Abstract: The neighbourhood reconstruction involves three key stakeholders—municipality, builders and residents. There are some conflicts among them due to their different standpoints, and the reasons of most conflicts relate to human needs of residents when they are not met. The main purpose of this study is to create a general socially sustainable neighbourhood reconstruction process through the lens of FSSD and Max-Neef’s human needs theory. This new process will promote the collaboration among these three key stakeholders and help residents to have their basic human needs fulfilled. First of all, a vision of a sustainable neighbourhood reconstruction process is created and amended based upon literature review and authorities’ feedback; then a summary of the current reality of the reconstruction process is addressed in light of a case study; followed by the analysis of the gap between vision and reality. At last, different suggestions are given with the purpose of eliminating the gap.

Keywords: Neighbourhood Reconstruction, Framework for Strategic Sustainable Development, backcasting, human needs
Statement of Contribution

The thesis group did a great and passionate teamwork through the whole thesis period. Each author contributed their efforts and strengths wholeheartedly.

In order to make full use of different backgrounds and intelligence of all three authors and gain a much more comprehensive perspective towards this research, they decided to maximize the power of solidarity and cooperated in every element of the thesis in lieu of doing separate tasks respectively, including sourcing reference material, reading, creating the vision of sustainable reconstruction process, analysing the case study, setting up phone conferences with collaborating partners and authorities, brainstorming ideas, designing questionnaires for different stakeholders, providing constructive periodic feedback for the other group members and many other specific content. After getting all the information, they divided the writing evenly and took group meetings to check the content and language together.

Besides the teamwork on the paper, each of them contributed to affairs related to thesis during the ongoing process. Zhao put lots of efforts in keeping and managing meeting notes, designing the slides for presentation and compiling the thesis document; Lin contributed a lot to summarize useful ideas from former thesis and shared with group, communicate with advisors and arrange meeting; Peng dedicated to take group meeting notes, communicate with collaborating partners, and collect response and feedback from survey.

Overall, each group member was equally engaged in producing this thesis. They enjoyed the research process.

Karlskrona, June 2010

Zhao Zhenhua

Lin Shangchao

Peng Peng
Acknowledgements

This paper was finished at the Department of Mechanical Engineering, Blekinge Institute of Technology, Karlskrona, Sweden, with great help from our advisors and colleagues.

Firstly, we would like to appreciate our primary advisor Marco Valente, who gave us many valuable suggestions along with very detailed comments. And an appreciation to Edith Callaghan who, as our secondary advisor helped us a lot with the contents; another appreciation to Tamara Connell, who provided a way for us to work out the final results thanks to her experience. We also want to thanks our shadow group Stephanie Peterka, Charlotte Barrow and Tuna Ozcuhadar, thanks for the useful references.

In addition, we really would like to say thank you to our third advising team, our opponent group, Amanda Doreen Hachey, Giuliana Jorge Netto and Lea Thuot for the significant work for our paper, thanks for the comments and the English edited. We are so happy and lucky to have you to be our opponent. And Leigh Greenius, thank you to be our English consultant as well.

Finally, we would like to thank all the colleagues in MSLS program, who suggested us some brilliant ideas for the paper; and our collaborating company, municipality and the interviewed residents. We could not complete this work without your meaningful contribution.
Executive Summary

Introduction

Neighbourhood, as an indispensable aspect within the society, needs to be improved in order to become more sustainable and help the needed societal transition towards sustainability. Neighbourhood reconstruction is happening all over the world today, especially in China. As the largest developing country by population in the world, nowadays, thousands of neighbourhood reconstruction projects are being implemented in China because of different reasons, such as urban planning, business development and improving the community’s living condition. The neighbourhood reconstruction plays a key role if the Chinese society aims to move towards sustainability. During the neighbourhood reconstruction process, there are three key stakeholders involved, residents, builders and municipality. Residents need to improve their lives through the neighbourhood reconstruction, municipality always takes charge to organize the neighbourhood reconstruction, and then builders implement the concrete process. Meanwhile, how to reconstruct the neighbourhood in a sustainable way is still a big challenge for China. Current approaches mainly focus on the economic profit rather than the needs of residents. Max-Neef suggested nine basic human needs (subsistence, freedom, protection, creation, affection, participation, idleness, understanding and identity) as a structured way to approach social sustainability (Max-Neef 1991). The aim of this research is to develop a sustainable neighbourhood reconstruction process, which can be implemented by the municipality and builders, in order to meet residents’ needs during the whole neighbourhood reconstruction process.

Methods

As the aim of the research is to create a sustainable neighbourhood reconstruction process, this research will work out the process step by step in the perspective of sustainability. During the research, literature review, case study and interviews are major methods which are used to achieve the goal. The research for this project is split into four phases. During the first phase, a literature review was conducted to gain understanding of...
sustainable neighbourhood reconstruction and envision the ideal process. Interviews in this phase focus on people’s visions of sustainable neighbourhood reconstruction process. In phase two is carried out an analysis of the current neighbourhood reconstruction based on the Heplingli neighbourhood reconstruction project. In phase three, a brief gap analysis is undertaken to highlight the differences between the sustainable neighbourhood reconstruction process and current neighbourhood reconstruction process. In phase four, measures are suggested for closing the gap between the current process and the sustainable process.

Results and Discussion

The sustainable neighbourhood reconstruction process in this study includes four parts. 1 Preparation for the neighbourhood reconstruction: in this part, residents and municipality choose the construction companies to take charge of the project. Then the construction companies do the preliminary investigation and propose the plan for neighbourhood reconstruction. 2 Demolition of the old neighbourhood: after the plan is approved by the residents and municipality, the companies start to organize the relocation of the residents and demolish the old neighbourhood. 3 Construction of the new neighbourhood: in this part, the construction companies build the new neighbourhood. Residents and municipality organize the inspection of the new neighbourhood. 4 Follow up service. Construction companies organize the residents to move back. The municipality promote a sustainable lifestyle in new neighbourhood.

The current neighbourhood reconstruction process can be divided into four parts as well. There are several steps in each part. 1 Preparation for the neighbourhood reconstruction: in this part, residents or municipality propose the neighbourhood reconstruction, and municipality organizes a tender to choose the builders. 2 Demolition of the old neighbourhood, in this part, the residents move out and the builders demolish the old neighbourhood. 3 Construction of the new neighbourhood happens when the builders construct the new neighbourhood and the municipality do the inspection. 4 Follow up service happens when the residents move back to the new neighbourhood.
When the current neighbourhood reconstruction process is compared to the sustainable neighbourhood reconstruction process, there is still a gap. As the first driver of the neighbourhood reconstruction is economic profit, the residents’ needs are often neglected. So the biggest problem is that some of the residents’ basic human needs are not met during the neighbourhood reconstruction process. The suggested measures are also divided into four parts for closing the gap and to fulfil the residents’ basic human needs.

### Part one: Preparation for the neighbourhood reconstruction

1. Municipality and builders hold some hearings with residents to exchange ideas.
2. Residents appeal to the public media to help them to supervise the builders.
3. Residents organise a supervision committee, which can take charge of negotiation, supervision, ideas and information collection.

### Part two: Demolition of the old neighbourhood

1. Municipality establish stricter regulations to ensure the houses’ lifespan is longer than 50 years.
2. Builders take charge of the relocation service for the residents.
3. When builders are demolishing the old neighbourhood, they must protect the buildings which are not needed to be demolished.

### Part three: Construction of the new neighbourhood

1. Municipality invites or allows residents to invite independent professional architects to help residents inspect new buildings.
Municipality sets up a credit system to make perpetual records for builders

Part four: Follow up service

1 Municipality provide financial support and experts to help to promote sustainable lifestyle in the new neighbourhood.

2 Residents give the feedback to the construction companies to help them to improve their capacity to reconstruct the neighbourhood.

Conclusion

The sustainable neighbourhood reconstruction process can serve as guidance for neighbourhood reconstruction projects in the urban district. The suggested measures for the sustainable neighbourhood reconstruction process can be used directly in the projects, but it is not required to use all of this measure. The application of the measures depends on the situations of different projects.
Glossary

Backcasting: The process of envisioning a future outcome, analyzing potential measures to move towards that envisioned outcome, and then prioritizing relevant measures to reach that outcome (Robinson 1990).

Biogeochemical cycles: is a pathway by which a chemical element or molecule moves through both biotic (biosphere) and abiotic (lithosphere, atmosphere, and hydrosphere) compartments of Earth.

Carbon Footprint: stands for “a certain amount of gaseous emissions that are relevant to climate change and associated with human production or consumption activities” (Wiedmann, T. and Minx, J. (2008).

Climate Change: is a change in the statistical distribution of weather over periods of time. It can be a change in the average weather or a change in the distribution of weather events around an average. Nowadays, climate change usually refers to changes in modern climate. It can be qualified as anthropogenic climate change which mostly is driven by human activities.

Ecosphere: The global ecosystem of planet Earth, and interaction between living and non-living components (Robèrt et al. 2007, 340).

Laws of conservation of matter and energy: states that energy cannot be created or destroyed, but can change its form. The total quantity of matter and energy available in the universe is a fixed amount and never any more or less.

Laws of thermodynamics: describe the transport of heat and work in thermodynamic processes. These laws have become some of the most important in all of physics and other types of science associated with thermodynamics.

LEED: “LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and
stewardship of resources and sensitivity to their impacts” (U.S. GREEN BUILDING COUNCIL 2010).

**Management system:** it provides the structure for systematic improvement and works through the process of planning, implementation, monitoring and auditing.

**Neighbourhood:** in this study, neighbourhood includes all the buildings, the plants and other fundamental facilities in a certain area, as well as the residents.

**Photosynthesis:** is a process that converts carbon dioxide into organic compounds, especially sugars, using the energy from sunlight.

**Sustainable development:** development which satisfies the current needs of society without compromising the capacity of future generations to meet their own needs.

**Sustainability Principles (SPs):** Principles built upon scientifically rigorous, consensus-based, systems-level understanding that define the minimum conditions for a sustainable society. They state that, in a sustainable society, nature is not subject to systematically increasing…

SP1. …concentrations of substances extracted from the Earth’s crust;

SP2. …concentrations of substances produced by society;

SP3. …degradation by physical means;

And…In that society,

SP4. People are not subject to conditions that systematically undermine their capacity to meet their needs (Holmberg and Robèrt 2000; Ny et al. 2006).

**The Golden Rule:** is an ethical code that states one has a right to just treatment, and a responsibility to ensure justice for others. It is also called the ethic of reciprocity. It is arguably the most essential basis for the modern concept of human rights.
The Framework for Strategic Sustainable Development (FSSD): is a scientifically robust model for planning and decision-making towards sustainability in complex systems (Holmberg and Robèrt 2000).

The funnel theory: unsustainable development can be visualized as society entering deeper and deeper into a funnel, in which the space for deciding on options is becoming narrower and narrower per capita.
Table of contents

Statement of Contribution ........................................................................................................ ii
Acknowledgements .................................................................................................................. iii
Executive Summary ................................................................................................................ iv
Glossary ................................................................................................................................... viii
Table of contents .................................................................................................................... xi
List of figure and tables ............................................................................................................ xv

1 Introduction .......................................................................................................................... 1
   1.1 Research background ..................................................................................................... 1
       1.1.1 The main reason of neighbourhood reconstruction .............................................. 2
       1.1.2 The current general process of reconstruction ...................................................... 4
   1.2 The FSSD and it is application to neighbourhood reconstruction ......................... 4
   1.3 Research Purpose, scope and limitations ................................................................. 10
       1.3.1 Purpose ................................................................................................................. 10
       1.3.2 Scope .................................................................................................................... 11
       1.3.3 Limitations .......................................................................................................... 11
   1.4 Research question ....................................................................................................... 12
   1.5 Neighbourhood reconstruction project ................................................................. 12

2 Research Methods ............................................................................................................. 15
   2.1 Research overview ..................................................................................................... 15
   2.2 Expected results ........................................................................................................ 16
2.2.1 Possible benefits .................................................................................. 16

2.2.2 Possible risk, barriers and difficulties that may come out in the research ................................................................. 17

2.3 Four phases of research and different methods different phases .. 17

2.3.1 The methods used in phase 1 ............................................................... 18

2.3.2 The methods used in phase 2 ............................................................... 18

2.3.3 The methods used in phase 3 ............................................................... 19

2.3.4 The methods used in phase 4 ............................................................... 19

3 Results ........................................................................................................ 20

3.1 Sustainable neighbourhood reconstruction process ......................... 20

3.1.1 Definition of the sustainable neighbourhood reconstruction process 20

3.1.2 The sustainable neighbourhood reconstruction process .............. 21

3.2 Current neighbourhood reconstruction process .................................. 25

3.3 The result of case study .......................................................................... 27

4 Discussion .................................................................................................. 32

4.1 The gap analysis between the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process .................................................................................. 32

4.1.1 Gap in part one (current process part one compared to sustainable process part one) .............................................................. 35

4.1.2 Gap in part two (current process part two compared to sustainable process part two) .............................................................. 36

xii
4.1.3  Gap in part three (current process part three compared to sustainable process part three) .................................................................38

4.1.4  Gap in part four (current process part four compared to sustainable process part four) .................................................................38

4.1.5  Human needs analysis in different parts of neighbourhood reconstruction process .................................................................38

4.2  Suggested measures for sustainable neighbourhood reconstruction 39

4.2.1  Suggestion for part one of the neighbourhood reconstruction 40

4.2.2  Suggestion for part two of the neighbourhood reconstruction 41

4.2.3  Suggestion for part three of the neighbourhood reconstruction 42

4.2.4  Suggestion for part four of the neighbourhood reconstruction 42

4.3  The barriers of the neighbourhood reconstruction moving towards sustainability .................................................................43

4.4  Discussion of some problems during the neighbourhood reconstruction process .................................................................45

4.4.1  Problems of current awareness of sustainability ..................45

4.4.2  Some other problems during the neighbourhood reconstruction process .................................................................46

5  Conclusion and Further Study .................................................................47

Reference .........................................................................................50

Appendix A Specific Social Issues .................................................................57
Appendix B The current general process of reconstruction .......................... 60
Appendix C Housing and land ownership.................................................. 62
Appendix D List of interviewees .................................................................. 64
Appendix E List of authorities ................................................................. 65
Appendix F Questionnaire for three key stakeholders .............................. 66
List of figure and tables

Figure 1.1 Levels of FSSD

Figure 1.2 Neighbourhood and the systems

Figure 2.1 Four phases of research

Figure 3.1 Four parts of sustainable neighbourhood reconstruction

Figure 3.2 Age distributing of interviewees

Figure 3.3 Occupation of interviewees

Figure 4.1: the awareness of sustainability in different occupations

Table 1.1 Area division of Hepingli project

Table 3.1 Gap and solutions analysis

Table 4.1: Contrast of the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process

Table 4.2: Human needs analysis in different part of current neighbourhood reconstruction process

Table 4.3: Barriers and challenges towards sustainability
1 Introduction

1.1 Research background

As environmental issues become increasingly prominent, the whole society, nowadays, pays more and more attention on the research on these issues. It is known that the world’s national economies are based upon the resources derived from ecosystems; it is also known that human life itself depends on the continuing capacity of ecosystems to provide their quantity of benefits (World Resources Institute 2010). However, at this moment, in all nations, both developed and developing, people are experiencing the effects of ecosystem decline in one guise or another: water shortages in the Punjab, India; soil erosion in Tuva, Russia; fish killed off the coast of North Carolina in the United States; landslides on the deforested slopes of Honduras; fires in the disturbed forests of Borneo and Sumatra in Indonesia and many other examples where human impacts are significant (UNDP and others 2000, 9). COP15, which represented the United Nations Framework Convention on Climate Change Conference of the Parties at its 15th session in Copenhagen in December, 2009, attracted the attention from all over the world on sustainability. It was reported that more than 100,000 people participated the march to ask for carbon reduction and promote sustainability (UNFCCC 2010).

The main goal of current Chinese government is to develop a harmonious society (The Washington Post 2010), including the harmony between humans and society, humans and environment, society and environment. On the other side, as the largest developing country by population in the world, China has to solve its housing problem within society in a sustainable way and this is a considerable challenge. The neighbourhood reconstruction can play a key role in sustainable development of China. Nowadays, about 3200 neighbourhood reconstruction projects are being implemented in China(Tang lijun 2010). Those projects can be initiated by both the residents and the municipality, and then be carried out by builders under the facilitation and supervision of municipality. The main purpose is to promote urban development as well as the quality of life of the residents in the neighbourhood. However, numerous environmental and social issues emerge in those complicated systemic processes (GreenBuildingSolutions 2010). On the environmental side, constructing and operating buildings
requires enormous amounts of energy, water, and materials such as concrete, brick, rubber, metals, plastics, and packaging materials (Hanie Okhovat and others 2009), which could lead the nature to subject to systematically increasing concentrations of substances extracted from the Earth’s crust or produced by society, degradation by physical means as well as make people systematically undermine their capacity to meet their needs. There is considerable CO₂ emission during the reconstruction process (China Building Materials Procurement 2010). Production of building materials consumes considerable amount of coals which leads to plenty of CO₂ emissions. The increased concentration of CO₂ in the atmosphere is the main reason of the global warming, which is contributing to climate change (IPCC 2007). For society, the questionnaire that the authors did in this study show that neighbourhood reconstruction affects people’s daily lives in many aspects such as transportation, security, sanitation, work, education, local culture, and business. There are many specific issues in each of these aspects. For instance, reconstruction would lead to traffic control which will impact the routes of residents to their work or study places. The detail of social issues is shown in appendix A.

Everything has two sides; the same event can often be seen as a crisis or an opportunity. Since so many sustainability issues need to be addressed, the main purpose of this study is to seek after some schemes to deal with them and incorporate sustainability in the neighbourhood reconstruction process.

1.1.1 The main reason of neighbourhood reconstruction

There are several reasons for neighbourhood reconstruction, which could be summarized in the following five main points.

1. Firstly, more and more people are moving to cities from the countryside, and the limited residential areas cannot offer enough housing so that people need to replace the short old flats with high apartment buildings to provide more housing space.

2. As the economy develops quickly in China, the country’s Gross Domestic Product expanded by an average 8.45% in 2009, the fastest in the world (TradingEconomics 2010), people become richer and richer so that they have started to care more about
different basic human needs. According to Manfred Max-Neef’s theory, the basic human needs could be characterized by nine fundamental categories of needs: Subsistence, Affection, Freedom, Protection, Creation, Idleness, Participation, Identity, and Understanding (Max-Neef 1991). For instance, during the past decade, China had emerged into the world’s fastest-growing major auto market, with an average annual growth of more than 22.2% from 1998 to 2006 (China Knowledge 2010). In 2006, it overtook Japan as the world’s second largest auto consumer after the U.S., with auto sales rising 25.1% year-on-year to 7.2 million units; meanwhile, it surpassed Germany to become the third largest auto maker after the U.S. and Japan, with automobile production climbing 27.6% year-on-year to 7.3 million units (China Knowledge 2010). The fast developing economy result in a continuously growing middle class in China, which lead to stronger desire about higher quality of life to meet all the human needs. As the consequence, it is more necessary to replace the old buildings which have limited functions and limited neighbourhood services with more comfortable and wholesome housing and neighbourhood services.

3. Another reason is related to some national projects which deal with improving people’s livelihood with a long-term perspective. For instance, the grand three gorges reservoir is designed and organized by a municipality in order to control and manage the flood of the Yangtze River, which brought about a massive relocation plan launched in 1993 to resettle 1.35 million people and neighbourhood reconstruction ensued (CHINA.ORG.CN. 2010).

4. Some old buildings are in a dangerous condition because of lack of maintenance, and are not safe to live in any more. People need to reconstruct them to get rid of the risk of accidents.

5. Reconstruction sometimes is also required due to natural disasters. For example, the strong Wenchuan Earthquake in Sichuan province
of China in 2008, which destroyed that area. There is no other choice except reconstruction.

1.1.2 The current general process of reconstruction

Based on these reasons listed above, neighbourhood reconstruction is common in China, and entails demolishing the buildings of a certain neighbourhood, and then redesigning and rebuilding them with advanced technology and appropriate layout to provide higher quality housing and neighbourhood services for residents (Tang Lijun 2010). This process will involve many stakeholders, including feasibility analysis experts, assessment experts, demolition work group, municipality, residents, businessmen and Transportation Company. The current general process of reconstruction could be summarized in four main steps which include proactive preparation, negotiation, on-going implementation and final compensation. (Tang Lijun 2010). More details could be read in the appendix B.

1.2 The FSSD and it is application to neighbourhood reconstruction

The Framework for Strategic Sustainable Development (FSSD) is a scientifically robust model for planning and decision-making towards sustainability in complex systems (Holmberg and Robèrt 2000). The framework promotes a systems perspective, to understand the constituents, parts and processes in the system and it encourages dialogue, consensus-building and changes to create the conditions within system, which are needed for systematic change towards sustainability. The FSSD is designed as a general guideline for generating change that can be applied to various levels such as global, national, regional, local community, organizational and is applicable in different fields at the same time, such as production industry, business, agriculture, and many other industries (Robèrt et al. 2002; Ny et al. 2006) as well as neighbourhood reconstruction. The FSSD helps to create a vision of success within the defined system based upon scientific sustainability principles. Then the backcasting, which means a thinking style that can help us in the application of the FSSD, can help us with its main idea, which is to think about conditions for success by asking
“what shall we do now to lead us to reach the ultimate vision” (Karl-henrik and others 2007). Such approach will be implemented to build necessary measures which lead to the vision strategically. All prioritized actions are tested in the context of overall strategies to reach the vision within the system. The framework is represented structured into five levels, including system level, success level, strategy level, action level, tools level.

*Figure 1.1 Levels of FSSD (Karl-Henrik and other 2007)*

*The systems level:* All fundamental constituents and their interrelationships within a system need to be understood so that we can allocate the resources
in right places when we explore the systematic shifts for the system. This could be achieved by using scientific theories such as thermodynamics and conservation laws, biogeochemical cycles; photosynthesis and the importance of diversity (Robèrt et al. 2002; Ny et al. 2006). They help to understand the rules within which the system operates. With regard to social systems, we can better understand by looking at social institutions, networks and and society’s interdependent pursuit of human needs (Karl-henrik and others 2007). A holistic perspective—bird’s eye view—can help to identify the basic principles that describe the system with its components and their interrelationships (Karl-henrik and others 2007).

This study aims to research on the social issues among involved stakeholders within a reconstructed neighbourhood within society within ecosphere. The neighbourhood reconstruction process regards both to ecological and social sustainability, but the authors only focus on the social dimension with the lens of human needs.

As the Manfred Max-Neef’s theory described, the basic human needs could be characterized by nine fundamental categories of needs: Subsistence, Affection, Freedom, Protection, Creation, Idleness, Participation, Identity, and Understanding (Max-Neef 1991). On the other side, there are many confictions among residents, municipality and builders during the reconstruction process because the residents cannot have their basic human needs fulfilled due to their powerless position and different standpoints of the three stakeholders in the reconstruction process. The authors analyze all confictions with the lens of those nine categories of human needs, and address suggestions to help residents to meet their needs in the purpose of eliminating the confictions.
The success level: It is the core level, which should inform strategies, actions and the design of tools. It defines the success within the system by describing the basic minimum requirements and constraints for reaching ecological sustainability and a sustainable society via a set of scientific and fundamentally-based four sustainability principles (SPs), which are based upon holistic and scientific understanding of the system (Ny et al. 2006; Robert et al. 2002)

The four Sustainability Principles are stated as below:

in a sustainable society, nature is not a subject to systematically increasing of:

(1)...concentrations of substances extracted from the Earth’s crust;

(2)... concentrations of substances produced by society;

(3)...degradation by physical means;

And, in that society
(4)…people are not subject to conditions that systematically undermine their capacity to meet their needs” (Ny Henrik and others 2004, 61-77).

These principles are designed in accordance with six criteria, including scientifically agreed upon view of the world, necessary to achieve sustainability, sufficient to achieve sustainability, general, concrete to guide action and non-overlapping (Ny Henrik and others 2004).

There are three key stakeholders in the neighbourhood reconstruction process, including municipality, builders and residents. Each of them has significant influence in different aspects such as culture, politic, economy during the whole reconstruction process. Their different standpoints and lopsided interrelationships (municipality and builders are much more powerful than residents) generate lots of conflictions among these three key stakeholders, which also contribute to obstruct the capacity of residents to meet their needs. The ultimate vision of success of this study is to design an ideal neighbourhood reconstruction process to maximally eliminate the conflictions via promoting the collaboration among stakeholders to fulfil the basic human needs of local residents in the purpose of seeking after benefits for the whole society in the perspective of sustainability. At the same time, this study aims to set up a standard example for municipality to facilitate reconstruction and help the builders do business in a more sustainable way.

The strategic level: It relates to the “Strategic Guidelines” which describe the conditions and requirements for achieving success with the system in light of backcasting. Backcasting is a planning procedure as described before, which has been applied in innumerable settings as a method that has been proven effective in moving organizations toward their vision of success.

The three key prioritizing questions at this level are used to make sure that actions promote sustainable development in the right direction, provide a flexible platform which offers enough elastic space for future decision-making and enough return on investment to support continuous development, as shown below:

1. Does this measure proceed in the right direction with respect to all principles of sustainability?
2. Does this measure provide a stepping-stone (i.e. ‘flexible platform’) for future improvements?

3. Is this measure likely to produce a sufficient return on investment to further catalyze the process? (Robèrt et al. 2002; Ny et al. 2006)

The authors compared the current process to the vision, and then analyze the creative tension and find out the essential reasons of each confliction among stakeholders in lens of the categorized human needs: subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom (Max-Neef 1991). The next step is to make solutions to help residents meet their needs during reconstruction process. The three prioritizing questions are the basic criteria for choosing suitable solutions.

*The actions level:* Implementing all the prioritized actions and activities that will lead the system to achieve the vision of success step by step strategically.

All prioritized actions and solutions are taken in the context of removing the barriers in purpose of reaching the vision—a more social sustainable reconstruction process.

*The tools level:* There are three broad categories of tools: strategic tools that can be used to make sure all the measures are in the correct direction; systems tools that are used to evaluate the effects within the system in temporary periods and capacity tools that create the capacity to facilitate sustainable vision, such as sustainability training and education etc (Robert and others 2004, 30).

The ABCD model is a strategic tool implemented for analysis and planning within complex systems. It develops backcasting according to sustainability principles in the FSSD via four steps.

Awareness: a holistic understanding of the system conditions. This research focuses on the social issues among involved stakeholders within a reconstructed neighbourhood within society within ecosphere.

Baseline: a complete assessment of current reality. Both the positive and negative sides. It is conducted by analyzing current practices with the lens of sustainability principles.
Compelling measures and visioning: create a vision of success in accordance with the four SPs and brainstorm solutions that will lead system to reach the vision.

Decision for action: strategic implementation of solutions derived from step C via prioritizing all solutions in light of the three key questions:

1. Does this measure proceed in the right direction with respect to all principles of sustainability?

2. Does this measure provide a stepping-stone (i.e. ‘flexible platform’) for future improvements?

3. Is this measure likely to produce a sufficient return on investment to further catalyze the process? (Robèrt et al. 2002; Ny et al. 2006)

This study is informed by the ABCD process: the authors designed a new reconstruction process—the vision—based on the consensus of what social sustainable means in such process in step A; A summary of social issues in current process was addressed in step B; All solutions for eliminating the gap between two processes and help residents within reconstructed neighbourhood to meet their needs were gathered in step C; The prioritizing questions lead authors to pick up the appropriate solutions and actions for implementation in step D, but the authors did not work out the final prioritization because all the suggestions were made according to the timeline of reconstruction process so that suggestion could be implemented when the relative process happens.

1.3 Research Purpose, scope and limitations

1.3.1 Purpose

The main intention of this study is to figure out a feasible and general sustainable neighbourhood reconstruction process for the builders who take charge of demolition and relocation in the reconstruction project to implement under the guidance of FSSD. It aims to be a process simple to
understand and general enough to be implemented in different urban neighbourhood reconstruction projects. There are many conflicts among different stakeholders due to their different standpoints, which bring about many social issues (Tang Lijun 2010). This study will also take the builders, municipality and residents into account to seek after collaboration among these three key stakeholders to reduce conflicts in the reconstruction process.

1.3.2 Scope

The neighbourhood reconstruction is a broad topic that covers many different fields, including building industry, design of transportation service for residents, layout of business and other social services for residents. There is still much room for improvement in the sustainable development of those fields in China. Nowadays, neighbourhood reconstruction brings about many social problems. For instance, people will be compelled to move out even if they do not reach consensus with municipality and builders about the reconstruction project. The authors choose neighbourhood reconstruction as research topic aimed to point out a potential way to deal with those problems. But because of the limitation of knowledge background, this study will mainly focus on the social issues that are brought about by the core part of the reconstruction process, demolition and relocation. In addition, this study will discuss human needs within these two parts. Through this research, it is believed that the municipality and builders could possibly work more efficiently during the reconstruction process due to a better collaborating relationship. It will help builders to initiate to think more about doing business in a sustainable way. Local residents will gain better life experience during reconstruction via building a bridge between business profits and social issues in the perspective of sustainability.

1.3.3 Limitations

There are many obstacles during this research process. The stakeholders have different standpoints. The municipality needs to think of reconstruction in a macro scope to distribute the resource such as labour and finance more efficiently in the long-term whereas builders need to make full use of reconstruction to create profit and withdraw their investment as soon as possible. The research needs to provide clear
evidence for potential future opportunities to urge them to give up part of short-term interests. As for residents, they will worry about the effect of reconstruction towards their old lifestyle. For example, it can be difficult to change behaviour for certain people to stop using their cars and return to using a bicycle. How to persuade them to change some unsustainable behaviour is a considerable problem (Talent Development Resources 2010).

Because reconstruction covers so many different fields and stakeholders, it is possible to neglect or miss some hidden points in this research. In addition, the authors need to appeal to authorities who may have their own biases.

1.4 Research question

Keeping in mind the aim to develop a sustainable neighbourhood reconstruction process, the research will mainly focus on the performance of builders, municipality and residents who are the major stakeholders during the whole reconstruction process. And to answer this following question:

What does an ideal sustainable neighbourhood reconstruction process look like— one that focuses on the social issues during the neighbourhood reconstruction in urban district?

1.5 Neighbourhood reconstruction project

In order to help us analyze the neighbourhood reconstruction process and address the problems, research was mainly based on the case study of Hepingli neighbourhood reconstruction project, which is located in the urban area of Dongcheng district in Beijing city. Hepingli neighbourhood was founded in the early 1950s; the housing and land ownership belongs to several different organizations in Beijing (see appendix C). The majority of houses were built fifty years ago, and the structure of the roofs was wooden. Because of the old structure and the aging of the buildings, the condition of the houses is getting worse today. The residents who live there
suffer an unsafe situation: the broken roofs of the houses, cracks in the walls and aging wires or pipelines. Because of the strong demand of reconstructing the house from the residents, the Municipality Offices made a proposal about the reconstruction of an inhabitable neighbourhood (Tang Lijun 2010). The proposal gives details about the area of Hepingli neighbourhood reconstruction project (see table 1).

Table 1.1 Area division of Hepingli project

<table>
<thead>
<tr>
<th>Project Item (area):</th>
<th>Number (M²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>126.843</td>
</tr>
<tr>
<td>Rebuilt</td>
<td>96.000</td>
</tr>
<tr>
<td>Rebuilt for Housing</td>
<td>64.000</td>
</tr>
<tr>
<td>Rebuilt for office and business</td>
<td>32.000</td>
</tr>
</tbody>
</table>

In the Hepingli neighbourhood, there is a kindergarten, a primary school, several hotels, many restaurants and a shop. Around this neighbourhood are four main streets, and there are two big supermarkets, the Hepingli hospital and the Ditan indoor stadium are nearby. Our collaborating organization, Beijing HongKun Construction Company is working on this project now. The manager of this project is our contact. The company has currently finished the neighbourhood planning and will soon start the demolition.

The authors try to address recommendations to tackle with the actions that happen during the reconstruction process, and make the process more sustainable. In the new process, hopefully there will be less confliction.
among residents, municipality and builders. The residents can have their needs fulfilled and initiate a more sustainable lifestyle.
2 Research Methods

2.1 Research overview

As the aim of the research is to create a sustainable neighbourhood reconstruction process, mainly focus on the social issues, this research worked out the new reconstruction process step by step in the perspective of sustainability. During the research, literature review, case study, interviews and appeal to authorities (inquiry of authorities) are major methods used to achieve our goal.

Literature review

A multi-resource literature review was conducted to help to work out the sustainable neighbourhood reconstruction process. It includes the books and journal articles on diverse topics such as Framework for Strategic Sustainable Development, urban planning, human needs.

Case study

The research is based on the case study of the Hepingli reconstruction project in Beijing, China. The collaborating organization Beijing Hongkun construction company is working on this project. The authors focus on the research question “How to organize the reconstruction in a sustainable way?” Although the research is based on Hepingli reconstruction project, the final goal is to work out a general sustainable neighbourhood reconstruction process which can be implemented in different projects.

Interviews

Since interviews are a really effective way to gather first-hand information, they are very helpful for data collection. There are two major kinds of interviews: telephone interviews and using standard questionnaires. The major targeted interviewees are the local residents, builders and municipalities. The interviews choose these stakeholders connected to the project so that the answers have a range of diverse points of view. This study consulted to different interviewees in different project stages. The major questions are about how to reconstruct the neighbourhood in a sustainable way, including the different stakeholders’ relations with the
project, the stakeholders’ attitudes to the project, the impact of the project on the environment nearby, and the respondents’ understanding of sustainability.

Appeals to Authorities

Since the thesis needs knowledge about architecture, urban planning and some other different fields, there were several problems coming out during the thesis process. We appealed to the authorities, looking for more professional answers and suggestions.

2.2 Expected results

Via collaborating with a reconstruction project in Beijing, this study created a set of feasible and general guidelines for a sustainable neighbourhood reconstruction process to guide the builders.

The Research found an appropriate network among local residents, builders and municipality to improve the cooperation among these three key stakeholders during the whole reconstruction process.

2.2.1 Possible benefits

This study aims to contribute to more harmonious and influential cooperation among municipality, builders and residents. It aims to help to reduce objection towards reconstruction among residents. It is hoped that, applying these guidelines, the work efficiency could improve due to better collaborating relationship (Chen Xing 2010).

It can help to promote the reputation of both builders and municipality via doing business in a sustainable way.

Focusing on social issues and adding sustainability consideration in reconstruction can create the conditions and opportunities for improving quality of life.
2.2.2 Some difficulties during the research

The neighbourhood reconstruction in the case is a project organized by a municipality, sometimes the answers of questionnaire came back slowly, which affected the thesis process. In addition, it was not easy to access all the information for the research (some of the information may be a trade secret or a municipality secret). The district is located in Beijing and there was no field research. The authors mainly relied on the internet connection with the staff of the project, which limited the quality of the case study.

2.3 Phases and methods of research

As figure 2.1 shows, the research for this project was split into four phases.

1 the vision of sustainable neighbourhood reconstruction ideal

2 the current reality of neighbourhood reconstruction

3 the gap between the ideal process and current reality

4 the suggested measures to achieve the ideal process

Figure 2.1 Four phases of research
2.3.1 The methods used in phase 1

In this phase, we created a sustainable neighbourhood reconstruction ideal process. What does a sustainable neighbourhood reconstruction process look like? What is included? Where to implement it? That is the vision of sustainable neighbourhood reconstruction. It is based on sustainability principles. Literature review and interviews are the major methods which are used in this phase.

A literature review was conducted to gain understanding of sustainable neighbourhood reconstruction and envision the ideal process. It included: books about sustainability, urban planning, sustainable urban development, and human needs, journal articles about different topics, such as the Framework for Strategic Sustainable Development, policy of reconstruction, sustainable neighbourhood planning, and former theses connected to our topic.

The interviews in this phase focused on the vision of sustainable neighbourhood reconstruction. Aiming to create the ideal sustainable reconstruction process, we considered the opinions from the municipality, builders and local residents; the purpose of the interview is to know their visions of the reconstruction process. So these three targeted groups were our interviewees during first phase.

2.3.2 The methods used in phase 2

In this phase, we analyzed the current reality of neighbourhood reconstruction. We needed to know the current process of the neighbourhood reconstruction, and then analyzed the current process through sustainability principles. Which comply with the sustainability principles and which violate them?

Case study and interviews are the major methods which have been used during this phase.

Our case study was the Hepingli reconstruction project which is located in Beijing, China. Our collaborating organization Beijing Hongkun Construction Company is working on this project; the company has currently finished the planning and will soon start the demolition. Hepingli is an old neighbourhood in urban district which was proposed to be rebuilt.
Although the research is based on the Heplingli project, the final purpose is to work out a general sustainable neighbourhood reconstruction process which can be implemented in different neighbourhood reconstruction projects.

The interviews in this phase focussed on the current reality of the reconstruction process. The major interviewees are the builders (detailed list in appendix D). Since our collaborating company is in China, the interviews were done by telephone and survey.

2.3.3 The methods used in phase 3

In this phase, our research focused on comparing the current neighbourhood reconstruction process with the ideal process, and then to find out the gap.

Literature review and interviews helped us to work out the ideal sustainable neighbourhood reconstruction process. And then the case study and interviews in the second phase helped us analyze the current reality. The next step was to draw a comparison to figure out the gap.

2.3.4 The methods used in phase 4

After we found out the gap between the sustainable neighbourhood reconstruction process and the current reconstruction process, the next step was to close the gap. We gave the suggested measures to achieve the ideal process in this phase.

At first, we brainstormed the measures, and then appealed to the authorities (detailed list in appendix E). We considered the opinions from the authorities, and then revised the measures according to their feedback.
3 Results

Sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” – UN Brundtland Commission (WCED 1987)

Through the application of theory, literature review, survey and interviews, as well as the feedback from the collaborating companies and the experts in relevant fields, relevant data was collected to answer the research question:

What does an ideal sustainable neighbourhood reconstruction process look like—one that focuses on the social issues during the neighbourhood reconstruction in urban district?

In order to answer this question, three areas have been explored here in the results:

Part1 The sustainable neighbourhood reconstruction process

Part2 Current neighbourhood reconstruction process

Part3 Investigation of a case study

3.1 Sustainable neighbourhood reconstruction process

3.1.1 Definition of the sustainable neighbourhood reconstruction process

This study focuses on a sustainable neighbourhood reconstruction process that fulfils the basic human needs of the local residents, aiming to protect all basic rights of the local residents, leading the way to a new process of neighbourhood reconstruction. It is mainly based on the Framework of Strategic Sustainable Development (FSSD) and the human scale development theory (Max-Neef 1991). The FSSD is a scientifically robust model for planning and decision-making towards sustainability in complex systems (Holmberg and Robèrt 2000). And the human scale development
theory is an approach which focuses on satisfying fundamental human needs: subsistence, protection, affection, participation, understanding, identity, freedom, idleness, and creativity (Max-Neef 1991).

3.1.2 The sustainable neighbourhood reconstruction process

The sustainable neighbourhood reconstruction process in this study includes four parts:

1. Preparation for the neighbourhood reconstruction: in this part, residents and municipality choose the construction companies to take charge of the project. Then the construction companies do the preliminary investigation and propose the plan of neighbourhood reconstruction.

2. Demolition of the old neighbourhood: after the plan is approved by the residents and municipality, the companies start to organize the relocation of the residents and the demolition of the old neighbourhood.

3. Construction of the new neighbourhood: in this part, the construction companies build the new neighbourhood. Residents and municipality organize the inspection of new neighbourhood.

4. Follow up service: construction companies arrange for residents to move back. Municipality promote the sustainable lifestyle in the new neighbourhood.

This is the vision of sustainable neighbourhood reconstruction. It is based on sustainability principles and aims to protect residents’ basic human needs. Literature review and interviews were the major methods to work out the process.
Part 1, preparation for the neighbourhood reconstruction, as a sustainable neighbourhood reconstruction process, it is especially important to have good guidance in the early stage. All the preparation will be done in this part until the neighbourhood is demolished. There are nine steps in the part.

1. Proposal of neighbourhood reconstruction. There are two kinds of neighbourhood reconstruction proposal. One is proposed by the residents, another is proposed by the municipality and the builders. In the second case, when the municipality and the builders propose the neighbourhood reconstruction, they should not only consider the benefit of the urban plan and the economic profit, but also pay more attention to the residents, help them to improve the quality of their life and by promoting sustainable development.

2. Preliminary investigation. In this step, municipality and builders do the preliminary investigation; they need to consider all residents’ opinions to decide if the neighbourhood should be reconstructed. The decision cannot be made without the agreement of the residents. The first and foremost thing to be considered should be the wishes...
and demands of the residents. “The best development process will be that which allows the greatest improvement in people’s quality of life” (Max-Neef 1991). So the aim of the preliminary investigation is to consider the wishes and demands of the residents and to see if the reconstruction can improve the quality of the residents’ lives.

3. Builders’ proposal for reconstruction. Different construction companies compete to bid for the project. It should not be monopolized by one company (Liu wenyan 2010). The bidding must be open, equal and transparent. Each company proposes their plan for the whole reconstruction process, including the compensation plan, demolishing plan, the resident relocation plan, and the rebuild plan.

4. Residents’ and municipality’s choice of builders. In the step, when residents and municipality decide the builders who will win the competition to take charge of the neighbourhood reconstruction, not only consider the economic factors but also sustainable development. They should give priority to the companies which are concerned about sustainable development and are certificated by the national building commission (Tang lijun 2010). And the corporate social responsibility of the builders is also an important factor to consider.

5. Feedback for the builders’ proposal. The municipality and the residents give comments to the builders’ proposal to help the builder to improve their proposal.

6. Builders’ revision and confirmation of the proposal. The builders revise the proposal according to the comments from the municipality and the residents and then confirm the proposal.

7. Municipality’s approval of the proposal. When the municipality approve the proposal from builders, not only consider economical factors but also the residents’ basic human needs, for that a set of standards to measure the proposal are developed. (Wu xiao 2010)

8. Reconstruction bulletin. In this step, the builders post a bulletin in the community to show detailed and new information about the
reconstruction so that residents can make their individual plans in time.

9. Supervision from the residents. The residents organize a supervision committee to represent the whole community. The members must be the residents who live in the neighbourhood. The committee supervises the whole process of the neighbourhood reconstruction (Sun 2005).

**Part 2, demolition of the old neighbourhood**, after all the preparation is done, residents start to move out from the old neighbourhood and the builders demolish the old neighbourhood. There are three steps in this part.

1. Moving out. In this step, the construction companies take charge of the relocation service for the residents. (Sun 2005) The plan of temporary moving out must be approved by the resident supervision committee, including the location, rent and time arrangements.

2. Demolition of the old neighbourhood. Builders are demolishing the old neighbourhood, at the same time, they must protect the buildings which are not needed to be demolished (Xiao pan 2010).

3. Recycling and waste disposal. In this step, builders recycle the waste which can be reused and appropriately disposal the waste which cannot be reused (Mao di 2010).

**Part 3, construction of the new neighbourhood**, after the demolition of the old neighbourhood, the builders start to put up a new neighbourhood. There are two steps in this part.

1. Reconstruction. In the process of construction, builders reconstruct a new neighbourhood based on the residents’ basic human needs.

2. Inspection. In this step, besides the inspection and acceptance from the municipality, the resident supervision committee can organize the inspection individually.
**Part 4, follow up service.** In this part, after the residents move back, the builders will still provide a set of services. Municipality promotes the sustainable lifestyle in the new neighbourhood. There are four steps in this part.

1. Moving back. The construction companies take charge of the moving back service for the residents. The plan of moving back must be approved by the resident supervision committee in advance.

2. Service after residents’ return. After the residents move back to the new neighbourhood, the construction companies should take charge of the quality issues which may come out. When the construction work ends, the service starts (Mao di 2007).

3. Promotion of a sustainable lifestyle. Municipality provide financial support and experts to help to promote sustainable lifestyle in the new neighbourhood. Municipality take charge of the sustainability education for the community and encourage the sustainable lifestyle.

4. Feedback to the construction companies. In this step, the residents give feedback to the construction companies to help them improve their capacity to promote a sustainable neighbourhood reconstruction (Tang lijun 2010)

### 3.2 Current neighbourhood reconstruction process

The current neighbourhood reconstruction process is based on a case study. The major procedures are common, being currently applied by every neighbourhood reconstruction project (Lee 2010). The result of interviews and surveys show the current reality of the different stakeholders’ understanding about neighbourhood reconstruction and sustainability.

This part gives an introduction of the current neighbourhood reconstruction process. The process can be divided into four parts as well. Part one, preparation for the neighbourhood reconstruction. Part two, demolition of the old neighbourhood. Part three, construction of the new neighbourhood. Part four, follow up service. There are several steps in each part.
Part 1, preparation for the neighbourhood reconstruction, nowadays, there is already a considerable work happening in this stage. But since it does not happen with the guidance of the sustainability principles, economic profit is always the first goal (Zheng changjie 2010). There are five steps in this part.

1. Reconstruction proposal. There are currently three different kinds of major reasons for neighbourhood reconstruction: city planning, commercial development and the demand for housing improvements (Gao yuan 2007).

2. Tender offer. In this step, the municipality organize a tender offer to choose the construction companies to take charge of the project, the economic factors are the most important standard (Gao yuan 2007). From the tender offer, the municipality will supervise the whole neighbourhood reconstruction process.

3. Reconstruction plans. In this step, the construction companies make a reconstruction plan, including the compensation plan, demolition plan, the resident relocation plan, and the rebuild plan.

4. Municipality’s approval of the plans. In this step, the builders send the reconstruction plan to different departments of the municipality, including the City Planning Commission, the City Construction Commission and the City Council Premises (Huang jing 2005).

5. Reconstruction bulletin. In this step, builders post a bulletin of the neighbourhood reconstruction. It includes details about the reconstruction project.

Part 2, demolition of the old neighbourhood, There are two steps in this part.

1. Residents’ moving out. In this step, residents move out and hand their apartments over to the construction companies, and the companies make records of each apartment (Xiao fei 2010).

2. Demolition of the old neighbourhood. After all the residents move out from the old neighbourhood, the builders start the demolition.
**Part 3, construction of the new neighbourhood.** There are two steps in this part.

1. Construction of a new neighbourhood according to the approved plan.

2. Inspection and acceptance. After the construction companies complete the reconstruction, the municipality does the inspection to check the quality of the new housing (Tang lijun 2010).

**Part 4, follow up service.** This is the last step, residents move back to the reconstructed neighbourhood. But the builders are not going to provide the follow up service, their work end when the construction is done.

### 3.3 The result of case study

This research is based on the case study of the Hepingli neighbourhood reconstruction project. As mentioned above, there are three key stakeholders in any neighbourhood reconstruction process. The survey was mainly made up of three pieces of questionnaires (detailed information in appendix F) for municipality, builders, and residents respectively, which aimed to investigate the current situation of neighbourhood reconstruction, and to better understand their perspectives about neighbourhood reconstruction as well as their understanding of sustainability.

**Opinions from the municipality.** The department of the municipality who took part in this survey come from State Forestry Administration of China, which is one of the major property owners of the collaborating project.

From the municipality’s point of view, their staff has a comprehensive understanding of sustainability. They believe the security of neighbourhood and the quality of new buildings are the most important social issues during the reconstruction. The price of the reconstructed house, the traffic of neighbourhood and the education for children are the other social issues that municipality also considered important (Jiang 2010).

According to the results of the survey, they said the role of the municipality is to provide policy guidance and public service. For example, formulate a
fair and sustainable demolition and relocation policy, including compensation standards. The survey showed that the municipality takes sustainability issues into account when examining and approving the proposal of neighbourhood reconstruction (Liu yuntao 2010).

The municipality is meant to protect the benefits of residents by promulgating and implementing various laws and regulations, such as, construction laws, a tendering system, a supervision system, traffic rules, and environmental impact assessment (Zheng xiao 2010).

The municipality monitors the builders by using a tendering system to choose the best qualified builders. Contractors and construction companies are monitored through a system to ensure the reconstruction progress and construction quality is held to the agreed quality standard (Chen xing 2010).

When asked how to promote sustainability to the whole society, the municipality responded in the survey that the barrier for people is that they do not recognize the relationship between partial benefits and overall benefits, short-term development and long-term development, economic development and ecological environment protection (Wei qiao 2010).

The three key stakeholders had quite different expectations in the neighbourhood reconstruction project. Residents expect new apartments with better quality, larger areas, complete facilities and more comfortable to live in; builders try to obtain maximum profits with minimum investment (Xin sun 2010). The municipality focuses on controlling the housing price and improving the residents’ lives (Chen xinyong 2010).

*Opinion from the builders*, The builder interviewed was Beijing Hong Kun Construction Company. From the builder’s opinion, the staff has a good understanding of sustainability. When carrying out a construction project, the builders will consider sustainability factors at each stage (Zhang xiang 2010), because it is necessary for future development. During the neighbourhood reconstruction process, the circumstances such as air condition, plant coverage; neighbourhood service like shopping place, stadium, hospital; and the traffic of the neighbourhood are the top three social issues that the builder considers (Zhang xiang 2010).
According to the survey, they said a sustainable neighbourhood to a builder means: the materials are harmless towards environment; the natural environment of the neighbourhood is beautiful; the facilities in the neighbourhood are advanced and complete; economizing resources systems are used to save electricity, land and water; the community manages waste such as recycling efficiently. Residents of the community respect nature and are willing to promote sustainable lifestyle (Chen lunhua 2010). In order to reach this goal, the builder thinks that a sustainable reconstruction process should consider all the residents’ opinions.

The builder considers sustainability issues in the neighbourhood reconstruction process, but the company does not have a professional sustainability team working for them. From the result of the survey, they believe sustainable development needs every staff from different departments to participate, but they still lack the capacity to implement sustainable neighbourhood reconstruction (Chen lunhua 2010).

From the builder’s opinion the main impacts on the surrounding environment are: noise, dust pollution, traffic problems (Xin sun 2010). These influence people who live nearby.

For the labour protection, the company provides safety education and accident insurance for workers before they embark in the reconstruction; They have some practices once the reconstruction has begun, such as providing safety facilities and equipments for workers, arranging special safety experts to supervise workers and developing a safety plan for emergency (Xin Sun 2010).

In the builder’s opinion promoting sustainable development can bring benefits to the company, it has long-term strategic advantage and it also follows current and future national industrial policies. However, it may require large initial investment, and sometimes it is difficult to get obvious benefits in the short-term ( Xin sun & Lee jian  2010).

Opinion from residents. In the research, one hundred and twenty residents replied the questionnaires, half of which are the residents who live in the neighbourhood of this project, whereas the others are from some adjacent neighbourhood.
According to the results of the questionnaires, the average housing uses twenty-four square meters per person. With the exception of two women and one man, all the other interviewees live with their families. Most of the residents work for the business companies and the local municipality. And the age of interviewees who we chose are mainly from 20 to 50, with a predominance of people between 26 and 30 years old (see figure 3.3).

**Figure 3.2 Age distribution of interviewees**

**Figure 3.3 Occupation of interviewees**
Among these interviewees, 33% of them said that they know only concepts of sustainability; 30% of the interviewees said that they understand sustainability comprehensively; 15% of the interviewees said that they do not know much about sustainability as well as 15% who replied do not know sustainability at all; just 7% of the interviewees are experts (Yi li, Wang bin etc, 2010).

During the neighbourhood reconstruction, 83.3% of the interviewees said that their main concerns were the security of neighbourhood and the quality of the reconstructed house, such as the structure, material and decoration etc; followed by is the price of the house which 80% of the interview chose; 76.7% of the residents listed as a priority a good environment of the neighbourhood; 70% and 56.7% of the interviewees respectively listed as a top priority the neighbourhood services and the education for children (Wang bin &Chen da, 2010).

Besides these options above, from the results of the survey, some of the interviewees said that they want the municipality or the builder to offer convenient temporary apartments for their families; some of the interviewees also wondered whether the builders could afford the cost of the move. Overall, the residents need help to deal with the inconvenience caused by the neighbourhood reconstruction. Except four interviewees, the other interviewees all agree to reconstruct the neighbourhood, because it could improve their living conditions. The minority of the interviewees who oppose the neighbourhood reconstruction believe that construction may pollute the current environment and has many negative effects on residents. (Wang bin, Chen da etc, 2010)

When they were asked whether sustainability relates to the residents’ own benefit, 53.3% of the interviewees thought sustainability partly relates to their own benefit; and 30% of the interviewees thought it more or less related. At the same time, 10.8% of the residents see sustainability as strongly related. Still, there are 5.9% of the interviewees who find it related at all.

60% of the interviewees think it is important to consider sustainability during the neighbourhood reconstruction; and 16.7% of the interviewees feel it is somewhat important or is not so important. 13.3% of the interviewees chose the option of absolutely important as well as 10% of the interviewees think it is not important at all.
4 Discussion

“What we call place is actually an entity – a unique constellation of patterns nested within patterns, interwoven with other patterns in families and guilds and social relationships, all endlessly changing, cycling, evolving and building to greater levels of complexity over time.” (Murphy 1998)

This study aims to create a sustainable neighbourhood reconstruction process, and promote a positive change towards sustainability at a community level. It is also to provide a best place for residents to live in. From the authors’ perspective, there are many problems in the current neighbourhood reconstructions process. Some of the human needs are not fulfilled, and there are a lot of social issues resulting from the whole process. Aiming to solve these problems, the sustainable neighbourhood reconstruction process is based on the Framework of Strategic Sustainable Development (FSSD) (Holmberg and Robert 2000) and the Human Scale Development theory (Max-Neef 1991). Backcasting from the sustainable neighbourhood reconstruction process, comparing to the current process, the research identified the gap between the current process and the sustainable process. Then a set of suggested measures in order to close the gap were acknowledged

4.1 The gap analysis between the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process

This table shows a contrast between the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process. There are both four parts in each process and each part includes several sub-steps.

Table 4.1: Contrast of the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process
<table>
<thead>
<tr>
<th><strong>Sustainable neighbourhood reconstruction process</strong></th>
<th><strong>Current neighbourhood reconstruction process</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part 1: Preparation for the neighbourhood reconstruction</strong></td>
<td><strong>Part 1: Preparation for the neighbourhood reconstruction</strong></td>
</tr>
<tr>
<td><strong>Sub-steps</strong></td>
<td><strong>Sub-steps</strong></td>
</tr>
<tr>
<td>1, proposal of neighbourhood reconstruction</td>
<td>1, proposal of neighbourhood reconstruction</td>
</tr>
<tr>
<td>2, preliminary investigation</td>
<td>2, municipality organize a tender.</td>
</tr>
<tr>
<td>3, builders propose the plans of the reconstruction according to the resident’s needs</td>
<td>3, builders propose the plans of the reconstruction for the economic profit</td>
</tr>
<tr>
<td>4, residents and municipality choose builders</td>
<td>4, municipality approves the proposal</td>
</tr>
<tr>
<td>5, feedback for the builders’ proposal</td>
<td>5, builders post the reconstruction bulletin</td>
</tr>
<tr>
<td>6, builders revise and confirm the proposal</td>
<td></td>
</tr>
<tr>
<td>7, municipality approves the proposal</td>
<td></td>
</tr>
<tr>
<td>8, builders post the reconstruction bulletin</td>
<td></td>
</tr>
<tr>
<td>9, the supervision from the residents</td>
<td></td>
</tr>
</tbody>
</table>

**Part 2: Demolition of the old neighbourhood**
<table>
<thead>
<tr>
<th>Sub-steps</th>
<th>Sub-steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, residents moving out</td>
<td>1, residents move out and hand apartments over</td>
</tr>
<tr>
<td>2, builders demolish the old neighbourhood</td>
<td>2, builders demolish old neighbourhood</td>
</tr>
<tr>
<td>3, builders recycle and dispose the waste</td>
<td></td>
</tr>
</tbody>
</table>

Part 3: Construction of the new neighbourhood

<table>
<thead>
<tr>
<th>Sub-steps</th>
<th>Sub-steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, builders rebuild neighbourhood</td>
<td>1, the construction companies build a new neighbourhood</td>
</tr>
<tr>
<td>2, inspection</td>
<td>2, the inspection and acceptance of by the municipality</td>
</tr>
</tbody>
</table>

Part 4: Follow up service

<table>
<thead>
<tr>
<th>Sub-steps</th>
<th>No sub-steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, residents move back</td>
<td></td>
</tr>
<tr>
<td>2, builders service after residents moving back</td>
<td></td>
</tr>
<tr>
<td>3, municipality promote the sustainable lifestyle</td>
<td></td>
</tr>
<tr>
<td>4, feedback to the construction companies</td>
<td></td>
</tr>
</tbody>
</table>
There is a gap when the current neighbourhood reconstruction process is compared to the sustainable neighbourhood reconstruction process. The gap analysis is also divided into four parts according to the process.

4.1.1 Gap in part one (current process part one compared to sustainable process part one)

Residents have not enough chance to participate in projects and have little power and influence in the final decision making about whether the neighbourhood should be reconstructed.

The municipality does not take enough consideration of residents’ opinions about reconstruction. Sometimes, even if there are a lot of residents opposed to the neighbourhood reconstruction, the project is still implemented as planned and the opposition of some residents is neglected (Tang Lijun 2010).

Economic loss is the main consideration when builders make compensation plans. They also often neglect other aspects such as local culture loss, effects on residents’ daily life, work and study (Tang Lijun 2010). According to the surveys, most residents, especially elders and students, have negative feelings when they are going to be away from old neighbours, classmates and intimate friends. The former community culture will disintegrate as well. There is currently no clear policy or method for measuring such emotional losses. This is one of the main reasons for the appearance of objections among residents and confliction between builders and residents.

The municipality also has no clear regulation on gardening plans to ensure there will be enough green space in the new neighbourhood.

The current compensation policy has a tight relationship with the real-estate estimation that is implemented by a group of experts. The problem is that some residents may disagree with this estimation. They may have made an expansion, housing renovation or refurbishment in order to increase the houses’ value to gain extra profits. It brings about a considerable quantity of waste both in building materials and labour (Lee wen 2010).

According to the replies of the questionnaire from builders and the municipality, economic profits are the key factor in the current bidding
process. Sustainability does not hold an appropriate weight in the plans’ evaluation. The current bidding process for selecting builders is price-oriented which encourages the economy to become the main or even the only driver of the reconstruction project (Lijun Tang 2010). Answers to the questionnaire also show that the current bidding process suffers from a lack of transparency as well. Residents usually have no idea about how the municipality chooses builders, and even have no chance to choose builders for constructing their future apartments.

Both the municipality and builders do not pay enough attention to the feedback about either the compensation method or the reconstruction plan from residents.

Another problem is the low work efficiency in the municipality. It usually takes years to wait for the auditing and approval of projects. For example, the collaborative research project of this thesis (Hepinli) was proposed for the first time in August 2005, and about four years later, it is still in the auditing stage (Lijun Tang 2010).

The current supervision of reconstruction projects by residents is spontaneous, sporadic, or even nonexistent. There is no official supervising mechanism among residents and many conflicts between residents and builders cannot be solved efficiently.

In the current process, there is also no room for residents to describe their ideas about the design of the new neighbourhood. The municipality cannot guarantee residents’ right to supervise the behaviour of builders during reconstruction.

4.1.2 Gap in part two (current process part two compared to sustainable process part two)

Students may need to transfer to other schools or live in school dormitories when they change their living location. In China, compulsory education only covers elementary school and junior high school. Students need to seek qualifications via graduation exams for senior high school and other higher levels of education. “In 2007, only 22% of the populations of tertiary age are qualified to be in tertiary education” (UNESCO 2007). There is a
highly competitive system among schools. Most reputed schools have strict admission standards and conditions for new students in order to maintain their quality of education. This transfer is not hard if the student performed well in exams during previous years. Otherwise, extra fees (it usually depends on both the reputation of school and local economic level) will be charged to transfer into a new school or the student might even have no chance of entering a more convenient school. If students choose to live in the dormitory of the former school, it will still cost more than living at home. The problem is that there is no legislation or regulation for ensuring that the municipality and builders take responsibility in this issue. This is also one of the reasons why people reject reconstruction and why it can lead to some conflict.

Based on the questionnaires, one of the most popular requests of residents is for help with temporary accommodation during the reconstruction process. However, the compulsive responsibilities of builders do not cover this aspect of the process, and the municipality doesn’t have this legal responsibility either. People encounter many difficulties in finding such temporary accommodations. As a result, some of them are not willing to accept reconstruction. Also, no moving service for residents is offered.

There is usually serious noise pollution around the reconstruction community which affects people’s daily life in the area. Dirt is also spread throughout the urban area and will cover the streets nearby once the project starts.

Both residents and workers lack safety awareness. People would rather cross dangerous reconstruction areas than detouring. Workers often do not wear helmets or other safety equipment, which increase the risk of construction accidents. In Beijing, statistics showed that 47 safety accidents happened during the first three quarters of 2005 which caused five deaths (Qi Liang 2005).

On the other side, many new buildings in China perform poorly in quality, which was demonstrated by the tragedy of the earthquake in Sichuan province of China in 2008. Only 11.52% of all buildings were basically intact in Mianzhu City of Sichuan (Concrete 2008). Baoxing Qiu, who is the Vice Minister of housing construction in China, during the sixth International Green Building and Energy Conservation Conference in Beijing said that, “China constructs the largest quantity of new buildings all
around the world with two billion square meters for new construction per year, which is equivalent to 40% of the world consumption of cement and steel, however, most of those new buildings only can last 25-30 years”. (Qiu 2009)

4.1.3  Gap in part three (current process part three compared to sustainable process part three)

The current process does not make full use of debris and waste, although the recycling can reduce the cost of the project (Sun Xin 2010). The municipality does not provide a clear policy to support sustainable neighbourhood reconstruction. There are no regulation support, technology support and the financial support from the municipality to the builders. Also, the residents lack professional knowledge to inspect the quality of new buildings.

4.1.4  Gap in part four (current process part four compared to sustainable process part four)

Builders do not provide a follow up service once the reconstruction is finished. So if there are some quality problems after the reconstruction, the residents need to take charge themselves (Cheng Xin 2010). There is no organization to promote a sustainable life style in the community. The municipality lack of the education of sustainability as well. There is no appropriate way for passing on the feedback of residents to builders after the reconstruction projects. Even if the residents have some comments to the builders to help them to improve the process, there is not a good system in place to deliver these comments.

4.1.5  Human needs analysis in different parts of neighbourhood reconstruction process

In the current neighbourhood reconstruction process, some of the residents’ basic human needs can’t be fulfilled.

Table 4.2: Human needs analysis in different parts of current neighborhood reconstruction process
<table>
<thead>
<tr>
<th>The part of neighbourhood reconstruction process</th>
<th>Preparation for the neighbourhood reconstruction</th>
<th>Demolition of the old neighbourhood</th>
<th>Construction of the new neighbourhood:</th>
<th>Follow up service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not fulfilled human needs</td>
<td>Participation Protection Subsistence Creation Understanding Identity Affection Idleness</td>
<td>Participation Protection Subsistence Idleness</td>
<td>Participation Protection Subsistence Understanding</td>
<td>Protection Creation Understanding Identity</td>
</tr>
</tbody>
</table>

4.2 Suggested measures for sustainable neighbourhood reconstruction

After the analysis of the gap between the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process, in this session, the authors brainstormed the suggested measures to achieve the ideal process. The authors also considered the opinions from the authorities, and then revised the suggested measures according to their feedback.
4.2.1 Suggestion for part one of the neighbourhood reconstruction

Municipality and builders should hold some public input hearings with residents to exchange ideas, which can promote collaboration among them. They should also organize seminars, exhibitions and prepare manuals and allow residents to introduce more specific details like design, layout and implementation of a project. These are good ways to facilitate public participation.

Asking for supervision from public media could be a good approach for residents. These days, public media has huge influence and it is an efficient way to supervise builders. When conflicts happen, it is an appropriate way for the less powerful residents to defend their rights. It could impose public pressure both on municipalities and builders.

There are already some regulations that forbid local residents from making any private modifications or renovations of their apartments or flats with the purpose of increasing the estimated value of their real-estate (Lijun Tang 2010). But they are implemented too late in the current reconstruction process. The municipality should communicate an official announcement right at the beginning to prevent such speculation. It should be clear that any of the following actions is illegal and forbidden after the neighbourhood is agreed upon and it has been decided to reconstruct:

(1) Building, expanding or reconstructing the houses privately;

(2) Changing the current use of housing and land;

(3) Leasing rooms to new tenant (Chongqin Baijun Law Firm 2010).

In order to get more comprehensive information and feedback from residents, a hearing among the local stakeholders should be organized by the municipality not only in the preliminary investigation, but also in the following steps. It can promote and encourage the participation of residents as well as improve reconstruction plans.

Municipality can assist in making sustainability education popular for residents and help the residents to realise the relationship between their daily lives and sustainability.
A set of clear criteria should be created to address and audit projects in the perspective of sustainability. Municipalities can hire independent sustainability consultant to do this.

Residents could organise a supervision committee, which can take charge of negotiation, supervision, ideas and information collection. This committee can help residents to communicate with builders and the municipality and promote collaboration.

Municipality could also be informed by the Golden Rule idea while working with the community, and this could help to reduce conflicts. The Golden Rule exists in one form or another in different religious and cultural traditions around the world. It simply asks the question, “Is this how I would like to be treated myself?” and uses this as a platform for understanding and engagement with others.

4.2.2 Suggestion for part two of the neighbourhood reconstruction

 Builders could post a bulletin in the community to gather information about how many residents will move out each day and their destinations and then design a route and organize the move to make full use of the space in vehicles to transport residents’ belongings.

 Builders could also offer some storehouses within the neighbourhood for residents to store items such as big furniture that they will not need to use before they move back. Then there is no need to transport those items out and in.

 Municipality and builders could help to facilitate the transfer of students to other schools.

 Municipality could establish stricter regulations to ensure the houses’ lifespan is longer than 50 years (Zheng zhen 2006). Builder could use better building material, more advanced technology, improve the quality of the houses, and extend the house’s life. Tax preferences can be used here to also encourage and promote recycling and sustainable building materials and technologies.

 Builders could also make appropriate working schedules to eliminate the negative effects on the residents who live near the reconstructing region and
classify all the debris and waste for recycling. For the traffic, builders could broadcast the current road situation near the reconstructing region and provide substituted routes for drivers via radio to reduce the pressure of traffic congestion.

Builders should organize training sessions for workers about how to classify and reuse the debris and waste before starting the reconstruction projects.

4.2.3 Suggestion for part three of the neighbourhood reconstruction

The municipality could invite or allow residents to invite independent professional architects to help residents inspect new buildings. If the buildings don’t meet the criteria of the plan in advance, the builders need to improve it and meet all the criteria.

The municipality could also set up a credit system to make perpetual records about the quality of reconstruction projects, and issue it to public media. (He lili 2010) It may be a good way to supervise the builders.

4.2.4 Suggestion for part four of the neighbourhood reconstruction

Builders still take charge of the quality of the new houses after the residents’ moving back.

The municipality could promote a sustainable life style in the community, provide awards for the families who perform well in promoting sustainability and disseminate the latest news, events and technologies about sustainability (He lili 2010).

The representatives of the builder in the community should also take charge of collecting comments about design of new buildings and other feedback from residents. These comments can help the builders to improve their capacity to reconstruct the neighbourhood and help the residents meet their needs through the promotion of a sustainable neighbourhood reconstruction process.
4.3 The barriers of the neighbourhood reconstruction moving towards sustainability

When a neighbourhood reconstruction process aims at moving towards sustainability, it may encounter many barriers and challenges. These can be social barriers, economic barriers, and also the environmental barriers. In the research, the barriers and the challenges are sorted into three categories in accordance with the three key stakeholders involved in the neighbourhood reconstruction process, as shown in the table below.

*Table 4.3: Barriers and challenges towards sustainability*

<table>
<thead>
<tr>
<th>Involved stakeholders</th>
<th>The barriers and the challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipality</td>
<td></td>
</tr>
</tbody>
</table>
| 1. Lack of awareness of sustainability  
   Not each level of the municipality has a good awareness of sustainability. |
| 2. Lack of financial budget  
   There is not enough financial support to the sustainable neighbourhood reconstruction project. |
| 3. Lack of sustainability experts  
   There are currently just a few sustainability experts in the municipalities in China, who cannot meet the demand of the society. The experts of sustainable neighbourhood reconstruction are few. |
| 4. Lack of specific laws  
   There are still no specific laws for sustainable reconstruction projects in China (zhang 2008). |
| 5. Lack of consideration of the residents’ human needs  
   The municipality sometimes neglect the basic human needs of the residents |
| 6. Lack of the cooperation with the residents. The municipality doesn’t cooperate well with the residents |
| Builders              |                                |
| 1. Lack of awareness of sustainability  
   For most builders, primary motivation is still the economic profit. Lack of the consideration of sustainable development. |
| 2. Lack of policy support |
| Residents | 1 Lack of awareness of sustainability.  
Most of the residents know little about sustainability. And the publicity from the municipalities and the media is not enough now |
|           | 2 Lack of participation  
Most residents lack participation in their neighbourhood reconstruction projects. On the one hand, some residents are not actively willing to supervise the whole process of the project and aren’t concerned if it is sustainable. On the other hand, the municipality and the builders do not provide enough chances for the residents to participate. |

There is not enough policy support from municipality for the sustainable neighbourhood reconstruction (Wang 2008).

3 Lack of experts  
As well as the municipality, there are not enough experts of sustainability in the construction companies. Most of the companies do not have a sustainability experts team. It is also hard to obtain the support from outside. No matter from the municipality or other organizations.

4 Lack of advanced technology  
Most of the construction companies lack advanced technology to support the sustainable reconstruction process, and it is too expensive to buy the advanced technology.

5 Cost of materials  
Some materials that conform to the requirements of sustainability are too expensive, the cost of the projects increases if these expensive materials are used.

6 Lack of consideration of the residents’ human needs  
The builders sometimes neglect the basic human needs of the residents.

7 Lack of the cooperation with the residents. The builders don’t cooperate well with the residents.
4.4 Discussion of some problems during the neighbourhood reconstruction process

4.4.1 Problems of current awareness of sustainability

Based on the results of the interviews and survey, there is still a lack of awareness of sustainability (see figure 4.1)

![Figure 4.1: the awareness of sustainability in different occupations](image)

The figure shows, at least 30% of the interviewees lack the knowledge about sustainability, and 67% of the interviewees do not know much about sustainability. We also feel that to promote sustainability is an urgent work. It is positive that 90% of the interviewees feel sustainability is important.

The municipality should take more responsibility to diffuse sustainability knowledge into the whole community. Some of the interviewees who responded that they don’t know about sustainability are the residents with lower income (Krugman 2009). One reason is the condition of life of the residents with lower income. It is already difficult to support their families daily, so there is no extra resources to dedicate to caring about the sustainability of the whole society. Another reason is the level of understanding about sustainability. Some of the residents with lower income also do not have a high education level (Wang Xiao 2008). They lack awareness of urgent need of sustainability. It is argued that along with promoting sustainability for the whole community, the municipality will
need to help the low income families to improve their daily life conditions first.

4.4.2 Some other problems during the neighbourhood reconstruction process

Besides the problems of current awareness of sustainability, the research also found some other serious problems to be considered.

First, whether the approval process is democratic enough or not. If the proposal needs every resident’s agreement in the neighbourhood, the reconstruction project may not be taken because of the persons who disagree. It would affect most of the residents to improve their living condition. The norm now is the neighbourhood reconstruction process could be taken if 90% of the residents agree (Urban Housing Demolition and Relocation Management Regulations 1991).

Second, whether the compensation plans are equal. Nowadays, since there are different standards of the compensation plans, it is hard to make sure the value of the residents’ apartment is neutral and impartial enough from the assessment of the company.

Third, it is hard to deal with the relationship between democracy and working efficiency. As reconstruction links to the benefits of public, before decision making by municipality, announcement is necessary to gather feedbacks from residents and experts. Both democracy and efficiency are worth to consider, but democracy is the more important one. Efficiency should follow democracy (Problems caused by Demolition and Relocation 2010).

The last one is to consider the difference. When the reconstruction process is applying to different projects, it is necessary to consider the different situations of the different projects (Jia yun 2010).
5 Conclusion and Further Study

The research worked out a sustainable neighbourhood reconstruction process in the urban district, which outlines a sustainable way for the neighbourhood reconstruction that aims to fulfil the residents’ needs during the whole reconstruction process. It can serve as a general and flexible process which can be implemented in different regions in China.

There are three key stakeholders involved in the neighbourhood reconstruction. The sustainable neighbourhood reconstruction process will hopefully improve their performance and cooperation in the whole process. For the residents, the sustainable neighbourhood process could help fulfil their needs, helping them to participate in the project and supervise the municipality and the builders. For the builders, the sustainable neighbourhood process can help them meet the demand of the residents and the society, improve their building technology and the building material research and obtain the competitive advantage in the future and a good reputation. For the municipality, the sustainable neighbourhood reconstruction process could help them to improve the administrative capacity, provide a better service for residents and builders and perfect the laws and policies, leading by example in the sustainable development practices in its area. For the whole society, the sustainable neighbourhood reconstruction process could contribute in reducing the waste to the environment, improving the community’s quality of life and setting an example for the other industries and departments, helping them in the shift towards sustainability. The sustainable neighbourhood reconstruction can trigger a big change in the whole society, build a harmonious society and promote the sustainable development.

Backcasting from the sustainable neighbourhood reconstruction process, the research also carried an analysis of the current neighbourhood reconstruction process in China nowadays: even though the current process has already improved a lot in the last few years, it is still far away from being entirely sustainable. Especially, it causes a lot of social issues. The residents are not satisfied with the current neighbourhood process. There is a big gap between the sustainable neighbourhood reconstruction process and the current neighbourhood reconstruction process. As well, the research worked out some suggested measures to close the gap. There are different
measures for the different stakeholders, residents, builders and municipality.

All in all, the sustainable neighbourhood reconstruction process can serve as a guidance for neighbourhood reconstruction projects in the urban district. The measures for the sustainable neighbourhood reconstruction process can be used directly in the projects. But it is not required to use all of this measure. The application of the measures depends on the situations of different projects.

**Limitations of the study**

As the data of the research have been collected mainly from the interviews and surveys, there are some biases during the data collection. The authors could not guarantee for the quality of all the data, so this may have affected the quality of the research. What is more, the authors have not prioritized the suggested measures. Therefore, they suggest that it is not necessary to use all the measures in a neighbourhood reconstruction project, since the application of the measures depends on the different situations of different projects. This may cause some difficulties when the stakeholder implement these measure.

**Future studies**

The following are some key areas identified during the process of this research that require further attention.

1 **Environmental impact research**

This research of sustainable neighbourhood reconstruction process focussed on the social issues in the projects, trying to fulfil the human needs first. Though the impact on the environment was involved, it still needs a deeper research.

2 **The financial issues research**

The sustainable neighbourhood reconstruction process doesn’t cover the financial issues. Some future research can focus on whether the process will
increase the return on investment of the project. And how does it impact on the capacity of the project to attract investments.

3 The application in small construction companies

As the sustainable neighbourhood reconstruction process is a general process for all kinds of the construction companies, many big companies have the capacity to implement it. But some small companies may lack the experts, investments and other resources. The future research can focus on the application of this process in small companies.

4 The testing of the research

The sustainable neighbourhood reconstruction process now is just on the theory stage. It has not been tested in the real projects. The testing will be helpful for improving and perfecting the process and the measures.
Reference


Chen lunhua. 2010. Interview by author. Beijing, China. April 8

Chen xing. 2010. Interview by author. Beijing, China. April 8

Chen xinyong. 2010. Interview by author. Beijing, China. April 8


Observing Climate Variability and Change. NOAA Office of Oceanic and Atmospheric


Lee. 2010. Interview by author. Beijing, China. April 8


Liu wenyan. 2010. Interview by author. Beijing, China. April 8

Liu yuntao. 2010. Interview by author. Beijing, China. April 8


Mao di. 2010. Interview by author. Beijing, China. April 8

Mao di, He Xiaopan, Li chao, etc. 2007. Ctiy and Life 33-35 Jiangsu People express


Murphy, Tim, and Vicki Marvick. 1998. “Patterning as process.”


Tang lijun. 2010, Current process of reconstruction of age-old buildings
Tang lijun. 2010. Interview by author. Beijing, China. February 6

Tang lijun. 2010. Interview by author. Beijing, China. April 8


Wang bin, Chen da. ect. 2010. Interview by author. Beijing, China. April 8

Wei qiao. 2010. Interview by author. Beijing, China. April 8


Wu xiao. 2010. Interview by author. Beijing, China. April 8

Xiao fei. 2010. Interview by author. Beijing, China. April 8

Xiao pan. 2010. Interview by author. Beijing, China. April 8

Xin sun. 2010. Interview by author. Beijing, China. April 8

Xin sun, Lee jian. ect. 2010. Interview by author. Beijing, China. April 8

Yi li, Wang bin. ect. 2010. Interview by author. Beijing, China. April 8

Yingxin Zhu, Borong.2003. “Sustainable housing and urban
construction in China,” Energy and Buildings 36:33-38


Zhang xiang. 2010. Interview by author. Beijing, China. April 8

Zheng changjie. 2010. Interview by author. Beijing, China. April 8

Zheng xiao. 2010. Interview by author. Beijing, China. April 8
## Appendix A Specific Social Issues

<table>
<thead>
<tr>
<th>Categories</th>
<th>Specific Issues during Reconstruction Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation</strong></td>
<td>Reconstruction would lead to traffic control which will impact the routes of residents to their work or study places, Will the conditions of nearby transportation system be improved during reconstruction?</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Moving out may lead local students to transfer to another school while most schools have strict admission standards and conditions for new students. How to facilitate this process?</td>
</tr>
<tr>
<td><strong>Culture &amp; Emotion</strong></td>
<td>How to ensure recreation and spiritual activities for the elderly since they are disengaged for all days along; Transfer also means losses of local neighbourhood culture, away from neighbours, classmates and intimate friends, how to compensate for these spiritual losses?</td>
</tr>
<tr>
<td><strong>Economic Compensation</strong></td>
<td>A set of economic compensation policies and measures will be designed and implemented, how to link these approaches to sustainability? Price of new real estate.</td>
</tr>
<tr>
<td><strong>Accommodation</strong></td>
<td>It would be hard for some residents to find a temporary living space during reconstruction process, how to help these flock to deal with this accommodation issue.</td>
</tr>
<tr>
<td><strong>Living Circumstance</strong></td>
<td>Is there any afforestation or gardening plan for improving the circumstance of new neighbourhood? How to deal with the noise, dust, water waste and other issues?</td>
</tr>
<tr>
<td><strong>Neighbourhood Services</strong></td>
<td>What kind of services could the neighbourhood committee provide for residents in reconstructed neighbourhood to initiate sustainable lifestyle?</td>
</tr>
<tr>
<td><strong>Relocation Dissension</strong></td>
<td>Selection of new spot; Participation; How to distribute the responsibility of moving and relevant work?</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>How to avoid unexpected accidents during reconstruction process? It was important for both workers and local residents.</td>
</tr>
<tr>
<td><strong>How to promote the cooperation among residents,</strong></td>
<td></td>
</tr>
<tr>
<td>Legislation</td>
<td>builders, and municipality, and guarantee their legal profits and rights in the meantime.</td>
</tr>
</tbody>
</table>
Appendix B The current general process of reconstruction

1. Posting the reconstruction bulletin;

2. Assessment and demolition experts do surveys among householders and figure out the assessment report of real estate value for residents;

3. Negotiations about compensation between builders and residents;

4. Residents choose compensation methods—moving back to new apartment in the reconstructed neighbourhood or receiving a proper quantity of money in line with the value assessment report.

If they choose moving back:

1. The demolition company introduce the schemes for moving back and local integration;

2. The demolition company audit the ownership of real estate;

3. Residents select the new housing unit according to reconstruction plan with resettlement program selection table;

4. Confirmation of selection and noting signature on some official cooperation documents;

5. Residents exchange local settlement agreement with their real estate—handing in the apartments or houses and moving out;

6. Moving back when the reconstruction project finished.

If they choose cash as compensation:

1. Demolition company, assessment experts and residents calculate out the totally proper amount of money as compensation,
excluding water fees, electricity fees and other fees that needed pay by residents;

2. Confirmation of selection and noting signature on some official cooperation documents;

3. Residents exchange money with their real estate—handing in the apartments or houses and moving out
## Appendix C Housing and land ownership

<table>
<thead>
<tr>
<th>Property Organization</th>
<th>Acreage (square meters)</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Forestry Administration, P.R. China</td>
<td>16.354,9</td>
<td>Office</td>
</tr>
<tr>
<td>China National Nuclear Corporation</td>
<td>21.808,5</td>
<td>Office and Housing</td>
</tr>
<tr>
<td>The Ministry Of Land and Resources, P.R. China</td>
<td>5.728,9</td>
<td>Office</td>
</tr>
<tr>
<td>Hepingli Street Office</td>
<td>1.637,37</td>
<td>Office, Housing and Business</td>
</tr>
<tr>
<td>Beijing Shouhua Construction Operation Co., Ltd</td>
<td>522.86</td>
<td>Housing and Business</td>
</tr>
<tr>
<td>Beijing Aoshikai Company</td>
<td>243.6</td>
<td>Business</td>
</tr>
<tr>
<td>Beijing Petrochemical Design Institute</td>
<td>91.76</td>
<td>Office</td>
</tr>
<tr>
<td>Government Offices Administration Of the</td>
<td>4.098,9</td>
<td>Housing</td>
</tr>
<tr>
<td><strong>State Council</strong></td>
<td><strong>Beijing Housing Management Company</strong></td>
<td>11.738,8</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>China National Chemical Construction Corporation</strong></td>
<td>9.085,2</td>
<td>Housing and Business</td>
</tr>
<tr>
<td><strong>Ministry of Human Resources and Social Security, P.R. China</strong></td>
<td>1.606,3</td>
<td>Housing</td>
</tr>
<tr>
<td><strong>Ministry of Commerce, P.R. China</strong></td>
<td>1.832,1</td>
<td>Housing</td>
</tr>
<tr>
<td><strong>National Institute of Metrology, P.R. China</strong></td>
<td>4.806,1</td>
<td>Housing</td>
</tr>
<tr>
<td><strong>Ethnic Affairs Commission</strong></td>
<td>5.735,2</td>
<td>Housing</td>
</tr>
<tr>
<td><strong>China National Offshore Oil Corporation</strong></td>
<td>2.640</td>
<td>Housing</td>
</tr>
</tbody>
</table>
## Appendix D List of interviewees

<table>
<thead>
<tr>
<th>Interviewees’ Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tang lijun</td>
<td>the manager of Beijing Hongkun construction company</td>
</tr>
<tr>
<td>Nao meng</td>
<td>the environmental manager of Beijing Hongkun construction company</td>
</tr>
<tr>
<td>Li meichen</td>
<td>the employee from environmental department of Beijing Hongkun construction company</td>
</tr>
<tr>
<td>Zuo you</td>
<td>the employee from design department of Beijing Hongkun construction company</td>
</tr>
<tr>
<td>Jing liang</td>
<td>the employee from construction department of Beijing Hongkun construction company</td>
</tr>
<tr>
<td>Pan huaishan</td>
<td>the employee from Urban Planning and Design Institute, Beijing</td>
</tr>
</tbody>
</table>
## Appendix E List of authorities

<table>
<thead>
<tr>
<th>Authority Name</th>
<th>Organization</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tan jun</td>
<td>Hongkun construction company</td>
<td>Beijing</td>
</tr>
<tr>
<td>Chen xing</td>
<td>Urban Planning and Design Institute</td>
<td>Beijing</td>
</tr>
<tr>
<td>Lie zhangxiang</td>
<td>Transportation Commission</td>
<td>Beijing</td>
</tr>
<tr>
<td>Dong yeye</td>
<td>Municipal Planning Commission</td>
<td>Beijing</td>
</tr>
<tr>
<td>Guo min</td>
<td>Municipal Planning Commission</td>
<td>Beijing</td>
</tr>
</tbody>
</table>
Appendix F Questionnaire for three key stakeholders

For residents

Firstly, thank you for taking this survey! This is a survey about the community reconstruction process. Our research is to develop a sustainable community reconstruction process. There are 15 questions in this survey; it probably will take you 20 minutes. Please tick the appropriate answer in the choice questions and write down the answers under the other questions. Thanks!

The community reconstruction thesis team

Blekinge Institute of Technology

Sweden

Gender:  Age:  Career:  Household:  Size of the house area:

1. How much do you know about sustainability or sustainable development? Please tick your choice

   A. Expert  B. Quite a lot  C. Only the concepts  D. I don’t know much, is confusing  E. Not at all.

2. Which do you think are the most important social issues during the community reconstruction process? Please tick all of your choices

<table>
<thead>
<tr>
<th>Social issues</th>
<th>The description of the social issues</th>
<th>Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circumstance</td>
<td>Air condition, virescence and so on</td>
<td></td>
</tr>
<tr>
<td>Community service</td>
<td>Shopping, stadium, hospital and so on</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>The price of the house</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Emotion</td>
<td>The old neighbours, living ways and so on</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>The security of the community</td>
<td></td>
</tr>
<tr>
<td>Quality of the house</td>
<td>The structure, material, decoration of the house</td>
<td></td>
</tr>
<tr>
<td>Traffic</td>
<td>The traffic of the community</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>The education for the children</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Do you agree with the plan of temporary moving out? Please tick your choice

A. Yes                B. No

4. Do you have suggestions for the temporary moving out during the process? Including the location, rent and time.

5. Do you think sustainability relate to your own profit? Please tick your choice

A. Yes, strongly related    B. Yes, partly related
C. Sustainability is somewhat related    D. Not very much related
E. Not at all related

6. Do you think sustainability is important for the community reconstruction? Please tick your choice
A. Yes, absolutely important  B. Yes, important
C. Somewhat important  D. Not very important
E. Not important at all

7. Do you agree to reconstruct the community? Please tick your choice

A. Yes  B. No

8. If you don’t, can you talk about the reasons?

9. What is the impact of the community reconstruction on the environment? Please list below some of the major impacts that you are aware of.

10. What is the impact of the community reconstruction on your social life? Please list below some of the major impacts that you are aware of.

11. Which compensation plan do you prefer? Please tick your choice

A. Cash  B. House

12. Are you going to supervise the work of the builder during the community reconstruction process? Please tick your choice

A. Yes  B. No

13. Besides the question mentioned above, do you have any other suggestions for the builders?

14. Besides the question mentioned above, do you have any other suggestions for the municipality?

15. Besides the question mentioned above, do you have any other suggestions for the whole reconstruction process?

For builders

Firstly, thank you for taking this survey! This is a survey about the community reconstruction process. Our research is to develop a sustainable
community reconstruction process. There are 10 questions in this survey; it probably will take you 15 minutes. Please tick the appropriate answer in the choice questions and write down the answers under the other questions. Thanks!

The community reconstruction thesis team

Blekinge Institute of Technology

Sweden

Department _________

1. Do you know about sustainability or sustainable development? Please tick your choice

   A. Expert        B. Quite a lot       C. Only the concepts
   D. I don’t know much, is confusing       E. Not at all.

2. Do you consider about sustainability during the community reconstruction process? Please tick your choice

   A. Yes, it is a necessary condition       B. Yes, quite a lot
   C. Sometimes     D. A little bit       E. No, but will start later
   F. No, and will not start

3. What do you think a sustainable community reconstruction process looks like; can you please list at least the 10 important steps?

4. In your opinion, what is the definition of a sustainable community?

5. Which do you think are the most important social issues during the community reconstruction process? Please tick all of your choice

<table>
<thead>
<tr>
<th>Social issues</th>
<th>The description of the social issues</th>
<th>Choice</th>
</tr>
</thead>
</table>

69
<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Air condition, virescence and so on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community service</td>
<td>Shopping, stadium, hospital and so on</td>
</tr>
<tr>
<td>Price</td>
<td>The price of the house</td>
</tr>
<tr>
<td>Emotion</td>
<td>The old neighbours, living ways and so on</td>
</tr>
<tr>
<td>Security</td>
<td>The security of the community</td>
</tr>
<tr>
<td>Quality of the house</td>
<td>The structure, material, decoration of the house</td>
</tr>
<tr>
<td>Traffic</td>
<td>The traffic of the community</td>
</tr>
<tr>
<td>Education</td>
<td>The education for the children</td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

6. What is the impact of the community reconstruction on the environment? Please list below some of the major impact that you are aware of.

7. Beside all the legal requirements, do you have some other measures to protect the workers during reconstruction process?

8. Do you consider about sustainability issues when designing the new community? Please tick your choice

   A. Yes, it is a necessary condition       B. Yes, quite a lot
1. Do you know about sustainability or sustainable development? Please tick your choice

A. Expert       B. Quite a lot       C. Only the concepts
D. I don’t know much, is confusing       E. Not at all.

2. Which do you think are the most important social issues during the community reconstruction process? Please tick all of your choice

C. Sometimes       D. A little bit       E. No, but will start later
F. No, and will not start

9. Do you have a professional sustainability team in your company? If not, what’s the main reason?

10. When the company takes the sustainability issues into account right now, what are the benefits and challenges do you think that brings to your company?

For municipality

Firstly, thank you for taking this survey! This is a survey about the community reconstruction process. Our research is to develop a sustainable community reconstruction process. There are 8 questions in this survey; it probably will take you 15 minutes. Please tick the appropriate answer in the choice questions and write down the answers under the other questions. Thanks!

The community reconstruction thesis team

Blekinge Institute of Technology

Sweden

Department___________

1. Do you know about sustainability or sustainable development? Please tick your choice

A. Expert       B. Quite a lot       C. Only the concepts
D. I don’t know much, is confusing       E. Not at all.

2. Which do you think are the most important social issues during the community reconstruction process? Please tick all of your choice
<table>
<thead>
<tr>
<th>Social issues</th>
<th>The description of the social issues</th>
<th>Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circumstance</td>
<td>Air condition, virescence and so on</td>
<td></td>
</tr>
<tr>
<td>Community service</td>
<td>Shopping, stadium, hospital and so on</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>The price of the house</td>
<td></td>
</tr>
<tr>
<td>Emotion</td>
<td>The old neighbours, living ways and so on</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>The security of the community</td>
<td></td>
</tr>
<tr>
<td>Quality of the house</td>
<td>The structure, material, decoration of the house</td>
<td></td>
</tr>
<tr>
<td>Traffic</td>
<td>The traffic of the community</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>The education for the children</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. When examine and approve the proposal of community reconstruction, do you consider about sustainability issues? Please tick your choice

A. Yes, it is a necessary condition          B. Yes, quite a lot
C. Sometimes                                D. A little bit
E. No, but will start later
F. No, and will not start
4. What kind of a role do you think a municipality plays during the community reconstruction process?

5. How does the municipality protect the residents’ benefits during the process?

6. How does the municipality supervise the builders’ construction, including the quality of the house, the protection of the worker and so on?

7. In your opinion, how can the municipality promote sustainability to the whole society?

8. In your opinion, what do you think are the main obstacles when promoting sustainability to the whole society?