

AFFORDABLE HOUSING REFORM WITHIN THE CONTEXT OF SUSTAINABLE  
DEVELOPMENT OF CITIES: CHALLENGES AND FUTURE PROSPECTS IN BEIJING,  
CHINA

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## 1. INTRODUCTION

### 1.1 Introduction

This research study explores the challenges of both affordable and sustainable housing in Beijing, China. According to Xiao, Qiu, and Gao (2016), housing has a significant influence on the socio-economic growth and overall welfare of the society. However, attaining both affordable and sustainable housing is a major issue of concern in urban areas that are growing rapidly, such as Beijing city. Providing both affordable and sustainable housing in this region is complex due to diverse problems including rapid urbanization, unplanned and unbalanced, as well as high population growth (Ruibo, and Linna, 2013). In an attempt to tackle the challenges linked with sustainable and affordable housing, the public sector has implemented affordable housing policies to address this issue but with little success (Ziegler, 2006). Thus, this study seeks to understand the challenges behind this problem and the way housing in Beijing can be affordable and sustainable. Although affordable housing reform has been the major focus for many decades, understanding the challenges of this policy can help find possible solutions for attaining sustainable development in Beijing now and in the future.

However, this thesis is based on the case study analysis to present the possible challenges of affordable housing and prospects for sustainable urban development. This study draws on secondary information through an extensive review of literature materials including academic journal articles, books, and policy papers, proceeding papers among other scholarly journals to determine the challenges of implementing the affordable housing policy in Beijing. It also relies on case studies conducted previously by other scholars to help provide a comprehensive and critical analysis of the issues and contextualizes it. However, it relies heavily on previous studies conducted by Bredenoord et al. 2014, Cohen, 2006; Gan et al., 2017; Watson, 2016; Wang,

Hoon, and Lim, 2012, as well as Ziegler, 2006 among other recent scholars to develop the theoretical base underpinning the issue of affordable and sustainable housing challenges in China.

Moreover, the study draws on case study analysis as an effective method to help in understanding the real-life issues facing urban planners as they attempt to develop sustainable structures in contemporary society. Thus, to ensure clarity and objectivity, this research incorporates case study analysis from previous studies in literature conducted on affordable and sustainable housing reform in China. It introduces the background of the case study (Beijing) and the rationale for selecting this place. It considers survey reports from previous study interviews and surveys reports on people working in the municipality, residents, policymakers, and stakeholders among others because this will offer valuable information, which will help in understanding the challenges that the city face in an attempt to implement affordable and sustainable housing program.

Additionally, Beijing city is in the center of China and has a high population with increasing unemployment; thus, its economy and external environment could represent most of the regions in the central areas (Xiao, Qiu, & Gao, 2016). Yin (2011) argues that preparing data for case studies can be complex. As such, this study focuses on a single case study of Beijing because the city has not yet realized sustainability tenets and housing costs are rising faster than income (Wang et al; 2012; The Collective, 2017). Despite adopting affordable housing policies, high cost of living including increasing costs of rent, demographic changes especially changes in household composition and increasing population most of who are low-income earners, as well as inadequate financial for funding affordable housing programs makes it difficult to deliver affordable and sustainable housing solutions in Beijing.

## 1.2. Statement of the Problem

Beijing city is growing at an alarming rate; thus presenting the remarkable opportunity for the economic growth of the local economy. As the city continues to grow, the demand for affordable housing is also on the rise. Affordability is not only being able to afford to rent or own a house but also afford to live in it (World Economic Forum, 2019). This goes beyond meeting the cost of maintenance, operations and takes into considerations infrastructure, transport, and social amenities. However, affordable housing remains a challenge in Beijing because of the ever-increasing population most of whom are middle-class and low-income earners (Wang, Hoon, and Lim, 2012). Although affordable housing has become at the core aspect of the sustainable development agenda in Beijing in recent decades, the rising problem of social inequality, increased population and other related issues might pose implication on the sustainable housing market (Xiao et al., 2016). Beijing is among the emerging cities in China with a high population growth rate (Ziegler, 2006). It faces a huge problem of pollution mainly from construction dust, coal burning in industries and from motor vehicles, as well as waste products from houses within the local area. In 2013, the smog had taken over the city forcing people to wear paper masks (Xiao et al., 2016). Besides, Beijing is overpopulated because of rural-urban migration due to rapid development in the city. As a result, this has created pressure on the ecosystem leading to associated problems, such as water shortage, desertification, and other environmental issues; thus subjecting residents to health risks. Despite all these issues, this study specifically attempts to investigate the challenges of making housing both affordable and sustainable in Beijing. It explores how the affordable housing program is complex to attain especially among the low-income earners and then finds the possible solutions to address this problem.

### **1.3. Aims & Objectives**

The main goal of undertaking this study is to find out the challenges behind affordable/sustainable housing policy in Beijing. Undertaking this research is worthwhile because it seeks to understand why affordable/sustainable housing policy is a challenge. Thus, this will help find a workable solution to the problem including urban planning, intensive developments, and legislation/policy issues, as well as the need for public towards sustainable development. The following are the primary and secondary objectives of the study.

#### **1.4.1 Primary Goal/Objective**

- To examine the challenges of affordable and sustainable housing in Beijing.

#### **1.4.2 Secondary Objectives**

- To determine whether housing in Beijing is affordable and sustainable at present.
- To determine the way sustainability concept can help in offering affordable housing in Beijing in the future.

### **1.5. Research Questions**

1. To what extent and how is housing can be both affordable and sustainable in Beijing?
2. Why is affordable housing reform difficult to attain to the majority of people especially the low-income earners?
3. What are the challenges and prospects of implementing the affordable housing policy that complies with the sustainable development of cities in Beijing?
4. How can the sustainability concept help in offering affordable housing in Beijing in the future?

## 1.6. Significance/Implications of the Study

The research study of affordable and sustainable challenge in Beijing can be a paradigm in learning institutions because it can enhance the knowledge of students on urban studies and planning as well. Besides, undertaking this research study could be of great benefit to the would-be urban development planners, public, policymakers, government, and interested stakeholders. It will build their engagement and collaboration towards developing innovative and sustainable solutions. The collaborative approach is one of the effective strategies for attaining both affordable and sustainable housing. The collaboration between the state, non-governmental organizations, and communities are necessary. A recent case study conducted by Jamaludin et al (2017) found that good governance in the government and state support is imperative towards affordable and sustainable housing program. However, the study found that a good government should focus on the welfare of low-income communities. The role of government in housing provision to the low-income earners is pivotal. There are dominant strategies that can help them to offer not only affordable but also sustainable housing including slum upgrading and service scheme programs spearheaded by the ministry of housing programs. However, most of these strategies have failed in many states because of poor urban planning regulations (Ruibo, and Linna, 2013; Susilawati, and Miller, 2013). Thus, the findings of this research study would of great benefit in Chinese society because affordable housing is designed to serve the overarching purpose of promoting sustainable development. It is the role of the Chinese government to promote the economic and social well-being of its citizens and match with the path of urbanization and growing national power. Therefore, this study would serve as a core strategy for promoting informed and effective decision-making geared towards sustainable development. Moreover, the given data would guide the government and interested stakeholders to understand



the challenges of implementing the affordable housing reform policy. In this way, they will be able to find out ways to devise strategies that can enable them to attain their intended goals successfully.

### **1.7. Background**

China has undergone an institutional reform in many areas including the welfare-oriented housing allocation to a market-oriented system since 1978 (Xiao, Qiu, & Gao, 2016). However, with the increasing housing prices, making houses both affordability and sustainable has remained the major issue of concern in China (Xiao, Qiu, & Gao, 2016). Currently, the state has begun to change the housing policy from a social and economic perspective to make it both sustainable and affordable so that the future cohort will have a decent living space (Xiao, Qiu, & Gao, 2016). Housing is a significant element of social and economic sustainability. The government now offer affordable housing programs through subsidies or offering low-rent public housing to middle-class and low-income households, as well as relies on the private housing market to attain the needs of the higher income earners (Yanyun, 2011 and Tao, 2015). However, the introduction of affordable housing reform has risen with different directives and policy tools that focus on promoting sustainable cities.

The rising urgency to offer affordable housing to millions of families and the need to do so in a way that ensures the future sustainability of cities calls for a prototype change in housing program and practices. However, this force could not be better without focusing on goal 11 of the sustainable development goals (SDGs) that aims "to make cities and human settlement areas a safe, inclusive, resilient and sustainable" (Rosenzweig, Solecki, Romero-Lankao, Mehrotra, Dhakal, and Ibrahim, 2018, p. 11). Hence, this target ensures that all people have access to safe and reasonably priced housing. Although the SDGs is ambitious, many states have begun to

rethink innovatively about inclusive tactics to policy and challenges of affordable housing.

Beijing is one of the most populated cities in China, a country that is also populous across the globe and is among the nations that are striving to go green by implementing affordable housing policies within the context of sustainable development (Lorek, and Spangenberg, 2014). Thus, the future of sustainable cities depends on accessibility to reasonably priced houses and safe environment.

### **1.8. Summary/Conclusion**

To attain the intended needs of the study objectives effectively, the research begins with a review of the broader conceptual/empirical issue, which apply to any urban setting in China. Consequently, it narrows down the study by exploring relevance/challenges/opportunities around applicability in Beijing. Through interviewing municipal leaders, community organizations, community and program stakeholders in Beijing city, the study will gain an understanding of the challenges of affordable and sustainable housing reform in this region. The results will include case study analysis, implications, and applications of the findings. However, the discussion section further provides an interpretation of the findings in conjunction to study questions and literature, as well as provide recommendations for future studies.

## **2. LITERATURE REVIEW**

### **2.1. Introduction**

This chapter draws information from diverse literature, policy papers, publication reports, books, newspapers, and relevant scholarly journals to explore sustainable affordable housing programs in Beijing. It collects data not only from academic articles but also from relevant policy documents and plans, census and local surveys that were previously conducted by local authorities and researchers vital for data analysis of the research questions. In an attempt to tackle housing affordability and sustainability issue, decision and policymakers among other stakeholders in China have implemented diverse programs such as affordable housing policy. As such, this section explores the issue of affordable and sustainable housing, its evolution, definitions, and goals of the implemented policies in Beijing. However, it begins with an overview of the theoretical or conceptual framework and policy debates around sustainability, affordability and their associated links to housing. It reviews the broader conceptual issue applicable to any urban setting in China. It then narrows the research down to the indicators of affordability and sustainability, as well as challenges of relevance around applicability in Beijing city.

### **2.1 Definition of Affordable and Sustainable Housing**

The efforts to offer sustainable and affordable housing have been the core aspect of policy for many governments. The concept of affordable housing have been widely studied in the past and current studies. Even so, thus far there is no clear and agreeable definition of sustainable and affordable housing. Cai, Tsai, and Wu (2017) claim that affordability and sustainable housing is concerned “with secure safe and good quality housing rent at effective prices without imposing unreasonable burden on household income” (p. 542). In this case, consumers should be

able to maintain socially acceptable living standards after rental payment. Conversely, Salama and Alshuwaikhat (2006) define housing affordability as the concerns that focus on incomes and housing costs factors. The study links sustainable affordable housing with performance criteria including economic, social and environmental indicators (Salama, and Alshuwaikhat, 2006). Current efforts to address this issue is based on multiple criteria in isolation then tends to overlook the process of attaining the sustainability of affordable housing and how this affects housing policy. Due to that, the housing affordability approach ‘castoffs together in a single aspect but with multiple distinct issues encompassing distribution of housing prices and incomes, as well as public policies affecting housing markets (Nuuter, Lill and Tupenaite (2015; Salama, and Alshuwaikhat, 2006). In contrast, a study conducted in Australia advocated that “housing affordability must account for the ancillary costs of households”, such as access to key services, facilities, employment, electricity, gas, water, and social amenities among others (Mulliner, Smallbone, and Maliene, 2013). It seems that many authors are seeking to challenge the convention standards used in to define and examine the concept of housing affordability.

The conventional way suggested for defining and measuring housing affordability is the “ability of household income to cover the total housing expenses or costs” (Mulliner et al., 2013). However, the study further argues that the definition may be too general and that the interaction between housing and location seems to offer meaningful criteria for measuring housing affordability. Similarly, Nuuter, Lill, and Tupenaite (2015) argued that a significant aspect of housing affordability relies on the amenities in a particular location that influences household welfare. Nevertheless, both scholars look at affordability in term of characteristics of a given area including access to quality learning institutions and jobs, as well as security or safety. The authors also conclude that accounting for the implicit costs of such elements

influences the affordability measures. They also agree that focusing on price alone may lead to imprecise or an erroneous agreement concerning the affordability of an area.

Nonetheless, the question remains on how moderate and low-income households perceive the concept of affordability of housing. Nuuter et al. (2015) conducted qualitative research analyzing on housing affordability to understand the way low-income earners who live in rented houses understand the meaning of residential affordability. The author found that low-income earner did not choose the areas with poor amenities or location measures but considered affordability (Nuuter et al., 2015). While the cost of living was an effective consideration, addressing the needs for dwelling attributes, such as location, proximity, and nearness to social amenities and facilities, such as schools, hospitals and infrastructure development were among the key priority for most low-income households. However, such choices resulted in tougher family and household budgets. The study finding demonstrates that several elements in addition to economic factors can influence the perception of housing affordability (Mulliner et al., 2013). Particularly, the quality, location, and access to important facilities directly related to the perception of affordability and sustainability.

The affordability and sustainable housing is a major issue of concern that not only affects individual households but also poses considerable implications on the entire economy and environment. Study shows that affordable housing is not all about having cheap and decent homes but entails a wider range of economic and social factors (Mulliner, and Maliene, 2011). The study examines housing affordability in terms of economic criteria including the cost of owning a house and the associated income (Mulliner, and Maliene, 2011). It regards housing affordability as affordable in case there are low economic and environmental costs. Thus, housing affordability has a positive correlation with the context of sustainable results that

emanates from housing reform policy. Although many studies define affordable sustainable housing as the housing prices in relation to incomes, the definition also encompasses employment opportunities, quality of transport, access to quality learning and health institutions (Bredenoord et al., 2014; Mulliner, and Maliene, 2011; World Economic Forum, 2019). However, the definition varies greatly depending on the economic assessment criteria of a given state.

Varied studies have tried to develop workable definitions for affordable housing but still there is no general agreeable definition because this concept is wide and vary across the state. The China policy documents housing affordability by linking it to the low cost of rent and homeownership in relation to the earnings (Wang, Hoon, and Lim, 2012). This study is supported by Cai, Tsai and Wu (2017) who claimed that Chinese government offer affordable housing merely for middle and low-income families registered in the residential system (*hukou*) in the city. In this case, one had to be eligible citizen to benefit from the affordable housing program. Therefore, the definition of housing affordability in China has synonyms allied with rental costs or house prices to incomes (Mulliner, and Maliene, 2011). According to the Beijing Municipal Commission of Housing and Urban-Rural Development, “an affordable housing for a three year registered applicant in the Beijing Municipal Resident System should be earning less than 60,000 RMB annually, and should possess no more than 480,000 RMB in assets” (Cai et al., 2017, p.544). Moreover, the total average of the living area in a household necessary for an applicant should be not more than 10 square meters (Cai et al., 2017). Although these requirements are adjustable depending on the situations of cities in China, income, assets, and living or location area are the primary standards of measuring affordability.

Additionally, the widely accepted definition of affordable housing refers to “the cost that is no more than 30% of the total income of the individual household” (Muazu, 2010). Most studies often define affordable housing as “an adequate dwelling where less than 30 percent of monthly household income is devoted to rent”, and/or where the marketing price of owning is less than three times the annual income of an individual household (Cai et al, 2017; Yanyun, 2011, para. 5). Muazu (2010) also links housing affordability with sustainable development concept that focuses on the use of current resources in a way that does not compromise with future needs. Conversely, Muazu (2010) further claims that there have been political debates surrounding the controversy behind economic development. Thus, the debate behind sustainability has risen with controversial issues surrounding economic-related aspects.

However, housing affordability is a complex aspect that not only focuses on economic viability but also other factors. To enhance the quality of life and sustainability, society must take social and environmental aspects of housing into considerations (Mulliner, Smallbone, and Maliene, 2013). The COPRAS method of multi-criteria decision-making (MCDM) has become among the wide method of assessing the affordability of housing in different areas in a sustainable way by taking into considerations the range of economic, social and environmental criteria (Mulliner et al., 2013). COPRAS method has been applied in selecting suitable definition taking into account the economic and environmental impact of construction and financial aspects. MCDM method also offers suitable housing affordability and full criteria analysis of varied factors that influences sustainable housing affordability (Mulliner et al., 2013). Hence, this method is effective and can be applied in the assessment criteria for affordable and sustainable housing.

Nevertheless, affordable sustainable housing is placed within the pillar of Brundtland report of sustainable development that encompasses economic, social and ecological/environmental sustainability. Research shows that housing is affordable and sustainable in case it meets the present needs of social, economic and environmental costs without conflicting with that of the future (World Economic Forum, 2019). In other words, affordable housing is linked with sustainable development, a concept that focuses on the ability to meet the present needs without compromising the needs of the future generations” (Watson, 2016, p.128). Previous studies conducted on sustainable housing have attempted to focus on this aspect of sustainability from various angles including economic, social and environmental aspects.

First, from an economic perspective, affordable housing generates considerable contributions to the economy of the state and leads to the increasing gross domestic product (Jamaludin et al., 2017). Similarly, Nelson (2016) in his book of steering sustainability defined sustainable development as the philosophical approach of balancing “social equity and economic related aspects” (p.55). Conversely, According to Hall and Pfeiffer (2013), sustainable development is all about the use of natural resources while promoting justifiable, social and economic growth. Thus, the introduction of affordable housing reform has risen with different directives and policy tools that focus on promoting sustainable development of cities.

Secondly, from the social perspective, affordable and sustainable housing offers a sense of shelter and protection to society (Jamaludin et al., 2017). Therefore, making the housing market structure more efficiency is also part of socially sustainable development. Social sustainability looks at the issue of affordability of housing in terms of access to social amenities,



such as hospitals and schools. It also focuses on the quality of transportation and infrastructure, as well as the proximity to the shops or supermarkets.

Lastly, from an environmental perspective, affordable and reliable housing reduce the carbon emission and optimizes energy usage, as well as minimizes waste (Jamaludin et al., 2017). In this case, housing affordability focuses on promoting greener cities. It also focuses on environmental issues and related health concerns, such as water and air pollution. However, most studies have emphasized energy efficiency when focusing on the environmental aspect of sustainable housing (Bredenoord et al., 2014; Cohen, 2006). While upgrading of poor housing conditions is cost-effective, there is a need for a diverse range of housing options to bring sufficient housing solutions to low-income stipendiaries (Bredenoord et al., 2014). Therefore, the future of urban development will depend on the way Beijing city places housing program at the center of public reform policy around the concept of sustainable development.

## **2.2. Affordable Housing Policies**

To understand the issues associated with the affordable housing policy today, there is a need to understand how the policies evolved in China. The housing issues encountered today in Beijing are a consequence of housing policy reform made in the past decades in China due to political, economic and land-use related aspects. Since 1978, the Chinese government has pursued diverse economic and housing reforms policies to promote homeownership through privatization and commercialization of urban public housing (Yanyun, 2011). They have abolished the old system to a better market-based system and now they focus on the provision of affordable housing programs. The housing policies evolved drastically in 1998 when the central government ended direct housing distribution through the employer-based system (Man, 2011). The objective of the affordable housing system was to support low-income families in Beijing

and other urban areas in China. Thus, the local government introduced housing cash subsidies and Housing Provident Fund (HPF), which is a compulsory housing saving systems offer subsidies to working-class homebuyers (Yanyun, 2011). Since then, affordable housing reform has become the center of politics and now it encompasses sustainability concept that focuses on economic, social and environmental related aspects.

The HPF is a recent policy created by the Chinese government and it is similar to the housing fund program (Buttimer, Gu, and Yang, 2004). HPF is a policy that focuses on offering affordable housing to low-income earners. The HPF is among the series of policies designed by the government in which it subsidizes the mortgage rates and offers price discounts as a mechanism; thus allowing employees to save money for completing a housing purchase. The HPF imitated the Central Provident Model implemented in Singapore and it was introduced in Shanghai in 1919 but it became a housing saving program in Beijing after 1994 (Yao, 2011). It is now common in Beijing and other urban areas in China. However, this is a complex program, which demands both employees and employers to save a certain amount of income into the HPF accounts meant for housing finance. However, housing saving is non-taxable and usually, participants get loans that are more ten times higher than their HPF savings (Yao, 2011). As a result, this enables them to get adequate money for housing savings.

Moreover, the low-income housing policy is a recent policy reform that focuses on providing low-rent to middle and low-income earners (Mulliner and Maliene, 2011). The policy aims at offering affordable and sustainable housing program to low-income households. Recently, Beijing city introduced the other two types of affordable housing policies that have some social support elements. One of them is the commercial housing program that controls of the sale price. The other is the public rental housing for migrant workers and this policy has

some benefits too. While the demand for affordable housing program will continue, study shows that future of housing system in Beijing depends on the central government to find answers on whether housing projects should focus on building homes for ordinary people and the kind of urbanization necessary for emerging cities (Wang, and Murie, 2011). There is also a need for interdependent actors to find effective strategies to address both the supply and demand challenges of affordable housing.

The low-income housing policy has now shifted to focus on affordable housing for migrants. The economic and socio-political goals seem to cause constant changes in low-income housing policy and its fate remains uncertain (Huang, 2012). However, Beijing has launched an affordable housing scheme that provides low-cost housing to all citizens (Bianji, 2017). The policy allows the government and buyers to share property rights. However, the policy has diverse restrictions because buyers and their households cannot have homes under their names and single people making house purchases should be at least 30 years and above (Bianji, 2017). Even so, the new policy lowers the housing ownership thresholds and makes things more affordable for families, as well as reduces government expenditure. The research survey reports show that over 56, 000 low-income earners have purchased self-occupied affordable housing with an average of 18, 000 Yuan per square meter (Rong, 2017). The "New Beijinger" along with those who have low income are eligible to apply for the self-occupied affordable housing (Rong, 2017). According to Rong (2017), the "New Beijingers" is a pilot policy that allocates a certain percentage of indemnification apartments to the new Beijingers to ease housing pressures on the ever-increasing population in the city.

The land-use policy has also become a widely spread aspect that attempts to focus on the issue of affordable and sustainable housing. Beijing government has been at the forefront of

implementing green architecture and eco-city planning to attain sustainable cities (Tsou et al., 2008). Thus, the Beijing government has now introduced strategic approaches to enhance the overall urban living environment. They have done so by implementing the mix-use of land use policy intended to enhance the efficiency of urban city functions (Xiao, Qiu, & Gao, 2016). Nonetheless, considering Beijing city and all its functional regions, integration of eco-system, housing planning, and energy conservations are among the aspects of attaining sustainability. However, integrating affordable housing into sustainable cities has not been an easy task.

Despite the implementation of affordable and sustainable housing policies, attaining affordable reform is also difficult because of tremendous and increasing demand for cost-effective housing not only in Beijing but also across the globe. The study reports that China had over 7.4 million low-income urban families with Beijing city reporting over 1 million cases of urban households in need of affordable housing (Yanyun, 2011). The labour statistics report estimated about 147 million floating population in need of affordable housing where the majority of them being the migrant workers are low-income earners (Yanyun, 2011). Thus, the housing approach of affordable and sustainable cities has now become a holistic agenda in Beijing city where housing is coordinated with the local and state government for urban planning program, which aims to promote the welfare to all urban households.

Although Beijing remains among the frontrunners to affordable and sustainable development aspects but the affordable housing accounts for the small portion of total housing stock (Yanyun, 2011). According to Yanyun, the low-rent housing programs, subsidized and comfortable housing accounted for 7% in urban areas of China where Beijing city is inclusive. In contrast, commercial and private-public housing accounted for 32 and 32.4% respectively (Yanyun, 2011). Although attaining compact city planning is the core aspect for developing

resource-efficient and eco-friendly city in the future, rapid urbanization brings challenges to this ideology (Tsou et al., 2008). However, Beijing continues to face notable challenges due to population explosion in urban areas making it difficult to provide affordable housing programs to middle-class and low-income families. Thus, the proper urban density necessary for the planning of the future urban cities has always remained a topic of debate.

### **2.3. Indicators of Affordable and Sustainable Housing**

Diverse literature has attempted to focus on the indicators of affordable and sustainable housing issue to understand this theoretical approach from varied perspectives.

First, social-economic aspects indicators of affordable and sustainable housing. Beijing is a city with people from the different social and cultural background. Muanzu (2010) argues that for housing to be both affordable and sustainable; therefore, it should accommodate people from diverse cultural background or else it risks promoting ethnic enclaves and social discrimination. While affordability requires the housing to have reasonable prices for lower and middle-income households, it should be able to meet living cost on a sustainable basis (Mulliner and Maliene, 2011). Thus, affordability is not necessarily a characteristic of housing but it should have a relationship between housing and people that use it. While there are diverse social and economic determinants of affordability, household income also measures housing stress.

Environmental indicators, such as density, open spaces, variety of transport choices, housing design and materials are linked to housing affordability and sustainability. Housing density plays a critical role in attaining affordable and sustainable housing. A report on urban planning shows that smaller units of land cost less to build than larger ones (Watson, 2016). Besides, low-density areas offer more costly housing than high-density regions. Muazu (2010) claims "the society must do by choice what their forefathers did out of necessity in case they

want to live in harmony in an environment (p. 44). Thus, for housing to be both affordable and sustainable, the building should have minimum heat and energy-efficient windows. It should also have low heat absorption, use recycled content concrete in the foundations and utilize fewer building materials. Besides, public open and green spaces within the city also mark valuable resources that not only enhances the quality of life but have significant environmental functions. These may also pose consideration economic benefit and promote social cohesion.

### 3. METHODOLOGY

The purpose of this section is to present the theoretical assumptions underlying the study and introduce the research design, as well as the empirical methods employed in the research process. The chapter presents the scope, research design process and limitations of the study design. It provides every aspect involved in carrying out this study including the method employed in gathering information. To attain the intended study objectives, this study is organized in the following questions. First, it introduces the background of Beijing and the rationale for selecting it to help in understanding the phenomenon of affordable housing problems in China. However, due to limited time for field research, this study relies heavily on literature sources and the single case study review. Yin (2011) further claims that designing a case study method is vital; thus, this case study approach will be explanatory. It then provides a contextual analysis of relevant texts from literature and data collection method, as well as the expectations from the conceptual approach adopted.

#### 3.1. Background of the Case Study

This study investigates the challenges of making housing both affordable and sustainable in Beijing. The rationale behind selecting this area of study is because Beijing is one of the most populous cities in China and the use of the case study strategy will help understand the research issue. Beijing is the capital city of China and among the most urbanized region in the state. Therefore, if the affordable and sustainable housing policy is unfavorable in this main capital city, then this policy is certainly not suitable for other urbanized regions across the country. Nevertheless, Beijing city is in the major economic center of China; thus, its external environment and economic growth level could represent most of the cities in China and global development. As such, using a case study strategy is imperative because it allows an in-depth

investigation to retain not only a holistic but also the meaningful characteristics of the real-life issues affecting society. Therefore, the case study approach is useful in circumstances where contextual conditions being studied are critical and where an investigator has not controlled as the events unfold.

Moreover, the prices in the current real estate market do not work well in Beijing city and the housing needs of the local population is on the rise (Yao, 2011). Despite the series of implementation of affordable housing policies, rental market prices, especially for the majority of low-income earners and the poor people, remain the primary challenge. As a result, high population rate coupled with high prices for housing makes this case study an interesting area under investigation since this helps in determining the challenges that policymakers, urban planners and interested stakeholders face as they attempt to attempt to implement affordable and sustainable housing policy. Research study indicates that in-depth studies offer a comprehensive approach to social, political and historical analysis of the complex study phenomena (Yin, 2011). Thus, relying on the case study approach and data collection from varied sources makes the capture, as well as an understanding of the context of the research issue in details.

### **3.2. Research Design**

Case study analysis is an effective approach that focuses on contemporary real-life issues and the findings of the research issue under investigation. It offers a detailed contextual analysis of the varied number of events and their associations. Case studies are relevant to more research questions since it seeks to explain the present circumstances, how and the ways some social phenomenon works (Yin, 2011). Therefore, this research is particularly useful since it employs a case study approach to obtain in-depth information on making housing both affordable and sustainable. According to Yin (2011), case study design might seem complex but it is an



effective qualitative approach that adds strength to what is already known since it relies on the previous studies. It can also offer further insight into the gaps that exist in its information delivery and turn can refine or develop theory. To address the research questions, this research considers employing a single case study to offer analysis, interpretation, and reporting of the research problem. Hence, this research will approach the case study design in a manner that would help obtain a more naturalistic understanding of the challenges of making houses both affordable and sustainable in Beijing.

### **3.3 Data Collection**

Data collection is through secondary sources and case study were the main methods employed in this study. To answer the research questions, the study relies on policy papers, census statistic, survey reports, and previous literature, as well as field research information done by previous researchers as the key methods for collecting secondary information. The study draws significant data and critical information from various academic papers. Valuable information is gained through research study analysis from the statistical yearbooks, population census reports, property news, policy documentations, local survey papers, and academic articles to analyze the challenges of affordable and sustainable housing provision in Beijing.

Besides, the primary purpose of this study is based on the background information on case study analysis. Therefore, a review of affordable housing policy in the context of Beijing is examined. Main materials from academic sources and government publications, as well as government statistical reports, are among primary materials for collecting information on the case study. Lastly, the documentary evidence of academic materials including published and credible journals that focuses on the single case study on Beijing will also help in offering relevant data necessary for accomplishing the study objectives.

### **3.4. Data Analysis**

This study will largely rely on the interpretation of literature and analysis of information gathered previously by other scholars on a similar research topic. It will employ a contextual analysis of the key information and interpret the theoretical issue under investigation. The rationale behind this is to help derive conclusions from the information collected and keep a clear chain of study evidence. However, the case will be descriptive in nature but it will be guided by the theoretical framework of affordability and sustainable housing policy as a guide for data collection. Yin (2011) argues that stating theory openly will help advance the subject under review and debate since this will serve later as the design for the descriptive analysis of the case. To analyze the case study effectively, this research will examine the case thoroughly by highlighting relevance facts and the underlying key issues concerning the challenges of affordable and sustainable houses in Beijing. It will also focus on the analysis of other related key issues and attempts to uncover the possible solutions or change needed to address the problem under inquiry.

### **3.5. Limitations**

Although case study approach can help in understanding the context of theory and research problem effectively, it can weaken historical analysis of the case in some aspects; thus allowing theoretical generalization beyond the particular issue (Crowe et al., 2011). This study has limitation arising from the method employed in collecting data and information. The study limited to previous literature materials and case study analysis in examining the challenges of affordable and sustainable housing policy. Even though secondary data can help understand the theoretical concept underpinning the research phenomenon, some sources can pose bias of the findings. Case study approach has been subject to criticism on the grounds of non-

representativeness and that it lacks statistical generalizability (Yun, 2011). Furthermore, the richness and complexity of information gathered data means that the data is often open to diverse interpretations and ultimately posing bias. Although the case study lacks detailed systematic data analysis and unable to provide generalizability in a statistical sense (Yun, 2011) still believes that case studies are useful in developing and refining generalizable concepts.

Moreover, researchers can minimize biases by using credible and/or trustworthy sources when gathering information for case study analysis. Similarly, this case study relies on credible sources to offer the reader with reliable and enough contextual information. In this way, it will help not only help minimize limitations but also enhance the research process followed and the conclusion reached. Besides, the case study draws upon the conceptual framework of affordable and sustainable housing approach and enhance the transparency of the findings to reduce study limitations. Thus, this study enhances transparency through providing in details the steps involved in case selection, data collection and the rationale for selecting research methods.

## 4. RESULTS

This chapter presents in-depth empirical findings revealed from different sources and case study analysis. It analyzes the results of the study and links it with the relevant literature including survey reports, policy paper, academic articles among other previous studies carried out by numerous scholars. This section begins with the general background of the case study and then provides a review of affordable/sustainable housing policies in Beijing. Lastly, it also tries to find answers to the research question or problem under investigation and the possible solutions to help address the research problem.

### 4.1. General Background of Case Study (Beijing)

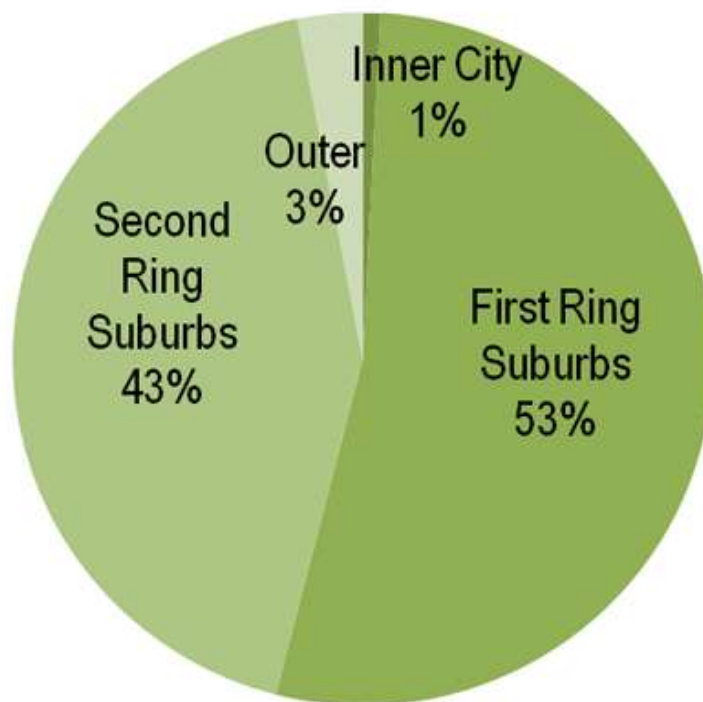
Beijing, a city with 16 urban and rural districts, is among the most populous urban areas in China (World Capital Cities, 2019). The capital city has been for long decades one of the largest cities across the world. Some statistical reports that the population in China was over one million by 1800, which could have placed the city among the largest global cities (Cox, 2011). Later in 19<sup>th</sup> era, Beijing dropped below one million as London, Paris and later New York City rose to prominence as the leading urban areas in the world (Cox, 2011). By 1953, Beijing had a population of less than 3 million but it has increased since then to more than six times as shown in figure 1 (a).

Additionally, the statistical facts report on world capital cities shows that Beijing is currently number three among the most populated cities in the globe. The Beijing Municipal Bureau of Statistics (BMBS) in 2010 estimated the city's total population at approximately 19,612, 368, representing a 4.4% increase from the year 2000 (BMBS, 2019). Consistent with the global urban trends, the highest growth rate took place in the first ring suburbs with 53% followed by the second ring suburbs that accounted for 43% in the year 2000-2010 as shown in

figure 1 (a) below (Cox, 2011). In 2015, the statistic population census revealed that Beijing had an estimate 1, 979, 946 people (BMBS, 2019). In 2016, the total population in the city grew by 2.3%, accounting to the total population of about 19.7 million and this was due to the increased rural-urban migration. The population has been growing along with the greater China populace in the past few years. Recently, the BMBS report of 2019 population census estimated that Beijing has over 20, 035, 455 but other statistical reports that the city has over 21.7 million people and is expected to increase to 25, 365, 920 by 2035 (World Population Review, 2019). Although the city has been expanding consistently at a fast pace, this has also led to the increased demand for housing to shelter the ever-increasing population.

## Beijing: Population Growth by Sector

2000-2010



**Figure 1**

*Figure 1 (a) Illustrating the population Growth by Sector in Beijing (Cox, 2011)*

Although Beijing is the second after Shanghai in terms of the populace, the city faces challenges of escalating housing prices due to the strong housing demand from Beijing residents (Yao, 2011). The population has been growing at breakneck speed with rent price increasing at an alarming rate. Most of the families living in this city are low-income earners and rural-urban migration to this area is on the rise due to the urbanization process (Tao, 2015). Even today, Beijing city government continues to expand forcing the local city government to implement affordable and sustainable housing program to cater to the needs of every citizen. The municipal government of Beijing seeks to not only offer affordable housing services but also fulfill sustainable needs of the local citizens.

Despite the introduction of affordable housing policies, the Beijing municipal government continues to face criticism for failure to regulate exponential housing price and inflation. To cope up with housing challenges and follow policy guidelines put forth by the central government, the municipal government has enforced a series of implementation plans (Cui et al., 2017). First, the local government grants developer the land parcels for constructing affordable housing using free of charge (Cui et al., 2017). They have set the price for development of housing, reduced the taxes, and provided a 3% profit cap for developers in Beijing (Cui et al. 2017). The municipal government has also endorsed the regulated price based on the specifics of the housing development initiatives and its location. However, limitations on this policy are on the full ownership of market-priced housing and the government set the prices for property management much lower than the market price.

Recently, an initiative of five-year plan program to offer affordable houses to the majority of the low-income earners has been now the core aspect concern. The major aim of the program is to curb the rising population and maintain it to about 23 million through 2020 (World

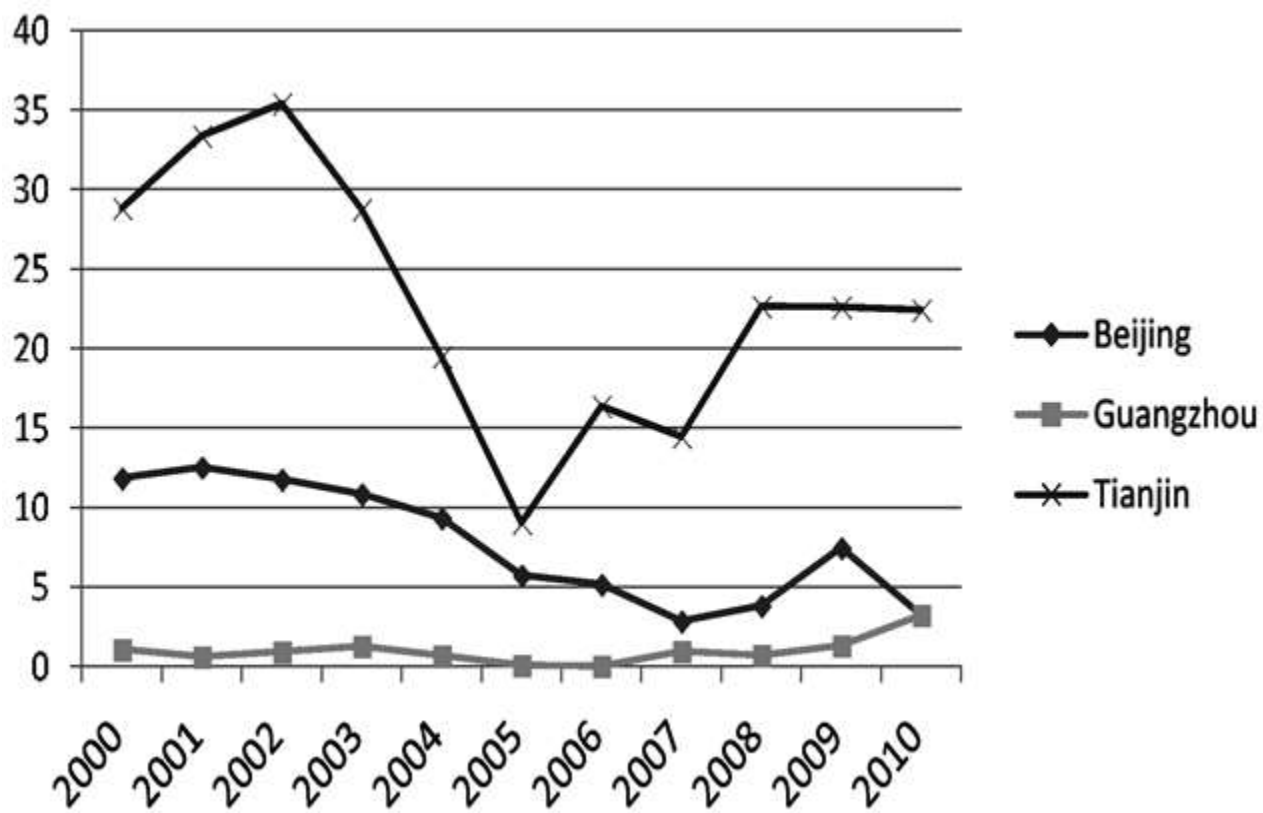
Population Review, 2019). However, some research experts argue that there will be more than 50 million people living in Beijing by the end of 2050 (World Population Review, 2019). Hence, this is likely to increase demand for housing and ultimately contributing to the skyrocketing of prices for housing. As such, the Beijing city government are now working hard towards keeping the population at bay. At the same time, they are seeking for ways that will help them deliver affordable and sustainable housing programs to suit the needs of the ever-increasing population.

#### **4.2. Affordable Housing Policies in Beijing**

The implementation of affordable housing policies in Beijing dates back to some years ago when the Chinese government established housing reform policies. The priorities of the Beijing municipal government on affordable housing program include promoting not only economic growth but also urbanization through proper allocation of resources and ensure social stability. Since the introduction of housing reform policy in China, the city government have worked hard towards ensuring that residents have better access to housing-related resources. In 1998, the housing market in Beijing established housing policies with the market-oriented reform housing system in cities (Wang, Hoon, and Lim, 2012).

Additionally, in the early 2000s, the Chinese government implemented numerous policies to stimulate the development of the housing market such as loose monetary policies, land lease policies and public housing subsidies in Beijing. The housing price in Beijing was stable because citizens spent about RMB 5000 before 2005 (Wang et al., 2012). Figure 1(b) below shows the median house price to median income ratio dropped from around 28 in 2000 to 8 in 2005 and then rose steadily after the financial crisis of 2007/2008 in Beijing. However, the price became stable in 2009 and 2010 and this can be explained in terms of the recent favorable housing policy reform; hence helped many citizens to release housing affordability

stress.



*Figure 1 (b) Illustrating house price and affordability in Beijing and the other cities (Cai Tsai, and Wu, 2017)*

Nevertheless, the housing prices rose gradually since 2005 and the market became severe during the global financial crisis in 2008 (Michnowski, 2017). During this period, most of the states reacted to this crisis by implementing numerous policies to curb the financial impact on housing prices. Beijing became among the first cities to implement financial policies and started investing in affordable housing, as well as loosening monetary policies. Even so, these policies worsened everything and the prices for housing continued to skyrocket; thus making it difficult for low-income earners to invest in housing ownership programs.

Although there was a sign of recovery reflected in 2010, the house price growth rebounded and worsened the house affordability situation in Beijing (Wang et al., 2012).



Research findings report that the user cost is approximated 2% and 1% increase in the real interest market rate that corresponds to 33% negative change in the price to rent change in the mass-market housing in Beijing (Michnowski, 2017). Although the price ratio to rent rose higher in 2008 and 2009, the Beijing government implemented financial policies to curb the inflation rate (Michnowski, 2017). However, this also fueled concerns regarding the affordability and inequality that prompted the Beijing government to initiate the social housing to supplement the role of housing allocation in the private market (Eftimoski and McLoughlin, 2019). Nevertheless, the government policies continued to affect the private property market many of which continue to influence the demand for housing.

In recent decades, there have been distinct episodes of policy intervention. In 2009, 2013 and 2016, Beijing government tightened housing purchase policies and related borrowing to control prices in the market to curb inflation and make houses affordable to every citizen (Michnowski, 2017). In each episode, the city government placed restrictions on the apartments that each household could possess. The rationale besides this was to restrict housing prices. Beijing recently developed new housing policies meant to stabilize the property market (Bianji, 2017). They also attached minimum housing ownership periods and aligned fluctuations with the real estate investment with major changes in governmental policies influencing property market.

Taken at the face value, the case for further building affordable and sustainable housing market has led to a policy-driven increase in housing supply in Beijing. Research shows that about 60-70% of the total population have residential properties and indication that housing affordability has improved in the city (Michnowski, 2017). The criteria employed to determine this percentage is the price-to-income ratios and rapid property price inflation has outpaced the growth in household income. Nonetheless, the fact that the percentage of housing ownership is

does not mean that everyone owns a home. Many people who own properties and homes in Beijing are those that acquired land a long time before the introduction of land reform policies of China and others own land where they were born. Therefore, the majority who work there does not own houses and onerous restrictions are among the cause that hindered migrants in the past from house ownership.

Research findings show that efforts to build affordable/sustainable housing are driven by diverse concerns. One of them is the high population and a larger number of households living in low-quality housing. A research survey conducted by Xiao et al. (2016) found that that the majority of low-income earners live in lower-quality housing commonly known as shantytowns. Most of these people are unemployed and others that work earn low income that cannot sustain their livelihood. Secondly, income disparities within the city of Beijing mean that the aggregate affordability ratios are likely to reflect resource distributional issues that urban dwellers or household living in the first-tier cities face. In particular, housing might become less affordable to migrant workers because the study shows that the annual wage for migrants is only two-thirds of the total national income (Michnowski, 2017; Xiao et al., 2016). Besides, housing policy restrictions make it complex for migrant workers to own houses and many of them lack equal access to public rental housing. However, the Beijing city government have now developed new policies known as “New Beijingers” that targets all citizens including migrants and low-income earners to benefit in the affordable and sustainable housing policies.

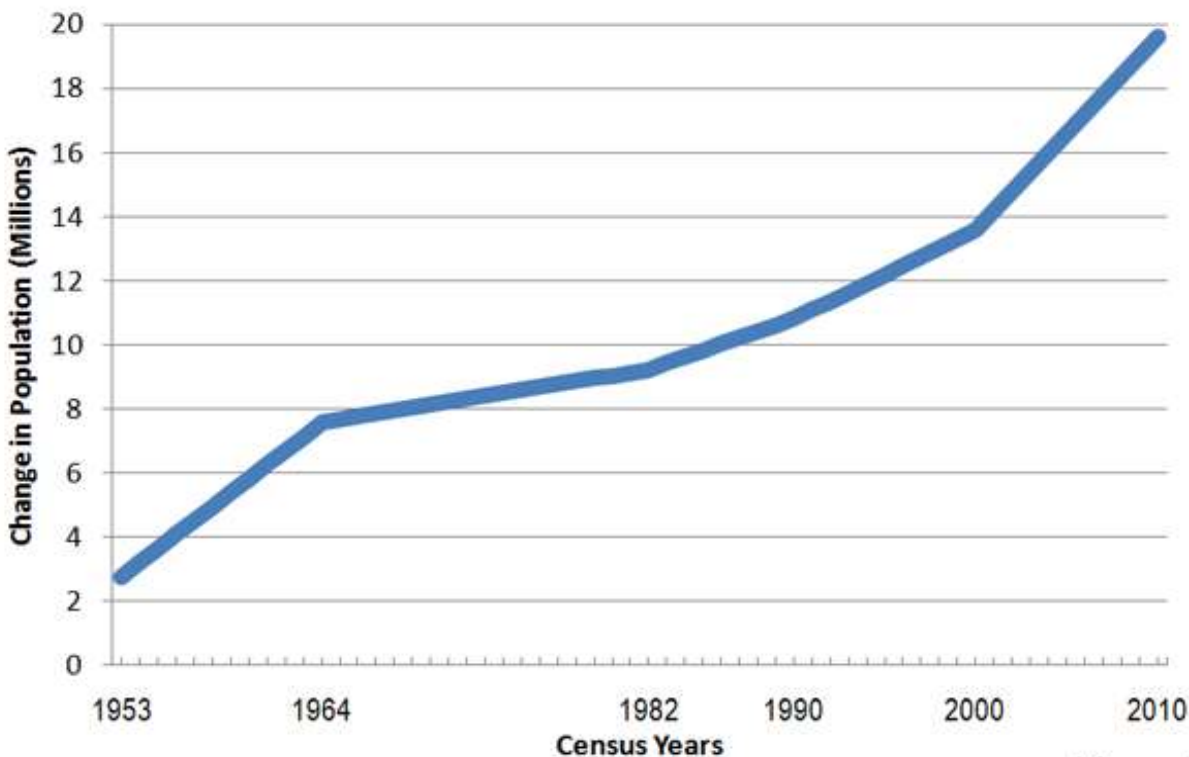
The other issue of concern that has driven housing policy reform is lack of affordable and accessibility to quality houses especially among the younger households (Cheng, & Hu, 2010). Research findings show that in an environment where housing prices have risen faster the value of the financial assets, higher-income earners are likely to undertake speculative investments in

other small urban areas, most of those that do not have strict policies based on house purchase (Cheng, & Hu, 2010; Michnowski, 2017). To address these issues, the Beijing government is now working towards stabilizing prices for house market through the provision of affordable housing policies meant to improve the social and economic welfare of all residents residing in this first-tier city.

#### **4.3. Challenges of Implementing Sustainable Affordable Housing in Beijing**

Study findings conducted found that implementing sustainable and affordable housing in Beijing is complex aspect because of the high population, which contributes to increased demand for houses. According to the Beijing Municipal Statistic Bureau yearbook of 2000-2011, the total population in Beijing increased from 12.46 million in 1998 to 19.61 million in 2010, with an average 4.4% increase level as shown in figure 2; thus, affecting the social demographic changes in Beijing (Beijing Municipal Bureau of Statistics. 2019; Yao, 2011). The study report shows that young people mostly college students and migrant workers immigrated from other districts and provinces to Beijing for study and work respectively. Hence, this led to the increased population growth rate in Beijing contributing to other associated challenges of offering affordable and sustainable housing to Beijing residents.

## Beijing: Population 1953-2010



**Figure 2**

*Figure 2 Illustrating demographic Changes in Beijing (Yao, 2011)*

The study report that making housing affordable and sustainable in Beijing is a challenge due to the increased demand for houses and inflation (Yao, 2011). Yao (2011), in his article "measuring affordability housing in Beijing," found that housing prices rose gradually in recent years in Beijing. The rationale behind the increase was a result of living consumption demand that arises from inflation, speculations in the market, and excessive investment needs (Yao, 2011). However, the reason behind the escalating housing prices is the demand for houses, and this is linked with the ever-increasing population growth rate in Beijing. In 2009, the total completion of commercial housing reached over 279.46 million square meters in Beijing (Yao, 2011). Hence, this shows that the house is a costly exercise, and this poses a challenge to the

Beijing government to cater for the housing demand for the ever-increasing population in the city.

Diverse literature challenges of implementing the affordable housing reform policy within the concept of sustainable development. Bredenoord et al., (2014) found that one of the biggest challenges of implementing affordable housing policy is to attain inclusive cities for all urban dwellers. Thus, given this problem, affordable and sustainable housing solutions are prerequisite for the poor and low-income earners (Bredenoord et al., 2014). Research indicates that Beijing is among the megacities in China that face rapid urbanization (Bredenoord et al., 2014). In this case, there is a high growth rate of the population; thus, housing affordability becomes a challenge to the low-income earners.

Housing affordability problems are also linked to household income and housing market prices in the city. The relationship between the two variables as indicated in the previous studies conducted by Gan et al. (2017), where the author claims that most of the low-income earners are unable to get better and safer housing at reasonable prices. Hence, this has led to millions of people living in poor housing conditions. Besides, the population is projected to reach 2 billion by the end of 2030 (Bredenoord et al., 2014). Due to limited rental income and weak policies both at the local and national level, affordable housing is a myth for most low-income earners in Beijing. While upgrading of poor housing conditions in the city is cost-effective, there is a need for a diverse range of housing options to bring sufficient housing solutions to low-income stipendiaries. Therefore, the future of urban development will depend on this city places housing program at the center of housing reform policy around sustainable development.

Besides, achieving sustainable housing is a challenge due to overcrowding because of high population growth in the capital city. There is numerous research evidence that sustainable

and affordable housing is increasingly becoming a challenge for most cities across the world and Beijing inclusive (Bredenoord et al. 2014). While the prevalent problem is linked with low income, other considerable challenges lay in the poor quality of housing and lack of availability to better services (Wu, Xu, & Yeh, 2006). Hence, this challenge remains the primary issue affecting most cities today and is likely to persist in the near decades. The World Bank report estimates that within a decade, about 1.6 billion people globally struggle to attain affordable housing, and this could affect their livelihood (Kacyira, 2016). In Beijing alone, about 70% of urban families strive to achieve affordable housing (Yanyun, 2011). Thus, the housing approach of smart, sustainable cities has now become a holistic agenda where housing is coordinated with the nation and urban expansion program in a manner that promotes welfare to all citizens.

Beijing has been impacted tremendously due to the rise of rural-urban migration most of whom are middle and low-income households; thus making it difficult for the municipality to distribute resources equally to the ever-increasing population (Ziegler, 2006). The previous studies conducted in urban regions of China found that Beijing is one of the growing cities with the highest population; thus, it has become the center of global politics (Ziegler, 2006; Wang et al., 2012). The rationale behind this is because of high economic development that has attracted rural to urban migration with associated environmental, social, and economic challenges (Ziegler, 2006). As a result, it has led to the politics of sustainable development that focuses on the curbing strategies of greenhouse gas emissions, which is among the causes of increased global warming. Sustainable cities have therefore gained a central role in politics of not only western but also in Chinese societies like Beijing.

Making housing both affordable and sustainable is a challenge for Chinese cities that are increasing and accommodating hundreds of thousands of low-income earners. The study shows

that Beijing is one of the Chinese cities and a home for hundreds of thousands of low-income earners, and most of them are jobless youths graduated recently from universities (The Collective, 2017). Hence, these students are now turning to temporary accommodations and underground space. In 2015, the government evicted more than 120, 000 people from these areas, but the number has doubled in the recent in cities like Beijing, Shanghai, and Tianjin (The Collective, 2017). Other urban dwellers are migrants who cannot purchase homes in urban regions, and this is a massive barricade to establishing better lives in the city; thereby contributing to socio-economic barriers to integration of affordable and sustainable housing policy. Both groups represent the emerging trend of low-income earners in urban demographic living in temporary accommodation where prices for houses are skyrocketing.

Although underground shelter apartments are highly desirable in Beijing areas offering a cost-effective alternative to the far-reaching places of the town, it might be a challenge to implement sustainable/affordable housing to the urban dwellers. The reason behind this is that the growing population alone may hinder the government from attaining their intended goals unless they find a solution. A study conducted found that Beijing has 48.1% of migrants who spend less than 300 RMB for monthly rent and the underground apartment comes to about 448RMB to the primacy of their location (The Collective, 2017). Although Beijing is not alone in the struggle with skyrocketing house prices, Shanghai migrants also face challenges, thus forcing many of them to turn disused shipping containers in the outskirts of the town as their home. Therefore, this might become a challenge for the government to offer sustainable and affordable housing programs to low-income earners.

#### **4.4. What are the Challenges and Prospects of Implementing the Affordable Housing Policy that Complies with Sustainable Development of Cities in Beijing?**

Scholars perceive affordable housing reform as a social and economic facet of sustainable development and Beijing government has developed housing reform program to offer middle class and low-income household with housing units at a cost-effective price to eschew any socio-economic segregation (Cai et al., 2017). The program has become the key aspect for transforming the China cities where Beijing is one of them. However, this program have brought in new challenges from multiple areas including resource management, environmental quality problems, urban identity and infrastructure issues (Tsou et al., 2008). First, environmental quality problems have become the major issue affecting cities like Beijing that are growing at a first rate. Undoubtedly, enhancing housing affordability is not only the way housing become economically viable but also need to advocate the wider criteria in determine housing affordability and quality of life (Ruibo, and Linna, 2013). From environmental housing criteria of sustainable development, a housing cannot be affordable and sustainable in case the quality of life in the surrounding environment is poor. Thus, while global cities strive to attain economic growth and at the same time attain sustainable development, these has not been easy without facing environmental challenges especially pollution from construction of cities and industrialization process. Beijing is one of the cities that continue to experience urbanization coupled with advanced industries. Hence, this pollution from industries and emission of dangerous gaseous materials from the construction of building and industries affects the environment.

From the urban planning perspective, land saving and population density control are among the core aspects influencing future urban development in Beijing. Although the Beijing



government has paid attention to address these issues, implementing affordable housing policy that complies with the sustainable development in megacities especially Beijing is not an easy task (Cai, 2017). The rationale behind this is due to increased urbanization and economic growth of Beijing that continue to attract many people to the city. There is the rapid rural-urban movement to Beijing city; making it complex for the government to offer affordable housing to all residents. The movement to urban areas is a result of better economic growth and rapid industrialization, as well as better infrastructure; thus attracting the mass of people to urban areas.

Current studies have paid more attention to case studies that focuses on the practical experience lessons on affordable housing programs in Beijing and other emerging cities. The rationale behind this is to evolving role that affordable housing play towards urban sustainable development. However, the rising urbanization and industrialization process of cities in the past decades have aggravated the housing policy problem (Cai et al., 2017). Policy makers in Beijing are now striving to search for effective ways to implement affordable housing program that are not only cost-effective but also sustainable. Despite this, Beijing and other megacities have encountered housing affordability challenges and divergent opinions as they attempt to attain the intended goals of affordable housing policy reform.

Furthermore, Cai et al. (2017) employed a comparative case study to explore the characteristics, effects and challenges of affordable housing in three megacities of China including Beijing, Tianjin and Guangshou. The author found that these cities have unique affordable housing policies but continue to face challenges as they attempt to implement those policies. One of the challenges reported in this study include barriers to the sustainable development of affordable housing program (Cai, 2017). The barriers arises from land supply

issues that the municipal government of Beijing need to solve first before planning for offering sustainable and affordable housing services. Thus, land issue has been for many decades a major problem facing Chinese citizens.

Despite of land reform policies, land supply and distribution continue to remain an issue of concern. Land use and planning is of great aspect when it comes to affordable housing programs because it influences housing development. However, many cities like Beijing are struggling with land use and planning problem in their process of urban development (Cai et al., 2017). Balancing the supply of land parcels for affordable housing development programs has not been an easy task because of corruption, budgetary cutbacks and tough government regulations. Budget restriction also pose major challenge as the Beijing local authorities attempt to further promote sustainable and affordable housing programs. All these are limited to public funds for enhancing projects related to affordable housing; thereby making it complex to serve the needs of local residents who dwell in affordable housing provision programs. Besides, conflicts of interest between private and public sectors, as well as regulation specifications are among the multiple barriers to the implementation of affordable housing. Cai et al (2017) claim that diverse risks and local concerns exist that relates to the cost-benefit issues of implementing big projects like this one. Some of them include criminality and discrimination when lower income households move into local communities.

A recent case study conducted one of the urban areas of China can help in understanding the challenges that Beijing city face in an attempt to implement affordable and sustainability housing policy. The rationale for linking this city is because most of the problems allied to affordable housing policy in urban areas Xiao, Qiu, and Gao (2016) conducted a sample survey design approach using professional spatial and statistical inferences strategy to determine the

impact of housing policy reform and sustainability issues. The authors carried out the study in the Xiamen city in the Southern part of China, a town that had undergone rapid urbanization and economic development. They found that housing market prices in this area are on the rise due to the high rate of rural-urban movement and high economic growth rate. They concluded that implementing housing and sustainable policy is a challenge; thus, they advocated that policymakers pay more attention to the welfare of renters (Xiao, 2016). They also advocated the need to integrate the processes of migration into urban planning strategy of cities.

Similarly, Tsou, Yu, and Hui (2008) reported that implementing housing reform policy in Beijing is a challenge because of poor resource management and inequality in resource distribution process. Thus, inequality in resource distribution may affect affordable housing provision and this may not catch up with the demanding needs of the high population density given the rapid urbanization process and social inequalities in key areas of development. The study further revealed that "unsustainable development reduces the efficiency of Chinese cities" and these contribute to resource usage and social sustainability-related issues. Conversely, the study claims that the premature housing market can make the central and municipal city government involve directly in the housing system; thus reducing administrative efficiency in offering comprehensive housing schemes. Besides, developers may not be keen to improve the quality of housing since they might devote varied efforts in keeping multi-level close association with the municipality officers to get extra revenue.

Affordable housing has been the core aspect of the sustainable development agenda in Beijing but the rising problem of housing inequality, poor quality, and other related issues make it complex to attain a sustainable housing market. A lot that has gone wrong with emerging cities is allied with the housing is one way or another. Today, the Beijing is part of the global cities

that faces rapid urbanization (Bredenoord, Van Lindert and Smets, 2014). Here, the cities are increasing in number; thus becoming challenging to the poor people to get better and safer housing at affordable prices. Hence, this has led to billions of people living in poor housing conditions and it is projected to reach 50 million by the end of 2030 (Bredenoord et al., 2014). One of the biggest challenges is attaining inclusive cities for all urban dwellers. Thus, given these characteristics, affordable and sustainable housing solutions are prerequisite for the poor people in the Global South (Bredenoord et al., 2014). Due to limited rental income, and weak policies both at the local and national level in Beijing, affordable housing is a myth for most low-income earners.

#### **4.5. How can the Sustainability Concept Help in Offering Affordable Housing in Beijing in the Future?**

Before focusing on how sustainability concept can help deliver affordable housing, it is imperative to understand the benefits of this policy from an economic and social perspective. First, the economic benefit of affordable housing provision is the primary concern for the government, citizens, and stakeholders. Job creation, government subsidies, and sales tax are the prevailing economic and fiscal benefits. Affordable rent can increase in case residual household income, and household can raise their purchasing power after meeting the necessary cost of paying house rent or purchasing one (Cheng, and Hu, 2010). Local businesses are likely to benefit more than anyone else in the affordable housing policy is because this program saves taxpayer money through the reduction of government services, such as settling homeless and other relevant programs.

Besides, affordable housing has the element of social sustainability and cannot enhance positive educated-related outcomes but also reduce the need for relocating the unprivileged

households. Moreover, it can also improve the health of residents by reducing exposure to environmental hazards and the cost of paying for health and food. Affordable housing is imperative because it can help stabilize the reasonable prices of living. It can help in avoiding the disruption of the learning environment and create a sense of impermanence in life (Cai et al., 2017). A well-constructed and maintained affordable housing can reduce health-related issues allied with the poor-quality house.

In most cases, families live in substandard housing in case they have the few affordable housing options. Hence, these substandard housing might put families at risk to expose them to diseases, such as lead poisoning and accidental injuries. Based on the housing research survey of 2012, it was found that middle and low-income families spend more than half of their earning on the cost of living but spend less on food and health services (Cai, 2017). Nonetheless, families may suffer from a lack of resources from other significant needs, such as healthcare and food, in case they pay more for housing rent than what they earn. As a result, access to affordable housing and help families to reduce family expenditure and ultimately contribute to the social-economic development of a city.

China, in general face unique socio-economic and environmental challenges as it, attempts to manage the transition of the cities to an increasingly urbanized economy. With the rapid urbanization of megacities, such as Beijing and Shanghai, the state faces considerable challenges in sustainable urban development. However, there have been reform policies and innovative ways that focus on expanding urban areas while conserving natural resources (Cheng, and Hu, 2010). The primary considerations in affordable housing reform include cost and time, as well as the ability to meet the needs of low-income earners by addressing cost-efficiency housing through integrating sustainability features (Gan et al., 2017; Xiao, Qiu, and Gao, 2016).

Radical changes in urban planning and greener cities that are ecologically friendly has taken center stage. Hence, sustainable housing that is self-sufficiency and carbon neutrality are among the aspects of creating an eco-city development.

Housing can be both affordable and sustainable through the introduction of sustainable development programs. China central government can work together with the Beijing municipal government to equip this fast-growing city for sustainable growth through working on urban planning, sustainable housing and industry development among other vital areas (Schwab, 2014). Although sustainability cannot guarantee affordable housing in Beijing, considering sustainability is imperative for the megacities. The sustainable initiative encourages cities to foster economic growth and innovative business. Developing nations such as Malaysia, for instance, have begun to “comprehend the needs of affordable and sustainable housing development” by integrating this concept into the housing policy (Jamaludin, Mahayuddin, and Hamid, 2018, p. 1). Reasonable and affordable housing is necessary for all citizens since it is an indicator of sustainable development. The society cannot attain a good life without better living conditions since this is the most significant aspect in the lives of people.

A study survey conducted in Fengtai district in Beijing found that residents have high aspirations towards affordable and sustainable houses in the future (Tao, 2016). However, the dilemma in housing is still a challenge in this city. People flock to Beijing every year in search of employment, and about 30 million people live and work in Beijing (Tao, 2016). Hence, this contributes to diverse problems in affordable housing and living conditions. As a result, the city government needs to address this issue by taking into considerations on policy change. Many regulations restrict densities and building arbitrarily; thus, removing these regulations would enable housing demand to increase frequencies (Demographia, 2017). As a result, densification

is desirable, but only in case it is demand-driven, especially when most households and firm prefer relocating to a particular part of the city.

#### **4.6. To what extent and how is Housing can be both Affordable and Sustainable in Beijing?**

Making housing both affordable and sustainable is a challenge in Beijing because this aspect was initiated some few decades and has not yet been effective. In this case, cost and time are among the major aspects to be taken into considerations in an attempt to meet the needs of people especially low-income earners. However, through the combination of funding, human innovation, and technology advancements, this paradigm might shift. Thus, one of the ways to make housing both affordable and sustainable is to focus on a real house for an affordable price. There are several models that the government can employ to achieve this including installing high ceilings to allow the heat to rise and offer the home with cross-ventilation.

However, make states nowadays employ publicly used data as the typical approach to illustrate the housing affordability issues through housing price-to income ratio (Cai et al., 2017). The core indicators used in Beijing and other cities to determine the affordability and sustainability of housing include “Rations of Affordable Housing (RAH), Housing-Price to Income (HPI) and Affordable Housing Investment (AHI (Cai et al., 2017). In case HPI is high, then household in the urban area may find it complex to purchase a house. AHI is the “absolute investment total in affordable housing” (Cai et al., 2017). Therefore, understanding these ratios can help the municipal government to determine if they can pay more attention to sustainable and affordable housing development or promote a market boom for real estate. Besides, this effective strategy can help the government to measure the extent in which they can develop policies vital for promoting sustainable development in urban areas.

Engaging community participation in affordable housing policy can also help enhance better quality housing and promote community or stakeholder understanding. Research shows that people have a sense of responsibility and the kind of attachment to their environment when involved in housing design (Tao, 2015). Moreover, since sustainable and affordable housing is a long-lasting program, numerous research findings supports collaboration between local, community, public agency and civic groups (Cao et-al. 2017; Tao, 2015). Policies developed without involving the community or stakeholder participation at the best will not last for long. Therefore, community participation in this affordable housing program is vital since this not only enhances social relationships but also fulfills their present and future needs. Thus, this is by going green and taking advantage of solar panels to supply electricity among other sustainability aspects.

To address housing affordability and inequality issues, Beijing authorities have now spearhead diverse initiatives meant to increase housing supply in the city. These programs have tremendously boosted real estate development and housing ownership. One of the key programs is the shantytown redevelopment initiative that aims at reducing the number of people living in poor and low-quality housing in less developed and slum areas in the city (Michnowski, 2017). Another initiative is the “rental pilot cities” initiative, a program in which the local authorities have announced changes that meant to not only boost housing supply but also increase private rental housing (Michnowski, 2017). The rental pilot housing program seeks to offer improved houses that are safe, stable and of good quality. It also focuses on areas in Beijing where affordability has not been effective in recent decades especially for new migrants working in the city and jobless or college graduates.



There is also the need to enhance the role of local government in service deliver process of affordable housing programs. They can adopt the couple of decentralized guidelines when implementing affordable housing policy. For example, Beijing municipal government established the HPF program and cheap rental pilot programs in the city among others for the extreme low-income household groups in 2006 (Cai et al., 2017). Despite this, affordability remained a problem for the majority of families. The issue became worse because this led to social instability and political related problems among the political leaders and policy-makers. Thus, this forced the Beijing municipal and central government to establish guidelines and enforced the series of affordable housing plans to cope up with issues of implementing affordable and sustainable housing.

The best solution for solving affordability crisis for urban planners and politicians to stop believing on the myth of allocating houses to low and middle-income households would end this problem. However, the likely possible solutions are driven by housing market forces and this will help find the best way of controlling the housing market price. The International Housing Survey statistics conducted reveal that the solution to costly housing prices is not inventing regulatory gimmicks or designing massive subsidies to taxpayers but rather increasing the land supply and floor space, as well as removing any land regulatory obstacle (Demographia, 2017). The market solution will allow any family or household searching for affordable house choice offer in the housing market by selecting the best trade-off between floor area, density and location to optimize the welfare.

Another likely solution is solving land supply issue and building strong financial mechanism to finance sustainable and affordable housing programs. Although Beijing municipal government need to solve land supply and increase it, this may require financial mechanism to

finance affordable housing program and infrastructure systems to make the new land accessible to the labor market. Research shows that a city cannot expand without proper disposal of the financial instruments to finance new infrastructure when expanding the urban areas (Demographia, 2017). Thus, these instruments should be able to finance infrastructural development, such as roads, sewers, drainage, railways and other urban transport networks. However, even though the planners, politicians and policy makers could establish the likely strategy to solve the affordability problem, it is not easy to implement it. As such, the distortions created that the regulatory repression of floor space and land create can generate the sort of pathological equilibrium (Demographia, 2017). The necessary reform to break this equilibrium can lead to potential loser and winners related issues.

## 5. DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

This study attempted to explore the challenges of making houses both affordable and sustainable in Beijing city. It also evaluated the possible solutions to these challenges to promote affordable housing within the context of sustainable development of cities. Based on the findings from the serious of literature materials including policy papers, statistical reports and survey papers, housing-price to income (HPI) is the core indicator for evaluating housing price and affordability in Beijing city (Cai et al., 2017; Cheng, and Hu, 2010; Huang, 2012; Yao, 2011). In this sense, changes in HPI implies the severity of the affordable housing challenge in Beijing. As such, this means that more investment in affordable would be an effective strategy, and the possible solution for controlling the inflation rate for prices in the housing market. It can be concluded that investing in affordable housing units is imperative because it would automatically translate to social and economic sustainability. It will help the city government to fulfill the needs of the residents who earn a low salary and are unable to afford the current market-price housing. Even so, there is no statistical correlation between HPI and affordable housing investment (AHI) based on the data collected from the previous studies (Cai et al., 2017). However, this is because the HPI continues to augment by a certain percentage level even once the AHI increases.

Based on the findings from the results section above, it can be concluded that making affordable housing reform and sustainable is difficult due to some factors. One of them is the complex nature of the HPF program. Beijing is one of the megacities that experienced drastic change after the introduction of housing policies in Beijing. The affordable housing plan that targeted middle and low-income earners in Beijing was implemented to offer support to most of the urban families. The state introduced the HPF and other housing cash subsidies to improve the

housing condition of urban residents. Both employees and employers receive HPF loans that are ten times higher than their savings to help them in housing projects (Yao, 2011). However, affordable housing has remained a significant issue in Beijing because of skyrocketing prices in the housing market (Yanyun, 2011). The current HPF operation has limited the ability of the government to implement affordable housing in Beijing. HPF is available to social workers only and that it cannot serve as “safety net to help citizens from different social backgrounds” (Tsou et al., 2008, p. 12). The increasing housing prices in the contemporary market cannot draw the interest of the public, especially the majority of low-income earners to consider HPF as the significant financial sources for housing (Yao, 2011). Although the local city government of Beijing has made the considerable effort of carrying out wage justification to increase earnings for low-income and middle-class workers, most low-income earners do not have enough savings in their HPF housing plan. Thus, it is hard for them to make even down payment.

Current studies have paid significant attention to case studies to explore the practical experience and lessons of affordable and sustainable programs in urban cities. Although the role of implementing affordable and sustainable housing has been transferred from the states to the local actors, the federal government still offer financial support to the local government. Thus, this influences the development or implementation of affordable housing programs. In Beijing, the statistical study report shows that significant changes in housing affordability and household size keep changing (Wang et al., 2012). Surprisingly, the General Domestic Product (GDP) is positively correlated with the housing prices and affordability, which translates that “the lower the level of housing affordability, the higher the economic growth” (Wang et al., 2012, p. 51). Thus, this demonstrates that GDP could worsen housing affordability and contribute to high inflation in Beijing.

Inequalities, coupled with low-income rental housing, pose difficulties in an attempt to implement an affordable housing program for all. Considering the fact that social welfare is essential for the low-income families, lack of interest in some city officials, unstable financial funding and unsuitable housing for low-income rental housing scheme among others are among the obstacles (Tsou et al., 2008, p. 14). The municipal city government in Beijing has slowed down in the implementation of rental housing for low-income earners (Yao, 2011). Besides, the lack of stable financial aid is not clear because some come from HPF investment return and other local income. As a result, this makes it difficult for the majority of low-income earners to benefit from the affordable plan. Even so, the lack of suitable housing reform for low-income earners is a serious issue in Beijing and other cities in China.

Furthermore, lack of incentives and financial means of the Beijing municipality are among the major aspects making it difficult to offer affordable housing in Beijing. The fiscal reform policy of 1994 tasked the local governments with the duty of providing 80% of the total government expenditures but with only about 47% of direct revenues (Yanyun, 2011). Such fiscal imbalances coupled with unfunded mandates from the central administration have driven the municipal administrations and stakeholders concerned in urban planning to rely on land leasing fees to finance urban development programs. Numerous study findings claim that financing of affordable housing in Beijing depends upon HPF but the deposits come from land leasing fees that are unstable but also inadequate for sustaining affordable housing (The Collective. 2017; Yanyun, 2011). Thus, it is not desirable to integrate housing approach into the affordable program due to the financial limit.

According to Tsou et al. (2008), balancing sustainable and affordable housing reform policies is a challenge because of inequalities especially among the low-income earners. The

study reported that affordable and sustainable housing is complicated due to income differences may also pose considerable challenges in the process. In this case, low-income earners and disadvantaged people may not be able to raise their voice in case of urban renewal or redevelopment process (Tsou et al., 2008). Although the government has made the effort of coming up with clear policies of offering affordable and sustainable housing programs, few problems exist that makes it challenging to attain their goals. One of them is that the process of housing application may fail to meet the expected sustainability standards, and the interest rate from an affordable program is low. Financial difficulties make it complex to offer affordable housing means this can force the government to work with private developers, without the close monitor. The private developers may end up altering the initial plan of affordable housing.

Based upon the evidence of the Beijing Municipal Bureau surveys and research comparative case study reports conducted by Cai et al. (2017), many people are unable to obtain affordable housing due to lack of a reliable system for differentiating between the have and have-not citizens. Even those people who earn higher income are still unable to attain affordable housing need because of the weak government system. The investment trends also indicate a shift in government guidelines, which also affects the delivery of affordable housing programs. A further look at the size of affordable housing units shows that this is not limited in Beijing city (Cai et al., 2017). The number of housing units is much lower when unnecessarily bigger, and this result when the municipal authorities limit land supply. Conversely, these large units contribute to unaffordability in the total housing price in the market that affects eligible groups and ultimately contributes to insufficient provision of affordable housing services.

Based on the above research analysis, this study also concludes that affordability has a positive correlation between household income and price market for houses. However, this is

particularly true for Beijing city because the market boom for housing caused remarkable changes in prices in 2007 and 2008 due to inflation (Cai et al., 2017). In terms sustainable and housing affordability, policy documents expressed affordability in terms of income level standards and demand for housing but the former have restricted the coverage for affordable housing programs (Cai et al., 2017). Nonetheless, most findings concentrate on low-income earners and rarely mention migrants and young workers or the people with special needs in the program, such as the people with disabilities and aging population (Ruibo, and Linna, 2013). Thus, these affordability measures may seem discriminatory since they exclude underprivileged groups. Most of the people excluded are the one who encounters pressure or urgent need for affordable housing. As a result, the Beijing municipal government and urban policy should review their policies by ensuring that they enhance housing situation for every citizen in case they want to attain goals of affordable housing and sustainable development programs.

Despite the challenges of making houses both affordable and sustainable, studies have shown that the consistency to affordable housing provision is vital in solving housing affordability issues. Based on the previous study survey on the Beijing city, the housing policy has focused on short-term programs such as HPF and cheap HPI, AHI and affordable rental housing programs to attain economic development in the town (Cao et al., 2017). Hence, it seems that the investment in affordable housing has shifted to focusing on economic growth only rather than focusing on sustainable, affordable housing.

Many studies also agree that many local governments have become reluctant to put efforts of affordable housing in the long-run due to the substantial financial burden incurred in the process of implementing this policy (Cai et al., 2017; Rong, 2017). Although the central government plays a considerable role in financing affordable housing, the corruption and

mismanagement of funds have left the burden of financial aid to the local city government. Despite this issue being discussed in social media, local fundraising innovations for housing programs are still not taken into serious considerations. As a result, it would be a challenge to maintain and deal with investment in sustainable and affordable programs in the future.

In conclusion, affordable housing reform has been the major focus for many years and understanding the challenges of housing policy can help find possible solutions attaining sustainable development in Beijing. Thus, the study concluded that making housing both affordable and sustainable is a complex task that affects Beijing. It argued that Beijing continues to experience high population growth rate due to rural-urban migration, and this increases the demand for housing; thus affecting the prices for accommodation in the city. Houses become affordable and sustainable in case the cost of owning or renting a home does not compromise with the social-economic needs. The study links affordability with income and social-economic development. Housing affordability could promote economic growth by stimulating housing consumption. Besides, housing affordability is an indicator of social, environmental, and economic development; thus, the negative impacts of these indicators could affect the sustainable development of cities.

Although sufficient evidence available indicates challenges of attaining affordable and sustainable housing problem in Beijing, there is a need for a further research study to determine the impact of housing affordability on the demographic changes in the city. The possible explanation behind this is because Beijing city has become highly urbanized; thereby attracting many migrants, most of whom are young undergraduate and low-income earners. The young migrants from the neighborhood contribute to the sustainable demographic changes in the city, and high prices for housing might affect the sustainable livelihood of these cohorts. Thus,



Beijing may end up losing the attraction of migrants in case the house prices keep skyrocketing and housing affordability worsens. It is acknowledged that owing to the complex nature of this study and the reliance on secondary data; the results are not definitive but rather indicative of the perceived challenges housing affordability in Beijing. Besides, the data collection method also employed in this research poses some limitations that need to be addressed in future study. One of the limitations is that there is secondary data used to collect information lack generalizability of the result; thus posing validity and reliability of the findings. Another defect arises from the credulity of sources because some of the information collected came from previous studies and knowledge might have been outdated; thus posing biasness of the findings to the current research. Therefore, there is a need for further investigation for the generalization of the results by incorporating social, environmental, and economic sustainability measure. To address research limitations and attain research goals effectively, future researchers conducting a study on a similar topic of affordable housing should also employ both qualitative, quantitative, and mixed research methods to collect adequate data on the research issue.

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