer (2008) and an institutional dimension was added for a better reflection of the idea of sustainability.

2.2.5 Urban Sustainability

City is the space where most human activities and their interaction with the natural environment occur. The United Nation forecast that 66 percent of the world's population will be living in urban

areas by 2050, compared with 54 percent in 2014 (UN, 2014). It also posited that as the world continues to urbanize, sustainable development challenges would be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanization is the fastest. Unprecedented rapid urbanization and population growth comprehensively challenge urban development and the consequent negative impacts on urban life brought by human activities. Thus, different concepts related to urban sustainability have been established to cope with challenges since the 1980s, such as 'sustainable city', 'eco-city', 'low-carbon city', 'green city' and 'smart city'. The research on sustainability in urban areas has gradually gained momentum in both academic and policy discourses since the 1990s. Its initial objective was to bring the issue of pollution control to the process of economic development, depicting a prospect of more liveable cities that depend less on fossil fuels (Van der Ryn & Calthorpe, 1986). Brundtland (1987) provided an early indication of urban sustainability challenges though concentrating on cities in southern Europe rather than the north.

The research community define urban sustainability as an umbrella concept covering 'ecological modernization' the 'green economy' 'regenerative sustainability' 'the ecological city as an economic city' 'social justice' and so on (Barton, 2013; Cole, 2012; Suzuki et al., 2010). They also define urban sustainability in terms of social life, economics, energy, ecology and transport. Among all these sustainability examinations, it should be noted that the concepts of integrity and coherence dominate the public understanding of urban sustainability (Suzuki et al., 2010). Some of the key characteristics of urban sustainability that are often mentioned in the literature and in policy documents are: intergenerational equity, intragenerational equity (including social equity, geographical equity, and equity in governance), protection of the natural environment (and living within its carrying capacity), minimal use of non-renewable resources, economic vitality and diversity, community self-reliance, individual well-being, and satisfaction of basic human needs' (Maclaren, 1996). Considerable debate over the relative importance of these urban sustainability characteristics have been conducted within the academic community, planning agencies, professional institutes, and other organizations. There is consensus on proposing a holistic approach to balancing environmental, economic and social concerns in urban development but there are disagreements on which group of characteristics should be covered when developing urban sustainability goals or strategies.

2.2.6 Local Sustainability

Unlike global, regional and national sustainability, local sustainability, which refers to the sustainability at municipal or city level, has not drawn intensive public attention and concrete action until the issue of Local Action 21 as a follow-up measure to Agenda 21. Initially, according to Agenda 21 which was passed by the United Nations Conference on Environment and Development (UNCED) in 1992 (Nations, 1997), the focus of sustainable development was on the national level. However, a growing number of experts raised the point that the challenges of implementing sustainable development are more often revealed at the local level, including municipalities and cities (Camagni, 2002). As the secretary general of ICLEI, Jeb Brugman worked with the UNCED secretariat to develop Chapter 28 of Agenda 21 (Bulkeley, 2013). Chapter 28 proposes that since many problems and solutions being addressed by Agenda 21 locate at local activities, the cooperation and participation of local authorities will play a determinant role in realizing its objectives (Kusakabe, 2013). Thus, ten years later after the launch of Agenda 21, the Local Action 21 was further advocated and then established by the leaders and representatives of local governments at the World Summit on Sustainable Development in Johannesburg (Nations, 2002).

2.2.7 Sustainability Indicators

Sustainability indicators were developed during the 1990s with the ambition to "provide a solid basis for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems" (Nations, 1992). K Hamilton et al. (1996) demonstrated that sustainable indicators were developed to indicate the degree of sustainability and show the progress in achieving sustainability ambitions as well as gaining an overview of the state of a city's environment. However, its ability to measure effectiveness was questioned as sustainable development was criticized to be too vague and abstract to have a practical meaning (S. Baker et al., 1997; Briassoulis, 1999; Jordan, 2008). As stated above, the reframing of sustainable development also led to the switch of the development of sustainability indicators. It changed from expert-driven and largely focusing on technical design (S. Bell & Morse, 1999; Bossel, 1999; Mitchell, 1996; Spangenberg et al., 2002), which hardly linked to local policies (S. Bell & Morse, 2001), to directly connecting to existing policies and the process of developing new

policies (S. Bell & Morse, 2001; Consortium, 2002; Hezri, 2004; Lehtonen, 2012; Rosenström, 2006).

Currently, sustainability indicators could be referred to for better decision-making and more effective actions by clarifying, simplifying and integrating the available information to stakeholders and policy makers (Komeily & Srinivasan, 2015). Furthermore, Pupphachai and Zuidema (2017) argued that sustainability indicators do not only have the potential to support adaptive processes of learning-by-doing on the path towards sustainable development, but also that unlocking this potential requires active management.

2.3 Neighbourhood Planning and Neighbourhood Sustainability

2.3.1 Urban Planning

Urban planning is a type of institution and instrument used by governments to guide urban development. The form of plans varies by different countries but generally include detailed, static master plans or comprehensive plans. Leading planning schools and institutes view planning as an integrated practice that requires technical, analytical and communicative skills, including participation and conflict resolution in a multicultural context (A. I. Frank et al., 2014). In every part of the world, the urban planning system is strongly shaped and influenced by the context within which it operates (Watson, 2009). Due to different development stages, urban planning in developing countries is significantly different from that in developed countries (Gu et al., 2014). Modern urban planning emerged in 19th century as a response to the concerns of rapid urbanisation, deteriorating living conditions for the poor, declining open green space, and threatened political upheaval as a result (Watson, 2009). After the 1950s, urban planning theory and practices has generally undergone a significant shift, although more significant in the global north and less significant in the global south. The reform and innovation occurred in the areas of planning processes and decision-making (shifts towards more participatory, democratic and integrated processes, involving wider groupings within and beyond the state); forms of spatial planning (towards strategic planning at a range of levels); linking planning and environment (new concerns of environmental sustainability, climate change and resource depletion); and some new directions in land use management. Recently, as an supportive action for facilitating the global agenda and consensus, promoting sustainable urban development has been widely added into the function of urban planning (Burgess & Jenks, 2002; UN-Habitat, 2010).

2.3.2 Neighbourhood and Neighbourhood Planning

The term neighbourhood describes a well-known concept in the history of the development of urbanization. There are a number of commonly used definitions of neighbourhood, such as “a geographically localised community located within a larger city or suburb” or “a separately identifiable area within a community retaining some quality or character which distinguishes it from other areas” or “an area where the residents are drawn and held together by common and beneficial interests” (Choguill, 2008). The concept of neighbourhoods has been a constant topic of investigative interest for sociologists, historians and urban planners since the late 19th century. Sociologist Charles H. Cooley discussed social integration and the primary group, between 1897 and 1918 (Cooley, 1897, 1899, 1918). His assessments were helpful in reformists’ responses regarding the increasing problems of crowded commercial and industrial cities. Specifically, to a large degree, they promoted the development of feasible neighbourhood studies (Johnson, 2002).

Although there is over 100 years’ history on neighbourhood studies, the concept of neighbourhood is still hard for scholars to precisely define. A few scholars only explained it from the ecological angle. For instance, Keller (1968) defined neighbourhood as a "place with physical and symbolic boundaries". D. J. Morris and Hess (1975) labelled it a “place and people, with the common sense limit as the area one can easily walk over”. Golab (1982) uses the phrase “a physical or geographical entity with specific (subjective) boundaries”.

Among all the neighbourhood studies, the concept of neighbourhood unit is the most important and most used articulation of neighbourhoods in North American. This was not the case in Britain, for example, where planning and development has traditionally been geared more to town planning following Ebenezer Howard’s Garden City idea (J. S. Brody, 2010). It is commonly believed that Clarence Arthur Perry developed and first presented the concept of the neighbourhood unit as a formula in 1929 (Rohe, 2009). He synthesized the ideas of the prominent planners of his day and defined an ideal neighbourhood that would “embrace all the public facilities and conditions required by the average family for its comfort and proper development within the vicinity of its dwelling” (Perry, 1929). The neighbourhood unit formula contained six principles:

1. Each neighbourhood should be large enough to support an elementary school.

2. Neighbourhood boundaries should be composed of arterial streets to discourage cut-through traffic.

3. Each neighbourhood should have a central gathering place and small scattered parks.

4. Schools and other institutions serving the neighbourhood should be located at the centre of the neighbourhood.

5. Local shops should be located at the periphery of the neighbourhood.

6. The internal neighbourhood street system should be designed to discourage through traffic.

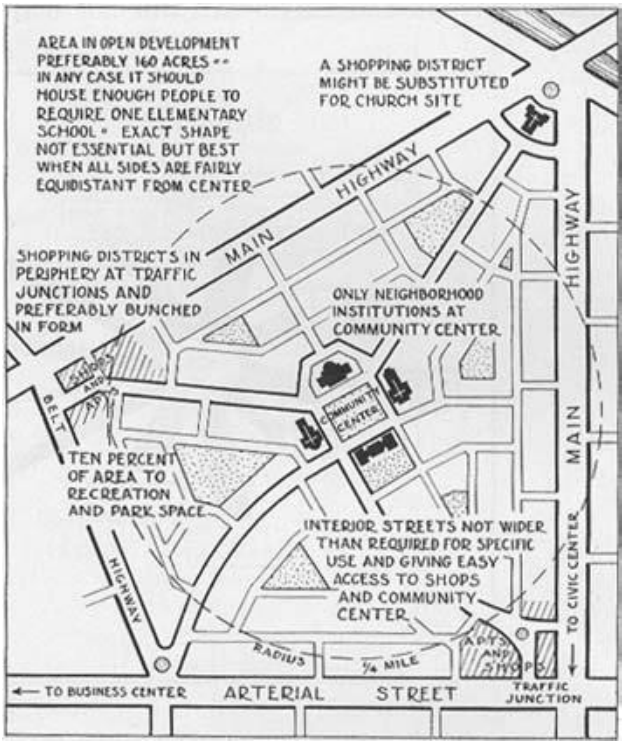


Figure 2. 1 Neighbourhood unit concept

(Source: Perry, 1929)

However, there are a variety of opinions of the theory foundation on which Perry built this significant model. Jason Brody argued that Perry proposed the neighbourhood unit concept by deriving it from the Garden City tradition introduced previously by Howard in England (J. Brody, 2013). He also regarded the formulation of the concept was a fusion of the social theory of Cooley (1909) and McKenzie (1923) with Perry's own work in the community centre movement (Perry, 1921) and recent innovations in real estate development (Perry, 1929). Comparatively, Donald L.

Johnson thought the idea originated in the era of progressive milieu in which Chicago's reformist William E. Drummond emerged prior to Europe's new war. Drummond's theory and relevant terminologies were widely published and exhibited between 1913 and 1922. His Neighbourhood Unit Concept (1913-1916) immediately attracted many theoretical responses.

Neighbourhood unit is also a theoretical model with extensive criticism from other scholars. The major criticism is about its sociological foundations and implication of physical determination, as well as its racist and elitist overtones. J. Jacobs (1961) and Alexander (1965) argued that the neighbourhood unit concept fails to capture the emergent complexity of organic social life. Many scholars (Dewey, 1950; Fairfield, 1992; Lloyd Lawhon, 2009; Patricios, 2002) have refuted claims that the physical design of residential environments in itself has the power to shape social life. Moreover, Dahir (1947) and Isaacs (1948) argued that it would destroy the excitement, diversity, transience, and breadth of opportunity that originally attract people to move into cities by providing neighbourhood-level and internal facilities. In addition, the neighbourhood unit formula was criticized as discriminating against low-income, black and non-family households (Rohe, 2009). Reginald Isaacs (1948) and others also criticized the neighbourhood unit formula for ignoring the demands of the elderly and single adults (Isaacs, 1948; Riemer, 1950).

Regardless of the divergence and criticism on the theory and application of the model, the neighbourhood unit concept has had a historical profound effect on urban planning and development. From then, the neighbourhood-based planning has been widely adopted as a planning method in the US, although not always practiced. Among the practical cases, Radburn, New Jersey (Stein, 1957) is probably the most renowned built example of a neighbourhood unit development. Other than it, since the 1960s there have been a number of urban renewal, new town planning, and neighbourhood-based community planning efforts deeply affected by the neighbourhood unit concept.

Although neighbourhood became an important unit for urban planning, it is still challenging to precisely define, especially the scale of a neighbourhood. It was found that the scale varied from a spatial unit, a social unit or a network of relationships and the associations and patterns of uses (Chaskin & Garg, 1997). Park and Rogers (2015) also demonstrated the difficulties of selecting the right scale of neighbourhood through a review of planning theory, guideline and empirical research. This issue became even more challenging in the China context due to the long term and

specific socio-political evolvement. A plethora of neighbourhood form had been derived during the transition from centrally planned to a more market-driven economy in China (S.-m. Li et al., 2010). These types include work unity compound, commodity housing estates and resettlement communities etc. with different building density and population size due to local context. Particularly, the average population of a neighbourhood in China is much higher than that in the Western countries since China owns the largest population across the world but limited liveable land area. Therefore, the neighbourhood population size is relatively higher than that in Western countries. Recently in China, the up-to-date Urban Neighbourhood Planning and Design Standards specifies and categorize the scale of neighbourhood by using the area with a radius of 5 minutes, 10 minutes to 15 minutes pedestrian walking distance. By referring to the newly issued China standards and administrative boundary, an area with a radius of 400 meters, which is a 5 minutes' walking distance (Yigitcanlar et al., 2007), was selected for defining the scale of neighbourhood in this study.

In addition to physical planning, social interaction and citizen participation were major concerns of neighbourhood planning as well (Choguill, 2008). Since Perry proposed neighbourhood unit concept, neighbourhood-based planning has gradually attracted planners' interests and dramatically developed in both the academia and industry. Many scholars argue that neighbourhoods are the most recognizable and viable units of identity and it is on this level that actions should be taken to customize planning alternatives (Bostic & Martin, 2003; Wellman & Leighton, 1979). In recent decades, plenty of initiatives of appropriate planning at neighbourhood level have been launched to achieve local sustainability in many countries. (Komeily & Srinivasan, 2015; Sharifi & Murayama, 2013; Urbanism, 2008).

However, the term neighbourhood planning experienced a transformation from a pure plan to a collaborative process, which became more collaborative and deliberate in recent debates and practices, although design-led association remains as the mainstream (Pinnegar, 2013). It became more closely related to local governance because of its frequent interaction with several local movements, such as 'localism' in the UK (Wills, 2016b) and Transit-oriented development (TOD) or New Urbanism in the US (Rohe, 2009). A strong historical tract could be recognized in the US, Canada and the UK that neighbourhood planning was adopted as a tool to cope with limited

participation in preparing the broader strategic blueprint for cities at the neighbourhood level (Pinnegar, 2013).

2.3.3 Neighbourhood and Community

These two terms are academically different although they were largely associated and often used interchangeably in many articles and oral communications. Specifically, the controversial usage of them normally relied on the statements that refer to geographical areas in proximity and people of a certain ethnicity or race; 'gated community' is a case in point. In comparison with the concept of neighbourhood stated in chapter 2.3.2, community was commonly defined as a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings (L. W. Green & Mercer, 2001). Comparatively, community is used more in the sense of group of people living in a particular area or sharing the same identity or value. There is no explicit boundary confining the size of the community, while there must be a physical boundary defining the size of a neighbourhood. Thus, a neighbourhood is used more in a physical sense, whereas there are more social implications when concept of community is mentioned.

2.3.4 Neighbourhood Planning Related to Local Sustainability

Neighbourhoods, as with other components of an urban system, are seen as part of the frontline in the current sustainability battle. Neighbourhood, as a basic planning unit, has always been planners' particular interests (Rohe, 2009). Recently, as there is an increasing emphasis on sustainable development at local level, developing new initiatives for neighbourhood planning has become a common method for planners to cope with local sustainable issues (Boyko et al., 2006; Sharifi & Murayama, 2013; Valentin & Spangenberg, 2000). Theoretically, it has been demonstrated that many characteristics of neighbourhood planning contribute to the overall sustainability performance of neighbourhood development. Several critical elements are shown below.

Taking the UK as an example, supportive institutional arrangements are fundamental. Town or parish councils are responsible for the neighbourhood plan and to engage public stakeholders in the planning procedure. The local planning authority shall take decisions at key stages in the neighbourhood planning process within applicable the time limits and provide assistance or advice

to a council in producing the plan. How neighbourhood planning is prepared and linked with neighbourhood sustainability is demonstrated in Table 2.1 below.

Table 2. 1 UK example: How neighbourhood plan is prepared and linked with neighbourhood sustainability

(Source: How to prepare a Neighbourhood Plan (Bradley, 2015))

The Order of Steps	**Eight Steps to Prepare a Neighbourhood Plan**	**Links with Sustainability Appraisal**
1	Getting started	
2	Identify the issues	Identify key economic, social and environmental issues
3	Develop a vision and objectives	Identify key National Planning Framework and Local Planning Objectives Develop the sustainability framework (objectives and criteria)
4	Generate options	Appraise the options using the sustainability framework
5	Draft your neighbourhood plan	Appraise the draft policies using the sustainability framework
6	Consultation and submission	Prepare the sustainability appraisal report
7	Independent examination	
8	Referendum and adoption	

2.3.5 Planning for a Sustainable Neighbourhood

The basis for designing a set of planning criteria for sustainable neighbourhoods was built up from neighbourhood theory contributed by Howard, Perry, Stein, Mumford and Fisher.

Firstly, an economically sustainable neighbourhood calls for the efforts in reducing transport cost and infrastructure, limiting the neighbourhood size, and improving its density. On several occasions, the daily vehicle trips would be eliminated if people were allowed to get to a central focal point, such as a school or iconic building, by walking. It is expected that young children

should not walk more than 500m to get their primary school, which implies that the neighbourhood diameter must be around 1km. The population of a neighbourhood should normally be specified as at least 3,000 to 4,000 inhabitants based on local density standards, which may be enough to justify the allocation of an elementary school. Provision of accessible amenities, such as local shops, are justified by the neighbourhood's population; neighbourhood shops can also provide a space for social interaction if it is located at the centre of the neighbourhood.

Secondly, for social sustainability, the population size of neighbourhood is suggested to be small enough to motivate free exchange among local neighbourhood members. This smaller population size is enough to form a representative group to handle the issues relating to local neighbourhood facilities and services, although it is possibly too small to generate an impact at municipal level. It is also argued that social interaction at the neighbourhood level should be regarded as a prerequisite for organizing public participation for decision making on affecting policy. It is critical since most local issues mainly focus on neighbourhood inclusion, parking and car related problems, and service quality, etc. It is possible that the majority of these problems could be locally addressed within the neighbourhood level if the size is appropriate.

Thirdly, how the neighbourhood fits into the wider area highlights the technical challenge of achieving sustainable development. The neighbourhood area can be clearly specified if there are clear boundaries, such as being enclosed by a main road. In addition, the safety of children can be better secured if the number of roads that pass through the neighbourhood can be reduced to minimize internal transportation.

Lastly, to achieve environmental sustainability, allocating parks and other public open space within the neighbourhood can also provide a meeting place for parents and children. The connection between public open space and primary school is expected to further enhance environmental contributions to sustainability. It has been argued that the most important of all sustainable factors is a common and accessible meeting place in which residents can exchange and mingle. Some other amenities, such as coffee shops, can be utilized as a place for cultivating social opportunities in addition to their original function.

2.4 Sustainable Neighbourhood Development

2.4.1 Growing Concern of Sustainable Neighbourhood Development

Sustainable development aims to balance overall development in terms of three dimensions: environment, economic, and social. This three-pillar concept was initially directed at national level according to Agenda 21 passed at the 1992 Rio Summit. However, a number of experts have concluded that it is at local level (municipalities, cities) that challenges are better reflected and those involved must be mobilized (Camagni, 2011). This was responded to by several thousand municipalities around the world who adopted the 28th Chapter of Agenda 21, which highlights the importance of actions at the local level (Nations, 2002). By 2004, there were approximate 5,000 local governments throughout Europe that had undertaken local sustainable development processes (Kusakabe, 2013).

After practical reflection and application of sustainability at the 1992 Rio summit, the idea of sustainable development was proposed to cope with the conflict between development and environmental protection. The definition of sustainable development promoted by Gro Brundtland, i.e., "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" has led to a broadly shared agreement of sustainability principles (Devuyst et al., 2001; WCED, 1987) This concept is now embraced by most politicians and decision makers when setting developmental goals (Andriantiatsaholiniaina et al., 2004).

Due to the global issue of increasing urbanization over the recent decades, sustainable development has frequently been discussed at urban levels (MacNaghten, 2001) (Bromley et al., 2005; Rudlin & Falk, 1999). A growing number of theoretical studies and practical tools have focused on building-level environmental sustainability, such as LEED, CASBEE, BREEAM, NABERS, BEAM Plus and others (Goh & Rowlinson, 2013b). However, some scholars criticized that because of the complex nature of sustainability, a building-oriented framework cannot adequately assess the degree of sustainable development (Conte & Monno, 2012; Spinks, 2015). As such, it has been advocated that there should be more awareness and constructive effort made at the neighbourhood level towards sustainable development. The pioneer scholar, Jane Jacob, clearly stated that "a sustainable way of living should effortlessly derive from the way we design our sustainable neighbourhoods, as they are beneficial to the community and the individual, as well as the environment" (J. Jacobs, 1961); this has been supported by New Urbanism (Kyrkou et al., 2011). Choguill (2008) also argued that cities should not be considered sustainable if their component parts, such as neighbourhoods, do not meet sustainability criteria.

2.4.2 Sustainability and Liveability

The definitions of liveability are diverse and while the term invokes various ideas pertaining to quality of life or human well-being, it is recognised as being not only difficult to define, but also to measure (Balsas, 2004; Leby & Hashim, 2010). In general, liveability is defined as "the degree to which a place supports quality of life, health and well-being" (Lowe et al., 2015). At national level, liveability has been defined as "the degree to which the provisions and requirements fit with the needs and capacities of its citizens" (Veenhoven, 1996). At municipal level, Vuchic (2017) described liveability as a series of elements that make a city liveable and is: "generally understood to encompass those elements of home, neighbourhood, and metropolitan area that contribute to safety, economic opportunities and welfare, health, convenience, mobility and recreation". At neighbourhood level, it is commonly used to denote the quality of living conditions and interaction between the community and the built environment (Shafer et al., 2000).

Theoretically, liveability theory assumes that the perceived quality of life is dependent on both subjective characteristics of persons and objective qualities of landscapes (Costanza et al., 2007; Pacione, 2003). Werner (2005) argued that liveability is not only related to spatial housing and the quality of urban setting, but also includes quality of community life. The dynamic and rapid urbanization inextricably highlights the significance of liveability. In recent decades, it became a key principle, an approach and critical objective in the landscape planning and policy making process (de Haan et al., 2014).

Portney (2013) stated that liveability and sustainability are practically indistinguishable. However, Lowe et al. (2015) identified the mismatch among different researcher's investigations on liveability and sustainability indicators and the barriers hindering their transformation to policies in the context of Australia. Leach et al. (2016) argued that sustainability and liveability are not necessarily reciprocal and demonstrated the need for interventions that enhance rather than compromise well-being and leverage the sustainability and liveability of their cities. Generally, the interpretation of their relationship is still yet to be explored and verified d by empirical studies.

2.4.3 Campbell Theory: Neighbourhood Characteristics, Life Satisfaction and Moving Intention

Neighbourhood satisfaction is generally summarized as how well the neighbourhoods meet residents' needs and desires. It has attracted attention since the last century when it was regarded as a crucial indicator and predictor of neighbourhood quality (Greif, 2009; Harris, 2001; J. R. Hipp,

2009). Among the large group of environment-behaviour research discussing the determinants of neighbourhood satisfaction, three set of factors can be mainly classified: personal/household characteristics; subjective evaluations of neighbourhood attributes; and objective neighbourhood characteristics (Permentier et al., 2011). The most influential model proposed by Campbell et al. (1976) specified a series of linkages between various objectives attributes of each life domain and satisfaction measures of those domains, which in turn could be influenced by a range of individual characteristics and individual standards of comparison. Its significance has been arguably highlighted as the satisfaction degree was found to be significantly associated with the moving intention and population stability, which can strengthen community social cohesion and collective efficacy, deterring crime and disorder (Sampson et al., 1997; Silver & Miller, 2004). Many satisfaction studies also researched the impact of objective/perceived neighbourhood attributes on life satisfaction and moving intention (Campbell et al., 1976; Dekker et al., 2011; Parkes et al., 2002). By conducting comparison studies among different neighbourhoods in central and eastern Europe, Herfert et al. (2013) revealed a high level of residential satisfaction and a low level of potential mobility.

The Institute for Social Research (ISR) suggested that satisfaction with living could be viewed at multiple levels of analysis, or for different living domains. Commonly three domains are used (Bruin & Cook, 1997; Campbell et al., 1976; M. Lu, 1999; Marans & Rodgers, 1975; Parkes et al., 2002; Sirgy & Cornwell, 2002), namely:

• level of satisfaction with housing.

• level of satisfaction with the neighbourhood.

• level of satisfaction with the wider community or the broader city/metro-region.

Satisfaction with the quality of the current dwelling has also been shown to impact on neighbourhood satisfaction (E. Baker & Arthurson, 2007) although the exact causal direction between housing satisfaction and neighbourhood satisfaction is difficult to determine (Parkes et al., 2002). The degree of residential life satisfaction was focused on at the neighbourhood level for this research.

2.4.4 Effects of People's Perception of Neighbourhood Sustainability

It is commonly recognized that the global strategy of sustainable development can only be realized if the public actually implements the policy or behaves in a sustainable way by following the guidelines. Specifically, neighbourhood sustainability is closely associated with people's action and behaviour as the nearest unit of a city to people's daily life. The association between perception and action has been widely discussed in many studies, particularly the relationship between residential satisfaction and moving out. People's perception of sustainability and sustainable development deeply affects people's actual action in realizing this abstract goal. Therefore, there is no doubt that people's perception has a critical impact on the sustainability of the neighbourhood as well as the whole city.

For environmental and economic aspects, taking the US case as an example, Gardner and Stern (2008) argued that the national energy consumption would be reduced by around 11% if the households effectively implemented all the suggested changes about reducing their contributions to climate change. Similarly, from the perspective of behavioural studies, Dietz et al. (2009) estimated that behavioural interventions could reasonably lead to a 20% reduction for household energy use and a 7.4% reduction in total US emissions in CO2 emissions within 10 years.

It was also assumed that citizens had a misperception on the effectiveness of their practical actions (Gardner & Stern, 2008). For instance, it is often suggested that turning out lights when leaving the room will save energy, but the practical energy it saves is very little (Kempton et al., 1985). Additionally, it was argued by many scholars that the general public do not always have a good understanding of the mechanisms of taking concrete actions to achieve sustainability involved in fighting against climate change (Bostrom et al., 1994; Sterman & Sweeney, 2007) and of the energy consumption generated by household activities, although the phenomenon of climate change is believed to be real by the general public (Leiserowitz, 2005).

In the situations in which people have some direct control, a better understanding of how well individuals know about energy consumption will be beneficial in activating demand-side policy responses to climate change, such as encouraging consumers to adopt more efficient technologies (Attari et al., 2010).

The social aspect can be critically influenced by a number of public perceptions of the neighbourhood. It is widely recognized that the sustainability of communities is closely related to

the collective aspects of social life. Five specific interrelated and measurable social dimensions of neighbourhood sustainability are identified as follows:

• social interaction in the neighbourhood

• safety and security

• sense of place

• community stability

• participation in collective groups and networks in the neighbourhood

These five dimensions are largely determined by people's perception and are closely related to collective aspects of the resident's daily life and are significant concepts especially at the neighbourhood level.

2.4.5 Association between Neighbourhood, Sustainability and Liveability

Due to its close link to liveability and sustainability, neighbourhood has attracted urbanists' attention in studying their interaction (Mitrany, 2005; Mouratidis, 2017). As major spaces where human activities occur, a city is considered sustainable only if neighbourhoods and building environment meet sustainability criteria (Choguill, 2008). A liveable city is described as having strong neighbourhoods and sufficient supporting facilities required within walking distance, a network of attractive public spaces and buildings, affordability, clean, vibrant with diverse street culture, and there are regional connections (Girardet, 2004).

Neighbourhood satisfaction is the most common measure used in empirical studies that assess liveability within built environments for urban planning purposes (Mouratidis, 2017). Most notably, neighbourhood satisfaction has emerged as a cornerstone of subjective neighbourhood research (Corrado et al., 2013; Grogan-Kaylor et al., 2006; J. Hipp, 2010; Howley et al., 2009b; Permentier et al., 2011). The strong alignment between neighbourhood satisfaction and liveability has been underlined in many studies (Allen et al., 2018). A satisfactory neighbourhood is normally perceived as a liveable neighbourhood. There is consensus to conceptualize liveability as an urban condition derived from interactions with the urban environment in the urban planning and housing literature and is "made operational in life- or residential satisfaction" (Van Kamp et al., 2003). In

this way, liveability in the urban setting is the degree of satisfaction expressed by residents towards their living environment, in objective and subjective dimensions (Haarhoff et al., 2016).

The Brundtland definition features the satisfaction of human needs and the application of sustainability concepts through 'sustainable development' or 'ecological sustainability', which is techno-centric and eco-centric respectively (Holden et al., 2014). These developments of the concept of sustainability have transformed the relationship between society and sustainability such that sustainability is no longer perceived to serve us by simply meeting our needs, but rather provides a benefit to societal and external systems.

Table 2. 2 Resemblances and discrepancies between sustainability and liveability

(Source: (de Haan et al., 2014)

	Aspects	**Sustainability**	**Liveability**
Resemblance	The characteristic of definition	Intrinsically normative, subjective and ambiguous	
	Political influence	Has key framing influences on public policy in development	
	General objective	They both have a profound focus on needs, and an ability to satisfy them	
Discrepancy	The relationship it studied	Not only current generation but also long-term, intergenerational conditions	Environment and quality of life and especially focuses on the needs of the present
	Human-centric emphasis	Less or indirect human-centric emphases	More and direct human-centric emphases
	Theoretical implication	Provides a benefit to societal and external systems	A reflection of 'quality of life', 'well-being' and/or the satisfaction of the needs of 'the people'.

Thus, the resemblance and discrepancy between sustainability and liveability are shown in Table 2.2. It reveals that their meanings remain ambiguous and demand further interpretations (Leach et al., 2016). The challenge is that liveability policies promise more tangible and immediate benefits, creating an expectation from citizens in that policy will need to accurately reflect and deliver their needs and wants, essentially making policy more vulnerable to the scrutiny of citizens.de Haan et al. (2014) argued that liveability objectives, and their focus on the satisfaction of the needs of the present, better align with enduring public policy objectives. From the perspective of seeking solutions that satisfy the needs of citizens, liveability could be a better 'fit' in public policy than sustainability. In other words, there are drawbacks in further advancing sustainable development if it contradicts the liveability somehow.

Their inextricable link can be conceptually reflected by many characteristics, such as neighbourhood satisfaction. For instance, neighbourhood satisfaction has been regarded as one of the features of sustainable neighbourhoods (Bahadure & Kotharkar, 2018) while it has also been commonly used in assessing liveability at neighbourhood level (Mouratidis, 2017). However, although many scholars have comprehensively investigated it, to date there is no consensus on specifying the relationship between sustainability and liveability globally. The latent conflict between liveability and environmental sustainability has been identified in other countries, such as Australia (Newton, 2012). Given liveability and sustainability bear theoretical links at the dimension of neighbourhood satisfaction, two questions can be posed here: to what extent and how are correlated at neighbourhood level in China? Is the way they interact with each other a universal principle or is it contextual?

2.4.6 Simultaneously Promoting Sustainability and Satisfaction with Neighbourhood Life

Sustainability is ultimately a question of how communities at various levels envision and pursue social and natural well-being. The three core objectives of sustainability science have been identified by Kates et al. (2001) as: (1) understanding the fundamental interactions between nature and society; (2) guiding these interactions along sustainable trajectories; (3) promoting social learning necessary to navigate the transition to sustainability. As discussed in 2.3.3, neighbourhood planning acts mostly as an engaged planning forum and it can thus be effective in guiding nature-society interactions (environment-inhabitant interactions) along sustainable trajectories at the neighbourhood level. However the public may support sustainability principles, there is a

perception that several sustainability initiatives, like high-density developments, impose too great a cost on individuals' quality of life (Howley et al., 2009b). In other words, there may be a latent divergence between sustainability and residential quality of life, which reduces the attractiveness of promoting sustainable development to the general public. This is one of the prominent gaps between current sustainable development strategy and practical societal motivations, which were hindering sustainable urban development (Miller et al., 2014). This problem has been conceptualized as: the message of scarcity and sacrifice of sustainable development is inherently uninspiring and may be more likely to induce apathy or denial than active engagement and change (Gifford & Comeau, 2011; Sabin, 2014).

In this sense, if current sustainable frameworks and action plans lacks attractiveness to residents, it is increasingly challenging to form a societal collaborative action in realizing sustainable development. Sustainable development cannot be achieved if we do not take collective and collaborative action (DESA, 2008). Therefore, to further facilitate sustainable urban development, it is imperative to make neighbourhood planning attractive, inspirational and exciting to neighbourhood and residents for improving active engagement and change at the basic level of the society. Amongst all planning considerations, residential satisfaction is usually adopted as typical indicator or even proxy of liveability, which attracts residents' concerns. Besides, according to updated theory and model previously demonstrated, residential satisfaction degree is significantly associated with the moving intention and population stability, which can strengthen many social sustainability issues, such as community social cohesion and collective efficacy, deterring crime and disorder. Given the issues stated above, to what extent sustainable neighbourhood planning can satisfy the involved residents and engage them obviously influences how well it can further navigate the transition to sustainability. In summary, planning for sustainability and satisfaction should be considered simultaneously if continuous dedication can be realized for constantly advancing sustainable neighbourhood development. Thus, to investigate the theoretical association between sustainability and satisfaction becomes crucial for advancing sustainable neighbourhood development.

2.5 Global Evidence of Sustainable Neighbourhood Development and Planning

Many global, regional or national actions have been taken for promoting sustainable neighbourhood development since local sustainability emerged as crucial role in achieving

sustainable urban development throughout the whole world. These efforts include issuing guidelines, proposing evaluation framework and practising neighbourhood planning etc. Increasing numbers of Neighbourhood Sustainability Assessment Frameworks have been formulated for evaluating the sustainability performance in different context. As stated in 2.3.4, since neighbourhood planning was found conducive to fostering sustainable neighbourhood, it had been widely practised in many countries to promote sustainable neighbourhood development. The status and circumstances of neighbourhood planning practices in different countries is shown in Chapter 5.

2.5.1 Latest Guidelines on Sustainable Neighbourhood Development and Planning

Numerous specific guidelines on sustainable neighbourhood planning and development have been published by different organization and authorities in recent decades. It can be recognized that most of them were proposed for municipal or city level actions. However, several up-to-date national or even global level guidelines for sustainable neighbourhoods have also been published recently, which suggests an increasing emphasis on sustainable neighbourhoods globally. Several guidelines are shown in the Table below.

Table 2. 3 Latest Guidelines for Sustainable Neighbourhood Planning and Development

Name	**Publishing Organization**	**Country**	**Issuing year**	**Highlights of the characteristics of sustainable neighbourhood**	**Source**
A new strategy of sustainable neighbourhood planning: Five Principles	United Nations	United Nations	2014	5 principles under 3 key features of sustainable neighbourhoods and cities: compact, integrated, connected. Five principles are: 1. Adequate space for streets and an efficient street network 2. High density -at least 15,000 people per km² 3. Mixed land-use 4. Social mix 5. Limited land-use specialization	Habitat, U. N. (2014). A new strategy of sustainable neighbourhood planning: Five principles. Nairobi, Kenya: United Nations Human Settlements Programme.
Sustainable Australia - Sustainable Communities	Department of Sustainability, Environment, Water, Population and Communities, Australia Government	Australia	2011	1. Building Skills Base and Enhancing Participation 2. Connected Communities 3. Liveable Urban Communities 4. Housing Supply and Affordability 5. Social Inclusion and Service Delivery 6. Reform for Stronger Communities 7. Diversity for Vibrant Communities 8. Healthy Communities 9. Resilient Landscapes and Communities 10. Decoupling Emissions from Population Growth 11. Water for Liveable Communities 12. Securing Food Production	Department of Sustainability, Environment, Water, Population and Communities, Australia Government. (2011). Sustainable Australia - Sustainable Communities. Available online: https://www.environment.gov.au/resource/sustainable-australia-sustainable-communities-sustainable-population-strategy-australia

A Citizen's Guide to LEED for Neighbourhood Development: How to Tell if Development is Smart and Green	Raimi + Associates and the Natural Resources Defense Council (NRDC),	United States	2011	This guideline provides a snapshot of neighbourhood sustainability by summarizing the key strategies of the LEED-ND Rating System, which is organized into three basic sections: 1. Smart Location and Linkage (SLL)—where to build 2. Neighbourhood Pattern and Design (NPD)—what to build 3. Green Infrastructure and Buildings (GIB)—how to manage environmental impacts	Welch, A., Benfield, K., & Raimi, M. (2010). A Citizen's Guide to LEED for Neighbourhood Development: How to Tell If Development is Smart and Green. US Green Building Council.
Sustainable Neighbourhood Development: Practical Solutions to Common Challenges	The Federation of Canadian Municipalities,	Canada	2016	1. Zero carbon 2. Zero waste 3. Sustainable transport 4. Sustainable materials 5. Local and sustainable food 6. Sustainable water 7. Land use and wildlife 8. Culture and heritage 9. Equity and local economy 10. Health and happiness	The Federation of Canadian Municipalities. (2016). Sustainable Neighbourhood Development: Practical Solutions to Common Challenges. Available Online: https://www.fcm.ca/Documents/tools/GMF/Sustainable_Neighbourhood_Development_Practical_Solutions_to_Common_Challenges_EN.pdf
Sustainable urban neighbourhoods: Building communities that last	Sustainable Urban Neighbourhoods Network	United Kingdom	2012	A sustainable urban neighbourhood is defined as having the following characteristics. It: 1. It has a wide enough choice of housing and facilities to ensure long-term value and create a balanced community over time; 2. It is well connected to jobs and services by foot, bike and public transport; 3. It has places of different character that stand the test of time and appeal to different markets; 4. It is designed to conserve resources; 5. It benefits from hands-on management and long-term stewardship by responsible local organizations, both during development and after residents have moved in.	Falk, N., & Carley, M. (2012). Sustainable Urban Neighbourhoods Building Communities That Last. Joseph Rowntree Foundation: York, UK.

2.5.2 The Application of Neighbourhood Sustainability Assessment tools

As stated in 2.4.1, several scholars (Choguill, 2008; Conte & Monno, 2012; Spinks, 2015) highlighted the necessity of assessing sustainability at neighbourhood level. Additionally, Berardi (2013) recognized that the assessment of sustainability of neighbourhoods needs to consider the ways in which economic, environmental and social level are related to the citizens. Thus, the recent development of internationally recognised assessment tools also incorporates the neighbourhood planning aspect, for example, BREEAM Communities, CASBEE for Urban Development and LEED for Neigbourhood Development (Haapio, 2012).

By reviewing the current literature, several major neighbourhood sustainability assessment tools were selected and are shown in Table 2.4 below. This section provides the basis for Chapter 4 in which some common factors are shortlisted in the initial list of neighbourhood sustainability factors for this study.

Table 2. 4 Summary of neighbourhood-based assessment tools worldwide

Framework	**Organizations**	**Country**	**Latest Publication Year**
BREEAM (Communities)	Building Research Establishment	United Kingdom	2012
LEED(-ND)	US Green Building Council	United States	2016
CASBEE(-UD)	Japan Green Building Council, Japan Sustainable Building Consortium	Japan	2014
DGNB(-NSQ)	German Sustainable Building Council	Germany	2012
The Technical Assessment Handbook for Ecological Residence of China (TAHER)	China Real Estate Chamber of Commerce	China	2011
BEAM Plus Neighbourhood (ND)	HKGBC	Hong Kong	2016
Green Star (Communities)	Australian Green Building Council	Australia	2016
Green Townships Rating System	Indian Green Building Council	India	2014

HQE2R	European Commission	European Union (France)	2004
EcoCity	European Commission	European Union	2005
EarthCraft Communities	EarthCraft, Greater Atlanta Home Builders Association, Southface	United States	2013

Many studies have reviewed the current neighbourhood sustainability assessment frameworks. Sullivan, Rydin, and Buchanan Sullivan et al. (2014) identified several gaps within the framework research, including its actual effect on the development procedure and planning, the barriers to its uptake in different realms, the way they are utilized, an d the improvements that have been made to those frameworks.

In addition, although several studies critiqued the content of neighbourhood sustainability frameworks, very few of them were related to social aspects (MIT, 2013; Sharifi & Murayama, 2014; Sullivan et al., 2014).

Social aspects of sustainability broadly consider social equity, social inclusion, social networks, social cohesion, social interaction, a sense of belonging, community participation, and liveability (E. Chan & Lee, 2008; Chiu, 2003; Godschalk, 2004; Sachs, 1999; Yung & Chan, 2011). These aspects to different degrees, affect the social well-being of people.

There are also some who criticize the lack of context-specificity and who doubt the actual universal effectiveness of applying the Neighbourhood Sustainability Assessment (NSA). Some studies have stated that NSA should be a pluralistic practice and the viability of applying global standards to NSA, regardless of local different specificities, location and stakeholders, is questionable (Sharifi & Murayama, 2015). It has been argued that context is crucial to sustainability assessment, since context is the most influential element of the assessment (Conte & Monno, 2012).

As human-centreed and environmentally friendly-based sustainable development has been strongly emphasized by the central government (NDRC, 2012), research on sustainability frameworks for neighbourhood planning in contemporary China is clearly required. Hence, this study fills a gap within this research area.

2.5.3 Comparing and Reviewing the Major Neighbourhood Assessment Tools (Frameworks)

Many studies have compared different frameworks for identifying their differences or the deficiencies. Lee (2013) suggested that more transparency and credibility could be obtained to benefit the overall method of assessment framework by understanding how schemes were compared. Sullivan et al. (2014) also stated that comparison may identify their strengths and weaknesses and check their inherent subjectivity. Among all the comparative studies, some of them are comprehensively descriptive (Eberl, 2010; Haapio, 2012; Hamedani & Huber, 2012) while some just focused on the effects of or reasoning behind the physical characteristics (Chandratilake & Dias, 2013).

2.5.3.1 Scope of Sustainability Framework

2.5.3.1.1 Main Factors

Table 2.5 and Table 2.6 are from two different studies (Chandratilake & Dias, 2013; Sharifi & Murayama, 2013) comparing building-level frameworks and neighbourhood-level frameworks respectively. The comparison reveals that neighbourhood-level frameworks have wider scope coverage than building-level frameworks. Neighbourhood-level frameworks contain less tangible factors, such as 'atmosphere', 'diversity', or 'small-town feel' (Clark et al., 2013), awareness of sustainability issues (Zuo & Zhao, 2014) and 'urban sprawl' (Haapio, 2012), which were proposed as supplementary factors to enrich the sustainability coverage. Social and economic issues account for the majority of the additional parts that neighbourhood-level frameworks own. Whereas, the building-level frameworks lack consideration of the social and economic aspects and ignore the holistic, systemic nature of sustainability criticized by many scholars (Conte & Monno, 2012; Goh & Rowlinson, 2013a; Lee, 2013; Schweber, 2013). This can be seen as motivation to help improve and optimize the sustainability coverage of the building-level framework as well as provide references for supplementing the neighbourhood-level frameworks.

Table 2. 5 Comparison of building sustainability assessment systems

(Chandratilake & Dias, 2013, Table 1)

System	Weightage (%)						
	Site (1)	Energy (2)	Water (3)	Materials (4)	IEQ (5)	O & M (6)	Other
BREEAM	15%	25%	05%	10%	15%	15%	15%
CASBEE	15%	20%	02%	13%	20%	15%	15%
Green globes	11.5%	36%	10%	10%	20%		12.5%
LEED	20%	25%	07%	19%	22%		07%

It is generally recognized that there is a consensus on the scope of factors for both building and neighbourhood frameworks (Lee, 2013; Sharifi & Murayama, 2013). Furthermore, a high correlation between the coverage of framework and the number of criteria has been identified by Lee (2013) in building-level frameworks.

2.5.3.1.2 Mandatory Criteria

Mandatory criteria refer to the set of criteria that must be measured if the overall sustainability of the neighbourhood or building needs to be evaluated. The importance of mandatory criteria "to ensure that the minimum sustainability requirements are met" was demonstrated by Sharifi and Murayama (2013) and Garde (2009).

Table 2.6 Percentage distribution of the frequency of indicators categorized under each main theme (Sharifi and Murayama, 2013).

Theme	Criteria	Percentage of the frequency of indicators falling under each theme and criteria													
		LEED-ND		ECC		BREEAM		CASBEE-UD		HQE^{2}R		Ecocity		SCR	
Resources and environment	Water	14	33	11	33	3	23	13	41	7	26	3	26	4	17
	Energy	9		4		6		9		7		15		6	
	Materials, ecosystem, biodiversity, resources conservation, etc.	10		18		14		19		12		8		8	
Transportation		9		12		19		10		7		15		8	
Social	Affordable housing	2	9	1	15	2	11	0	6	2	45	3	15	4	26
	Inclusive communities	0		3		3		0		5		3		2	
	Safety, community well-being, community outreach, heritage, social networks, etc.	7		11		6		6		38		9		20	
Economic	Local jobs and economy, finances, investments, employment, business	2		2		8		0		5		6		15	
Location, site selection		11		14		5		3		2		6		4	
Pattern and design	Mixed use	2	31	1	23	2	32	0	40	2	15	3	32	4	25
	Green infrastructure, compact development, access, urban planning and design standards, etc.	29		22		30		40		13		29		21	
Innovation	Accredited professionals	2	5	0	1	0	2	0	0	0	0	0	0	0	5
	Innovation	3		1		2		0		0		0		5	

Sullivan Sullivan et al. (2014) found that very few relevant studies focused on examining how well the mandatory criteria included in frameworks significantly represented the key sustainability criteria as well as being adaptable to different local environments and contexts.

2.5.3.2 Local Issues

Arguably, the applicability of frameworks is absolutely correlated with the local context so that the framework basically cannot be universally adopted without necessary adjustments Chandratilake and Dias (2013); (Garde, 2009; Haapio, 2012) . Therefore, consulting local stakeholders would be the appropriate way to determine the scope of the factors in the framework. D (Carter & Rogers, 2008). It is suggested that a pre-planning meeting with a variety of stakeholders is required to ensure that their concerns are included into the framework design (Sullivan et al., 2014).

2.6 Theoretical Framework for Sustainable Neighbourhood

2.6.1 Contextual Framework for Sustainable Neighbourhood Development

The term 'framework' adopted in this research refers to a type of tool designed for guiding sustainable neighbourhood development. The level of framework is defined as the level at which the framework is to be implemented, for example BREEEM-Community at neighbourhood level. In this research, a framework normally refers to a neighbourhood-level tool. Different users in different contexts could use the framework. Therefore, the effect of framework implementation depends on relevant circumstances and may vary case by case.

Contextual framework limits the characteristic and function of the framework to addressing circumstances that form a setting of an event, a phenomenon, a statement or an idea. It was adopted in many studies that investigated both natural and social science issues related to contextual dimensions, especially exploring the theory to practise (Marshall et al., 2010; McCaffrie, 2013; McFarland & Ployhart, 2015). It was usually developed or proposed based on the evidence that studied how factors or parameters vary case by case in terms of contextual features or specificities. In this research, contextual framework was developed to guide the different-context neighbourhoods' sustainable development by specifying the contextual critical factors and proposing contextual priorities.

2.6.2 Theoretical Framework – Sustainability Factors

The theoretical framework of this study is a consolidation of sustainability factors identified from both academic studies and the major NSA tools, as well as from other frameworks. Among all the major NSA frameworks or tools introduced in section chapter 2.6, BREEAM (Communities), CASBEE(-UD), LEED(-ND), DGNB(-NSQ), TAHER, and Beam Plus ND were initially selected to identify the themes, major factors and sub-factors. Among the six frameworks, BREEAM (Communities), LEED(-ND), CASBEE(-UD), DGNB(-NSQ), which have been developed and used in the UK, US, Japan and Germany, were frequently selected for previous comparative studies (Sharifi & Murayama, 2013); (Komeily & Srinivasan, 2015; Sharifi & Murayama, 2014). Beam Plus Neighbourhood Development (version 1.0) is the updated assessment tool developed by Hong Kong Green Building Council for guiding neighbourhood development projects in Hong Kong Special Administrative Region (KHSAR), China. This one was considered because HKSAR is a part of China and its cultural context is similar to Mainland China even though there are differences in terms of the social-political context. Lastly, as the main comparative subject, the current Technical Assessment Handbook for Ecological Residence of China was selected for this study as an important reference for better comparison and future possible improvements on the currently available NSA frameworks and tools.

A comprehensive consolidation of all the indicators in the six frameworks was conducted. Since one of the major aims of these frameworks was to evaluate how well the development project performed in enhancing sustainability, some indicators are project-oriented which are not suitable and significant for this research. Therefore, that group of indicators were eliminated during the initial consolidating work. Finally, a total of 4 main themes, 22 key sustainability factors and 98 sub-factors were obtained through a comprehensive literature review. The entire set of factors is shown in Appendix C and the selection procedure for eliminating the redundant ones was shown in the following parts. After elimination, the description of each selected factor is given in Table 2.7 below.

As discussed in Chapter 2, commonly agreed factors could be shortlisted as the formulated framework. This initial list of factors comprises 4 main themes, 22 key sustainability factors and 98 sub-factors. They were identified from the comprehensive literature review of academic papers and existing NSA frameworks in five different countries/cities.

Although sustainability has dramatically altered the relevant discourses, social sustainability still lacks a coherent, clear and utilizable definition (Åhman, 2013). Griessler and Littig (2005) found that even the selection of social sustainability indicators is not always grounded in theory but rather in a practical understanding of plausibility and current political agendas. Given that such issues and the large number of sub-factors in the initial framework may challenge the feasibility of future survey collection, the following four criteria were used to refine or combine some of the sub-factors for constructing an explicit, hierarchical and applicable framework:

1) Mentioned in only one reference (either academic or industrial)
2) The objective of criteria setting is not quite consistent with the research objectives
3) Not quite applicable to the neighbourhoods in China in terms of scale and content
4) Different sub-factors with overlapped meanings will be combined

After eliminating the redundant sub-factors, there were 4 mains themes, 17 key factors and 49 sub-factors left as the finalized theoretical framework for use in further research. The detailed factors are shown in Appendix C.

Table 2. 7 Different levels of factors and their references

Main Themes	**Factors**	**Sub-factors**	**Description of the factor**	**References**	
				Academic	Industrial
Social	Social Culture And capital	Cultural Events and Festivals	Events and festivals were randomly organized to sustain the cultural root	Tweed and Sutherland, 2007；Griessler and Littig, 2005	CASBEE-UD (2014)
		Conservation of Cultural Assets: Preservation and restoration of historical legacies and buildings	Respecting local landmarks and conserve material as well as cultural resources by	Kearns and Forrest, 2000；Yung and Chan, 2012	Beam Plus Neighbourhood (2016); TAHER (2011); CASBEE-UD (2014)

			encouraging the conservation of historical legacies		
	Quality of Life	Social interaction and functional mixed	Mixed-use neighbourhood are conductive to social interaction and mingling of the community within walking distance	Bramley and Power, 2009; Morris, 2003；Yigitcanlar,;Kamruzzaman and Teriman, 2015;	Beam Plus Neighbourhood (2016); DGNB-NUD (2012)
		Affordable and Diverse Housing Provision	Enabling different residents to live in a community regardless of their economic levels, household sizes, and age groups to promote social equity	Berardi, U. (2013). Yigitcanlar, Kamruzzaman and Teriman, 2015.; Chiu (2002)	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); LEED-ND (2016)
		Housing condition and state of repair	How well is the building condition and what is the rate of repair	Berardi, U. (2013). Albino, V., & Dangelico, R. M. (2012); Turcu, 2013.	
		Quality of Open Space	Good quality of open space in terms of materials, equipment, accessibility	Berardi, U. (2013); Turcu, 2013. Morris, 2003	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); DGNB-NUD (2012)
		Delivery of services, Provision of facilities and	Essential facilities (school, clinic, etc.) are provided	Lew, et al. (2016); Chan and Lee, 2008；	BREEAM Communities (2012); Beam Plus

		amenities and their convenience	within accessible and safe walking distance	Yigitcanlar, Kamruzzaman and Teriman, 2015; Turcu, 2013.	Neighbourhood (2016); DGNB-NUD (2012)
	Social Inclusion and Equity	Surrounding, internal connectivity and Inclusive Access	Enhancing connectivity and accessibility both for current and possible future residents	(Barton, 2000a; Burton, 2000b (Hopwood et al., 2005; Chiu, 2002); Brook Lyndhurst, 2004; Macintyre et al., 1993	LEED-ND (2016); DGNB-NUD (2012)
		Demographic needs and priorities	Provision of housing, services, facilities and amenities, which are based upon the local demographic trends and priorities	Ancell and Thompson-Fawcett, 2008; Turcu, 2013. Porta and Renne, 2005	BREEAM Communities (2012)
	Sense of Place and Community Identity	Place Making and Local Character	Public art or other cultural programs were provided to enhance the sense of place	Stubbs (2004) Nash and Christie, 2003); (Kearns and Forrest, 2000); Dempsey et al., 2011	Beam Plus Neighbourhood (2016)
	Security	Disaster Prevention and response ability	Measurements were taken to prevent flood, fire etc.	Yigitcanlar, Kamruzzaman and Teriman, 2015.	CASBEE-UD (2014); TAHER (2011)

		Crime Prevention	Security measure including night lighting, monitorable characteristics from the periphery, security cameras, and security patrol system in the block is arranged.	Bramley and Power, 2009. (Silburn et al., 1999); Nash and Christie, 2003, p. 47; Berardi, U. (2013). Yigitcanlar, Kamruzzaman and Teriman, 2015.; Turcu, 2013.	CASBEE-UD (2014); DGNB-NUD (2012)
		Traffic Safety	Establishing sidewalks and separating the pedestrian and vehicles for securing pedestrian safety and existence of plans of movement lines	Yigitcanlar, Kamruzzaman and Teriman, 2015.	CASBEE-UD (2014); DGNB-NUD (2012)
		Building Security	It consists of security system and surveillance camera in common area, elevator with 24-hours employment.	Russo and Comi, 2010；Cuthill, 2010；Martens, 2006	CASBEE-UD (2014);
Economic	Jobs and opportunities	Local training and Skills	training and/or apprenticeships, classes in the local area were provided	Turcu, 2013；Young and Church, 2014	BREEAM Communities (2012

		Housing and Job Proximity	proximate housing and employment opportunities	Zhao et al., 2011； Turcu, 2013.	LEED-ND (2016);
	Growing Potential	Population Growth and staying population	The population growth rate; moving in and out of the area	(Bramley and Morgan, 2003; Berardi, U. ,2013);Turcu, 2013.	CASBEE-UD (2014)
		Cooperative activities	The cooperative activities with the area include an approach based on collaboration between government, industry and academia, a cooperative business with company in and around the block, and a cooperative approach with residents in and around the block	Berardi, U. (2013). Green et al., 2005);	CASBEE-UD (2014)
		Economic inactivity rates	The percent population of the people who are not in employment or unemployed	Sharifi, A., & Murayama, A. (2013). Manzi et al., 2010	BREEAM Communities (2012
	Land use	Compact Development	encourage daily walking, biking, and transit use, and support car-free living by providing access to diverse land uses.	Yigitcanlar, Kamruzzaman and Teriman, 2015. Burton, 2002	LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)

		Commercial establishment types	The different types of commercial organization have been established.	Yigitcanlar, Kamruzzaman and Teriman, 2015. Sutton, 2010	Beam Plus Neighbourhood (2016)
	Smart Efficiency	Information service performance	Flexibility and usability of information environment Communication line capability, internet communication speed and utilization methods.	De Jong et al., 2015; Caragliu et al., 2011	CASBEE-UD (2014); DGNB-NUD (2012)
Environmental	Site and outdoor environment	Outdoor thermal environment and Urban Heat Island Effect	Shaded and covered routes and sitting area is provided.	Zhu and Lin, 2004)	Beam Plus Neighbourhood (2016); LEED-ND (2016); BREEAM Communities (2012);
		Outdoor Air quality	It mainly refers to the air quality of outdoor open space. A buffer distance between any open space within the site and the nearest road or highway.	Engel-Yan et al., 2005	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); TAHER (2011)
		Noise	The location of building will help minimize the noise. Some approaches have been	Siew, 2014; Bijoux et al., 2007; Williams and Dair, 2007	Beam Plus Neighbourhood(2016); BREEAM Communities

			adopted to mitigate noise as well.		(2012); DGNB-NUD (2012); TAHER (2011)
		Universal Access	Preferably on flat land or carefully designed for visual and spatial connections with gradient or slope with due consideration given to universal access.	Barton, 2000a; Burton, 2000b; Buys et al., 2005;	Beam Plus Neighbourhood (2016); LEED-ND (2016)
		Accessibility to Open Space, Green Space and Blue Assets.	The open space, green space and blue assets are accessible to residents.	Barton, 2000a; Burton, 2000b;	Beam Plus Neighbourhood (2016); LEED-ND (2016)
	Ecological and Biodiversity	Ground and Roof Greenery	Rooftop green is designed on the buildings. A specific area of green is arranged. Greening is performed mainly with native species that originally lived in this area. Shared or public open space such as planted or wild areas that are sufficiently large to be ecologically viable	Moldan et al., 2012; Bernstein, 2014.	CASBEE-UD (2014); BREEAM Communities (2012); Beam Plus Neighbourhood (2016); TAHER (2011);
	Street and Transport	Safe and appealing streets	Motivating mutual interaction and cultivating a positive sense of place by	Li et al., 2005; Cubukcu, 2013	BREEAM Communities (2012); DGNB-NUD (2012)

			enhancing the safety and vitality degree of the street.		
		Cycling network and facilities	Promoting cycling as a leisure activity and as alternative for vehicle driving by providing a safe and efficient cycle network	Williams and Dair, 2007	BREEAM Communities (2012); CASBEE-UD (2014); Environmental; DGNB-NUD (2012)
		Low Carbon Transport	To reduce pollution generated by car use and provide viable alternatives to car ownership	Stubbs, 2002; Williams and Dair (2007)	Beam Plus Neighbourhood (2016); BREEAM Communities (2012)
		Walkable Street and Pedestrian-oriented	To promote walkability, livability and reduce vehicle distance traveled. To improve public health by encouraging daily physical activity.	Williams and Dair (2007)	LEED-ND (2016); DGNB-NUD (2012)
		Access to public transport	The availability of frequent and convenient public transport and they are linked to fixed public transport nodes (train, bus, tram or tube) and local centres	Barton, 2000a; Burton, 2000b; Yigitcanlar, Kamruzzaman and Teriman, 2015. Turcu, 2013.	BREEAM Communities (2012); LEED-ND (2016); Environmental; DGNB-NUD (2012)

		Public transport facilities	Providing safe and comfortable transport facilities for encouraging the use of public transport.	Turcu, 2013. Williams and Dair (2007); (Stubbs, 2002)	BREEAM Communities (2012); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Multiple Transit Types	There are multiple choices of public transit system, such as car, bus, train, subway, ferry.	Yigitcanlar, Kamruzzaman and Teriman, 2015.	LEED-ND (2016); BREEAM Communities (2012); Beam Plus Neighbourhood(2016); DGNB-NUD (2012); CASBEE-UD (2014)
	Resource and materials	Rain water Management and Flood risk assessment	Taking measures to reduce the risk of flooding caused by either rain or others to the neighbourhood and the surrounding areas	Ellis, 2013; Morales-Pinzón et al., 2015	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Resource Cycling and Water circulation system and reused infrastructure	using recycled and reclaimed materials to avoid negative environmental impact or consequences	Turcu, 2013. Messari‐Becker et al., 2014)	CASBEE-UD (2014); LEED-ND (2016); TAHER (2011); DGNB-NUD (2012);
		Building Reuse	Encouraging the reuse of old buildings to extend its the life cycle, reduce waste and environmental harm from materials manufacturing as	Sbci, 2009	Beam Plus Neighbourhood(2016); BREEAM Communities (2012); LEED-ND (2016)

			well as transport for building new buildings		
		The adaptive reuse of historic resource	Adaptive reuse of historic resources to reduce the waste of resources	; Balaras et al., 2004； Bromley et al., 2005	LEED-ND (2016); TAHER (2011)
	Energy efficiency	Energy strategy, Energy Efficiency Infrastructure and Renewal Energy	An energy strategy has been issued to incorporate renewable energy type, such as solar, wind or biomass in production capacity	Turcu, 2013; Williams and Dair, 2007	Beam Plus Neighbourhood(2016); BREEAM Communities (2012); TAHER (2011) LEED-ND (2016); DGNB-NUD (2012);
		Solar orientation	Arranging and designing passive and active solar strategies	Neuhoff, 2005	LEED-ND (2016); TAHER (2011)
		District heating or cooling	Employing district heating and cooling strategies that reduce energy use and environmental harms	Rosen et al., 2005	LEED-ND (2016); TAHER (2011)
	Waste and Pollution	Light and dust pollution	Using the definitions of lighting zones; controlling pollutants including dust and particulate matter	Dales, 2002	BREEAM Communities (2012); LEED-ND (2016); TAHER (2011)
		Integrated Waste Management (Water, solid waste,	Reducing the volume of waste deposited in landfills	Davies and Wagner, 2000; Prey, 1992.	Beam Plus Neighbourhood (2016); LEED-ND (2016);

			and promoting the proper disposal of hazardous waste		DGNB-NUD (2012); TAHER (2011)
Institutional	Policy Making	Consistency with the upper-level planning	The development is consistency with and utilization of urban infrastructure which was included in the upper level plan	Shen et al., 2011; Lafferty, 2006.	CASBEE-UD (2014)
		the integrated decision making	The decision-making process involved economic, environmental and social considerations	Spangenberg, Pfahl and Deller (2002). Kearns and Forrest (2000); Spangenberg et al., 2002	
		Local Authority Services	The diversity and functionality of administrative service	Turcu, 2013.	
	Community Engagement and partnership	Community engagement in planning and management	Whether the community was engaged within the neighbourhood planning and management process	(Carmichael et al., 2005；Meek, 2008); Ratcliffe, 2000; Pendlebury et al., 2004；Bramley and Power, 2009; Turcu, 2013.	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); CASBEE-UD (2014); LEED-ND (2016); DGNB-NUD (2012)

		Collaborative System for area management	Supporting communities and business sector in active involvement in developing, managing the area	Bäckstrand, 2006; Kearns and Forrest (2000); Turcu, 2013.	CASBEE-UD (2014); BREEAM Communities (2012)

The underlying factors of sustainable neighbourhoods was filtered and consolidated in the table above. The 49 factors are elaborated as follows.

2.6.3 Social Sustainability Factors

Social sustainability encompasses five main factors: social culture and capital, quality of life, social inclusion and equity, sense of place and community identity, and security (Eizenberg & Jabareen, 2017; Y. R. Jabareen, 2006; Tweed & Sutherland, 2007).

Social culture and capital

Social culture was included as a system of cultural relations in which the positive aspects of disparate cultures are valued and protected, and in which cultural integration is supported and promoted when it is desired by individuals and groups (Griessler & Littig, 2005). For cultural assets, the conservation and reuse of historic buildings can also enhance social sustainability (Yung & Chan, 2012). Historical legacies are regarded as important to social sustainability. An attachment to place and a sense of place, which are key social sustainability factors, are identified as the key motivational forces behind the desire for the conservation of historic buildings (Stubbs, 2004).

Quality of life

For quality of life, social interaction, affordable and well-maintained housing, quality of open space and provision of amenities and other service are sub-factors affecting social sustainability. Social interaction, as "the basic process in the formation both of human nature and of the social order", is one of the typical non-physical factors corresponding to the named social processes and structures (Wirth, 1964). Without social interaction, people living in a given area can only be described as a group of individuals living separate lives, with little sense of community or sense of pride or place attachment (Dempsey, 2006). Affordable housing and diverse housing provision is translating socially equitable housing into a sustainability context. Chiu (2002) argued that desirable, quality and affordable housing should be encouraged as a part of equitable housing policies enhancing social sustainability. In addition, open spaces and green areas provide buffer zones in crowded areas to facilitate social gathering and public interaction (Corbett & Corbett, 1999). Open spaces with greenery are particularly recognized as major contributors to human health and social well-being (N. Morris, 2003). Provisions of various amenities, which are

regarded as social infrastructure, are vital to a society from the social sustainability perspective. Amenities, such as sports facilities and community centres, offer venues for holding different leisure activities (E. Chan & Lee, 2008).

Social inclusion and equity

Equity is one of the most well-known representatives of social aspects within the sustainability literature (Y. Jabareen, 2008). The concept of equity seeks to prevent unequal policies and to promote substantive public involvement in the production of space. More just policies and less inequality reduce the alienation of people from their living spaces, enhance their ability to cope with vulnerabilities, and foster the development of feasible environmental objectives (Eizenberg & Jabareen, 2017). From the perspective of reducing inequality and enhancing accessibility, visual images of street furniture and pavements, and interconnectivity of street layouts have impacts on social sustainability of places (Porta & Renne, 2005). In addition, in order to look after vulnerable groups such as the disabled, elderly and children within a community, special provisions should be readily available for their use (E. Chan & Lee, 2008).

Sense of place and community identity

The sense of community or place is often described as residents' sense of attachment relating to the physical environment in which they live, the socio-spatial interpretation of neighbourhood (Dempsey et al., 2011). It is related not only to other residents, but to the social order, common norms and, to a lesser extent, civic culture in a neighbourhood (Kearns & Forrest, 2000). There are other definitions, such as Talen (1999) who defined sense of community as an amalgam of shared emotional contact through interaction with others, place attachment and a sense of membership in terms of feelings of having a right to belong. Schneck (2000) stated that there is a direct and positive relationship between norms and values and a sense of community: "the deeper and more strongly held these common values are, the stronger the sense of community is". Sense of place can be affected by built environment through the mediating effect of perceived quality of place (Talen, 1999). Thus, sense of community or place is an important factor of social sustainability.

Security

Providing security and, with it, feelings of safety in a neighbourhood is closely related to the other dimensions of community sustainability (Barton, 2013). Lacking a sense of security hinders residential motivation in participating in public occasions or other social interaction (Dempsey et al., 2011). Normally, people prefer to stay in a safe and secure place where thieves, burglars or vandals are absent. By planning or designing for security, including physical (safe internal and external roads) and non-physical (layout plan for providing natural surveillance against crimes), social sustainability can be enhanced (Yigitcanlar et al., 2015). In addition, a safe neighbourhood was argued to more likely to provide residents with a greater sense of belonging (Burton & Mitchell, 2006) so social sustainability can be enhanced. The other influential security issues include traffic and building security, which are also attributed to social sustainability, were also mentioned in a lot of related literature (Cuthill, 2010; Martens, 2006; F. Russo & Comi, 2010).

2.6.4 Economic Sustainability

Economic sustainability covers four main factors: job and opportunities, growing potential, land use, and smart efficiency. Economic sustainability implies a system of production that satisfies present consumption levels without compromising future needs. An economic system designed under the theory of economic sustainability is one constrained by the requirements of environmental sustainability. It restrains resource use to ensure the sustainability of natural capital. It does not seek to achieve economic sustainability at the cost of environmental sustainability (Basiago, 1998). A way to implement the theory of economic sustainability in a practical sense is to fashion a method of urban design that meets the urban service needs of the general public.

Job and opportunities

Jobs and opportunities are correlated to an important economic indicator - employment. The financial situation of the residents' indicator comprises issues like residents' ability to save money or create more income. The capacity of the neighbourhood in seeking for and securing an approachable job is the key individual factor of economic sustainability at neighbourhood level. For job seeking, the provision of local training and skills were identified as important indicators for reflecting change triggered by neighbourhood policy and investment from the perspective of

economic sustainability (S. Young & Church, 2014). Another issue relating to employment is job-housing proximity. The job-housing perspective argues that job-housing balance has an impact on reduced commuting (P. Zhao et al., 2011). In the existing literature, job-housing ratios at the sub-district level are used to measure job-housing balance in Chinese cities (Zheng et al., 2015). Zheng et al. (2015) argued that highly accessible job opportunities also foster a good self-sufficient neighbourhood. L. D. Frank and Pivo (1994) defined job-hosing value, which is the value of job numbers divided by number of households, of more than 1.5 as favourable. Such neighbourhoods have enough attraction to support its residents in terms of finding a job nearby.

Growing potential

Growing potential mainly includes population, cross-sectional cooperation and economic inactivity rates. Population dynamics do not only pose challenges, they also provide important opportunities for more sustainable development. In the context of rapid transitional urban neighbourhoods, population turnover has been boosted by the millions of migrants' settling down in urban neighbourhoods while old urban citizens also started moving out from their original place seeking for better accommodation in the market. As the characteristics of in-movers and out-movers differ from each other and from those of continuous residents, population migration will generate changes in those community assets which depend on personal characteristics - most obviously human capital, but perhaps social capital also (G. Green et al., 2005). Specifically, sustainability obtains when community welfare does not diminish over time. The temporal-spatial character of neighbourhood population turnover also reflects paradoxical 'mobility-fixity tensions' (Raco, 2007). This paradox refers to the contradiction between population stability (as an agent for social relations) and turnover as a means of maintaining demand for local community infrastructure (Hamiduddin, 2015). Economical inactivity is defined as people who are not in employment or unemployed. It is stated in the relevant literature that economical inactivity is threatening sustainable economy or sustainable employment (Bourne, 2007; Manzi et al., 2010).

Land use and smart efficiency

Land use and smart efficiency mainly include compact development, commercial establishment types, and information service performance. The advantages of compact urban form in achieving sustainable urban development is well documented and includes: conservation of the countryside; less need to travel by car, thus reduced fuel emissions; support for public transport and walking and cycling; better access to services and facilities; more efficient utility and infrastructure provisions; and revitalisation (Burton, 2002). By having compact neighbourhood forms, the reduction of car use may mitigate traffic congestion, which damages the economy through reduced efficiency (Williams & Dair, 2007). The important role of established commercial organizations in promoting business and the economy for enhancing economic sustainability is mentioned in several studies (Sharifi & Murayama, 2013; Sutton, 2010). Building a smart and accessible information system in the city is regarded as a sustainability indicator promoting a sustainable economy (De Jong et al., 2015). Building modern information and telecommunication infrastructure are imperative for generating sustainable economic development and a high quality of life (Caragliu et al., 2011).

2.6.5 Environmental Sustainability

As the traditional and typical theme, environmental sustainability involves a wider range of factors in formulating the framework. It spans from site and outdoor environment, ecological biodiversity, street and transport, resource and materials, and energy efficiency to waste and pollution.

Site and outdoor environment

The outdoor thermal environment is not only related to the thermal comfort of pedestrians, but also to the building energy consumption. It usually correlates to how to quantitatively evaluate the effect of the waterscape, vegetation design and the arrangement of materials for paving road, wall and roof on the heat island around buildings (Yingxin Zhu & Lin, 2004). Outdoor air quality was included to relate poisonous air and uncomfortable smells threatening the physical health and safety of neighbourhood residents (Engel-Yan et al., 2005). Noise is a common and easily perceived factor disturbing people's quality of day-to-day life (Siew, 2014) and low noise disturbance, mainly referring to traffic noise, is regarded as a good quality of outdoor environment contributing to neighbourhood sustainability (Bijoux et al., 2007) and improving its attractiveness (Williams & Dair, 2007). The Universal Design elements such as flat access points, reduce-slip tiles and variable height work benches minimise the risk of injury and alleviate potential strain on

the body (Buys et al., 2005). Access to facilities, open spaces and amenities address demographical equity through physical design (Kowaltowski et al., 2006).

Ecological and biodiversity

Biological diversity, or biodiversity for short, a term that refers to "the variety of life, including species, the genes they contain, and ecosystems they form, underlies much of what keeps people healthy, from adequate and clean water, to food, medicines, and freedom from infectious diseases" (Bernstein, 2014). Biological diversity is the most important element of environmental infrastructure and an overarching prerequisite for most of the services which refer to all the goods provided by the ecosystem (Moldan et al., 2012). At neighbourhood level, garden is a very important part and platform of ecological diversity. The layout of biologically vital areas and the level of their fragmentation are important for biodiversity. Ferris et al. (2001) argued that community gardens (allotments in Europe) could be positively linked to the implementation of local agendas and sustainability policies and at the same time used to promote environmental equity. To be environmentally sustainable, Choguill (2008) stated that the existence of parks and other green spaces within the neighbourhood, and preferably in conjunction with elementary schools, will serve as a meeting place for mothers and their children.

Street and transport

Adopting a systems perspective and considering local urban infrastructure interconnections is a necessary element of being a sustainable neighbourhood. As walking is the most typical travelling mode of residents within neighbourhoods, whether residents feel safe when walking across the neighbourhood affects their motivation to walk more. Safe to walk and safe from traffic are two safety issues motivating mutual interaction and cultivating a positive sense of place (F. Li et al., 2005). Given that, walking plays a fundamental role in the sustainability of a place. Accessible places are walkable, and when people walk they know their neighbours and they can easily identify strangers in the neighbourhood. In other words, walking helps improve social surveillance (Cubukcu, 2013). For other transport, promoting cycling helps reduce obesity, heart disease, stroke, cancer, and diabetes as well as reducing the carbon emission which is environmental friendly (Williams & Dair, 2007). Car-free development has been adopted as an advocated method to promote sustainability by taking planning criteria, such as proximity to public transport and shops/services, and within a high-density ‘ped-shed’ location (Stubbs, 2002). Lastly, promoting

the usage of public transport needs extra supporting condition within or nearby the neighbourhood, such as accessible public transport, comfortable and adequate public transport facilities, and multiple transit types. Making fewer and shorter journeys by fuel inefficient modes of transport (particularly by car) and good transport links by neighbourhood design was highlighted by Williams and Dair (2007) for contributing to environmental sustainability by encouraging sustainable behaviour. Basically, travelling itself is not unsustainable but it is the modes of transport chosen that cause resource inefficiencies and other societal dis-benefits. The increasing numbers of cars in China has brought huge challenges for sustainable development. There is an immense potential to shift to more energy efficient modes of travel given that many trips are delivered within two miles (Williams & Dair, 2007). Thus, by providing accessible public transport and multiple transit types, it shapes a modal shift away from the car and towards walking, cycling and public transport, which contributes to sustainability.

Resource and materials

As a commonly discussed issue, resource and materials are definitely included and covers rainwater and flood risk management, resource cycling, building reuse, and the adaptive reuse of historic resources. The rainwater and flood risk are associated with drainage systems that influence sustainability through daily infrastructure, pollution, and sanitation (Ellis, 2013). Meanwhile, rainwater is the main source of fresh water for various uses and ecosystems, which is crucial to sustainable infrastructure (Morales-Pinzón et al., 2015). Recycling is a key element of holistic sustainable resource management and material flows (Messari‐Becker et al., 2014). Particularly, building material reuse is fundamentally important for recycling construction waste, which accounts for 30 to 40% of the total greenhouse gas emissions (Sbci, 2009). Meanwhile, encouraging the reuse of old buildings to extend its life cycle can reduce waste and environmental harm from materials manufacturing as well as transport for building new buildings. For historical buildings, built heritage that through adaptive reuse has a new function for some socially useful purpose, appears to be the most effective approach for a self-financing and sustainable form of conservation (Balaras et al., 2004; Bromley et al., 2005). In addition to reducing carbon emissions and improving cost efficiency, adaptive reuse strategies for heritage buildings also conserve significant heritage values (Langston, 2010). Thus, adaptive reuse strategies for heritage buildings provide economic, environmental and social benefits (Yung & Chan, 2012).

Energy efficiency

Energy usage and efficiency is another core aspect of environmental sustainability that affects sustainable neighbourhood development. It includes energy strategy and infrastructure, solar orientation and district heating or cooling. At the neighbourhood level, energy strategies can be defined as consuming less energy in the home. The energy consumption at home include lighting, heating, cooking, cooling, by burning fossil fuels or using renewable energy, such as solar panels (Williams & Dair, 2007). This is domestic and widely influential as the total household consumption of a country is vast. Therefore, if climate change is to be tackled, domestic energy consumption needs to be reduced (E. Agency, 2007a). For heating, it accounts for large amount of the total home energy consumption. Energy efficient heating systems can be fitted. High efficiency condensing boilers are the most efficient and convert more than 88% of the fuel they use into heat, compared with only 72% for conventional boilers (Williams & Dair, 2007). District heating or cooling refers to the supply of heat/cooling or hot water from one source to a district or a group of buildings. District energy can reduce GHG (greenhouse gas) emissions in two ways: facilitating the use of non-carbon energy forms for heating and cooling and replacing less efficient equipment in individual buildings with a more efficient central heating system (Rosen et al., 2005). Lastly, solar orientation refers to the installation of rooftop Solar Photovoltaic (PV) on the buildings in the neighbourhood. The direct conversion of sunlight into electricity by solar photovoltaic (PV) technology possesses great untapped potential and represents a technically viable and sustainable solution to energy demands (Neuhoff, 2005). However, PV accounts for <1% of the global energy supply (I. E. Agency, 2007b).

Waste and pollution

Householders need to recycle waste in order to help reduce demand for raw materials and so cut down on the depletion of finite resources, and to help reduce environmental damage caused when waste is dumped in landfill sites or incinerated. Currently, the waste management is not sustainability-oriented. Taking the UK as an example, the majority of household waste (80%) is currently dumped in landfill sites and these sites account for 25% of all methane emissions, which contribute to global warming (Unit, 2002). At home, sorting waste material at source is effective for ensuring that segregated waste can be collected from homes by kerbside collection services (Davies & Wagner, 2000). Waste energy, especially in the forms of heat, noise and solid waste

can also cause pollution problems (Dales, 2002). Waste and pollution collectively affect the environment and social sustainability can be reversely proved by different views towards informal recycling waste. Some with pessimistic views, such as Prey (1992), argued that the informal recycling of garbage spreads health and safety hazards.

2.6.6 Institutional Sustainability

Institutional category is the least emphasized category in both theoretical and practical work. It includes not only organizations, but also mechanisms and orientations. It refers to human interaction and the rules by which they are guided (Valentin & Spangenberg, 2000). Following some positive updated efforts including institutional indicators throughout the world (BREEAM-Community and DGNB-NSQ), this research includes institutional factors and categorizes them into policymaking, engagement, and partnership.

Integrated Policymaking

Policy making covers a wider range of issues including consistency with the upper-level planning, integrated decision making, and local authority services. Compliance consists in determining which indicators from the large amount of international urban sustainability frameworks have been included, or have been included in similar terms, and or have not been included in the individual practices (L.-Y. Shen et al., 2011). According to Lafferty (2006), governance for sustainable development concerns integrating core values and principles of sustainable development vertically within governments and finding effective ways to involve and mobilise civil society into the formulation and implementation of sectoral policies. Thus, to what extent the neighbourhood incorporates a sustainability policy into its policy formulating process is an important institutional sustainability factor. During the process, the integration of social, economic, environmental, and institutional considerations is another mandatory element of institutional sustainability (Spangenberg et al., 2002).

Community engagement and partnership

For interaction between neighbourhood residents and authority, the patterns of interaction can be more contextually relevant and locally responsive adapting to changing circumstances, which also promotes neighbourhood sustainability institutionally (Carmichael et al., 2005; Meek, 2008). Besides, the participation of individuals, groups and organisations affected by the consequences

of specific decisions on all levels of decision-making is another key institutional factor at neighbourhood level. It includes providing access to information for individuals, groups and organisations with a recognised interest in the decisions to be taken, as well as capacity-building for individuals, groups and organisations to enable them to participate in decision making (Spangenberg et al., 2002). The involvement of other social sectors into neighbourhood development is attributed to the responsibility for implementing complex cross-sectoral issues in the sustainable development agenda. It cannot be limited to governments but has to be diffused into wider sectors of society (Bäckstrand, 2006). Thus, partnership between neighbourhood and other societal organization is also crucial in advancing sustainable neighbourhood development.

2.7 Framework Formulation

Many studies proposed frameworks based on systematic theoretical factors or guidelines through empirical study for optimizing target systems. Empirical studies played a crucial role in identifying practical issues and validating critical factors, especially those cases studies based on subjective perception of the factors (Almaiah & Man, 2016; Chukwuere et al., 2016; Hua & Haughton, 2009; Zhuang et al., 2006).

Figure 2.2 illustrates the method of transforming the key sustainability aspects to actual planning criteria, which was applied in this research for constructing the framework. After the literature review and underlying factors identified in Chapter 2, the questionnaire survey was designed based on the selected factors and distributed in the chosen case neighbourhoods. The sustainability performance and associations among sustainability, neighbourhood satisfaction and moving intention were then analysed considering context-specific components. Next the preliminary sustainable neighbourhood planning strategies and principles were proposed and shown to ten Chengdu experts for verification. Lastly, the verified contextual framework for sustainable neighbourhood planning in transitional urban China was finalized for contributing to sustainable neighbourhood development, which is the centre of the figure below.

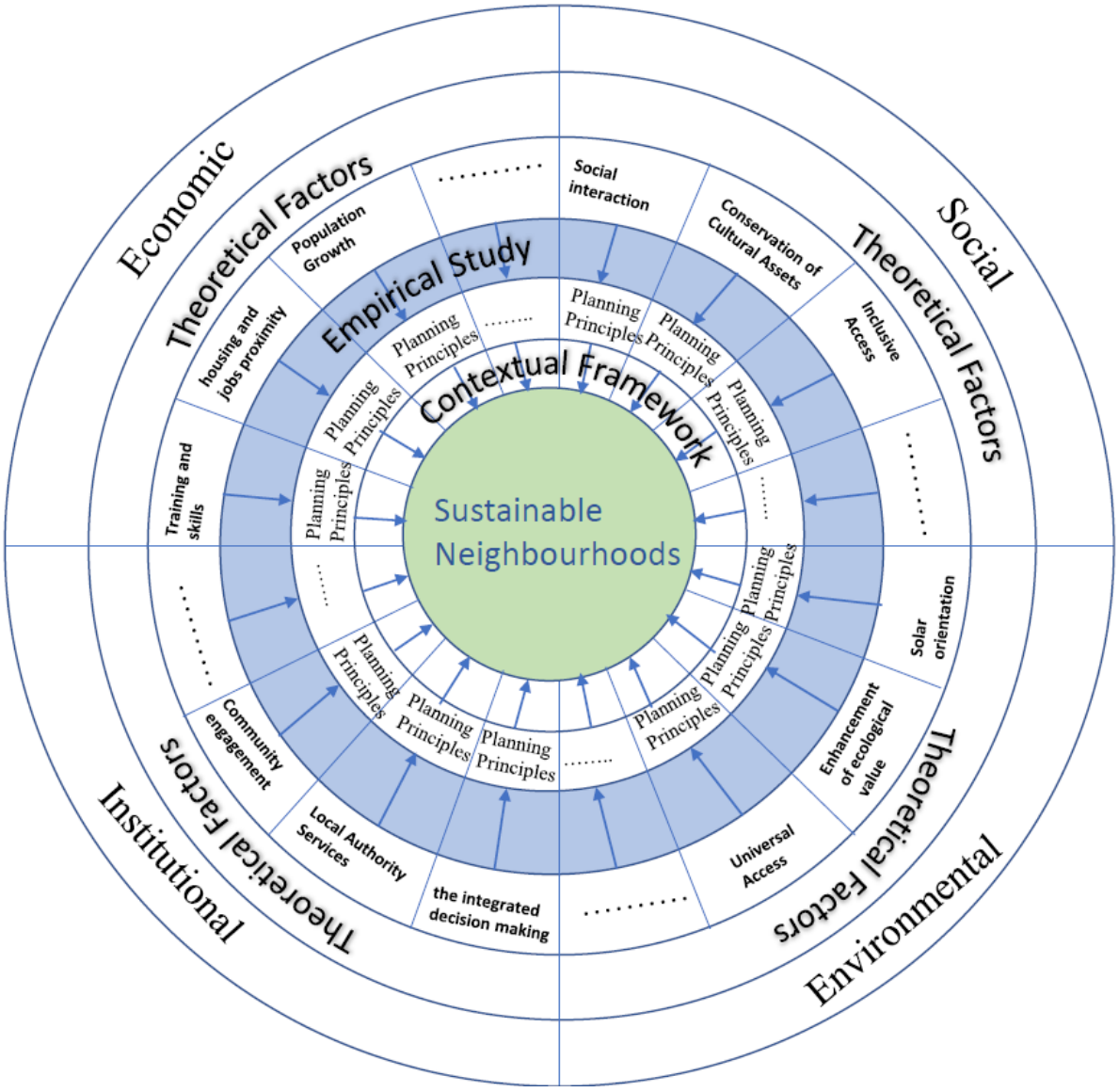


Figure 2. 2 Transformation of sustainability indicators into framework conducive to sustainable neighbourhoods.

2.8 Conceptual Model Investigating the Factors of Sustainable Neighbourhood Planning in Affecting Neighbourhood Satisfaction and Moving Intention through Adopting Contextual Framework

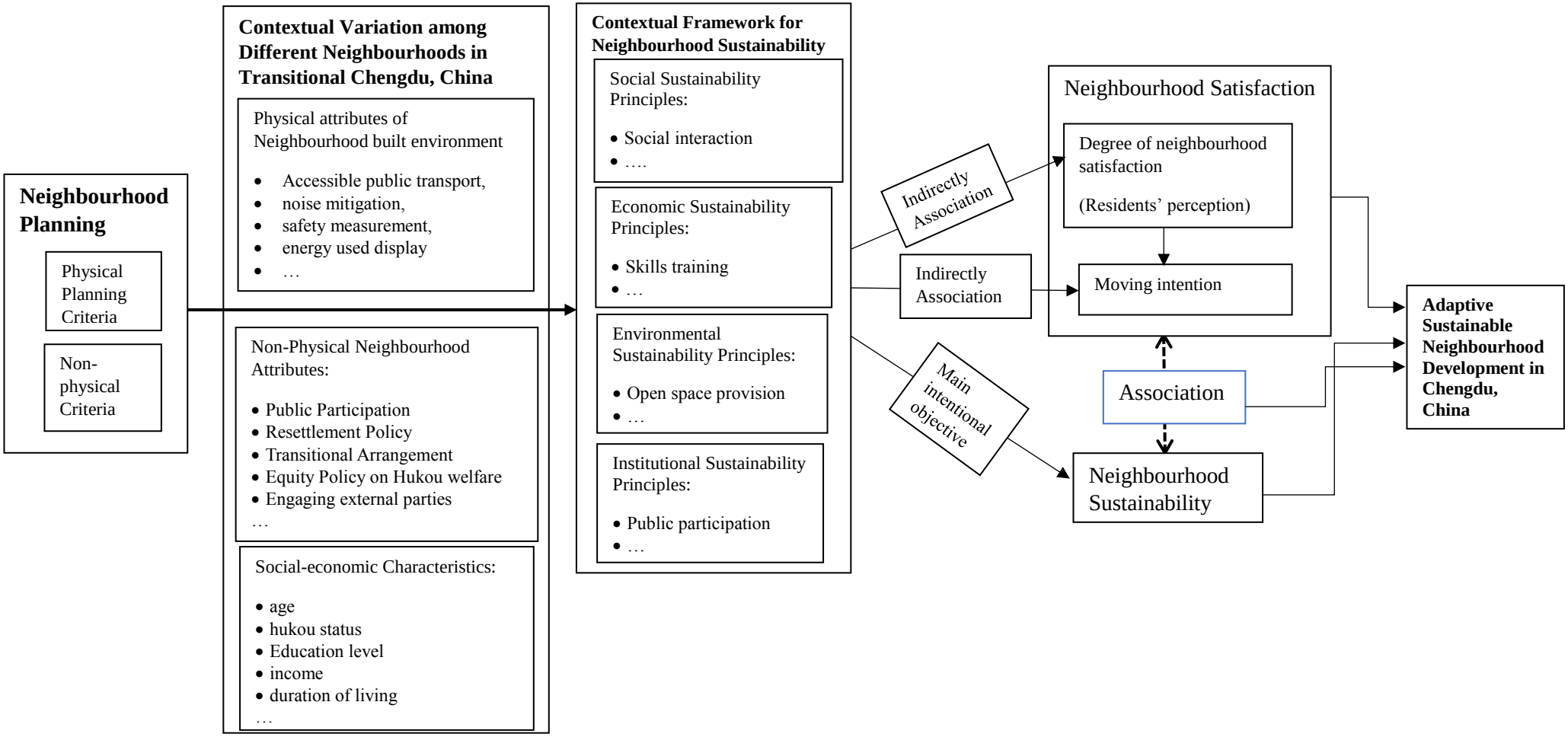


Figure 2. 3 Conceptual Framework for investigating the factors of Sustainable Neighbourhood Planning in affecting Neighbourhood Satisfaction and Moving Intention through Adopting Contextual Framework

Figure 2.3 depicts how neighbourhood planning contributes to adaptive sustainable neighbourhood development with the aid of contextual framework. Given the sustainability principles are worldwide and neighbourhood issues are context-specific, this framework shows the mechanism of adapting universal principles into local context for facilitating sustainable neighbourhood development.

Basically, the content of neighbourhood plan includes physical and non-physical elements, including principles and key planning concept such as inclusive and affordable housing etc. Then the context of the neighbourhood should be analysed and discussed in the planning process. For instance, A neighbourhood is high dense in terms of population or building density or B neighbourhood are largely isolated with surrounding area. Furthermore, based on the context analysis, including residents' perception investigation, the contextual framework of sustainable neighbourhood planning can be identified and proposed. Originally, the main intentional objective of sustainable neighbourhood planning is directly developing sustainable neighbourhood. However, given the indistinguishable relationship between sustainability and liveability, developing sustainable neighbourhood may also affect its liveability. This cannot be neglected if there were significant associations existed between sustainability, liveability as well as moving intention. In other words, the effectiveness of sustainable neighbourhood planning would be doubtful if there are contradictory association existed in between. If there was contradiction, framework should be developed to circumvent the contradicting points. If there were significant associations, corresponding plan or policy should be proposed to leverage the associations. Nevertheless, the effect of sustainable neighbourhood planning on both sustainability and liveability should be holistically considered when developing the contextual framework. Lastly, after including the investigated issues above into the contextual framework, universal principles are hereby adapted into local context. Therefore, the plan made finally fits into the neighbourhood context and can help achieving sustainable neighbourhood development by providing effective solution. This framework rests on these four principles from theories adapted from Campbell et al. (1976); Marans and Rodgers (1975) and Low et al. (2018):

1) The experiences of people are derived from their interactions with the surrounding environment; 2) The subjective experiences of people are different from the objective environment; 3) People

respond to their experiences with the environment; 4) Moving intentions are affected by whether residents are satisfied with their neighbourhood.

2.9 Chapter Summary

This chapter builds a theoretical framework by intensively reviewing the four main NSA tools, as well as related literature. A list of common sustainability factors was shortlisted, from which the content of the questionnaire was developed. It provides an overview of the theoretical background and global context of sustainable neighbourhood planning and assessment. It lays a foundation for the subsequent study in Chapter 4 that identifies what factors shared by other major countries could be possibly applied in to China practice. Deficiencies of current assessment tools were also highlighted as research gaps, which would help formulating sustainable neighbourhood planning and parameters in China. Conceptual model investigating the factors of sustainable neighbourhood planning in affecting neighbourhood satisfaction and moving intention were lastly framed.

Chapter 3 China Context: A Transitional Era for Neighbourhoods

3.1 Introduction

This chapter provides an overall picture of transitional China especially focusing on the neighbourhood level. It reviews the challenges faced by different neighbourhoods and explains China's special character including the Danwei and Hukou systems and their associated problems, current urban planning mechanisms, and major issues concerning planning institutions and the three different types of urban neighbourhoods in China. It also provides the localized social, economic and political context of China, which is very different from other countries. It also highlights the driving force of this research and articulates its significance.

3.2 Background

Due to rapid urbanization, urban neighbourhoods have experienced profound transitions in China. Balancing social, economic environmental and institutional sustainability are major challenges. Previous research has studied the transition of neighbourhoods, but those changes have not been explored in detail across different types of neighbourhoods (F. Wu, 2012). Many studies have been conducted to interpret the transition, the derived phenomenon and to construct a new framework for evaluating and guiding neighbourhood development. With these transitions, both central and local governments in China have begun to advocate for sustainable neighbourhoods by issuing diverse policies and guidelines. This advocacy is in line with international consensus (UN-Habitat, 2016) and is reflected in authoritative reports as part of China's promise to fulfil a global agenda. 'Building Sustainable Urban-Rural Neighbourhoods' practiced by Chengdu City government as a municipal guideline is a case in point. To cultivate a sustainable neighbourhood, a systematic and scientific sustainability evaluation framework is a critical prerequisite for determining a prototype of a sustainable neighbourhood.

Significant social-political transitions and their derived challenges have occurred since the 1980s in China. Under dramatic economic reform and rapid urban transformation, changes in urban residential areas have taken place. The contemporary neighbourhood building is a relatively new concept in China that has been practised for three decades only. But the history of traditional neighbourhood or community development is longer than that since the foundation of New China

in 1949 (X. Fei, 2002). As China transitioned from a planned economy era to a market economy era, neighbourhoods experienced diverse but also unique evolvement, which differentiates the issues in China from other countries. The transformation at neighbourhood level includes increased heterogeneity due to the dissolved danwei (work unit) system, lost social capital in resettled neighbourhoods, and weakened social cohesion in the emergent commodity housing neighbourhoods.

To learn from other countries and avoid the problems they have experienced, identifying contextual variation and how it interacts with sustainability performance is crucial. In fact, the variations in contextual characteristics comprehensively exist among different cities, even different neighbourhoods within the same city. All contextual characteristics can be categorized into two dimensions: the built and natural environment dimension, and the human dimension. These cover different aspects, including physical, operational, socio-economic, environmental and institutional aspects (Eschbach et al., 2004; Komeily & Srinivasan, 2016; Reisig & Parks, 2000). The neighbourhood context is associated with a set of socio-economic indicators.

Researchers have studied the variation of urban context in different countries. However, very few studies have been sustainability-oriented and have systematically reviewed sustainability performance using an empirical study, particularly in China. Sustainability calls for adopting an integrated approach by considering a wide range of factors, as well as their relationships and interdependencies (Komeily & Srinivasan, 2015). Previous studies have argued that measuring actual users' subjective perceptions or awareness of sustainability issues is very important (Bahadure & Kotharkar, 2015; Wynveen, 2015). But the majority of the neighbourhood sustainability assessment tools have been evaluated by experts and very few evaluated sustainability performance based on the residents' subjective perception. To further facilitate the sustainable urban development practice and better develop an adaptive framework of neighbourhood planning in China, identifying the critical contextual variance in perceived sustainability among different neighbourhoods is imperative.

3.3 Neighbourhood Transition and Challenges in Contemporary China

Prior to the late 1970s, land use rights in China were strictly controlled by the central government, and urban development was relatively slow compared with that of Western countries. The latter's urban expansion, which was influenced and generated by the effects of the Industrial Revolution, arguably began in the eighteenth century. The turning point for China, however, occurred in 1978 when national leaders made the strategic decision to 'reform" in what has become known as the "opening up" policy. Thereafter, China's fundamental economic institution gradually transformed from a central-controlled planned system to a market-oriented system. Due to the powerful driving force of economic reform, urban development was unleashed and physical construction activities dramatically boosted, subsequent land market reforms were also enacted. As a result of rapid urbanization, the urban population rose from 17.9% in 1978 to 52.6% in 2012 (UNDP, 2013).

From the community's perspective, W. Ma and Li (2012) argued that the subsequent housing institution reform had two major impacts on the community. Firstly, the community profile was transformed when the government stopped providing housing. As more comprehensive urban development and holistic marketization reform took place, together with the cessation of the danwei system, the provision of public housing to residents ceased after 1998. Thus, residences became a commodity rather than a public good. Since staff no longer relied on the danwei, they began to seek new flats in the market. Secondly, the dissolved danwei system promoted labour mobility. As the inhabitants' mobility between the danwei and other newly built residential areas increased, community heterogeneity was consequently enhanced. Since the 1990s, the component and form of urban living space has gradually changed.

On the government side, the change in the socio-spatial process brought about major challenges to neighbourhood governance. W. Ma and Li (2012) stated that one of the major challenges was the disruption of organizational bases for providing social services. The central government started delegating by handing over increasing functions of public service and welfare delivery to local authorities, meanwhile devolving a part of these responsibilities to the private sector, social organisations and citizens (F. Wu et al., 2006). The question of state control arose since individuals had more options and avenues for social and political participation. The government was concerned with the methods to effectively deliver social services and meanwhile to reconsolidate state control over individuals and society.

3.4 Inhabitants Mobility: Social Culture, Danwei (Work unit) and Hukou Institution

A significant difference between mobility in China and Western countries is internal mobility, since China has traditionally been a country lacking in such mobility. Mobility, especially mass mobility, is not a mainstream concept in the human settlement history of China society development. The free movement of individuals was highly restricted in the Chinese pre-modernization period before twentieth century. The majority of people were bound to the land and their extended families. Economically, mobility was expensive, and culturally, individuals tended to hold tightly to clanship for security and shelter (H.-t. Fei et al., 1992). Individuals were not encouraged to drift, and those who disassociated themselves from their fixed places were considered dangerous exiles, much like 'vagabonds' in Western societies (Cresswell, 2011; C. G. Li, 2005; X. T. Wang, 2007). Culturally, low levels of mobility also bolstered close relationships between individual Chinese and their families and communities and had great impact on their social interactions. From the early 1900s to the 1970s, the scale of mobility inside China was limited because of limited jobs in urban areas, the strong traditional culture of being in one's hometown (He, 2013; Su et al., 2015). Since 1978, often called the Transitional Period, initiated macro reforms in socioeconomic sectors changed every aspect of life.

Another typical characteristic of social institution and residential development that differentiates the China context from other countries is the danwei compound. The danwei system is a historic concept and it refers to the social management system in which the department authority is the core subject in providing social service and organizing social life. For accommodation, a danwei compound is characterized by high-density and mixed land-use pattern. Public housing units were provided by the governmental authorities exclusively to their own employees so that the accommodation arrangement was totally designated by responsible authorities. Most employees live in public housing flats in a danwei compound, and each danwei also provides its residents with comprehensive facilities and services, including housing, medical care, shops, education, and even a post office (Chai, 1996). A danwei compound is thus a relatively self-contained community, organized spatially into distinctive functional areas (e.g. work, social, and recreational activities) where jobs and residences were located close to each other (D. Lu, 2006). Before the 1980s, danwei in urban China served as the basic unit of economic, social, and spatial organization in which economic activity, social life, and political control were integrated (Bjorklund, 1986; Bray, 2005).

Since the 1980s, as a sign of a central-controlled planned economy era, the danwei compound (Work Unit), which was the mainstream of China's local housing system, has been gradually transformed during the institutional reform. Previously, the danwei was a crucial tool used by the state to control society and to distribute resources (Parish & Whyte, 1984; Walder, 1986). From the individual's perspective, residents relied heavily on danwei for political participation and social welfare and security (W. Ma & Li, 2012). Normally, people spent most of their time living and working within this integrated space or danwei and order was maintained by a top-down authoritarian system.

Other than danwei compound, Hukou system is another institutional arrangement employed in Chinese society as a political device of household registration and population mobility control. It was established since 1958 and compulsorily operated like a boundary dichotomizing citizens' identity by rural and urban for dividing the population into rural households and non-rural households; essentially two-tier boundaries of belonging (J. Zhang, 2012). The emergence of the contemporary hukou system has been effective in further restricting movement in the domestic population (Bosker et al., 2012; Fujita & Mori, 2005; Z. Zhao, 2005) together with a 'closed-door' policy that also stopped any international mobility. As one of the most influential institutional systems in socialist China, the Hukou system not only affects various aspects of Chinese people's lives, but also plays an important role in China's economic development and urban governance (K. W. Chan, 2009; F. Wu, 2002). The history of the Hukou system can be categorized into three phases: 1) The birth stage (1949-1958); 2) The restriction stage (1959-1977); and 3) The transformation stage (1978-now). Along with reform and opening-up since 1978, restriction of Hukou on rural-urban migration has been gradually loosened. For instance, rural residents were allowed to work in cities "with self-supplied food grain" in the 1980s (K. W. Chan & Zhang, 1999). The market has been highly influential in dictating an increase in free movement of labor and capital (Solinger, 1985). However, even if population mobility between urban and rural increased, the uneven policy derived from the Hukou system still comprehensively existed in contemporary urban life. For example, migrants without local Hukou status are not qualified to apply for subsidised housing, go to school or even get a pension in the destination city (F. Wang & Liu, 2018). This social phenomenon became a crucial element for interpreting the demographic transition of neighbourhood residents and derived challenges at current stages.

3.5 Chinese Special Characteristics: 'Community building' Policy and the 'Street Office and Resident Committee' System

To cope with the emerging challenges brought about by rapid urbanization, the 'Community Building' policy was launched throughout the nation in the early 1990s (Xia, 2008) and it has been implemented for over 20 years. It acted as a crucial political tool for forming a social institution that has taken over welfare functions previously performed by the danwei. Consequently, the neighbourhood (shequ) is now designated as the basic unit of social, political and administrative organization in urban China. Different types of spatially defined and territorially bounded shequ have been established as a type of city zoning (F. Xu, 2008). The municipal governments have delegated comprehensive functions to shequ and the latter has rapidly developed in structure and function following the Central Government's instruction to 'strengthen grassroots regime construction' (Derleth & Koldyk, 2004). The urban local governance structure has become a multi-layer system consisting of the governments and autonomous organizations as shown in Figure 3.1. The governments include municipal governments at the top, district government in the middle, Street Office at the bottom while the autonomous organization mainly refers to Community Residents' Committee (CRC).

For the ‘shequ’ system itself, it is an autonomous organization and the CRC is the management centre of autonomy. The shequ is responsible for providing almost all the administrative and civil service, including housing, property service, training, religious issue, health insurance, social security and environmental protection etc., to all the involved residents. CRC is generally responsible for the overall development of shequ and it also acts as a conjunctive tunnel through which street office can communicate and interact with shequ residents. Thus, its role of implementing governmental policies at the lowest local level and getting feedback is irreplaceable within the local governance structure. Politically, although shequ is named as an autonomous organization and accountable to the all residents, the operation of CRC was largely affected by the street office, especially financial and human resource issues. Given its comprehensive responsibility and authorities in economic, environmental and social area of shequ activities, CRC should be a crucial and unique subject in neighbourhood planning if sustainable neighbourhood development is expected in China.

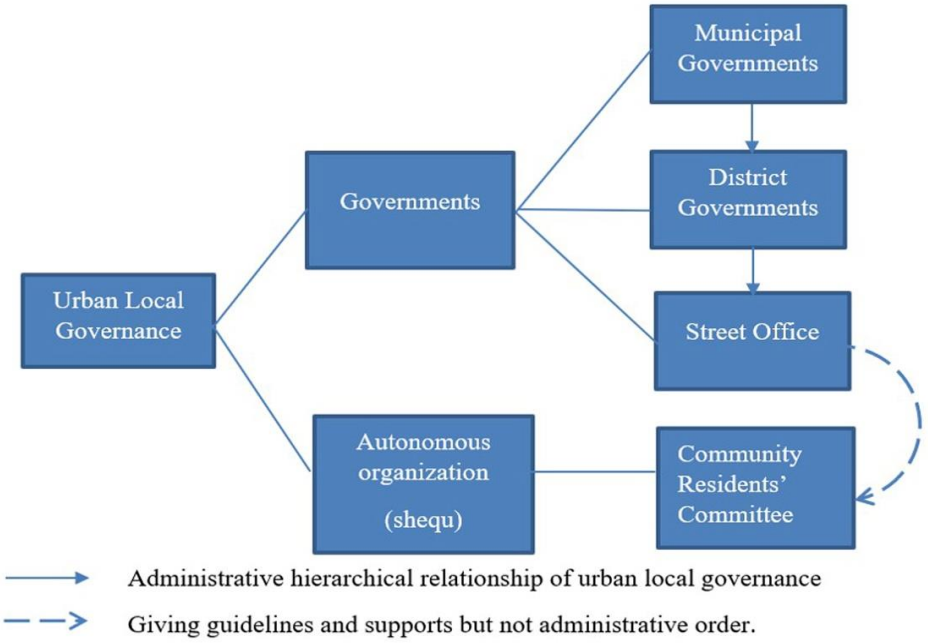


Figure 3. 1 Structure and hierarchy of urban local governance

3.6 The Current Urban Planning Mechanisms in China

There is consensus that urban planning is a critical instrument used by governments to guide urban development and that it is very localized and context-based due to different social-political backgrounds of the countries where urban planning is carried out. Regarding the different historical and political context of China, it was argued that the major neighbourhood planning and assessment framework should not be directly introduced and applied in this large developing country. The traditional urban planning system before 1980s is broken, but the new planning system cannot directly copy the system based on the market economy in Western countries (Gu et al., 2014).

Significant political and economic shifts since 1949 have affected urban planning practice in China. In the 1950s, the principle of 'Production and economy function goes first' was the old guideline of urban planning in the central-planned economy era. This principle had a profound impact on urban planning in China and is a major reason for the present growth-oriented policies throughout China (P. Zhao, 2015). Since then, the two major types of residential unit: work unit (danwei) and self-sufficient communities (juzhuqu), which still accounts for a large proportion of whole residence, emerged as the main elements of the residential area.

The role of urban planning in China has experienced transformation along with the institutional reforming process since the 1980s. The enactment of old City Planning Act in 1989 triggered the development of urban planning legalization in China and stipulated that a city plan should include a city system plan and an urban plan. An urban plan includes master plan and detailed plan and this system is still in effect in the current urban planning system. The Act also clearly stated the responsible authority for preparing the city plan of different level of a city to establish a hierarchy management system of urban planning.

Political power still plays a dominant role during urban planning process in today's China. Some doctrines of imperial and socialist planning are still at play in current planning practices, especially in the formation, authorisation, management and implementation of the urban planning system in China (P. Zhao, 2015). These bureaucratic procedures were attributed to the historical effect of long-term planned economy institution (Gu et al., 2014). Even though the higher efficiency, compared with the West, in land developing were delivered in China, there were still many

problems, such as social injustice, environmental pollution, extravagance and waste derived from rapid urbanization (Gu & Cook, 2012) .

In addition, (Gu et al., 2014) stated that China's urban planning process sometimes suffers from inappropriate incorporation of Western planning theories and concepts that do not fit China's situation. In fact, innovation and theories could also be generated from the China practises in the new era. Meanwhile, the global context of globalization and climate change provide new frameworks and input for urban planning in China. It suggested that making adaptable plans for environmental sustainability and global challenges is feasible to fit the China contemporary context and valuable for contributing to the global solution for sustainable development. Above all, a new trend in urban planning in China is to establish a framework for 'ecology-living-production spaces' (Gu et al., 2014). This laid a substantial foundation and driving force for developing contextual sustainable urban planning conducive to the context of transitional China while coping with global challenges.

3.7 Major Issues Concerning Urban Planning Institution in China

Some major issues have emerged with regard to the current planning system in China. Firstly, most of the planning responses to the emerging challenges from rapid urban development are physical and spatial-oriented but lack substantial social and economic considerations for taking collaborative and societal action. Basically, the planning system in China consists of three major types of statutory plans: the general land use plan, urban master plan, and the national economic and social development plan. F. Wu (2015) categorized the statutory planning system in China into two tiers: the urban master plan and the detailed plan. But there are supplementary plans to support these tiers. For example, preparing urban system plan prior to the preparation of urban master plan. At the lower tier, the detailed development control plan appeared as a zoning type of

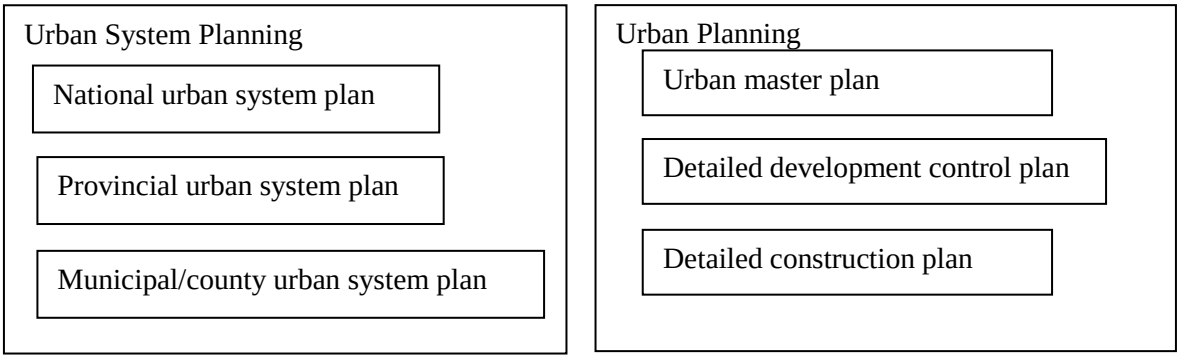


Figure 3. 2 Urban Planning System in China

development framework for land granting and development. The supplementary plans (left) and statutory plans (right) are shown in Figure 3.2 above. All these plans merely focus on construction activities in physical space and are unable to effectively incorporate social and other non-physical planning considerations (Friedmann & Fang, 2011) even though there has been a global general transition in planning practice from physical to participatory and post-modern planning (Taylor, 1998). As a local plan, neighbourhood-level, community-oriented plans are not part of the statutory planning system in China. Thus, all neighbourhood-related development planning practice, except detailed construction plan, are made outside the legal system and less likely to be regulated by law and compulsory regulations.

Secondly, the responsible body for community planning is the Civil Affairs Department (CAD), rather than Planning Department (PD) (Wei; Zhao & Zhao, 2002). The previous 'constructive planning of community service system' and relevant research on communities were initiated by the Civil Affairs Department without the Planning Department's participation. As there are comprehensive differences in responsibilities and authorities between these two departments, different considerations are adopted respectively when they are proposing a planning measurement. Consequently, existing community planning has become policy-oriented and can barely fit into the master plan (L. Huang & Luo, 2014; Nong & Zhou, 2012).

Lastly, while public participation in planning has gained some legal status, how it can be better institutionalized is yet to be explored. Since the enactment of the Urban and Rural Planning Law in 2008, it is legally required that the public be given the opportunity to participate in the process before planning applications are submitted for approval. This shows that public participation has become a legal procedure and part of the urban planning process. However, there is still no specialized law ensuring public participation in China (Sun et al., 2016). Public participation policies cannot be written into the laws without agreement by the central government (Cai, 2009). Enserink and Koppenjan (2007) explained that a cautious strategy was employed by the central government to explore the relationship between governance and public participation in response to numerous protests by landowners and farmers against expropriation, absence of compensation, and preferential treatment of project developers by local politicians. In fact, the lack of specialized

laws and institutions has been criticized, as during the public participation process there is little constructive communication and discussions are usually redundant (M. XU & TAO, 2012).

3.8 The urban neighbourhood types in transitional China

Significant social-political transitions have occurred and their derived challenges have emerged since the 1980s. Particularly, the housing market reform has contributed to the emergence of a more mobile, heterogeneous and economically independent urban population (Bray, 2006). This transition has paralleled rapid urbanization from 20% in 1980 to 56.1% in 2015. Consequently, challenges such as urban sprawl, declining social capital, environmental deterioration, traffic congestion, declining urban culture, land overdevelopment and social inequality, etc., have put neighbourhood sustainability issues in the spotlight (W. Ma & Li, 2012; Shi et al., 2016). This highlights the urgency for advancing neighbourhood sustainability evaluation with the aim of enhancing sustainable development at the neighbourhood level.

Under dramatic economic reforms and rapid urban transformations, urban residential areas have undergone profound transitions in the past few decades. One of the major transitions is the ongoing diminishing of the old 'danwei (work unit)' system, which is a planned economy era institution and a place of employment, which provides working stations as well as living accommodation, accordingly. Commencing in 1998, the allocation of danwei based associated living spaces as welfare-oriented housing was terminated (R. Liu & Wong, 2015). Taking Guangzhou, the third largest metropolis by population in China, as an example, when the danwei retrenched as a producer of housing, its share of built residential area fell from 46.1% in 1998 to 12.1% in 2006 (Flock et al., 2013). But there are still large amounts of danwei neighbourhoods accommodating staff from different organizations, such as the government, research institutes, universities, military and state-owned companies. Concurrently, there is evidence showing the increased adoption of the marketized commodity housing system in China since the central government announced the housing policy in 1979 (Zhou et al., 2016). As a result, the role of the state government in influencing urban residents' social lives has been weakened since the dismantlement of the danwei system (Y. Huang, 2006). Meanwhile, the mobility of urban residents from old traditional neighbourhoods to new commodity housing has increased.

Another transition of residential forms has been the emergence of resettlement neighbourhoods due to rapid urbanization since late 1990s. As urban spaces have rapidly expanded, a large amount of rural land has been acquired for construction usage. Consequently, the original farmers have lost their farmlands and passively became urban citizens. A large number of resettlement neighbourhoods have been built to accommodate the affected 'new urban citizens' (Wanxia Zhao & Zou, 2017). As a result, resettlement neighbourhood comprehensives exist in newly urbanized, especially urban fringe, metropolitan areas. Some scholars argue that resettlement is a kind of involuntary or passive urbanization where the whole procedure is dominated by governments and the opinions of affected residents on critical issues such as relocation destination and neighbourhood planning are not taken into consideration (M. Zhang et al., 2017). There is another pattern of settlement neighbourhood that accommodate landless farmers called 'urban village'. However, as urban villages rarely exist in Chengdu, it is not the focus of this empirical study, although they have been often addressed in other studies focusing on other advanced cities in China (Y. Lin et al., 2012; Y. Liu et al., 2010). Historically, since the reform and transformation mentioned above occurred along different paths through different stages, Chinese cities are currently characterized by the coexistence of different housing types (Breitung, 2014) as shown in figure 3.3 below. Specifically, the types of urban neighbourhoods include: Work-unit or danwei

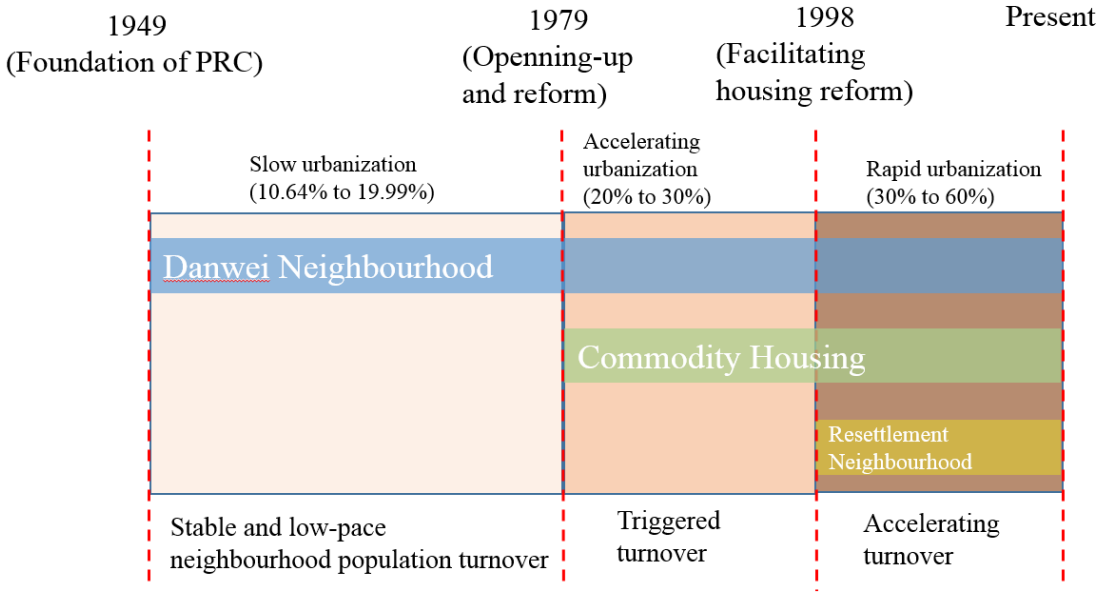


Figure 3. 3 The historic transition and co-existence of three major types of neighbourhoods in China. Source: prepared by the author

compounds, commodity-housing estates and resettlement neighbourhoods (S.-m. Li et al., 2012; Wanxia Zhao & Zou, 2017).

3.9 Chapter Summary

This chapter depicts the overall context in which neighbourhood development had undergone in urban China. It elaborated how different china-character elements contribute to the challenges of neighbourhood governance and planning. Firstly, social culture, danwei and Hukou were introduced for understanding the special characteristics of neighbourhood development from the historical perspective. Secondly, the local governance hierarchy was investigated for ascertaining the relationship between government and neighbourhood and the china-character neighbourhood autonomy status. Thirdly, the current urban planning issues, including role, mechanisms, drawback and trends were elaborated for justifying the advocate of promoting neighbourhood planning from both enrich social considerations and enhancing public participation perspectives. Lastly, the three major types of transitional neighbourhoods were identified as the main research subject of this study. This chapter investigates the national context after reviewing the global background and international evidences and lays a foundation for understanding the cases in Chengdu City which will be detailed in Chapter 4.

Chapter 4 Three Different Cases in Chengdu City, China

4.1 Introduction

After reviewing the overall context of neighbourhood development and urban planning in transitional China, understanding the local context in which the sustainable neighbourhood planning is expected to be delivered and sustainability issues pending to be addressed are important. To investigate the research questions two and three proposed in Chapter 1, an empirical study was adopted, and the relevant critical issues are elaborated in this chapter. Three typical neighbourhoods in Chengdu were selected as the cases for investigation. The reasons why they reflect the transitional situations in urban China is explained.

4.2 Transitional Neighbourhoods in Chengdu

The city of Chengdu was selected for this study. This is not only because of its cultural and environmental representation as a traditional Chinese western metropolis, but also because of its outstanding political and pioneering position in contemporary urban development and its prestigious image as the most liveable city in China. As the capital of Sichuan Province, Chengdu has existed for over four thousand years and has been the political, economic and cultural centre of Sichuan, even of southwest China. Its history as a stable millennia civilization makes Chengdu a useful reference for investigating urban planning and development throughout China's history (Qin, 2015). In 2007, the Central Government launched the national comprehensive reform pilot for coordinated urban-rural development and instigated two pioneering cities, Chengdu and Chongqing, as cities that other cities could learn from (Abramson & Qi, 2011). Chengdu gradually drew nationwide attention as one of the examples of successful implementation (B. Li, 2014). The representative role of Chengdu as an advanced urbanization model in coordinating urban and rural development in China was highlighted by A. Chen and Gao (2011). Regarding population transition as an urbanization process, prior to 1978 when the reform began, urban-rural mobility was strictly limited due to the urban-rural segregation of the Hukou system. The Hukou institution is a household registration system which categorize citizens into urban (non-agricultural) and rural (agricultural) residents and stipulates the associated rights and welfare (Afridi et al., 2015). After the reform and opening-up, the urbanization pace began booming and the Chengdu government was determined to integrate urban and rural development. Thus, it adopted a concentrated urbanization strategy. The metropolitan area has been constantly expanding, especially in the past

two decades with greater population mobility to the central city of Chengdu. The proportion of population in different tiers of the Chengdu administrative area is shown in Table 4.1 below, which indicates the tendency of centralization of population from 2000 to 2007.

Table 4. 1 Percentage population distribution in the three tiers of Chengdu

(Source: (A. Chen & Gao, 2011)

Three tiers of Chengdu	**2000**	**2003**	**2007**
Metropolis (first tier)	23.4%	25.8%	27.4%
Peripheries (second tier)	31.2%	30.6%	30.7%
Remote counties and towns (third tier)	45.4%	43.6%	41.9%

Figure 4. 1 Satellite maps of the Chengdu metropolitan area on 1996/12/31, 2005/12/31, 2016/12/31

(Source: Google Earth)

On the issue of neighbourhood development, the Chengdu municipal government initiated the 'Building Sustainable Urban-Rural Neighbourhoods' project to optimize neighbourhood development and governance and address local issues by utilizing local resources. The neighbourhood committee and social institution jointly applied for the project funding, which was less than 100,000 RMB, from the Municipal Civil Affairs Department. The joint project team would be given one year to promote the sustainable neighbourhood development, especially cultivate social capital, and promote public participation with the aid of allocated funding. Chengdu was the first and only metropolis in China where the project was undertaken. Since 2016, the Chengdu municipal government has invested around 20 million RMB to support more than 200 neighbourhoods in fostering sustainable neighbourhoods (Y. Wu, 2018). Generally, although it was regarded as one of the most liveable cities in China, population centralization and rapid

urbanization still brought unprecedented sustainability challenges to Chengdu but the municipal governments had already taken actions to cope with it.

Yuling, Xinyue, and Jinyang were selected from all the neighbourhoods in Chengdu based on both theoretical and practical criteria. Given the three major types of transitional neighbourhoods stated above, three major criteria were adopted for selecting the case study neighbourhoods for this research:

- They should belong to the three different and representative types of transitional neighbourhoods in China.
- They should be one of the neighbourhoods where the pilot project 'Building Sustainable Urban-Rural Neighbourhoods' was implemented or is being practised.
- Their spatial scale should be roughly equivalent to a circle area with a radius of 400 meters.

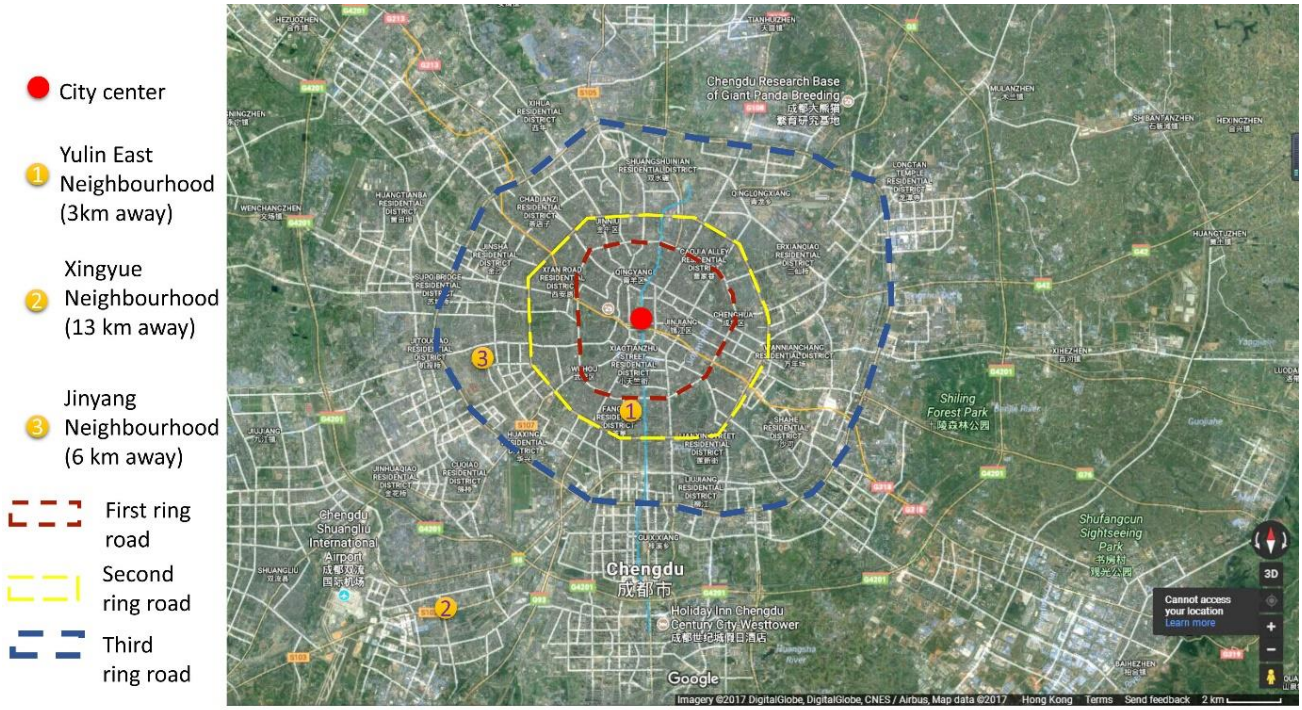


Figure 4. 2 Location of the three neighbourhoods within Chengdu

(Source: Google Earth)

After reviewing the approximate 100 neighbourhoods in Chengdu, Yulin, Xinyue, and Jinyang were selected for the subsequent empirical study of residents' perception of sustainability issues. They are typical neighbourhoods but vary in their periods of construction, size and location.

The physical transition of the Yulin neighbourhood in the past two decades has not been as significant as the other two. Its urban form is almost the same as it was in 2000. Xingyue, as a resettlement type neighbourhood, was built on a land slot that was previously farmland and is now surrounded by two arterial roads and nearby parks. Jinyang also experienced a huge transition from its origin as half farmland and half small clusters of traditional low-rise buildings to a mixed cluster of commodity housing properties. Figure 4.3 illustrates the physical changes that have occurred in the three neighbourhoods in the past two decades.

4.3 Case of danwei traditional neighbourhood: Yulin

Figure 4. 3 Captured satellite map of Yulin in 2000, 2009, 2018

(Source: Google Earth)

The Yulin neighbourhood is located in the downtown district of Wuhou between 1st ring road and 2nd ring road in southern Chengdu. It covers an area of 45 hectares and consists of 11,027 inhabitants. The origin of Yulin dates back to the 1980s when the first danwei (governmental department or state-owned institution) started to utilize the designated land slot for accommodating its employees. There was only a master residential plan in the 1980s when this neighbourhood was started being built and no detailed plan has ever been made. The parcel division of this planning area was gradually made when danwei was allocated some piece of land for accommodating their staff since then. After that, more and more danwei gradually moved into this neighbourhood and the different danwei yards constituted the whole Yulin neighbourhood as it is today. However, it was not until 2001 that the Neighbourhood Residents Committee was established and started governing the neighbourhood. Now as a prestigious traditional neighbourhood, Yulin encompasses 14 danwei and 51 yards where employees from different danwei and their families live.

As danwei staff turned to be property owners along with the institutional reform, old danwei units in Yulin have been gradually sold to external buyers so that the demographic structure has become heterogeneous. For the land use intensity, the current plot ratio is 1:4 for the Yulin neighbourhood.

Figure 4. 4 Birds-eye view 3D map of Yulin Neighbourhood (inside red dashed line)

(Source: Author's edition based on the map of research team member's).

One third of the neighbourhood population are tenants while two thirds are property owners. For internal social interaction, the old inhabitants and new moved-in inhabitants are physically living together but socially separated (Expert interview with CRC director). Thus, most of the internal social interaction occurs among old residents who share a common identity or similar background. It was revealed in a previous study that due to the increasing migrants number, the social inclusion between local and non-local residents is a challenge (W. Li et al., 2015). For external social interaction, because of Yulin's dense street grid, residential clusters are mixed up with the business areas, which provide many social spaces conducive to interaction between internal residents and external visitors. Additionally, the opening of modern consumption and service spaces, such as coffee shops and fashion stores has attracted a lot of young consumers and brought new wave of business development to the neighbourhood in the past decade. The diversified and vibrant lifestyle makes Yulin a cultural icon of Chengdu.

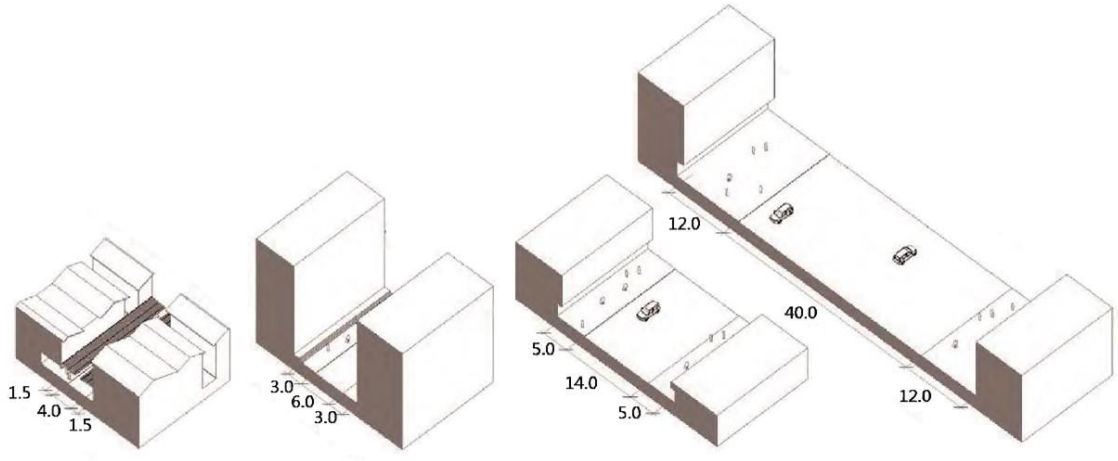


Figure 4. 5 From left to right: Yulin No.1 lane, Yulin East Street, Nijiaqiao Road, Renmin Southern boulevard.

Notes: the number in the middle is the width of street while the ones on both sides are the width of pedestrian space (Source: Jian and Zhang , unpublished working paper).

Development of the Yulin neighbourhood is organic and not purely a government-led, top-down project. The biggest advantage compared to other surrounding neighbourhoods, is the transport infrastructure. It is a typical small-street grid area, as shown in Figure 4.5, with a four-layer street hierarchy (arterial streets, secondary streets, tertiary streets, and residential streets or lanes) providing the benefit of making the neighbourhood pedestrian-friendly and easy to explore. The ground floors of the buildings along the grid-roads include banks, hairdressers, fruit markets etc., which enhance the residents' accessibility to the neighbourhood amenities, as shown in Figure 4.6. The hierarchical road system efficiently connects to the other parts of the city and laid the foundation for fostering a mature neighbourhood with convenient trip mode and diverse street life. Some sustainability challenges faced by Yulin were mentioned in the expert interview, including

decaying cultural and sports facilities, uneven distribution of public open space, and deficient medical care.

Figure 4. 6 The Business stores at the ground floor of buildings along the streets of Yulin

(Source: Taken by the author)

4.4 Case of resettlement neighbourhood: Xingyue

Figure 4. 7 Captured satellite map of Xingyue in 2000, 2009, 2018

(Source: Google Earth)

Xingyue neighbourhood's location is different from the other two, which are in Chengdu's downtown area. The Xingyue neighbourhood is located in a suburban area near the Chengdu Shuangliu International Airport. Although located in a suburban area, the Xingyue neighbourhood still provides amenities for its inhabitants through its facilities and its shopping street, called Yuexing Street, within the neighbourhood. Kiosks, a centre for the elderly, fitness courts, chess playing rooms, barber shops, etc. are located within the living area. Outside the area, a wide range of shops and services, including medical facilities, restaurants, banks, Internet cafés and kindergartens are provided on two 400m long shopping streets, along with the living areas highly accessible to residents. It is a typical resettlement neighbourhood constructed for accommodating relocated residents after large-scale land acquisition or urban renewal. Xingyue covers 39 hectares

and accommodates over 3,000 inhabitants. Prior to urban renewal project, there were three different villages involved with the current studied area, including Wuduolian, Yue'er, and Sisheng. At that time, the total area of the three villages was 3.1 square kilometres. The total number of affected residents was approximately 5,000. The majority of them chose to stay and wait for moving back to the original living place and only very few of them chose to move away when they were shown the resettlement policy. The residents moved back to resettle in Xingyue by different phases. Phase 1 was started in 2011, Phase 2 was started in 2012 and Phase 3 was started in 2014. For land use intensity, the current plot ratio is 2:5. For the resettlement spatial plan, its planning standards were made at a very early time and were lower than the ordinary urban residential planning standards. Recently, the planning department is considering improving the planning standards, such as amenities provision, the number of parking lots etc., for improving the quality of the resident's living environment.

According to the archives and interviews with old residents, the resettlement policy was shown as follows: the normal standard of housing compensation per capita was 60 square meters per person. If the affected property owner were single, the standard for him or her would be improved to 120 square meters per person considering their future family demand. The farmland compensation was paid based on the actual number of living inhabitants of the family, which owned the farmland. The money was calculated by dividing the total area by the number of actual inhabitants. The transition duration of urban renewal lasted four years from 2007 to 2011. During the transitional period, each affected resident was allocated a monthly stipend of 300 RMB and the amount of money was adjusted based on the Consumer Price Index at the time.

The compensation policy was fixed and standardized and no other alternatives were available to affected residents. Another benefit obtained by residents was the Hukou transferring from rural Hukou to urban. As discussed in Chapter 3, the residents can enjoy all the fringe benefits as an urban citizen, like medical insurance, social securities and education allowance etc. This transition was a significant change to residential lives in this area and the start of a brand-new lifestyle. Currently, some residents are expressing concerns over their right to sell their new resettled flat in the housing market. As regulated by relevant policy, the residents have the right to permanently use the new flat but were not provided the property ownership certificate. Thus, the compensated

flat cannot be freely sold in the housing market, they are however allowed to rent the flat out to tenants in the rental market.

For the job-housing situation after resettlement, most of the working population of the neighbourhood work in the nearby logistics and industrial park or the aviation industry. There is a monthly job recruitment talk organized within the neighbourhood calling for more workers. It is because of the neighbourhood's accessibility to many working opportunities that many employees chose to rent a flat in Xingyue so that the number of tenants has been constantly increasing in the past seven years; tenants now account for roughly half of the total neighbourhood population.

Figure 4. 8 The Parking lots, waste management and sport amenities in Xingyue

(Source: Taken by the author)

Although Xingyue is a relatively new neighbourhood it faces some challenges, including inadequate parking lots, security management, and inefficient communication between residents and neighbourhood management committees. This is partly because the planning standard of amenities, facilities or open space for resettlement neighbourhood was lower than the average standard adopted in urban area. Thus, as the number of car users increased, the number of parking lots became deficient so uncontrolled parking occurred blocking pedestrian space, as shown in Figure 4.8. The waste management is also too basic to mitigate its harm to the neighbourhood air quality and sanitation.

4.5 Case of commodity housing neighbourhood: Jinyang

The Jinyang neighbourhood is located in western Chengdu along Jinyang Avenue, which is an arterial road connecting the 2nd ring road and the 3rd ring road. It covers an area of 26 hectares and accommodates 9,794 inhabitants. It is a typical high dense commodity-housing neighbourhood. The ground floor shops are also diverse and provide a wide range of commodities and services. It was one of the earliest projects developed by private property developers in Chengdu. Most of the

commodity-housing estates are gated communities built after 2000, which differ from the other two neighbourhoods. The four main housing estates within the selected neighbourhood area include Club Garden (built 2002), Jinlan Yuan (built 2015), Ruitai Jincheng (built 2007) and Xijun Xianglin (built 2006). For the land use intensity, the plot ratio ranges from 3:3 to 4:1, which is the highest among the three neighbourhoods.

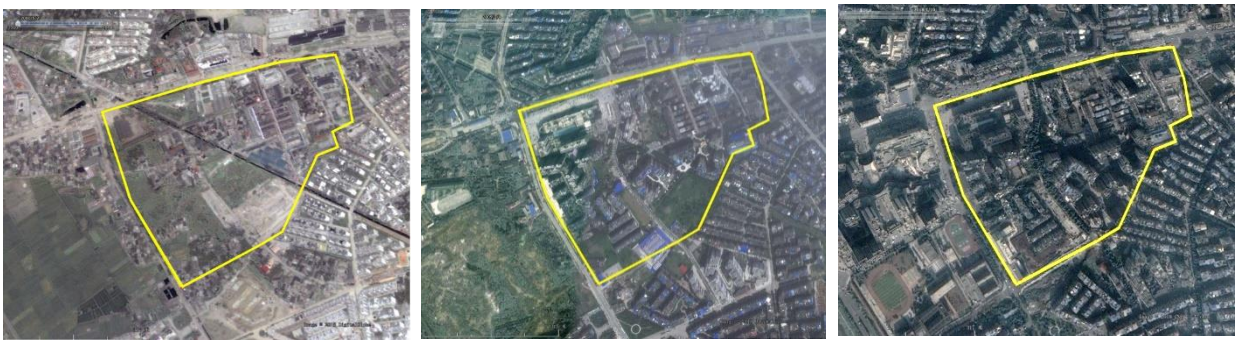


Figure 4. 9 Captured satellite map of Jinyang in 2000, 2009, 2018

(Source: Google Earth)

The figure above shows Jinyang neighbourhood's evolvement over the past two decades. It was originally an area of half farmland and half mixed buildings in 2000 and now in 2018 it is highly developed densely populated urban area. The figure also illustrates that the transition of Jinyang is a part of the urbanization of the greater area in the past two decades. Diverse urban infrastructure, including banks, shopping centres, schools, and sports amenities as shown in Figure 4.10 have been gradually added over the past two decades to satisfy the demands of an ever-increasing number of residents. The nearest metro station-longzhuyan station is 1000 meters away from the neighbourhood centre point.

Figure 4. 10 Photos of Jinyang neighbourhood infrastructure

(Source: Taken by author, October 2017)

4.6 Chapter Summary

This chapter articulated the comprehensive context of three different neighbourhoods in Chengdu, China. It laid the foundation for conducting in-depth analysis on the sustainability and residential satisfaction of these representative neighbourhoods. A previous study found that there were only small variations in perceptions of residential satisfaction among residents living in different neighbourhoods in China (Cao & Wang, 2016) but there are no studies that have arrived at finding regarding variations in residents' perception of sustainability performance. The chapter therefore compares three selected neighbourhoods to ascertain their contextual variance as part of the wider study investigating the association between sustainability and satisfaction. But how about the variation in sustainability performance? This chapter conclude by recapping the research questions in Chapter 1.4: To what extent do people's subjective perceptions of sustainability issues differ from each other between different contextual neighbour hoods? Three selected cases were compared to ascertain the contextual variance. Then, a total of 510 designed questionnaires aims to exposure the similarities and variations among the sustainability performance of and investigate the association between sustainability and satisfaction in the three neighbourhoods. Corresponding results will be given in the chapter 7.

Chapter 5 Methodology

5.1 Introduction

This chapter describes the overall methodology of this research. Triangulation was adopted for the research since it has been demonstrated to be more precise by revealing complementarity, convergence and dissonance among the findings (Erzberger & Prein, 1997). Both qualitative and quantitative methods are employed and integrated to cross-verify the results as well as build upon the results of others. The chapter also elaborates upon the specific methods, including data collection and analysis methods. Finally, the proposed framework is verified.

5.2 Overview of Research Methodology

Research methodology is "a way to systematically solve the research problem" (Kothari, 2004). Research methods and styles are not usually exclusive to specific research type (Fellows & Liu, 2015). Two basic research approaches include qualitative and quantitative approaches. The difference mainly focuses on the data collection and analysis but does not lie in the investigation of theory and literature (Fellows & Liu, 2015).

The word quantitative generally refers to the data generation in the quantitative form, which could be analysed through a rigorous quantitative manner. Kothari (2004) categorized the quantitative approach into inferential, experimental, and simulation approaches. Traditional analysing quantitative data are language-based, descriptive or interpretive, and theory building (Tesch, 1990). In comparison, qualitative research involves a subjective assessment of attitudes, opinions, and behaviours (Kothari, 2004). This approach aims to capture insights and to understand people's perceptions of individuals, groups, and "the world" (Fellows & Liu, 2015).

Table 5. 1 Comparison between qualitative and quantitative approach

(Steckler et al., 1992)

Qualitative	**Quantitative**
Inductive	Deductive
Discovery and process	Verification and outcome oriented
Measurement tends to be subjective	Measurement tends to be objective
Valid	Reliable

Self as instrument (the evaluator is close to the data)	Technology as instrument (the evaluator is removed from the data)
Ungeneralizable The insider's perspective Case oriented	Generalizable The outsider's perspective Population oriented

It is widely admitted that both qualitative and quantitative approach have their own strengths and weaknesses. As indicated in Table 5.1, the strengths of quantitative methods are that they produce factual, reliable outcome data that are usually generalizable to some larger population. The strengths of qualitative methods are that they generate rich, detailed, valid process data that usually leave the study participants' perspectives intact. Qualitative methods also provide contextual understanding of health behaviour and program results. Thus, the integration of qualitative and quantitative approach is suggested by many social scientists (J. K. Jacobs et al., 1999; Morgan, 2013). There are different methods to integrate these two approaches in terms of sequence of each and the weighting allocated to each before drawing the conclusion (Steckler et al., 1992). One common method is called triangulation that each approach is used equally to cross-verify the study findings. Qualitative and quantitative approaches are applied to reduce the disadvantages of each approach and to improve their advantages (Fellows & Liu, 2015).

In this study, qualitative research was used to capture the sustainability challenges, institutional barriers, underlying factors and verify the proposed framework. It can obtain people's perspectives since this study aimed to promote sustainable neighbourhood development that closely relates to residents' daily life and participation. Quantitative assessment and evaluation are imperative for investigating the corresponding sustainability performance and association among sustainability, moving intention and satisfaction degree in three different cases. Thus, integrated method of triangulation was adopted here to achieve the research objective.

5.3 Research Process

Following the general methodology of triangulation, a range of required actions or steps were designed to effectively conduct the research, including the desired order of these steps (Kothari,

2004). After defining the problems, research questions, relevant concepts, theories, previous research finding, related documents were reviewed by desktop research. The conceptual framework was proposed based on the results of literature review. Case study and expert interviews were the main methods adopted to propose the contextual framework for sustainable neighbourhood planning. Two rounds of expert interview were adopted to identify the institutional barriers hindering neighbourhood-planning development and verify the formulated questionnaires respectively. Three typical and different transitional neighbourhoods were investigated for collecting first-hand data in the form of questionnaire survey. Various data analysis methods, including logistical regression modelling, were adopted to analyse the collected data. The proposed framework based on the analysed results was verified by ten experts who were from four different sectors as a necessary part of triangulation. The models were then modified by considering experts' comments and finalized for providing corresponding findings and policy implications. The data collection and analysis methods relating to each research objective are shown in Table 5.2 below.

Table 5. 2 Research objectives and the corresponding methods

	Data Collection Methods							Data Analysis	
Research Objectives	Extensive literature review	Questionnaire survey	Expert interviews	Focus groups	Pilot study	Case Studies	Expert verification	Logistic Regression Modelling	Mean score ranking + Normalization
To identify the sustainable neighbourhood planning theory and examine the common characteristics shared by neighbourhood planning in widely-practiced countries/region	√		√						
To evaluate the barriers and opportunities of delivering neighbourhood planning in Chinese cities	√		√			√			
To ascertain the underlying factors in the neighbourhood (community) planning which would facilitate sustainable community development in Chinese cities	√	√	√	√	√	√	√	√	√

To construct a theoretical framework for delivering sustainable neighbourhood planning in Chinese cities	√		√						
To develop an operational mechanism of sustainable neighbourhood planning within the China's local governance system	√		√	√			√		
Notes	To build a theoretical base for the research	To collecting information about a population of interest	To verify the research findings/ models	To adjust, optimize and improve the framework		To verify the proposed framework	To record the objective performance or fact	To extract the principle components	Appropriate for testing the criticality/significance of factors

5.3.1 Literature Review

This study began with an extensive review of professional journals, conference papers, books, newspapers, governmental reports, Internet resources and local publications to analyse the theoretical background of local sustainability and neighbourhood planning. In addition, the literature review provided information that helped compare and identify common characteristics of neighbourhood planning in four different countries/region, namely the UK, the US, Canada and Taiwan. The reason for selecting these four countries is that the UK, the US and Canada are pioneers in successfully and comprehensively practicing neighbourhood planning, while Taiwan is geographically and culturally close to China and nationwide community building movements have been successful there.

5.3.2 Case Study

Case study is a common and effective method to link abstract research or theory with concrete practice by reviewing the perceptions or intuitions of the respondents with the elements proposed from the sustainable neighbourhood planning framework. It is also defined as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clear; and in which multiple sources of evidence are used" (Yin, 1984). The following three features can be categorized from the definition: (1) the approach is context-based, (2) contextual conditions are not specific, and (3) the case study method is always combined with other methods because it can use different data sources collected by qualitative and quantitative methods. As this research is contextual-related, case study approach facilitates the investigation of the phenomenon within a certain context and provide an opportunity to explore particular conditions of a phenomenon (J. Bell, 2014).

Case study was adopted for this research to: 1) investigate the sustainability performances of and the association between sustainability and satisfaction in different neighbourhoods; and 2) verify the applicability of the proposed theoretical framework of sustainable neighbourhood planning in China. Subsequent investigation and adjustment of the framework may be made based on the results and findings of this evidence-based study before extensively applying the optimized framework to a wider area in the future.

5.3.2.1 Study Area

Chinese cities are experiencing significant transitions under rapid urbanization and considerable different interests in neighbourhood development. As a typical metropolis in China, Chengdu is a case in point. The city of Chengdu was selected for this study because of 1) its cultural and environmental representation as a traditional Chinese western metropolis; 2) its outstanding political and pioneering position in contemporary urban development 3) and its prestigious image as the 'most liveable city in China'. It encompasses traditional danwei, resettlement housing, and commodity housing neighbourhoods to a large extent. Thus, selected samples are from these three types that exhibit a wide range of the residents' characteristics, as well as issues relating to sustainability and neighbourhood life satisfaction.

5.3.2.2 Case Selection

These selected neighbourhoods are three of one hundred neighbourhoods that received municipal funding to practise sustainable neighbourhood building as pilot projects in Chengdu. Generalizability of case studies can be increased by the strategic selection of cases (Ragin, 1992; Rosch, 1978). It is true that purposive methods cannot entirely overcome the inherent unreliability of generalizing from small numbers of samples, but they can nonetheless make an important contribution to the inferential process by enabling researchers to choose the most appropriate cases for a given research strategy, which may be either quantitative or qualitative.

Thus, this study selected the typical and diverse cases to reflect the general trend of transitional neighbourhoods in Chengdu, China. Typical neighbourhood representing danwei, commodity housing and resettlement neighbourhood should be selected to reflect the major issues of transitional neighbourhoods throughout China. Diverse cases were selected in this study because they can illuminate the full range of variation among the independent variables and the dependent variables (Seawright & Gerring, 2008). This is consistent with the major research objective that investigates the association among wide range of sustainability factors, neighbourhood satisfaction and moving intention.

Specifically, three major criteria were adopted for selecting the neighbourhood cases for this research:

1) They should belong to the three different representative types of transitional neighbourhoods in China: Traditional Danwei (work-unit), resettlement neighbourhood and commodity housing (Yushu Zhu et al., 2012); 2) They should be one of the neighbourhoods that received municipal funding to practise 'sustainable neighbourhood building' as pilot projects in Chengdu ; 3) Their spatial scale should be roughly equivalent to a circle area with a radius of 400 meters, which is a 5 minute walking distance (Yigitcanlar et al., 2007).

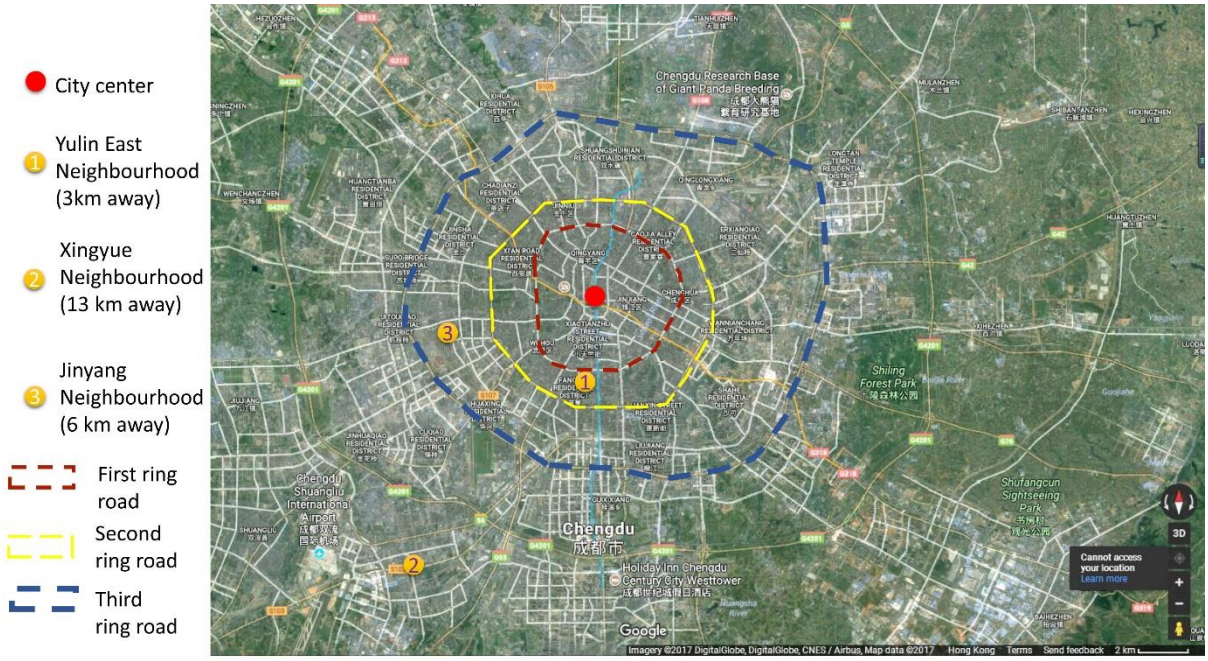


Figure 5. 1 Location of the three neighbourhoods within Chengdu

(Source: author's edition based on Google Earth map)

5.3.3 Expert Interview

An expert, according to Meuser and Nagel (2010), is the person: 1) who is responsible for the development, implementation or control of solutions/strategies/policies; and 2) who has privileged access to information about groups of persons or decision processes.

The knowledge obtained from expert interviews can be categorized into three dimensions: 1) Technical knowledge, including very specific knowledge in the field and details on operations,

laws, etc. influencing the field; 2) Process knowledge, including information on routines, specific interactions, and processes that the expert is directly involved in; 3) Explanatory knowledge, including subjective interpretations of relevance, rules, beliefs, ideas and ideologies.

Different groups of experts who own different background and solid experience were invited for three rounds of expert interviews according to relevant research objectives. Expert verification was adopted as one of the aims of the three series of interviews. Firstly, Interview 1 was utilized to verify the identified barriers hindering neighbourhood planning in China by soliciting their comments on each of the barriers. Secondly, Interview 2 was adopted to improve the clarity, relevance and representation of the proposed questions in the survey. Lastly, interview 3 were invited to verify the proposed framework for sustainable neighbourhood planning and help explore how this framework can be optimized for adoption and operation within present local planning and governance systems.

Firstly, a panel of nine experts was interviewed between February 2016 and September 2016 to discuss the relevance of common worldwide neighbourhood planning characteristics in the context of China and to identify possible obstacles revealed in the case study that may hinder the development of neighbourhood planning in China. The experts chosen were academics, professionals, governors and an NGO representative who have at least fifteen years of working experience in the field of urban planning, community governance and sustainable development in China. A profile of each of the experts in the panel is given in Table 5.3. During the interviews, the researcher asked the following questions:

• What are the major problems facing neighbourhood planning development in terms of social, economic and environmental aspects?

• Do you think neighbourhood planning will emerge in China? Why? What are the major differences between neighbourhood planning in China and in Western countries?

• To what extent do you agree that the identified barriers may hinder neighbourhood-planning development in China?

• How do you respond to the argument that 'public participation in China will be absolutely different from that in the West'? What can the process of public participation in neighbourhood planning learn from the Western experience?

Table 5.3 Profile of the experts in Interview 1

Expert	Name	Field of expertise	Affiliation
1	Mr AA	Civil Affairs and Community Governance	Senior Governor, District Government, Shenzhen, China.
2	Dr BB	Urban and Community Planning	Professor, The University of XX, Guangzhou, China.
3	Ms CC	Urban Planning and Design	Senior Planner, a professional urban planning and design Institute, Guangzhou, China.
4	Dr DD	Open Space Management and Policy	Professor, The University of YY, UK.
5	Dr EE	Planning Methodology and Technology	Senior Researcher, The University of ZZ, Shanghai, China.
6	Ms FF	Urban Renewal and Public Participation	Project Manager, a renowned NGO, Shenzhen, China.
7	Dr GG	Green Technology and Environmental Regulation	Professor, The University of UU, Beijing, China.
8	Dr HH	Elderly Friendly Community	Director of A professional planning and design institute, Shanghai, China.

9	Dr II	Neighbourhood and Participatory Planning	Professor, The University of VV, Guangzhou, China.

Secondly, in September and October 2017, eight experts with diverse domain and background were invited to verify the clarity, relevance and representation of the proposed questions in the survey. They were also asked to review the neighbourhood development of Xingyue (XY), Yulin (YL) and Jinyang (JY) from the four sustainability-pillar perspectives. The profiles of each expert in Interview 2 are shown in Table 5.4 below.

Table 5. 4 Profile of the experts in Interview 2

Expert	Name	Field of Expertise	Affiliation
1	Mr. AA	Sustainable neighbourhood building project	School of Urban Planning and Architecture, XX University, Chengdu, Sichuan, China
2	Mrs. BB	Neighbourhood affairs	Residential Committee, Xingyue Neighbourhood, Chengdu, Sichuan, China
3	Mr. CC	Neighbourhood development and governance	Senior Manager, Xingyue Neighbourhood, Chengdu, China
4	Mrs. DD	Social institution and community affairs	Senior Manager, Sichuan Guanghua Centre for Social Service, Chengdu, Sichuan, China
5	Mrs. EE	Neighbourhood development and community sense	Chengdu Harmony Community Development Association.
6	Mrs. FF	Neighbourhood development and governance	Senior Manager, Yulin, Neighbourhood, Chengdu, China

7	Prof. GG	Urban planning and neighbourhood planning	Professor, College of Architecture and Environment, Sichuan University, Sichuan, China.
8	Prof. HH	Sociology and community development policy	Senior Manager, Sichuan Academy of Social Science, Sichuan, China.

Lastly, in September 2018 the 10 experts in Table 5. 5 below were interviewed for validating the proposed framework in Chapter 8 by seeking their comments and suggestions. The ten experts were approached by snowballing method which is commonly used for finding suitable interviewees (Miles et al., 2013). Snowball method can be used to reach hard-to-reach populations. Each involved expert was asked to suggest another expert who they may know could offer more information regarding the study. Critiques and comments were consolidated and the recommendations were refined as necessary following the verification process.

Table 5.5 Profile of experts in Interview 3

Number	**Name**	**Expert Type**	**Occupation**	**Affiliation**	**Expertise**	**Years of Expertise**
1	Mr HB	Practitioner	senior planner	Senior Director of Urban Planning department, Cendes Corporate	Urban Planning Practice	20
2	Dr GZ	Academic	Associate professor	Sichuan University	Housing study	15
3	Prof LL	Practitioner	Senior Planner	Southwest Jiaotong University.		20
4	Mrs GG	Local Staff	Director	Director of Residential Committee of Yulin Neighbourhood	neighbourhood governance	10
5	MR DR	governor	senior governor	Ex-deputy director of district Urban Planning Bureau, Chengdu	urban planning regulation	15
6	DR YY	Practitioner	Community planner	Project Investigator of Chengdu Neighbourhood Development	Urban and Community Planning	15

				Planning Guideline (2018-2030). School of Architecture and Urban Planning, Tongji University.		
7	MRS CF	Residents	Community centre manager	Director of Elderly centre, Xingyue Neighbourhood	Neighbourhood Governance	24
8	MR LC	Residents	Residential representative	Residential Representative	Neighbourhood Governance	5
9	DR CC	Practitioner	Assistant professor	School of Architecture and Urban Planning, Tongji University.	Suburban Urban planning	10
10	MR RR	NGO	Project manager	Assistant Director of Aiyouxi Corporate, Chengdu	Community Building and Neighbourhood Governance	10

5.3.4 Questionnaire Survey

5.3.4.1 Purpose and Use of Questionnaire

Questionnaire survey was adopted as major method to evaluate the significance of different neighbourhood factors in sustainability performance by analysing the residents' perceptions. By reviewing their perceptions or preferences, the differences between diverse components of neighbourhoods was ascertained for better optimization of the neighbourhood planning and decision-making framework. In addition, questionnaire survey is a type of public engagement conducive to people-oriented planning, which has been increasingly suggested by scholars (Gehl & Svarre, 2013; Yung et al., 2016). Technically, survey is one of the common methods to acquire a representative sample of the study area and a very good approach to examining a far larger number of factors than can be considered in experimental approaches (Czaja & Blair, 1996; Galliers, 1992).

Therefore, the questionnaire survey approach was adopted as the main data collection method. By dealing with a sample of the population, the quantitative description of attitudes, opinions, and perception of the entire population could be obtained. Although there are several disadvantages,

such as risk of bias and possible low response rate, questionnaire survey still provides an effective method to examine a wide range of issues (Akadiri, 2011).

5.3.4.2 Stratified Random Sampling

Sampling refers to a process during which a limited but workable number of cases are selected out of a large group for study. It is also an efficient and cost-effective way to generate better outcomes by sampling out of a huge number of respondents from a wide range of geographical locations in order (McQueen & Knussen, 2002). Additionally, time spent on data collection and processing will be dramatically saved and the anonymity of respondents can also be ensured (Cooper et al., 2006). By adopting sampling, the researcher can obtain results and derive findings which are related to the character of entire population (Kerlinger & Lee, 2000; Monette et al., 2013). It is necessary because of the limitation of time and cost (Babbie, 1990). The validity and accuracy of the results and findings significantly depend on how the samples are selected. A sample refers to a small reproduction of the entire population that the researcher would handle. A representative sample should be extracted from the target population to truly show the population's characteristics in all relevant and significant dimensions. By uusing this method, the collected data can be more reliable and useful in drawing generalizable conclusions (Brewerton & Millward, 2001; Monette et al., 2013).

In this research, stratified random sampling was adopted as a suitable sampling method due to the essence of this study and the advantage of this method. Stratified random sampling refers to firstly selecting a specific group of target population and then conducting random sampling method. The main advantage of stratified sampling is that it captures key population characteristics in the sample. Stratified sampling works well for populations with a variety of attributes but is otherwise ineffective if subgroups cannot be formed. It was widely used for data collection within certain areas which are purposely chosen (Kind et al., 1998; Spittaels et al., 2010; Tongco, 2007).

Random sampling was used in all the three selected neighbourhoods and the selection of respondents was guided by following criteria:

1) Aged 18 or above

2) Permanent resident of this neighbourhood and now living in this community (not businessman or neighbourhood administrative staff)

5.3.4.3 Sampling Size

The size of a sample used for a qualitative project is influenced by both theoretical and practical considerations. The target sampling size of the survey essentially depends on three factors: the resource available, the aim of the study, and the statistical quality needed for the study (Kelley et al., 2003). In cross-sectional research, a sampling strategy that focuses on attaining small random samples with high response rates is considered more valuable than achieving large random samples with low response rates (S. Evans, 1991). Given the available resource and time restriction, high response rates are another focus of questionnaire collection rather than purposely increasing the sampling size in this research. Around 500 questionnaires from the three selected neighbourhoods were collected for this research.

5.3.4.4 Pilot Study

A pilot study is necessary before delivering a large-scale survey since its reliance and comprehensiveness can be examined by experienced experts (D. H. Walker, 1997). The aim of a pilot study is to check whether the distribution and receipt of the questionnaire and the content of the questionnaire are scientific, comprehensive and effective. In this research, 15 residents of some communities were provided with the proposed questionnaire survey for indicating their agreement on each of the factors or questions that would be asked to the respondents in the subsequent large-size survey. The 15 people were of varying age, occupation, gender, and duration as a resident in the neighbourhood.

5.3.4.5 Questionnaire Design

Both qualitative and quantitative questions were designed based on lists of factors included in the proposed framework in Chapter 2 to elicit the opinions of selective neighbourhood residents on their degree of agreement on the different planning criteria for enhancing neighbourhood sustainability. First hand data was obtained to dig out an overall expectation of neighbourhood residents on the performance of neighbourhood development. Likert scale method was utilized to indicate the respondent’s degree of agreement on corresponding factors by measuring how they feel about the variables presented in the questionnaire.

The questionnaires were designed to elicit both attitudinal data and demographic data. The attitudinal data is to collect their preferences in the evaluation of sustainability performance while the demographic data refers to demographical background of the respondents, including the age, gender, occupation, duration of living in the neighbourhood, education level, monthly income, and household expenditure. The collected demographic was further used to evaluate the representativeness of the sample and identify the significance of similarities and differences between different groups of respondents (Brewerton & Millward, 2001).

During the surveying process, the respondents were shown a list of the planning criteria of sustainable neighbourhoods identified from the literature review and orally asked to rate the degree of agreement with each statement. To enhance the readability, understandability and effectiveness, the questionnaire was designed in the following way:

1. Eliminate the redundant questions and combine the similar variable to reduce the question numbers to smaller than forty.
2. Likert-scale was adopted to formulate the choices for respondents to indicate.
3. Translate English jargon into Chinese layman language for better understanding.
4. Provided a checkbox system in the questionnaire for ease of response.

Table 5. 6 Adopted five-point Likert-scale

	Strongly Disagree	Disagree	Average (Neutral)	Agree	Strongly Agree
Scale	1	2	3	4	5

5.4 Data Collection

The total of 510 questionnaires were distributed in the form of on-site interview within the Yulin, Xingyue and Jinyang neighbourhoods in Chengdu between April and September 2017. The questionnaires survey was conducted in the sequential order of Xingyue in April 2017, and Yulin and Jinyang in September 2017. For the survey in each neighbourhood, each interviewee was allocated 20 minutes, including briefing the research background, marking his/her indication on the 1-5 Likert-scale on all 33 questions, and recording their social-economic and demographic characteristics.

5.5 Data Analysis

The collected data was analysed by a number of statistical techniques as well as several different software. It included Descriptive Statistics, Correlation Analysis, Mean Score Ranking, Independent T-Test, Kendall's Coefficient of Concordance, Reliability Analysis, and Logistical Regression Modelling. IBM SPSS Statistics 19 English version was the primary software employed for dealing with the raw data.

5.5.1 Descriptive Statistics

Descriptive statistics aims to provide basic features of the data by giving simple summaries about the sample and measures. R. Russo (2004) demonstrated that useful information could be extracted only if the raw data collected from various samples is properly categorized. Since attitudinal and demographical data was collected in this research, descriptive statistics was adopted to identify the characters of specific groups as well as the similarities and differences of different variables among different groups.

5.5.2 Cronbach's Alpha Reliability Test

Reliability analysis is necessarily adopted to indicate the degree of consistency of the measurement scales and the variables before further advanced analysis. Among all the reliability analysis methods, Cronbach's alpha (α) (Cronbach, 1951) is regarded as the most common one, with a value from 0 to 1, which can be used to indicate the average correlation or internal consistency of the data collected. Normally, the larger the α is, the higher reliability of the collected data. Therefore, Cronbach's Alpha Reliability Test was conducted to check whether the way in which the respondents responded to all variables was consistent or not and to measure the internal consistencies of the generated results in the subsequent stage of the study.

5.5.3 Mean Score Ranking Technique (MSRT)

Mean score ranking was commonly adopted as a typical method to examine the relative significance of individual factors, so that the key factors could easily be identified. However, a normal distribution test is necessarily to validate whether the prerequisite of running MSRT is met.

Several similar studies in China have successfully used this method, such as X. Zhang et al. (2011) who identified technological barriers to their use in housing development in China, while Cheng

and Li (2002) also used mean scores to test the criticality of factors. In a similar fashion, this study adopted the mean score ranking to rank the relative significance/criticality of factors. The mean scores were calculated by using the following formula:

$$\text{Mean score} = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{N}$$

Note:

n = respondents' scores based on 5-point scales (From 1 to 5)

N = the total number of respondents.

In this research, mean score ranking was used to rank the relative significance of different neighbourhood sustainability factors in different cases.

5.5.4 Independent T-test or Mann–Whitney U test

As one of the inferential statistical techniques, independent T-test is used to determine whether there is a statistically significant difference between the means in two unrelated groups. A null hypothesis, which is 'there is no significant difference between population means of a dependent variable for 2 independent groups', is tested in the Independent T-test. The mean difference is significant at the level of 1% (or 5%) if the corresponding p-value is less than or equal to 0.01.

However, it should be noted that the normal distribution of sample data is the prerequisite of running independent T-test. Thus, a test of normal distribution is normally carried out before the Independent T-test. In this research, the residents in different neighbourhoods were selected as independent groups while the degree of agreement on each sustainability factors were seen as dependent variables. If normal distribution is not followed, a non-parametric test (Mann–Whitney U test) should be considered to generate more precise results and reliable findings.

5.5.5 One-Way Analysis of Variance (ANOVA)

The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. Specifically, it tests the null hypothesis: $H_0: \mu_1 = \mu_2 = \mu_3 = \cdots = \mu_k$

where μ = group mean and k = number of groups. If, however, the one-way ANOVA returns a statistically significant result, we accept the alternative hypothesis (HA), which is that there are at least two group means that are statistically significantly different from each other.

A one-way ANOVA is required when the study includes more than two groups. Interval dependent variables for nominal groups are required. The assumption of normal distribution is not required. ANOVA compares the variation within a group (on average) to the equivalent variation based on group means' variation. One way ANOVA was widely used in comparing the mean scores of perceptions across three different groups categorized based on the likert-scale score their reported in social science (Hanna et al., 2017; Low et al., 2018; Timperio et al., 2017).

5.5.6 Person Chi-Square Test

Pearson's chi-square test (also called the chi-square test of independence) examines a set of variables to determine whether they are associated (Tzeng, 2002). The reason for using Chi Square was the categorical nature of parts of the data for which Chi Square is an appropriate test here. Since the dependant variable in modelling state can be dichotomised as bivariate variables, another justification for using Chi Square is based on the premise that it is most frequently used to test the statistical significance of results reported in bivariate tables, (Connor-Linton & Shohamy, 2001; van Halm et al., 2006). The Pearson chi-square statistical method can also be used to select variables by analysing the factors influencing satisfaction level. Fang et al. (2015) substituted the variables with statistical significance determined from the Pearson chi-square statistical test into the logistic regression model for calculation ($P < 0.05$).

5.5.7 Logistical Regression Modelling

Unlike ordinary linear regression, logistic regression does not assume that the relationship between the independent variables and the dependent variable is linear. Logistic regression was used to examine the associations between each subscale of the Neighbourhood Quality Index and residential satisfaction (satisfied versus not satisfied). Each subscale was dichotomized at the median cut off point, for example, "low security" versus "high" security (Yang et al., 2002). It is used primarily when the output variable is binary (Lawson & Montgomery, 2006) and it is a useful tool for analysing data that includes categorical response variables (Midi et al., 2010). Social

scientists and demographers frequently want to estimate regression model in which the dependent variable is dichotomous (Hosmer Jr et al., 2013). Binary logistic regression is a type of regression analysis where the dependent variable is a dummy variable. It is a variation of ordinal linear regression which is used when the response variable is a dichotomous variable and the independent variables are continuous, categorical, or both.

In the logistic regression analysis, aggregating existing categories dichotomised explanatory variables measured at the ordinal level. For neighbourhood life satisfaction, 'agree' (4) and 'strongly agree' (5) were attributed to Y=1 while 'strongly disagree' (1), 'disagree' (2) and 'Neutral' (3) were attributed to Y=0. Each item was considered individually, and in instances where a variable containing five categories had to be reduced to two, a conservative approach, based on the expected direction of effect, was taken (Dunn, 2002).

Stepwise Forward (Wald) Regression

Stepwise regression is a semi-automated tool for building a model by fitting regression models, in which the choice of predictive variables is determined by automatic procedures (Efroymson, 1960; Hocking, 1976). The process systematically adds the most significant variable, or removes the least significant variable, in each step. The use of stepwise regression for neighbourhood analysis has been verified d by other studies (Sugiyama et al., 2008; Sugiyama & Thompson, 2008; Wilson et al., 2004). Independent variables included in all initial backward conditional regression models represented a range of factors including length of residence, condition of dwelling, a neighbourhood of resident dummy variables (Old City is the reference category), as well as a range of demographic and socioeconomic factors.

Method = Forward Stepwise (Wald) Results

Different models were designed to investigate the significant association between different dimensions.

The binary logistics regression model (equation 1) was used to estimate how the predictor variables (sustainability factors) are associated with the response variable (neighbourhood satisfaction level). With the Hosmer and Lemeshow test, the goodness of fit was evaluated, while overall percentage was used to evaluate the percentage of correct prediction of the model. SPSS Statistical software was employed in this study to analyse the data, run the regression models and to plot the results.

$$Logit\ (P) = \ln \frac{P(Y=1)}{P(Y=0)} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_m x_m \quad (3)$$

Where $P(Y \leq j)$or $P(Y = 1)$ is the probability of the event, β_0 is the constant, (0 represents not satisfactory, 1 represents satisfactory) Y is the response variable, x_m is the predictor variable, $\beta_m$is the coefficient of the predictor variable.

5.6 Verification

Verification is the procedure of checking, confirming, ensuring and being certain (Morse et al., 2002). In qualitative research, verification refers to the mechanisms used during the process of research to incrementally contribute to ensuring reliability and, thus, the rigor of a study. These mechanisms involve into every step of the inquiry to construct a solid product (Lewis, 2015; Noble & Smith, 2015) by identifying and correcting errors before they are built in to the developing model and before they subvert the analysis. The integration of qualitative and quantitative methods in this research requires an integrated way to verify the "truth value" of the findings. The Validity is the degree to which a result from a study is likely to be true and free from bias (Khorsan & Crawford, 2014). Interpretation of findings from a study depends on both internal and external validity. Guba and Lincoln (1981) stated that the nature of knowledge within the rationalistic (or quantitative) paradigm is different from the knowledge in naturalistic (qualitative) paradigm. Consequently, each paradigm requires paradigm-specific criteria for addressing "rigor" or "trustworthiness", their parallel term for qualitative rigor. They noted that, within the rationalistic paradigm, the criteria to reach the goal of rigor are internal validity, external validity, reliability, and objectivity. On the other hand, they proposed that the criteria in the qualitative paradigm to ensure trustworthiness are credibility, fittingness, auditability, and confirmability (Guba & Lincoln, 1981). These criteria were eventually refined to credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). They recommended specific strategies be used to attain trustworthiness such as negative cases, peer debriefing, prolonged engagement, persistent observation, audit trails, and member checks.

Besides validating the internal and external validity of quantitative data, verifying the qualitative parts is even crucial to ensure the ‘truth value’ of this contextual research. As suggested by Lincoln and Guba (1985), the expert interview was adopted as a ‘peer debriefing’ method to ensure the credibility, transferability, dependability, and confirmability of the proposed framework by

soliciting their comments and suggestions. In September 2018, the 10 experts were interviewed for validating the proposed framework in Chapter 8 by seeking their comments and suggestions. In the face-to-face interviews, the findings and results were presented to the experts for comments. The 10 experts can be categorized into five different sectors: government, enterprise, academia, non-profit organization, and neighbourhood leaders. All the experts were those who had more than 10 years of practical or research experience in neighbourhood planning, residential planning, neighbourhood governance, planning management and Chengdu experience in the previous five years. All the interviews were conducted during September 2018 in Chengdu, which is the case city in this study. Each expert was approached by using snowballing method and interviewed separately. The one to one interview took roughly one to one and a half hours.

During the interviewing process, the expert was orally briefed with an overview of the research, including background issues, research questions, methodology and results by the researcher. After the briefing, the researcher asked them to give their comments on the research flow and results, including reviewing the scope of neighbourhood issues in Chengdu, examining the representativeness of the selected neighbourhood, and evaluating the credibility and transferability of incorporating the proposed framework into the respective form of neighbourhood planning in China. They were also asked to comment on the prospect for neighbourhood planning development China.

5.7 Chapter Summary

This chapter systematically introduced the methodology utilized in this study. Mixed qualitative and quantitative research were adopted to achieve subsequent research objectives progressively. Questionnaire survey was used for collecting first-hand data and multi-tech statistical tools were adopted to admin and analysed the data. Expert interviews were conducted at last to verify the proposed framework. The results and analysis of investigations will be shown in chapter 6 and 7 from national and local case level respectively.

Chapter 6 Comparison of Neighbourhood Planning of Other Countries: Insights for Transitional Urban China

6.1 Introduction

This chapter articulates the challenges and opportunities for neighbourhood planning in the context of transitional urban China for addressing research question 1. It begins with an intensive review of journals, conference papers, books, newspapers, governmental reports, local publications, and internet resources to review the neighbourhood planning practice in other countries. Then a comparison study is then employed to identify common characteristics, based on the summarized institutional aspects, of neighbourhood planning shared by four other countries. Next, the institutional aspects of neighbourhood planning, which contribute to neighbourhood sustainability, are summarized. These characteristics are then discussed for identifying the potential barriers to planning reform in China. Finally, the in-depth interviews with experts are reported to further verify and supplement the potential barriers hindering neighbourhood-planning practices in China.

This chapter was developed based on a published article: Zhang, Qi, Esther Yung, and Edwin Chan. "Towards sustainable neighborhoods: challenges and opportunities for neighborhood planning in transitional urban China." Sustainability 10, no. 2 (2018): 406. The author is the first and corresponding author of this published paper who made the predominant contribution to the manuscript development. The copyright of the paper was retained by the authors and the paper can be accessed at https://www.mdpi.com/2071-1050/10/2/406.

6.2 The Neighbourhood Planning Practice in Other Countries

Globally, neighbourhood planning has been increasingly promoted as a planning or policy method to enhance local sustainability. The comprehensive literature review provides details for the comparison of four different countries or regions, namely the UK, the US, Canada and Taiwan. It also helps identifying the cross-boundary common characteristics of neighbourhood planning practice worldwide. As the institutional aspects was highlighted as prominent factor, these four countries were compared based on the summarized institutional aspects to identify the characters of neighbourhood planning institutionally contributing to neighbourhood sustainability.

The key profile of these four countries/districts is shown in Table 6.1. It also provides a reference for justifying the comparability between them and China. The similarities and variations between different countries, especially between the Western countries and Taiwan, provide useful lessons for promoting neighbourhood planning practice in China.

Table 6. 1 Profile of the four countries/districts where neighbourhood planning has been practiced

X	UK	US	Canada	Taiwan
Urbanization Rate (By urban population in 2016)	80.8%	83.2%	81.9%	77%
Is NP a legal planning?	Yes	No	No	No
Is the form of NP diverse or normative?	Normative	Diverse	Diverse	Diverse
What is the Status of NP in the Local Development?	The adopted plan becomes a part of statutory development plan	It varies from state to state. In a few states, an adopted plan become a component of city's development plan.	The adopted plan becomes an official guideline for neighbourhood development	An official scheme to engage public into neighbourhood development.
Which Local Body is Responsible for the NP Projects?	Parish or town council; or Neighbourhood forum;	City council	City council	Community Empowerment Network (Founded by Municipal Government)

	or Community organization			
Applied Neighbourhood Sustainability Assessment Tools	1.BREEAM Communities 2.SPeAR 3.OPL	1. LEED-ND 2. ECC 3. EPAT 4. CS	1. FSA Tool 2. SCORE Tool	EEWH-EC

Source: World population (Bird, 2015; Worldometers, 2016); Planning Practice Guidance (Ministry of Housing, 2016); Seattle Department of Neighbourhoods (Neighborhoods, 2016); A Guide for Developing Neighbourhood Plans (the et al., 2002); Community Empowerment Network (Culture, 2016); . (Sharifi & Murayama, 2013);

United States:

The history of neighbourhood planning in American cities spans over 100 years. Initially, the social workers of settlements advocated neighbourhood building and housing improvements. Historians then recognized the effort that had been put into planning and conserving a cohesive neighbourhood life in colonial New England towns (Lockridge, 1970). Subsequently, urban planners added multipurpose civic centers for neighbourhood use into their comprehensive citywide plans. In the 1920s, Clarence Perry's 'Neighbourhood Unit Concept' regarded the neighbourhood as a planning tool to organize public space and socialize residents. Since then, planning at neighbourhood level has been closely associated with Perry's concept and it has been added to by the ecological organic principles of several professionals, such as Lewis Mumford, Ernest Park and Robert Burgess from the Chicago School (Pinnegar, 2013). Neighbourhood-based urban thinking was shaped at that time.

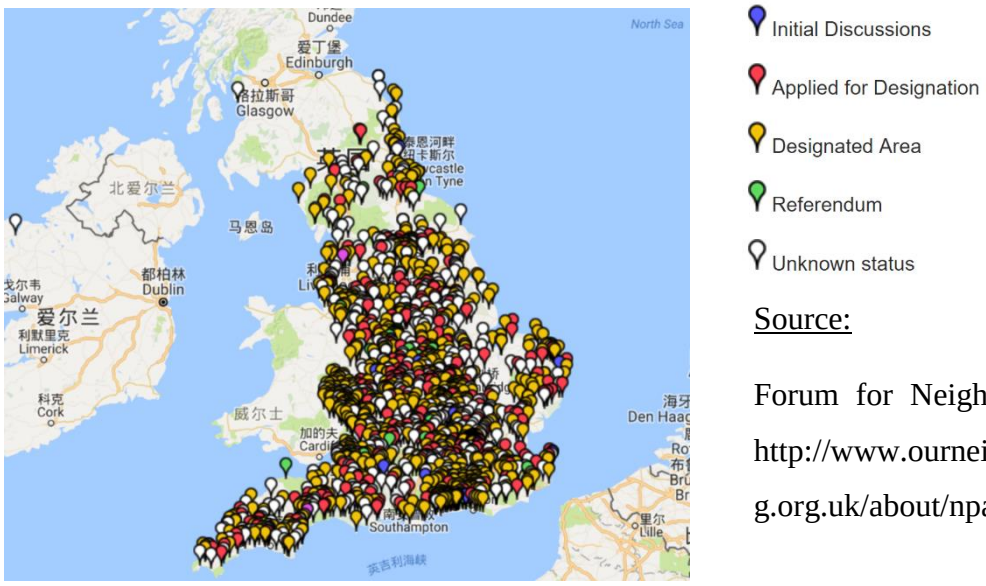
During the last one hundred years, the concept of neighbourhood has been the basis of several planning initiatives, including Urban Renewal, Community Action, Community Economic Development, Municipally-Sponsored Neighbourhood Planning, Planned Unit Development, Traditional Neighbourhood Development, and Transit-Oriented Development in the US (Rohe, 2009). Each type of neighbourhood planning initiative paralleled the broader social-political

context change and was influenced by the previous initiative's accomplishments and limitations. As neighbourhood planning practice expanded, planners gradually recognized that planning at neighbourhood level played an important complimentary role in comprehensive urban planning and that residents became socially and economically invested within the neighbourhood area surrounding their homes.

Neighbourhood planning is now more frequently discussed as it not only addresses local concerns but also responds to global issues, especially to global climate change. Ten years ago, the standards for environmentally sustainable neighbourhood location and design, which is LEED for Neighbourhood Development, were jointly issued by the U.S. Green Building Council, the Congress for the New Urbanism, and the Natural Resources Defence Council (Council, 2014). This enhanced the link between neighbourhood planning and global sustainability issues.

United Kingdom:

In the last century, neighbourhood planning played an important role in society from post-war reconstruction to new town programmes. At that time, neighbourhood planning was seen as a tool with suitable planning scale to help provide centres of community life serving residents daily social, retail, cultural as well as educational needs. Since 2010, it has been one of the major new developments in localist policy in England (Wills, 2016a) and was introduced as part of the Localism Act in 2011. The government wanted to give more power and influence to local communities and so it introduced the Neighbourhood Planning Act in 2017. Neighbourhood plans can now add to what is in the local plan for the larger area. If there is majority of people voting in a community for a neighbourhood plan in a referendum, it will then become a statutory plan to which the local authority has to show deference. By delegating the legal right to exercise statutory neighbourhood planning powers, the Act legitimizes collective participation and inserts it into the legal framework of municipal and national governments (Bradley, 2015). Figure 6.1 below shows the coverage and status of all the neighbourhood-planning practices in the UK.



Source:

Forum for Neighbourhood planning, http://www.ourneighbourhoodplanning.org.uk/about/npa_area_list

Figure 6. 1 Coverage and status of neighbourhood planning practices in the UK

Canada:

Canadian cities also have a documented long history, with cities such as Victoria, Winnipeg and Ottawa establishing neighbourhood-planning approaches under the influence of the renowned Vancouver Practice (Pinnegar, 2013).

For instance, the city of Vancouver is famous for its efforts in developing progressive planning as an innovative model for enhancing neighbourhood-based and participatory planning as well as "the overall planning document for the City". Back in 1995, the process of making the City Plan in Vancouver was initially more about bottom-up rather than top-down. More than 20,000 citizens directly got involved in shaping the City Plan strategy as a blueprint for guiding Vancouver's future development towards a sustainable and liveable city and the City Plan was intended to be a plan prepared by citizens.

Firstly, Vancouverites emphasized that it should remain a city of neighbourhoods and villages within the larger city, each with its own identity. Meanwhile, however, it was recognized that increasing the housing density is necessary to accommodate regional growth and avoid related negative impacts on agricultural and ecological aspects from urban sprawl. A consensus was achieved that the form of neighbourhoods should evolve around existing neighbourhood centres

with proper new development so that more complete, inclusive and sustainable communities could be fostered.

In this regard, the Community Visions program was launched in 1997 to break the City Plan initiative down to the local level by adopting neighbourhood-based planning. Generally, the sustainability of the broader City Plan and the liveability and local character of grassroots neighbourhoods was enhanced by developing Community Visions.

Taiwan:

In Taiwan, the action of neighbourhood planning is called 'Community Empowerment' or 'Community Development' and they roughly share the similar objective of engaging communities in making local development plans. Since the emerging democratic elections in the 1990s, policymakers have tried to make urban planning systems more decentralized, localized, and community-based. For instance, the priority of Community Development was advocating concepts, rebuilding space, and resolving the living tasks for communities. In 1996, the Neighbourhood Plan of Taipei City was issued as the first governmental attempt to institutionalize community design through collaborative planning (L.-L. Huang, 2005). This planning reform and community building movement in Taipei City, which is the capital of Taiwan, partly reveal or perform as an effect of the broader context associated with domestic democratization, globalization and subsequent rapidly changing identities and subjectivities (Raco et al., 2011). The publication of a planning framework in 2005 named A Viable Community, a Liveable City, a Democratic Society (City Government of Taipei, 2005), indicated a substantial turning point towards a community-based planning agenda.

However, the different governmental and developmental context determined that the driving force of the emergence of community empowerment in Taiwan was different from those in the UK, the US and Canada. Delanty (2006) argued that the emergence of such community-focused planning frameworks needs to be comprehended as the spaces of interaction between the local and the global. In fact, community has become embroiled in a broader set of political projects that seek to strengthen local, urban and national identities in order to consolidate the power of national and city-wide agencies in Taiwan, which is far away from the real meaning of community empowerment (Raco et al., 2011). During the process of community development, local

community and cultural associations have been set up to identify community demands and engage citizens in actively pursuing broader policy agendas, based on strategies that some authors have referred to as forms of popular authoritarianism (Chuang, 2005).

Community-focused planning turned out to be a driving force for promoting active participatory democracy and provided a focus on which active and cosmopolitan urban identities of Taiwan were formed. Generally, it was thought that community empowerment was linked with internationally recognized forms of good governance by the Taiwan government as a part of its policy discourses (Raco et al., 2011).

Nevertheless, although the efficiency of community empowerment in Taiwan is still debatable, a bottom-up participation to construct the built environment, especially everyday spaces, has dramatically shaken up contemporary thinking within Taiwan society (F. C.-H. Lin, 2014). To date, the development of neighbourhood planning movement is still expanding across the whole Taiwan.

A comparison of neighbourhood planning practice in four different countries are consolidated and analysed by different categorical aspects in Table 6.2 below:

Table 6. 2 Comparison of Neighbourhood Planning Practice in Four Different Countries

COUNTRY/ District / *ASPECT*	**U.S.A** (Globeville NEIGHBOURHOOD PLAN)	**U.K.** (Alnwick and Denwick Neighbourhood Plan)	**CANADA** (Maillardville Neighbourhood Plan)	**TAI WAN** (Yi Lan Community empowerment Project)
What is the neighbourhood plan in specific country?	This Plan establishes near-term aspirations for Globeville as well as a long-range vision and guiding principles for the development and future of the neighbourhood. The elements of this Plan will direct the community toward achieving the vision for a unique, strong, connected, and healthy Globeville	The Alnwick and Denwick Neighbourhood Plan (ADNP) is a new type of planning document. It is part of the Government's new approach to planning, which aims to give local people more say about what goes on in their area	The updated Maillardville Neighbourhood Plan will outline a vision for the area that will help guide change over the next 20 years for this area	Community empowerment refers to empowering the people. By getting members of society involved, the Ministry is helping local communities to: Form a group identity. Have their voices heard. Fulfill their needs
The aim or role of Neighbourhood Plan	The role of the neighbourhood Plans is to establish the vision for their respective neighbourhoods and to identify recommended implementation actions to achieve their visions	It aims to give local people more voice right about what goes on in their area. The Plan gives local people the power to decide where new housing and employment should go, and	The purpose of this Plan is to chart a renewed course for the future of Maillardville.	1) strengthening the ability of self-service and self-reliance at local level; 2) promoting the integration of community lifestyle and

		how the town centre should change. Previously, Northumberland County Council would make these decisions on behalf of the people of Alnwick and Denwick without the ADNP		cultural： 3) fostering the sense of identity and place; 4) developing the content of cultural tourism industry
How will the plan be used?	Public agencies and private entities will use this Plan in coming years for many purposes and actions that will affect the form and function of Globeville The elements of this Plan will direct the community toward achieving the vision for a unique, strong, connected, and healthy Globeville The Plan provides a sound policy basis for a thriving Globeville.	The Plan is to guide the future of Alnwick and Denwick as a whole. Neighbourhood plans will be used in making planning decisions. When a development or change is proposed in the Plan Area Northumberland County Council (as the Local Planning Authority) will be required to refer to the ADNP and check whether proposals are in keeping with policies the community has developed.	The Plan will guide growth and reinvestment in the Maillardville neighbourhood over the next 20 years. This Plan will become Council's 'blueprint' for guiding growth and investment in the neighbourhood	The Product of Community Empowerment will be considered as the file documenting people's concern and interests. It would be respected in the decision-making or planning making process in the local development.
The coverage of neighbourhood	Applied Nationwide (Silver, C. (1985).	Applied Nationwide (Map: neighbourhood plan applications,	Applied Nationwide	Applied Nationwide

plan projects across the country		http://www.planningresource.co.uk/article/1212813/map-neighbourhood-plan-applications)		
Is Neighbourhood Plan a Statutory Plan? (Legitimacy?)	Not always (Neighbourhood plan is a part of the Comprehensive Plan which is not usually legally binding.)	Yes (If it is successfully passed in public referendum)	Yes (sunset ridge – harvest view sustainable neighbourhood plan) A neighbourhood plan is a statutory planning document, adopted by council as policy or an amendment within the Official Community Plan (OCP)	No It is a national level policy issued by ministry of culture.
Financial Resources of Neighbourhood Planning Projects	Case: Globeville Neighbourhood Plan. •Tax Base Support •Grants. •Special Districts.	Some of the costs covered by the local planning authority, such as the costs of holding, the independent examination and the public referendum Other costs funding will need to be found by the parish/town council or neighbourhood forum preparing the plan. (Neighbourhood Plans Roadmap Guide. Dave	Not specified	Financial Budget: The project finance source: 1. fiscal appropriation by the local responsible authority 2. Allowance from the upper-level government 3. Donation from non-governmental organization

		Chetwyn MA, MRTPI, IHBC, FInstLM)		
Planning Making Duration	More than 2 years	Approximately 5 years	Feb 6th 2009 to April 1st 2014 More than 5 years	It depends on circumstance
Planning Area	The administrative region.	The administrative region.	The administrative region.	The administrative region.
Planning Horizon	20 years From 2014	2014-31 15 years	20 years from 2014	No fixed duration Long-term project, sustainably facilitating the development of local community
Neighbourhood Profile	• Population: 3,687 (2010) • Land Area: 1,318 Acres Globeville is located along the western bank of the South Platte River in North Central Denver. In addition to the river, major physical landmarks in the neighbourhood include I-25 and I-70. Historically, the neighbourhood was home to large industry, especially smelting and meat packing	Alnwick is identified as a main town in Northumberland and in large part because of its fabulous environment and quality of life, it is a location that continues to attract people to live, work and retire here	Maillardville is the City's most historic and unique neighbourhood established over 100 years ago	There are different neighbourhoods wthin Yi Lan county and their neighbourhood profile varies.

Core Concerns; Key Issues to be addressed	(Taking Globeville Neighbourhood Plan as an Example) To identify issues and opportunities, develop a vision, and create recommendations and strategies for achieving the vision. • The Vision for Unique: A neighbourhood rich with destinations that celebrates its history and uniqueness and overcomes challenges to create a brighter future • The Vision for Strong: Globeville is a neighbourhood where diverse land uses are present and are located such that the needs of residents, businesses, and industry are met equitably. The neighbourhood has a complete and accessible	Taking 'Alnwick and Denwick Neighbourhood Plan' as an example The aim of NP is to give local people more say about what goes on in their area and guide the future of Alnwick and Denwick as a whole. • What level of growth in Alnwick would be sustainable • How we ensure we can develop the economy and services of the town • How we provide housing that is affordable and helps young people to stay in the town • How we future proof our housing, amenities, services, and public transport, to meet	Taking 'Maillardville Neighbourhood Plan' as an example. These key principles implement the Plan vision and serve as the basis for Plan policies: a. Design on a Human Scale – Strive for a complete and compact, pedestrianfriendly neighbourhood b. Restore Main Street – Revitalize Brunette Avenue as a vibrant, walkable neighbourhood shopping street c. Preserve Heritage – Conserve heritage buildings and distinct block and lot patterns to celebrate Maillardville's history	1. Building up the sense of community, motivating the public sense of participation in resolving public issues 2. Fostering self-driving cultural and art activities, laying foundation for cultural and art development, promoting cultural and local education, enhancing the performance of community cultural bulding 3. Facilitating the cultural industrialization and culturalization of the industry. Developing the characteristic industry, revitalize the local vitality 4. Incorporating Non-government power to build up

	system of parks that encourages physical activity, social interaction, and environmental responsibility. Residential and employment opportunities are diverse and accessible with services in place to support the well-being of the local population • The Vision for Connected: A mobility network that provides a full array of transportation choices and balances the needs of pedestrians, bicyclists, drivers, trucks, rail, and transit • The Vision for Healthy: Globeville is a healthy and safe neighbourhood where residents, workers, and visitors alike experience mental and physical well-being as a result of good environmental quality, a well-	the needs of older people and disabled people • What we need to do to retain the community facilities we have • What we need to do to ensure the way we move around is more sustainable • How we do all this and still protect the fabulous heritage and environment we all enjoy	d. Facilitate Job Growth – Encourage the development of local job opportunities in the Neighbourhood Centre and throughout the Plan area e. Build Vibrant Public Spaces – Provide park and outdoor recreation experiences and distinctive public gathering spaces to enrich social interaction and encourage healthy lifestyles f. Provide Housing Choices – Encourage a diversity of high-quality housing types for present and future residents g. Create Neighbourhood Identity – Foster a 'sense of place' that is unique	a harmonious society with humanitarian concern 5.Promoting residents' aesthetic level of appreciation on life scenario

	connected multi-modal street network, and convenient access to goods and services		to Maillardville, strengthen neighbourhood character, and facilitates a higher quality development through the use of Maillardville specific design guidelines h. Enhance Landscapes – Recognize the importance of landscaping, trees and environmental areas as key elements of the neighbourhood i. Increase Transportation Options – Strengthen a multi-modal transportation system that provides automobile and goods movement while encouraging transit use, walking and cycling	
Relationship to regional or other	The Denver Comprehensive Plan 2000 provides the vision	•They must have regard to national planning policy	The Plan's vision, policies and implementation	Not directly related

upper-level planning (How the Neighbourhood Plan fits into the Planning System)	for the entire city. Citywide and small area plans are adopted as supplements Comprehensive Plan 2000 to provide additional direction for certain topics or areas The neighbourhood Plans have been closely coordinated to ensure that they are complimentary and do not provide conflicting or contradictory guidance. The National Western Centre Master Plan is responsive to the guidance of the surrounding neighbourhood Plans, and its role is to help implement the vision that is set by those Plans	advice contained in guidance issued by the Secretary of State in particular the National Planning Policy Framework (otherwise known as the NPPF) •They must be in general conformity with strategic policies in the development plan for the local area (i.e. such as in a core strategy) •They must be compatible with EU obligations and human rights requirements. (http://www.planningportal.gov.uk/inyourarea/neighbourhood/) • Not have a significant effect on a European Site (as defined in the Conservation of Habitats and Species Regulations 2012) either alone	measures, along with other City plans and strategies, will help achieve the revitalization of Maillardville. Neighbourhood plan work both to implement and further complement the regional or other upper-level planning For example, the Maillardville Neighbourhood Plan will work both to implement and further complement the Citywide Official Community Plan (CWOCP) policies as well as Southwest Coquitlam Area Plan (SWCAP) policies . However, if there is a conflict between a policy in the SWCAP or CWOCP and this Neighbourhood Plan, the	

		or in combination with other plans or projects A neighbourhood plan or Order must not constrain the delivery of important national policy objectives. The National Planning Policy Framework is the main document setting out the Government's planning policies for England and how these are expected to be applied	Neighbourhood Plan policy takes precedence.	

Is sustainability issues mentioned in the Neighbourhood Plan?	Yes The vision for the ADNP concludes with the following statement: Overall the town and village will have become a more sustainable neighbourhood where the quality of life has improved through social and community development, economic growth and sensitive environmental management Thus the overarching objective of the plan is: To contribute to the development of a sustainable future for the Plan area and an improving quality of life for all.	Yes, Neighbourhood plan is required to help achieve sustainable development. A qualifying body must demonstrate how its plan or Order will contribute to improvements in environmental, economic and social conditions or that consideration has been given to how any potential adverse effects arising from the proposals may be prevented, reduced or offset (referred to as mitigation measures)	Yes Even though 'sustainability' was not particularly emphasized, the principles and key elements are consistent with the principles of sustainable development. Such as' mix-used, vibrant public spaces, Preserve Heritage, Restore Main Street'	Yes The first focus of community empowerment of Yi Lan county is facing the challenge of sustainable development
Neighbourhood level or boundary definition	Administrative area	Administrative area	Administrative area	Administrative area

Major Factors of NP	A Unique Globeville • Showcase the *History Embrace Unique Physical Attributes* •Reinforce and Enhance *Unique Sense of Place* A Strong Globeville • A Land Use Plan that Balances the Needs of Residents, Commerce, and Industry • Effective Storm Drainage and Water Quality Management • An Integrated, Complete, and Diverse Park System • Improve Access to Jobs, Housing, Neighbourhood Services, and Education A Connected Globeville • Update Key Transportation Policies Affecting Globeville • A Connected Street Network • A Walkable, Bikeable Globeville	• Good Quality and affordable Housing • Economy and Employment: To support, strengthen and diversify Alnwick as the principal employment and service centre for the wider area. • Retail and Town Centre: To maintain and develop a vibrant mix of retail and tourism facilities • To provide high quality, accessible and affordable community, leisure and education facilities • To improve the provision of good quality, affordable sports and recreation facilities • Transport:	• Design on a Human Scale – Strive for a complete and compact, pedestrianfriendly Neighbourhood • Restore Main Street – Revitalize Brunette Avenue as a vibrant, walkable neighbourhood shopping street • Preserve Heritage – Conserve heritage buildings and distinct block and lot patterns to celebrate Maillardville's history • Facilitate Job Growth – Encourage the development of local job opportunities in the Neighbourhood Centre and throughout the Plan area	Five major factors: Human, culture, place, property and landscape. Human refers to the satisfaction on daily demand, the management of mutual relationship and creation of daily well-being. Culture refers to conserve and develop the shared historical culture, management of art activities and lifelong learning Place refers to the preservation of geographical character and maintenance the micro-climate Property refers to real estate development and collective management of economic activities as well as promotion of the housing development

	• A Transit-Rich Globeville • Address Traffic Operations and Roadway Maintenance Issues A Healthy Globeville •Improve *Environmental Quality* •Improve Multi-Modal Connectivity •Increase Access to Goods and Services •Enhance Community Safety •Improve Mental Health and Well-being •Implement All Remaining HIA Strategies	To improve movement around Alnwick and Denwick, enhance the pedestrian experience and improve the quality of public transport facilities and linkages. • Environment To improve well-being and reduce the environmental impact of the people, increase the amount of public open space, protect and increase biodiversity, practice sustainable urban drainage and water management and make us more resilient to increasing fuel prices and climate change • Heritage, Design and Culture: To protect and enhance the special architectural and historic character of the area	• Build Vibrant Public Spaces – Provide park and outdoor recreation experiences and distinctive public gathering spaces to enrich social interaction and encourage healthy lifestyles • Provide Housing Choices – Encourage a diversity of high-quality housing types for present and future residents • Create Neighbourhood Identity – Foster a 'sense of place' that is unique to Maillardville, strengthen neighbourhood character, and facilitates a higher quality development through the use of Maillardville specific design guidelines	Landscape refers to building the public community space, sustainable living space, creating unique landscape and active participation in community building

		To secure a high quality in the design of all development and change within the plan area. To sustain and enrich the cultural life of the area.	• Enhance Landscapes – Recognize the importance of landscaping, trees and environmental areas as key elements of the neighbourhood • Increase Transportation Options – Strengthen a multi-modal transportation system that provides automobile and goods movement while encouraging transit use, walking and cycling	
Institutional Arrangement	Examining Body: Denver City Council Drafting and Facilitating organ: Globeville Neighbourhood Plan Steering Committee	Responsible Body: Town Council Drafting and Facilitating organ: NP Steering Committee (sub-committee of town council) Examining Body:	Responsible Body: Council Drafting and Facilitating organ a multidisciplinary team of Coquitlam staff, led by Community Planning and including staff	Responsible Body: County government Drafting and Facilitating organ: Steering committee of Community Empowerment

		County Council (Local Planning Authority) Legislative Body: County Council (Provided that the NP was passed by referendum， which was conducted in related town or district.)	from Development Planning, Engineering and Public Works, Parks, Recreation and Culture, Strategic Initiatives and Economic Development.	Executive Body: 1. Department of Culture, Taiwan Provincial Government 2. Different level of Societal and Educational, Cultural Organizations 3. Non-government Bodies

Sources:

1. GLOBEVILLE NEIGHBOURHOOD PLAN, Adopted December 1, 2014.
2. The Alnwick and Denwick Neighbourhood Plan (ADNP), Independent Examination In Progress. December 9, 2015.
3. The Maillardville Neighbourhood Plan which was adopted by council on Tuesday, April 1, 2014
4. Silver, C. (1985). Neighbourhood Planning in Historical Perspective. Journal of the American Planning Association, 51(2), 161-174.
5. Jui-mao, H. (2013). Community Empowerment in Taiwan. Architectural Journal, 4, 006.
6. The Briefing of Community Empowerment Project of Yi Lan County, 2008, available at： http://www.youngsun.org.tw/files/other/20080927ppt.pdf. Accessed on 12/27/2016.
7. The work plan of Tai Wan cultural department’s aid on community empowerment, available at： http://www.rootlaw.com.tw/LawArticle.aspx?LawID=B240050031001200-0860903. Accessed on 12/27/2016.

The characteristics of neighbourhood planning in the four different countries were identified by reviewing the corresponding planning strategies. The definition of neighbourhood planning is generally similar among the four countries and mainly aims to draw a blueprint of the future neighbourhood development by empowering and engaging stakeholders in a participatory way. Except the legal force given to neighbourhood planning in the UK, the neighbourhood plan will be regarded as a policy document providing solid basis for guiding growth and investment in US and Canada, while as a project during which stakeholders can be empowered and engaged in the decision-making process in Taiwan. For the coverage of Neighbourhood planning practice, it has been delivered roughly nationwide in all the four containers. For legitimacy, neighbourhood plans have full legal force in the UK and Canada but still are only policy recommendations in the US and Taiwan. Neighbourhood planning costs are partially supported by local councils (UK, USA) or responsible authority (Taiwan, UK) and the rest is supported by either an allowance from upper-level government (Taiwan) or local tax and grants (USA). The planning duration ranges from more than 2 years in the US, approximately 5 years in the UK, more than 5 years in Canada, and circumstantial in Taiwan. The planning areas are all the administration's areas. For the horizon of neighbourhood planning, 20 years is set for US and Canada, 15 years is for UK, but no fixed duration is set for Taiwan's system, which depends on the circumstances of facilitating the project. The key issues pending to be addressed are identifying problems, visualizing the future development, and providing policy suggestions for the UK, the US and Canada while the neighbourhood planning in Taiwan emphasizes more than building up the community sense and enabling the residents in public participation. For its relationship and upper-level plan, neighbourhood planning must be in general conformity with strategic policy in the larger area and it acts as a supplementary plan. In Taiwan, the conflict between neighbourhood planning and other urban planning is not obvious. To a larger or lesser extent, sustainability issues, such as integration of the three pillars and mixed land use etc., are mentioned in all four cases.

Major factors of US plans include uniqueness, strength, connectivity, and health. In the UK, it covers quality and affordable housing, economy and employment support, high quality amenities, linked transport, quality environment, and heritage and cultural conservation. For Canada, the major factors include human-scale design, restoring main treet, heritage preservation, job growth facilitation, vibrant public open spaces, diverse housing choices, neighbourhood sense cultivation, landscape enhancement, and multi-transport modes. In Taiwan, the five main factors of neighbourhood planning are human, culture, place, property and landscape. Lastly, the responsible body for implementing neighbourhood plans is the town council in the US, the UK and Canada while it is the county government in Taiwan with a steering committee set up to facilitate the project in cooperation with corresponding governmental departments.

6.3 Institutional Aspects of Neighbourhood Planning Practice in the Four Study Countries/District

Through an extensive analysis of various sources, especially neighbourhood plan documents, nine common characteristics shared by neighbourhood planning practices in the UK, the US, Canada and Taiwan have been identified. The type of neighbourhood plan may vary from country to country in order to adapt to the specific context of neighbourhood governance. The four selected cases in these corresponding countries for comparative study are Globeville Neighbourhood Planning (US), Alnwick and Denwick Neighbourhood Planning (UK), Maillardville Neighbourhood Planning (Canada) and Yi Lan Community empowerment Project (Taiwan). The comparative study is based on the four institutional aspects of neighbourhood planning to achieve local sustainability highlighted in Chapter 2. Each of the institutional aspects were further broken down into several points and through a comparative study, nine common characteristics were identified as shown in Table 6.3.

By reviewing the planning procedures in other countries, institutional aspects were found to be one of the fundamental factors contributing to overall neighbourhood sustainability. Among all the aspects, several critical elements linked with sustainability are identified and explained below.

Decentralization and Community Empowerment

Politically, neighbourhood planning has been practiced as a method of planning devolution, which refers to the transferring or delegation of planning power to a lower level, to empower local communities under national decentralization policies in many countries, such as the UK, the US, Canada (England, 2016; Sirianni, 2007; Stoney & Elgersma, 2007). After researching forty European cities, B. Evans et al. (2013) suggested that local governments were more proactive and adventurous in their policy-making and implementation regarding sustainability challenges when they were given a higher degree of autonomy. The governments of several developing countries have also practiced decentralization of decision making in the past two decades, achieving effective sustainable development of community resources, social capital development, resource management, and service provision at the local level (Awortwi, 2011; Kakumba, 2010).

For local communities, it is suggested that there is a direct relationship between decentralization and community empowerment and the latter is regarded as a tool to enhance local community capacities and assets (Bennett, 2002). Tan and Zhou (2015) stated that decentralization increasingly attracted the attention of Chinese policy makers and researchers. Currently, democracy and autonomy are placed at the center of the neighbourhood (Shequ) concept in China. Thus, neighbourhood planning, as one of the derivatives of decentralization, can lay a powerful foundation for activating local autonomy so as to institutionally promote sustainable neighbourhood development.

Public Participation and Decision Making

Participatory planning and decision making, which includes public participation and expert-based approaches, is advocated by many studies to promote sustainability (Barry, 2003; Kwan Esther Yung & Wan Edwin Chan, 2012). Conventionally, sustainable development decisions have been mainly made by responsible authorities based on a group of indicators proposed by authoritative experts or international and national agencies. The local public had been consulted but its impact on the eventual decision was very limited. Thus, the draft policy or decision might not thoroughly reflect the local situation and the local important factors cannot be well captured. This turned out to be a barrier hindering local sustainable development. The basic sustainability conditions provided by general guidelines should be necessarily met but the extra local character should not

be set aside. Thus, a new method to overcome sustainability challenges has emerged. It is argued that getting local input by engaging local citizen is of paramount importance to safeguard the representation and accuracy of the indicators and meanwhile help empower the local community, which conventional approaches fail to do (Fraser et al., 2006; Lang et al., 2012).

To get representative and reliable local input, neighbourhood-level public meetings can be activated through neighbourhood planning for broader participation (step 3 and 6 in Table 2.1). Vulnerable groups, whose voice may have been ignored before, would be concerned and encouraged to participate in the neighbourhood planning process. This inter-related process between neighbourhood planning and social inclusion also implies the former's contribution for greater equity, particularly the equity of public resource use. In this sense, neighbourhood planning can enhance social democracy, equity, inclusion and other sustainability dimensions by engaging neighbourhood residents and fostering a bottom-up approach to the planning and decision-making process. Some scholars have also argued that successful sustainability policies built on contextual features empower the residents of neighbourhoods and help prevent simple top-down implementation (Drilling & Schnur, 2012; Talen, 2011). In other words, local authority can make a more adaptive decision favouring sustainable development only if effective local inputs are obtained during the decision-making process.

Cultivation of Community Sense

Neighbourhoods are referred to as collective spaces. The inhabitants and their sense of community and social capital play a dominant role in actively nurturing a sustainable neighbourhood. The literature generally agrees that a strong sense of community (SoC) implies a healthy community and exhibits an extra-individual quality of emotional interconnectedness observed in collective lives (Fisher et al., 2002). Some scholars also note that SoC is beneficial for the improvement of quality of life and social well-being, as well as life satisfaction (Farrell et al., 2004; Prezza & Costantini, 1998). All these major elements contribute to social sustainability. Since the inhabitants of a neighbourhood are the focus of neighbourhood planning, their sense of community should be cultivated through public participation at the planning procedure stage to enhance the social sustainability of the neighbourhood.

Iterative and Adaptive Planning

For planning procedure, the iterative character is regarded as an institutional arrangement to safeguard that a draft neighbourhood plan meet the principles set by higher-level guideline or framework. In fact, the preparation of neighbourhood plans is meant to follow a simplified version of the process used to develop a local plan. The development and appraisal of proposals in local plan documents should be an iterative process during which the proposals can be revised according to appraisal findings. For neighbourhood plan, it would probably be time consuming but beneficial to largely ensure that the development proposal does meet the sustainability principles. The iterative process should inform the selection, refine and publish the preferred approach for consultation.

For the issues identification and solution option (step 2 and 4 in Table 2.1), an iterative and adaptive planning process is crucial for understanding urban challenges and adjusting neighbourhood development plans to respond to both key internal and external factors. In a transitional world, urban planning is significantly challenged by uncertainty of the future (Kwakkel & van der Pas, 2011). To cope with uncertainties and unprecedented changes of urban development, generating reliable knowledge and creating more predictable systems by command and control management is a common approach (McDaniel & Driebe, 2005). But, recently, this traditional approach did not work well enough in European countries and more engaged and bottom-up planning forms were encouraged to diversify the planning methods in handling more complicated issues. In this sense, iterative planning can provide a regular and adaptive tunnel through which different stakeholders may get involved in the local decision-making process. Thus, the iterative manner of neighbourhood planning is considered important for enhancing a neighbourhood's capacity for surviving, adapting and growing in a transitional context so that sustainability problems brought by future uncertainties and complexities can be scientifically resolved. Marique and Reiter (2011) also stated that testing and subsequently improving innovations, as well as reproducing current ideas through trial and error is required to foster sustainable neighbourhoods.

Table 6. 3 Comparison of common characteristics of neighbourhood planning practice in four countries

Institutional Aspect	No.	Aspects for Comparison	Key Common Characteristics
Decentralization and local governance	1	The aim or role of Neighbourhood Plan	1. Policy and Initiatives foundation 2. Authoritative, explicit and consistent definition of the role, aim and area of neighbourhood planning 3. Institutional arrangement or Resolution mechanism of possible planning conflicts 4. Funding and staffing of the project
	2	Relationship to regional or other upper-level planning (How the Neighbourhood Plan fits into the Planning System)	
	3	The coverage of neighbourhood plan practice in the country	
	4	Is Neighbourhood Plan a Statutory Plan? (Legitimacy?)	
	5	Financial and Human Resources of Neighbourhood Planning Projects	
Iterative and adaptive planning	6	Who is the facilitator of neighbourhood planning project?	5. The facilitation of Steering Committees or Groups 6. Normalized, systematic and iterative planning procedure
	7	Planning Horizon, any regular revision?	
	8		

		How will the plan be used to guide neighbourhood development?	
	9	Neighbourhood Profile	
Cultivation of community sense	10	Core Concerns; Key Issues to be addressed	7. Public Opinion foundation
	11	The range of community engagement activity	
Public Participation and decision making	12	The degree of public participation	8. Substantial experience and high level of public participation
	13	Major Factors of the plan	
	14	Institutional arrangement of planning procedure	9. Quality assurance of planning implementation

For each characteristic, an elaborative statement is provided as follows:

·Policy and initiative foundation

Decentralization through the enactment of national or provincial policies was the first common characteristic of the four countries studied. This is in line with the literature as discussed in Chapter 2. It revealed that national, municipal level policies or legal documents were the foundation for the development of neighbourhood planning in each of the countries.

In the UK, the government made a commitment to empower the local grassroots in developing their areas. The Localism Act 2011 enhanced people's power in making neighbourhood plans and neighbourhood planning orders while the intervene from the central government was reduced. In the US, national standards for environmentally sustainable neighbourhood locations was jointly issued by the US Green Building Council, the Congress for the New Urbanism and the Natural

Resources Defence Council to encourage and recognize the link between neighbourhood planning and global sustainability challenges. In Canada, an influential document called 'A Guide for Developing Neighbourhood Plans' was jointly issued by the Manitoba Intergovernmental Affairs Office and the City of Winnipeg's Planning, Property and Development Department to guide regional development. Other Canadian mega cities, like Vancouver and Toronto, also have their own official guidelines or action strategies for neighbourhood planning. In Taiwan, Phase II of the Community Empowerment Project (2008 to 2016) was stipulated at ministry level. The three main objectives of the Ministry's nine-year plan include: nurturing a new generation of experts for community empowerment and integrating regional resources; empowering local residents and engaging with their local community; and developing new methods of community empowerment by initiating a new and specific sub-project called the Community Development Breakthrough Program.

• Authoritative, explicit and consistent definition of the role, aim and area of neighbourhood planning

There is an authoritative, explicit and consistent definition of the role, aim and scope of neighbourhood planning in all these four countries. The role of neighbourhood planning is seen as complementary to local planning and is coordinated with municipal-level planning to achieve a city's developmental goal without neglecting individual neighbourhood interests.

The comparative study indicates that slight differences exist among the different countries' objectives when it comes to neighbourhood planning. The US and Canada begin with a vision for their respective neighbourhoods and recommend implementation actions for achieving their visions. In the UK, the local residents are directly given the power to decide what kinds of development they want. In Taiwan, because of its varied progress with democratic and civic development, the primary objective is to cultivate a sense of strong community and enhance the collective capacity to voluntarily resolve public issues.

• Institutional arrangement or resolution mechanisms of possible planning conflicts

In these countries, institutions or mechanisms are established which ensure that neighbourhood planning is fitted into the overall urban planning system, which mitigates any contradicting

interests, especially in terms of sacrificing the interests of the local people. There is a specific institutional arrangement for dealing with situations if there are conflicts between neighbourhood plans and upper-level plans. Guidelines or conditions are developed based on the neighbourhood plans.

・Individual funding and staffing of the project

For the project itself, adequate funding and competent staff are important prerequisites for practising neighbourhood planning. To some degree, these two aspects are determined by the strength of governmental support and the availability of societal resources. For the funding part, individual funding for neighbourhood planning projects is often allocated from the local government (town council or municipal government), or extra funding may also be obtained from the upper-level government in these four countries. For the staffing part of the project, the project team members include representatives from different stakeholders including government, community, residents, developers, academics, professionals, and NGOs.

・The facilitation of steering committees or groups

In all four countries, a core facilitator of the project, a steering group or a responsible team bears the responsibility to lead, organize and monitor the process of a neighbourhood planning project. In the UK, this group is professional, official, and knowledgeable with executive force. In the US and Canada, the steering committee is comprised of local leaders and organizations with a rich history of serving the community and who review the community’s needs and concerns before approving the neighbourhood plan's recommendations. In Taiwan, steering groups are initially set up to engage the public through organizing different events and professionally coordinating with relevant government departments.

・Normalized, systematic and iterative planning procedures

Although many different forms, methods and participants are involved in neighbourhood planning, normalized, systematic and iterative procedures are the three common features found in the successful practices of these four countries. Multiple city departments, local stakeholders, community organizations, citizens and social service providers are engaged together and

coordinate their efforts. Therefore, a more interactive, responsive environment at neighbourhood level or grassroots resident level is provided to express concerns and needs.

・Public opinion foundation

Neighbourhood inhabitants share common community interests, aspirations of autonomy and do not hesitate to collectively collaborate to help resolve nearby issues. It is evident that sense of community in these four countries is relatively strong. Positioned between state governments and markets, the inhabitants demonstrate a concern about quality of life, security, social well-being, as well as sense of place. As such, they are more likely to participate in the neighbourhood planning process and air their views and demands.

・Promotion of high level of public participation

The degree of public participation is of utmost important. For the UK, the US and Canada, the planning process is usually divided into several phases and the majority of them are committed to high levels of community participation. In Taiwan, public participation is defined as the soul of 'community empowerment' projects from the beginning. Especially under the global trend of decentralization, governments readily provide diverse opportunities for residents to participate in public consultation and to express their opinions about community issues. Different kinds of activities, like forums, workshops, planning studios and focus groups, are designed to encourage people to air their views. The expression of their needs, comments on present service and their views of the future are collected and regarded as crucial components of the final neighbourhood plan.

・Quality assurance of planning implementation

Neighbourhood plans in the US, the UK and Canada include the respective residents' concerns and views, which are then taken into consideration when planning amendments or new proposals. The adopted plans are gradually implemented under a political mechanism, like becoming a part of a statutory plan through referendum in the UK and adoption by the city council in the US and Canada. Taiwan places more emphasis on how the community sense is cultivated and the collective capacity of voluntarily resolving problems are enhanced through 'Community Empowerment'.

However, the National Development Council also regularly heads different levels of departments to monitor and evaluate the project performance as quality assurance.

6.4 Prominence of Institutional Elements in Sustainable Neighbourhood Planning in China

It is widely recognized that political and institutional aspects are more prominent in China's urban planning system. Gu et al. (2014) categorized China's urban planning transition into four stages: socialist master planning and anti-planning (1949-1978), reforming master planning (1979-late 1980s), urban development planning (early 1990s-2000) and comprehensive planning (2001-present). They demonstrated that strong authority was still the major characteristic of urban planning and implementation, as well as the construction of large infrastructure and public facilities in China after these series of planning evolutions.

It can be deduced that the promotion and facilitation of sustainable urban development was very policy-oriented at different levels of Chinese governments. From the 1970s to the 2010s, 'green city,' 'garden city,' 'eco-city,' 'low-carbon city' to 'eco-low-carbon city' were successively proposed as political guidelines for urban development (H. Liu et al., 2014). The development of all these concepts is a constant and dynamic procedure that was derived from an old one with revisions to adapt to a new context. Three major methods used by government to promote sustainable cities were also categorized by H. Liu et al. (2014): construction demonstrative models for nationwide replication; building up awarding and incentive systems to encourage local governments to follow proposed standards and criteria; and promotion of general objectives but allowing different local approaches to be adopted for reaching them.

By reviewing the China context above, the prominence of institutional and political elements in neighbourhood governance, urban planning systems, and sustainable development reveals their dominant and conjunctive role in facilitating sustainable neighbourhood planning in China. For urban planning, strong policy orientation is a constant while legal recourse, particularly with respect to public participation, has been gradually enhanced. Regarding neighbourhood governance, financial and human resources and accountability of the actual governing pattern still play a role as an extension of local governments rather than offering higher degree of autonomy. Sustainable development guidelines have been affected by China's international reaction to global action advocates rather than by domestic evolvements. Sustainable neighbourhood planning is located within the overlapping area between these three as illustrated in Figure 6.2. Given the common character of institutional dominance between the three realms, the significance of firstly identifying institutional barriers to practicing neighbourhood planning in this study is highlighted.

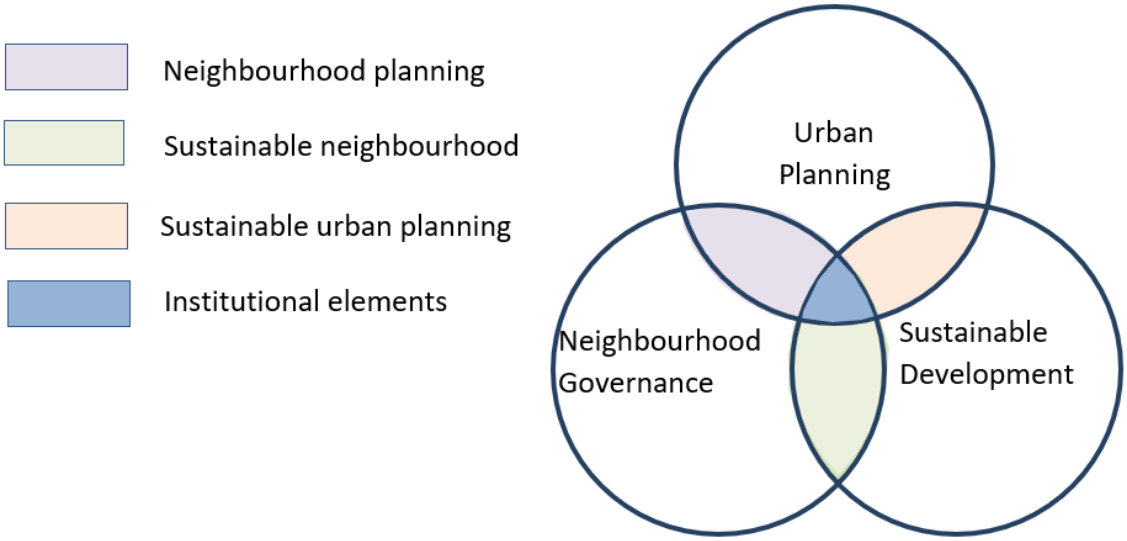


Figure 6. 2 Relationships between different realms.

6.5 Barriers to Neighbourhood Planning Development in China

With reference to the comparative study above, the researcher transformed the common characters into nine preliminary barriers that possibly hinder the development of neighbourhood planning in China. The twelve experts were then interviewed to verify the applicability of these nine barriers in the context of China. The experts were asked to indicate whether he or she agreed with each

corresponding barrier. Finally, the results from eight out of twelve experts were regarded as valid ones. These eight were chosen as they both had been involved in housing planning, neighbourhood governance, and community revitalization projects in China and were able to give a valid remark on each statement during the interview.

6.5.1 Structured Expert Interview

A panel of twelve experts was interviewed during September 2016 to October 2017 to discuss the relevance of common worldwide neighbourhood planning characteristics in the context of China and to verify the proposed obstacles that may hinder the development of neighbourhood planning in China. The experts chosen were academics, professionals, governors and an NGO representative who have at least fifteen years of working experience in the field of urban planning, community governance and sustainable development in China. A profile of each expert on the panel is given in Table 6.4. During the interviews, they were presented with the identified barriers and asked to indicate their agreement or otherwise with each; they were also invited to supplement with any barriers that they might know of.

Table 6. 4 Profile of the experts

Expert	Name	Field of expertise	Affiliation
1	Mr AA	Civil Affairs and Community Governance	Senior Governor, District Government, Shenzhen, Guangdong, China.
2	Dr BB	Urban and Community Planning	Professor, The University of XX, Guangzhou, Guangdong, China.
3	Ms CC	Urban Planning and Design	Senior Planner, a professional urban planning and design Institute, Guangzhou, Guangdong, China.
4	Dr DD	Public Space Management and Policy	Professor, The University of YY, UK.
5	Dr EE	Planning Methodology and Technology	Senior Researcher, The University of ZZ, Shanghai, China.
6	Ms FF	Urban Renewal and Public Participation	Project Manager, a renowned NGO, Shenzhen, Guangdong, China.

7	Dr GG	Green Technology and Environmental Regulation	Professor, The University of UU, Beijing, China.
8	Dr HH	Elderly Friendly Community	Director of A professional planning and design institute, Shanghai, China.
9	Dr II	Neighbourhood and Participatory Planning	Professor, The University of VV, Guangzhou, Guangdong, China.
10	Mr JJ	Community Governance	Director of XX Community, Chengdu, China.
11	Dr KK	Urban Planning	Senior Urban Planner, Urban Planning and Design Institute of XX city, Jiangsu, China.
12	Dr LL	Urban Design and residential area planning	Former chief planner of Urban Planning and Design institute, XX city, Hubei, China

6.5.2 Verified Barriers

Table 6. 5 Overall consent rate of the proposed barriers

No.	Specific Barrier	Total Consent rate
1	Poor Community Sense	87.5%
2	Lack of national policy foundation and explicit official definition	75%
3	Unclear accountable body of neighbourhood planning project	75%
4	Lack of institutional arrangement or resolution mechanism of planning conflicts	50%
5	Inadequate experience, degree and platform of public participation	100%
6	Inadequate financial and human resource support	75%
7	Lack of the facilitation of Steering Committee	50%
8	Lack of institution and mechanism for planning implementation and evaluation	75%

9	Planning procedure is not normalized, systematic and iterative	75%
Other barriers suggested by the experts:		
S1	Inadequate updated laws and regulations to define the authority and liability of neighbourhood public space management	
S2	Highly bureaucratic community residents' committee	

According to the results of the expert verification, two items were eliminated due to their low consent rate, since 70% agreement is considered necessary in interpreting percentage agreement (House et al., 1981), whereas two extra items were added based on the experts' supplements. It was found that the experts agreed on most of the barriers and provided further elaborations, which provided a more holistic perspective.

The finalized nine barriers were categorized into three major areas: insufficient policy design and legal support; inappropriate local governance and planning context; and weak sense of community and participation in planning. These three areas are closely associated with the four institutional aspects of how neighbourhood planning relates to local sustainability in Chapter 2. Some of these identified barriers had also been demonstrated in previous research for hindering sustainable urban development in China (H. Liu et al., 2014). Each barrier is further elaborated upon in the following.

6.5.2.1 Insufficient Policy Design and Legal Support

・*Lack of national policy foundation and explicit official definition*

Decentralization through the enactment of national or provincial policies was the common characteristic of the US, the UK, Canada and Taiwan and neighbourhood planning acted as one of the typical methods of decentralization. Comparatively, it was not until June 2017 that neighbourhood planning was first formally included in national policy and guidelines in China. The central government has issued this updated policy guideline for "enhancing and improving urban-rural neighbourhood governance." However, 'organizing and making neighbourhood planning in pilot cases' was only mentioned in one paragraph under the subheading of "Optimizing the neighbourhood resource allocation" (Agency., 2017). K. Yu and Cai (2012) stated that neighbourhood planning has not drawn as much attention from senior policy makers as urban planning has. Prior to the recent policy, the only relevant plan was issued by the National Ministry

of Civil Affairs as an initiative policy to promote construction of a community service system. However, according to an interviewee who was the local governor of the Department of Civil Affairs in Shenzhen, practical actions are very limited at municipal level and there are never any significant achievements at lower levels by following this national advocacy. It is argued that neighbourhood planning and building cannot be efficiently facilitated without the participation of major departments and stakeholders.

As there is a lack of explicit and authoritative definition about the role and aim of neighbourhood planning in China's national guidelines, many projects are conducted on a case by case basis rather than following predetermined nationwide practices. In comparison, there is an authoritative, explicit and consistent definition of the role, aim and scope of neighbourhood planning in the other four countries. The role of neighbourhood planning is seen as complementary to local planning and is coordinated with municipal-level planning to achieve a city's developmental goal without neglecting individual neighbourhood interests.

・*Inadequate updated laws and regulations that define the authority and liability of neighbourhood management*

As a result of immense urbanization and institutional reform, community profiles have already been comprehensively transformed. However, the legal system of urban community governance has not been well established and updated. Under these circumstances, very few laws and regulations have been formulated to clearly define the authority and liability of neighbourhood public space management, which, otherwise, could be the baseline for community governance (Expert 1 and 2 in table 6.4). Besides, very few local policies have been issued to provide a mechanism for ordinary neighbourhood members to participate in neighbourhood planning and environmental management (M. Chen et al., 2015; X. Zhang et al., 2013). Neighbourhood planning cannot be effectively practiced within a fuzzy and ambiguous legal and governance system where mediation and arbitration are not always constructive. Thus, the lack of a clearly defined role for management power and responsibility concerning public spatial issues and property rights is one of the systematic barriers to initiating neighbourhood planning.

・*Unclear accountable body of neighbourhood planning project*

In all four countries, a core facilitator of the project, a steering group or a responsible team bears the responsibility to lead, organize and monitor the process of a neighbourhood planning project. Usually, this team contains different stakeholders to engage affected communities. But such a responsible and accountable body is not clearly designated in China. In fact, the Land Use and Urban Planning Bureau, Department of Civil Affairs, Street Office, Residents' Committee are all involved in different stages of neighbourhood planning processes in China. However, the absence of a main accountable leader makes the allocation of authority and responsibility to the corresponding departments unclear (Expert 9). It is therefore common for different bodies to pass responsibility to another body, especially in the planning implementation phases. Consequently, the facilitation of planning procedures has been hindered.

6.5.2.2. Inappropriate Local Governance and Planning Context

・*Highly bureaucratic residents' committee of the community*

As the major governance institution of neighbourhood in China, the Community Residents' Committee (CRC) and its efforts play a critical role in neighbourhood planning projects. In principle, CRC is officially defined as an autonomous organization of local residents. However, this grassroots organization has become highly bureaucratized and been largely accountable to Street Office since it was firstly established and has managed to rule the community as though it were still operating in the planned economy era. This situation is against the principle of planning for the people.

The municipal governance hierarchy, as shown in Figure 3.1, is a three-level vertical system. There has been evidence of frequent or even inevitable intervention of Street Office, which is the agency and lowest level of urban local government, with community autonomy in terms of top-down (Street Office to Community Residents' Committee) financial allocation and human resource nomination authority (Expert 1). In fact, the fiscal appropriation from Street Office is legally allowed and the main financial source of CRC. Therefore, CRC institutionally became an extension of local government into neighbourhoods and accountable to Street Office rather than the most important stakeholder-residents, to a large extent. These arrangements have been criticized for damaging the degree of autonomy and work against the official implication of community as a basic autonomous unit. Since neighbourhood planning should be collaborative

and interactive, involving 'bottoms-up' participation, the lower degree of autonomy is a fundamental barrier to nurturing residents' concerns about their own interests and facilitating neighbourhood planning.

・*Inadequate financial and human resource support*

In the other four countries, individual funding is often allocated from the local town council or municipal government as well as extra funding obtained from the upper-level government. Regarding the staffing of the project, the project team members include representatives from different stakeholders including the government, community, residents, developers, academics, professionals, and NGOs.

However, neighbourhood planning lacks regular financial and human resource support in China. Unlike those foreign countries, financial support for neighbourhood planning is limited and policy-oriented. There is no regular funding for neighbourhood planning so far and all available funding are managed by the department of Civil Affairs which is not responsible for planning projects (Expert 1). Regarding human resource, the lack of professionals who are both proficient in urban planning and community studies presents another key challenge. Chinese planning practitioners have insufficient experience and knowledge related to neighbourhood planning (Shi et al., 2016). The current professional urban planners who were trained as urban engineers are not competent to deal with new and integrated social-dimension problems in the community. This problem has been aggravated by the absence of Neighbourhood Planning courses in current planning training schemes in higher education institutions (Expert 2).

・*Lack of institutions and mechanisms for planning implementation and evaluation*

In the other four countries, the adopted plans are gradually implemented under a political mechanism, such as becoming a part of a statutory plan through referendum in the UK and adoption by the city council in the US and Canada. The National Development Council of Taiwan also regularly heads different levels of departments to monitor and evaluate the project performance as quality assurance.

In comparison, little research has focused on the implementation and evaluation of neighbourhood planning in China. Thus, adaptive neighbourhood planning theories in China are scarce (Jiayan &

Xiangyu, 2017), which has led to the absence of a theoretical foundation for delivering planning implementation and evaluation. In practice, the government is currently concerned more with policy rather than its implementation and evaluation. For instance, although the municipal Department of Civil Affairs of Shenzhen issued official guidelines on neighbourhood development, very few local neighbourhoods checked on plan implementation or evaluated impact (Expert 1). Without substantial implementation and management, how a planning policy initiative can work effectively is questionable.

6.5.2.3. Weak Sense of Community and Participation in Planning

・*Poor collective community sense*

Unlike the relatively strong sense of community in the other four countries, the community sense has still yet to be cultivated in transitional China. Previously, the maintenance of community sense passively relied on the top-down political administration. This situation began to change in the late 1980s, during which time market-oriented economic reforms were implemented and the neighbourhood demographical profiles began to change. A growing number of residents chose to move out and purchase new commodity flats in the market. Thus, neighbourhood clusters became a mixture of old work units and newly developed commodity and gated communities. However, as the old danwei-based community sense has gradually dissolved, a new sense of community in commodity houses has not yet built up (Experts 2 and 9). To date, the residents from both the old danwei and the new commodity community system had not yet got involved with public issues nor been active in taking collective action.

・*Inadequate experience, degree and platform of public participation*

It is believed that public participation mode is imperative or even a pre-requisite for successful neighbourhood planning. Thus, the sense, degree and platform of public participation determine the effectiveness of neighbourhood planning in helping resolve neighbourhood problems in a collaborative way. In reviewing the history of public participation, it is apparent that the three Western countries have a relatively longer history of public engagement with local governance, while Taiwan has had a shorter period but still performs well when it comes to motivating grassroots participation.

However, due to historical and social ideological reasons, these three elements have not been substantially and constructively improved in previous planning practices (Expert 2). H. Liu et al. (2014) stated that there is still a lack of broad participation on local level and by civil society although both top-down and bottom-up initiatives have been tested. The effectiveness of public participation in the local planning process is still doubtful. Expert 12 emphasized the ineffective feedback from the authority after public consultation. According to her past experience of organizing public consultation on urban planning in City A, residents felt discouraged and would not attend again since their thoughts and comments on plans during the previous consultation did not receive effective and timely feedback from the authorities. This is one of the critical reasons the participation rate is fairly low in China. She advocates a more transparent and efficient participating mechanism to address this problem.

・*Planning procedure is not normalized, systematic and iterative*

Neighbourhood planning refers to both the simple process of collecting residents' feedback and elaborating on and addressing social problems in a professional way (Expert 9). This emphasizes that planning procedures should not be a one-stop process but iterative, systematic and normalized.

Although many different forms, methods and participants are involved in neighbourhood planning, normalized systematic and iterative procedures are the three common features found in the successful practices of these four countries. Therefore, a wide range of quality services at the neighbourhood level and a more responsive, interactive planning procedure are provided for residents to express their concerns and needs. Institutionally, several rounds of proposal appraisal within the iterative planning process also guarantee that draft plans conform to core principles or frameworks.

By contrast, the existing neighbourhood planning practices reflected that both the public and the authority are more concerned with whether planning outcomes achieve the pre-set goal rather than that the procedure is appropriate in China. This situation is associated with the deficiency of current urban planning systems and, also relate to failings in tracking residents' long-term feedback on planning implementation (Expert 3).

6.6 Chapter Summary

This chapter adds to the literature on neighbourhood planning both from a global and Chinese perspective. Particularly, it highlights the local adaptability of neighbourhood planning by ascertaining the differences of institutional context between China and other countries. It also demonstrates challenges and opportunities for facilitating neighbourhood planning in China and raises several questions that should be further investigated: What are the underlying factors involved in cultivating sustainable neighbourhoods in China and what are the specific and unique sustainability indicators? What is the proper operational mechanism for neighbourhood planning that fits into the local social-political context? And, will constructing a comprehensive sustainability framework for neighbourhood planning help cultivate more sustainable neighbourhoods?

Chapter 7 Results and Analysis of Empirical Study in Chengdu

7.1 Introduction

The previous chapter depicted the background and characteristics of the three selected neighbourhoods in Chengdu, China, that were used as case studies for conducting the study's empirical research; Chengdu was chosen because it is claimed to be one of the most liveable cities in China and it encompasses traditional danwei, resettlement housing, and commodity- housing neighbourhoods. This chapter presents the results of the case studies and explains how logic regression modelling was used to produce an adaptive sustainable neighbourhood framework for assessing how neighbourhood sustainability, residential life satisfaction, and moving intention interact with each other in different neighbourhoods in China.

7.2 Respondents' Social-economic Characteristics

From each of the three neighbourhoods, 170 samples were randomly drawn. The number of valid questionnaires from each neighbourhood was 160 (Yulin), 160 (Xingyue), 162 (Jinyang), and by dividing each by 170 a valid rate of 94.1%, 94.1%, and 95.3% respectively was arrived at. It should be noted that only respondents living in each of the studied neighbourhoods were interviewed.

Table 7.1 shows the social-economic characteristics of the respondents in the selected three neighbourhoods. The overall demographical and social-economic figure of Chengdu municipal level was shown as well in table 7.1 for comparison. Jinyang has the largest proportion of youngsters, property owners, and new inhabitants, as well as highly educated individuals, and those with a high monthly income and expenditure. Yulin has the highest proportion of respondents who have lived there for longer than 10 years. Xingyue has the highest proportion of respondents with lower than 2,000 RMB monthly incomes, lower than 3,000 RMB per household of monthly expenditure, and longer than 30 minutes of housing-job commuting time.

The results reveal that residents with non-local (outside Chengdu) Hukou, account for the majority of the tenants (161 out of 188), while most of the respondents who have local Hukou (in Chengdu) are property owners (243 out of 293). This indicates that immigrants are generally the major source of tenants. For commuting time, most of the respondents indicated that their housing-job commuting time was less than 30 minutes (73.1% for Yulin, 64.7% for Xingyue, and 75.8% for Jinyang).

Table 7. 1 Social-economic characteristics of the selected three neighbourhoods

	Yulin	**Xingyue**	**Jinyang**	**Chengdu City**
No. of valid responses	160 (10 invalid)	160 (10 invalid)	162 (8 invalid)	
Gender				Year 2017
Male	72 (45%)	64 (40%)	78 (48.1%)	49.66%
Female	88 (55%)	96 (60%)	84 (51.9%)	50.34%
Age Group				Year 2010
18-35	46 (28.7%)	48 (30.0%)	72 (44.4%)	90.19%
36-50	41 (25.6%)	50 (31.3%)	46 (28.4%)	
51-65	38 (23.8%)	44 (27.5%)	32 (19.8%)	
66-80	27 (16.9%)	18 (11.25%)	10 (6.2%)	9.71%
80 or above	8 (5.0%)	0 (0%)	2 (1.2%)	
Status of residence				
Property owner	88 (52.5%)	93 (58.1%)	113 (69.8%)	
tenant	72 (47.5%)	67 (41.9%)	49 (30.2%)	
Hukou type				Year 2018
Local	84 (52.5%)	95 (59.4%)	91 (56.2%)	90.39%
Non-local	76 (47.5%)	64 (40%)	71 (43.8%)	9.61%
Missing response		1		
Duration of residence				
Less than 1 year	23 (14.4%)	24 (15.0%)	38 (23.5%)	
1 to 3 years	28 (17.5%)	35 (21.9%)	46 (28.4%)	
4 to 6 years	20 (12.5%)	44 (27.5%)	25 (15.4%)	
7 to 10 years	17 (10.6%)	47 (29.4%)	24 (14.8%)	
Longer than 10 years	72 (45%)	10 (6.3%)	29 (17.9%)	
Education				Year 2010
Lower than primary school	13 (8.1%)	32 (20.0%)	8 (4.9%)	7%

Elementary school	42 (26.3%)	23 (14.4%)	15 (9.3%)	24.3%
Secondary School	56 (35%)	61 (38.1%)	39 (24.1%)	52.0%
College or above	49 (30.6%)	44 (27.5%)	100 (61.7%)	16.7%
Monthly Income				**Monthly Income Per Capita (2018)**
2000 or below	50 (31.3%)	75 (46.9%)	24 (14.8%)	Urban Citizen: 38918 RMB Rural Citizen: 20298 RMB
2000 to 4000	73 (45.6%)	51 (31.9%)	39 (24.1%)	
4000 to 6000	23 (14.4%)	24 (15.0%)	46 (28.4%)	
6000 to 8000	11 (6.9%)	9 (5.6%)	25 (15.4%)	
8000 or above	3 (1.9%)	1 (0.6%)	28 (17.3%)	
Household monthly expenditure				**Household Annual Expenditure (2018)**
3000 or below	85 (53.1%)	94 (58.8%)	41 (25.3%)	38284.60 RMB
3000 to 5000	48 (30%)	43 (26.9%)	42 (25.9%)	
5000 to 7000	13 (8.1%)	20 (12.5%)	38 (23.5%)	
7000 to 9000	7 (4.4%)	1 (0.6%)	16 (9.9%)	
9000 above	7 (4.4%)	2 (1.3%)	25 (15.4%)	
Housing-job commuting time				Year 2018
Less than 5 minutes	32 (20.5%)	10 (6.8%)	20 (12.4%)	93.6%
5 to 15 minutes	39 (25.0%)	32 (21.8%)	51 (31.7%)	
15 to 30 minutes	43 (27.6%)	53 (36.1%)	51 (31.7%)	
30 minutes to 1 hour	34 (21.8%)	33 (22.4%)	27 (16.8%)	
Longer than 1 hour	8 (5.1%)	19 (12.9%)	12 (7.4%)	6.4%
invalid response	4	13	1	Average: 46 minutes
Commuting time between home and transport station				
Less than 3 minutes	33 (20.6%)	42 (26.3%)	30 (18.7%)	

4 to 10 minutes	88 (55.0%)	68 (42.5%)	111 (69.4%)	
11 to 20 minutes	27 (16.9%)	33 (20.6%)	15 (9.4%)	
Longer than 20 minutes	12 (7.5%)	17 (10.6%)	4 (2.5%)	
Willing to stay living here or not				
Yes	130 (81.3%)	135 (84.4%)	110 (67.9%)	
No	30 (18.8%)	25 (15.6%)	52 (32.1%)	
Overall neighbourhood life satisfaction				**Source:** Chengdu statistical yearbook 2018; 2018 Research Report of Urban Commuting in China; 2010 population census Chengdu report.
Less than satisfied	71 (44.4%)	62 (38.8%)	98 (60.5%)	
Satisfied	89 (55.6%)	98 (61.3%)	64 (39.5%)	

7.3 Internal and External Validity

Validity is concerned with the meaningfulness of research components. Internal and external validity are two major validity indicating the reliability of the social science research (Drost, 2011). For internal, is there a representative sample of respondents or a bias sample? For external validity, how generalisable is this case-effect across persons, settings, and times? These two issues were discussed as follows.

For internal validity, population validity (people) and ecological validity (situation) are discussed below. The total population of each neighbourhood is 11,027 (Yulin), 3,000 (Xingyu) and 9,794 (Jinyang) while the valid sampling size of each neighbourhood is 160 (Yulin), 160 (Xingyue), 162 (Jinyang). According to Kotrlik and Higgins (2001), a sampling size from 119 to 209 should be adequate enough for a survey study with the total population size from 4,000 to 10,000. Thus, the obtained valid questionnaires are statistically adequate and appropriate for all the three cases. In this study, stratified random sampling technique was adopted. Firstly, people aged 18 and above

in three neighbourhoods were invited to take part in the survey. In addition, only users who were currently living within the neighbourhoods were invited to take part in the survey to make sure they are truly stakeholders. Moreover, the sampling contains different gender, age, education level and economic level.

For sampling purposes, the study chose three typical neighbourhoods with different size, history and built environment characteristics. A 'diverse cases' approach was adopted as the case selection method to illuminate the full range of variation amongst X's impacts on Y. The questionnaire surveys were repeated in three neighbourhoods to collect respondents living in diverse social and physical backgrounds to increase the representativeness of the sampling. The study was a cross-sectional study focusing on comparing the contextual characteristics among the three neighbourhoods, longitudinal issues were not investigated in this study.

For external validity, it refers to whether the findings, mainly include the associations investigated among neighbourhood sustainability, satisfaction and moving intentions, of this study can be inferred to other with the similar context. In social science, Cook and Campbell (1979) stated that generalising to well-explained target populations should be clearly differentiated from generalising across populations. In this research, the identified common and critical factors shared by three neighbourhoods can provide references as universal principles for policy making of sustainable neighbourhood planning in other cities. In contrast, the generalization of contextual framework to other context is subject to the neighbourhood typology.

It should be also clarified that this research does not aim to develop a certain and fixed framework addressing relevant problems in any local context, particularly political and demographical characteristics. Instead, it is to provide other cities a pattern as reference to develop adaptive sustainable neighbourhood planning for addressing their own problems. The findings of and framework developed in this study can provide both theoretical and practical implications for other cities to address similar problems. The conceptual framework in figure 2.3, method of association analysis in chapter 7.5 and developing prioritized principles in table 8.3 can provide references for both Chinese and foreign cities to develop their own framework. In this way, top-down and bottoms-up approach can be integrated to break those guidelines and principles down into local practice to facilitate sustainable neighbourhood development pluralistically.

The generalization of this framework is subject to local context and uncertainty of neighbourhood development. Firstly, the role and effect of neighbourhood planning is pluralistic. It should be noted that it was never an independent movement or scheme, despite the social-political context in countries worldwide. It suggests that the neighbourhood planning could be practiced in diverse forms, such as neighbourhood revitalization or community development, with different function (Q. Zhang et al., 2018).

Thus, within China, the research framework should have significance in addressing similar problems given the representativeness of neighbourhood typology and Chengdu as traditional Chinese city that other cities may learn from. According to the results of expert verifications, it would be anticipated that more factors in common nationwide would be existed in Danwei neighbourhoods than the other two types of neighbourhood. Danwei neighbourhoods face the similar challenges in management transition from danwei to the neighbourhood residents' committee. Resettlement neighbourhood face typical transition of hukou status and lifestyle due to urban renewal in peri-urban area. Commodity-housing are more diverse throughout China. But identified dominant role of physical environment quality, participatory governance as well as responsive service can provide reference for other others.

Outside China, the research framework can also make sense but how significant the results would be subject to two points: first, the role and form of neighbourhood planning locally. Secondly, the possible addition of their own special factors, such as religious or racial heterogeneity which affects social inclusion. Some historical and cultural issues, such as Hukou, collectivism and lifestyle, make China different from other countries. Thus, the content of sustainability criteria may also be different due to national context.

7.4 Sustainability Performance of Different Neighbourhoods in Chengdu

7.4.1 Results of Sustainability Performance in the Questionnaire Survey

Table 7. 2 Percentage of respondents agreeing with neighbourhood sustainability factors

Sustainability performance		**Yulin (1)**	**Xingyue (2)**	**Jinyang (3)**	**ANOVA (Sig)**
Number of valid surveys		**N=160**	**N= 160**	**N=162**	
Social Sustainability					
Accessible and convenient amenities	Good performance in all 3 (percent > 85% or mean value >4)	**91.3%** (4.17)	**86.3%** (4.01)	**91.4%** (4.36)	**F= 7.535 (0.001)**
Often participating in collective activities	Poor performance in all 3 (percent <45% or mean value <3)	**25.6%** (2.52)	**33.8%** (2.68)	**18.5%** (2.35)	**F=2.794 (0.062)**
Opportunity to have social interaction within and without neighbourhoods	Variation in performance > 0.4 or percent difference >20% (between any two)	54.4% (3.30)	**75%** (3.76)	52.5% (3.27)	**F=9.000 (0.000)**
Preference of the collective living pattern		68.6% (3.77)	**78.1%** (4.06)	55.0% (3.54)	**F=10.282 (0.000)**
Economic Sustainability					
Accessible grocery shopping near the neighbourhood	Good performance in all 3 (percent > 85% or mean value >4)	**97.5%** (4.49)	**99.4%** (4.69)	**93.2%** (4.42)	**F=9.346 (0.000)**
Attending economic activities within the neighbourhood.	Poor performance in all 3 (percent <45% or mean value <3)	**15.0%** (2.22)	**34.4%** (2.61)	**14.8%** (2.07)	**F=8.437 (0.000)**
Satisfaction with public methods of information	Variation in performance > 0.4 or percent difference >20% (between any two)	38.8% (3.19)	**69.4%** (3.64)	43.4% (3.22)	**F=10.397 (0.000)**
Environmental Sustainability					
Acceptable distance to the public transport station	Good performance in all 3 (percent > 85% or mean value >4)	**95.0%** (4.33)	**89.4%** (4.01)	**89.5%** (4.30)	**F=8.713 (0.000)**
Institutional Sustainability					
Opportunities to attend and express myself in the	Poor performance in all 3	**23.8%** (2.28)	**22.5%** (2.29)	**24.7%** (2.43)	F=0.759 (0.469)

neighbourhood management meeting	(percent <45% or value <3)				
Benefits of engaging external parties in neighbourhood development	Good performance in all 3 (percent > 85% or mean value >4)	**88.1%** (3.45)	**90.0%** (3.57)	**90.7%** (3.39)	F= 1.536 (0.216)
Overall satisfaction on neighbourhood life		**55.7%** **(3.59)**	**61.3%** **(3.67)**	**39.5%** (3.31)	**F=10.731** **(0.000)**

Table 7.2 above shows the good and poor performances, according to residents' subjective perception of neighbourhood life and of different sustainability dimensions within the neighbourhoods. Several dimensions in which there are significant variations among the three neighbourhoods are also shown in the table. To identify the tendencies, respondents who indicated they agreed or strongly agreed were separated from the others. The term 'agreement rate' is hereinafter used to denote proportion of respondents who indicated agree or strongly agree. For instance，the agreement rate of 'I am satisfied with the overall neighbourhood life' in the Xingyue neighbourhood was 61.3%. This comparable dichotomous split for self-stated agreement is adopted to interpret the tendency of the overall results (Mohan & Twigg, 2007; Parkes et al., 2002).

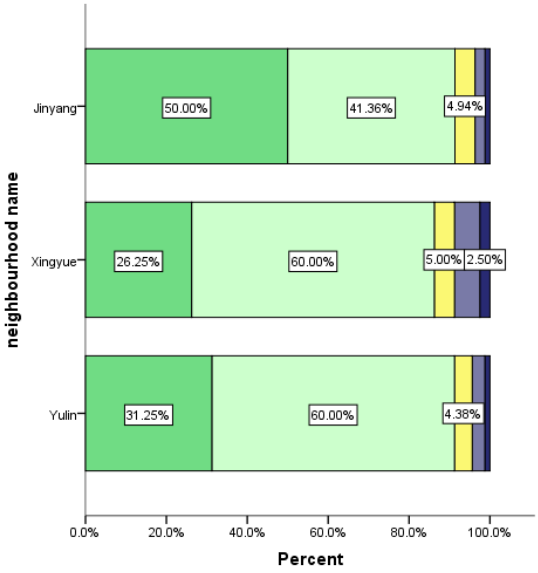
Generally, more than half of the respondents (52.1%) indicated that they were satisfied or strongly satisfied with the neighbourhood life. This suggests that more than half the residents had a positive attitude towards their neighbourhood living experience. However, there is a variation among the three neighbourhoods. Xingyue (XY) had the highest mean value (3.67) and agreement rate (61.3%), while Jinyang (JY) had the lowest mean (3.31) and agreement rate (39.5%), with Yulin (3.59, 55.7%) in between. The ANOVA test was used to examine whether there is a statistically significant difference between the overall satisfaction with neighbourhood life among the three studied neighbourhoods. The results $p=0.000 <0.05$ suggest that different types of transitional neighbourhoods offer different levels of quality of life to their residents.

Regarding specific dimensions, ten specific factors were selected for discussion, since the three neighbourhoods' performance of these factors was either significantly similar or different. Figure 7.1 below illustrates the results in the form of a bar chart, which represents the percentage of respondents' perception of the respective sustainability factors. For institutional sustainability performance, the mean value of the three cases is closed but the ANOVA p-value is larger than

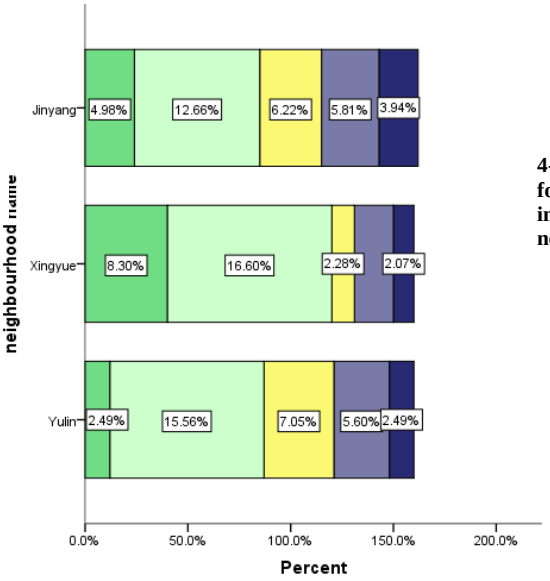
0.05. This indicates that there is no significant difference among the performance of the three cases in respect of 'Opportunities to attend and express myself in the neighbourhood management meeting' and 'Benefits of engaging external parties in neighbourhood development.

Some consistent patterns were identified through descriptive analysis. The results show that all the three neighbourhoods performed better in 'Adequate and convenient community amenities' (SC), 'Accessible grocery shopping near the neighbourhood' (EC) and 'Acceptable distance to the public transport station' (EV). For these three factors, the agreement rate was above 85% in all the three neighbourhoods. 'Accessible grocery shopping near the neighbourhood' had the best performance in the three neighbourhoods. The figures for the three factors were: 4.49 (97.5%) for Yulin, 4.69 (99.4%) for Xingyue, and 4.42 (93.2%) for Jinyang, respectively. In comparison, 'Active participation in collective activities' (SC), 'Will attend economic activities within the neighbourhood '(EC), and 'Opportunities to attend and express myself in the neighbourhood' (IN), reflected the worst performance. The agreement rate was below 45% in all three neighbourhoods.

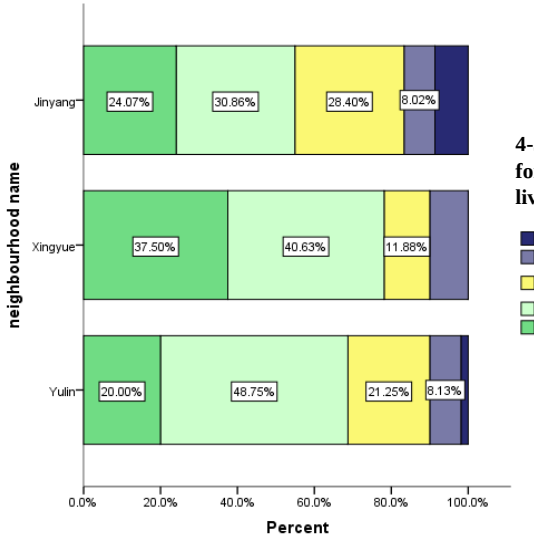
For factors that have obvious variations (differences between agreement proportion >20% and mean value >0.4) among the three neighbourhoods, Xingyue performed better than the other two in 'Opportunity to have social interaction within and without neighbourhoods (SC)', 'Preference on neighbourhood's collective lifestyle (SC)' and 'Satisfaction with the methods of publicizing information (EC)'.



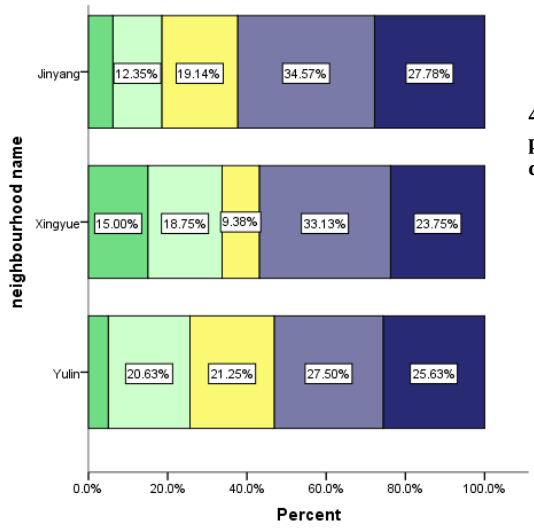
4-1 Adequate and convenient community amenities



4-2 Opportunity for social interaction and networking



4-3 Preference for the collective living pattern



4-4 Active participation in collective activities

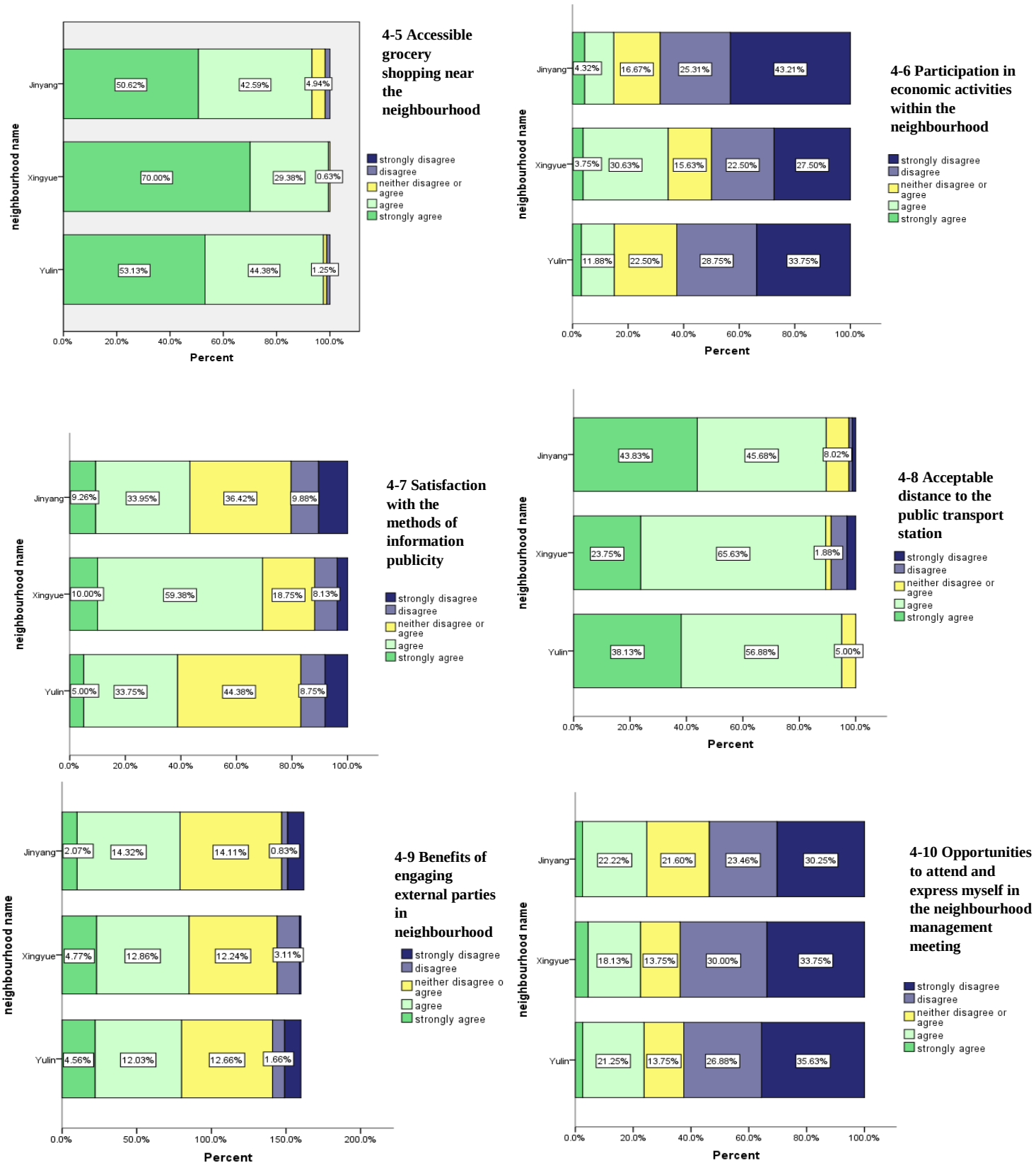


Figure 7. 1 Percentage of distribution of respondents' perception of different factors

7.4.2 Comparison of Three Neighbourhoods' Overall Sustainability Performance

Generally, the respondents' perceptions show that Xingyue (resettlement neighbourhood) had the best performance in social interaction among the three based on respondents' perceptions. It reveals that the established social network contributes to promoting current social interactions. As a case example, Xingyue indicated the highest mean value and agreement rate in 4 out of 5 sub-factors in the group of 'Neighbourhood cultural identification, inclusion and sense of belonging'. The devastating effect of urban renewal on keeping existing social network has been stated in many previous studies (He & Wu, 2007; Meegan & Mitchell, 2001; M. Young & Family, 1957). However, this finding in the Xingyue case makes an important point that the old social network, kinship and its derived domestic interaction, to some extent, can still be retained rather than destroyed. In addition, the policy and method of nearby resettlement is another characteristic conducive to keeping existing social networks in this case. 'Nearby resettlement with transitional housing allowance', as introduced in Chapter 6, reduced the affected residents' social and financial cost by providing them with a transitional housing allowance before moving back to the newly rebuilt neighbourhood in roughly the same place. In other words, residents moved into the newly built neighbourhoods nearby but not far away in a timely manner. It was raised by Experts 2 and 3 in the 3rd round of expert interviews that it is important to ensure that most of the original inhabitants can be resettled into another newly built neighbourhood nearby. This is an effective method for retaining the existing social network during the urban renewal process. In this sense, a resettlement neighbourhood can achieve very good social sustainability performance if the site selection plan and resettlement policy of affected inhabitants is well established. Thus, adopting the principle of 'Nearby resettlement with transitional housing allowance' may help in reducing the negative impact and improving the social sustainability of a resettled neighbourhood. For the institutional dimension, given the lowest performance in 'acceptable variation of property management policy on property owner and tenants', property management is another sustainable issue in Xingyue. According to the interview with Expert 2, in table 4.4, many residents did not pay the management fee there was inadequate property management income to financially support neighbourhood development. The punishments executed were not effective enough to improve the situation. The management team partly attributed this problem to residents' negative perception of paying a property management fee. Although the physical attributes were urbanized, residential mind-set and perception of collective lifestyle had not been completely transformed into a

contemporary pattern. They did not pay the management fee because they did not think it is was their obligation to do so and didn't realise how important it is to the sustainable development of their neighbourhood.

Jinyang (commodity-housing neighbourhood) performed best in the 'Sense of belonging and amenities provision' aspect. Specifically, Jinyang performed best among the three neighbourhoods in 'Regard myself as a member of the neighbourhood', 'Accessible and convenient amenities', 'Satisfactory fresh air', and 'Acceptable noise'. Meanwhile, interestingly, Jinyang performed worst in social interaction, which indicates that they have fewer social contacts. It also performed worst in 'Preference for the collective living pattern'. The results can be possibly interpreted that a higher degree of neighbourhood attachment is attributed to the residents' higher satisfaction with the amenities provision and other physical environments in Jinyang. This result is consistent with the findings of a similar study conducted in Guangzhou (Yushu Zhu et al., 2012). Given that, to what extent face-to-face social interaction should still be an essential condition of cultivating sense of belonging in China is questioned, similar to findings in other foreign neighbourhoods (Rosenblatt et al., 2009). In the case of the new commodity- housing neighbourhood, it shows that satisfactory physical neighbourhood characteristics are important in creating a sense of belonging. Meanwhile, Jinyang has the highest score in some institutional aspect, such as 'Opportunities to express myself in the neighbourhood meeting', 'Effective solution from the CRC after reporting the problem' and 'Acceptable policy variation between local Hukou and non-local Hukou inhabitants'. This empirical result indicates that people's perception of their living experience in new commodity-housing neighbourhoods is complex. On the one hand, they have better performance in neighbourhood attachment and sense of belonging. On the other hand, they have worse performance in social interaction and inclusion. Given the issues above, the methods of allocating an inclusive neighbourhood form as a physical design to cultivate a sense of belonging should be reviewed. More research on the significance of enhancing face-to-face neighbourly interaction in commodity housing is expected. Lastly, considering the declining intensity of social interaction in new commodity housing, is China facing the demise of the community, as suggested in the context of the United States? (Putnam, 1995).

Figure 7. 2 Small yard danwei unit in Yulin neighbourhood
(Source: Photo taken by the author)

Comparatively, the Yulin Neighbourhood (the traditional Danwei neighbourhood) shows the best performance in 'Sense of security'. A high sense of security has always been a typical characteristic of a danwei neighbourhood, as they are gated-communities. Moreover, a sense of security can be partly attributed to the small yard formation of each unit, as shown in Figure 7.2 above, with individual security checks at the front gate. This provides important evidence that small-scale yard or building clusters with individual security at the entrance may enhance the sense of security of residents in the neighbourhood. Meanwhile, Yulin, compared to the other two neighbourhoods, has the largest proportion of respondents who have lived there for longer than 10 years. The result indicates that the more familiar a neighbourhood is to residents, the more psychologically secure the residents may feel. For its environmental sustainability, the results indicate that the quality of living environment, such as 'Satisfactory fresh air', 'Well maintained biological environment' and 'Pleasant open space', is generally good enough to fulfil residents' expectations. Furthermore, the largest proportion of tenant and non-local respondents may help to explain the poorest performance in 'Occasionally visiting the neighbours', and 'Regarding myself as a member of the neighbourhood'. Additionally, the worst performance in 'Interaction with the Community Residents' Committee' can be attributed to the separation of the danwei and the Community Residents' Committee (CRC). Institutionally, the CRC only serves those residents who do not belong to any danwei within a certain area. Thus, it is reasonable that current danwei residents still rarely approach the CRC. Lastly, the increasing number of danwei workers who are moving out and tenants who are moving in enhances the heterogeneity but challenges the old danwei neighbourhood governance of welfare distribution and property management. Generally, the danwei neighbourhood is facing the severe challenges of decaying physical (living conditions) and non-physical (social capital) aspect of their neighbourhood life. To improve the poor overall

sustainability of danwei neighbourhoods, the findings of this research may provide some useful insights. More attention should be given to declining social capital, increased heterogeneity, and the caused changes in residents' preferences and demands. Effectively engaging tenants and immigrants in neighbourhood meetings and letting them express their demands and problems should be a priority.

7.5 Association of Sustainability and Liveability at Neighbourhood Level

Ascertaining the contested association between sustainability and liveability in China is a significant and practical research topic that needs urgent attention. Most previous studies separately investigated neighbourhood sustainability and liveability, omitting the contextual variation in typology. They either only focused on gated neighbourhoods (T. Lu et al., 2018), migrant neighbourhoods (Z. Wang et al., 2017) or broadly researched the total population of all neighbourhoods (J. Ma et al., 2018). Very few attempted to systematically investigate the association between sustainability and liveability in different neighbourhood contexts. Neighbourhood life satisfaction is adopted here as a proxy to indicate liveability (Mouratidis, 2018) as discussed in Chapter 2. The moving intention of residents has been mentioned in many studies to indicate whether the neighbourhood meets both sustainable and liveable criteria in Western countries (Howley et al., 2009a). Intention to stay or not were adopted in investigating residential moving intention(Kim et al., 2005). Thus, a context-specific neighbourhood study on sustainability and liveability while investigating the clarity of association among sustainability, neighbourhood satisfaction and moving intention was conducted for this thesis to narrow the gap mentioned above. The study adopted logistic regression modelling to analyse collected empirical data. The results and interpretations are shown in the following.

7.5.1 Models Analysis

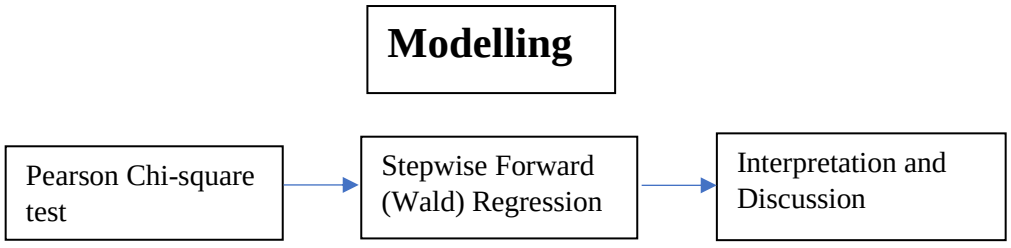


Figure 7. 3 Procedures of logistical modelling adopted in this research

Figure 7.3 above illustrates the procedures of modelling analysis adopted in this research. Given the sampling size of 482 with 30 variables, Pearson chi square test was performed for variables selection by excluding those independent variables that are not significantly associated with the dependant variables (Y). The cutting-off significant level was set at 0.05. Correlation test was also adopted to test the multilinearity among all the variables to avoid the case of two factors being significantly associated. This is also a condition of applying binary logistic regression, which is used later. Stepwise forward regression was adopted to build the model. Pearson's correlation coefficient test was run to avoid a situation where there are two factors which are significantly associated. This is also a condition of applying binary logistic regression. The internal consistency reliability of each resulting factor was assessed by Cronbach's α.

Table 7. 3 Remaining variables after excluding the independent variables that are significantly associated with the dependant variables.

No	1. Yulin	2. Xingyue	3. Jinyang
1	Affordable house	Affordable house	attractive sport and cultural facilities
2	sense of security	attractive sport and cultural facilities	traffic needs of elderly, children, disables and other vulnerable groups
3	traffic needs of elderly, children, disables and other vulnerable groups	sense of security	attended neighbourhood sport or cultural activities or not
4	attended neighbourhood sport or cultural activities or not	willing to stay living here or not	willing to stay living here or not
5	willing to stay living here or not	Active participation in collective activities	Active participation in collective activities
6	opportunities to have social interaction and networking within and outside neighbourhoods	occasionally visiting the neighbours	useful skills training and study workshop in the neighbourhood
7	Preference on neighbourhood's collective lifestyle	Regard myself as a member of the neighbourhood	internal and external connective road is safe

8	Active participation in collective activities	Satisfaction with the methods of information publicity	sense and habit of energy saving
9	occasionally visiting the neighbours	acceptable commuting time	clean internal roads and adequate garbage bins
10	Regard myself as a member of the neighbourhood	Night lighting within neighbourhood	responses from the CRC
11	Satisfaction with the methods of information publicity	adequate transport mode choice	Solution got by informing the CRC of problems
12	acceptable commuting time	acceptable distance to the public transport station	benefits of engaging external parties in neighbourhood development
13	sense and habit of energy saving	clean internal roads and adequate garbage bins	
14	clean internal roads and adequate garbage bins	satisfactory fresh air	
15	satisfactory fresh air	acceptable noise	
16	acceptable noise	pleasant and well maintained biological environment	
17	healthy public open space	effective rainfall drainage system	
18	frequency of using public open space	comfortable and clean benches	
19	be able to attend and express myself in the neighbourhood management meeting	healthy public open space	
20	responses from the CRC	be able to attend and express myself in the neighbourhood management meeting	
21	Solution got by informing the CRC of problems	responses from the CRC	
22	acceptable variation of property management policy on property owner and tenants	Solution got by informing the CRC of problems	

23		benefits of engaging external parties in neighbourhood development	

Table 7.3 above shows the remaining variables after excluding the independent variables that are not significantly associated with the dependant variables (satisfaction on neighbourhood life). The results depicted the different structure of the significant factors set among the three neighbourhoods. There are 22, 23 and 12 qualified factors for Yulin, Xingyue, and Jinyang respectively after variables exclusion. This preliminary comparison generally implies the different mechanism of how sustainability factors interacted with satisfaction degree among different neighbourhood context. The selected factors were input for running binary logistic regression for specifying associations amongst them. Similarly, the independent variables that are not significantly associated with the dependant variables (moving intention) were excluded and the remaining variables were included in the subsequent logistic modelling.

Model 1: Sustainability and neighbourhood life satisfaction

Neighbourhood life satisfaction is the dependant Y variable

Dependant variable: (Y= 1,0)

Independent variables: sustainability factors and social-economic characters.

Model 2: Sustainability and moving intention

Moving intention (Willing to stay living here or not) is the dependant Y variable

Dependant variable: (Y= 1,0)

Independent variables: sustainability factors, overall satisfaction with neighbourhood life, and social-economic characters.

7.5.2 Sustainability and Neighbourhood Life Satisfaction Model

Table 7.4 below shows Model 1 that specifies the association between aggregated sustainability factors and neighbourhood life satisfactions in three different neigbourhoods. There are variations in the range of significant sustainability factors affecting overall neighbourhood satisfaction

among the three. The significant factors, including its corresponding coefficient B value (in the bracket), are described as follows. For Yulin danwei neighbourhood, the five significant sustainability factors are ‘sense of security’ (0.794), ‘Preference on neighbourhood’ (0.538) 'Collective lifestyle’ (0.652), ‘Satisfactory fresh air’ (0.706), ‘Solution got by informing the CRC of problems’ (0.706), and ‘Acceptable variation of property management policy on property owner and tenants’ (0.658). Additionally, age (0.369) is the only significant social-economic significant factor. For Xingyue resettlement neighbourhood, the four significant factors are ‘Sense of security’ (0.638), ‘Regard myself as a member of the neighbourhood’ (0.583), ‘Night lighting within neighbourhood’ (1.268), and ‘Solution got by informing the CRC of problems’ (0.685). For Jinyang, the commodity-housing neighbourhood, ‘Sense and habit of energy saving’ (-0.420), ‘Clean internal roads and adequate garbage bins’ (0.681), ‘Responses from the CRC’ (0.487), and ‘Benefits of engaging external parties in neighbourhood development’ (0.738) are the four significant sustainability factors. Besides, ‘Family monthly expenditure’ (0.292) is the only significant social-economic factor affecting the degree of neighbourhood satisfaction.

Table 7. 4 Model 1 Neighbourhood Sustainability Factors and the Social-Economic Character

(letters A, B, C, D, E, F in the bracket after the sustainability dimension represent sub-themes; the meaning of each word can be found in Appendix D)

Dependent variable: neighbourhood life satisfaction degree (Y 0,1)															
Total				***Yulin (danwei)***				***Xinyue (resettlement)***				***Jinyang (commodity housing)***			
B	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**
Social sustainability (A and B)															
Affordable house				1. Sense of security				1. Sense of security				None			
0.249	0.107	5.421	0.020	.794	.292	7.392	**0.007**	0.638	0.208	9.381	**0.002**				
Sense of security				2. Preference on neighbourhood's big family-like vibe				2. Regard myself as a member of the neighbourhood							
0.373	0.116	10.346	0.001	.538	.244	4.844	**0.028**	0.583	0.190	9.376	**0.002**				
Economic sustainability (C)															
Participation in economic activities within the neighbourhood				None				None				None			
0.226	0.089	6.429	0.011												
Environmental sustainability (D and E)															
Night lighting within neighbourhood				3. Satisfactory fresh air				3. Night lighting within neighbourhood				1. Sense and habit of energy saving			
0.298	0.127	5.552	0.018	.652	.240	7.377	**0.007**	1.268	0.300	17.841	**0.000**	-.420	.188	5.024	**.025**
Clean internal roads and adequate garbage bins				None				None				2. Clean internal roads and adequate garbage bins			
0.409	0.141	8.418	0.004									.681	.259	6.933	**.008**
Institutional sustainability (F)															
Responses from the CRC				4. Solution got by informing the CRC of problems				4. Solution got by informing the CRC of problems				3. Responses from the CRC			
0.360	0.106	11.472	0.001	.706	.204	11.932	**0.001**	0.685	0.247	7.701	**0.006**	.487	.187	6.802	**.009**
None				5. Acceptable variation of property management policy on property owner and tenants				None				4. Benefits of engaging external parties in neighbourhood development			
				.658	.226	8.468	**0.004**					.738	.246	9.024	**.003**
Social-economic characteristics															
Age				Age								Family monthly expenditure			
0.395	0.104	14.538	0.000	.369	.187	3.868	**0.049**	None				0.292	0.139	4.376	**0.036**
No significant results: Gender, Status of residence, Local or nonlocal hukou, Duration of living here, Education, Monthly income															
Cronbach's Alpha															
0.810				**0.799**				**0.835**				**0.817**			

7.5.3 Sustainability and Moving Intention Model

Table 7.5 below shows the significant factors affecting residential willingness to stay living in current neighbourhood or not in three different neighbourhoods. The different structure of significant factors of each neighbourhood indicates there are different mechanisms of how sustainability interacts with residents' moving intention in three different neighbourhood contexts. There are variations in the range of significant sustainability factors affecting overall neighbourhood satisfaction among the three neighbourhoods. The significant factors, including their corresponding coefficient B value (brackets), are described as follows.

For the Yulin danwei neighbourhood, these five factors are 'Traffic needs of elderly, children, disables and other vulnerable groups' (0.915), 'Opportunities to have social interaction and networking within and outside neighbourhoods' (0.760), 'Regard myself as a member of the neighbourhood' (0.528), 'Pleasant and well-maintained biological environment' (0.578) and 'Responses from the CRC' (0.490). Additionally, 'Local or nonlocal hukou' is the only significant social-economic characteristic in this model. For the Xingyue resettlement neighbourhood, the two significant sustainable factors are 'Regard myself as a member of the neighbourhood' (1.357) and 'Internal and external connective road is safe' (1.028). In addition, there are two significant social-economic factors, which are 'Gender' (1.608) and 'Local or non-local hukou' (-1.584). For the Jinyang, commodity-housing neighbourhood, 'Affordable house' (0.674), 'Sense of security' (0.393), and 'Benefits of engaging external parties in neighbourhood development' (0.539) are the only three significant factors which are comparatively the least significant.

Table 7. 5 Model 2 Sustainability factors and moving intention

(letters a, b, c, d, e, f in the bracket after the sustainability dimension represent sub-themes; the meaning of each word can be found in Appendix D)

Dependant variable: Willing to stay living here or not (Y 0, 1)															
Total				***Yulin (danwei)***				***Xinyue (resettlement)***				***Jinyang (commodity housing)***			
B	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**	**B**	**S.E.**	**Wald**	**Sig.**
Social sustainability (a and b)															
Affordable house				traffic needs of elderly, children, disables and other vulnerable groups				Regard myself as a member of the neighbourhood				Affordable house			
0.349	0.120	8.415	**0.004**	0.915	0.354	6.698	**0.010**	1.357	0.294	21.247	**0.000**	0.674	0.187	13.042	**0.000**
Regard myself as a member of the neighbourhood				Opportunities to have social interaction and networking within and outside neighbourhoods								Sense of security			
												0.393	0.176	4.997	**0.025**
				0.760	0.288	6.690	**0.008**								
				Regard myself as a member of the neighbourhood											
0.466	0.110	17.914	**0.000**	0.528	0.237	4.980	**0.026**								
Economic sustainability (c)															
Useful skills training and study workshop in the neighbourhood				**None**				**None**				None			
0.317	0.119	7.107	**0.008**												
accessible grocery shopping near the neighbourhood															
0.517	0.209	6.108	**0.013**												
Environmental sustainability (d and e)															
				pleasant and well-maintained biological environment				internal and external connective road is safe							
None				0.578	0.294	3.860	**0.049**	1.028	0.339	9.177	**0.002**				
Institutional sustainability (f)															
None				Responses from the CRC								Benefits of engaging external parties in neighbourhood development			
				0.490	0.243	4.057	**0.044**					0.539	0.217	6.172	**0.013**
Social-economic characteristics															
Local or nonlocal hukou				Local or nonlocal hukou				Gender				None			
								1.608	0.747	4.639	0.031				
								Local or nonlocal hukou							
0.840 (-)	0.264	10.089	**0.001**	1.567(-)	0.598	6.873	**0.009**	1.584(-)	0.652	5.907	**0.015**				
Education				None				None							
0.299 (-)	0.136	4.875	**0.027**												
Overall neighbourhood life satisfaction															
0.827	0.268	9.504	**0.002**												
Cronbach's Alpha			0.810	**0.799**				**0.835**				**0.817**			

7.6 Chapter Summary

This chapter systematically reviewed and analysed the perceived sustainability performance, residential satisfaction level, moving intention and their association in three neighbourhoods based on the questionnaire survey results. Significant differences were found among the three in terms of good and poor sustainability dimensions, and the set of dominant sustainable factors affecting overall neighbourhood life satisfaction and moving intention. The results were supplemented with field study and expert interviews to present the variable interplay in different context from diverse perspectives. Corresponding interpretations and discussion of significant findings were given, as well as several suggestions for planning both sustainable and liveable neighbourhoods.

Chapter 8 Discussion and Verification

8.1 Introduction

After identifying sustainability performances, associations among sustainability, satisfaction on neighbourhood life, and residents' moving intention in the previous chapter, this chapter further discusses the identified issues as a basis for proposing a sustainable neighbourhood-planning framework. Interviewing ten experts from different professional sectors in Chengdu verified the framework. The discussion and verification addresses research questions 2 and 3, with the discussion of sustainability performance being conducted with reference to sustainability dimensions given in Figure 7.1 of Chapter 7, and discussion of associated categorized factors.

8.2 Sustainability Issues of the Three Typical Neighbourhoods in Chengdu

Following the objectives of this research, neighbourhood sustainability performance is first discussed according to four different dimensions: social, economic, environmental, and institutional. Ten factors are brought forward out of a total of 33 for further discussion, as they are the aspects that had significant similar or different performances. Respective sustainability performance is discussed from the perspective of different neighbourhood types. Lastly, several policy and planning suggestions are proposed in the discussion.

8.2.1 Social Sustainability (SC)

Adequate and convenient community amenities

The results reveal that all the three neighbourhoods provided very satisfactory amenities in terms of provision and convenience. The neighbourhood amenities in this study refer to clinics, schools, parks, supermarkets, etc. inside or outside the neighbourhood, which benefit neighbourhood life and improve neighbourhood value. The provision and convenience of amenities are usually affected by the urban form and location (Burton et al., 2003; Haughton & Hunter, 1994). This comparison indicates that the residents are satisfied with the provision of amenities even if the neighbourhood location is not near a city centre or sub-centre but in a suburban area.

Opportunities for social interaction and networking

The Xingyue Neighbourhood had a higher score in 'social interaction and networking within and outside neighbourhood' than the other two. Xingyue's mean value and the agreement rate was significantly higher than Yulin's and Jinyang's, $p<0.001$. This result is consistent with the situation described by Expert 2. As she stated in an interview, many residents are old neighbours who knew each other before the resettlement project. In this sense, they retained the manners of old rural villages which was summarized as the 'baseless society of acquaintance' by H.-t. Fei et al. (1992). The 'baseless society of acquaintance' widely exists in China's rural areas and has evolved from thousands of years of rural civilization. Accumulative social capital is one of the critical elements of 'baseless society of acquaintance' for sustaining its normal interaction and governance. In such society of acquaintance, a strong sense of collective intimacy is a critical character since almost all the neighbours know each other very well and most domestic affairs are ruled by traditional culture and manners rather than by contemporary law. In the case of Xingyue as a resettlement neighbourhood, those groups of residents may keep the old social manners and relationships within the neighbourhood, which has built a foundation for frequent social interaction and networking.

Preference for a collective living pattern

Xingyue's respondents also have a much higher preference for a collective living pattern and lifestyle than the other two neighbourhoods. According to Expert 3, most of the residents currently living in the Xingyue neighbourhood were previously farmers with rural Hukou. They lived in a village community where the collective sense of intimacy was strong before the resettlement project (H.-t. Fei et al., 1992). Their objective living conditions and patterns rapidly changed to urban lifestyles after the resettlement project, but their mind-set and manners as well as other soft elements have not naturally and immediately adapted to an urban pattern. They still retain their rural and collective lifestyle to a large extent (Jie Li et al., 2016). Previously, the rural residents lived in single-story village houses and they knew each nearby neighbour very well. They frequently engaged in collective activities, such as dropping in, chatting and playing mah-jong together. Currently they live in high-density buildings and after the honeymoon period of owning a new flat, they have had difficulty adapting to a highly independent but isolated urban lifestyle; it is therefore reasonable that they still indicate a high preference for a collective living style. In comparison, the residents of the Yulin and Jinyang neighbourhoods had previously lived in the

core urban area and so as traditional urban citizens their preference for a collective living style is not as high.

Active participation in collective activities

Interestingly, the respondents' attitude to 'Often participating in collective activities' was generally not positive. Only 25.6% (YL), 33.8% (XY) and 18.5% (JY) of the respondents agreed that they often attend collective activities organized within the neighbourhood. Compared with other factors, this was the factor in which all the three neighbourhoods had the poorest performance. This reflects a lower level of participation in public activities, which is not conducive to social cohesion. This result can be possibly correlated with another poor performance in 'Attractive sport and cultural facilities or space'. Only 34.4% (YL), 44.4% (XY) and 26.6% (JY) of the respondents agreed that the sport and cultural spaces are attractive that they often used them. Public sports and cultural spaces are the main areas where people can engage in collective activities and mingle with others. The significant role a neighbourhood's public space plays in enhancing public participation and social network was argued by Alexander (1965) five decades ago. The less attractive sports and cultural facilities are, the less likely that people will go and enjoy them, which reduces the degree of participation in collective activities.

8.2.2 Economic Sustainability (EC)

Accessible grocery shopping near the neighbourhood

This factor is highlighted, since it has the highest mean value score and agreement rate among all the factors for all the three neighbourhoods, which revels that the respondents are most satisfied with accessible grocery shopping, regardless of the neighbourhood he/she belongs to.

Figure 8.1 shows the shopping areas (red area) within a 500-meter radius (yellow circle) of the centre of the three neighbourhoods (yellow area). A 500-metre buffer around each individual's

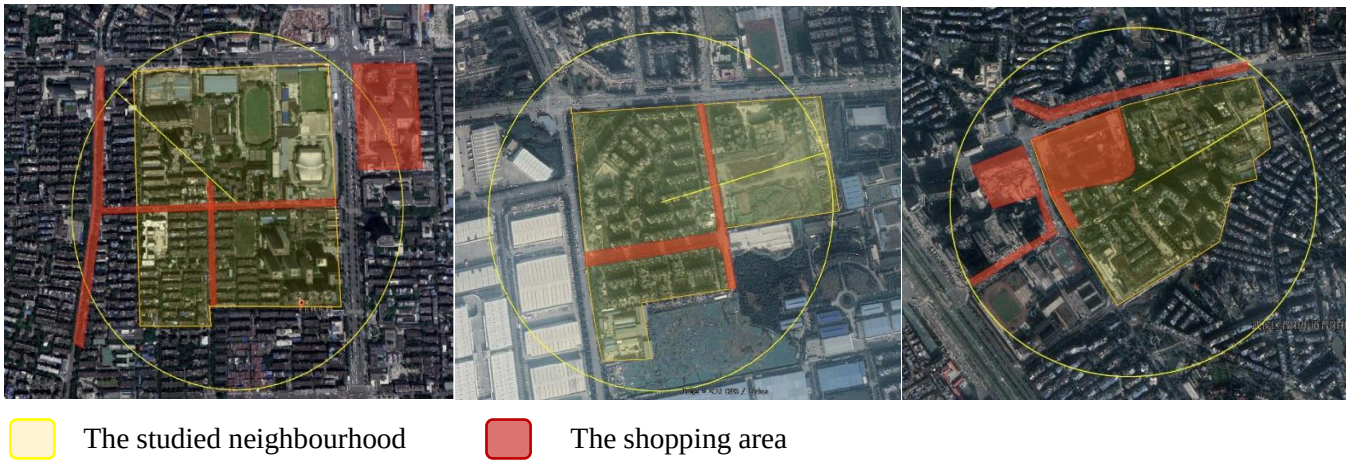


Figure 8. 1 Shopping areas within a 500-metre radius of Yulin, Xinyue, and Jinyang (L to R)

household is often adopted in density and built environment research (Hino et al., 2014). All the shopping areas located within walking distance contribute to the excellent accessibility. By field observation, it was also recognized that ground floor shops were abundant and diversified along or near the neighbourhoods. The shopping areas are all on lined streets, which also serves the neighbourhood's internal traffic. The spatial relationship between street form and the concentrated lined shopping areas roughly follows the principles of 'design internal streets' and 'restrict local shopping areas to the perimeter' which were proposed by Perry (1929) 90 years ago. The best performance in this respect shows that ground floor shops along neighbourhood's internal roads or perimeters are a very efficient way of providing convenient shopping.

Participation in economic activities within the neighbourhood

Several of the lowest scores are for 'participation in economic activities within the neigborhood', such as professional skills training and Civic Law workshops organized within the neighbourhood. In comparison, the mean value (2.61) and agreement rate (34.4%) of XY is higher than YL (2.22, 15%) and JY (2.07, 14.8%). This is reasonable from the demand perspective. Expert 3 highlighted that most of the residents in XY were previously not urban citizens and were not equipped with modern working skills, like typing, using the Internet or speaking Putonghua (standard mandarin for official use). Once they moved into the newly built neighbourhood, they also had to adapt to the urban work style by learning basic skills and technology for sustaining a new life. Thus,

working skills training is more in demand in XY than YL and JY and, most likely, residents of XY would prefer to attend workshops for improving competitiveness in the job market if there were training or job fairs organized in the neighbourhood.

Satisfaction with the methods of information publicity

Respondents of XY were more satisfied with information publicity and transparency than those living in the other two neighbourhoods. According to Experts 2, 3, 6 and the author's field observations, the information disclosure methods adopted by the three neighbourhoods are mainly through noticeboards and weekly briefing meetings. Resident representatives play a connective role in information publicity and collection between residents and the CRC (or neighbourhood governor). All three neighbourhoods have weekly briefing meetings involving the director of the CRC, major senior managers, resident representatives, and social institutional workers. Key issues and problems are discussed during the weekly meetings. What makes XY a better neighbourhood in this aspect is possibly attributed to its better arrangement in allocating communicators and utilizing social media. Expert 3 stated that a group of communicators, usually volunteers or staff from NGO, are allocated to communicate with residents of each building. Each building unit's public expenditures are shown on the noticeboards. Meanwhile, online groups also give information on important policies or regulations to residents by using social media, such as WeChat or Tencent QQ.

8.2.3 Environmental Sustainability (EV)

It is interesting to find that environmental sustainability performance is better than the other three dimensions in all three neighbourhoods.

Acceptable distance to the public transport station

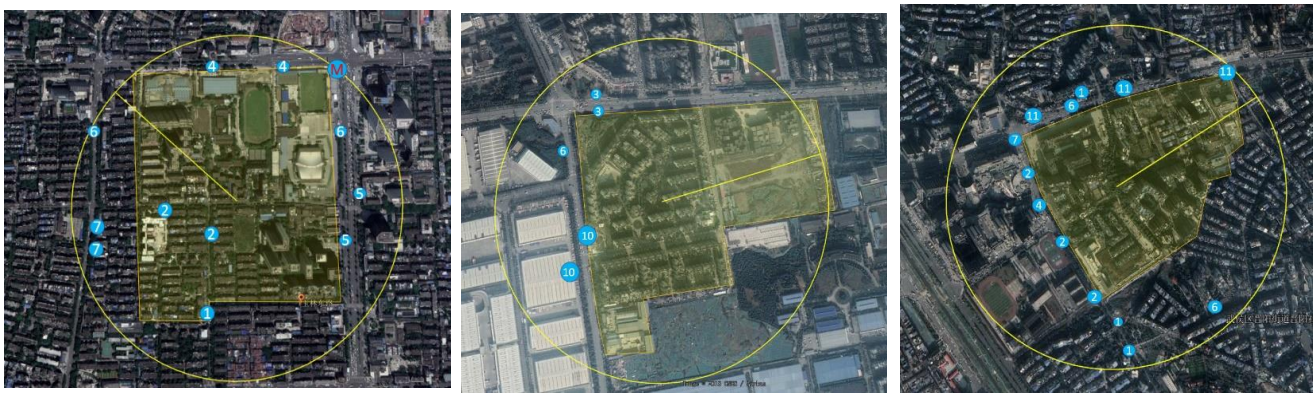


Figure 8. 2 Bus and metro stations within a 500-meter radius of Yulin, Xinyue, and Jinyang (L to R)

To comprehensively investigate the accessibility of surrounding public transport stations for residents, the location and number of routes of each public station located within a 500 meters radius from the centre of neighbourhood was calculated and is illustrated in Figure 8.2 above. The blue circles with a number inside respectively represent the location of bus stops and the number of routes, while some blue circles with the letter 'M' inside refer to the location of Metro stations. The results show that the number of stations (routes) for Yulin, Xingyue, and Jinyang is 11 (49), 5 (32) and 13 (65) respectively. Clearly, the public transport stations provided near Yulin and Jinyang are denser than those near Xingyue. This objective attribute can be used to interpret why Xingyue performed worst in 'Acceptable distance to the public transport station'.

People's perceptions of 'Commuting time between home and transport station' are shown in Table 7.1. It shows the proportion of respondents who spent less than 20 minutes walking to transport stations are 75.6% (Yulin), 68.8% (Xingyue), and 88.1% (Jinyang). However, the degree of subjective satisfaction on 'Acceptable distance to the public transport stations' in all three neighbourhoods is high: 95.0% (Yulin), 89.4% (Xingyue), and 89.5% (Jinyang) of respondents indicated they are satisfied or very satisfied. This discordance between the distribution of nearby transport stations and user's actual perception of accessibility is interesting. It demonstrates that the spatial density of nearby station distribution does not linearly contribute to the users' actual perceived accessibility. Neighbourhood residents are well satisfied if the stations are located within walking distance and adequate bus routes are concentrated in several stations, as shown in the Xingyue case.

8.2.4 Institutional Sustainability (IN)

Benefits of engaging with external parties in neighbourhood development

The results were the best when it came to the three neighbourhood's perceptions of the institutional dimension. This factor closely correlates with the ongoing municipal project of 'Building Sustainable Urban-Rural Neighbourhoods' in Chengdu. This result indicates that most respondents have a positive attitude towards opening neighbourhood affairs to social organizations, such as NGOs or universities, and the positive effects they generate. This can also be interpreted as a positive signal or feedback that 'Building Sustainable Urban-Rural Neighbourhoods' projects or similar partnerships are effective in promoting neighbourhood development and should be encouraged more in the future. It also indicates that neighbourhood residents' perception of the involvement of external parties, such as charity organization, university and companies, is favourable and open. This is a very important signal and public opinion for cultivating a multi-stakeholder partnerships mode of promoting sustainable development.

Opportunities to attend and express myself in the neighbourhood management meeting

This is one of the poorest performing perceptions in all three neighbourhoods. According to Experts 3 and 6, only resident representatives can participate in the weekly neighbourhood meeting, so not everyone is able to express their thoughts during the decision-making process. On the other hand, interestingly, Expert 3, the senior manager of the XY neighbourhood, believes that addressing the main issues in one big meeting involving all the residents would not be effective and constructive. He clarified that the duration of meetings is very limited and practically only a minority of residents have time to express their ideas. The committee members do not have adequate time to talk to everyone in person. Thus, they advocate allocating communicators to carry out a connective role between committees and residents to facilitate the discussions. The result reflects that lacking a comprehensive public participation mechanism is a common issue in different neighbourhoods in Chengdu. In other words, the variation in this aspect of institutional sustainability among the three neighbourhoods is small.

8.3 Associations among Sustainability, Satisfaction, and Moving Intention

8.3.1 Association between Sustainability and Neighbourhood Satisfaction

For Yulin (danwei), 55.6% of respondents indicated that they were satisfied with the neighbourhood life. The range is relatively more diverse since the five significant factors are from three different dimensions. As shown in Model 1, the five are 'sense of security', 'Preference on neighbourhood's collective lifestyle', 'satisfactory fresh air', 'Solution got by informing the CRC of problems', and 'Acceptable variation of property management policy on property owner and tenants'. The wide range implies that the underlying factors in Yulin are decentralized rather than centralized. Firstly, the regression results show 'sense of security' is significant. It can be partly associated with the small yard formation of each unit in Yulin and its tested significance helps to understand how well the formation contributes to the perceived satisfaction of the residents. Secondly, 'Preference on neighbourhood's collective lifestyle' is only significant in Yulin among the three. This can be explained by the largest proportion of respondents' (45%) who had lived longer than 10 years in the neighbourhood and the significant role of 'age' in improving life satisfaction in Yulin. The more well-known neighbours the residents have, the more likely they prefer the existing social network as it is like a big family, which improves their satisfaction level. Thirdly, poor perceived air quality and its significant effect in the model suggests that improving the air quality of living environments should be a priority for improving life satisfaction in Yulin. Fourthly, 'Solution got by informing the CRC of problems' shows whether the CRC's action is effective in addressing residents' request has a critical influence on their life satisfaction. Lastly, it indicates that 'acceptable variation of property management policy on property owner and tenants' is only significant in Yulin but not in the other two neighbourhoods. Yulin has the largest proportion (47.5%) of non-local hukou holders among the three neighbourhoods, which suggests that a fair and reasonable property management policy is significant for building a satisfactory living environment in danwei neighbourhood if tenants account for a fair number of residents.

For Xingyue (resettlement), 61.3% of respondents indicated that they were satisfied with the neighbourhood life, which is the best performance among the three neighbourhoods. 'Sense of security', 'Regard myself as a member of the neighbourhood', 'Night lighting within neighbourhood', and 'Solution got by informing the CRC of problems' are the significant factors from 3 out of 4 sustainability dimensions. Two out of four significant factors concentrate on social sustainability dimension. This reveals that social sustainability significantly contributes to the perceived life satisfaction in resettlement neighbourhood. Specifically, sense of security and sense of belongings are the sub-factors. The dominant association between these social sustainability

issues, such as ‘Satisfaction of Welfare Requirements’, ‘Conservation of Resources and the Surroundings’, ‘Creation of Harmonious Living Environment’, ‘Provisions Facilitating Daily Life Operations’, ‘Form of Development’, and ‘Availability of Open Spaces’, and life satisfaction in urban renewal, has been identified in other studies (E. Chan & Lee, 2008; Dempsey et al., 2011; H. W. Zheng et al., 2014). Xingyue, as a resettlement neighbourhood, provides supporting evidence in the context of transitional China. The fact that ‘Night lighting within neighbourhood’ is significant in the model shows that Xingyue has done very well in providing satisfactory night lighting as well as it has the highest mean value among the three neighbourhoods. This finding provided reference for future study investing to what extent and how night lighting affects life satisfaction in terms of lights density, lighting coverage, and duration of lighting. The same as Yulin, ‘Solution got by informing the CRC of problems’ highlights the significant part that the effectiveness of residential the CRC's responsive action plays in overall life satisfaction. The fact that Xingyue owned the highest mean value of the overall neighbourhood life satisfaction among the three neighbourhoods, prompts further research into the association between resettlement policy, social sustainability, and overall satisfaction. Also, neighbourhood planning can be further advocated to foster both sustainability and liveability if a better understanding of the associations between them can be modelized to provide a useful reference for policy making.

For Jinyang (Commodity), 39.5% of respondents indicated that they were satisfied with the neighbourhood life, which is the poorest performance among the three neighbourhoods. ‘Sense and habit of energy saving’, ‘Clean internal roads and adequate garbage bins’, ‘Responses from the CRC’, and ‘Benefits of engaging external parties in neighbourhood development’ have significant effects on overall satisfaction. Unlike the other two neighbourhoods, Jinyang’s significant factors are only confined to two dimensions: environmental and institutional. Social and economic dimensions do not have a significant effect on neighbourhood life satisfaction in commodity-housing neighbourhoods. In contrast, the limited environmental and institutional factors uncovered the significant role of environmental quality, neighbourhood service quality and external party engagement in explaining the residents’ overall neighbourhood life satisfaction level. This was consistent with previous studies (Yushu Zhu et al., 2012) doubting the effect of neighbourly interaction on improving residential satisfaction level in commodity-housing neighbourhood. Forrest and Kearns (2001) argued residents ‘buy into’ a physically attractive neighbourhood without necessarily expecting interaction with their neighbours while Plas and

Lewis (1996) demonstrated that sometimes place attachment is related to the prestige of the area and not necessarily to social contacts. This finding provides supportive evidence ino China. Additionally, 'sense and habit of energy saving' is the only significant factor that is associated negatively with neighbourhood satisfaction among all the factors.

The highly concentrated structure of limited significant factors in the case of commodity housing (Jinyang) should be particularly noted since commodity housing will account for most of the newly built neighbourhoods as urbanization continues (J. Chen et al., 2018). Interestingly, 'family monthly expenditure' is the only economic character to have a significant positive effect on neighbourhood satisfaction, which demonstrates that the higher monthly expenditure the family has, the higher degree of life satisfaction the resident has in commodity-housing neighbourhoods. This contradicts the argument proposed by Rojas (2004) that expenditure is an important explanatory variable for economic satisfaction, but not so much for life satisfaction and happiness. The reason is partially that the property mortgage is the main housing expenditure in commodity housing (Jinyang) and it increases the financial threshold of meeting the basic housing demand. It is more likely in a commodity-housing neighbourhood that residents the bear additional financial burden of property mortgage; residents with a mortgage need higher income to meet basic daily needs. Expenditure was regarded as the proxy of income in previous housing research (Tipple, 2015). The percentage of respondents whose family monthly expenditure is higher than 5000 RMB is 48.8% in Jinyang, and 14.4% and 16.9% in Xingyue and Yulin respectively. Given the poor overall satisfaction performance Jinyang has, the result highlights the exclusive role of family expenditure in indicating resident's life satisfaction in costly commodity-housing neighbourhoods.

As shown in Table 7.4, it can be explicitly recognized that a few sustainability factors are statistically associated with neighbourhood life satisfaction in the Chengdu case study, which implies that efforts to promote social, environmental, and institutional sustainability can also significantly improve perceived satisfaction levels of neighbourhood life.

However, economic sustainability issues appear to be insignificant in affecting overall satisfaction in all three neighbourhoods. Generally, the three neighbourhoods have different significant factors, suggesting that different strategies should be proposed for developing adaptive neighbourhood planning to achieve both sustainable and liveable goals of neighbourhood development.

Generally, unlike other three sustainability dimensions that have a significant association with respondents' satisfaction levels, the economic sustainability dimension was found to be insignificant in any of the neighbourhoods as shown in Model 1. This indicates that 'Cooperative activities', 'Information service performance', 'Local training and skills' and 'Housing and job proximity' are not statistically associated with residents' perceived neighbourhood life satisfaction in all three neighbourhoods despite their different context. This can be supported by previous research findings that quality of life it is about immediate and tangible conditions and interventions (i.e. now and here) (Ruth & Franklin, 2014). Thus, only those physical and close-to-life factors are more likely to be statistically significant in affecting residents' neighbourhood life satisfaction. Thus, it is reasonable that abstract and indirect economic factors turned out to be insignificant in this study.

8.3.2 Association between Sustainability and Moving Intention

As stated in Model 2, for Yulin (danwei), 81.3% of the respondents indicated that they desired to stay living in the current neighbourhood. Similar as its results in last section, the range of significant factors is also more diverse and decentralized since the five factors are from three different dimensions: social, environmental, and institutional sustainability. These five factors are 'traffic needs of elderly, children, disabled and other vulnerable groups', 'Opportunities to have social interaction and networking within and outside neighbourhoods', 'Regard myself as a member of the neighbourhood', 'pleasant and well-maintained biological environment', and 'Responses from the CRC'. These five significant factors indicate that universal and equal traffic infrastructure, satisfactory social interaction, sense of b1elonging, natural environmental, and responsive neighbourhood services keep the residents living there. This diverse structure demonstrates that there are a few different factors collectively affecting residential willingness to stay living in the neighbourhood rather than being dominated by one single factor.

For Xingyue (resettlement), 84.4% of the respondents indicated that they desired to stay living in the current neighbourhood. The two significant sustainable factors are 'Regard myself as a member of the neighbourhood' and 'internal and external connective road is safe'. This demonstrated that sense of belonging and convenient and safe roads significantly affect people's willingness to stay living or not in this resettlement neighbourhood.

For Jinyang (Commodity), 67.9 % of the respondents indicated that they desired to stay living in the current neighbourhood. 'Affordable house', 'Sense of security' and 'Benefits of engaging external parties in neighbourhood development' are the specific significant factors spanning social and institutional aspects. Given Jinyang is a relatively new commodity-housing neighbourhood with better amenities, its average housing price is relatively the highest among the three neighbourhoods. Thus, it suggests that whether the resident can afford the mortgage or rent affects their willingness to stay, whether they are property owners or tenants. 'Sense of security' indicates the critical role of security services provided by the neighbourhood to keep residents secure. 'Benefits of engaging external parties in neighbourhood development' refers to the sustainability factor 'community engagement in neighbourhood governance'. Its significance reveals that open and engaged neighbourhood governance plays a critical role in keeping residents living in the neighbourhood.

In comparison, different neighbourhoods have different sets of significant factors, which indicate that the association between sustainability and residential moving intention is contextual rather than universal. Most of the factors are exclusively significant in specific neighbourhoods except two, 'Regard myself as a member of the neighbourhood' and 'Local or nonlocal hukou', which are simultaneously significant in both Yulin and Xingyue. Given their older history than Jinyang's, it demonstrates that a sense of belonging is more likely to be significant in affecting residential willingness to stay living in older neighbourhoods. Besides, hukou status is not significant in commodity-housing neighbourhoods but is significant in danwei and resettlement neighbourhoods. This demonstrates that whether residents have local hukou does not significantly affect their willingness to stay living in a commodity-housing neighbourhood. Given the significance of 'affordable housing' in Jinyang, residents are more concerned about having 'hukou' or not in danwei and resettlement neighbourhoods, and affordability of the accommodation in commodity-housing neighbourhoods when they are considering remaining there or not.

Interestingly, no significant effect of overall neighbourhood life satisfaction on residential moving intention was found in either of these models. This can be further interpreted by comparing all the significant factors in Model 1 and Model 2 that show there are only two common significant factors between the two models. In other words, sustainability factors' impact on satisfaction and moving intention are separate and independent. Thus, it is reasonable that there is no significant association

between neighbourhood satisfaction and moving intention. Surprisingly, this contradicts the model developed by Marans and Rodgers (1975) and Campbell et al. (1976), which defined the impact of neighbourhood satisfaction on moving intention.

Given the findings obtained above, an important effect can be identified: apart from promoting sustainable neighbourhood development, sustainability neighbourhood planning can also play a vital role in significantly affecting residents' perceived neighbourhood life satisfaction and moving intention simultaneously in a contextual way. Thus, how pertinent and adaptive the sustainable planning framework is can significantly influence not only sustainable neighbourhood development but also residential neighbourhood life satisfaction and moving intention. Since satisfaction and moving intention play dominant roles in indicating liveable neighbourhoods, the effect of sustainable neighbourhood planning on sustainability and liveability can be redefined and identified in different context.

8.4 Proposing Contextual Framework for Sustainable Neighbourhood Planning

Prioritizing the corresponding associated factors can provide a contextual solution and action plan. Basically, neighbourhood governors and planners should pay more attention to the significant factors that have poor performance. Y. Yuan et al. (2018) stated that important but poor performance aspects should be priority issues to be addressed by neighbourhood planning.

The critical factors and corresponding planning parameters are shown in Table 8.1, Table 8.2, and Table 8.3 below. Table 8.1 shows the consolidate common poor sustainability performances, respective different sustainable and socio-economic threats, sustainability factors associated with residential satisfaction, and sustainability factors associated with moving intention of the three neighbourhoods. Table 8.2 shows the matrix that was used to stratify, rank and categorize all the identified sustainability factors associated with neighbourhood satisfaction and moving intention. The parameters in the horizontal axis are sustainability factors associated with neighbourhood satisfaction and sustainability factors associated with moving intention. The parameters in the vertical axis include significant sustainability factor's performance among the three, neighbourhood satisfaction degree among the three, moving intention degree among the three, and sustainability factors associated with moving intention. The objective of this matrix is to sort out the integrated planning considerations by prioritizing the critical factors in different neighbourhoods with reference to the various parameters above. Based on the sorted planning

considerations, the integrated contextual planning framework of principles and guidelines are proposed in Table 8.3.

Table 8. 1 Key identified factors of three neighbourhood through empirical study in Chengdu

Neighbourhood type	Case Name	Common poor sustainability performance	Respective different socioeconomic and sustainable threats	Sustainability factors associated with residential satisfaction	Sustainability factors associated with moving intention
Danwei traditional	Yulin Neighbourhood	• Often participating in collective activities. (SC) • Occasionally visiting the neighbours. (SC) • Will attend the economic activities within the neighbourhood. (EC) • There is a chance to attend and express myself in the neighbourhood management meeting. (IN)	Highest heterogeneity Largest aging population Poorest air quality methods of information publicity; Poorest satisfaction on proposed solution from CRC after reporting the issues to them.	'sense of security', 'Preference on neighbourhood's collective lifestyle', 'satisfactory fresh air', 'Solution got by informing the CRC of problems' and 'Acceptable variation of property management policy on local and non-local residents'.	'traffic needs of elderly, children, disables and other vulnerable groups', 'Opportunities to have social interaction and networking within and outside neighbourhoods', 'Regard myself as a member of the neighbourhood', 'pleasant and well-maintained biological environment' and 'Responses from the CRC'.
Resettlement	Xingyue Neighbourhood		Longest 1) Job-housing and 2) home-transport station commuting time; Lowest sense of security; Lowest satisfaction on difference of neighbourhood policy between local and non-local residents;	'Sense of security', 'Regard myself as a member of the neighbourhood', 'Night lighting within neighbourhood' and 'Solution got by informing the CRC of problems'	'Regard myself as a member of the neighbourhood' and 'internal and external connective road is safe'.
Commodity housing	Jinyang Neighbourhood		Lowest participation degree in collective activities Lowest usage rate of public open space; Highest moving out intention; Poorest; Lowest participation in economic activities and satisfaction on economic training workshop.	'sense and habit of energy saving', 'clean internal roads and adequate garbage bins', 'responses from the CRC' and 'benefits of engaging external parties in neighbourhood development'	'Affordable house', 'Sense of security' and 'Benefits of engaging external parties in neighbourhood development'

Notes for Table 8.1: (1) Heterogeneity was indicated by the proportion of tenants and non-local Hukou residents; (2) Local and non-local residents are defined by Hukou status.

For proposing integrated planning principles, a matrix is adopted to stratify and rank all the significant factors into three groups of principles: Principles to be retained (A), Principles to be enhanced in planning (B), and Principles to be urgently assured in planning (C). Retaining principles (A) refer to those significant sustainability factors that had been realized very well and need to be retained to maintain the very good performance. Principles to be enhanced in planning (B) refer to those significant sustainability factors that had been realized well and can be enhanced in the planning or governing to improve sustainability. Principles to be urgently assured in planning (C) refer to those significant sustainability factors that had not been done well and need to be urgently considered for improving the current sustainability. The comprehensive parameters were proposed considering both the various performance and cross-factors associations for better integrating all the considerations.

Table 8. 2 Matrix used for proposing integrated planning parameters considering the identified factors

		Sustainability factors associated with neighbourhood satisfaction			*Sustainability factors associated with moving intention*		
		Principles to be retained (A)	**Principles to be enhanced (B)**	**Principles to be urgently assured (C)**	**Principles to be retained (A)**	**Principles to be enhanced (B)**	**Principles to be urgently assured (C)**
Significant Sustainability factor's performance among the three	Best	✓			✓		
	Moderate		✓			✓	
	Lowest			✓			✓
Neighbourhood Satisfaction performance among the three	Best	✓					
	Moderate		✓				
	Lowest			✓			
Moving intention among the three	Highest						✓
	Moderate					✓	
	Lowest				✓		
Sustainability factors associated with moving intention		✓ if best sustainability performance among the three	✓ if moderate sustainability performance among the three	✓ if lowest sustainability performance among the three			

Table 8. 3 Contextual principles and guidelines of neighbourhood planning framework conducive to the enhancement of sustainability and residential satisfaction.

Neighbourhood name (type)	**Integrated planning Principles**			**Policy Suggestions**
	Principles to be retained (A)	**Principles to be enhanced (B)**	**Principles to be urgently assured (C)**	
Yulin Neighbourhood (Danwei traditional)	1. Sense of belonging.			Improving the sense of belonging by organizing more collective activities engaging residents. Particularly for danwei neighbourhood with higher proportion of tenants.
			2. High outdoor air quality	Optimizing the waste management of old danwei neighbourhood and renovate infrastructure.
			3. CRC'S solution to the reflected problems from residents	Improving the effectiveness of solution got by reflecting the problems to CRC';
		4. Acceptable variation of property management policy on local and non-local residents		Formulating acceptable and balanced property management policy to both local and non-local residents: enhancing the public participation in the policy making process and the declaration of policy making especially to non-locals and tenants.
	5.Traffic needs of elderly, children, disables and other vulnerable groups			University design quality should be strictly consistent with the planning or design standard requirement. Especially considering the large aging population in danwei nationwide. Age-friendly neighbourhood environment should be particularly required in the neighbourhood of danwei.
		6. Opportunity to have social interaction and networking within and outside neighbourhood		Socially inclusive design and organizing more interactive open activities, such as workshop, festival.

		7. Pleasant and well maintained biological environment		Increasing the green and open space. Recruiting gardener to deliver regular gardening work to maintain the quality of open space.
		8. Responsive service from CRC		Reviewing the effectiveness and responsiveness of administrative service provided by CRC. Setting up special officer for responding the residents' necessary request.
			9. Justice of Hukou Policy	Reviewing the justice and implementation of Hukou policy in terms of financial allowance, neighbourhood rights and property management.
Xingyue Neighbourhood (Resettlement)			1. Sense of security	Enhancing the night lighting, security at entrance or exit and guards patrolling after resettling the neighbourhood.
			2. Job-housing and home-transport station commuting time	Providing accessible public transport and safe, convenient supporting facilities, including safe internal and external connective roads.
		3. Sense of belongs		Enhance the sense of belongs by organizing more collective activities engaging residents.
	4. Internal and external connective road is safe			Optimizing the connective road, such as crossroads, safety design. Reviewing the parking management for preventing vehicle-pedestrian conflict.
	5. Justice of Hukou Policy			Reviewing the justice and implementation of Hukou policy in terms of financial allowance, neighbourhood rights and property management.
Jinyang Neighbourhood (Commodity housing)			1. 'clean internal roads and adequate garbage bins',	Making strict sanitary policy, including roads clean, garbage bin allocation, waste management and
			2. Attractive sport and cultural facilities	Design usable and favourable open space for the residents
			3. 'benefits of engaging external parties in neighbourhood development'	Making open and vibrant neighbourhood governance policy and engaging diverse external parties into neighbourhood development, such as social organization and other enterprises.

			4. Participating in collective activities. (SC)	CRC should assist the neighbourhood in establishing property owner committee for building regular tunnel through which residents and property managements body can effectively communicate. CRC should also engage social institutions in organizing more interactive collective activities for community sense building.
	5. Affordable housing			Increasing the diversity of housing options (indoor area size) within one commodity-housing neighbourhood.
		6. Sense of securities		Enhancing the security arrangement by increasing number of security crew, installing quality door-entrance security check and enlarging the lighting area during the night time.

The integrated planning framework is proposed in Table 8.3 after categorizing all the selected factors by reference to the matrix in Table 8.2. There are 9 principles for Yulin, 5 for Xingyue and 6 for Jinyang. The guidelines for implementing the principles are provided in Table 8.3. A, B, and C are used to represent the following different types of principles:

(A) Principles to be retained

(B) Principles to be enhanced

(C) Principles to be urgently assured

The results show that, for Yulin, 'High outdoor air quality', 'CRC's solution to the informed problems from residents', and 'Justice of Hukou Policy' are the C principles. 'Acceptable variation of property management policy on local and non-local residents', 'Opportunity to have social interaction and networking within and outside neighbourhood', 'Pleasant and well-maintained biological environment' and 'Responsive service from CRC' are the B principles. 'Sense of belonging', 'Traffic needs of elderly, children, disabled and other

vulnerable groups' are the A principles. For Xingyue, 'Sense of security' and 'Job-housing and home-transport station commuting time' are identified as principles to be urgently assured in planning (C). 'Sense of belongs' are sorted as principles to be enhanced in planning (B). 'Internal and external connective road is safe' and 'Justice of Hukou Policy' are principles A. For Jinyang, 'clean internal roads and adequate garbage bins', 'Attractive sport and cultural facilities', 'benefits of engaging external parties in neighbourhood development', and 'Participating in collective activities' are the C principles. 'Sense of securities' and 'affordable housing' are the B and A principle for Jinyang respectively.

Thus, the contextual principles demonstrated above were proposed by consolidating and categorizing the sustainability performance, the association between sustainability and neighbourhood satisfaction, and the association between sustainability and moving intension. The basic mechanism behind Table 8.3 is identifying and categorizing all the significant sustainability factors associated with neighbourhood satisfaction and providing contextual planning and policy suggestions as actual actions for promoting sustainability and liveability simultaneously. The ultimate goal is to achieve sustainable neighbourhood development as stated in the research objective in Chapter 1. The table shows that 4 out of 5 factors are principles C for Jinyang, which is consistent with its poorest overall residential satisfaction degree (3.31/5); the sustainability challenges in Jinyang are therefore relatively more severe and urgent than both Yulin (with only 3 C principles out of 9) and Xingyue (with 2 C principles out of 5). This provides valuable evidence that the commodity-housing neighbourhoods, which were built under higher urban planning standards and criteria, are not necessarily more sustainable and satisfactory neighbourhoods from the residents' point of view. This urgently calls for an up-to-date review of current urban planning guidelines and the adoption of neighbourhood planning for addressing non-physical issues as supplements to statutory planning.

8.5 Framework Verification

Ten interviews with experts were carried out in September 2018 as a method of validating the developed framework in Table 8.3 for sustainable neighbourhood planning and development. Overall, the majority of experts agree with the framework and made positive comments on the research findings and proposed framework. They also provided suggestions for further optimizing

the framework and improving its applicability within the current planning and governance context in Chengdu.

The senior governor of a district Urban Planning Bureau of Chengdu roughly agreed with the findings investigated in the context of Chengdu. He emphasized the crucial role of value orientation and financial budget in implementing neighbourhood planning and facilitating sustainable neighbourhood development. He wondered to what extent the proposed framework could be properly applied in the current neighbourhood planning and development situation, which largely depends on value orientation that neighbourhood governance sectors determine in relation to the financial feasibility of projects. For value orientation, since neighbourhood planning comprehensively and closely involves the integrity and justice of neighbourhood governance and management, whether the authorities think that use of the framework will favour their governing performance significantly determined the fate the framework. This circumstance widely exists in the local governance of China, since top-down governance is the traditional way for both human and financial resources, as well as for administrative procedures generally. It is very challenging to do things completely in the interests of the people without considering the current system's administrative barriers. Besides, physical planning and design is still currently the focus of planning practice in Chengdu as increments of urban construction is the development priority of the Chengdu government's policy agenda. Most often, creating adequate physical space is the first and utmost important values, which the government holds followed by considering the social justice and spatial quality. Financial viability is strongly associated with the current fiscal appropriation system adopted in local governance. The institution arrangement is a typical top-down system that the upper-level management department manages to allocate the requested amount of money to the application subject to any circumstance of fiscal appropriation. This is the main financial source of neighbourhood development as the fiscal autonomy degree at neighbourhood level in China is very different from those in the UK and the US. The neighbourhood fiscal income can be mainly utilized in neighbourhood development as the neighbourhood owns discretional power in the US and the UK. Comparatively, neighbourhood plays a very passive role in applying and obtaining financial budget for optimizing neighbourhood development in Chengdu. It is relatively easier to handle physical problems, such as rehabilitating the old yard and enhancing the neighbourhood lighting, but things tend to be complicated and troublesome if more money is required for facilitating participatory planning and governance, as

it complicates the issue by mixing up financial source, responsible parties, and political value orientation issues. The current planning department reserves the rights of approval and managing all the planning practices at neighbourhood level, although favourable policy actions are often taken for speeding up improvement in the quality of neighbourhood life. The interviewed Chengdu district planning governor greed that neighbourhood planning should adopt a bottom-up planning approach and suggested that the relationship with other statutory upper-level planning is like that between interior design and the building's framework. He ventured that neighbourhood plans should be made based on neighbourhood demands and vision but that in the meantime statutory plans need to be obeyed.

Expert 1, a senior director of a renowned urban planning corporation, attributed the success of Yulin neighbourhood in maintaining a vibrant, safe and attractive neighbourhood to the well-designed street hierarchy system. He did not think that neighbourhood planning should be designated as statutory planning but instead should be a flexible, participatory, and close-to-life planning process; being legalized would rigidify its development and suppress its effect of being localized and responsive. He highlighted public participation in neighbourhood planning by emphasizing the importance of the connection between neighbourhood planning and people's daily life. He thought this should be the priority of facilitating sustainable neighbourhood development by planning. Additionally, he strongly agreed that engaging external social corporations in neighbourhood operations, such as operating the amenities and facilities, would make a substantial contribution to sustainable development, especially financially.

Three academics from different universities, Experts 2, 3, and 6, gave positive comments on the research findings and the framework. Two of the three interviewed academics are the team leaders of the on-going project 'Neighbourhood Development Planning (NDP) 2018-2035'. One is from the Urban Planning Department of Southwest Jiaotong University and the other one is from the Urban Planning Department of Tongji University. Expert 2 opined that there is a mismatch between this NDP plan and other physical urban planning. She agreed with the research finding that it is important to specify the guideline or planning requirements and contextualize the implementation of principles in guiding different types of neighbourhood development. It is also important to notice that social interaction can be significantly affected by physical and environmental elements. Instead, the obvious inequality of education and income was regarded as

the main cause of lacking neighbourly social interaction. Balancing the overall sustainability performance as the research focus, is challenging. Although it is feasible to improve environmental sustainability, including quality and sanitation at the expense of high property management fee or tax, this development pattern cannot be called sustainable development since it is not economically sustainable. Expert 6 stated that the findings of this research can be the policy implication for those transitional neighbourhoods who shared the similar characters and problems, for instance all danwei neighbourhoods faced the similar challenges in management transition from danwei to the neighbourhood CRC. He also agreed that the common character, challenge and problems among the total 4000+ neighbourhoods could be categorized by typology so that the findings from a typical neighbourhood research could be better generalized. Danwei is the first case in point since most danwei neighbourhoods share similar sustainable challenges. The physical decay of old neighbourhoods could also be investigated and as a reference for promoting environmental sustainability.

Neighbourhood leaders from three different neighbourhoods held different views and comments on the research finding and proposed strategies from this study. The leaders from Xingyue neighbourhood which was given the highest average satisfaction score, attributed the best performance to not only the comprehensive improvement in living environment after urban renewal but also to the new development opportunities brought to affected residents who mostly thought their previous life was futureless. The leaders also agreed that the highest social interaction and collective activities participation rate was because most of the residents were previously old neighbours and knew each other well. The also thought that nominating a reliable and respected old leader as the manager of neighbourhood amenities, especially cultural and sports facilities, makes sense in rebuilding the community sense and promoting public participation in neighbourhood activities. They further opined that the degree to which residents knew each other before urban renewal largely determined the degree of neighbourhood interaction after urban renewal. Lastly, they pointed out the shortage of supporting facilities, such as parking lot and public transport stations, as the main barrier hindering sustainable neighbourhood development. Generally, they agreed with the frameworks proposed by the researcher.

Neighbourhood leaders from Yulin generally agreed with the framework proposed to handle the neighbourhood development issues. They also supplemented many explanation and interpretations

from their own perspective and experience. They thought the problems of poor air quality revealed by the questionnaire survey was caused by the inefficient wasted management system. The accumulative daily garbage at refuse collection points, including leftover food, may generate unpleasant smell if the garbage truck could not collect it all. They explained that the neighbourhood had done some work in engaging the tenants into neighbourhood management and public activities before, but this work was very much limited by available manpower, time and resources so it was stopped when the neighbourhood CRC staff were tied up with other more important issues. For public participation, they described the three different forms of public participation method practiced in Yulin: residents council, residential representatives meeting, and civic affairs special meeting. Each building block has a block leader and each cluster has a cluster leader who is in charge of collecting residential opinions and expressing them in meetings. After getting feedback from the CRC, the leader disseminates the feedback to the residents so that a round of information exchange takes place. Public participation in Yulin concentrates on property right usage and public resource allocation. Thus, they thought that public participation is very much indirect and affairs-oriented and the neighbourhood CRC did not additionally organize public meetings in other circumstances. Lastly, they agreed that rebuilding a new sense of community, adequate financial resources, and a competent neighbourhood management team are crucial elements contributing to the sustainable transition of danwei neighbourhoods.

The neighbourhood representative from Jinyang generally agreed with the framework and thought that the identified factors were crucial in their neighbourhood life. She highlighted the difference of public usage of open space between new and old commodity neighbourhoods, noting lower usage rate in old ones due to their poor design and maintenance. This is important since most residents chat with neighbours in the open spaces thereby promoting interaction among residents. Two other issues challenging residential satisfaction and neighbourhood development, from her perspective, are unsatisfactory nearby infrastructures and neighbourhood property service and management. For nearby infrastructure, schools and hospitals were thought of as two critical infrastructure facilities that did not satisfy Jinyang residents. For property service, she agreed that the poor effectiveness of responsive service significantly decreased overall neighbourhood life satisfaction. She clarified that in commodity-housing neighbourhoods, residents usually went to the property management office rather than the neighbourhood CRC to look for assistance in daily

life. Thus, how the property office responds may comprehensively affect residents' overall experience of living in the neighbourhood.

8.6 Chapter Summary

The sustainability performances and the associations among sustainability, neighbourhood satisfaction and moving intention in the three different cases were investigated and the proposed sustainable neighbourhood framework was verified through a third round of expert interviews. Contextual planning was suggested by reviewing the representative cases of resettlement, danwei, and commodity-housing neighbourhoods. The chapter highlighted that contextual sustainable planning should be made with consideration of the specific issues faced by the neighbourhood. By taking into consideration different neighbourhood contexts within the framework, sustainable neighbourhood planning can locally and adaptively address sustainability issues.

Chapter 9 Conclusions

9.1 Introduction

This thesis investigated the concepts and theories of sustainable neighbourhoods, neighbourhood planning, neighbourhood satisfaction through on empirical study of three neighbourhoods in Chengdu to answer a critical question: how can a contextual framework be adopted for delivering sustainable neighbourhood planning that leads to both sustainable and liveable neighbourhoods in transitional urban China? To answer this question, three sub-questions were addressed step by step in this study. The research first identified the reason, challenges and opportunities for delivering sustainable neighbourhood planning in China. Secondly, through empirical study, it investigated the common characteristics and contextual variance in sustainability performance among three typical and different neighbourhoods in the city of Chengdu by conducting in-depth case studies. Thirdly, based on the case studies, it ascertained the association among sustainability, satisfaction and moving intention in different neighbourhood context and proposed an adaptive sustainable neighbourhood-planning framework promoting sustainable neighbourhood development and residents' satisfaction with neighbourhood life.

This chapter summarizes and concludes the thesis by discussing the theoretical and policy implications of the study's contrasting findings. It revisits the research objectives, summarizes the research findings and policy implications, explains the contribution of the research, reviews the study's limitations, provides suggestions for further related research, and finishes with concluding remarks.

9.2 Revisiting the Research Objectives

To realize the primary aim of this study as promoting sustainable neighbourhood development in transitional China by developing an adaptive sustainable planning framework in the context of three typical neighbourhoods, the following sub-objectives were developed:

1) To examine sustainable neighbourhood planning theory and identify the common characteristics shared by neighbourhood planning in widely-practiced countries.
2) To evaluate the barriers and opportunities of adopting neighbourhood planning in Chinese cities.
3) To ascertain the underlying factors in neighbourhood planning which would facilitate sustainable neighbourhood development in Chinese cities.

4) To identify and compare the association between sustainability and neighbourhood satisfaction in the context of three typical neighbourhoods in Chengdu, China.
5) To construct a theoretical framework for delivering adaptive sustainable neighbourhood planning in Chinese cities.
6) To draw policy implications in promoting sustainable neighbourhood development in China by validating the framework.

Chapter 1 identified the research questions and objectives by briefly reviewing the overall picture, problems and research gaps in this domain. Chapter 2 reviewed the relative literature, theories, and global evidences to address objective 1. To answer objective 2 and 3, Chapter 3 and 4 depicted the current context of neighbourhood transition in urban China and Chengdu within which this research was conducted and demonstrated how China's context differs from other parts of the world. Chapter 6 conducted a comprehensive intense literature review of other four countries and employed expert interviews to investigate the challenges and opportunities for neighbourhood planning in China to address objective 2. Chapter 7 further identified common and respective sustainability challenges so that underlying contextual sustainable factors were discovered to address objective 3. Chapter 7 also investigated and compared the links among sustainability factors, satisfaction level and moving intention by adopting both quantitative and qualitative methods for addressing objective 4. Based on the data analysis results, Chapter 8 proposed a theoretical planning framework and verified it by interviewing ten different experts from four sectors to achieve Objectives 5 and 6.

9.3 Summary of Findings

There are three main findings obtained to answer the three following research questions of this study.

1) Why should sustainable neighbourhood planning be adaptively applied in China at this stage of its development?
2) What are the dominant sustainable considerations in neighbourhood planning in China?
3) How can sustainable neighbourhood planning be effectively utilized to cultivate sustainable and satisfactory neighbourhoods simultaneously in the current context of local planning and

governance?

1) Sustainable neighbourhood planning is highly advocated to promote sustainable urban development. The driving force are from the both sides of global sustainable development agenda and national sustainable development demand. Due to the prominent role of institutional elements and coexistence of different China-character neighbourhood typology, both the neighbourhood planning and sustainability assessment should fit into China context and adaptively practiced. The barriers hindering neighbourhood planning development in China include little support from national policy and local governance, ambiguous legislation on community public management, as well as inadequate public participation and a weak sense of community;

2) Neighbourhood infrastructure and China-character public engagement are two principle components fostering sustainable neighbourhood in Chengdu context. Besides, different neighbourhoods faced different contextual sustainability problems thus unique context-specific characteristics should not be neglected when universal sustainability principles are implemented;

3) When sustainable neighbourhood planning is practiced, simultaneously promoting sustainability and liveability is crucial and feasible. However, that should be contextually practiced for providing effective methods. For meshing sustainability with liveability, a more comprehensive sustainable principles should be adopted in danwei and resettlement neighbourhood context while environmental and institutional dimensions should be highlighted in commodity-housing neighbourhoods.

In the following paragraphs, each of the finding was elaborated.

9.3.1 Barriers Hindering the Development of Neighbourhood Planning in Transitional Urban China

This part highlights the importance of institutional elements of neighbourhood planning in contributing to sustainable development and identifies the challenges and opportunities of facilitating neighbourhood planning in China. Firstly, nine key and common characteristics reflected in neighbourhood planning were identified, as shown in Table 9.1 below, through a comparative study of different countries' planning practices based on the theoretical relationship between neighbourhood planning and sustainability.

Table 9. 1 Nine key and common characteristics reflected in neighbourhood planning

Aspects for comparison	Key Common Characteristics of four foreign countries/r
Decentralization and local governance	1. Policy and Initiatives foundation 2. Authoritative, explicit and consistent definition of the role, aim and area of neighbourhood planning 3. Institutional arrangement or resolution mechanism of possible planning conflicts 4. Funding and staffing of the project
Iterative and adaptive planning	5. The facilitation of Steering Committees or Groups 6. Normalized, systematic and iterative planning procedure
Cultivation of community sense	7. Public Opinion foundation
Public Participation and decision making	8. Substantial experience and high-quality of public participation 9. Quality assurance of planning implementation

It has been argued that due to the different social-political context in transitional China, these characteristics may not be entirely applicable in illustrating the circumstance of China. Therefore, through the literature review, this study sought to identify barriers that could hinder the development of effective neighbourhood planning practices in China. The nine identified barriers were further investigated and verified through interviews with experts. These barriers are:

- Lack of national policy foundation and explicit official definition
- Inadequate updated laws and regulations that define the authority and liability of neighbourhood management
- Unclear accountable body of neighbourhood planning project
- Highly bureaucratic resident community committees
- Inadequate financial and human resource support
- Lack of institutions and mechanisms for planning implementation and evaluation
- Poor collective community sense

- Inadequate experience, degree and platform of public participation
- Planning procedures not normalized, systematic and iterative

Three of the barriers stem from lack of support from national policies and local governance, unclear legislation regarding community public management, as well as inadequate public participation based on a poor sense of community. This result turned out to be closely associated with the theoretical relationship between neighbourhood planning and local sustainability, which suggests interference of these barriers on sustainable neighbourhood development in China.

9.3.2 Comparison of Perceived Sustainability in Different Neighbourhoods of Transitional China

To better facilitate sustainable neighbourhood development in China, identifying the contextual variations between different types of neighbourhoods is crucial. Generally, more than half of the respondents (52.1%) indicated that they were satisfied or strongly satisfied with the neighbourhood life. This suggests that over half of the residents had a positive attitude towards their neighbourhood living experience. However, there is a variation among the three neighbourhoods: Xingyue (XY) had the highest mean value (3.67) and agreement rate (61.3%) while Jinyang (JY) had the lowest mean (3.31) and agreement rate (39.5%), with Yulin (YL) in between. The study discovered several similar patterns of sustainability performance despite the different types of neighbourhoods. It was found that all the three neighbourhoods performed excellently in 'Adequate and convenient community amenities' (SC), 'Accessible grocery shopping near the neighbourhood' (EC), 'Acceptable distance to the public transport station' (EV). However, performance was worst in 'Active participating in collective activities' (SC), 'Participation in economic activities within the neighbourhood' (EC) and 'Opportunities to attend and express myself in the neighbourhood' (IN). Common positive sustainability performance showed that the infrastructure of these three neighbourhoods enhanced overall sustainability. In contrast, the common negative performance highlighted that poor public engagement in both neighbourhood activities and governance is a common barrier hindering sustainable development. Thus, neighbourhood infrastructure and public engagement are the two common components that should be emphasized in cultivating sustainable neighbourhoods.

This research also identified many unique contextual variations and calls for adaptive methods in different types of neighbourhoods to pursue sustainability pluralistically. For traditional danwei neighbourhoods, increased heterogeneity and declining social capital are the two main sustainability challenges. This study uncovered several negative points, such as poor neighbourhood inclusion, lack of sense of belonging and limited interaction between residents and the CRC. Therefore, rebuilding the neighbourhood identity and enhancing public participation should be a sustainability priority. For the resettlement neighbourhood, its best sustainability performance was the positive effect of proper resettlement policy and design. 'Nearby resettlement with transitional housing allowance' is important for resettlement projects to preserve the previous social network. The resettlement projects provide an important and unique opportunity for improving the sustainability of the previous neighbourhood. Regarding the commodity-housing neighbourhood, the complexity lies in the contrasting relationship between its better and worse sustainability performance. It has better performance in the neighbourhood sense of belonging and interaction with the CRC, but worse performance in social interaction and inclusion. Considering the independence of the commodity-housing neighbourhood from the CRC's governance, promoting effective autonomy conducive to social interaction and inclusion should be its priority for sustainable development.

The key identified factors of the three neighbourhoods in Chengdu are shown in Table 9.2 below. It consolidates the common poor sustainability performances, and the different sustainable and socio-economic threats of the three neighbourhoods. The common poor sustainability performances include 'Often participating in collective activities', (SC), 'Occasionally visiting the neighbours' (SC), 'Will attend the economic activities within the neighbourhood' (EC), 'There is a chance to attend and express myself in the neighbourhood management meeting' (IN).

Table 9. 2 Key identified factors of three neighbourhoods in Chengdu

Neighbourhood type	**Case Name**	**Common poor sustainability performance**	**Respective different socioeconomic and sustainable threats**
Danwei traditional	Yulin Neighbourhood	• Often participating in collective activities. (SC) • Occasionally visiting the neighbours. (SC) • Will attend the economic activities within the neighbourhood. (EC) • There is a chance to attend and express myself in the neighbourhood management meeting. (IN)	Highest heterogeneity Largest aging population Poorest air quality methods of information publicity; Poorest satisfaction on proposed solution from CRC after reporting the issues to them.
Resettlement	Xingyue Neighbourhood		Longest 1) Job-housing and 2) home-transport station commuting time; Lowest sense of security; Lowest satisfaction on difference of neighbourhood policy between local and non-local residents;
Commodity housing	Jinyang Neighbourhood		Lowest participation degree in collective activities Lowest usage rate of public open space; Highest moving out intention; Poorest; Lowest participation in economic activities and satisfaction on economic training workshop.

Individually, the danwei neighbourhood's socioeconomic challenges and sustainable threats include highest heterogeneity, largest aging population, poorest air quality, poorest method of information dissemination, and poorest satisfaction on proposed solution from the CRC after reporting an issue to them. The resettlement neighbourhood's threats and challenges include the longest the job-housing and home-transport station commuting time, the lowest sense of security, and the lowest satisfaction on difference of neighbourhood policy between local and non-local residents. Commodity housing's weak points are the lowest participation degree in collective activities, the lowest usage rate of public open space, the highest moving out intention, and lowest participation in economic activities and satisfaction with economic training workshops.

9.3.3 Sustainability, Neighbourhood Satisfaction and Moving Intention

This study found 11 specific sustainability factors to be significantly associated with the neighbourhood life satisfaction in different neighbourhoods. Ten factors have a positive association while one factor has negative association with neighbourhood life satisfaction. A similar set of significant factors in danwei and resettlement neighbourhoods revealed that the balance of social, economic, environmental and institutional considerations can also comprehensively improve the residential subjective satisfaction with neighbourhood life. In comparison, only environmental and institutional sustainability factors were significant in new commodity-housing neighbourhoods. In other words, two out of four dimensions of sustainability should be emphasized for satisfactory neighbourhoods. Given the representativeness of these three typical neighbourhoods in both Chengdu, the proposed implications and framework are significant in providing reference for developing adaptive sustainable neighbourhood planning in other cities of China.

Several findings of data analysis were shown in table 9.3 below. Firstly, very few social-economic characteristics were found significantly associated with neighbourhood satisfaction. This provides an evidence supporting the argument 'subjective evaluations of neighbourhood attributes are much more important in explaining neighbourhood satisfaction than personal/household characteristics' (Parkes et al., 2002). Secondly, no economic sustainability factor was found to be significantly associated with neighbourhood satisfaction and moving intention. Thirdly, to cultivate a sustainable and liveable neighbourhood, contextual and classified principles were identified and elaborated in Chapter 8. They should be adopted in danwei, resettlement, and commodity-housing

neighbourhoods, since contextual variation and association were found in different contexts. For commodity-housing neighbourhoods, special attention should be paid to environmental and institutional dimensions, as its modelled significant factors are relatively concentrated within these two dimensions. Specifically, keeping the neighbourhood environment clean and healthy, providing responsive property and other management services, building resource recycling and energy efficient systems, as well as engaging external parties, are the sustainability issues contributing to improving neighbourhood satisfaction and liveability.

Table 9. 3 Significant sustainability factors associated with neighbourhood satisfaction and moving intention

Neighbourhood type	**Case Name**	**Sustainability factors associated with residential satisfaction**	**Sustainability factors associated with moving intention**
Danwei traditional	Yulin Neighbourhood	'sense of security', 'Preference on neighbourhood's collective lifestyle', 'satisfactory fresh air', 'Solution got by informing the CRC of problems' and 'Acceptable variation of property management policy on local and non-local residents'.	'traffic needs of elderly, children, disables and other vulnerable groups', 'Opportunities to have social interaction and networking within and outside neighbourhoods', 'Regard myself as a member of the neighbourhood', 'pleasant and well-maintained biological environment' and 'Responses from the CRC'.
Resettlement	Xingyue Neighbourhood	'Sense of security', 'Regard myself as a member of the neighbourhood', 'Night lighting within neighbourhood' and 'Solution got by informing the CRC of problems'	'Regard myself as a member of the neighbourhood' and 'internal and external connective road is safe'.
Commodity housing	Jinyang Neighbourhood	'sense and habit of energy saving', 'clean internal roads and adequate garbage bins', 'responses from the CRC' and 'benefits of engaging external parties in neighbourhood development'	'Affordable house', 'Sense of security' and 'Benefits of engaging external parties in neighbourhood development'

In general, the study's findings support claims for advocating adaptive and contextual neighbourhood planning strategy to achieve sustainable and satisfactory neighbourhoods. Different sustainability challenges and dominant satisfaction factors exist in different forms of neighbourhood in the context of transitional Chengdu. This empirical study showcases how

sustainability and liveability are associated with each other but also different from each other, even within the same city in China. The findings also provide local clues for achieving sustainability and neighbourhood satisfaction at neighbourhood level. Although it is necessary to refer to universal sustainability principles commonly adopted in other countries, it is equivalently important to adapt the general framework by differentiating the local strategy based on context and the derived problems. This study argues that sustainable neighbourhood planning should be a pluralistic practice in different neighbourhood contexts, even though there are global standards for neighbourhood sustainability assessment.

Thus, it is the feasible to simultaneously promote sustainability and liveability (neighbourhood satisfaction). As discussed in Chapter 2, there is a divergent risk existed when these two important considerations are committed into public policy or planning principles. Thus, the finding demonstrated that it is possible for urban planners or governors to converge sustainability and liveability by practising contextual and localized strategies. This is significant as current sustainable development strategies have been constantly criticized for ignoring human aspirations and needs (Dong & Li, 2014).

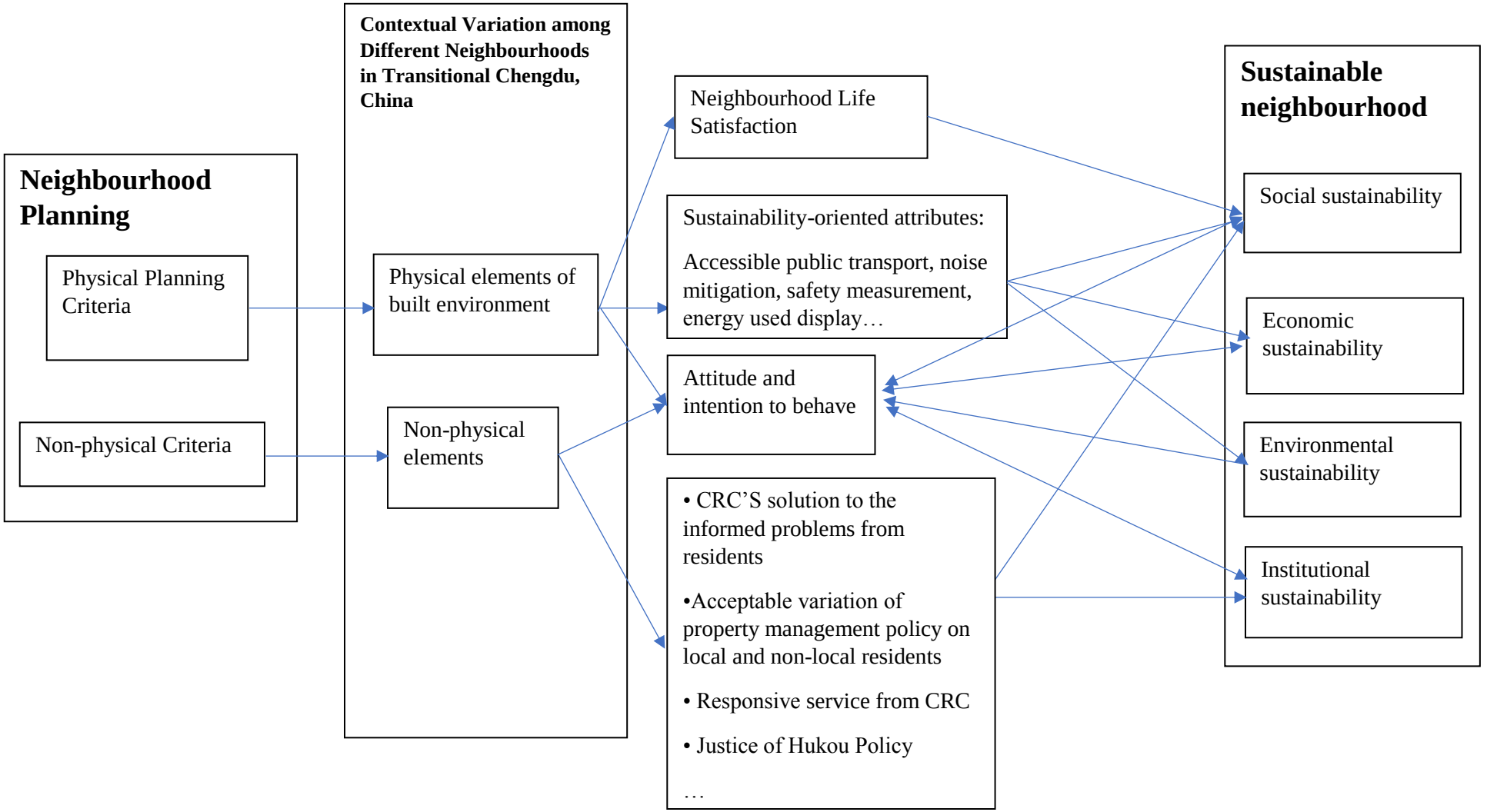


Figure 9. 1 Investigative path showing how neighbourhood planning contributes to sustainable neighbourhood

Figure 9.1 above was developed based on Campbell's environmental psychology and derived theories (Campbell et al., 1976; Marans & Rodgers, 1975) and the results of the case studies in Chengdu, China. The arrows indicate the relationship and direction of significant effects among various elements. It depicts the way neighbourhood planning contributes to sustainable neighbourhood development and how diverse paths affect neighbourhood sustainability. The overall structure was set up based on a finding from the three case studies that a sustainable neighbourhood cannot be cultivated by physical design alone without other non-physical considerations, especially institutional support.

Another important finding obtained is about the association between subjective satisfaction with neighbourhood life and moving intention in the context of the Chengdu cases. This empirical study does not provide obvious evidence in support of previous studies that people's degree of satisfaction with neighbourhood life affects their intention to move out of the neighbourhood (Brown & Moore, 1970; Mohan & Twigg, 2007). No empirical evidence was found in this study's three cases to support a significant association between neighbourhood life satisfaction and residents' moving intention. However, diverse significant sustainability factors were found to be associated with moving intention among the three cases respectively. Thus, the driving forces motivating residents to move out of the neighbourhood would be complex rather than the degree of overall satisfaction with neighbourhood life, regardless of the neighbourhood context. Since moving intention leads to high turnover that severely threatens the social and economic sustainability of neighbourhoods, it is imperative that contextual methods be investigated and implemented for changing the intention to move to the intention to stay.

9.4 Policy Implications

It is important to note that neighbourhood planning was never an independent movement or scheme, despite the social-political context in countries worldwide. Politically, it was utilized as a policy tool to deal with the interplay between decentralization and localism in corresponding countries. This suggests that the neighbourhood planning could be practiced in different forms, such as neighbourhood revitalization or community development, throughout China due to its diverse local context. The local context, especially the existence of the CRC, may provide an opportunity for neighbourhoods to develop their own form of planning in China. But, in spite of diverse objectives across the world, it is commonly agreed that a participatory method with local

input to the planning lifecycle is fundamental. Regarding the global trend and the China context, several policy implications and planning strategy that help neighbourhood planning practices in China are given below. The policy implications were given at national, municipal and neighbourhood level. The planning strategy was proposed considering the contextual variations and respective associations among sustainability, neighbourhood satisfaction and moving intention.

9.4.1 Institutional Implications for Sustainable Neighbourhood Planning in China

At national level, firstly, exploring and developing explicit national policies and initiatives regarding neighbourhood planning would be helpful. As discussed in Chapter 5, the Central Government has gradually paid more attention to neighbourhood planning and national guidelines have been issued as well as many pilot projects undertaken in major cities. Given the national strategy and the aspiration of residents are basically consistent, deepening the general and abstract national guidelines to provide an authoritative and explicit policy foundation for neighbourhood planning would be appropriate. Based on proposed national policies, the involved departments, including the Urban and Rural Housing Ministry, Civil Affairs Ministry and Department of Finance, could foster better coordination and interdepartmental reform in forming a comprehensive framework for nationwide neighbourhood planning practices and management. As a result, legal accountability would be ensured.

Secondly, substantial reform of local governance and the planning education system is urgently needed. Since the setup of grassroots governance in the planned economy era, the CRC has adopted bureaucratic administration procedures. This problem has recently become even more controversial, as its role and authority has been enhanced due to the national policy of 'Community Building.' To be in line with the official role of the CRC as the resident autonomy organization, substantial institutional reform is needed to remove local institutional barriers for decentralization of decision making and to legitimate public participation. Special attention should be paid to the Central Government's poor results in enhancing local preservation and environmental protection, as stated by Ding (2007). To address the problem of inadequate professionals delivering the projects, community planning could be added as part of the current higher education curriculum in planning as a supplement to professional training.

Lastly, nurturing a stronger sense of community through diversifying the forms and avenues of public participation could be encouraged. For planning participation, more interactive and participatory channels, such as workshops, open forums, live discussions, competitions, etc., could be used to facilitate effective planning participation at different phases of the project. The administrative area of one community is a suitable scale within which potential participants could be engaged by the CRC. For community issues, normalized, scientific and deliberate community institutions could be established under the leadership of the CRC. This would provide a regular channel for residents' representatives to make direct contributions to the discussion and resolution of community issues. Of course, public education, such as law, rules and order (Expert 1), is important for raising people's awareness and their capability to provide useful opinions. Therefore, the sense of community and collective capacity to resolve public issues voluntarily would be cultivated and enhanced. These would be beneficial to nurturing a stronger sense of community and laying a solid ideological foundation for practicing neighbourhood planning.

At municipal level, general guideline specifying the objective, strategy and principles, such as infrastructure and public engagement, is necessary to lead the citywide practice as a top-down policy. Financial support or allowance from municipal government bodies is imperative in improving the viability of neighbourhood planning project.

At neighbourhood level, contextual variations should be considered into policy making for developing sustainable neighbourhoods. Generally, for resettlement neighbourhood, implementing the principles of 'Retaining most old neighbours' and 'Nearby resettlement' may help in mitigating the negative impact and improving the social sustainability. The field study and interview reveal that sustaining the pre-resettlement social network works well in promoting current social interactions. Old social network, kinship and its derived domestic interaction, to some extent, can be retained, rather than largely destroyed. 'Nearby resettlement' was highlighted as another characteristic conducive to keeping existing social networks. Considering the statements of Experts 2 and 3 (Round 2), it is important to enable most original inhabitants to be resettled back into new and nearby neighbourhood. During the transitional period (2007 to 2011), each affected resident was allocated a monthly stipend of 300 RMB (45 USD) as transitional housing allowance. This turned out to be an effective method for retaining the existing social network during the urban renewal procedure.

For the commodity housing neighbourhood, proposing differentiated social sustainability consideration and keeping good environmental sustainability performance is imperative in enhancing overall neighbourhood sustainability. It had the best performance in the sense of belonging and amenities provision while, interestingly, it performed worst in social interaction and 'Preference for the collective living pattern'. The higher degree of neighbourhood attachment is perhaps attributed to the residents' higher satisfaction with the amenities provision and other physical environments rather than daily face-to-face interaction. Similar circumstance was justified in a study conducted in Guangzhou (Yushu Zhu et al., 2012). Since residents enjoyed more privacy in new commodity housing, to what extent face-to-face social interaction should still be an essential condition of cultivating sense of belonging in China is questioned. This is similar to findings in other foreign neighbourhoods (Rosenblatt et al., 2009). Thus, reviewing the environmental and psychological consideration in physical design of commodity neighbourhood is necessary.

For traditional Danwei neighbourhood, policy should address the declined social capital, increased heterogeneity and derived transition in residents' perception, including preference and demand. The largest proportion of long term-living respondents and growing number of non-locals and tenants suggests the urgency of addressing heterogeneity challenge, such as old-new and owner-tenant relationship, in policy making. Institutionally, Jinyang is still at the transition stage of neighbourhood management between CRC system and Real Property Management Enterprise (RPME) autonomy. To facilitate the establishment of RPME is essential for promoting neighbourhood institutional sustainability. Generally, to cope with the decay of both physical (living conditions) and the non-physical (social capital) aspect (expert 4 in expert interview round 2), Effectively engaging tenants and immigrants in policy making process should be a priority.

9.4.2 Policy Implications of Contextual Framework

To enable neighbourhood planning to simultaneously promote sustainability and neighbourhood satisfaction in the context of three transitional neighbourhood in China, a framework of few categorized policy implications and planning strategy, as shown in table 8.3, are finalized after expert verification. Decision makers and professional planners can incorporate this framework into sustainable neighbourhood planning.

The policy implications were proposed to address the three categories, of principles in each neighbourhood context, respectively. For danwei neighbourhood, firstly, priority should be given to optimizing the waste management mechanism to prevent trash accumulation, improving the effectiveness and promptness of addressing reported problems by residents, cultivating a sense of belonging by addressing the interests of non-local and tenant residents, increasing the biodiversity of the ecological environment. Secondly, the following enhancement should be planned hereafter: organizing activities, such as planting, dancing etc., to foster a vibrant and interactive collective lifestyle; issuing acceptable and equal property management policies regarding both local and non-local residents; enhancing public participation in the policy-making process and the declaration of policy making, especially to non-locals and tenants. Lastly, the small yard and entrance securities should be retained to make residents feel secure, particularly the aging and vulnerable population, and ensure that adequate transport stations are allocated for public commuting demands, particularly the vulnerable group.

For the resettlement neighbourhood, firstly, priority should be given to enhancing security, both access control systems and staff, at entrances or exits, and guards should patrol within the neighbourhood; further preserve the interests and rights of non-local residents who do not have local hukou, including enhancement of policy declarations and clarification to all residents to prevent information asymmetry. Secondly, the following enhancement should be planned hereafter: encouraging ex-residents to reunite with both familiar and new neighbours by organizing collective activities; Providing accessible public transport and safe, convenient supporting facilities. Lastly, ensuring the current internal and external connective roads are safe and walkable and issuing strict domestic and side parking.

For the commodity neighbourhood, firstly, priority should be given to issuing strict sanitary policies, including clean roads, garbage bin allocation, waste management to improve the quality of the physical environment; engaging diverse external parties, such as social organizations and other enterprises, in neighbourhood development to create more open and vibrant neighbourhood atmosphere. Secondly, the following enhancement should be planned hereafter: securing the residents' privacy and property interests by restricting strangers and optimizing guard patrols; establishing a property owners' committee to practice representative and statutory roles in regular governance. Allocating a display area (displays in common areas such as the entrance lobby,

clubhouse lift lobby and inside of lift cars, etc.) for month-on-month and year-on-year energy use in the neighbourhood. Lastly, regularly reviewing neighbourhood-related charges, such as property management fees, parking charges and even rentals, to provide economic and affordable housing.

This method of framework development can be utilized and applied in other areas where similar neighbourhood planning or policy making is anticipated. In this case study, the least number of A principles, poorest overall residential satisfaction degree, and highest moving out intention of Jinyang revealed that the sustainability and liveability challenges in Jinyang are, therefore, relatively more severe and urgent than in Yulin and Xingyue. This evidence showed that the commodity-housing neighbourhoods, which were built following higher urban planning standards and criteria, are not necessarily more sustainable or satisfactory from the residents' point of view. Given commodity housing will account for most newly built neighbourhoods, planning should be reviewed from the perspective of physical environment, service quality, and institutional mechanisms for balancing sustainability and liveability. For those suggestions which can be delivered at the neighbourhood scale, the policy and action plan above can be used to determine the timetable for improvement. For those problems relating to upper-level policies, this method can also provide empirical evidence as reference for policy reviews. For instance, the results highlighted the role of personal hukou status in driving population turnover in danwei and resettlement neighbourhoods. Given its binary function in restricting urban and rural integrating, as well as leading to uneven policies, as discussed in 3.4, hukou policy reform in securing non-local hukou migrants should be advanced not only for better urban-rural integration but also for fostering sustainable and liveable neighbourhoods.

9.5 Contributions of this Research

This research adds to the literature on neighbourhood planning both from a global and Chinese perspective. The results of this study could provide valuable insights for urban planners, neighbourhood residents, and government decision makers. The study identified nine major institutional barriers hindering neighbourhood-planning practices in China. The findings could aid professionals and governors in further exploring how neighbourhood planning practices in China could be better implemented, with the end goal of achieving sustainable neighbourhoods and a better quality of life.

While this study does not offer a conclusive answer to the question of how specific contextual factors affect neighbourhood sustainability performance, it does provide empirical research through identifying the factors to be considered. This study found both similarities and differences among residents' perceptions of sustainability performance in three different types of neighbourhoods in Chengdu, China. Although several similar sustainability performances can be found among different neighbourhoods, unique contextual variations should not be neglected when universal sustainability principles are adopted.

It also contributes to the growing studies that have investigated the association between sustainability and liveability, especially in the context of transitional China. It proved the existence of significant associations between neighbourhood sustainability and liveability from the perspective of users' perception. The findings identified a variety of significant sustainability factors associated and highlighted the contextual variations among the significant factors set in different neighbourhoods. Generally, tangible or physical sustainability factors, such as keeping the neighbourhood environment clean and healthy, providing responsive property and other management service, building resource recycling and energy efficiency systems, as well as engaging external parties, are more likely to contribute to improving liveability and suppressing moving intention. Only age and hukou status were found to be associated with satisfaction levels and moving intention respectively. It revealed that discrepancies might more likely to be attributed to the physical and institutional environment rather than the respondents' background.

Besides, this research empirically supports the claim that adaptive and contextual neighbourhood planning strategies are crucial for achieving sustainable, satisfactory and liveable neighbourhoods in China. Different sustainability challenges and satisfaction dominant factors exist in different forms of neighbourhood in transitional Chengdu. This provides substantial empirical evidence in showcasing the discrepancy and specifying the associations between sustainability and liveability as well as moving intention. The study's findings also provide local clues in associating the sustainability and liveability at neighbourhood level. It is necessary to refer to universal sustainability principles commonly adopted in other countries but even more imperative to adapting the general frameworks by differentiating the local strategy based on context and derived problems. After all, human beings are the users of the neighbourhood and current sustainable development strategies have been constantly criticized for ignoring social considerations,

especially human demands, and lacking a forward thinking and action driving. Thus, it is significant to identify the links between neighbourhood sustainability and liveability in rethinking the current isolated local strategies and laying a theoretical foundation for future studies. As such, the study offers a small but constructive clue to the planning strategies made by practitioners, urban planners, city and local leaders and other policy-makers who seek to meet the aspirations of their citizens while making their cities more sustainable and liveable.

Finally, the study contributes to policy development by providing implications conducive to sustainable neighbourhood planning. Generally, a review of current neighbourhood planning guidelines to refine its supplementary role to other statutory planning in China, particularly in addressing non-physical issues, should be given. For instance, according to the author's interview with the project leader of 'Chengdu Neighbourhood Development Planning Guideline 2018-2034', a top-down general neighbourhood planning guideline will be issued recently for guiding the neighbourhood development. The master guideline will strategically demonstrate the objective, strategy and tasks of neighbourhood development in Chengdu. However, how the guideline addresses the different issues faced by more than 4,000 neighbourhoods and the corresponding effective methods remains ambiguous and uncertain. Only general objective and parameters are inadequate and adaptive strategy is imperative to break the guideline down into action plan by considering local context. In this sense, the proposed framework provides a general method for identifying the critical factors of corresponding neighbourhood. It combines the theoretical factors and local inputs by engaging the neighbourhood members. This could supplement the general guideline so that an integrated top-down and bottom-up approach can be adopted for an adaptive solution to the specific context.

9.6 Limitations and Future Research

9.6.1 Delimitation of the Study

Despite the theoretical and practical contributions, this research is subject to several limitations. Firstly, the major data sources are from Chengdu so the generalization of the framework to other city is subject to the diversity of geographical, demographic and even political context. According to senior governor during the expert interview, the implementation of the framework was affected by whether the government value 'neighbourhood planning' and is financially capable in delivering it. Secondly, the access to interviewee and survey respondent was limited or even

denied sometime because of security, availability or human resource reason. Backup alternatives had been adopted as supplemental data source. Thirdly, the self-reported data can contain several potential sources of bias because of selective memory, misattribution or exaggeration. For experts who accepted the interview invitation, they were potentially filtered already since only those somehow endorsed the research findings beforehand would like to join the discussion. It suggests that more holistic view or validation, such as social media views, can be used to balance any bias in expert selection. Fourthly, the time available to investigate change or transition over time is limited hence longitudinal and time-dependent effects had not been thoroughly addressed. Lastly, lacking similar studies on this topic led to very few available references for methodology and analysis.

9.6.2 Recommendation for Future Research

Several recommendations for potential research can be provided considering the results and limitation of the study. Firstly, more empirical studies are expected to be conducted in other cities of China to provide evidences for comparing and improving the adaptability of the framework. Secondly, after investigating the association between sustainability and liveability, knowing how the different factors interact specifically is the next question. Thus, Structural Equation Modelling (SEM) can be applied to figure out the sequence and mechanism of the effect amongst. Thirdly, for the undergoing neighbourhood planning practice in Chengdu, longitudinal research can be proposed to track the neighbourhood development along with the planning project to triangulate the framework. Fourthly, exploring to what extent face-to-face interaction still contributes to fostering neighbourhood attachment and sense of belonging in contemporary commodity-housing neighbourhoods is also expected for reviewing the design methods. Lastly, is China facing the demise of the community in new commodity housing? It also raises an important question about the future of danwei neighbourhoods. It can be forecasted that danwei neighbourhoods will gradually diminish and finally disappear with urban and institutional development. But is commodity housing going to replace old danwei neighbourhoods with this trend of urban renewal? How do we achieve a sustainable balance between individual danwei residents, market demand and public interests to deliver a smooth transition?

9.7 Concluding Remarks

Neighbourhood planning was never an independent movement or scheme, despite the social-political context in countries worldwide. In China, its practice was significantly affected by institutional elements, such as political and financial support. Besides removing development barriers of neighbourhood planning, the complexity of sustainable neighbourhood planning was also attributed to addressing contextual variance and simultaneously promoting neighbourhood sustainability and liveability. Generally, it is important to refer to universal sustainability principles commonly adopted in other countries, but it is equivalently imperative to implement the principles by proposing local strategies based on context and derived problems. After all, human beings are the users of the neighbourhoods and current sustainable development strategies have been constantly criticized for ignoring social considerations, especially human demands, and lacking forward thinking and action driving (Garcez & de Souza Vianna, 2009).

To achieve this, neighbourhood planning in China should adapt the internationally and theoretically recognized sustainable standards and indicators into local context of planning. Regarding updated academic literature, sustainable neighbourhood planning should arguably promote not only sustainability but also liveability if sustainable development is expected to move forward by engaging citizens in acting collectively. Residential perceived satisfaction with neighbourhood life has commonly been used as a proxy for liveability (Mouratidis, 2018). Planning sustainable and liveable neighbourhoods epitomises the crucial nexus between urban planning, sustainable development, built environment and public perception. Thus, how the involved factors are addressed in the process of framing sustainable neighbourhood planning is therefore critical in fostering sustainable and satisfactory neighbourhoods. Amongst all framework elements, parameters are important because they provide benchmarks against which to monitor progress towards policy reform; and to make comparisons between and within cities (Howley et al., 2009b).

Contextual variation exists not only among different countries but also different neighbourhoods within the same city of the same country. Based on the findings of this research, the significant parameters associating sustainability with residential satisfaction on neighbourhood life vary by typology of the neighbourhood even within the same city. The findings support the advocacy of

considering local contextual variation in improving the development of neighbourhood sustainability principles (Bond & Morrison-Saunders, 2013).

Either for integrating traditional top-down elite and bottom-up participatory planning, or sustainability and satisfaction, sustainable neighbourhood planning has proved to be a conjunctive and powerful method to advance sustainable urban development. It originates from the West so that how effective it will be in realizing sustainable neighbourhoods in China is largely determined by how well it addresses unique and critical local sustainability issues. To address this, the contextual frameworks were redefined based on internationally recognized frameworks through empirical studies. Differentiated planning frameworks were classified and articulated for providing local action plan. Supportive institutional elements were proposed by addressing the identified barriers hindering neighbourhood-planning development in China.

The China-character and diversity of both planning and implementing these frameworks within even the same city revealed that sustainable neighbourhood planning should be guided by sustainability principles but individually pluralistic and dynamic rather than fixed and standardized practice in China. The uniformity mainly lies in the sustainable objectives and action principles at municipal level, while the differences lie in planning preparation, responsible bodies, implementation, and policies of various neighbourhoods with different locations, socio-economic characteristics, and development stage. In this sense, unlike other statutory planning in China, sustainable neighbourhood planning would play a better role if it acts as a non-statutory and participatory planning at the grassroots level of the national urban planning system. From the perspective of people-orientation and public participation, it also supplements traditional physical planning by better engaging and empowering citizen so that convergent and favourable actions can be taken collectively towards a more sustainable future**.**

APPENDICES

Appendix A Questions for Experts Interview (Round One)

研究題目：我國城市發展轉型期的中國城市社區/鄰里的可持續性框架研究

研究目的： 通過擬訂中國城市社區/邻里發展的可持續性指標，來幫助推進可持續性社區規劃，有助於社區最終達到可持續發展。

研究問題：如何通過推進社區/邻里规划来提高社区的可持续性，最终达到社区可持续发展？

1. 中國實踐可持續性社區規劃的障礙是什麼？

1. 中國城市社區的可持續性指標有哪些？

2. 如何將這些"可持續"原則和指標體現到具體的社區規劃內容和規劃審批中去？

專家採訪問題 Questions:

1. 根據此研究的初步文獻綜述結果，英國，美國，加拿大和台灣的鄰里/社區規劃實踐的共同特征如下：

- **群眾基礎**：社區的居民共同擁有社會資本，社區利益，期望自治和願意採取共同行動去解決周圍的問題
- **政策基礎**：存在全國性的政策或者法律，來支持推進全國的鄰里規劃的發展
- **官方，清晰和一致的定義**：對於鄰里規劃的角色和目標有一個權威並且清晰的定義
- **衝突解決機制**：當鄰里規劃與上位規劃出現衝突時，有相應的制度安排或者解決機制來解決衝突問題
- **公眾參與的經驗基礎**：當地相關部門有長期的組織和推進公眾參與的經驗
- **資金和人力資源**：地方政府或者議會，都會提供財政支持
- **公眾參與的程度高**：高度的公眾參與
- **督導委員會**：強有力的督導委員會的連續推進
- **規劃實施的保障**：立法或者政策措施來保障社區規劃的規劃實施

・常態化，動態化，系統化的規劃過程：而不是一站式的活動

請問，您是否認為此十項也為中國實踐社區/鄰里規劃的條件或者特征？若不是，請指出不符的地方以及可能中國的不同之處？

2. 您認為，

社區規劃會在近期的中國城市規劃中興起嗎？為什麼？

它主要是為了解決哪些問題？

中國的社區規劃跟西方的社區規劃，將有何不同？

3. 中國如果開始正式編制社區規劃，哪一些內容是需要優先考慮加入規劃內容的？

根據麻省理工學院都市研究及規劃系前系主任的李灿辉教授的中國項目研究， 中國城市鄰里的可持續性規劃需從自然環境，可移動性，住房以及社區系統四個方面做出規劃設計。

自然環境規劃： 對現有自然環境的保護，創造環境友好的社區發展方向。

交通（可移動性）規劃： 提高社區交通的可達性，連接性，靈活性，遞增性，可持續性和低環境影響性。

住房系統規劃： 擬訂經濟上可承受的房屋計劃，設計一個有活力的住房系統的目的，標準和因素。

社區系統規劃：社區服務的投送以及服務設施的規劃安排

您同意嗎？有無其他的補充？

4. 有人說，中國的社區規劃無法實行‘自下而上’的居民規劃參與，您對此如何回應? 何種程度上，我國可以借鑒國外社區規劃的公眾參與模式？

Appendix B Experts Verification for Identifying Barriers (Round Two)

	障碍描述	打分说明
社区（邻里） 规划项目 在中国发展的 障碍	1. **群众社区意识基础较弱**：社区的居民共享本地社会资本，社区利益，期望自治和愿意采取共同行动去解决身边的问题。 1 2 3 4 5	**1** 表示 非常不同意 **2** 表示不同意 **3** 表示 不一定 **4** 表示同意 **5** 表示非常同意 （请留下您所打分数，删除其他分数选项）
	2. **政策基础和官方定位**：缺乏全国性的程序性政策或者法律，来支持推进全国的社区规划的发展（程序性：程序设定而非内容框架设置）。当前指引社区规划或营造的政策多为地方（省市）级别。政府官方部门对于社区规划的角色和目标缺乏统一并且清晰的定义。 1 2 3 4 5	
	3. **项目责任主体不明确**：社区规划项目主体责任部门不明确，涉及的相关单位和团体（民政，规划，国土，社区，开发商）多而复杂，统筹机制不成熟。 1 2 3 4 5	
	4. **缺少冲突解决机制**：当邻里规划与上位规划出现冲突时，有相应的制度安排或者解决机制来处理 冲突问题 1 2 3 4 5	
	5. 公众参与的经验基础，参与程度及平台效率均不足：当地相关部门缺乏长期的组织和推进公众参与地方性规划的经验。地方性规划项目的公众参与的程度以及效果很有限，更多为程序性和展示性。地方的不同团体之间缺少有效的沟通平台。 1 2 3 4 5	

<table>
<tr><td rowspan="4">社区（邻里）

规划项目

在中国发展的

障碍</td><td>6. 政府资金和人力资源支持不足：地方政府（区政府，区民政局 或者街道办）对于社区规划项目财政支持不足。

1 2 3 4 5</td><td rowspan="5">1 表示 非常不同意

2 表示不同意

3 表示 不一定

4 表示同意

5 表示非常同意

（请留下您所打分数，删除其他分数选项）</td></tr>
<tr><td>7. 没有专责的项目小组（委员会）的组织推进：项目过程中没有得到授权的，有广泛代表性（成员包括社区及周边利益相关者）的项目小组或者督导委员会的连续推进。

1 2 3 4 5</td></tr>
<tr><td>8. 缺乏社区规划实施的制度保障：地方很少有通过发布政策或者立法等措施来保障社区规划的规划实施。

1 2 3 4 5</td></tr>
<tr><td>9. 规划过程并非动态化，系统化以及常态化：社区规划项目部分仅为一站式程序而轻视了利益相关者反馈意见和多轮修改的意义。

1 2 3 4 5</td></tr>
<tr><td>您认为有没有其他障碍（此处未列出）？</td><td></td></tr>
</table>

Appendix C Experts Verification for Proposed Framework (Round Three)

三个具有代表性的社区在**可持续发展方面所面临的问题和挑战**

共同因子：完备的社区基础设施和**较低公众参与程度**是影响这三个不同社区可持续发展的共同因子。

社区类型	案例社区	共同的可持续发展性问题	各自类型所面对的问题	原因分析讨论
传统混合单位院落	玉林东路社区	社区集体活动，特别是就业创业等其他经济活动和社区治理的居民参与度均很低。	住户的高异质性，邻里互动方面是三者中较差。社区发展面临着物质和非物质两方面的衰败风险，社会资本正在逐渐流失，需要加强规划治理。	本调研中其所呈现最大比例的租户和非本地户口住户比例揭示了人口流动性在过去几年有所增强，使邻里互动减少，加大了邻里融合的难度。这也是全国范围内传统单位大院所面临的除了物质空间衰败之外的重塑社区资本的挑战。单位和社区居委会在对居民的管理上还存在责权不清或者还处于过渡性阶段。
动迁安置小区	星月社区**（整体可持续性表现最好）**		职住通勤时间较长。社区治理参与度最低。综合可持续性（特别是社会因素）表现最好。	延续旧的社区社会网络和关系对于安置小区的可持续发展意义重大，如若大部分延续，非常有利于提高社会可持续性。加上本案例的近距离异地动迁，更有利于降低物质空间移动对于社会网络的破坏程度。
商品房住宅小区	晋阳社区		小区公共空间的使用度较低。居民对于住宅小区心理依附感更强，与业委会（居委会）互动较好，但邻里之间互动和社会包容性较差，特别是集体活动参与度是三个当中最差的。对于邻里亲密感的为实现可持续发展，应更多关注通过提高小区自治水平来促进邻里互动和提高包容性。	社区依附感更强与居民对于附属康乐设施的高满意度有关，与邻里交往则关系不大。这点与广州商品房和传统社区的比较研究结果一致。

2. 与**社区生活满意度**显著相关的社区可持续性因素:

社区类型	案例社区	显著影响社区生活满意度的可持续性因素 （Significant factors）	原因？
传统单位小区	玉林东路社区	社区安全感，集体生活气氛，令人满意的空气质量，向居委会反映后问题得到了解决，社区管理上对于本地和非本地户口的政策让人可以接受	
动迁安置小区	星月社区	社区安全感，社区归属感，社区内夜间的照明，向居委会反映后问题得到了解决	

商品房小区	晋阳社区	有节能环保意识（负相关），干净的社区内道路和足够的垃圾桶，反映的问题都会得到小区业委会的反馈, 让社会组织参与到社区的管理与发展（包括组织活动，培训，就业和开展其他项目）依附感更强与居民对于附属康乐设施的高满意度有关，与邻里交往则关系不大。这点与广州商品房和传统社区的比较研究结果一致。	

3. 如果想要同时提高社区的可持续性和宜居性，基于以上两部分的因素分析，以下为不同社区类型的在地性规划框架 (juxtaposing the 1 and 2)

	规划策略 Planning criteria/parameter	**适用于的规划类型**	专家意见?
传统单位小区	需要加强规划和管理介入小区日常生活的强度。通过兼顾本地（业主）和非本地户口（租户）住户的需求，拟定相对公平的社区管理政策（停车，物业费，居民参与），定期应召集登记租户进行交流讨论。	参与式社区发展规划，特别是社区微改造和微更新。	
	通过组织区内集体交流会，优先着重建立邻里的熟识性，逐步建立有别于以往单位集体生活的新时代社区气氛。		
	居委会应在管理上注重区内空气质量的提高。		
	居委会或者社区中心提供有效的社区服务，能够切实解决居民需求。		
动迁安置小区	对于有条件的动迁项目，应以“近距离异地安置”为优先动迁策略, 尽可能保留原先的社会交往网络，	新安置小区的详细规划及发展规划，特别是项目选址，环境设计。	
	安置项目选址应充分考虑未来居民就业通勤时间的合理性，以周边就业机会较多的区位为优先考虑。		
	社区内夜间的照明设施，包括楼内和小区道路，应规划充足。		
	居委会的工作重点应该放在具体能否解决安置居民所关心的问题上来，即有效服务。		
	通过回顾原小区历史文化，定期重新召集新老邻里进行集体交流来重塑居民对于新社区的归属感和提高其参与治理能力。		
商品房小区	重新检讨小区内公共空间的设计以塑造对于在地居民更加有使用价值和吸引力的活动空间为目标。	新商品房小区的详细规划。旧商品房小区的社区发展规划和社区微改造和微更新。	
	从制度设计层面增加邻里互动和社区共融的指标		
	规划严格的垃圾管理和道路清洁守则，对于康乐设施的设计和管理标准继续维持高品质标准。		
	从如何更有效回应居民需求的角度去厘定业委会和居委会在小区管理上的关系		
	进一步开放第三方社会组织或企事业单位参与到小区发展和管理当中，譬如空间规划改造，提供幼教和养老服务。		

附加专家问题

1. 本研究再次强调了中国语境下，可持续城市社区规划建设的在地性和社区规划的以人为本的立足点。对于目前为止得到的结论和策略，请给出您的看法和理由？

2. 成都市“可持续城乡社区建设”项目已经开展到了第三年。同时，目前成都市委社治委与同济大学签订合作协议，正式启动《成都城乡社区发展规划(2018—2035 年)》的编制工作。成都市的社区规划已经得到了实质性的发展。 从您的角度，如果本研究框架可以应用在成都城市社区的规划发展当中，应该如何利用和实施才适合？譬如，编制主体应该是成都市规划局还是成都市民政局？与现行城乡法定规划和其他上位规划的关系应该是如何？

Appendix D Preliminary Theoretical Framework

The whole preliminary framework with 98 factors was shown in the table below:

Main Themes	Factors	Sub-factors	References	
			Academic	Industrial
Social	Social Culture And capital	Local language		BREEAM Communities (2012)
		Cultural Events and Festivals	Tweed and Sutherland, 2007	CASBEE-UD (2014)
		Conservation of Cultural Assets	Kearns and Forrest, 2000	Beam Plus Neighbourhood (2016); TAHER (2011)
		Creation of new culture		CASBEE-UD (2014)
		Value Stability		DGNB-NUD (2012)
	Quality of Life	Social interaction and Functional Mix	Bramley and Power, 2009	Beam Plus Neighbourhood (2016); DGNB-NUD (2012)
		Affordable and Diverse Housing Provision	Berardi (2013); Yigitcanlar et al. (2015)	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); LEED-ND (2016)
		Quality of Open Space	Bramley and Power, 2009; Yigitcanlar; Kamruzzaman and Teriman, 2015; Berardi, U. (2013).; Turcu, 2013.	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); DGNB-NUD (2012)
		Delivery of services, facilities and amenities		BREEAM Communities (2012)
		Commercial Infrastructure		DGNB-NUD (2012)
	Education	Neighbourhood schools	(Wilson and Taub, 2006	LEED-ND (2016)

		Education programmes on waste management and water conservation		Beam Plus Neighbourhood (2016);
	Social Inclusion and Equity	Surrounding and internal connectivity	(Barton, 2000a; Burton, 2000b	LEED-ND (2016)
		Integrated Planning	(Dempsey, 2008a	DGNB-NUD (2012)
		Inclusive Access	(Hopwood et al., 2005; Chiu, 2002); Brook Lyndhurst, 2004; Macintyre et al., 1993	DGNB-NUD (2012)
		Demographic needs and priorities	Ancell and Thompson-Fawcett, 2008	BREEAM Communities (2012)
	Public Participation	Community Participation	Pierson, 2002; Ratcliffe, 2000; Pendlebury et al., 2004； Bramley and Power, 2009	Beam Plus Neighbourhood (2016); BREEAM Communities (2012)； CASBEE-UD (2014); LEED-ND (2016); DGNB-NUD (2012)
	Sense of Place and Community Identity	Art in Public Space	Reith and Orova (2015)	DGNB-NUD (2012)
		Preservation and restoration of historical legacies and buildings		CASBEE-UD (2014)
		Place Making and Local Character	Stubbs (2004) Nash and Christie, 2003); (Kearns and Forrest, 2000)	Beam Plus Neighbourhood(2016)
		Urban Integration		DGNB-NUD (2012)
	Security	Disaster Prevention		CASBEE-UD (2014)
		Disaster response ability		CASBEE-UD (2014)

		Crime Prevention	Bramley and Power, 2009. (Silburn et al., 1999); Nash and Christie, 2003, p. 47	CASBEE-UD (2014); DGNB-NUD (2012)
		Traffic Safety		CASBEE-UD (2014); DGNB-NUD (2012)
		Phycological security	Shaftoe, 2000, p. 231	
	Amenity Provision and Convenience	Provision and Management of public Amenities		Beam Plus Neighbourhood (2016); BREEAM Communities (2012); DGNB-NUD (2012)
		Amenity Convenience	Lew et al. (2016); Berardi (2013); Turcu (2013)	CASBEE-UD (2014); BREEAM Communities (2012); LEED-ND (2016)
Economic	Jobs and opportunities	Economic impact		BREEAM Communities (2012)
		Marketing		DGNB-NUD (2012)
		Training and skills	Turcu (2013)	BREEAM Communities (2012)
		housing and jobs proximity	Berardi (2013); Turcu (2013)	LEED-ND (2016);
	Quality of the Management and Maintenance	Maintenance, Upkeep and Cleaning	Worpole, 2003	DGNB-NUD (2012)
		Logistic Management		CASBEE-UD (2014)
	Growing Potential	Population Growth	Bramley and Morgan, 2003	CASBEE-UD (2014)
		Cooperative activities	Berardi (2013)	CASBEE-UD (2014)
		Responsible Organization for Attracting investment		CASBEE-UD (2014)

	Land use	Utilization level of standard floor area ratio	Yigitcanlar, Kamruzzaman and Teriman, 2015.	CASBEE-UD (2014); DGNB-NUD (2012)
		Reuse of Brownfield Site	Yigitcanlar, Kamruzzaman and Teriman, 2015.	CASBEE-UD (2014); LEED-ND (2016); TAHER (2011)
		Compact Development		LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
	Smart Efficiency	Information service performance	Boström (2012)	CASBEE-UD (2014); DGNB-NUD (2012)
		Smart Block management		CASBEE-UD (2014); TAHER (2011)
		Smart demand and supply system		CASBEE-UD (2014); LEED-ND (2016)
Environmental	Site and outdoor environment	Outdoor thermal comfort	Levett (1998)	Beam Plus Neighbourhood (2016)
		Urban Heat Island Effect		Beam Plus Neighbourhood (2016); LEED-ND (2016)
		Neighbourhood Daylight Access	Gibberd (2013)	Beam Plus Neighbourhood (2016); BREEAM Communities (2012);
		Visual Quality		Beam Plus Neighbourhood (2016);
		Outdoor Air quality	Reith and Orova (2015)	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); TAHER (2011)
		Mitigation of noise	H. Chen et al. (2008)	Beam Plus Neighbourhood(2016); BREEAM Communities (2012); DGNB-NUD (2012); TAHER (2011)
		Universal Access	Barton, 2000a; Burton, 2000b	Beam Plus Neighbourhood (2016); LEED-ND (2016)
		Micro climate		TAHER (2011)
		Accessibility to Open Space, Green Space and Blue Assets.	Barton, 2000a; Burton, 2000b	Beam Plus Neighbourhood (2016); LEED-ND (2016)

		Flexible Use		DGNB-NUD (2012)
	Ecological and Biodiversity	Ecology strategy		BREEAM Communities (2012)
		Enhancement of ecological value	Holdren et al. (1995)	BREEAM Communities (2012); Beam Plus Neighbourhood (2016); CASBEE-UD (2014); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Adaptive Landscape Design	Tweed and Sutherland, 2007	BREEAM Communities (2012)
		Ground Greenery	(Kearns and Forrest, 2000	CASBEE-UD (2014); BREEAM Communities (2012); Beam Plus Neighbourhood (2016); TAHER (2011)
		Agricultural land Conservation	Bramley and Power, 2009; Yigitcanlar, ;Kamruzzaman and Teriman, 2015; Berardi, U. (2013).; Turcu, 2013.	LEED-ND (2016)
		Local food production	Berardi, U. (2013). Yigitcanlar, Kamruzzaman and Teriman, 2015.; Turcu, 2013.	LEED-ND (2016); DGNB-NUD (2012)
	Sustainable Buildings and indoor environmental quality	Building Reuse	Berardi, U. (2013). Albino, V., & Dangelico, R. M. (2012); Turcu, 2013.	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); LEED-ND (2016)
		Certified Sustainable Buildings	Berardi, U. (2013); Turcu, 2013.	Beam Plus Neighbourhood (2016); LEED-ND (2016); BREEAM Communities (2012); TAHER (2011)

		Minimum building energy performance	Lew, et al. (2016); Berardi, U. (2013). Yigitcanlar, Kamruzzaman and Teriman, 2015; Turcu, 2013.	LEED-ND (2016)
		Roof green	(Barton, 2000a; Burton, 2000b (Hopwood et al., 2005; Chiu, 2002); Brook Lyndhurst, 2004; Macintyre et al., 1993	CASBEE-UD (2014); TAHER (2011)
		Indoor air quality	Ancell and Thompson-Fawcett, 2008; Turcu, 2013.	TAHER (2011)
	Street and Transport	Safe and appealing streets	Stubbs (2004) Nash and Christie, 2003); (Kearns and Forrest, 2000);	BREEAM Communities (2012); DGNB-NUD (2012)
		Cycling network and facilities	Yigitcanlar, Kamruzzaman and Teriman, 2015.	BREEAM Communities (2012); CASBEE-UD (2014); Environmental; DGNB-NUD (2012)
		Pedestrian-oriented and Low Carbon Transport	Bramley and Power, 2009. (Silburn et al., 1999); Nash and Christie, 2003, p. 47; Berardi, U. (2013). Yigitcanlar, Kamruzzaman and Teriman, 2015.; Turcu, 2013.	Beam Plus Neighbourhood (2016); BREEAM Communities (2012)
		potential reduction in greenhouse gas emissions from different solutions	Yigitcanlar, Kamruzzaman and Teriman, 2015.	BREEAM Communities (2012); TAHER (2011)

		existing alternative transport facilities within the community		BREEAM Communities (2012); CASBEE-UD (2014)
		Walkable Street	Turcu, 2013.	LEED-ND (2016); DGNB-NUD (2012)
		Access to public transport	Berardi, U. (2013); Turcu, 2013.	BREEAM Communities (2012); LEED-ND (2016); Environmental; DGNB-NUD (2012)
		Public transport facilities	(Bramley and Morgan, 2003; Berardi, U. (2013). ;Turcu, 2013.	BREEAM Communities (2012); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Multiple Transit Types	Berardi, U. (2013).	LEED-ND (2016); BREEAM Communities (2012); Beam Plus Neighbourhood(2016); DGNB-NUD (2012)
		Tree lines and shaded streetscape	Sharifi, A., & Murayama, A. (2013).	LEED-ND (2016)
		Parking lots Integration	Yigitcanlar, Kamruzzaman and Teriman, 2015.	BREEAM Communities (2012); DGNB-NUD (2012)
	Resource and materials	Water Environment Conservation	Yigitcanlar, Kamruzzaman and Teriman, 2015.	Beam Plus Neighbourhood (2016); BREEAM Communities (2012); CASBEE-UD (2014), LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Rain water Management and Flood risk assessment		Beam Plus Neighbourhood (2016); BREEAM Communities (2012); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Alternative Water Resource		Beam Plus Neighbourhood (2016)
		Low impact materials		BREEAM Communities (2012)

		Passive Design		Beam Plus Neighbourhood (2016); TAHER (2011)
		Resource Cycling	Barton, 2000a; Burton, 2000b	CASBEE-UD (2014); LEED-ND (2016); TAHER (2011)
		Historical resource preservation and adaptive reuse	Barton, 2000a; Burton, 2000b;	LEED-ND (2016); TAHER (2011)
		Life Cycle Assessment		DGNB-NUD (2012)
		Water circulation system		DGNB-NUD (2012); TAHER (2011)
	Energy efficiency	Energy Efficiency Infrastructure	Turcu (2013)	Beam Plus Neighbourhood(2016); BREEAM Communities (2012); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Renewal Energy	Turcu (2013)	Beam Plus Neighbourhood (2016); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)
		Energy strategy		BREEAM Communities (2012); DGNB-NUD (2012); TAHER (2011)
		dust and pollution		BREEAM Communities (2012)
		Solar orientation	Barton, 2000a; Burton, 2000b; Yigitcanlar, Kamruzzaman and Teriman, 2015. Turcu, 2013.	LEED-ND (2016); TAHER (2011)
		District heating or cooling	Turcu, 2013.	LEED-ND (2016); TAHER (2011)
	Waste and Pollution	Light pollution	Yigitcanlar, Kamruzzaman and Teriman, 2015.	BREEAM Communities (2012); LEED-ND (2016); TAHER (2011)
		Integrated Waste Management		Beam Plus Neighbourhood (2016); LEED-ND (2016); DGNB-NUD (2012); TAHER (2011)

		Construction pollution prevention	Turcu, 2013.	LEED-ND (2016)
		Recycled and reused infrastructure		LEED-ND (2016); TAHER (2011)
		Solid Waste Management		DGNB-NUD (2012); TAHER (2011)
Institutional	Policy Compliance	Consistency with the upper-level planning		CASBEE-UD (2014)
	Governance	Stakeholder engagement in planning	Labuschagnea et al. (2005). Pierson (2002); Ratcliffe (2000); Pendlebury et al. (2004)	BREEAM Communities (2012)
		Collaborative System for area management	Kearns and Forrest, 2000; Turcu (2013)	CASBEE-UD (2014); BREEAM Communities (2012)

Appendix E Questionnaire Survey for case study in Chengdu, China

项目名称：转型时期的中国可持续性社区规划的框架研究

问题描述		说明
	A 社区的生活质量与安全性	
	关于您所居住的社区，下列描述能否代表您的感受？	以下指标能否代表您的相关感受。请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	A1 1. 入住此小区时的房价或者租金对我来说可以接受 1 2 3 4 5	
	A2 2. 平常会去社区里的体育和娱乐设施场所（乒乓球室，图书室，棋牌室）活动并且感到满意。 1 2 3 4 5	
	A3 3. 从社区出发到附近的配套设施（如超市，诊所，学校和小公园等）都很方便 1 2 3 4 5	
	A4 4. 我居住在社区中感到有安全感，周围的社会秩序良好。（社区有保安人员和摄像头等措施） 1 2 3 4 5	
	A5 5. 身边的老弱病残（老人，小孩及残障人士）在社区出行，都很便利。 1 2 3 4 5	
	A6 6. 您是否会参加社区内的公共体育或者文化活动？（打球，跳舞，下棋，唱歌，打牌等） 1 是☐ or 2 否☐	请勾选符合您情况的选项。如不适用，请在一旁标明原因。
	A7 7. 您是否在未来仍然愿意在这个小区居住下去 （如果也有其他选择的话） 1 是☐ or 2 否☐	

关于社区的社会、经济、环境与制度四个方面居民的认识感受的问卷调查

本问卷旨在通过街头访问，从以上四个方面了解在地社区居民对于社区生活的认识和感受，所得结果将用于研究社区规划的框架内容。

	B 社区的文化认同，包容与归属感	说明
	关于您所居住的社区，下列描述能否代表您的感受？	
	B1 1. 在社区生活中，我有认识邻居和交新朋友的机会并且会跟周围其他社区互动。 1 2 3 4 5	以下指标能否代表您的相关感受。 请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	B2 2. 我喜欢社区内有时大家在一起聊天，运动等热闹的氛围。 1 2 3 4 5	
	B3 3. 我经常参与社区内举办的集体活动（展览，跳舞，打牌等）。 1 2 3 4 5	
	B4 4. 社区邻居之间会偶尔串串门，走动交流。 1 2 3 4 5	
	B5 5. 我心里认为自己是社区的一员或者一份子。 1 2 3 4 5	

本问卷旨在通过街头访问，从以上四个方面了解在地社区居民对于社区生活的认识和感受，所得结果将用于研究社区规划的框架内容。

	C 社区的经济活动	说明
	关于您所居住的社区，下列描述能否代表您的感受？	
	C1 1. 我会参加在社区内举办的经济活动（比如就业，创业及其他）。 1 2 3 4 5	以下指标能否代表您的相关感受。 请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	C2 2. 我觉得社区的信息公开和宣传方式（比如布告栏，微信群等）让人满意。 1 2 3 4 5	
	C3 3. 我觉得社区举办的技能培训和学习有用（比如政策、法律知识讲解，职业培训等）。 1 2 3 4 5	
	C4 4. 在社区内或者周边基本上可以买到一般日常用品。 1 2 3 4 5	
	C5 5. 从社区出发上下班，路上所花的时间让人可以接受 1 2 3 4 5	
	C6 6. 每天从家里到上班地点需要花的时间? 1 5 分钟之内☐ 2 5 到 15 分钟☐ 3 15 分钟 到 半个小时☐ 4 半个小时到 1 个小时☐ 5 1 个小时以上 ☐	请勾选符合您情况的选项。如不适用，请在一旁标明原因。

本问卷旨在通过街头访问，从以上四个方面了解在地社区居民对于社区生活的认识和感受，所得结果将用于研究社区规划的框架内容。

	D 社区的环境 （交通和能源环境）	说明
QUALITATIVE INDICATORS	关于您所居住的社区，下列描述能否代表您的感受？	以下指标能否代表您的相关感受。 请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	D1 1. 社区内的夜晚的照明效果良好 （道路路灯和楼道灯的效果良好）。 1 2 3 4 5	
	D2 2. 社区内部小路和周边的道路都较便利和安全。 1 2 3 4 5	
	D3 3. 我觉得出行选择较多（比如坐公交车，地铁， 打的或者开车，有较多选择）。 1 2 3 4 5	
	D4 4. 我会有节约的意识，比如关注水电网的使用情况。 1 2 3 4 5	
	D5 5. 从家里出门乘车比较便利 （到车站距离可以接受，途中的安全性等） 1 2 3 4 5	
QUANTITATIVE INDICATORS	D6 6. 您一周乘坐几次公共交通（包括公交，地铁，的士等） 1 1 次 ☐ 2 2 次-3 次 ☐ 3 4-5 次 ☐ 4 6-7 次 ☐ 5 大於 8 次 ☐	请勾选符合您情况的选项。如不适用，请在一旁标明原因。
	D7 7. 从您家里走路到上车点需要多长时间？ 1 少于 3 分钟☐ 2 4-10 分钟 ☐ 3 11-20 分钟☐ 4 20 分钟以上☐	

本问卷旨在通过街头访问，从以上四个方面了解在地社区居民对于社区生活的认识和感受，所得结果将用于研究社区规划的框架内容。

	E 社区的居住环境 （生态和物理环境）	说明
	关于您所居住的社区，下列描述能否代表您的感受？	
	E1 1. 社区内路面和公共空间比较干净，垃圾桶的数量够。 1 2 3 4 5	以下指标能否代表您的相关感受。 请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	E2 2. 社区内的空气清新流动，令人满意。 1 2 3 4 5	
	E3 3. 社区内的生活噪音较少。 1 2 3 4 5	
	E4 4. 夏天，还可以在社区里散步和乘凉而不会感到太热。 1 2 3 4 5	
	E5 5. 社区内的花花草草令人感到愉悦并且维护得良好。 1 2 3 4 5	
	E6 6. 下大雨后，社区内的道路积水在段时间可以得到疏通。 1 2 3 4 5	
	E7 7. 社区内的凳子干净，一年四季用起来都舒服。 1 2 3 4 5	
	E8 8. 我觉得公共休闲空间能让我感到更舒适和有益于身心健康。 1 2 3 4 5	
	E9 9. 一周之内你去社区的小广场或者公共活动空间几次？： 1 少於 1 次 ☐ 2 2 次-3 次 ☐ 3 4-5 次 ☐ 4 6-7 次 ☐ 5 大於 8 次 ☐	请勾选符合您情况的选项。如不适用，请在一旁标明原因。

本问卷旨在通过街头访问，从以上四个方面了解在地社区居民对于社区生活的认识和感受，所得结果将用于研究社区规划的框架内容。

	F 社区的制度	说明
	关于您所居住的社区，下列描述能否代表您的感受？	
	F1 1. 我作为居民参加过社区的集体会议并且有机会反映自己关注的情况和想法。 1 2 3 4 5	以下指标能否代表您的相关感受。 请通过打分给出您的同意程度。 5=最同意 4=同意 3=说不准 2=不同意 1=最不同意
	F2 2. 我觉得大多数反映的情况都能够在之后得到社区和居委会的回应。 1 2 3 4 5	
	F3 3. 作为居民，去社区行政服务中心办事，问题都能够得到解决。 1 2 3 4 5	
	F4 4. 我觉得企事业单位、社会团体和社会组织参与到社区事务，让社区更有活力，有助于解决问题和社区的管理和发展。 1 2 3 4 5	
	F5 5. 我觉得社区对于区内本地（户籍）和流动居民（非户籍）的区别对待程度让人可以接受。（物业费、停车费、享受公共服务等方面） 1 2 3 4 5	
	F6 6. 过去一年中，您参加过多少次社区的会议或者集体问政之类的活动 1 没有 ☐ 2 1 次 ☐ 3 2-3 次 ☐ 4 3-4 次 ☐ 5 5 次 以上 ☐	请勾选符合您情况的选项。如不适用，请在一旁标明原因。

X1 性别：1 □ 男　　0 □ 女

X2 年龄: 1 □ 18-35　2 □ 36-50　3□ 51-65　4 □ 66-80　5 □ 80 以上

X3 居住身份类型 ：1□□ 业主　2 □ 租户

X4 户籍：1 □ 本地户籍　2 □ 非本地户籍

X5 居住在此社区多久：1 □ 少于 1 年　2 □ 1 到 3 年　3 □ 4 到 6 年　4□ 7 到 10 年　5 □ 10 年以上

X6 教育程度 ：　1 □ 小学以下　2 □ 小学　3 □ 中学　4 □ 大专或大学以上

X7 现在个人大概月收入是：

1 □2000 元以下　2□2000-4000 元　3□4000-6000 元　4 □ 6000-8000 元　5 □ 8000 元以上

X8 现在每个月家庭生活（衣食住行）平均开销大概多少？

1□ 3000 元以下　2 □ 3000-5000 元　3□5000-7000 元　4 □ 7000-9000 元　5□ 9000 以上

Y 对于社区生活的总体满意度：社区多大程度上满足您的生活需要（必答）

1□ 非常不满意　2□ 不满意　3□ 适中　4□ 满意　5 □ 非常满意

感谢！在此问卷中你说提供的资料均会严加保密，并且只会作为本学术研究之用！

REFERENCES

Abramson, D., & Qi, Y. (2011). "Urban-Rural Integration" in the Earthquake Zone: Sichuan's Post-Disaster Reconstruction and the Expansion of the Chengdu Metropole. *Pacific Affairs, 84*(3), 495-523.

Afridi, F., Li, S. X., & Ren, Y. (2015). Social identity and inequality: The impact of China's hukou system. *Journal of Public Economics, 123*, 17-29.

Agency, E. (2007a). *Conserving water in buildings*.

Agency, I. E. (2007b). *Key world energy statistics*: International Energy Agency Paris.

Agency., X. N. (2017). CPC Central Committee and Central Government's Advice on Enhancing andImproving Urban-Rural Neighborhood Governance. *Xinhua News*. Retrieved from http://www.xinhuanet.com//politics/2017-06/12/c_1121130511.htm

Ahern, J. (2011). From fail-safe to safe-to-fail: Sustainability and resilience in the new urban world. *Landscape and Urban Planning, 100*(4), 341-343.

Åhman, H. (2013). Social sustainability–society at the intersection of development and maintenance. *Local Environment, 18*(10), 1153-1166.

Akadiri, O. P. (2011). Development of a multi-criteria approach for the selection of sustainable materials for building projects.

Alexander, C. (1965). *A city is not a tree*. Portland, Oregon, U.S.A: Sustasis Press/Off The Common Books.

Allen, N., Haarhoff, E., & Beattie, L. (2018). Enhancing liveability through urban intensification: The idea and role of neighbourhood. *Cogent Social Sciences, 4*(1), 1442117.

Almaiah, M. A., & Man, M. (2016). Empirical investigation to explore factors that achieve high quality of mobile learning system based on students' perspectives. *Engineering science and technology, an international journal, 19*(3), 1314-1320.

Andriantiatsaholiniaina, L. A., Kouikoglou, V. S., & Phillis, Y. A. (2004). Evaluating strategies for sustainable development: fuzzy logic reasoning and sensitivity analysis. *Ecological Economics, 48*(2), 149-172.

Attari, S. Z., DeKay, M. L., Davidson, C. I., & De Bruin, W. B. (2010). Public perceptions of energy consumption and savings. *Proceedings of the National Academy of Sciences, 107*(37), 16054-16059.

Awortwi, N. (2011). An unbreakable path? A comparative study of decentralization and local government development trajectories in Ghana and Uganda. *International Review of Administrative Sciences, 77*(2), 347-377.

Babbie, E. R. (1990). Survey research methods Wadsworth Pub. *Co Belmont, Calif, 3*(9).

Bäckstrand, K. (2006). Multi‐stakeholder partnerships for sustainable development: rethinking legitimacy, accountability and effectiveness. *European Environment, 16*(5), 290-306.

Bahadure, S., & Kotharkar, R. (2015). Assessing Sustainability of Mixed Use Neighbourhoods through Residents' Travel Behaviour and Perception: The Case of Nagpur, India. *Sustainability, 7*(9), 12164-12189.

Bahadure, S., & Kotharkar, R. (2018). Framework for measuring sustainability of neighbourhoods in Nagpur, India. *Building and Environment, 127*, 86-97.

Baker, E., & Arthurson, K. (2007). Housing, place or social networks: What's more important for relocating tenants? *Australian Planner, 44*(4), 28-35.

Baker, S., Young, S., Kousis, M., & Richardson, D. (1997). *The politics of sustainable development: theory, policy and practice within the European Union*: Psychology Press.

Balaras, C., Dascalaki, E., & Kontoyiannidis, S. (2004). Decision support software for sustainable building refurbishment. *TRANSACTIONS-AMERICAN SOCIETY OF HEATING REFRIGERATING AND AIR CONDITIONING ENGINEERS, 110*(1), 592-601.

Balsas, C. J. (2004). Measuring the livability of an urban centre: an exploratory study of key performance indicators. *Planning, Practice & Research, 19*(1), 101-110.

Barbier, E. B., Markandya, A., & Pearce, D. W. (1990). Environmental sustainability and cost-benefit analysis. *Environment and Planning A, 22*(9), 1259-1266.
Barry, J. (2003). *Communicating a politics of sustainable Development*: Eolss Publishers: Oxford, UK.
Barton, H. (2013). *Sustainable communities: The potential for eco-neighbourhoods*: Routledge.
Basiago, A. D. (1998). Economic, social, and environmental sustainability in development theory and urban planning practice. *Environmentalist, 19*(2), 145-161.
Bell, J. (2014). *Doing Your Research Project: A guide for first-time researchers*: McGraw-Hill Education (UK).
Bell, S., & Morse, S. (1999). Measuring the immeasurable. *The Theory and Use of Sustainability Indicators in Development, Earthscan, London*.
Bell, S., & Morse, S. (2001). Breaking through the Glass Ceiling: who really cares about sustainability indicators? *Local Environment, 6*(3), 291-309.
Bennett, L. (2002). Using empowerment and social inclusion for pro-poor growth: a theory of social change. *Working Draft of Background Paper for the Social Development Strategy Paper. Washington, DC: World Bank*.
Berardi, U. (2013). Sustainability assessment of urban communities through rating systems. *Environment, development and sustainability, 15*(6), 1573-1591.
Bernstein, A. S. (2014). Biological diversity and public health. *Annual review of public health, 35*, 153-167.
Bijoux, D., Lietz, K., & Saville-Smith, K. (2007). Measuring neighbourhood sustainability in New Zealand. *UPE7: World Class Cities-Environmental Impacts and Planning Opportunities*.
Birch, E., & Wachter, S. (2008). *Growing greener cities: Urban sustainability in the twenty-first century*: University of Pennsylvania Press.
Bird, K. (2015). Neighbourhood Sustainability Assessment: Connecting Impact with Policy Intent.
Bjorklund, E. (1986). The Danwei: socio-spatial characteristics of work units in China's urban society. *Economic Geography, 62*(1), 19-29.
Black, W. R. (2004). Sustainable transport: definitions and responses. *Integrating Sustainability into the Transportation Planning Process*, 11-13.
Bohle, H. G., Downing, T. E., & Watts, M. J. (1994). Climate change and social vulnerability: toward a sociology and geography of food insecurity. *Global Environmental Change, 4*(1), 37-48.
Bond, A., & Morrison-Saunders, A. (2013). Challenges in determining the effectiveness of sustainability assessment. In: Routledge, Taylor & Francis Group.
Bosker, M., Brakman, S., Garretsen, H., & Schramm, M. (2012). Relaxing Hukou: Increased labor mobility and China's economic geography. *Journal of Urban Economics, 72*(2-3), 252-266.
Bossel, H. (1999). Indicators for sustainable development: theory, method, applications.
Bostic, R. W., & Martin, R. W. (2003). Black home-owners as a gentrifying force? Neighbourhood dynamics in the context of minority home-ownership. *Urban Studies, 40*(12), 2427-2449.
Bostrom, A., Morgan, M. G., Fischhoff, B., & Read, D. (1994). What do people know about global climate change? 1. Mental models. *Risk Analysis, 14*(6), 959-970.
Bourne, J. (2007). Sustainable employment: supporting people to stay in work and advance. *National Audit Office, London*.
Boyko, C. T., Cooper, R., Davey, C. L., & Wootton, A. B. (2006). Addressing sustainability early in the urban design process. *Management of Environmental Quality: An International Journal, 17*(6), 689-706.
Bradley, Q. (2015). The political identities of neighbourhood planning in England. *Space and Polity, 19*(2), 97-109.
Bray, D. (2005). *Social space and governance in urban China: The danwei system from origins to reform*: Stanford University Press.
Bray, D. (2006). Building 'Community': New Strategies of Governance in Urban China. *Economy and Society, 35*(4), 530-549. doi:10.1080/03085140600960799

Breitung, W. (2014). Differentiated Neighbourhood Governance in Transitional Urban China: Comparative Study of Two Housing Estates in Guangzhou. *Neighbourhood governance in urban China*, 145-166.

Brewerton, P. M., & Millward, L. J. (2001). *Organizational research methods: A guide for students and researchers*: Sage.

Briassoulis, H. (1999). Who plans whose sustainability? Alternative roles for planners. *Journal of Environmental Planning and Management, 42*(6), 889-902.

Brody, J. (2013). The Neighbourhood Unit Concept and the Shaping of Land Planning in the United States 1912–1968. *Journal of Urban Design, 18*(3), 340-362. doi:10.1080/13574809.2013.800453

Brody, J. S. (2010). *Constructing professional knowledge: The neighborhood unit concept in the community builders handbook.* University of Illinois at Urbana-Champaign,

Bromley, R. D., Tallon, A. R., & Thomas, C. J. (2005). City centre regeneration through residential development: Contributing to sustainability. *Urban Studies, 42*(13), 2407-2429.

Brown, L. A., & Moore, E. G. (1970). The intra-urban migration process: a perspective. *Geografiska Annaler: Series B, Human Geography, 52*(1), 1-13.

Bruin, M. J., & Cook, C. C. (1997). Understanding constraints and residential satisfaction among low-income single-parent families. *Environment and behavior, 29*(4), 532-553.

Brundtland. (1987). World commission on environment and development. Our common future. In: Oxford, United Kingdom: Oxford University Press.

Bulkeley, H. (2013). *Cities and climate change*: Routledge.

Burgess, R., & Jenks, M. (2002). *Compact cities: sustainable urban forms for developing countries*: Routledge.

Burton, E. (2002). Measuring urban compactness in UK towns and cities. *Environment and Planning B: Planning and Design, 29*(2), 219-250.

Burton, E., Jenks, M., & Williams, K. (2003). *The compact city: a sustainable urban form?* : Routledge.

Burton, E., & Mitchell, L. (2006). *Inclusive urban design: Streets for life*: Routledge.

Buys, L., Barnett, K. R., Miller, E., & Bailey, C. (2005). Smart housing and social sustainability: Learning from the residents of Queensland's Research House. *Australian Journal of Emerging Technologies and Society, 3*(1), 43-57.

Cable, F. (2008). *Sustainable neighborhood rating systems: An international comparison.* Paper presented at the Proceedings of the CEU Climate Change and Urban Design Conference, Oslo, Norway.

Cai, D. (2009). *In Public Participation: Constructing a Framework for the 'Risk Society'* Beijing: Law Press.

Camagni, R. (2002). On the concept of territorial competitiveness: sound or misleading? *Urban Studies, 39*(13), 2395-2411.

Camagni, R. (2011). *Local knowledge, national vision': challenges and prospects for the EU regional policy.* Paper presented at the Seminar on Territorial Dimension of Development Policies, papers and proceedings.

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*: Russell Sage Foundation.

Cao, X. J., & Wang, D. (2016). Environmental correlates of residential satisfaction: An exploration of mismatched neighborhood characteristics in the Twin Cities. *Landscape and Urban Planning, 150*, 26-35.

Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of Urban Technology, 18*(2), 65-82.

Carmichael, J., Talwar, S., Tansey, J., & Robinson, J. (2005). Where do we want to be? Making sustainability indicators integrated, dynamic and participatory. *Community indicators measuring systems, 178*.

Carpenter, S., Walker, B., Anderies, J. M., & Abel, N. (2001). From metaphor to measurement: resilience of what to what? *Ecosystems, 4*(8), 765-781.

Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. *International journal of physical distribution & logistics management, 38*(5), 360-387.
Chai, Y. (1996). Danwei-based Chinese cities' internal life-space structure: a case study of Lanzhou city. *Geographical Research, 15*(1), 30-38.
Chambers, R. (1989). Editorial introduction: vulnerability, coping and policy. *IDS bulletin, 20*(2), 1-7.
Chan, E., & Lee, G. K. (2008). Critical factors for improving social sustainability of urban renewal projects. *Social indicators research, 85*(2), 243-256.
Chan, K. W. (2009). The Chinese hukou system at 50. *Eurasian geography and economics, 50*(2), 197-221.
Chan, K. W., & Zhang, L. (1999). The hukou system and rural-urban migration in China: Processes and changes. *The China Quarterly, 160*, 818-855.
Chandratilake, S., & Dias, W. (2013). Sustainability rating systems for buildings: Comparisons and correlations. *Energy, 59*, 22-28.
Chaskin, R. J., & Garg, S. (1997). The Issue of Governance in Neighborhood-Based Initiatives. *Urban Affairs Review, 32*(5), 631-661. doi:10.1177/107808749703200502
Chen, A., & Gao, J. (2011). Urbanization in China and the Coordinated Development Model—The case of Chengdu. *The Social Science Journal, 48*(3), 500-513. doi:https://doi.org/10.1016/j.soscij.2011.05.005
Chen, H., Jia, B., & Lau, S. (2008). Sustainable urban form for Chinese compact cities: Challenges of a rapid urbanized economy. *Habitat International, 32*(1), 28-40.
Chen, J., Wu, Y., Guo, F., & Wang, H. (2018). Domestic property and housing class in contemporary urban China. *Journal of Housing and the Built Environment, 33*(1), 91-109.
Chen, M., Qian, X., & Zhang, L. (2015). Public participation in environmental management in China: status quo and mode innovation. *Environmental management, 55*(3), 523-535.
Cheng, E. W., & Li, H. (2002). Construction partnering process and associated critical success factors: quantitative investigation. *Journal of management in engineering, 18*(4), 194-202.
Childers, D. L., Pickett, S. T., Grove, J. M., Ogden, L., & Whitmer, A. (2014). Advancing urban sustainability theory and action: Challenges and opportunities. *Landscape and Urban Planning, 125*, 320-328.
Chiu, R. L. (2002). Social equity in housing in the Hong Kong special administrative region: A social sustainability perspective. *Sustainable Development, 10*(3), 155-162.
Chiu, R. L. (2003). 12 Social sustainability, sustainable development and housing development. In *Housing and social change: East-west perspectives* (Vol. 221): Routledge.
Choguill, C. L. (2008). Developing sustainable neighbourhoods. *Habitat International, 32*(1), 41-48. doi:http://dx.doi.org/10.1016/j.habitatint.2007.06.007
Chuang, Y.-C. (2005). Place, identity, and social movements: Shequ and neighborhood organizing in Taipei City. *positions: east asia cultures critique, 13*(2), 379-410.
Chukwuere, J. E., Mavetera, N., & Mnkandla, E. (2016). An Empirical Study on the Success Factors to Consider in Developing e-Learning Systems: A Learner-Oriented System. *Asian Journal of Information Technology, 15*(16), 3087-3102.
Ciegis, R. (2004). Economy and environment: management of sustainable development. *Kaunas (in Lithuanian)*.
Ciegis, R., Ramanauskiene, J., & Martinkus, B. (2009). The concept of sustainable development and its use for sustainability scenarios. *Engineering Economics, 62*(2).
City Government of Taipei, T. (2005). A viable community, a liveable city, and a democratic society.
Clark, H. E., Aranoff, M., Lavine, E., & Suteethorn, K. M. (2013). LEED for Neighborhood Development: Does It Capture Livability? *Berkeley Planning Journal, 26*(1).
Co-operation, O. f. E., & Development. (2001). *OECD Environmental Strategy for the First Decade of the 21st Century: Adopted by OECD Environmental Ministers*: OECD.
Cole, R. J. (2012). Regenerative design and development: current theory and practice. In: Taylor & Francis.

Connor-Linton, J., & Shohamy, E. (2001). Register variation, oral proficiency sampling, and the promise of multi-dimensional analysis. *Variation in English: Multi-dimensional studies*, 124-137.
Consortium, P. (2002). Indicators into Action. A Practitioners Guide for Improving Their Use at the Local Level. *European Union, FP5 report, Pastille Consortium*.
Conte, E., & Monno, V. (2012). Beyond the buildingcentric approach: A vision for an integrated evaluation of sustainable buildings. *Environmental Impact Assessment Review, 34*, 31-40.
Cook, T. D., & Campbell, D. T. (1979). The design and conduct of true experiments and quasi-experiments in field settings. In *Reproduced in part in Research in Organizations: Issues and Controversies*: Goodyear Publishing Company.
Cooley, C. H. (1897). The process of social change. *Political Science Quarterly, 12*(1), 63-81.
Cooley, C. H. (1899). *Personal Competition: Its Place in the Social Order and Effect Upon Individuals: with Some Considerations on Success* (Vol. 4): For the American economic association by the Macmillan Company.
Cooley, C. H. (1909). Primary groups.
Cooley, C. H. (1918). *Social process*: New York, Scribner's.
Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9): McGraw-Hill Irwin New York.
Corbett, M., & Corbett, J. (1999). *Designing sustainable communities: Learning from village homes*: Island Press.
Corrado, G., Corrado, L., & Santoro, E. (2013). On the individual and social determinants of neighbourhood satisfaction and attachment. *Regional Studies, 47*(4), 544-562.
Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., . . . Farley, J. (2007). Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecological Economics, 61*(2-3), 267-276.
Council, U. S. G. B. (2014). Getting to know LEED: Neighborhood Development. Retrieved from https://www.usgbc.org/articles/getting-know-leed-neighborhood-development
Cresswell, T. (2011). The vagrant/vagabond: The curious career of a mobile subject. *Geographies of mobilities: Practices, spaces, subjects*, 239-254.
Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika, 16*(3), 297-334.
Cubukcu, E. (2013). Walking for sustainable living. *Procedia-Social and Behavioral Sciences, 85*, 33-42.
Culture, M. o. (2016). Tai Wan Community. Retrieved from https://communitytaiwan.moc.gov.tw/
Cuthill, M. (2010). Strengthening the 'social'in sustainable development: Developing a conceptual framework for social sustainability in a rapid urban growth region in Australia. *Sustainable Development, 18*(6), 362-373.
Czaja, R., & Blair, J. (1996). Designing surveys. *A guide to decision and evaluation. London*.
Dahir, J. (1947). *The Neighborhood Unit Plan: its spread and acceptance: a selected bibliography with interpretative comments*: Russell Sage Foundation.
Dales, J. H. (2002). *Pollution, property & prices: an essay in policy-making and economics*: Edward Elgar Publishing.
Davies, P., & Wagner, C. (2000). *Streets for All: A Guide to the Management of London's Streets*: English Heritage.
de Haan, F. J., Ferguson, B. C., Adamowicz, R. C., Johnstone, P., Brown, R. R., & Wong, T. H. (2014). The needs of society: A new understanding of transitions, sustainability and liveability. *Technological Forecasting and Social Change, 85*, 121-132.
De Jong, M., Joss, S., Schraven, D., Zhan, C., & Weijnen, M. (2015). Sustainable–smart–resilient–low carbon–eco–knowledge cities; making sense of a multitude of concepts promoting sustainable urbanization. *Journal of Cleaner Production, 109*, 25-38.
Dekker, K., de Vos, S., Musterd, S., & Van Kempen, R. (2011). Residential satisfaction in housing estates in European cities: A multi-level research approach. *Housing Studies, 26*(04), 479-499.
Delanty, G. (2006). The cosmopolitan imagination: critical cosmopolitanism and social theory. *The British journal of sociology, 57*(1), 25-47.

Dempsey, N. (2006). *The Influence of the quality of the built environment on social cohesion in English neighbourhoods.* Oxford Brookes University,

Dempsey, N., Bramley, G., Power, S., & Brown, C. (2011). The social dimension of sustainable development: Defining urban social sustainability. *Sustainable Development, 19*(5), 289-300.

Derleth, J., & Koldyk, D. R. (2004). The Shequ experiment: Grassroots political reform in urban China. *Journal of Contemporary China, 13*(41), 747-777.

Derleth, J., & Koldyk*, D. R. (2004). The Shequ experiment: Grassroots political reform in urban China. *Journal of Contemporary China, 13*(41), 747-777.

DESA, U. (2008). Achieving Sustainable Development and Promoting Development Cooperation. In: Department of economic and social affairs of the United Nations, United Nations Publications, New York, NY.

Devuyst, D., Hens, L., Impens, R., International Council of Scientific Unions. Scientific Committee on Problems of the, E., Académie royale des sciences, d. l. e. d. b.-a. d. B., & Koninklijke Vlaamse Academie van België voor Wetenschappen en, K. (2001). *Neighbourhoods in crisis and sustainable urban development : proceedings of a seminar held on 29 October 1999 in Brussels, Belgium*. Brussels: Brussels : VUB University Press, c2001.

Dewey, R. (1950). The neighborhood, urban ecology, and city planners. *American Sociological Review, 15*(4), 502-507.

Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*: Penguin.

Dietz, T., Gardner, G. T., Gilligan, J., Stern, P. C., & Vandenbergh, M. P. (2009). Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions. *Proceedings of the National Academy of Sciences, 106*(44), 18452-18456.

Ding, C. (2007). Policy and praxis of land acquisition in China. *Land Use Policy, 24*(1), 1-13.

Dong, S., & Li, M. (2014). The Research of Optimization Strategies of Evaluation System for Chinese Sustainable Development Community. *Journal of Human Settlements in West China*(2), 112-117.

Doughty, M. R., & Hammond, G. P. (2004). Sustainability and the built environment at and beyond the city scale. *Building and Environment, 39*(10), 1223-1233.

Drilling, M., & Schnur, O. (2012). Nachhaltigkeit in der Quartiersentwicklung–einführende Anmerkungen. In *Nachhaltige Quartiersentwicklung* (pp. 11-41): Springer.

Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and perspectives, 38*(1), 105.

Dunn, J. R. (2002). Housing and inequalities in health: a study of socioeconomic dimensions of housing and self reported health from a survey of Vancouver residents. *Journal of Epidemiology & Community Health, 56*(9), 671-681.

Eberl, S. (2010). *DGNB vs. LEED: A comparative analysis.* Paper presented at the Conference on Central Europe towards Sustainable Building.

Efroymson, M. (1960). Multiple regression analysis. Mathematical Methods for Digital Computers, edited by: Ralston, A. and Wilf, HS. In: Wiley.

Eizenberg, E., & Jabareen, Y. (2017). Social sustainability: A new conceptual framework. *Sustainability, 9*(1), 68.

Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st ‐ century business. *Environmental Quality Management, 8*(1), 37-51.

Ellis, J. B. (2013). Sustainable surface water management and green infrastructure in UK urban catchment planning. *Journal of Environmental Planning and Management, 56*(1), 24-41.

Engel-Yan, J., Kennedy, C., Saiz, S., & Pressnail, K. (2005). Toward sustainable neighbourhoods: the need to consider infrastructure interactions. *Canadian Journal of Civil Engineering, 32*(1), 45-57.

England, C. t. P. R. (2016). How to prepare a Neighbourhood Plan. Retrieved from https://www.planninghelp.cpre.org.uk/improve-where-you-live/shape-your-local-area/neighbourhood-plans/how-to-prepare-a-neighbourhood-plan

Enserink, B., & Koppenjan, J. (2007). Public participation in China: sustainable urbanization and governance. *Management of Environmental Quality: An International Journal, 18*(4), 459-474.

Environment, W. C. o., & Development. (1987). *From one earth to one world: An overview*: Oxford University Press.
Erzberger, C., & Prein, G. (1997). Triangulation: Validity and empirically-based hypothesis construction. *Quality and Quantity, 31*(2), 141-154.
Eschbach, K., Ostir, G. V., Patel, K. V., Markides, K. S., & Goodwin, J. S. (2004). Neighborhood context and mortality among older Mexican Americans: is there a barrio advantage? *American journal of public health, 94*(10), 1807-1812.
Evans, B., Joas, M., Sundback, S., & Theobald, K. (2013). *Governing sustainable cities*: Routledge.
Evans, J., & Jones, P. (2008). Rethinking sustainable urban regeneration: ambiguity, creativity, and the shared territory. *Environment and Planning A, 40*(6), 1416-1434.
Evans, S. (1991). Good surveys guide. *BMJ: British Medical Journal, 302*(6772), 302.
Fairfield, J. D. (1992). Alienation of social control: the Chicago sociologists and the origins of urban planning. *Planning Perspective, 7*(4), 418-434.
Fang, P., Luo, Z., & Fang, Z. (2015). What is the job satisfaction and active participation of medical staff in public hospital reform: a study in Hubei province of China. *Human resources for health, 13*(1), 34.
Farrell, S. J., Aubry, T., & Coulombe, D. (2004). Neighborhoods and neighbors: Do they contribute to personal well‐being? *Journal of community psychology, 32*(1), 9-25.
Fei, H.-t., Fei, X., Hamilton, G. G., & Zheng, W. (1992). *From the soil: The foundations of Chinese society*: Univ of California Press.
Fei, X. (2002). Autonomy of Resident: New Target of Community Construction in Urban China [J]. *Jianghai Academic Journal (Bimontrly), 3*, 001.
Fellows, R. F., & Liu, A. M. (2015). *Research methods for construction*: John Wiley & Sons.
Ferris, J., Norman, C., & Sempik, J. (2001). People, land and sustainability: Community gardens and the social dimension of sustainable development. *Social Policy & Administration, 35*(5), 559-568.
Fisher, A. T., Sonn, C. C., & Bishop, B. J. (2002). *Psychological sense of community: Research, applications, and implications*: Springer Science & Business Media.
Flock, R., Breitung, W., & Lixun, L. (2013). Commodity Housing and the Socio-spatial Structure in Guangzhou. A study based on estate-level residential property prices. *China Perspectives, 2013*(2013/2), 41-51.
Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., & Walker, B. (2002). Resilience and sustainable development: building adaptive capacity in a world of transformations. *AMBIO: A journal of the human environment, 31*(5), 437-440.
Forrest, R., & Kearns, A. (2001). Social cohesion, social capital and the neighbourhood. *Urban Studies, 38*(12), 2125-2143.
Frank, A. I., Mironowicz, I., Lourenço, J., Franchini, T., Ache, P., Finka, M., . . . Grams, A. (2014). Educating planners in Europe: A review of 21st century study programmes. *Progress in Planning, 91*, 30-94.
Frank, L. D., & Pivo, G. (1994). Impacts of mixed use and density on utilization of three modes of travel: single-occupant vehicle, transit, and walking. *Transportation research record, 1466*, 44-52.
Fraser, E. D., Dougill, A. J., Mabee, W. E., Reed, M., & McAlpine, P. (2006). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of Environmental Management, 78*(2), 114-127.
Friedmann, J., & Fang, C. (2011). Towards Sustainable Neighborhoods: The Role of Social Planning in China-A Case Study of Ningbo, Zhejiang Province [J]. *China City Planning Review, 1*, 30-40.
Fujita, M., & Mori, T. (2005). Frontiers of the new economic geography. *Papers in Regional Science, 84*(3), 377-405.
Galliers, R. (1992). *Information systems research: Issues, methods and practical guidelines*: Blackwell Scientific.

Garcez, C. A. G., & de Souza Vianna, J. N. (2009). Brazilian biodiesel policy: social and environmental considerations of sustainability. *Energy, 34*(5), 645-654.
Garde, A. (2009). Sustainable by design?: insights from US LEED-ND pilot projects. *Journal of the American Planning Association, 75*(4), 424-440.
Gardner, G. T., & Stern, P. C. (2008). The short list: The most effective actions US households can take to curb climate change. *Environment: science and policy for sustainable development, 50*(5), 12-25.
Gehl, J., & Svarre, B. (2013). *How to study public life*: Island Press.
Gibson, R. B. (2006). Sustainability assessment: basic components of a practical approach. *Impact Assessment and Project Appraisal, 24*(3), 170-182.
Gifford, R., & Comeau, L. A. (2011). Message framing influences perceived climate change competence, engagement, and behavioral intentions. *Global Environmental Change, 21*(4), 1301-1307.
Gilbert, R., Stevenson, D., Girardet, H., & Stren, R. (2013). *Making cities work: Role of local authorities in the urban environment*: Routledge.
Girardet, H. (2004). *Cities people planet: liveable cities for a sustainable world*: Academy Press.
Godschalk, D. R. (2004). Land use planning challenges: Coping with conflicts in visions of sustainable development and livable communities. *Journal of the American Planning Association, 70*(1), 5-13.
Goh, C. S., & Rowlinson, S. (2013a). Conceptual maturity model for sustainable construction. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, 5*(4), 191-195.
Goh, C. S., & Rowlinson, S. (2013b). *The roles of sustainability assessment systems in delivering sustainable construction.* Paper presented at the Procs 29th annual ARCOM conference.
Golab, C. (1982). The geography of neighborhood. *Neighborhoods in urban America*, 70-85.
Goodland, R. (1995). The concept of environmental sustainability. *Annual review of ecology and systematics, 26*(1), 1-24.
Goodland, R., & Ledec, G. (1987). Neoclassical economics and principles of sustainable development. *Ecological modelling, 38*(1-2), 19-46.
Green, G., Grimsley, M., & Stafford, B. (2005). *The dynamics of neighbourhood sustainability*: Joseph Rowntree Foundation York.
Green, L. W., & Mercer, S. L. (2001). Can public health researchers and agencies reconcile the push from funding bodies and the pull from communities? *American journal of public health, 91*(12), 1926-1929.
Greif, M. J. (2009). Neighborhood attachment in the multiethnic metropolis. *City & Community, 8*(1), 27-45.
Griessler, E., & Littig, B. (2005). Social sustainability: a catchword between political pragmatism and social theory. *International Journal for Sustainable Development, 8*(1/2), 65-79.
Grogan-Kaylor, A., Woolley, M., Mowbray, C., Reischl, T. M., Gilster, M., Karb, R., . . . Alaimo, K. (2006). Predictors of neighborhood satisfaction. *Journal of Community Practice, 14*(4), 27-50.
Grybaite, V., & Tvaronavičiene, M. (2008). Estimation of sustainable development: germination on institutional level. *Journal of Business Economics and Management, 9*(4), 327-334.
Gu, C., & Cook, I. G. (2012). Beijing: Socialist Chinese capital and new world city. *Planning Asian Cities: Risks and Resilience, London*, 90-130.
Gu, C., Hu, L., Guo, J., & Cook, I. G. (2014). China's urban planning in transition. *Proceedings of the Institution of Civil Engineers-Urban Design and Planning, 167*(5), 221-236.
Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation: Improving the usefulness of evaluation results through responsive and naturalistic approaches*: Jossey-Bass.
Haapio, A. (2012). Towards sustainable urban communities. *Environmental Impact Assessment Review, 32*(1), 165-169.
Haarhoff, E., Beattie, L., & Dupuis, A. (2016). Does higher density housing enhance liveability? Case studies of housing intensification in Auckland. *Cogent Social Sciences, 2*(1), 1243289.
Hagedorn, K. (2008). Particular requirements for institutional analysis in nature-related sectors. *European review of agricultural economics, 35*(3), 357-384.

Hamedani, A. Z., & Huber, F. (2012). A comparative study of DGNB, LEED and BREEAM certificate systems in urban sustainability. *The Sustainable City VII: Urban Regeneration and Sustainability, 1121*.
Hamiduddin, I. (2015). Social sustainability, residential design and demographic balance: neighbourhood planning strategies in Freiburg, Germany. *Town Planning Review, 86*(1), 29-52.
Hamilton, K. (2006). *Where is the wealth of nations?: measuring capital for the 21st century*: World Bank Publications.
Hamilton, K., Atkinson, G., & Pearce, D. (1996). Measuring sustainable development: progress on indicators. *Environment and Development Economics, 1*(1), 85-102.
Hanna, B., Kee, K., & Robertson, B. W. (2017). Positive impacts of social media at work: Job satisfaction, job calling, and Facebook use among co-workers.
Harris, D. R. (2001). Why are whites and blacks averse to black neighbors? *Social science research, 30*(1), 100-116.
Haughton, G. (1999). Environmental justice and the sustainable city. *Journal of Planning Education and Research, 18*(3), 233-243.
Haughton, G., & Hunter, C. (1994). Sustainable cities, regional policy and development series 7. *Regional Studies Association. London and Bristol, Pennsylvania*.
He, S. (2013). Evolving enclave urbanism in China and its socio-spatial implications: The case of Guangzhou. *Social & Cultural Geography, 14*(3), 243-275.
He, S., & Wu, F. (2007). Socio-spatial impacts of property-led redevelopment on China's urban neighbourhoods. *Cities, 24*(3), 194-208.
Helm, D. (1998). The assessment: environmental policy objectives, instruments, and institutions. *Oxford review of economic policy, 14*(4), 1-19.
Herfert, G., Neugebauer, C. S., & Smigiel, C. (2013). Living in residential satisfaction? Insights from large‐scale housing estates in central and eastern europe. *Tijdschrift voor economische en sociale geografie, 104*(1), 57-74.
Hezri, A. A. (2004). Sustainability indicator system and policy processes in Malaysia: a framework for utilisation and learning. *Journal of Environmental Management, 73*(4), 357-371.
Hino, A. A., Reis, R. S., Sarmiento, O. L., Parra, D. C., & Brownson, R. C. (2014). Built environment and physical activity for transportation in adults from Curitiba, Brazil. *Journal of urban health, 91*(3), 446-462.
Hipp, J. (2010). What is the 'neighbourhood'in neighbourhood satisfaction? Comparing the effects of structural characteristics measured at the micro-neighbourhood and tract levels. *Urban Studies, 47*(12), 2517-2536.
Hipp, J. R. (2009). Specifying the determinants of neighborhood satisfaction: A robust assessment in 24 metropolitan areas. *Social Forces, 88*(1), 395-424.
Hocking, R. R. (1976). A Biometrics invited paper. The analysis and selection of variables in linear regression. *Biometrics, 32*(1), 1-49.
Holden, E., Linnerud, K., & Banister, D. (2014). Sustainable development: our common future revisited. *Global Environmental Change, 26*, 130-139.
Holdren, J. P., Daily, G. C., & Ehrlich, P. R. (1995). The meaning of sustainability: biogeophysical aspects. *Defining and measuring sustainability: the biogeophysical foundations*, 3-17.
Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: mapping different approaches. *Sustainable Development, 13*(1), 38-52.
Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (Vol. 398): John Wiley & Sons.
House, A. E., House, B. J., & Campbell, M. B. (1981). Measures of interobserver agreement: Calculation formulas and distribution effects. *Journal of Behavioral Assessment, 3*(1), 37-57.
Howley, P., Scott, M., & Redmond, D. (2009a). An examination of residential preferences for less sustainable housing: Exploring future mobility among Dublin central city residents. *Cities, 26*(1), 1-8.

Howley, P., Scott, M., & Redmond, D. (2009b). Sustainability versus liveability: an investigation of neighbourhood satisfaction. *Journal of Environmental Planning and Management, 52*(6), 847-864.
Hua, G., & Haughton, D. (2009). Virtual worlds adoption: A research framework and empirical study. *Online Information Review, 33*(5), 889-900.
Huang, L.-L. (2005). Urban politics and spatial development: The emergence of participatory planning. *Globalizing Taipei: Political economy of spatial development*, 78-98.
Huang, L., & Luo, Y. (2014). Community Planning and the Local Approach in the Perspective of Social Governance Innovation—A Case Study of Shiyou Road, Yuzhong District of Chongqing. *J. Hum. Settl. West China, 5*(5).
Huang, Y. (2006). Collectivism, political control, and gating in Chinese cities. *Urban Geography, 27*(6), 507-525.
Isaacs, R. R. (1948). The neighborhood theory: An analysis of its adequacy. *Journal of the American Institute of Planners, 14*(2), 15-23.
Jabareen, Y. (2008). A new conceptual framework for sustainable development. *Environment, development and sustainability, 10*(2), 179-192.
Jabareen, Y. R. (2006). Sustainable urban forms: Their typologies, models, and concepts. *Journal of Planning Education and Research, 26*(1), 38-52.
Jacobs, J. (1961). *The death and life of American cities*.
Jacobs, J. K., Kawanaka, T., & Stigler, J. W. (1999). Integrating qualitative and quantitative approaches to the analysis of video data on classroom teaching. *International Journal of Educational Research, 31*(8), 717-724.
Jian, Y., & Zhang, K. Study on spatial vitality of neighbourhood in old urban district *unpublished working paper*.
Jiayan, L., & Xiangyu, D. (2017). Community Planning Based on Socio-Spatial Production: Explorations in" New Qinghe Experiment". *China City Planning Review, 26*(2).
Johnson, D. L. (2002). Origin of the Neighbourhood Unit. *Planning Perspectives, 17*(3), 227-245. doi:10.1080/02665430210129306
Jordan, A. (2008). The governance of sustainable development: taking stock and looking forwards. *Environment and planning C: Government and policy, 26*(1), 17-33.
Kakumba, U. (2010). Local government citizen participation and rural development: reflections on Uganda's decentralization system. *International Review of Administrative Sciences, 76*(1), 171-186.
Kates, R. W., Clark, W. C., Corell, R., Hall, J. M., Jaeger, C. C., Lowe, I., . . . Dickson, N. M. (2001). Chapter 8 *Science, 292*(5517), 641-642.
Kearns, A., & Forrest, R. (2000). Social cohesion and multilevel urban governance. *Urban Studies, 37*(5-6), 995-1017.
Keller, S. (1968). *The Urban Neighbourhood: a Sociological Perspective.(Second Printing.)*: Random House.
Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in health care, 15*(3), 261-266.
Kempton, W., Harris, C. K., Keith, J. G., & Weihl, J. S. (1985). Chapter 6: Do Consumers Know" What Works" in Energy Conservation? *Marriage & Family Review, 9*(1-2), 115-133.
Kennedy, C., Miller, E., Shalaby, A., Maclean, H., & Coleman, J. (2005). The four pillars of sustainable urban transportation. *Transport Reviews, 25*(4), 393-414.
Kerlinger, F. N., & Lee, H. (2000). Survey research. *Foundations of behavioral research*, 599-619.
Khorsan, R., & Crawford, C. (2014). External validity and model validity: a conceptual approach for systematic review methodology. *Evidence-Based Complementary and Alternative Medicine, 2014*.
Kibert, N. C., & Kibert, C. J. (2008). Sustainable Development and the US Green Building Movement-Profitable Development Projects Can Be Good for the Planet, Too. *Prob. & Prop., 22*, 21.
Kim, J. H., Pagliara, F., & Preston, J. (2005). The intention to move and residential location choice behaviour. *Urban Studies, 42*(9), 1621-1636.

Kind, P., Dolan, P., Gudex, C., & Williams, A. (1998). Variations in population health status: results from a United Kingdom national questionnaire survey. *Bmj, 316*(7133), 736-741.

Komeily, A., & Srinivasan, R. S. (2015). A need for balanced approach to neighborhood sustainability assessments: A critical review and analysis. *Sustainable Cities and Society, 18*, 32-43. doi:http://dx.doi.org/10.1016/j.scs.2015.05.004

Komeily, A., & Srinivasan, R. S. (2016). What is neighborhood context and why does it matter in sustainability assessment? *Procedia Engineering, 145*, 876-883.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*: New Age International.

Kotrlik, J., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information technology, learning, and performance journal, 19*(1), 43.

Kowaltowski, D. C., da Silva, V. G., Pina, S. A., Labaki, L. C., Ruschel, R. C., & de Carvalho Moreira, D. (2006). Quality of life and sustainability issues as seen by the population of low-income housing in the region of Campinas, Brazil. *Habitat International, 30*(4), 1100-1114.

Kusakabe, E. (2013). Advancing sustainable development at the local level: The case of machizukuri in Japanese cities. *Progress in Planning, 80*, 1-65.

Kwakkel, J. H., & van der Pas, J. W. G. (2011). Evaluation of infrastructure planning approaches: an analogy with medicine. *Futures, 43*(9), 934-946.

Kwan Esther Yung, H., & Wan Edwin Chan, H. (2012). Critical social sustainability factors in urban conservation: The case of the central police station compound in Hong Kong. *Facilities, 30*(9/10), 396-416.

Kyrkou, D., Taylor, M., Pelsmakers, S., & Karthaus, R. (2011). *Urban sustainability assessment systems: How appropriate are global sustainability assessment systems.* Paper presented at the 27th Conference on Passive and Low Energy Architecture.

Lafferty, W. M. (2006). *Governance for sustainable development: the challenge of adapting form to function*: Edward Elgar Publishing.

Lang, D. J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., . . . Thomas, C. J. (2012). Transdisciplinary research in sustainability science: practice, principles, and challenges. *Sustainability science, 7*(1), 25-43.

Langston, C. (2010). Green Adaptive Reuse: Issues and strategies for the built environment.

Lawson, C., & Montgomery, D. C. (2006). Logistic regression analysis of customer satisfaction data. *Quality and reliability engineering international, 22*(8), 971-984.

Leach, J. M., Braithwaite, P. A., Lee, S. E., Bouch, C. J., Hunt, D. V., & Rogers, C. D. (2016). Measuring urban sustainability and liveability performance: the city analysis methodology. *International Journal of Complexity in Applied Science and Technology, 1*(1), 86-106.

Leby, J. L., & Hashim, A. H. (2010). Liveability dimensions and attributes: Their relative importance in the eyes of neighbourhood residents. *Journal of Construction in Developing Countries, 15*(1), 67-91.

Lee, W. (2013). A comprehensive review of metrics of building environmental assessment schemes. *Energy and Buildings, 62*, 403-413.

Lehtonen, M. (2012). Indicators as an appraisal technology: Framework for analysing the policy influence of the UK Energy Sector Indicators. *Sustainable development, evaluation and policy-making: theory, practise and quality assurance*, 175-206.

Leiserowitz, A. A. (2005). American risk perceptions: Is climate change dangerous? *Risk Analysis: An International Journal, 25*(6), 1433-1442.

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health promotion practice, 16*(4), 473-475.

Li, B. (2014). Coordinating Urban and Rural Development in China–Learning from Chengdu. In: Taylor & Francis.

Li, C. G. (2005). Population Mobilities in Chinese History. *China Employment, 7*, 44-46.

Li, F., Fisher, K. J., Brownson, R. C., & Bosworth, M. (2005). Multilevel modelling of built environment characteristics related to neighbourhood walking activity in older adults. *Journal of Epidemiology & Community Health, 59*(7), 558-564.
Li, J., Fu, Y., Li, J., & Guo, L. (2008). *Some thinking on Sustainability of residential district Planning.* Paper presented at the Urban Planning Forum.
Li, J., Wang, F., Wuzhati, S., & Wen, B. (2016). Urban or village residents? A case study of the spontaneous space transformation of the forced upstairs farmers' community in Beijing. *Habitat International, 56*, 136-146.
Li, S.-m., Hou, Q., Chen, S., & Zhou, C. (2010). Work, Home, and Market: The Social Transformation of Housing Space in Guangzhou, China. *Urban Geography, 31*(4), 434-452. doi:10.2747/0272-3638.31.4.434
Li, S.-m., Zhu, Y., & Li, L. (2012). Neighborhood type, gatedness, and residential experiences in Chinese cities: A study of Guangzhou. *Urban Geography, 33*(2), 237-255.
Li, W., Li, Y., Geng, W., Wang, X., & Liu, Y. (2015). The Exploration of a Neighborhood Planning Scheme Following the Rule of "Harmonious Coexistenceof Pluralism and Difference"—Case Studies of Yulin and Caojiaxiang Neighborhoods in Chengdu. *Journal of Human Settlements in West China, 30*(4), 61-66.
Lin, F. C.-H. (2014). Community Development in Post-WWII Taiwan through the Lens of Official, Academic and Practical Discourses. *Architecture Science*(10), 1-15.
Lin, Y., De Meulder, B., & Wang, S. (2012). The interplay of state, market and society in the socio-spatial transformation of "villages in the city" in Guangzhou. *Environment and Urbanization, 24*(1), 325-343.
Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (Vol. 75): Sage.
Liu, H., Zhou, G., Wennersten, R., & Frostell, B. (2014). Analysis of sustainable urban development approaches in China. *Habitat International, 41*, 24-32.
Liu, R., & Wong, T.-C. (2015). The allocation and misallocation of economic housing in Beijing: Target groups versus market forces. *Habitat International, 49*, 303-315.
Liu, Y., He, S., Wu, F., & Webster, C. (2010). Urban villages under China's rapid urbanization: unregulated assets and transitional neighbourhoods. *Habitat International, 34*(2), 135-144.
Lloyd Lawhon, L. (2009). The neighborhood unit: physical design or physical determinism? *Journal of Planning History, 8*(2), 111-132.
Lockridge, K. A. (1970). *A New England Town: The First Hundred Years, Dedham, Massachusetts, 1636-1736*: New York: Norton.
Low, C.-T., Stimson, R., Chen, S., Cerin, E., Wong, P. P.-Y., & Lai, P.-C. (2018). Personal and neighbourhood indicators of quality of urban life: a case study of Hong Kong. *Social indicators research, 136*(2), 751-773.
Lowe, M., Whitzman, C., Badland, H., Davern, M., Aye, L., Hes, D., . . . Giles-Corti, B. (2015). Planning healthy, liveable and sustainable cities: how can indicators inform policy? *Urban Policy and Research, 33*(2), 131-144.
Lu, D. (2006). *Remaking Chinese urban form: modernity, scarcity and space, 1949-2005*: Routledge.
Lu, M. (1999). Determinants of residential satisfaction: Ordered logit vs. regression models. *Growth and change, 30*(2), 264-287.
Lu, T., Zhang, F., & Wu, F. (2018). Place attachment in gated neighbourhoods in China: Evidence from Wenzhou. *Geoforum, 92*, 144-151.
Ma, J., Dong, G., Chen, Y., & Zhang, W. (2018). Does satisfactory neighbourhood environment lead to a satisfying life? An investigation of the association between neighbourhood environment and life satisfaction in Beijing. *Cities, 74*, 229-239.
Ma, W., & Li, L. C. (2012). Community Governance Reform in Urban China: A Case Study of the Yantian Model in Shenzhen. *Journal of Comparative Asian Development, 11*(2), 224-247. doi:10.1080/15339114.2012.720127

Maclaren, V. W. (1996). Urban sustainability reporting. *Journal of the American Planning Association, 62*(2), 184-202.
MacNaghten, P. (2001). Sustainable development in urban areas: setting the scene. *Neighbourhoods in Crisis and Urban Sustainable Development. VUB University Press. Brussels*, 5-17.
Manderson, A. K. (2006). A systems based framework to examine the multi-contextural application of the sustainability concept. *Environment, development and sustainability, 8*(1), 85-97.
Manzi, T., Lucas, K., Jones, T. L., & Allen, J. (2010). *Social sustainability in urban areas: Communities, connectivity and the urban fabric*: Routledge.
Marans, R. W., & Rodgers, W. (1975). Toward an understanding of community satisfaction. *Metropolitan America in contemporary perspective*, 299-352.
Marique, A.-F., & Reiter, S. (2011). *Towards more sustainable neighbourhoods: are good practices reproducible and extensible.* Paper presented at the Proceedings of International Conference PLEA.
Marshall, K., Blackstock, K., & Dunglinson, J. (2010). A contextual framework for understanding good practice in integrated catchment management. *Journal of Environmental Planning and Management, 53*(1), 63-89.
Martens, C. (2006). Basing transport planning on principles of social justice.
Martin, J. P. (2001). The social dimensions of sustainable development. *Proceedings of the European Social Agenda and EU International Partners, Brussels, Belgium, 2021*, 94.
Mauerhofer, V. (2008). 3-D Sustainability: An approach for priority setting in situation of conflicting interests towards a Sustainable Development. *Ecological Economics, 64*(3), 496-506.
McCaffrie, B. (2013). A contextual framework for assessing reconstructive prime ministerial success. *Policy Studies, 34*(5-6), 618-637.
McDaniel, R. R., & Driebe, D. (2005). *Uncertainty and surprise in complex systems: questions on working with the unexpected*: Springer Science & Business Media.
McFarland, L. A., & Ployhart, R. E. (2015). Social media: A contextual framework to guide research and practice. *Journal of Applied Psychology, 100*(6), 1653.
McKenzie, R. D. (1923). The neighborhood. *A Study of Local Life in Columbus, Ohio. Chicago: UCP. Google Scholar*.
McQueen, R. A., & Knussen, C. (2002). *Research methods for social science: A practical introduction*: Pearson Education.
Medved, P. (2016). A contribution to the structural model of autonomous sustainable neighbourhoods: new socio-economical basis for sustainable urban planning. *Journal of Cleaner Production, 120*, 21-30.
Meegan, R., & Mitchell, A. (2001). 'It's Not Community Round Here, It's Neighbourhood': Neighbourhood Change and Cohesion in Urban Regeneration Policies. *Urban Studies, 38*(12), 2167-2194.
Meek, J. W. (2008). Adaptive intermediate structures and local sustainability advances. *Public Administration Quarterly*, 415-432.
Meisheng Nie , Y. T. (2007). *The Technical Assessment Handbook for Ecological Residence of China. Beijing*. Beijing: China Architecture & Building Press.
Messari‐Becker, L., Mettke, A., Knappe, F., Storck, U., Bollinger, K., & Grohmann, M. (2014). Recycling concrete in practice–a chance for sustainable resource management. *Structural Concrete, 15*(4), 556-562.
Meuser, M., & Nagel, U. (2010). ExpertInneninterview. In *Handbuch Frauen-und Geschlechterforschung* (pp. 376-379): Springer.
Michael, F. L., Noor, Z. Z., & Figueroa, M. J. (2014). Review of urban sustainability indicators assessment–case study between Asian countries. *Habitat International, 44*, 491-500.
Midi, H., Sarkar, S. K., & Rana, S. (2010). Collinearity diagnostics of binary logistic regression model. *Journal of Interdisciplinary Mathematics, 13*(3), 253-267.
Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis*: Sage.
Miller, T. R., Wiek, A., Sarewitz, D., Robinson, J., Olsson, L., Kriebel, D., & Loorbach, D. (2014). The future of sustainability science: a solutions-oriented research agenda. *Sustainability science, 9*(2), 239-246.

Ministry of Housing, C. L. G. (2016). Planning practice guidance. Retrieved from https://www.gov.uk/government/collections/planning-practice-guidance
MIT. (2013). *SUSTAINABLE NEIGHBORHOODS IN CHINA*: Massachusetts Institute of Technology.
Mitchell, W. J. (1996). *City of bits: space, place, and the infobahn*: MIT press.
Mitrany, M. (2005). High density neighborhoods: Who enjoys them? *GeoJournal, 64*(2), 131-140.
Mohan, J., & Twigg, L. (2007). Sense of Place, Quality of Life and Local Socioeconomic Context: Evidence from the Survey of English Housing, 2002/03. *Urban Studies, 44*(10), 2029-2045. doi:10.1080/00420980701471885
Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. *Ecological Indicators, 17*, 4-13.
Monette, D., Sullivan, T., & DeJong, C. (2013). *Applied social research: A tool for the human services*: Nelson Education.
Morales-Pinzón, T., Rieradevall, J., Gasol, C. M., & Gabarrell, X. (2015). Modelling for economic cost and environmental analysis of rainwater harvesting systems. *Journal of Cleaner Production, 87*, 613-626.
Morgan, D. L. (2013). *Integrating qualitative and quantitative methods: A pragmatic approach*: Sage publications.
Morris, D. J., & Hess, K. (1975). *Neighborhood power: The new localism*: Beacon Press (MA).
Morris, N. (2003). Health, well-being and open space. *Edinburgh: Edinburgh College of Art and Heriot-Watt University*.
Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International journal of qualitative methods, 1*(2), 13-22.
Mouratidis, K. (2017). Is compact city livable? The impact of compact versus sprawled neighbourhoods on neighbourhood satisfaction. *Urban Studies*, 0042098017729109.
Mouratidis, K. (2018). Is compact city livable? The impact of compact versus sprawled neighbourhoods on neighbourhood satisfaction. *Urban Studies, 55*(11), 2408-2430.
Naess, P. (2001). Urban planning and sustainable development. *European Planning Studies, 9*(4), 503-524.
Nations, U. (1992). *Rio Declaration on Environment and Development*. Rio deJaniero, Brazil.
Nations, U. (1997). *Agenda 21: Programme of Action for Sustainable Development; Rio Declaration on Environment and Development; Statements of Forest Principles; the Final Text of Agreements Negotiated by Governments at the United Nations Conference on Environment and Development (UNCED), 3-14 June 1992, Rio de Janeiro, Brazil*: United Nations Department of Public Information.
Nations, U. (2002). *Report of the World Summit on Sustainable Development*. Retrieved from New York:
NDRC, N. D. a. R. C. (2012). National Report on Sustainable Development Report. Retrieved from http://www.china.com.cn/zhibo/zhuanti/ch-xinwen/2012-06/01/content_25541073.htm
Neighborhoods, S. D. o. (2016). Neighbourhood Planning. Retrieved from https://www.seattle.gov/neighborhoods/programs-and-services/neighborhood-planning
Neuhoff, K. (2005). Large-scale deployment of renewables for electricity generation. *Oxford review of economic policy, 21*(1), 88-110.
Newton, P. W. (2012). Liveable and sustainable? Socio-technical challenges for twenty-first-century cities. *Journal of Urban Technology, 19*(1), 81-102.
Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence Based Nursing, 18*(2), 34-35. doi:10.1136/eb-2015-102054
Nong, Y., & Zhou, S. (2012). Community Planning And System Base On Individual Requirement [J]. *Planners, 1*, 004.
North, D. C. (1997). *The contribution of the new institutional economics to an understanding of the transition problem*: Unu/Wider.
Pacione, M. (2003). Urban environmental quality and human wellbeing—a social geographical perspective. *Landscape and Urban Planning, 65*(1-2), 19-30.

Parish, W. L., & Whyte, M. K. (1984). Urban life in contemporary China. *Chicago: University of Chicago Press. Pfeffermann, G. and Wasow, B.(2005)'The US and China-The Global Economy's Odd Couple'. The Globalist, 4*, 245-273.
Park, Y., & Rogers, G. O. (2015). Neighborhood Planning Theory, Guidelines, and Research: Can Area, Population, and Boundary Guide Conceptual Framing? *Journal of Planning Literature, 30*(1), 18-36.
Parkes, A., Kearns, A., & Atkinson, R. (2002). What makes people dissatisfied with their neighbourhoods? *Urban Studies, 39*(13), 2413-2438.
Patricios, N. N. (2002). Urban design principles of the original neighbourhood concepts. *Urban morphology, 6*(1), 21-36.
Permentier, M., Bolt, G., & Van Ham, M. (2011). Determinants of neighbourhood satisfaction and perception of neighbourhood reputation. *Urban Studies, 48*(5), 977-996.
Perry, C. A. (1921). *Ten years of the community center movement*: Department of Recreation, Russell Sage Foundation.
Perry, C. A. (1929). City planning for neighborhood life. *Social Forces, 8*(1), 98-100.
Pinnegar, S. (2013). 'Neighbourhood Planning', in "Smith SJ" (ed.). In P. S (Ed.), *The International Encyclopedia of Housing and Home* (pp. pp. 78-84). Oxford,: Elsevier.
Plas, J. M., & Lewis, S. E. (1996). Environmental factors and sense of community in a planned town. *American Journal of Community Psychology, 24*(1), 109-143.
Porta, S., & Renne, J. L. (2005). Linking urban design to sustainability: formal indicators of social urban sustainability field research in Perth, Western Australia. *Urban Design International, 10*(1), 51-64.
Portney, K. E. (2013). *Taking sustainable cities seriously: Economic development, the environment, and quality of life in American cities*: MIT Press.
Prey, J. (1992). Environmentally and socially sound production in the informal sector. *Gate, 92*, 12-13.
Prezza, M., & Costantini, S. (1998). Sense of community and life satisfaction: Investigation in three different territorial contexts. *Journal of Community & Applied Social Psychology, 8*(3), 181-194.
Pupphachai, U., & Zuidema, C. (2017). Sustainability indicators: A tool to generate learning and adaptation in sustainable urban development. *Ecological Indicators, 72*, 784-793.
Putnam, R. D. (1995). Tuning in, tuning out: The strange disappearance of social capital in America. *PS: Political science & politics, 28*(4), 664-683.
Qin, B. (2015). City profile: Chengdu. *Cities, 43*, 18-27.
Qing Ye , Q. Z., Kun Song. (2014). A comparative study on the evaluation system of green community at home and abroad. *Urban Problems*(04), 74-81.
Raco, M. (2007). Securing sustainable communities: citizenship, safety and sustainability in the new urban planning. *European Urban and Regional Studies, 14*(4), 305-320.
Raco, M., Imrie, R., & Lin, W. i. (2011). Community governance, critical cosmopolitanism and urban change: observations from Taipei, Taiwan. *International Journal of Urban and Regional Research, 35*(2), 274-294.
Ragin, C. C. (1992). Casing" and the process of social inquiry. *What is a case*, 217-226.
Register, R. (2006). *Ecocities: Rebuilding cities in balance with nature*: New Society Publishers.
Reisig, M. D., & Parks, R. B. (2000). Experience, quality of life, and neighborhood context: A hierarchical analysis of satisfaction with police. *Justice quarterly, 17*(3), 607-630.
Ribot, J. C., Najam, A., & Watson, G. (1996). *Climate variation, vulnerability and sustainable development in the semi-arid tropics*: Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
Riemer, S. (1950). Hidden dimensions of neighborhood planning. *Land Economics, 26*(2), 197-201.
Robinson, J. (2004). Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics, 48*(4), 369-384.
Rohe, W. M. (2009). From Local to Global: One Hundred Years of Neighborhood Planning. *Journal of the American Planning Association, 75*(2), 209-230. doi:10.1080/01944360902751077

Rojas, M. (2004). *Well-being and the complexity of poverty: A subjective well-being approach*: Research Paper, UNU-WIDER, United Nations University (UNU).
Rosch, E. (1978). Principles of Categorization, în Eleanor Rosch & Barbara B. Lloyd (eds.), Cognition and Categorization. In: Lawrence Erlbaum Associates, Hillsdale, New Jersey.
Rosen, M. A., Le, M. N., & Dincer, I. (2005). Efficiency analysis of a cogeneration and district energy system. *Applied thermal engineering, 25*(1), 147-159.
Rosenblatt, T., Cheshire, L., & Lawrence, G. (2009). Social interaction and sense of community in a master planned community. *Housing, Theory and Society, 26*(2), 122-142.
Rosenström, U. (2006). Exploring the policy use of sustainable development indicators: interviews with Finnish politicians. *The Journal of Transdisciplinary Environmental Studies, 5*(1-2), 1-13.
Rudlin, D., & Falk, N. (1999). *Building the 21st century home: the sustainable urban neighbourhood*: Butterworth-Heinemann.
Russo, F., & Comi, A. (2010). A classification of city logistics measures and connected impacts. *Procedia-Social and Behavioral Sciences, 2*(3), 6355-6365.
Russo, R. (2004). *Statistics for the behavioural sciences: an introduction*: Psychology Press.
Ruth, M., & Franklin, R. S. (2014). Livability for all? Conceptual limits and practical implications. *Applied Geography, 49*, 18-23.
Sabin, P. (2014). The Bet: Paul Ehrlich, Julian Simon, and Our Gamble over Earth's Future. In: HeinOnline.
Sachs, I. (1999). Social sustainability and whole development: exploring the dimensions of sustainable development. *Sustainability and the social sciences: a cross-disciplinary approach to integrating environmental considerations into theoretical reorientation*, 25-36.
Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science, 277*(5328), 918-924.
Säynäjoki, E., Kyrö, R., Heinonen, J., & Junnila, S. (2012). An assessment of the applicability of three international neighbourhood sustainability rating systems to diverse local conditions, with a focus on Nordic case areas. *International Journal of Sustainable Building Technology and Urban Development, 3*(2), 96-104.
Sbci, U. (2009). Buildings and climate change: summary for decision-makers. *United Nations Environmental Programme, Sustainable Buildings and Climate Initiative, Paris*, 1-62.
Schneck, S. (2000). The great disruption: human nature and the reconstitution of the social order. *The Review of Metaphysics, 54*(1), 139.
Schweber, L. (2013). The effect of BREEAM on clients and construction professionals. *Building Research & Information, 41*(2), 129-145.
Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly, 61*(2), 294-308.
Serageldin, I., & Streeter, A. (1993). *Valuing the environment: proceedings of the first annual conference on environmentally sustainable development.* Paper presented at the Environmentally sustainable development proceedings series.
Shafer, C. S., Lee, B. K., & Turner, S. (2000). A tale of three greenway trails: user perceptions related to quality of life. *Landscape and Urban Planning, 49*(3-4), 163-178.
Sharifi, A., & Murayama, A. (2013). A critical review of seven selected neighborhood sustainability assessment tools. *Environmental Impact Assessment Review, 38*, 73-87.
Sharifi, A., & Murayama, A. (2014). Neighborhood sustainability assessment in action: Cross-evaluation of three assessment systems and their cases from the US, the UK, and Japan. *Building and Environment, 72*, 243-258. doi:http://dx.doi.org/10.1016/j.buildenv.2013.11.006
Sharifi, A., & Murayama, A. (2015). Viability of using global standards for neighbourhood sustainability assessment: insights from a comparative case study. *Journal of Environmental Planning and Management, 58*(1), 1-23.
Shen, L.Y., Ochoa, J. J., Shah, M. N., & Zhang, X. (2011). The application of urban sustainability indicators–A comparison between various practices. *Habitat International, 35*(1), 17-29.

Shen, L., & Zhou, J. (2014). Examining the effectiveness of indicators for guiding sustainable urbanization in China. *Habitat International, 44*, 111-120.
Shi, Q., Yu, T., Zuo, J., & Lai, X. (2016). Challenges of developing sustainable neighborhoods in China. *Journal of Cleaner Production, 135*, 972-983.
Siew, R. Y. J. (2014). A review of sustainability reporting tools (SRTs) for communities. *International Journal of Sustainable Construction Engineering and Technology, 5*(2), 39-52.
Silver, E., & Miller, L. L. (2004). Sources of informal social control in Chicago neighborhoods. *Criminology, 42*(3), 551-584.
Sirgy, M. J., & Cornwell, T. (2002). How neighborhood features affect quality of life. *Social indicators research, 59*(1), 79-114.
Sirianni, C. (2007). Neighborhood planning as collaborative democratic design: The case of Seattle. *Journal of the American Planning Association, 73*(4), 373-387.
Solinger, D. J. (1985). Commercial reform and state control: Structural changes in Chinese trade, 1981-1983. *Pacific Affairs, 58*(2), 197-215.
Spangenberg, J. H., Pfahl, S., & Deller, K. (2002). Towards indicators for institutional sustainability: lessons from an analysis of Agenda 21. *Ecological Indicators, 2*(1-2), 61-77.
Spinks, M. (2015). Understanding and actioning BRE environmental assessment method: a socio-technical approach. *Local Environment, 20*(2), 131-148.
Spittaels, H., Verloigne, M., Gidlow, C., Gloanec, J., Titze, S., Foster, C., . . . Sjöström, M. (2010). Measuring physical activity-related environmental factors: reliability and predictive validity of the European environmental questionnaire ALPHA. *International Journal of Behavioral Nutrition and Physical Activity, 7*(1), 48.
Steckler, A., McLeroy, K. R., Goodman, R. M., Bird, S. T., & McCormick, L. (1992). Toward integrating qualitative and quantitative methods: an introduction. In: Sage Publications Sage CA: Thousand Oaks, CA.
Stein, C. S. (1957). *Toward new towns for America*: Reinhold Publishing Corporation.
Sterman, J. D., & Sweeney, L. B. (2007). Understanding public complacency about climate change: Adults' mental models of climate change violate conservation of matter. *Climatic Change, 80*(3-4), 213-238.
Stoney, C., & Elgersma, S. (2007). Neighbourhood Planning through Community Engagement: The Implications for Place Based Governance and Outcomes. *Unpublished paper presented at Canadian Political Science Association, Saskatoon, June*.
Stubbs, M. (2002). Car parking and residential development: sustainability, design and planning policy, and public perceptions of parking provision. *Journal of Urban Design, 7*(2), 213-237.
Stubbs, M. (2004). Heritage-sustainability: developing a methodology for the sustainable appraisal of the historic environment. *Planning Practice and Research, 19*(3), 285-305.
Su, Z., Cao, Y., He, J., & Huang, W. (2015). Perceived social mobility and political trust in China. *African and Asian Studies, 14*(4), 315-336.
Sugiyama, T., Leslie, E., Giles-Corti, B., & Owen, N. (2008). Associations of neighbourhood greenness with physical and mental health: do walking, social coherence and local social interaction explain the relationships? *Journal of Epidemiology & Community Health, 62*(5), e9-e9.
Sugiyama, T., & Thompson, C. W. (2008). Associations between characteristics of neighbourhood open space and older people's walking. *Urban forestry & urban greening, 7*(1), 41-51.
Sullivan, L., Rydin, Y., & Buchanan, C. (2014). Neighbourhood sustainability frameworks-a literature review.
Sun, L., Yung, E. H., Chan, E. H., & Zhu, D. (2016). Issues of NIMBY conflict management from the perspective of stakeholders: A case study in Shanghai. *Habitat International, 53*, 133-141.
Sutton, S. A. (2010). Rethinking commercial revitalization: A neighborhood small business perspective. *Economic Development Quarterly, 24*(4), 352-371.
Suzuki, H., Dastur, A., Moffatt, S., Yabuki, N., & Maruyama, H. (2010). *Eco2 Cities: Ecological cities as economic cities*: The World Bank.

Talen, E. (1999). Sense of community and neighbourhood form: An assessment of the social doctrine of new urbanism. *Urban Studies, 36*(8), 1361-1379.
Talen, E. (2011). Sprawl retrofit: sustainable urban form in unsustainable places. *Environment and Planning B: Planning and Design, 38*(6), 952-978.
Tan, R., & Zhou, T. (2015). Decentralization in a centralized system: Project-based governance for land-related public goods provision in China. *Land Use Policy, 47*, 262-272.
Taylor, N. (1998). *Urban planning theory since 1945*: Sage.
Tesch, R. (1990). *Qualitative research: Analysis types and software tools*: Psychology Press.
the, M. I. A. a., City of Winnipeg's Planning, P. a. D. D.-., & Division, P. a. L. U. (2002). A guide for developing neighbourhood.

PLANS. Retrieved from https://winnipeg.ca/ppd/pdf_files/Nhbd_guide.pdf

Timperio, A., Crawford, D., Ball, K., & Salmon, J. (2017). Typologies of neighbourhood environments and children's physical activity, sedentary time and television viewing. *Health & place, 43*, 121-127.
Tipple, G. (2015). Housing policy-making in Africa: Ten common assumptions. *Habitat International, 49*, 413-418.
Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and applications, 5*, 147-158.
Torjman, S. (2000). *The social dimension of sustainable development*: Citeseer.
Tweed, C., & Sutherland, M. (2007). Built cultural heritage and sustainable urban development. *Landscape and Urban Planning, 83*(1), 62-69.
Tzeng, H.-M. (2002). The influence of nurses' working motivation and job satisfaction on intention to quit: an empirical investigation in Taiwan. *International journal of nursing studies, 39*(8), 867-878.
UN-Habitat. (2010). Planning sustainable cities: UN-Habitat Practices and Perspectives. In: Nairobi.
UN-Habitat. (2016). *Sustainable Development Goals Report 2016*: UN.
UN. (2008). World urbanization prospects: the 2007 Revision Population Database. In: United Nations, Department of Economics and Social Affairs, Population ….
UN. (2014). *World Urbanization Prospects: The 2014 Revision-Highlights*: UN.
UNDP. (2013). The rise of the South: Human progress in a diverse world. *Human Development Report)*.
Unit, S. (2002). Risk: Improving government's capability to handle risk and uncertainty. *Cabinet Office*.
Urbanism, S. (2008). Urban Design with Nature. *Doug Farr*.
Valentin, A., & Spangenberg, J. H. (2000). A guide to community sustainability indicators. *Environmental Impact Assessment Review, 20*(3), 381-392.
Van der Ryn, S., & Calthorpe, P. (1986). Sustainable Communities: A New Design Synthesis for Cities, Suburbs and Towns, 1986. In: Sierra Club Books.
van Halm, V. P., Nurmohamed, M. T., Twisk, J. W., Dijkmans, B. A., & Voskuyl, A. E. (2006). Disease-modifying antirheumatic drugs are associated with a reduced risk for cardiovascular disease in patients with rheumatoid arthritis: a case control study. *Arthritis research & therapy, 8*(5), R151.
Van Kamp, I., Leidelmeijer, K., Marsman, G., & De Hollander, A. (2003). Urban environmental quality and human well-being: Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning, 65*(1-2), 5-18.
Van Wijngaarden, T. (2001). Indicators of sustainable development. *How green is the city*, 251-274.
Veenhoven, R. (1996). Happy life-expectancy. *Social indicators research, 39*(1), 1-58.
Vuchic, V. (2017). *Transportation for livable cities*: Routledge.
Walder, A. (1986). The informal dimension of enterprise financial reforms. *China's Economy Looks Toward the Year 2000, 1*, 630-645.
Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability and transformability in social–ecological systems. *Ecology and society, 9*(2).
Walker, D. H. (1997). Choosing an appropriate research methodology. *Construction management and economics, 15*(2), 149-159.

Wang, F., & Liu, Y. (2018). Interpreting Chinese Hukou system from a Foucauldian perspective. *Urban Policy and Research, 36*(2), 153-167.
Wang, X. T. (2007). *Nomad Culture and China's Society*: Beijing: Tongxin Press.
Wang, Y., Jiang, P., & Xia, T. (2009). Inspiration from pilot community planning of Wulian in Longgang district of Shenzhen. *City Plan. Rev, 4*, 17.
Wang, Z., Zhang, F., & Wu, F. (2017). Neighbourhood cohesion under the influx of migrants in Shanghai. *Environment and Planning A: Economy and Space, 49*(2), 407-425.
Watson, V. (2009). 'The planned city sweeps the poor away…': Urban planning and 21st century urbanisation. *Progress in Planning, 72*(3), 151-193.
WCED, S. W. S. (1987). World Commission on Environment and Development. In: Oxford University Press London.
Wei, Y. D., Li, H., & Yue, W. (2017). Urban land expansion and regional inequality in transitional China. *Landscape and Urban Planning, 163*, 17-31.
Weinstein, M. P. (2010). Sustainability science: the emerging paradigm and the ecology of cities. In: Taylor & Francis.
Wellman, B., & Leighton, B. (1979). Networks, neighborhoods, and communities: Approaches to the study of the community question. *URBAN AFFAIRS QUARTERLY, 14*(3), 363-390.
Werner, I. B. (2005). *The Liveability of the City: A study of living with children in different urban designs.* Paper presented at the ENHR 05, Reykjavik.
Williams, K., & Dair, C. (2007). A framework of sustainable behaviours that can be enabled through the design of neighbourhood‐scale developments. *Sustainable Development, 15*(3), 160-173.
Wills, J. (2016a). Emerging geographies of English localism: The case of neighbourhood planning. *Political Geography, 53*, 43-53.
Wills, J. (2016b). *Locating localism: Statecraft, citizenship and democracy*: Policy Press.
Wilson, K., Elliott, S., Law, M., Eyles, J., Jerrett, M., & Keller-Olaman, S. (2004). Linking perceptions of neighbourhood to health in Hamilton, Canada. *Journal of Epidemiology & Community Health, 58*(3), 192-198.
Wirth, L. (1964). LOUIS WIRTH ON CITIES AND SOCIAL LIFE; SELECTED PAPERS.
Worldometers. (2016). World Population. Retrieved from http://www.worldometers.info/population/
Wu, F. (2002). China's changing urban governance in the transition towards a more market-oriented economy. *Urban Studies, 39*(7), 1071-1093.
Wu, F. (2012). Neighborhood attachment, social participation, and willingness to stay in China's low-income communities. *Urban Affairs Review, 48*(4), 547-570.
Wu, F. (2015). *Planning for growth: Urban and regional planning in China*: Routledge.
Wu, F., Xu, J., & Yeh, A. G.-O. (2006). *Urban development in post-reform China: State, market, and space*: Routledge.
Wu, L. Y., & Li, C. G. (2010). Development Tendencies of Sciences of Human Settlements. *China City Planning Review*(3), 003.
Wu, Y. (2018). 成都全面开展社区营造行动 两年覆盖九成以上城乡社区. *Sichuan Daily*. Retrieved from http://scnews.newssc.org/system/20180413/000869595.html
Wynveen, B. J. (2015). Perceptions of Sustainability and Sustainable Living Among Non-Environmentally Motivated Individuals. *Society & natural resources, 28*(12), 1278-1289.
Xia, J. (2008). An empirical study on self‐governing organizations in new‐style urban communities. *Social Sciences in China, 29*(1), 171-180.
Xiu-Ying, C. (2011). The Status Quo and Trends of the Study on City Life-space and Community Sustainable Development in China. *PROGRESS IN GEOGRAPHY, 21*(5), 491-499.
Xu, F. (2008). Gated communities and migrant enclaves: the conundrum for building 'harmonious community/shequ'. *Journal of Contemporary China, 17*(57), 633-651.

Xu, M., & TAO, D. (2012). EXPLORING AND THINKING OVER THE PUBLIC PARTICIPATION IN URBAN PLAN FORMULATION IN THE NEW PERIOD: A CASE STUDY OF NANJING MASTER PLAN REVISION [J]. *City Planning Review, 2*, 013.

Yang, M., Yang, M., Shih, C., & Kawachi, I. (2002). Development and validation of an instrument to measure perceived neighbourhood quality in Taiwan. *Journal of Epidemiology & Community Health, 56*(7), 492-496.

Yigitcanlar, T., Kamruzzaman, M., & Teriman, S. (2015). Neighborhood sustainability assessment: Evaluating residential development sustainability in a developing country context. *Sustainability, 7*(3), 2570-2602.

Yigitcanlar, T., Sipe, N., Evans, R., & Pitot, M. (2007). A GIS‐based land use and public transport accessibility indexing model. *Australian Planner, 44*(3), 30-37. doi:10.1080/07293682.2007.9982586

Yin, R. K. (1984). Case study research: design and methods. Beverly Hills, Calif. In: Sage Publications.

Young, M., & Family, P. W. (1957). kinship in East London. *Reports of the Institute of Community Studies1. London, Routledge and Kegan Paul. YoungFamily and kinship in east London1957*.

Young, S., & Church, C. (2014). The United Kingdom Mainstreaming, mutating or expiring? In *Sustainable communities in Europe* (pp. 129-151): Routledge.

Yu, K., & Cai, H. (2012). A research on community planning system reconstruction and new mechanism in China from the perspective of low-carbon. *Ecological Economy, 7*, 041.

Yu, Y., & TIAN, D. (2009). INTERNATIONAL EXPERIENCES IN ECOCOMMUNITY ASSESSMENT SYSTEM: CASE STUDIES OF BREEAM-ECOHOMES AND LEED-ND [J]. *City Planning Review, 8*, 018.

Yuan, W., James, P., Hodgson, K., Hutchinson, S., & Shi, C. (2003). Development of sustainability indicators by communities in China: a case study of Chongming County, Shanghai. *Journal of Environmental Management, 68*(3), 253-261.

Yuan, Y., Kaili, D., Xinyu, C., & Xinyi, W. (2018). A Review of Neighborhood Satisfaction. *Urban Development Studies, 25*(10).

Yung, E. H., & Chan, E. H. (2011). Problem issues of public participation in built-heritage conservation: Two controversial cases in Hong Kong. *Habitat International, 35*(3), 457-466.

Yung, E. H., & Chan, E. H. (2012). Implementation challenges to the adaptive reuse of heritage buildings: Towards the goals of sustainable, low carbon cities. *Habitat International, 36*(3), 352-361.

Yung, E. H., Conejos, S., & Chan, E. H. (2016). Public open spaces planning for the elderly: The case of dense urban renewal districts in Hong Kong. *Land Use Policy, 59*, 1-11.

Zhang, J. (2012). The hukou system as China's main regulatory framework for temporary rural-urban migration and its recent changes. *DIE ERDE–Journal of the Geographical Society of Berlin, 143*(3), 233-247.

Zhang, M., Wu, W., Zhong, W., Zeng, G., & Wang, S. (2017). The reshaping of social relations: Resettled rural residents in Zhenjiang, China. *Cities, 60*, 495-503.

Zhang, Q., Yung, E. H. K., & Chan, E. H. W. (2018). Towards Sustainable Neighborhoods: Challenges and Opportunities for Neighborhood Planning in Transitional Urban China. *Sustainability, 10*(2), 406.

Zhang, X., Shen, G. Q., Feng, J., & Wu, Y. (2013). Delivering a low-carbon community in China: technology vs. strategy? *Habitat International, 37*, 130-137.

Zhang, X., Shen, L., & Wu, Y. (2011). Green strategy for gaining competitive advantage in housing development: a China study. *Journal of Cleaner Production, 19*(2-3), 157-167.

Zhao, P. (2015). The evolution of the urban planning system in contemporary China: an institutional approach. *International Development Planning Review, 37*(3), 269-287.

Zhao, P., Lü, B., & De Roo, G. (2011). Impact of the jobs-housing balance on urban commuting in Beijing in the transformation era. *Journal of transport geography, 19*(1), 59-69.

Zhao, W., & Zhao, M. (2002). From Residential Area Planning to Community Planning. *Urban Planning Forum* (06), 68-71.

Zhao, W., & Zou, Y. (2017). Un-gating the gated community: The spatial restructuring of a resettlement neighborhood in Nanjing. *Cities, 62*, 78-87.
Zhao, Z. (2005). Migration, labor market flexibility, and wage determination in China: A review. *The Developing Economies, 43*(2), 285-312.
Zheng, Xu, Y., Zhang, X., & Yu, D. (2015). Jobs-housing balance index and its spatial variation: a case study in Beijing. *Qinghua Daxue Xuebao/J. Tsinghua Univ, 55*(4), 475-483.
Zheng, H. W., Shen, G. Q., & Wang, H. (2014). A review of recent studies on sustainable urban renewal. *Habitat International, 41*, 272-279.
Zhou, S., Liu, Y., & Kwan, M.-P. (2016). Spatial mismatch in post-reform urban China: A case study of a relocated state-owned enterprise in Guangzhou. *Habitat International, 58*, 1-11.
Zhu, Y., Breitung, W., & Li, S.-m. (2012). The Changing Meaning of Neighbourhood Attachment in Chinese Commodity Housing Estates: Evidence from Guangzhou. *Urban Studies, 49*(11), 2439-2457. doi:10.1177/0042098011427188
Zhu, Y., & Lin, B. (2004). Sustainable housing and urban construction in China. *Energy and Buildings, 36*(12), 1287-1297.
Zhuang, G., Tsang, A. S., Zhou, N., Li, F., & Nicholls, J. (2006). Impacts of situational factors on buying decisions in shopping malls: an empirical study with multinational data. *European Journal of Marketing, 40*(1/2), 17-43.
Zuo, J., & Zhao, Z.-Y. (2014). Green building research–current status and future agenda: A review. *Renewable and Sustainable Energy Reviews, 30*, 271-281.