

Proceedings in Technology Transfer

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Tallal Abdelkarim Bouzir ·  
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Samar Altarteer *Editors*

# Proceedings of the 2nd International Conference on Creativity, Technology, and Sustainability

CCTS 2025, 30 April–1 May, Jeddah,  
Saudi Arabia




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# Transformation of Affordable Housing in Saudi Arabia Toward Sustainable Development Goals

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**Abstract.** This paper deals with the analysis of the theoretical concepts of affordable housing in the context of the sustainable development goals SDGs. Locally, there are great efforts to provide housing programs that are consistent with the economic capacity of low-income people. However, there is a deficiency in understanding the holistic perspective of affordable housing, as most housing programs focus on the economic aspect. In light of the sustainable development goals, the paper attempts to propose transformation principles to achieve the duality of sustainable affordable housing. This paper relied on the theoretical approach and critical analysis of a wide range of studies that addressed the concept of affordable housing within the framework of sustainability. The study concluded with four strategic principles for achieving affordable housing in line with the sustainable development goals which are: sustainable regional planning, local urban legislation, sustainable housing production, and sustainable subsidies programs.

**Keywords:** Affordable housing · Sustainability · Sustainable development

## 1 Introduction

UN statistics estimate that 1.1 billion urban dwellers live in slums or inadequate housing conditions [1]. Statistics predict that an additional 2 billion people are expected to live in slums in developing countries. Access to affordable housing has become one of the main challenges facing developing countries in recent decades [2]. Housing affordability is subject to several factors including housing supply, income levels, legislative framework, and subsidies and financing programs [3]. Low affordability negatively impacts quality of life and household spending, including transportation, utilities, health, and education [4]. In other words, affordable housing provides spatial and economic stability and social convenience, leading to improved living standards [5]. Locally, the construction sector is still unable to develop innovative solutions that meet the economic and social needs of families. Producing affordable housing does not only mean providing housing environments that are compatible with the economics of the population; but also, with the extent to which they are compatible with economic, social and environmental perspective. Therefore, integrating sustainable urban development goals into city strategic plans requires developing the urban planning infrastructure including the legislative, procedural and executive framework [6]. These structural transformations will lead to the

sustainability of affordable housing production, which will enhance cities' commitment to a sustainable urban future. This paper seeks to stimulate affordable housing production within a framework consistent with the Sustainable Development Goals SDGs by developing strategic principles for reforming the local housing sector infrastructure including legislative, procedural and implementation aspects.

Saudi Arabia has witnessed urban growth over the past four decades, with an urbanization rate of 82% [7]. Urban growth has been concentrated in some major cities such as Riyadh, Jeddah, and Al Khobar due to the growth of economic investments. The volume of housing demand has increased in major cities, and land prices. Despite the United Nations commitment to providing everyone with equal access to fair housing, the housing sector still fails to reach the balanced production in line with the quality necessary to meet the demand for affordable homes [8]. The rise in land prices and rents is an inevitable result of the limited supply of housing that is compatible with the economic capacity of low-income people and the weakness of housing support programs. These urban problems can increase in light of the rapid urban transformations that Saudi cities are witnessing [9]. Therefore, there is a need to activate the role of affordable housing within a framework that serves the goals of sustainable development.

## **2 Theoretical Framework**

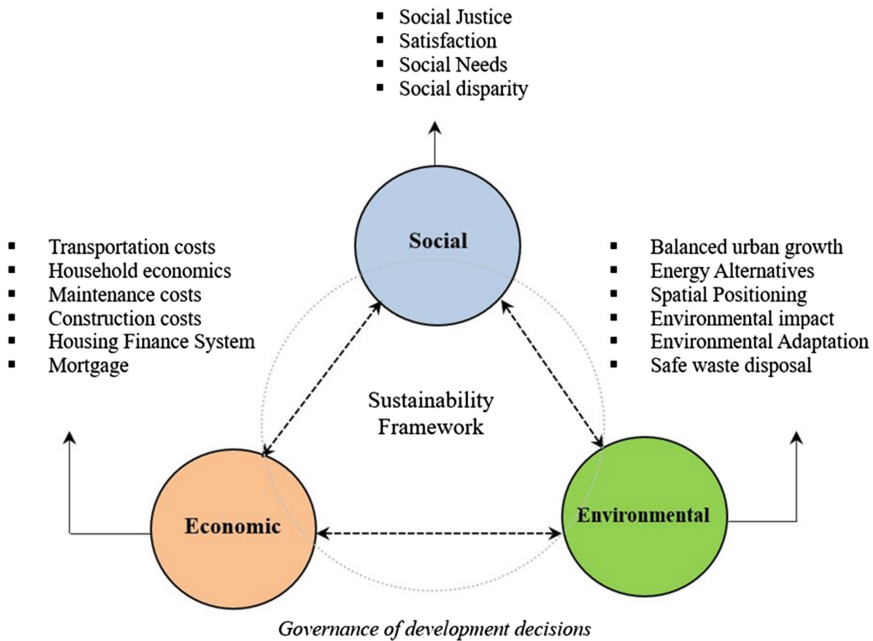
### **2.1 The Concept of Affordable Housing**

Many cities around the world struggle to provide adequate housing stock for middle- and low-income people. Affordable housing is described as housing units that do not burden low- or middle-income families and do not affect the cost of living [10]. The concept of affordable housing refers to a "housing market" that maintains a housing supply that is adequate for middle- and low-income families [11]. The measure of affordability varies between countries, with the proportion of housing costs varying between 30–35% of the capital invested in housing, whether mortgage or rent [12].

### **2.2 Affordable Housing and SDGs**

The concept of affordable housing remains unclear as some studies focus on the economic side of households [3]. Therefore, many literatures suggest that affordable housing should be consistent with a sustainability framework to ensure its success including achieving functional quality, economic diversity, and social suitability [4, 13]. Affordable housing means more than just physical housing but also providing privacy, accessibility, adequate space, security, stability, infrastructure, lighting and heating, environmental quality, and a suitable location with affordable costs [14]. Sustainable cities provide equitable urban policies that promote affordable housing options, thus preserving city demographics and preventing the displacement of vulnerable populations due to rising costs. Sustainable cities develop housing programs that adapt to all economic groups and monitor the housing stock in the city. Sustainable cities establish regulations to prevent real estate speculation to ensure a fair housing market. In addition, sustainable cities encourage investors to provide economical housing alternatives and exploit vacant lands

within the city through fair urban legislation [1]. Target 11.1 states “ensuring access for all to adequate, safe and affordable housing and basic services and improving slums.” [15]. To achieve SDG 11, sustainable urban development policies emphasize allowing communities to access basic services, affordable housing, efficient transportation and green spaces in a way that serves current and future generations without depleting or disrupting resources [15] (see Fig. 1).



**Fig. 1.** Affordable Housing in the Context of Sustainability (Author based on [1, 3, 4, 11])

Based on the above, cities that achieve the Sustainable Development Goals SDGs are those cities that respond to the needs of society, economic variables and environmental conditions through effective urban policies, development programs and flexible plans [16]. sustainable policies work to develop an effective governance framework for development decision-making that serves all segments of society and achieves equal opportunities for low-income economic groups, including providing housing support programs and a sufficient stock of affordable housing to meet current and future demand. Sustainable Development Goals SDGs intersect with affordable housing concepts to achieve a balance between environmental, social and economic dimensions:

- **Environmental:** Developing housing policies that encourage rational consumption, use of alternative energy systems, waste disposal systems, and adapt to the natural environment. In addition, protect agricultural areas from urban sprawl and random extensions [17].
- **Economic:** Developing a balanced housing market that takes into account spatial and economic disparities between cities without negative impacts on vulnerable groups,

including providing housing programs for low-income people and financing in line with economic capacity limits [18, 15].

- Social: Enhance community participation in development decision-making, including measuring community satisfaction and household needs in affordable housing projects [17].

### 3 Materials and Methods

This study was based on the theoretical approach through an in-depth analysis of the United Nations reports on affordable housing and a review of the Sustainable Development Goals (Target 11). The study compared local efforts in the context of providing affordable housing and their alignment with the Sustainable Development Goals. Local data was collected based on reports from the General Authority for Statistics and the Ministry of Municipalities and Housing, then applied to the case of Riyadh, Jeddah, and Al Khobar. The study concluded with a set of strategic principles for transformation of affordable housing within the framework of sustainability that can be applied at the local level. (See Fig. 2).

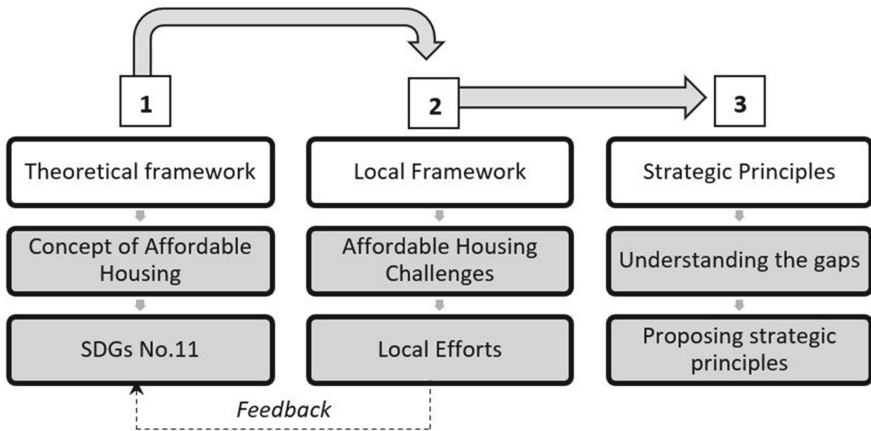
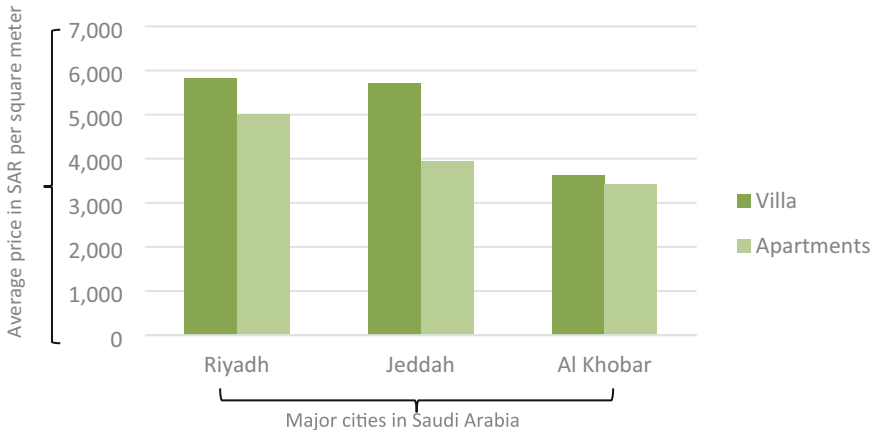


Fig. 2. Scheme of the research methodology (Author based on [19])

### 4 Local Context

There is a clear disparity in the housing market in Saudi Arabia, with land and housing unit prices rising in Riyadh, Jeddah, and Al Khobar. The estimated population of these cities is 11,419,392 which is equivalent to 40% of the total population in Saudi Arabia [20]. In Riyadh, apartment prices have been on the rise since Q3 2020, with sales values around 11.7% annually over the past four years. The average price reached SAR 5,000 per square meter at the end of Q2 2024. On the other hand, residential villas have been on the rise since 2019, with the average value of villas reaching SAR 5,824 per square

meter at the end of 2024 [21]. In contrast, villa prices in Jeddah contracted by 0.8% at the end of Q2 2024, with the average villa price reaching SAR 5,707 per square meter and average apartment SAR 3,945 [21, 22]. Moreover, average villa prices Al Khobar increased by 1.8% and 3.2% compared to 2022 with SAR 3,612 per square meter at the end of 2023. In addition, the average apartment prices saw a 2.9% increase to SAR 3,424 per square meter at the end of 2023 [21] (see Fig. 3).



**Fig. 3.** Average prices of villas and apartments in Riyadh, Jeddah, and Al Khobar (Author based on [21, 22]).

The Sustainable Development Goals states the balance in the distribution of population and resources. Locally, there is an imbalance in the distribution of population and resources without a comprehensive understanding of the regional context. Statistics from the General Authority for Statistics indicate that the population of Riyadh city reached 7,009,120 people in 2022, that constitutes 82% of the total population of the Riyadh region, which is 8,591,748 people [23]. Major cities are expected to see a rise in housing prices as a result of increased demand, population migration and investment concentration. Large cities have expanded in response to housing demand, and this expansion has contributed to urban problems that are not in line with sustainable development goals, such as accessibility, traffic congestion, and rising prices. In addition, some affordable housing projects have been located on the outskirts of major cities due to lower prices or in small cities without a comprehensive program for urban renewal of city centers or maintenance of dilapidated housing [24].

The Sustainable Development Goals indicate that housing production should achieve social justice, social inclusion, and partnership among stakeholders especially for low-income social groups [25]. Therefore, the production of affordable housing is subject to understanding the economic, social and environmental variables in cities. Locally, many housing plans have been developed with a real estate objective to accommodate demand without taking into account the economic diversity of the population, the level of quality, the type of services, environmental considerations, and social patterns [4]. This ultimately generated urban patterns that are not in line with the social, economic,

and environmental diversity within the framework of the SDGs. The Ministry of Municipalities and Housing launched the “Sakani” program to support middle-income families and a number of initiatives to support low-income people such as cooperative housing and development housing [26]. Efforts in Saudi Arabia have tried to increase the rate of family home ownership in line with the goals of the National Vision 2030. Statistics from the General Authority for Statistics indicate that the housing stock in Saudi Arabia amounts to 8,174,674 units, of which 20,901 units are classified as public housing, which represents 0.2% of the total housing stock [23]. Moreover, the percentage of Saudi families owning homes has reached (around 60% to 63.74%), 36.4% of whom own homes without a mortgage or loan. More than 24% of families still need to pay off mortgage loans [23, 27]. Yet, there are many challenges related to providing affordable housing due to high production costs, increasing demand, and weak support programs for low-income people [9]. Many middle-income households pay more than 35% of their income for housing [4, 24, 28]. Low-income households do not have the income to obtain a mortgage and rely entirely on developmental housing or cooperative programs, which are still limited [9].

## 5 Principles of Transformation Towards SDGs

There are significant challenges facing affordable housing in Saudi Arabia in the context of the Sustainable Development Goals SDGs, including regional disparities in the housing market, the effectiveness of housing finance and subsidies programs, urban development policies and the housing production process. Therefore, the study proposes the application of the following transformation principles: First, the housing sector should be part of comprehensive regional development in line with sustainability concepts. This includes restructuring the population in cities to ensure balanced development, enhance connectivity between small and large cities, and encourage reverse migration to small cities. The regional imbalance contributes to increased migration rates to major cities and the growth of informal settlements [29]. Sustainable regional planning requires the development of municipal structures to make decisions that support resilience, social justice, and a balance between economic investment and environmental protection.

Second, strategic plans in cities should include sustainability principles, as the horizontal urban growth of large cities increases the demand for land and housing. Instead, smart growth can be adopted as a sustainable approach that emphasizes the optimal use of resources and reduces unbalanced urban sprawl. Developing urban legislation in cities in line with sustainable development goals, including the Saudi Building Code, which emphasizes rationalization of economic spending, energy, and waste disposal systems. In addition, update urban legislation in a way that is consistent with the social, economic, and environmental diversity of each city.

Third, the process of producing housing locally should be in line with the principle of social and economic diversity. Yet, the real estate development system still deals with physical construction (quantitative production) without developing a model for improving living standards in residential neighborhoods (qualitative production). The development of RED procedures entails requirements for real estate companies to limit the traditional approach based on economic investment [24]. These requirements

may include allocating areas for housing projects that increase the housing stock in the market and maintain the balance in prices and requiring the development of a percentage of the plan completely, starting from the infrastructure to the urban structure, to reduce real estate speculation on vacant lands. Fourth, improving housing subsidy programs involves building a sustainable “business model” that emphasizes partnership and community participation within the framework of governance [29]. Housing subsidy programs should target eligible groups based on a housing stock allocated to these programs, such as cooperative housing, urban renewal, and public housing projects. The shortage of available land for trading affects the housing stock in cities and increases prices as many landowners invest in land. Although vacant land is available in cities, it is owned by real estate companies [30]. Therefore, government land must be allocated for affordable housing and developed through public-private partnerships.

## 6 Conclusion

The paper addressed the principles of transformation of affordable housing in Saudi Arabia towards the sustainable development goals. The study was based on an in-depth review of SDG 11 and comparing it in the context of the local housing situation. The study concluded with four strategic principles for transformation, which are: sustainable regional planning, local urban legislation, sustainable housing production, and sustainable subsidies programs. Implementing these policies faces challenges in aligning the housing sector’s structural framework with sustainability indicators. Therefore, the study recommends developing a procedural model to verify the implementation of SDGs in national, regional and local plans.

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