Journal of Surveying, Construction and Property (JSCP) **Volume 13, 2022 Issue 1**
ISSN: 1985-7527

CRITICAL SUCCESS FACTORS FOR AFFORDABLE HOUSING: EVIDENCE FROM LOWER-MIDDLE INCOME AND HIGH INCOME ECONOMIES

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ABSTRACT

The provision of affordable housing is a pressing challenge that exists around the globe. Successful completion of affordable housing projects is, therefore, of great significance in both developed and developing countries. The primary objective of this paper is to identify the Critical Success Factors (CSFs) for affordable housing projects. To achieve this a comprehensive review of international literature is conducted to identify relevant factors. Nine groups of CSFs were formed, namely: Policy and government support; Land and planning process; Role of Financial Institutions and funding aspects; Sustainability; Designing and materials selection; Approvals, procedures, and clearances; Project management and value engineering; Infrastructure development of Project; and Facility Management. Subsequently, a survey is conducted with experts in India in order to validate and rank the criticality of the identified success factors in the Indian context. Expert rankings are provided for a range of affordable housing products. The results indicate that 'policy and government support', 'land and planning process', 'role of financial institutions and funding aspects' and 'approvals, procedures and clearances' are generally the top four CSFs for affordable housing projects. However, the results also indicate that importance of the CSFs was found to vary across different housing products (social, public, and private housing and rental and ownership models). A secondary objective of this paper is to identify differences in approaches to the implementation of the established CSFs in practice. The paper presents a case study comparison between India (a lower-middle income country) and the UK (a high income developed country). Pune in India and London in the UK are compared to determine how well countries of different income levels are achieving the established CSFs. Results suggests a variation in the local contexts in the delivery of successful affordable housing and it is found that developed countries are better at government support and policies, land planning, and incentives to developers for affordable housing delivery.

Keywords: Affordable Housing; Critical Success Factors; Housing Policy; Public Housing

1. INTRODUCTION

Housing is fundamental to the general health and well-being of people and makes an important contribution towards the economic growth of nations (United Nations, 2019). Adequate housing is important for shelter, security, privacy and/or as a means of investment for any individual or family. Despite this, large parts of the global population are left in housing need. According to a United Nations (2019) report 150 million people worldwide are homeless and more than 1.8 billion people lack adequate housing. Moreover, global population is estimated to grow from 7.7 billion in 2019 to 9.7 billion in 2050, with rapid urbanization in both developed and developing countries (United Nations Department of Economic and Social Affairs, Population Division, 2019a). The global urban population is expected to grow from 55% in 2018 to 68% by 2050, with India, China and Nigeria accounting for 35% of the projected growth (United Nations Department of Economic and Social Affairs, Population Division, 2019b). Although high

urbanization can have several economic benefits, it is also a disruptive process which can cause further problems related to inadequate housing and even lead to slum formation (Annez and Buckley 2009; McKinsey Global Institute, 2014). Rapid urbanization is, therefore, driving increasing inadequacy in housing, causing an unprecedented global problem.

A related concern is the affordability of housing, which has become a major policy challenge for both developed and developing countries across the globe. It is suggested that around 80% of cities worldwide do not have affordable housing options for half of their population (European Parliament, 2020). For example, affordability crises have been testified among various countries such as India (Gopalan and Venkataraman, 2015), Malaysia (Teck-Hong, 2012), China (Zhang et al., 2016), Hong Kong (Huang et al., 2015), Australia (Birrell and McCloskey, 2015), the US (Rohe, 2017) and across Europe (Pittini, 2012; Mulliner and Maliene, 2013). Worldwide the affordability gap, which is the difference between available income for housing and market price of a standard house, amounts to 1% of global GDP or around $650 billion per year (McKinsey Global Institute, 2014). Although in several low-income cities, such as Lagos and Mumbai, this gap exceeds 10% of GDP, leading to a third of the urban dwellers being priced out of the market (McKinsey Global Institute, 2014). Many types of affordable housing policies and projects have been initiated around the globe to attempt to tackle this crisis. However, the affordability of housing is a multi-faceted issue and simply proving low-cost housing projects does necessarily always sufficiently address the problem (Mulliner and Maliene, 2012; 2015). For example, there are instances in both developing and devolved countries where affordable housing projects have been left abandoned and vacant, leading to housing overhang (Mulliner et al., 2013; Teck-Hong, 2012; Yuan, 2019). These examples emphasize that there are a variety of factors, beyond only economic ones, associated with the success of affordable housing projects.

In India affordable housing has been cited as a national priority for decades. Successive governments have declared their commitment to eliminate the gap of affordable housing in India. Overall economic growth in the last two decades has been hovering between 4% and 7.5% (World Economic Forum, 2018). However, for the major part of this period affordability in housing provision has remained a challenge. Average real house prices have increased significantly than GDP per capita over the period 2012-2019, undermining housing affordability, particularly for low-income households (De La Maisonneuve and Dek, 2020). Urban areas continue to provide employment opportunities meaning India's labour force has witnessed a rural to urban shift. The urban population in India increased rapidly from 109 million in 1971 to 377 million in 2011 and is anticipated to grow to 600 million by 2030 (Gopalan and Venkataraman, 2015). This has put great pressure on housing provision, leaving a substantial housing shortage in India. The overall housing shortage was stated to be 10 million units by the Minister for Housing and Urban Affairs in 2017 and is estimated to reach around 25 million units by 2030 (Knight Frank, 2019). A significant proportion of the population is forced to live in poor quality houses in India, compared to other Emerging Market Economies (De La Maisonneuve and Dek, 2020). Therefore, improving the functioning of the housing market and addressing affordability are key challenges for India that need to be addressed.

Given the rapid rates in urbanization and extent of the affordable housing shortage in India, the objective of the paper is to identify the Critical Success Factors (CSFs) for affordable housing projects in India. While there is some existing literature on CSFs related to affordable housing projects, evidence from India is found to be lacking. A case study is also used in order to demonstrate the extent to which the CSFs are implemented in practice in India. Given the evidence that housing affordability problems are prevalent in both developing (lower-middle income) and developed (high income) countries, a case study comparison is made between India and a high-income country (UK) based on the identified CSFs. The World Bank groups economies into income categories to show how different groups of countries are doing against measures such as growth and reducing poverty. Gross national income (GNI) per capita is the main indicator of how well off a country is and where it sits in the categories; lower- middle income economies are those with a GNI per capita between $1,046 to $4,095 and high income economies are those with a GNI per capita of $12,696 or more.

2. LITERATURE REVIEW

The concept of Critical Success Factors (CSFs) was first defined by Rockart (1982). Since then an extensive amount of literature has evolved on CSFs from various industries and disciplines, such as management information systems, project management, public-private partnerships, construction engineering and management. There is a general agreement that the success of any project involves the combination of several critical factors (Baccarini 1999; Pinto and Slevin 1987; Toor and Ogunlana 2009). Traditionally, based on the iron triangle, timely completion of a project within the allocated cost and confirmation of expected quality standards are three main benchmarks of success. However, several other criteria such as satisfaction of end-users and stakeholders, project safety, minimal disputes and conflicts, and environmental impacts created by the project are also considered to be important measures of

success (Ahadzie et al. 2009; Toor and Ogunlana 2009). Moreover, CSFs are recognized as being project specific and will change according to geographical location, industry and/or economic conditions (Huang et al., 2015).

Within the construction industry there has been much debate as to which CSFs contribute most to the performance of projects. Thus, there are a wealth of academic studies examining CSFs related to specifically to construction projects (Abraham, 2004; Chan et al., 2004; Chua et al., 1999; Gudiene et al., 2013; Jha and Iyer, 2006; Li et al., 2005; Nguyen et al., 2004; Sanvido et al., 1992; Tabish and Jha, 2012; Toor and Ogunlana, 2009). For example, Sanvido et al. (1992) concluded that, out of seven factors related to construction projects, four factors that can be treated critical include: a cohesive team to direct, organize, design and manage the project; a series of contracts that permit and support the various specialists to work as a team without conflicts of interest; experience in design, planning and managing construction and operations; well-timed, valuable information from the user, designer and contract. Chua et al. (1999) grouped 67 success-related factors under four main project aspects (project characteristics, contractual arrangements, project participants, and interactive processes) for construction project success. The results revealed that there are different sets of CSFs for different project objectives. In contrast Chan (2004) found that, from 44 identified factors, five were the most critical, including: project-related factors; project procedures; project management actions; human-related factors; and external environment. Abraham (2004) identified seven CSFs that influence the success of construction projects: competitive strategy, market analysis, political environment, economic environment, technical application, employee/organizational enhancement and process benchmarking. Tabish and Jha (2012) focused on CSFs in public construction projects. They identified 36 success attributes and from this four success factors were determined, including: awareness of and compliance with rules and regulations; effective partnering among project participants; pre-project planning and clarity in scope; and external monitoring and control. Overall, 'awareness of and compliance with rules and regulations' was found to be the most important factor (Tabish and Jha, 2012).

With regards to affordable housing specifically, the literature on CSFs is somewhat less well developed but has been evolving in recent years (e.g. Adabre and Chan, 2019; Alteneiji et al., 2020; Hwang et al., 2013; Kavishe and Chileshe, 2018; Kwofie et al., 2016; Mukhtar et al., 2017; Oyebanji et al., 2017). Researchers have adopted differing focuses for their investigations and, therefore, there is no general agreement on the number and list of CSFs for affordable housing projects. Some studies have sought to find agreement in the opinion of affordable housing experts on the CSFs for different types and aspects of affordable housing in respective countries. Several studies, with differing emphasis, have been based on empirical data gathered from developing lower-middle income countries in Africa. For example, Ihuah et al. (2014) focused specifically on Critical Project Management Success Factors for sustainable social (public) housing in Nigeria. The study identified 22 essential factors and from this the top six CSFs were: Competent project team; Land issues; Effective housing policy implementation; Housing project ownership; Top management support; Adequate project fund and resources. Mukhtar et al. (2017) also studied CSFs for public housing projects success in Nigeria, but did not have an emphasis on sustainable housing. Their study established seven CSFs including: institutional framework for public housing; availability of competent personnel; effective project management; good maintenance management practice; appropriate design and good location; effective housing finance system; and adequate political support (Mukhtar et al., 2017). Other studies have focused on CSFs specifically for affordable housing delivered by public-private partnerships (PPPs). For example, Kwofie et al. (2016) identified six factors that significantly influence the success of public housing projects delivered by PPP in Ghana. These included: involvement of the government by providing guarantees; accurate project identification and technical feasibility; competitive and transparent procurement procedures; adequate legal framework; stable macro-economic condition and favorable economic policy; and availability of strong and robust financial market (Kwofie et al., 2016). Similarly, Kavishe and Chileshe (2018) examined CSFs for PPPs on affordable housing schemes in Tanzania. In their study the six most important factors were found to be: a dedicated team of professionals to oversee the PPP projects; official and unofficial site visits and inspection; government support and guarantees; undertaking checks and balance from the design stage to construction stage; scrutiny of PPP project proposal; and trust and integrity (Kavishe and Chileshe, 2018).

Empirical data has also been gathered from high income countries. For example, Alteneiji et al. (2020) established CSFs for PPPs in affordable housing in the United Arab Emirates. The most crucial CSFs were: good governance; government guarantees; commitment and responsibility of the public and private sectors; favorable and efficient legal frameworks; political support and stability; and demand for and the debt-paying ability of the project. For PPPs it seems that CSFs related to government involvement and guarantees and legal frameworks were considered to be crucial in both high income and lower-middle income countries (Kwofie et al., 2016; Kavishe and Chileshe, 2018; Alteneiji et al., 2020). Similar to Ihuah et al. (2014), Oyebanji et al. (2017) investigated the CSFs for achieving sustainable social housing, with primary data collected from a high income country (England, UK). The study identified the CSFs as: adequate funding and provision; affordability; efficient economic planning; appropriate construction technology; environmental protection; use of environmentally friendly materials; effective land use

planning; appropriate design; security of lives and property; provision of social services and ensuring social cohesion. Overall, economic related factors were found to be more critical than social and environmental ones; in particular 'adequate funding provision' and 'affordability' were ranked as the most critical factors (Oyebanji et al., 2017). Aadbre and Chan (2019) sought to gather the opinions of experts from various developed and developing countries in order to identify CSFs for sustainable affordable housing. Out of 30 identified success factors, a survey of international housing experts found 13 factors to be critical. The study concluded that the top six CSFs for achieving sustainable affordable housing were: political will and commitment to affordable housing; formulation of sound housing policies; access to low interest housing loans to developers; adequate accessibility to social amenities; good location for housing projects; and monitoring condition/performance of completed houses (Aadbre and Chan, 2019). It is evident form the literature that CSFs in the sphere of affordable housing vary greatly from country to country, and sometimes within the countries. It has been suggested that CSFs are situation specific and, therefore, the findings can only be applied to the specific country where the study has been performed, rather than being generalized (Abre and Chan, 2019; Toor and Ogunlana, 2009).

In this study the authors examined the international literature on CSFs and attempted to identify CSFs specifically for affordable housing projects. All factors identified from the literature review have been tabulated and categorized (see **Table 1 to 9 in Appendix 1)** into nine main themes as follows: Housing policy and government support; Land and Planning process; Financial and funding aspects; Sustainability; Design and material aspects; Approvals, procedures and clearances; Project management and value engineering; Infrastructure development and management; and Facilities management. The attributes within the nine CFSs were found to be commonly emphasised in the international literature. However, they required further validation and ranking to determine their criticality.

3. METHODOLOGY

The CSFs identified from the international literature (in Appendix 1 Table 1 to 9) are in some cases generic to construction and housing projects and in many cases they are country specific. Moreover, empirical evidence on the CSFs for affordable housing projects in India was found to be lacking. Therefore, this study gathered primary data in order to verify and rank the CSFs for affordable housing projects in India. To achieve this, a survey was conducted with experts who had experience in the affordable housing sector in India (many of whom have also worked on international projects outside of India). The survey was distributed online during 2018-2019 using direct contacts and via social media, such as LinkedIn. It was sent to over 120 respondents and 55 responses were received (46% response rate), with 30 responses found to be fully complete. Responses were collected from a diverse group of experts belonging to both private and public sector organizations across the states of Maharashtra, Delhi, Uttar Pradesh, Haryana, Madhya Pradesh, Andhra Pradesh in India. Respondents who expressed their individual opinion had experience of managing and advising national and international projects in affordable housing segment. Just to name a few, the following are the organisations, our expert group belong to:

- BIS (Bureau of Indian Standards, GOI)
- DIMTS (Delhi Integrated Multi-Modal Transit System Ltd.)
- HSIIDC (Haryana State Industrial and Infrastructure Development Corporation)
- ICT Pvt Ltd. (Intercontinental Consultants and Technocrats Pvt. Ltd)
- MoRTH (Ministry of Road Transport and Highways, GOI)
- MMRCL (Mumbai Metro Rail Corporation Limited.)
- NIUA (National Institute of Urban Affairs)
- Piramal Fund Management
- PwC (PricewaterhouseCoopers)
- R. R. Consultants (Financial Consulting)
- Reliance Industries Limited.
- RICS (Royal Institution of Chartered Surveyors)
- SPCL (Shapoorji Pallonji Group)

The survey asked experts to rate the importance/criticality of the identified CSFs on a scale of 1-5 (where 1 was considered least important and 5 was most important). The experts were asked to rate the CSFs for different types of affordable housing products (social, public and private) and ownership models (rental and ownership). The

responses of the experts were analyzed using the Relative Importance Index (RII). The RII assisted in determining the importance of the factors in the success of affordable housing projects (across different housing types) from the perspective of the stakeholders in the Indian context, which was not evident in the existing literature.

A subsequent stage of the research was the use of a case study to enable a more in-depth analysis of the extent to which the validated CSFs are currently implemented in practice. Given that the CSFs are validated in an Indian context, a case study city in India is used. Given that the literature identified issues in providing affordable housing across both developing and developed economies, a comparison is also made to a case study city in a high-income developed country to provide a wider view. Case study cities of Pune (in India) and London (in the UK) and compared against the CSFs to derive the major similarities and differences in affordable housing models and the factors contributing to their success. London in the UK was chosen as a comparison case study based on data available in the public domain and owing to its recognized housing affordability problems. For example, London is one of the least affordable housing markets in the world according to the Urban Reform Institute and Frontier Centre for Public Policy.

4. RESULTS

Figures 1 and 2 provide a brief background to the survey respondents in terms of their expertise. The respondents were from both practice and academia. Many of the respondents had middle to senior level managerial/consultancy roles or were senior academics/researchers (Figure 1). The survey respondents had diverse associations with the housing sector, such as through project management, consultancy and advice on policy and practice, as well as through industry research (Figure 2).

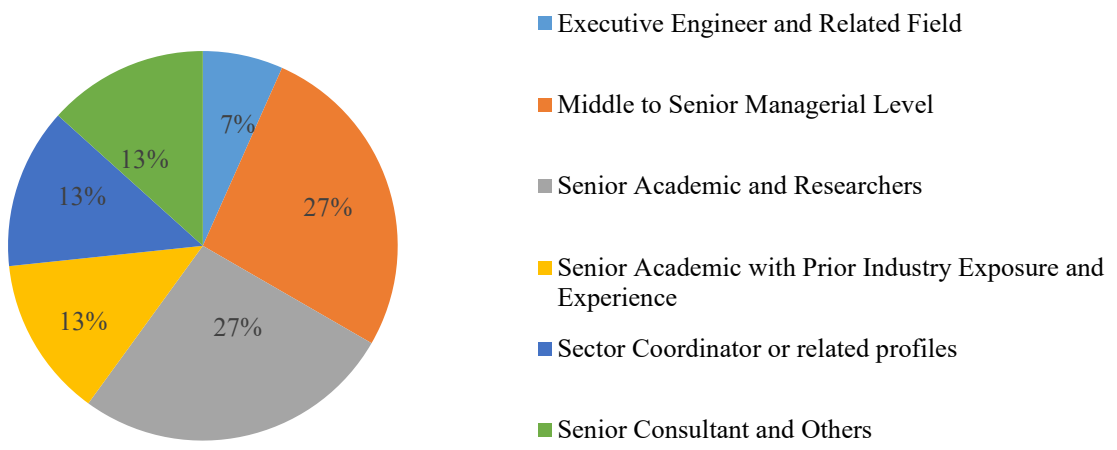

Figure 1: Profile of expert respondents

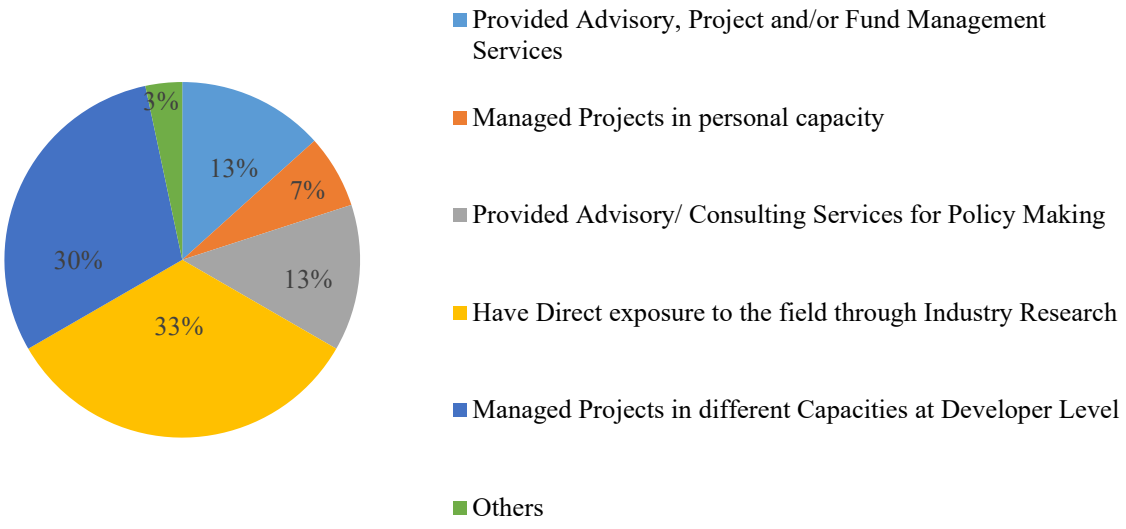

Figure 2: Association of experts with the housing sector

Table 1 summarizes the responses from the experts in respect of the relative importance ratings they ascribed to each of the CSFs identified through the literature. Given the diversity in types of affordable housing, the experts were asked to provide individual ratings of importance for various types of affordable housing product, including public housing, social housing and private housing, and both for ownership and rental models. Following analysis using the Relative Importance Index (RII), the CSFs were arranged in rank order from most important (rank 1) to least important (rank 9) in Table 1. The shading in Table 1 (red and grey colours respectively for rental and ownership models in each category of Public, Social and Private Housing) indicates the top 5 CSFs for each type of affordable housing as rated by the experts.

Table 1: RII Ranking of CSFs for Public, Social and Private Housing

CSFs	Ranking for public housing		Ranking for social housing		Ranking for private housing	
	Rental	Ownership	Rental	Ownership	Rental	Ownership
Policy and government support	1	5	1	5	6	3
Land and planning process	2	2	4	4	8	4
Role of Financial Institutions and funding aspects	3	1	2	1	9	1
Sustainability	7	8	5	8	7	9
Designing and materials selection	6	9	8	6	4	5
Approvals, procedures and clearances	3	6	2	2	3	2
Project management and value engineering	5	3	5	7	5	7
Infrastructure development of Project	8	4	8	2	1	7
Facility Management	8	6	7	9	2	5

According to the experts, 'Policy and government support'; 'Land and planning process' and 'Role of financial institutions and funding aspects' and 'Approvals, procedures and clearances' were generally found to be the top CSFs for affordable housing projects. These findings draw some similarities with studies by Adabre and Chan (2019) and Mukhtar et al. (2017). In such studies, where empirical data was gathered from both lower-middle and a high income countries, political conditions, government support, access to finance and funding / incentives, and supply of land came out as highly ranked critical factors (Adabre and Chan, 2019; Mukhtar et al., 2017).

As can be seen by the rankings in Table 1, the experts' opinion on the relative importance of the CSFs was found to be significantly varied for the different housing products (public housing, social housing and private housing) and for rental versus ownership models. Under the ownership model, the 'role of financial institutions and funding aspects' was ranked as the most critical factor across all (public, social and private) housing products. The high ranking of this factor is consistent with the findings from studies in other lower-middle and a high income countries. For example, Oyebanji et al. (2017) concluded that adequate funding was the most critical factor for achieving sustainable social housing in England, while Mukhtar et al. (2017) found finance and funding to be one of the most critical factors for the success of public housing projects in Nigeria.

Under the rental models, 'Policy and government support' was the highest ranked critical factor for both public and social housing success. Other studies also found political conditions and government support to be most critical and have far reaching contributions towards the success of affordable housing projects; for example, in relation to public housing projects in Nigeria (Mukhtar et al., 2017) and for provision of sustainable affordable housing (Aadbre and Chan, 2019).

The experts identified 'Land and planning processes' as the second most critical factor under the rental model for both public and social housing. Correspondingly, Ihuah et al. (2014) found 'land issues' to rank second in relation to CSFs for sustainable social/public housing in a lower-middle income country (Nigeria). In contrast, Oyebanji et al. (2017) found 'land use planning' to rank at seventh place in the most CSFs for achieving sustainable social housing in high-income country (England). For private rental housing there was much greater variance in the experts' ranking of the CSFs compared to for the other housing types. In particular 'facility management' and 'infrastructure development of project' were ranked more highly for private rental housing in comparison to the other housing types, yet the 'role of financial institutions and funding aspects' aspects was ranked less critical.

A few of the CSFs were rated relatively low by the experts, such as 'Sustainability' across all housing types. A study in a developed high-income country (Oyebanji et al., 2017) also found that economic related factors were more critical than environmental ones, despite such study being focused on the success of 'sustainable social housing'. Although, environmental factors still featured in the top six critical factors in their study (Oyebanji et al., 2017). Other CSFs that were rated relatively low by the experts in this study included 'Designing and materials selection' and 'Facility Management' in the case of public and social housing. Oyebanji et al. (2017) found design related factors to critical, but they similarly ranked in eighth place overall. In contrast, Mukhtar et al. (2017) found maintenance management and appropriate design to be within the top five CSFs influencing the success of public housing projects in Nigeria.

4.1 Case Studies: Evidence from UK and India's models in providing Affordable Housing

In this section, affordable housing models from India (City of Pune) and the UK (City of London) have been analyzed based on the CSFs derived from the empirical data gathered from experts above. The selected cases highlight land related issues and explain how development was an outcome of planned and systematic initiatives. These also focus on technology and design aspects used in affordable housing. The case studies also highlight demographic trends, various initiatives taken by local governments and support provided in development methods, tax relief, funding sources, rental options and tenure options, to improve affordable housing.

4.1.1 India (Pune) case study

In India, affordable housing policies are largely driven by the principle 'Housing for All'. Similarly, Pune (Maharashtra) affordable housing initiatives target half of the population (approximately 50%). Government policy and support in the form of Pradhan Mantri Awas Yojana (PMAY) defines the targets and measures to promote affordable housing (PMC, 2019a). Policy initiatives which largely include tax relaxation- only 1% GST and according the infrastructure project status to affordable housing projects wherein developers are eligible for all government support. Government has relaxed Zoning, Development Control Rules and building bye laws for making it convenient

for affordable housing projects in the state (PMC, 2019b). Financial and funding being one of the most crucial aspect of affordable housing in India, Government has involved various institutions such as HUDCO and NHB to ensure availability of finance for affordable housing segment. Other than formal support, various NGOs and CBOs also assist such function for affordable housing projects. Pune is a pioneer city to take up India's first 'Eco-Housing Program' and has launched various programs such as 'Smart and Green City' and received '2020 Sustainable Transport Award'. To ensure proper project management and value creation, all affordable housing projects in Pune are assigned milestones to each phase and dwelling units against which their progress is measured. Also, all units need to comply with the National Building Code and other Bye-Laws. The Infrastructure support for affordable housing projects is provided by the public partner whereas facilities are managed either by Pune Housing and Area Development Board (PHADB), Project Developer or Resident Welfare Association (RWA).

4.1.2 UK (London) Case Study

The housing crisis is said to be one of the greatest challenges facing London, which is attributed to the inability in the past few decades to build sufficient quantity and type of homes to meet the needs of London's inhabitants (GLA, 2018). The increase in demand for affordable housing in London is largely driven by the rising population and positive net migration rate. The shortage of housing has resulted in house prices and rents rising rapidly, with more than a quarter of Londoners living in poverty once housing costs are accounted for (GLA, 2018). The average rental cost for a one-bed home in London is more than the average for a three-bedroom home in every other English region (GLA, 2018). Even outside of the UK, London is ranked as one of the least affordable housing markets in the world by the Urban Reform Institute and Frontier Centre for Public Policy in 2020. Housing affordability is thus a major concern for government. Accordingly, there are a number of strategies and policies related to affordable housing in London. Primarily, the London Plan is Greater London's overall spatial development strategy, which includes 'Policy H4 delivering affordable housing' (GLA, 2021). The London Housing Strategy (LHS) 2018 (GLA, 2018) also sets out the plan to address the housing crisis in London. Thorough such strategies it is identified that London needs more than 32,500 affordable homes every year to meet the rising demand and the Mayor of London pledges that 50% of new homes delivered in London should be in the affordable category. Land and planning processes in London are largely focussed on increasing land supply for affordable housing. The government has taken several measures such as giving housing delivery targets for each council, intensive use of available land and higher densities, release of surplus publicly-owned land for affordable housing projects, use of 'compulsory purchase orders' and 'Opportunity and Intensification Areas'. For financing and funding, the Mayor of London secured £4.82 billion from Government to fund new affordable housing in London until 2022 (extended to 2023), with a further £4 billion secured to fund affordable housebuilding until 2026. Funding is usually allocated by GLA via a bidding process to qualifying 'Investment Partners' (such as local authorities and housing associations) to provide affordable housing products. The affordable housing programme primarily funds 3 housing products: 'London Affordable Rent' (a social rent product), 'London Living Rent' (an intermediate product) and 'London Shared Ownership' (a shared ownership product). For greater sustainability, all projects funded through the affordable housing programme must meet 'housing design and sustainability standards' (non-compliance is monitored and recorded). Planning powers are also used by the government to apply a 'zero carbon target' to major housing developments. The government monitors all affordable housing providers' performance against set delivery millstones. Although, government does not plan role in facilities management (most of the projects follow RWA based model). However, government has introduced 'Service Charge Charter' to standardise approach to service charges in London for shared ownership products.

Table 2 provides a summary and comparison of the approaches taken in Pune and London against the established CSFs in this study

Table 2. Delivery of affordable housing against CSFs in Pune v London

CASE STUDY: Delivery of affordable housing against CSFs			
CSFs	**Pune Summary**	**London Summary**	**Comparison**
Policy & Government support	Pradhan Mantri Awas Yojana (PMAY), RERA, GST of 1% on Affordable Housing, Infrastructure Status	Greater London Authority's (GLA) London Plan and the London Housing Strategy (LHS): • Target for 50% of new homes delivered in London to be affordable ("affordable housing" includes social rented, affordable rented, and intermediate properties); • Aim to deliver 32,500 new affordable homes a year over 10 years (total 325,000), for sale and for rent (70% to be social rent, 20% shared ownership and 10% intermediate rent)	London is more advanced than Pune in terms of meeting CSFs related to policies and support for affordable housing
Land & planning process	• PMC area has increased from 7.74 sq. km in 1857 to 243.84 sq. km; Population increase by 5-6 times in last 50 years; • Residential- 42%, Commercial- 2%, Industrial- 4%, Public/semi-public and recreational use- 16, Transport- 13%, reserved forest and agriculture- 12%, Water bodies and hills- 11%. • Zoning, Development Control Rules and building bye laws control the building permissions • Brownfield Development of slums and Greenfield Development in city peripheries	Focus is on increasing land supply for affordable housing by: • Supporting more intensive use of available land and higher densities (brownfield sites prioritized); • Encouraging release of surplus publicly-owned land for AH development; • Intervention in land market (greater use and reform of land assembly powers, such as Compulsory Purchase Orders); • Use of 'Opportunity and Intensification Areas' to identify areas suitable for housing development; • Housing delivery targets for each Council. Affordable housing quotas used at planning stage: • Planning permission for new housing development requires a threshold (minimum percentage) of affordable homes per development (generally set at 35%, increasing to 50% for public sector land and strategic industrial locations); • Developments meeting minimum thresholds are 'Fast Tracked' through planning system, otherwise viability assessments determine the level of AH that needs to be provided.	London is more advanced than Pune in implementing CSFs related to planning processes.
Financial & funding aspects	Government Funding: • Rs 88,191 crores invested in Maharashtra since 2014. • Additionally, in November 2020, Maharashtra government allocated Rs 4,000 crore to build 8.82 lakh houses under Maha Awas Yojana.	Government Funding: • £4.8bn Government funding obtained for affordable housebuilding over 2016-2023, further £4 billion secured to fund affordable housebuilding until 2026. • However, significant shortfall in funding has been identified; City Hall (GLA, 2019) suggest £4.9 billion per year for 10 years is required to deliver the required amount of homes	Being a developing city, housing stock requirements in Pune are much greater than in London. Correspondingly, the money invested in Pune is greater. However, London is proving better incentives to developers.

	The informal and semi-formal Institutions; Public Sector Institutions (National Housing Bank, HUDCO etc.); Formal Private Sector; Non-Government Organisations and Community-Based Organisations (NGOs and CBOs)	Grant funding: • Funding allocated by GLA via a bidding process to qualifying 'Investment Partners' (such as local authorities and housing associations); • 30 'Housing Zones' (areas with greatest delivery potential) identified for targeted investment; • Additional 'Land Fund' established to offer funding to assist in acquiring and preparing land for affordable housing developments. Products/tenures funded: • The affordable housing programme primarily funds 3 products: 'London Affordable Rent' (a social rent product), 'London Living Rent' (an intermediate product) and 'London Shared Ownership' (a shared ownership product); • Benchmarks used to set maximum 'affordable' rents/prices, which vary across the different products and Boroughs.	
Sustainability; **Design & materials**	A sub-mission under the PMAY mission to adopt modern technologies. First Urban Local Body in the country to take up implementation of the Eco – housing Programme. Smart and Green City and 2020 Sustainable Transport Award	Focus is on creating 'mixed and inclusive communities'. Projects funded through the affordable housing programme must meet 'housing design and sustainability standards' (non-compliance is monitored and recorded. Planning powers used to apply a 'zero carbon target' to major housing developments. London declared the 'smartest city' in the world according to IESE Cities in Motion Index 2020.	London is better than Pune at meeting the design and sustainability CSFs since it is one of the smartest cities globally with a heavy investment in technology and infrastructure.
Project management & value engineering	A milestone is assigned to every phase and unit progress is checked against it. The houses must comply with the National Building Code and other Bye-Laws.	Affordable housing providers' performance is monitored against set delivery millstones.	Both cities can be treated similarly in this context.
Infrastructure development & management	The infrastructure is provided by the public agency.	Allocation from the Government's 'Housing Infrastructure Fund' will support improvements to infrastructure.	Both cities can be treated similarly in this context.
Facilities management	Depending upon the engagement and partnership, can be any of: • Pune Housing and Area Development Board (PHADB) • Private Developer • Resident Welfare Association (RWA) formed by the beneficiaries	Government does not maintain facilities (RWA based model). However, introduction of 'Service Charge Charter' to standardise approach to service charges in London shared ownership products.	Pune preforms more highly than London under this CSF as the responsibility for Facility Management is given to the partner who is best equipped to handle the risk.

5. CONCLUSION

With increasing urbanization the problem of providing affordable housing is acute and is a global phenomenon. Understanding the CSFs that would encourage successful delivery of affordable housing in different geographies is, therefore, crucial. This research contributes to the body of knowledge on CSFs in affordable housing projects. While some research is developing in this area, there was a gap in the literature in terms of evidence and applicability of CSFs for affordable housing projects in India. The paper first identified CSFs for affordable housing projects via a review of existing international literature. Relevant attributes were grouped into nine CSFs as follows: policy and government support; land and planning process; role of financial institutions and funding aspects; sustainability; designing and materials selection; approvals, procedures, and clearances; project management and value engineering; infrastructure development of project; and facility management. The views of affordable housing experts from India were then gathered via a survey in order to verify and rank the importance of the CSFs in the Indian context. The survey of experts utilized the Relative Importance Index (RII) in order to identify the criticality of the success factors for different types of affordable housing products. The overall RII scores indicate that that the top four CSFs for affordable housing projects are: policy and government support; land and planning process; role of financial institutions and funding aspects; and approvals, procedures and clearances. A significant finding was the extent to which expert opinion differed on the ranking of the relative importance of the CSFs for the range of affordable housing products (social, public and private housing) and ownership structures (rent and ownership). In particular, the rank order of the CSFs for 'private' housing was significantly different to the rankings for 'social' and 'public' housing. Even within the category of 'private' housing the ranking of CSFs for ownership vs rental products varied considerably. This highlights that there is certainly not a one size fits all solution to provision of affordable housing projects even within one country. The CSFs must be considered for the specific type of affordable housing products being delivered.

A further objective of the paper was to utilize a case study to examine the extent to which the identified CSFs are currently being implemented in practice in India (with Pune used as the case study). To support this and provide a wider view, a comparison was made to case study area in a high-income economy (using London, UK) in order to identify if lessons can be learnt regarding the successful attainment of the CSFs in a more developed country. While the CSFs established in this study were validated in the Indian context, they also appeared to be relevant in affordable housing provision in a high-income developed country. The findings revealed that, in relation to CSFs on policy and government support, land and planning process, funding and sustainability, London was deemed to be more successful than Pune. This finding is useful for the Indian context as it provides evidence of potential gaps in successful provision and also practical examples of how such CSFs could be better achieved in future projects. On factors related to project management and value engineering and infrastructure development and management the two case study cities were seen to be more comparable.

The findings have several implications for both research and practice. The identification of the CSFs for affordable housing projects will provide valuable decision making information for key stakeholders, such as policymakers and developers, that are seeking to plan and develop future affordable housing projects. The empirical evidence is particularly relevant for stakeholders in India, but the findings could also be relevant for practice and researchers in other countries. Further research could investigate the applicability and relative importance of the CSFs identified in this study in the context of other lower-middle income and high-income countries. This would allow for further comparison between developed and developing countries and even further comparison between different types of affordable housing products within countries. The case studies provided an insight on the extent to which the CSFs are currently emphasized by local bodies in affordable housing provision in two cities in different types of economies. A greater number of case studies within single countries could be analyzed in future research to test and compare the success of affordable housing projects in meeting the CSFs.

6. REFERENCES

Abraham, G. L. (2004). Critical Success factors for the Construction Industry. Construction Research Congress (pp. 1-9). ASCE 2004.

Ademiluyi, I. A. (2010). Public Housing Delivery Strategies in Nigeria: A Historical Perspective of Policies and Programmes. *Journal of Sustainable Development in Africa*. 12(6), 153-161.

Adabre, M.A. & Chan, A.P.C. (2019) Critical success factors (CSFs) for sustainable affordable housing, *Building and Environment*, 156, 203-214.

Adinyira, E. & Anokye, P. (2013) Illegal appendages to residential buildings in Kumasi, Ghana-a case study of North Suntreso. *Journal of Construction Project Management and Innovation,* 3(1), 511-529.

Agyemang, F.S.K. & Morrison, N. (2018). Recognising the barriers to securing affordable housing through the land use planning system in Sub-Saharan Africa: A perspective from Ghana. *Urban Studies,* 55(12):2640-2659.

Ahadzie, D. K., Proverbs, D. G., Olomolaiye, P. O., Ankrah, N.A. (2009). Competencies required by project managers for housing construction in Ghana: Implications for CPD agenda. *Engineering, Construction and Architectural Management,* 16(4), 353-375.

Alawadi, K., Khanal, A. & Almulla, A. (2018) Land, urban form, and politics: a study on Dubai's housing landscape and rental affordability. *Cities*, 81,115–130.

Alteneiji, K., Alkass, S. & Abu Dabous, S. (2020). Critical success factors for public–private partnerships in affordable housing in the United Arab Emirates. *International Journal of Housing Markets and Analysis,* 13(5), 753-768.

Annez, P. C., & Buckley, R. (2009). Urbanization and growth: Setting the context. In M. Spence, P. C. Annez & R. M. Buckley (Eds.), *Urbanization and growth. Commission on growth and development* (pp. 1-45). Washington, DC: The World Bank.

Aribigbola, A. (2008). Housing Policy Formulation in Developing Countries: Evidence of Programme Implementation from Akure, Ondo State, Nigeria. *Journal of Human Ecology,* 23(2), 125-133.

Baccarini, D. (1999). The logical framework method for defining project success. *Project Management Journal,* 30(4), 25–32.

Belassi, W. & Tukel, O.I. (1996) A New Framework for Determining Critical Success/Failure Factors in Projects. *International Journal of Project Management*, 14(3). 1996, 141-151.

Birrell, B. & McCloskey, D. (2015) The housing affordability crisis in Sydney and Melbourne Report One: The demographic foundations. Victoria, Australia: The Australian Population Research Institute.

Boamah, N. (2010). Housing Affordability in Ghana: A focus on Kumasi and Tamale. Ethiopian Journal of Environmental Studies and Management. *Ethiopian Journal of Environmental Studies and Management,* 3(3), 1-11.

Chan, A.P.C., Scott, D. & Chan, A.P.L. (2004) Factors Affecting the Success of a Construction Project. *Journal of Construction Engineering and Management,* 130(1), 153-155.

Chua, D.K.H., Kog,Y.C. & Loh, P.K. (1999). Critical Success Factors for different project objectives. *Journal of Construction Engineering and Management*, *ASCE*, 125(3), 142-150.

De La Maisonneuve, C. & Dek, M. (2020). Housing for all in India, OECD Economics Department Working Papers, No. 1612, OECD Publishing, Paris. https://doi.org/10.1787/b1e68648-en

European Parliament. (2020). Draft Report on Access to decent and affordable housing for all (2019/2187(INI)). Retried September 19 2020 from: https://www.europarl.europa.eu/doceo/document/EMPL-PR-653984_EN.pdf

Gan, X., JZuo, J., Wu, P., Wang, J., Chang, R. & Wen, T. (2017). How affordable housing becomes more sustainable? A stakeholder study. *Journal of Cleaner Production,* 162, 427–437.

Ganiyu, B.O., Fapohunda, J.A. & Haldenwang, R. (2017) Sustainable housing financing model to reduce South Africa housing deficit. International Journal of Housing Markets and Analysis, 10(3), 410–430.

Greater London Authority. (2018) London Housing Strategy. London: Greater London Authority.

Greater London Authority. (2021) *The London Plan 2021*. London: Greater London Authority.

Gopalan, K. & Venkataraman, M. (2015) Affordable housing: Policy and practice in India. IIMB Management Review, 27(2),129-140.

Gudiene, N., Banaitisa, A., Banaitienėa, N. & Lopes, J. (2013). Development of a Conceptual Critical Success Factors Model for Construction Projects: a Case of Lithuania. *Procedia Engineering*, 57, 392 – 397.

Gurran, N., Milligan, V., Baker, D. & Bugg, L.B. & Christensen, S. (2008). *New directions in planning for affordable housing: Australian and international evidence and implications. AHURI Final Report. No. 120*. Melbourne: Australian Housing and Urban Research Institute Limited.

Horvath, A. & Mydin, M.A.O. (2012). Towards Best Practice in Public Housing Maintenance Management. *European Researcher*, 30, No 9-3, 1538-1544.

Huang, J., Shen, G.Q. & Zheng, H.W (2015). Is insufficient land supply the root cause of housing shortage? Empirical evidence from Hong Kong. *Habitat International*, 49, 538-546.

Hwang, B-G. & Lim, E-S.J. (2013). Critical Success Factors for Key Project Players and Objectives: Case Study of Singapore. *Journal of Construction Engineering and Management,* 139(2), 204-215.

Hyvari, I. (2006). Success of Projects in Different Organizational Conditions. *Project Management Journal*, 37(4), 31-41.

Ibem, E. O., Anosike, M. N., & Azuh, D. E. (2011). Challenges in public housing provision in the post independence era in Nigeria. *International Journal of Human Sciences*, 8(2), 421–443.

Ihuah, P.W., Kakulu, I.B. & Eaton, D. (2014). A Review of Critical Project Management Success Factors (CPMSF) for Sustainable Social Housing in Nigeria. *International Journal of Sustainable Built Environment,* 3(1), 62-71.

Jha, K. N. & Iyer, K. C. (2006). Critical Factors Affecting Quality Performance in Construction Projects. *Total Quality Management,*17(9), 1155-1170.

Jiboye, A. (2011). Sustainable Urbanization: Issues and Challenges for Effective Urban Governance in Nigeria. Journal of Sustainable Development. 4(6), 211-224.

Kandelousi, N.S., Ooi, J. & Abdollahi, A. (2011) Key Success Factors for Managing Projects. *World Academy of Science Engineering and Technology*, 59, 1826-1830.

Kavishe, N. & Chileshe, N. (2018). Critical success factors in public-private partnerships (PPPs) on affordable housing schemes delivery in Tanzania: a qualitative study. *Journal of facilities management,* 17(2), 1-20.

Klug, N., Rubin, M & Todes, A. (2013). Inclusionary housing policy: A tool for re-shaping South Africa's spatial legacy? *Journal of Housing and the Built Environment,* 28(4), 667–678.

Kwofie, T.E., Afram, S. & Botchway, E. (2016). A critical success model for PPP public housing delivery in Ghana. Built Environment Project Asset Management, 6(1), 58–73.

Li, B., Akintoye, A., Edwards, P.J. & Hardcastle, C. (2005). Critical success factors for PPP/PFI projects in the UK construction industry. *Construction Management and Economics,* 23(5), 459–471.

Makinde, T. (2013). Globalization as a Constraint to Development in Africa: The Nigerian Experience. *Public Administration Research*, 2(2), 191-200.

Massyn, M., Mcgaffin, R., Viruly, F. & Hopkins, N. (2015). The challenge of developing higher density, affordable housing in the inner city of Cape Town. *International Journal of Housing Markets and Analysis,* 8, 412-428.

McKinsey Global Institute (2014). *A blueprint for addressing the global affordable housing challenge.* Retrieved May 15, 2019, from: https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Urbanization/Tackling%20the%20w

orlds%20affordable%20housing%20challenge/MGI_Affordable_housing_Full%20Report_October%20201 4.ashx

Mukhtar, M.M. & Amirudin, R., (2016). The Success Criteria of Public Housing Project in Nigeria, *International Journal of Built Environment and Sustainability,* 3(2), 102-110.

Mukhtar, M.M., Amirudin, R.B., Sofield, T. & Mohamad, I.B. (2017) Critical success factors for public housing projects in developing countries: a case study of Nigeria. *Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development*, 19(5), 2039–2067.

Mulliner, E. & Maliene, V. (2012) What Attributes Determine Housing Affordability? *World Academy of Science, Engineering and Technology, International Science Index*, 6(7), 576-581.

Mulliner, E. and Maliene, V (2015). An Analysis of Professional Perceptions of Criteria Contributing to Sustainable Housing Affordability. Sustainability, 7(1), 248-270.

Mulliner, E., Maliene, V. & Smallbone, K. (2013). An assessment of sustainable housing affordability using a multiple criteria decision making method. Omega, 41(2), 270-279.

Nguyen, L, Ogunlana, S. & Lan, D.T.X. (2004). A study on project success factors in large construction projects in Vietnam. *Engineering, Construction and Architectural Management*, 11(6), 404-413.

Obeng-Odoom, F. (2010) An urban twist to politics in Ghana. *Habitat International*, 34(4), 392-399.

Olayiwola, L. M., Adeleye, O., & Ogunshakin, L. (2005). Public Housing Delivery in Nigeria: Problems and Challenges. Paper presented at the World congress on Housing, Pretoria, South Africa. Retrieved August 22, 2019, from: http://repository.up.ac.za/bitstream/handle/2263/10438/Public%20Housing%20Delivery%20In%20Nigeria %20Problems%20And%20Challenges.pdf?sequence=1

Oyebanji, A.O., Liyanage, C. Akintoye, A. (2017). Critical Success Factors (CSFs) for achieving sustainable social housing (SSH), *International Journal Sustainable Built Environment*, 6(1), 216–227.

Pinto, J. K., & Slevin, D. P. (1987). The critical factors in successful project implementation. IEEE Transactions on Engineering Management, 34(1), 22–28.

Pittini, A (2012) *Housing Affordability in the EU: Current Situation and Recent Trends,* CECODHAS Housing Europe's Observatory Research Briefing 5(6). Brussels: CECODHAS.

Ponce, J. (2010). Affordable housing and social mix: comparative approach. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 2(1), 31–41.

PMC (2019a) *Pradhan Mantri Awas Yojana | Home | Pune Municipal Corporation*. Retrieved August 22, 2019, from: https://www.pmc.gov.in/en/pmay

PMC (2019b) *Pune Municipal Corproation GIS Maps*. Retrieved August 22, 2019, from: http://hardcastlespatial.com/kml/PMC-BP-Doc-Map.html

Knight Frank. (2019). India needs additional 25 million affordable houses by 2030. Retrieved August 22, 2022, from: https://content.knightfrank.com/news/13251/6506-article-1.pdf

Rockart, J.F. (1982). The changing role of the information systems executive: A critical success factors perspective. *Sloan Manag. Rev*, 24, 3–13.

Rohe, W.M. (2017) Tackling the Housing Affordability Crisis. *Housing Policy Debate*, 27(3), 490-494.

Sanvido, V., Grobler, F., Parfitt, K., Guvenis, M. & Coyle, M. (1992). Critical success factors for construction projects. *Journal of Construction Engineering and Management*, 118(1), 94-111.

Tabish, S. Z., & Jha, K. N. (2012). Success traits for a construction project. *Journal of Construction Engineering and Management*, 138(10), 1131–1138.

Teck-Hong, T. (2012). Housing satisfaction in medium- and high-cost housing: The case of Greater Kuala Lumpur, Malaysia. *Habitat International,* 36 (1), 108-116.

Thaker, H.M.T. & Sakaran, K.C. (2016). Prioritisation of key attributes influencing the decision to purchase a residential property in Malaysia: an analytic hierarchy process (AHP) approach. *International Journal of Housing Markets and Analysis*, 9(4), 446-467.

Toor, S. R., & Ogunlana, S. O. (2009). Construction professionals' perception of critical success factors for large-scale construction projects. *Construction Innovation*, 9(2), 149–167.

Turcotte, D. A., & Geiser, K. (2010). A framework to guide sustainable housing development. *Housing and Society*, 37(2), 87–117.

Udechukwu, E. C. (2008). Obstacles to individual home ownership in Nigeria. *International Journal of Housing Markets and Analysis,* 1(2), 182-194.

United Nations. (2019) Guidelines for the Implementation of the Right to Adequate Housing. Retrieved February 19 2020 from: https://undocs.org/A/HRC/43/43

United Nations, Department of Economic and Social Affairs, Population Division. (2019a). *World Population Prospects 2019: Highlights (ST/ESA/SER.A/423).* New York: United Nations.

United Nations, Department of Economic and Social Affairs, Population Division. (2019b) *World Urbanization Prospects: The 2018 Revision (ST/ESA/SER.A/420).* New York: United Nations.

UN-Habitat. (2010). *A practical guide for conducting housing profiles.* Nairobi: United Nations Human Settlements Programme.

UN-Habitat. (2011). *Affordable Land and Housing in Africa*. Nairobi: United Nations Human Settlements Programme.

White, D. & Fortune, J. (2002). Current practices in project management – An empirical study. *International Journal of Project Management*, 20(1), 1-11.

Whitehead, C.M. (2007) Planning policies and affordable housing: England as a successful case study? Housing Studies, 22(1), 25–44.

Wordsworth, P. (2001). *Lee's building maintenance management*. London: Blackwell Science.

World Economic Forum (2018) *This is the story of India's GDP growth*. Retrieved August 22, 2019, from: https://www.weforum.org/agenda/2018/04/india-s-remarkably-robust-and-resilient-growth-story

Yuan, J., Li, W., Xia, B., Chen, Y., & Skibniewski, M. J. (2019). Operation performance measurement of public rental housing delivery by PPPS with fuzzy-AHP comprehensive evaluation. *International Journal of Strategic Property Management,* 23(5), 328-353.

Zhang, C., Jia, S. & Yang, R. (2016) Housing affordability and housing vacancy in China: the role of income inequality. *Journal of Housing Economics,* 33, 4-14.

Zhang, X. (2005). Critical success factors for public-private partnerships in infrastructure development. *Journal of Construction Engineering and Management*, 131(1), 3–14.

Appendix 1 - Summary of Literature for different aspects of CSFs for affordable housing

Table 1: CSFs related to Policy and government support

Policy and government support		
	CSF description	**Source**
1.	Stable macro-economic system	Kwofie et al. (2016)
2.	Effective private sector participation	Kwofie et al. (2016); Whitehead (2007)
3.	Political will and commitment to affordable housing	Aadbre & Chan (2019), Ademiluyi (2010), Alteneiji et al. (2020), Mukhtar et al. (2017), Oyebanji et al. (2017);
4.	Stable political system	Alteneiji et al. (2020), Ademiluyi (2010), Ibem et al. (2011), Kwofie et al. (2016); White and Fortune (2002)
5.	Formulation of sound housing policies	Aadbre & Chan (2019), Ademiluyi (2010), Ibem et al. (2011), Whitehead (2007)
6.	Mandatory inclusion of affordable unit policy in developer's projects	Klug et al. (2013)
7.	Increase tax rate to discourage long holding period of vacant land	Obeng-Odoom (2010)
8.	Sufficient staffing of public housing agencies	Mukhtar et al. (2017); Agyemang & Morrison (2018)
9.	Speculative measures on property sales through taxes	Thaker & Sakaran (2016)
10.	Taxation on property or capital gains for housing supply	Obeng-Odoom, (2010); Agyemang & Morrison (2018)
11.	Adequate staff in public housing agencies	Ibem et al. (2011), Pinto & Slevin (1987), UN-Habitat (2010)
12.	Clear role and responsibility of public housing agencies	Ademiluyi (2010), Chua et al. (1999), Nicolini (2010)
13.	Effective housing policy implementation	Aribigbola (2008), Ihuah et al. (2014), Jiboye (2011)
14.	Stability of macro-economic system	Gudiene et al. (2013), Makinde (2013)
15.	Good economic policy	Cheung et al. (2012), Li et al. (2005)
16.	Appropriate legal and regulatory framework	Alteneiji et al. (2020), Gudiene et al. (2013), Kwofie et al. (2016), Li et al. (2005), Makinde (2013)

Table 2: CSFs related to Land and Planning process

Land and Planning process		
	CSF Aspect	**Reference**
1.	Mixed land development	Gan et al. (2017), Oyebanji et al. (2017)
2.	Good location for housing projects	Aadbre & Chan (2019), Chua et al. (1999), Ihuah et al. (2014), Mukhtar et al. (2017), Turcotte & Geiser (2010)
3.	Time limited planning approval/bonuses on land development	Gurran et al. (2008)
4.	Government commitment in providing land to developers	Mukhtar and Amirudin (2016)

Table 3: CSFs related to Financial and funding aspects

Financial and funding aspects		
	CSF Aspect	**Reference**
1.	Access to low interest housing loan to developers	Aadbre & Chan (2019), Kwofie et al. (2016), Boamah (2010)
2.	Linking commercial development approval to funding for affordable housing	Agyemang & Morrison, (2018), Alawadi et al. (2018)
3.	Incentives for developers to include affordable housing/sustainable designs	Klug et al. (2013), Ponce (2010)
4.	Governments providing guarantees to developers / Providing support to developers	Alteneiji et al. (2020), Kwofie et al. (2016), Kavishe and Chileshe (2018), Li et al. (2005), Zhang (2005)
5.	Governments' provision of housing subsidies to households	Ganiyu et al. (2017); Whitehead (2007)
6.	Availability of financial market	Ademiluyi (2010), Ibem et al. (2011), Kwofie et al. (2016), Olayiwola et al. (2005), UN-Habitat (2010)
7.	Accurate cost estimates of the project	Belassi and Tukel (1996), Ihuah et al. (2014), Nguyen et al. (2004), Toor & Ogunlana (2009)
8.	Access to housing loan	Ademiluyi (2010), Ibem et al. (2011), Makinde (2013)
9.	Low lending cost (interest charged)	Ademiluyi (2010), Ibem et al. (2011), Olayiwola et al. (2005)
10.	Long period for repayment of loan	Ademiluyi (2010), Ibem et al. (2011)
11.	Low equity contribution	Ibem et al. (2011), UN-Habitat (2011)

Table 4: CSFs related to Sustainability

Sustainability aspects		
	CSF Aspect	**Reference**
1.	Adaptable housing design	Adabre & Chan (2019), Adinyira & Anokye (2013), Mukhtar et. al. (2016), Oyebanji et al., (2017)
2.	High density affordable housing development	Gan et al. (2017); Massyn et al. (2015)
3.	Use of local and environmentally friendly materials	Ademiluyi (2010), Ihuah et al. (2014), Jiboye (2011), Oyebanji et al. (2017)
4.	Good accessibility and alternative transport modes	Oyebanji et al. (2017)

Table 5: CSFs related to Design and material aspects

Design and material aspects		
	CSF Aspect	**Reference**
1.	Use of local building materials and components	Ademiluyi (2010), Ihuah et al. (2014), Jiboye (2011)
2.	Monitoring condition/defects/deterioration of the completed housing	Aadbre & Chan (2019), Horvath & Mydin (2012); Wordsworth (2001)
3.	Identifying the causes of the defects	Horvath & Mydin (2012); Wordsworth (2001)
4.	Timely execution of repairs needed	Horvath & Mydin (2012); Wordsworth (2001)
5.	Controlling the quality of the maintenance work	Horvath & Mydin (2012); Wordsworth (2001)
6.	Acceptable housing design	Ibem et al. (2011), e (2011), Oyebanji et al. (2017), Turcotte & Geiser (2010)
7.	End-users' consideration in the design	Ihuah et al. (2014), Toor & Ogunlana (2009), White and Fortune (2002)
8.	Support/encouragement by government to industries of local building materials.	Mukhtar et. al. (2016)

Table 6: CSFs related to Approvals, procedures and clearances

Approvals, procedures and clearances		
	CSF Aspect	**Reference**
1.	Improved supply of low cost developed land by government	Huang et al. (2015), Ihuah et al. (2014), Oyebanji et al. (2017)
2.	Comprehensive contract documentation	Chua et al. (1999), Nguyen et al. (2004), Toor & Ogunlana (2009)
3.	Competitive procurement process	Chan et al. (2004), Cheung et al. (2012), Li et al. (2005)
4.	Transparency in procurement process	Chan et al. (2004), Gudien_e et al. (2013), Li et al. (2005)
5.	Appropriate risk allocation and risk sharing	Gudiene et al. (2013), Ihuah et al. (2014), Li et al. (2005)
6.	Development of a good project plan	Chan et al. (2004)
7.	Effective control system	Gudiene et al. (2013), Ihuah et al. (2014), Tabish & Jha (2012), Toor and Ogunlana (2009),
8.	Adequate use of communication among project participant	Chan et al. (2004), Clarke (1999), Gudiene et al. (2013), Ihuah et al. (2014), Nguyen et al. (2004)
9.	Project size (number of housing units in the project)	Belassi & Tukel (1996), Chan et al. (2004), Gudiene et al. (2013)

Table 7: CSFs related to Project management and value engineering

Project management and value engineering		
	CSF Aspect	**Reference**
1.	Compliance with quality targets	Oyebanji, Liyanage & Akintoye (2017)
2.	Adherence to project schedule	Mukhtar et al. (2017)
3.	Compliance with project budget	Mukhtar et al. (2017)
4.	Good coordination among project participants	Sanvido et al. (1992)
5.	Project manager's competency	Gudiene et al. (2013); Nguyen et al. (2004); Tabish & Jha (2012); Toor & Ogunlana (2009)
6.	Project team members' competency	Belassi & Tukel (1996); Chan et al. (2004); Gudiene et al. (2013); Ihuah et al. (2014)
7.	Good leadership of project manager	Ihuah et al. (2014); Kandelousi et al. (2011); White & Fortune (2002)
8.	Commitments of project participants in meeting the project goal	Jha & Iyer (2006); Nguyen et al. (2004); Tabish & Jha (2012)
9.	Trouble shooting	Gudiene et al. (2013); Ihuah et al. (2014); Pinto & Slevin (1987); Toor & Ogunlana (2009)
10.	Good coordination between project participants	Jha & Iyer (2006); Tabish & Jha (2012)
11.	Top management support	Belassi & Tukel (1996); Gudiene et al. (2013); Ihuah et al. (2014); Tabish & Jha (2012)
12.	Clarity of project goal to the project team.	Gudiene et al. (2013); Ihuah et al. (2014); Jha & Iyer (2006)
13.	Effective project monitoring	Hwang & Lim (2013); Ihuah et al. (2014); White and Fortune (2002)
14.	Project team motivation	Chua et al. (1999); Gudiene et al. (2013); Hwang & Lim (2013)
15.	Value of a project	Ademiluyi (2010), Gudiene et al. (2013)

Table 8: CSFs related to Infrastructure development and management

Infrastructure development and management		
	CSF Aspect	**Reference**
1.	Adequate infrastructure supply by government	Oyebanji et al. (2017)
2.	Government provision of infrastructure	Makinde (2013); Udechukwu (2008)

Table 9: CSFs related to Facilities Management

Facilities Management		
	CSF Aspect	**Reference**
1.	Adequate accessibility to social amenities	Aadbre & Chan (2019), Oyebanji et al. (2017); Gan et al. (2017)
2.	Adequate maintenance of existing houses	Gan et al. (2017), Mukhtar et al. (2017)
3.	Monitoring conditions/performance of completed houses	Aadbre & Chan (2019), Winston (2010)