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Planning for Resilience – Study of a social housing model for Ras Al Khaimah, UAE

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Abstract

Housing, in general, addresses technical, social, political, and economic issues more than any other building type. However, there is a recent emphasis on a bigger picture with more intention placed on implementing sustainable planning aspects of neighborhoods and communities' level as well as on the individual house's level. Considering that from 10 to 20 percent of the total urban area is usually occupied by social housing, urban resiliency is currently in the center of debate about the provision of social housing in order to achieve the long-term sustainable development goals. United Arab Emirates (UAE) government considers housing as one of the most vital sectors of the country's economy that safeguards a successful sustainable urban development. One the main goals of the country is to provide its citizens with quality social housing. Hence, new, more resilient models of neighbourhood planning are introduced in replacement to the conventional models of urban forms. However, these programs address country's citizens only despite the fact that the demographics of the country shows the ratio of Emirati population to Expat 11,48% to 82,52% respectively. Based on this perspective, this study discusses the requirements of resilient social housing that are adaptable to the local environment, by proposing a social housing model for expat population of the country. Through observation of expat social housing conditions and of existing social housing programs for Emiratis population in Ras Al Khaimah, authors design criteria for environmentally/culturally adaptive social housing. The observation phase of the research is followed by an experimental one, during which the authors suggest a social housing model for Expat population that satisfy the set criteria. As a result of the research, model of social housing that considers the environmental, economic, and social aspects of sustainability is suggested to comply with Emirate's strategy to enhance the sector of social housing. By this research, the authors comply with the Emirate's strategy to enhance social housing and inform all decision makers and responsible stakeholders about the importance of better individual housing unit-neighbourhood-city planning that will result in sustainable communities and social equity.

Keywords: *Autonomous road vehicles, City, Mobility as a Service, New Mobility Services, Sustainability*

Introduction

Resilient and inclusive social housing is a significant indicator that measures a community's and country's social welfare. The definition, size, scope, target population and provider of social housing may differ from country to country, however most of the social housing programs target low-income members of the community. Countries establish their eligibility for social housing criteria based on clientship, household's income and its current living circumstances. Yet, these criteria – target population and eligibility - differentiate social housing programs from country to country. Despite the above listed differences, social sustainability, social mixing and inclusivity unites social programs goals of different countries as this is a key to achieving social and economic sustainability (OECD (2020)). The growing concerns around social segregation and social stability calls for mak-

ing the cities more inclusive, safe, resilient through the revision of social housing programs and policies. The aims of these revisions are to accelerate social sustainability and mitigate socio-economic challenges and spatial segregation between different community groups and rectify social imbalances and offer equal opportunities for people of different social groups (Janssen, et al, 2021). Social housing is an important sector of the economy that ensures sustainable urban development, and therefore, the provision of quality social housing is one of the main goals of the United Arab Emirates (UAE) government (Ibrahim, 2020). The sustainability agenda of the country's government is reflected on social housing programs and cities/neighbourhoods planning, wherein conventional design and planning methods are replaced by more sustainable ones (Ahmed, 2017). Green building rating systems such as local ESTIDAMA (The Pearl rating system launched by the Department of Urban Planning and Municipalities in Abu Dhabi in 2010) and LEED (U.S. Green Building Council) help in achieving more sustainable cities, neighbourhoods and housing communities across the country and reduce the carbon emissions of the country (Ibrahim, 2020). The country's current housing programs target citizens only, though, according to Janssen (2021), social sustainability is defined as consideration and enhancement of wellbeing of all current and future members of a community. Therefore, this article focusses on social sustainable development as it relates to housing programs in Ras Al Khaimah (RAK). RAK is the northern Emirate of the seven Emirates in United Arab Emirates (UAE). It is projected that the population of this Emirate will reach 603,000 residents by 2025 (Farrington, 2015). In recent years, there has been an influx of expatriates choosing to live in RAK not only due to low cost of living compared to the other emirates, but also to the work opportunities offered based on the economic development experienced in this emirate and whole UAE. Given that a significant portion of the city's population consists of foreigners and expatriates, it is crucial to address their housing needs, particularly in terms of affordability. This could be integrated into the Emirate's social housing strategy. Bruen et al (2013) maintain that affordability and sustainability have become essential considerations in the international discourse on development, especially concerning housing solutions for the blue-collar workers in developing nations. This paper will argue that addressing the housing requirements of Ras Al Khaimah's residents, including expatriates, is essential to meet the long-term sustainable development goals in the Emirate. Achieving these long-term sustainable development objectives, will necessitate prioritizing sustainability and resilience in the Emirate's housing programs for the local as well as for the expats. In planning for resilient and inclusive housing, the three main sustainability measures – social, economic and environmental, must be considered (Alves, 2020). The criteria, in this case, for measuring social, economic and environmental sustainability of a housing are: ability to a) ensure equitable access, b) economic/financial inclusion to all community members, and c) conserve resources during its entire life-cycle (construction, maintenance and operation) and produce a low carbon footprint. In order to meet social sustainability requirements, a city planning system considers a socially efficient mix of land uses, equitable distribution of land for housing, and adequate provision of affordable housing (Mekawy, 2014). Based on the above-described perspective, this study discusses the requirements of resilient social housing that are adaptable to the local environment, by proposing a social housing model for expat population of the country taking RAK as a case study. Through the overview of existing housing programs and study of expat social housing conditions, authors design criteria for resilient and inclusive social housing that is also environmentally/culturally adaptive. As a result of study, authors suggest a model of social housing that considers social aspects of sustainability.

Literature review - review of social housing programs in rak:

Housing is one of the significant sectors in the United Arab Emirates. The visionary leaders of this economically developed country recognized the importance of providing affordable housing for the citizens, ensuring that every Emirati, regardless of their economic status, have a decent place to call home. As the country continues to flourish, so does its commitment to social welfare to build resilient and vibrant communities. Under the directives of His Highness Sheikh Mohamed bin Zayed Al Nahyan, the UAE President, UAE's Social Welfare Programs of low-income population have been restructured to align with the leadership visionary and commitment to "make the UAE one of the best countries in terms of supporting the community and quality of life" (WAM, 2022). Housing allowance is one of the main social benefits to be granted to low-income citizens who are eligible to social welfare, according to Hessa bint Essa Buhumaid, the UAE Minister of Community Development. As early as the unification of the country initiated, the government began social housing initiatives that focus on providing basic dwelling to low-income families to shelter them from the harsh desert environment (Maclean, 2016; Mohamed et al, 2023). These initiatives laid later the foundation for more ambitious projects (Al-Mansoori, 1997). The governmental social housing programs encompassed three main categories: Firstly, pre-built housing units which were provided free of charge to low-income citizen groups. Secondly, financial grants were offered to citizens to build their own homes on designated plots of land. Thirdly, long-term loans, extending up to 25 years with minimal interest rates, were provided to citizens with the financial capability. The main objective of these housing programs was to offer a well-designed healthy environment for every Emirati, regardless of their background and location, as a gesture from HH Sheikh Zayed, the founder of UAE (Assi, 2023). The early public housing projects, that fell under the first category, were predominantly a single-family unit on a sufficient piece of land. Example of this social housing projects is the Shabiyat Housing in Ras Al Khaimah implemented in 1973. Assi (2023) maintains that initially, the Shabiyat dwelling units were compact and constructed primarily to accommodate a large number of people during emergencies. These planned communities included equal medium-sized plot of lands that contained similar housing design layouts. As per data gathered by the Ministry of Public Works, UAE, this housing program initiative began with implementing moderate size housing units of approximately 108 square meters situated on 900 square meters plots of land. By the 1990s, these units were expanded to a two-story housing layout of 367 square meters, located on plots of 1,620 square meters (Ahmed, 2011). As the UAE embraced modernity and urbanization, the scope of social housing expanded. Innovative architectural designs emerged, blending traditional elements with contemporary aesthetics to create sustainable and culturally relevant dwellings. These new developments were not just about providing shelter but about nurturing a sense of belonging and community spirit. Thus, the government also provides housing options for the Emiratis under the above-mentioned second category. Examples of these programs are: the Sheikh Zayed Housing Program (SZHP), the President's Initiative (PI) (Elmenghawi & Cazacova, 2023). SZHP, which was established in 1999, is the main federal association responsible for providing public housing across all the country's Emirates (Sheikh Zayed Housing Program, 2020). Subsequently, each Emirate has established its own local public housing agency to enhance housing availability for Emirati citizens, the Sheikh Saud Housing Program is the local initiative of social housing programs for the Emirate of Ras Al Khaimah (Agrawal, 2018; The Sheikh Saud Housing Program, 2019). With the increased demand on public housing due to growing population and limitation of land available for building such projects, new models have been introduced. The government offered multi-family housing as apartment buildings. Examples of such housing models are found in Diba Al Hosn in Sharjah and Al Ghurfa in Al Fujairah. Shareef and Ahmed (2023) argue that while the design of these two multi-family housing models considered some of the Emirati life-style's requirements, the degree of attainment of social sustainability in these medium rise apartment buildings is

not fully examined. Their study concludes by identifying the deficiencies in the social sustainability aspects of contemporary multi-family public housing designs in the UAE. It proposes a comprehensive framework of social sustainability principles and indicators that could effectively address the social sustainability aspects of vertical public housing for Emiratis (Shareef & Ahmed, 2023).

Methods:

With the aim of identifying the requirements of resilient social housing and proposing a residential unit for the expat population of the country, authors apply two different research methods – qualitative and experimental. Qualitative method is used for: a) identification of requirements for resilient social housing; b) existing social programs study. Wherein, a) is executed through literature survey, and b) through literature survey. For the experimental method of this research, authors are modelling a social housing unit based on the requirement identified by qualitative method and evaluates its social, economic and environmental sustainability. This research however concentrates on social sustainability performance only, and the other two components will be evaluated in the future research. Social sustainability of the proposed model is evaluated based on two main criteria (tangible and intangible) that are given in the below diagram.

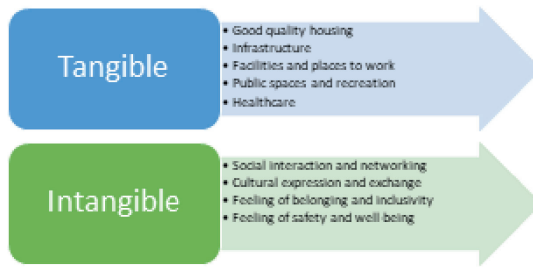


Fig. 1. Criteria for evaluating housing social sustainability.

Results and discussion - social housing modelling:

The proposed model of social housing targets inclusively all groups of RAK community and aims to revolutionize affordable housing through inventive modular building systems, to cater for pressing need of accessible living spaces within the community. Using the efficiency and flexibility of modular architecture, this model optimizes land use (that is so precious in the UAE) and spaces use while maintaining quality and cost. Traditional building methods frequently fail to keep up with increased demand for inexpensive housing, resulting in inadequate living circumstances for many people and families. Modular construction offers a range of benefits such as cost reduction through streamlined building processes, faster construction times, and reduced prices. This means that housing can be deployed rapidly, thus raising the supply of inexpensive houses to meet increasing demand. As the housing model is modular and unexpensive, will be accessible for groups of people with low income. In this proposal, every module is specifically made to optimize utility and comfort with different modules fitting varying family sizes and needs. There are three module units which consist of a studio, one-bedroom and two-bedroom unit. The studio unit encompasses an area of 35 m² and utilizes space without sacrificing comfort. It consists of an open kitchen and living/sleeping area with an enclosed bathroom. The one-bedroom unit occupies an area of 49 m² with an open kitchen and living space. The separate bedroom enhances privacy while ensuring a link between



Fig. 2. Social housing proposed model; Type 1 – Studio and 1 BHK; Type 2 – 1 BHK and 2 BHK.

different spaces. Subsequently, the two-bedroom unit occupies an area of 84 m² to accommodate a larger household. Similar to previous units, it also consists of an open kitchen and living layout with two bathrooms, one attached to the master bedroom. All units have windows located in each living and bedroom space that allow in ample natural light and offer views of the neighbourhood or communal areas. The blocks (Type 1 and Type 2) can be configured based on the available land plot.

Conclusion:

Individuals and families that have previously faced housing insecurity might gain stability and a feeling of community by being offered affordable and appropriate living environments. Modular housing is an effective means of alleviating the kind of instability in housing by offering secure, pleasant homes at reasonable costs which are comfortable and affordable, thus reducing anxiety and stress among residents. This stability generates a sense of belonging and community cohesiveness by allowing people and families to develop roots and form meaningful ties with neighbors. This promotes the establishment of supportive social networks, in which neighbors may share ideas, resources, and offer assistance to one another. Frequent events and meetings in the common areas encourage socializing hence creating a safer and supportive environment for all. Furthermore, residents have the opportunity to participate in decision-making processes, allowing them to determine what happens in their locality thereby acquiring pride and ownership. Additionally, the variety of housing designs attract inhabitants from different socio-economic backgrounds at various life stages which fosters inclusivity as well as diversity within neighborhoods. These diversified individuals promote contact between other communities, resulting in enhanced knowledge and respect for each other's customs, cultures, and languages. People living in modular homes across cultural lines can develop strong relationships with one another by exchanging stories while respecting each other's cultural heritage. Not only does using modular architecture in affordable housing developments provide shelter, but it also creates lively, supportive communities by facilitating intersecting and unifying people from different economic backgrounds which reduces the risk of social exclusion and sense of separation. As seen from Table 1, the proposed housing model satisfies both tangible and intangible criteria for social sustainability. It promotes urban resilience and offers inclusivity to expat population of RAK. The model suggests affordable housing solutions to all community members, including expat population that can live comfortably while working abroad. The feeling of security and inclusiveness will

Category	Criteria	Housing assessment
Tangible	Good quality housing	Functional and comfortable
	Infrastructure	Well-developed withing the model; depends on the location/neighbourhood
	Facilities and places to work	Depends on the location/neighbourhood
	Public spaces and recreation	Common areas offer retreat and recreation
	Heath care	The model suggests parking at the entrances to the compound and, therefore motivate walking; the availability of healthcare facilities depends on the location
Intangible	Social interaction and networking	Common areas that are centrally located can be used for social events and social interactions/networking
	Cultural expression and exchange	Affordability and common areas promote intercultural exchange and can be used for cultural festivals
	Feeling of belonging and inclusivity	Offers affordable and comfortable housing for all members of the community with different income and develops the feeling of belonging in expat population (that in many cases spend most of the live abroad)
	Feeling of safety and wellbeing	Provides safety to the members of the community with low income and promotes their wellbeing

Table 1. Proposed model of social housing assessment.

retain the expat population of RAK and attract even more. By proposing this housing model, the authors comply with the Emirate's strategy to enhance social housing and inform all decision makers and responsible stakeholders about the importance of better individual housing unit, neighbourhood, city planning that will result in faster social sustainable development of the community and country. As this article addresses the social sustainability related to social housing in RAK, future research will explore the economic and environmental sustainability of the proposed model.

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