

QUALITY OF LIVING ENVIRONMENT IN RESIDENTIAL AREAS IN  
SHIJIAZHANG, CHINA

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A project report submitted in fulfilment of the requirements for the award of the  
degree of Master of Science (Urban and Regional Planning)

Faculty of Built Environment  
Universiti Teknologi Malaysia

2014

## **DEDICATION**

To my beloved parents and wife

## ACKNOWLEDGEMENT

Many people have contributed greatly to the completion of this master project, without them this would not have been possible. First of all, I would like to thank my master's project's supervisor, Assoc. Prof. Dr. Foziah binti Johar. I sincerely appreciate her kindness, patience, full support and confidence in me, her on-going guidance, feedback, and encouragement in the undergraduate project. Special thanks to Assoc. Prof. Dr. Nooraini binti Yusoff; who guided the right way for my master's study.

Secondly, through this opportunity I would like to thank my dear friend Rahayu Ahamad and coursemates who share their opinion and information that have helped deepen my understanding of my master's project and built my confidence in the study. Their views and advices are useful indeed. Unfortunately, it is not possible to list all of them in this limited space.

Last but not least, I wish to express my special thanks to members of my family, especially to my parents and my wife, who have a special place in my heart, for their unswerving support and spiritual guidance. Thanks for their support, encouragement and being my source of enjoyment during my study program in UTM.

## ABSTRACT

With the growth of economy in China, residential quality became one of the serious issues in the contemporary urban society. Not only bad quality residential brings trouble in life to people, but also causes the economic dispute. The quality issue is increasingly becoming outstanding, especially in the metropolis. Nowadays, people put more emphasis on the quality of life and prefer to purchase a high quality property. This is due to fact that the issue on residential living environment quality may bring long-time troubles. However, modern design of residential mainly focuses on the economic and aesthetic values and more often than not, ignore the other aspects that may impact the residential quality; such safety, privacy, density, accessibility, environment, and so on. The purpose of the study is to find a proper evaluation indicator system to assess the residential living environment quality in Shijiazhuang. And give suggestion and potential solution based on the study findings for future residential area planning and design in Shijiazhuang, China. The study identified the indicators that can be applied in the residential area planning and design, as well as the perception of residential quality among the local residents. Researcher of this study selected 9 residential areas in Shijiazhuang as the examples to get the real scenario of living environment quality condition. Quantitative method was the tool to carry out the survey, while descriptive analysis was adopted in the data analysis. The result suggested that planner and designer should pay more attention on nature environment planning which is much harder than physical environment planning. The indicator system and suggestions are helpful in planning good living environment quality for residential area and offer a better perception of residential environment for the local residents.

Key words: Quality, Living environment, Residential, Evaluation indicator system

## ABSTRAK

Dengan meningkatnya pertumbuhan ekonomi di China, kualiti kediaman menjadi salah satu isu yang amat serius dalam masyarakat bandar kontemporari. Bukan sahaja kualiti kediaman yang rendah memberi kesulitan dalam kehidupan penduduk, malah menyebabkan pertikaian ekonomi. Isu kualiti perumahan menjadi semakin menonjol, terutamanya di kota metropolitan. Kini, ramai orang memberi perhatian yang lebih kepada kualiti hidup dan memilih untuk membeli harta benda yang berkualiti tinggi, kerana isu kualiti persekitaran kediaman boleh membawa kepada masalah yang tidak berkesudahan. Namun, reka bentuk kediaman moden hanya fokus kepada nilai-nilai ekonomi dan estetika tetapi sering mengabaikan aspek-aspek lain yang boleh memberi kesan kepada kualiti kediaman seperti keselamatan, privasi, densiti, akses, alam sekitar, dan sebagainya. Tujuan kajian ini adalah untuk mencari satu sistem indikator penilaian yang tepat untuk menilai kualiti persekitaran perumahan di Shijiazhuang. Dan memberikan cadangan serta potensi penyelesaian berdasarkan penemuan kajian untuk perancangan kawasan kediaman dan reka bentuk di Shijiazhuang, China di masa depan. Kajian ini mengenal pasti indikator-indikator yang boleh diguna pakai dalam perancangan dan reka bentuk kawasan kediaman, serta mengenal pasti persepsi kualiti kediaman dalam kalangan penduduk tempatan. Penyelidik memilih sembilan (9) kawasan kediaman di Shijiazhuang sebagai contoh untuk mendapatkan senario sebenar tentang kualiti persekitaran kediaman. Kaedah kuantitatif digunakan untuk menjalankan kajian ini, manakala analisis deskriptif digunakan dalam analisis data. Hasil kajian mencadangkan agar perancang dan pereka perlu memberi perhatian yang lebih kepada perancangan persekitaran alam sekitar kerana ia adalah lebih sukar daripada perancangan persekitaran fizikal. Sistem indikator dan cadangan yang diketengahkan boleh membantu dalam perancangan kualiti persekitaran kawasan kediaman yang baik serta menawarkan persepsi yang lebih baik tentang komoditi persekitaran kediaman bagi penduduk tempatan.

Kata kunci: Kualiti, Persekitaran kehidupan, Kediaman, Sistem indikator penilaian

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

After the establishment of China, there have been tremendous changes in terms of economy, culture and social development. In recent years, these changes created a sense of need for the development of residential quality. This is because there is a growing concern on the deteriorating state of housing in urban areas of developing countries. Therefore, residential quality has become crucial to the contemporary urban society as it influences the quality of life in terms of well-being of the human beings, and their daily activities. Consequently, the quality of housing can be considered as an important health element that affects the manner of living and their productivity.

The rapid development of economy leads to the growth of population. Therefore, the needs for the living standards and life quality has become a vital concern of a population. Many people prefer to live in a high quality residential area since people are able to involve socially and physically with their surroundings in the residential environments. China has allocated 150,800 hectares of land for the residential areas in 2013. The residential area totalled about 4.4 million hectares, providing 31 square meters for per person. Furthermore, the use of land for residential area continues rising at 0.2 million hectares every year. However, today in China, the

aesthetic and economic value of the residential areas are the primary even though safety, privacy, density and accessibility are more essential to planning the good quality of housing. Such being the case, the low quality of residential area occurs even though it promotes reasonable and aesthetics in the overall built-up environment.

Shijiazhuang being the capital city of Hebei Province plays important role in terms of technology, education and trade as well as politics. Therefore, Shijiazhuang is becoming the largest city due to the convenient traffic and a busy commercial trade in the northern China. The rapid population growth and sharp increases in rents require more housing to be built in order to fulfil the needs of the people. Not only increases in population demands for housing, but also steady increases in newlyweds who are looking for rental homes create demands for residential areas. Consequently, many attractive and affordable residential areas were built with low quality. However, Wang (2013) in 2012 found that, there were 135 complaints with regards to residential quality in 29 residential areas. It was reported that residents mainly complained about building distance, short sunshine exposure, poor environment, housing density and insufficient parking spaces which may affect the health, privacy, safety and life quality of the residents. Thus, these issues are rapidly becoming the main concerns of the residents in Shijiazhuang.

Residential environment quality is the main issue that should be considered in the planning process. Marans (1976) states that “the residential environment is viewed as the place where an individual can relate himself socially and functionally to the complex world around him”. It is considered to be richly diverse, both physically and socially, and constantly changing in terms of an aging landscape and a mobile population. Furthermore, it should enable the planners to improve the quality of the physical surroundings and to create liveable environments for the residents.

A good living environment includes the good accessibility of services and facilities, such as schools and grocery stores with walking distance from the home.



The workplace does not, however, have to be in the immediate vicinity. Hence, the residents do not have to depend on their private transportations if the public transport system is convenient.

A good place to live is that made up of single-family homes. For example, multi-storey apartment buildings with lift-equipped is also considered desirable for the residents. Residential areas should also be close to nature and provide safety in terms of tidiness, appropriate lighting and well-tended pedestrian traffic lanes. A good living environment also contains collective responsibility both for children and other adults (Tuorila, 2012).

Residential quality is not only about design and planning, but also quality evaluation plays an important role as well. Well planned and good management of residential areas provide satisfactory perception of living environment to the residents. Quality evaluation makes the user, planner and manager involve in the residential area much deeper. Chinese scholars did not start off the residential quality evaluation until 1980s. Although there are several studies on the subject today, such as the 'Study of Living Environment in Urban Settlement' (Chen, 2000), 'Living Environment Evaluation and Optimization in Metropolis- A Case Study In Shanghai, China' (Ning and Shi, 1999) etc., but the research objectives are mainly focus on macroscopic level, and lack of reach on private residential area which has been built widely in China (Hu, 2007). This study attempts to assess the quality of living environment in private residential areas in Shijiazhuang city, China.

## **1.2 Problem Statement**

Better quality of life is the aim of everyone, and for generations to come (DETR, 1996). The spatial distance and living environment in residential areas may impact the quality of life (Yang, 1997). Most Chinese spend more than 1/3 of their life time in the residential area. Therefore, it is only fair that the plan of residential

areas should focus on the residential quality. Chunhua Song, the Minister of The Ministry of Construction of China said that “residential area is one of our important spatial living environment, it not only mirrors the current local social culture and development of science and technology, but also the features of residents’ life model, income, education and social status, thus, the residents require that the living environment be fit for human health with beautiful landscape” (Song, 2008).

In recent years, the requirement for living environment is increasing; many unique residential areas has been built all over China. There has generally been an improvement in the quality of residential areas. Recent developments show that some issues may easily be ignored in planning and design, such as inadequate function of community, unreasonable layout, lack of service facilities, dirty living environment, monotonous pattern of residential areas, lack identity, etc. Thus, the issues of planning a good living environment, complete function community and local characteristics of residential area are the major problems to be resolved (Yu and Wang, 2008).

In Shijiazhuang, the aesthetics, cost, and floor space are taken into consideration in the planning and design of the residential areas. Nevertheless, other aspects that may also influence the quality of residential living environment have been neglected such as building distance and setback, sunshine exposure, spatial relationship of building, population density, greening, service facilities and energy efficiency. These elements are generally termed the natural environment and the humanistic environment. The planning guideline in China is published in 2012 contains the detailed limitation on these planning aspects. Although some planners are trying to consider all the aspects regarding the residential quality during the planning process, the current residential quality is still not sufficient to fulfil the needs of people. Even though the environment has a great impact on the happiness and well-being of individuals, urban planners and designers have not taken much actions to shape the environment into communities where people can live comfortably and enjoy the highest possible quality of life (Matthew, 2003).

Although the Chinese planning bureaus have the stage where the drawings of residential planning and design are checked, there is no clear monitoring of residential quality. In addition, the National Development and Reform Commission of China also does not have any criteria on residential quality grade evaluation. So, the issues of residential quality were not taken into consideration until complaints about the construction has been made. Some of the conditions cannot be modified or improved after construction, such as the building distance and setback, and residential location.

An evaluation of the living environment needs to be tested and measured. In 1999, Song and Liu established an indicator evaluation system for urban living environment based on the analytic hierarchy process (AHP). The quality of living environment in Chinese residential areas can be calculated by using the system. It is the first system that takes the quality of living environment into account for Chinese. This study uses the AHP to evaluate the quality of living environment of nine private residential areas in Shijiazhuang, China.

### **1.3 Research Questions**

Currently, people in urban areas more concerned with residential quality, because bad residential living environment has negative impacts on the residents' life. Thus, this study should identify the indicators which may influence the quality of residential living environment quality.

The research questions that the study will address are:

1. How to evaluate the residential living environment quality?
2. Which indicator plays the major role in residential living environment quality?
3. What is the perception of residential living environment quality?
4. What aspects should be considered during residential planning?
5. How to improve the insufficient of human living environment quality?

## **1.4 Aim and Objectives**

The aim of this study is to identify a system to evaluate the quality of residential living environment. It hopes to provide a high quality of residential living environment for the urban residents. The study makes an assessment of planning and design in nine residential areas. Base on the study aim, three objectives as follows were identified:

1. To identify the indicators or elements that can be applied in the residential area evaluation system.
2. To evaluate living environment using the indicators or elements identified in current in different residential areas.
3. To identify indicators or elements that should be taken into consideration in the planning and design of residential areas.

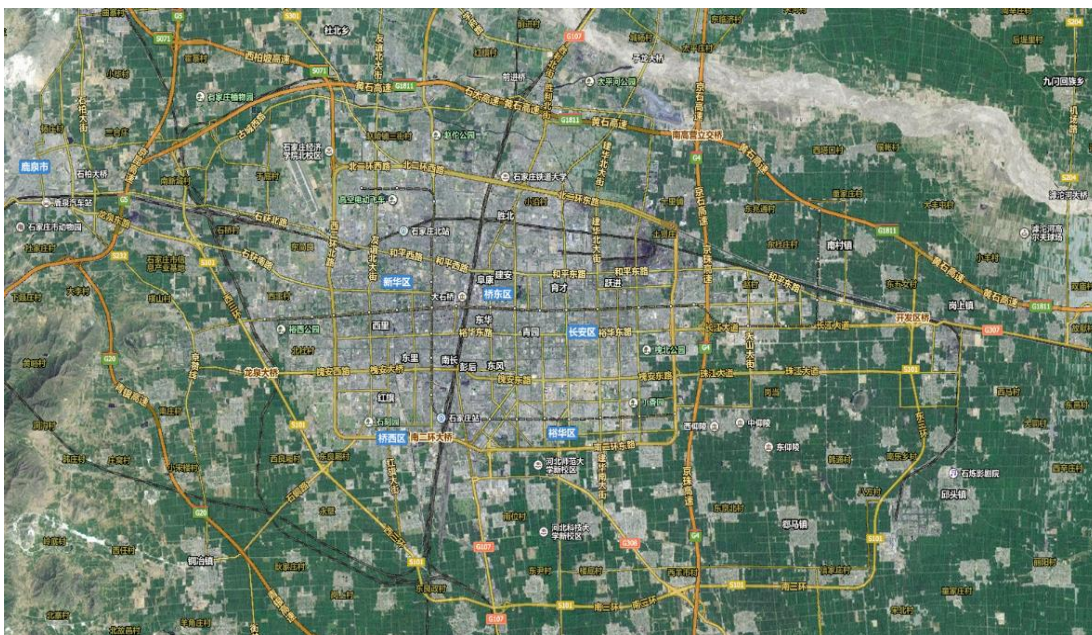
## **1.5 Methodology**

A mixed method approach was used in this study. The methodology includes data collection and data analysis. The methodology of the study is elaborated in Chapter 3.

### **1.5.1 Study Area**

Shijiazhuang is selected for the study. Shijiazhuang is the capital city of Hebei Province. It is the third largest city in northern part of China with total area of 15848 kilometre square, and the area of city centre is 455.81 kilometre square. In 2013, the

total population of Shijiazhuang was 12.764 million, and GDP per capita was 21,393RMB. The existing residential area in the city centre of Shijiazhuang is 608 kilometre square (Soufun, 2012) where the average house price is 8502RMB/ square meter, (402.97 RMB/square foot) (Baidu, 2014). Nine different private residential areas are specifically selected for this study to investigate the house price, size, age and property. Private residential is a project developed by private developers.



**Figure 1.1:** Image of Shijiazhuang City Centre (2013)

### 1.5.2 Data Collection

The data collection includes the questionnaires, observation, and literature review. The research instrument is a questionnaire which consist questions that intends to collect the perception, opinions and needs of residents. It includes the demographic information of the respondents, satisfaction of living environment indicator index, and the perception of the quality of residential living environment. The questionnaires were distributed to the residents in the 9 residential areas.

### **1.5.3 Data Analysis**

The study used the sampling method to identify the respondents for the study. AHP as the basic theory is used to weight the indicators. The AHP is a structured technique for organizing and analysing complex decisions, based on mathematics and psychology. It was developed by Thomas L. Saaty in the 1970s and has been extensively studied and refined since it was released. The study established the hierarchy model and judgment matrix based on the various indicator and the importance of the indicator, and followed by ranking the hierarchies to calculate the importance of natural and physical environment, and the importance of each indicator. The data from questionnaire and survey is calculated with analysis model and weight of the indicators. The score of each residential area is shown as results of the calculation in Chapter 4.

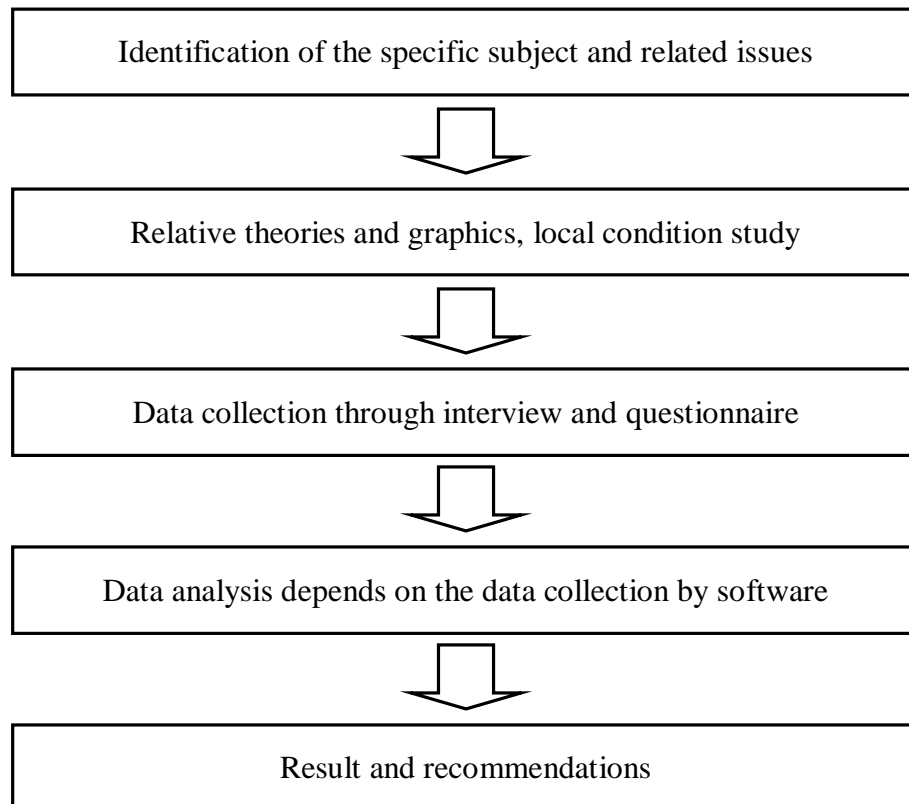
### **1.6 Significance of the Study**

The significance of this study are:

1. The evaluation system of private residential living environment quality can describe and measure the condition and development trend of living environment, it is a standard.
2. It is beneficial to compare private residential areas and to find existing issues in living environment, and to control the development direction in the future.
3. The evaluation system will form a basis for the planners to plan for future development of residential living environment.

## 1.7 Organisation of Thesis

In order to accomplish the study objectives, the study is divided into 5 stages: identify the issues and study questions, literature review, data collection, questionnaire and methods, data analysis and conclusion.



**Figure 1.2:** Flow Chart of Thesis

### Chapter 1 Introduction

The first stage of this study is to identify the problems related to the residential areas. Based on the problem statement, the researcher of the study came up with various questions.

### Chapter 2 Literature Review

The second stage is literature review which is based on the subject that has been chosen. In this stage, information and instrument that can help in evaluating the residential quality of living environment is studied. The study also consists of AHP

practice in China; meanwhile, the study also covers the current situation of residential development in Shijiazhuang.

### **Chapter 3 Research Methodology**

The methodology explains the methods and instruments used to achieve the aim and objectives of the study. It covers the method for data collection, and data analysis.

### **Chapter 4 Data Analysis**

The data analysis stage focus on the analysis and synthesis of the findings. The analysis contribute to the future recommendations and suggestions.

### **Chapter 5 Conclusion and Recommendation**

In this stage, the output from data analysis is concluded and discussed in in-depth. The result is summarised with the future recommendation. Limitations of the study is discussed in this section.



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