POLICYBRIEF

Improving Community Acceptance of Sustainable Low-income Housing: Lessons from Mumbai & Surabaya

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Highlights

Sustainable and affordable housing is critical for achieving SDG 11 (sustainable cities & communities). Housing policy should support environmentally sound housing that considers socio-cultural and economic issues. Integration of technology and sustainable design is increasingly important for sustainable consumption and production in the sector. Community acceptance of such innovations can be a catalyst for a smooth transition to sustainable housing if supported by policies.

Recommendations:
- Apply adaptive policy pathways to incorporate flexibility into decision-making for sustainable low-income housing policy.
- Utilise social and environmental criteria in site selection along with economic viability.
- Conduct participatory planning to understand and incorporate residents' needs in housing design.
- Facilitate community ownership and institutionalised participation in project planning.
- Foster sustainability consciousness among residents and the local community through capacity building and communication.

Achieving SDG 11: Building a Sustainable & Affordable Future

Building sustainable and affordable housing is essential to ensure access to housing, reduce waste, and improve resource efficiency. It has an important role in achieving SDG 11 (sustainable cities & communities) and SDG 12 (responsible consumption & production). Sustainable housing, by definition, must incorporate a process of holistic and integrated assessment of social, economic, and environmental sustainability (Winston and Pareja Eastaway 2008). The application of technology in affordable housing projects can improve energy efficiency; ensure access to safe drinking water and sanitation; and reduce waste and water pollution. Any reductions in environmental impact would also offset the environmental footprint of affordable housing.

Emerging economies such as India and Indonesia seek to achieve widespread improvements in housing conditions. Access to sustainable and affordable housing is a key component of their housing policy and initiatives to deliver SDG 11. Different population groups living in different parts of cities have varying access to quality housing and require tailored strategies and approaches. For instance, the 2011 census of India estimated that approximately 65 million people were living in informal settlements.

The application of technology for better housing can improve the quality of life for the urban poor. However, it can also have negative impacts — for example, people refusing to move in, or returning to the slum after living in the housing built for them (Restrepo 2010). There is an increasing need to understand the factors influencing community acceptance to ensure the successful implementation of technology for sustainable low-income housing (Saidu and Yeom 2020).

This policy brief offers recommendations to strengthen the application of technology and building design in sustainable low-income housing policies and practices by encouraging community acceptance. Drawing from studies in Mumbai and Surabaya (see Note), supplemented by recent literature, the brief provides suggestions for local policymakers and housing practitioners to harness strategies to achieve greater community acceptance, shape sustainable lifestyles, and improve consumption patterns. The recommendations are particularly relevant for cities working to transition their housing towards more sustainable practices and harness technology for affordable housing.

Sustainable Housing & Community Acceptance: Learning from Mumbai & Surabaya

Community acceptance refers to the acceptance of specific projects by local stakeholders, particularly residents and local authorities (Wüstenhagen et al. 2007). For technology in housing, it is determined by an array of social and environmental factors, in addition to disposable income levels and physical infrastructure (Kosorić et al. 2019). Studies in Mumbai and Surabaya confirm prior findings that users' cost burden indicators, such as housing expenditure and household income informality, are sometimes overlooked (Streimikiene 2015).

The fundamental issue in applying technology in housing, such as renewable energy or waste management, is that residents are often excluded from the decision-making process, despite being the stakeholders most affected. Governments and developers often assume that residents will accept the specific implementation of technology because it has broad popularity among the general public. Additionally, developers vary in size, resources, and experience, affecting their capacity to deal with awareness and integration of technology among residents.

Passive design, an approach to help maintain thermal comfort, is generally received more readily, requiring only minimal awareness-raising during the pre-design stage.

For example, designing for more efficient energy use is a typical housing feature in Mumbai and Surabaya. Efficient lighting and cooling are essential determinants of resident satisfaction (Keyvanfar et al. 2004). In colder climates, energy efficiency improvements due to passive design are environmentally advantageous and essential in reducing heating costs (Wong and Baldwin 2016). In contrast, introducing technology such as photovoltaic (PV) panels requires the understanding of residents, so awareness-raising and training are needed during the pre- and post-design stages. Residents with a positive outlook towards community participation, who have been involved in planning and design, have higher acceptance of technology and design measures.

Aside from design and technology, access to economic opportunities is a key factor in sustainable housing. For example, in Mumbai and Surabaya, the need for affordable housing near workplaces is one of the main reasons the poor choose to reside in slums. Similarly, proximity to economic centres, i.e., commercial or industrial districts, is an essential factor influencing residential satisfaction.

Moreover, the development of sustainable low-income housing must overcome deep challenges rooted in the legal and institutional frameworks for housing. The shortage of land parcels suitable for public housing development is one of the key problems (Gopalan and Venkataraman 2015). These issues go beyond the initial development phase, as evident in the poor overall record of public housing in most countries. Ensuring sustainable and affordable housing requires the adoption and implementation of effective policies across the sector.

Policy Recommendations

Based on lessons learned from Mumbai and Surabaya, the following five recommendations are provided for local policymakers and housing practitioners to advance the adoption of sustainable technologies and design in low-income housing strategies.

1. Apply Adaptive Policy Pathways to Incorporate Flexibility into Decision-making for Sustainable Low-income Housing Policy

A key factor for the success of sustainable housing is consideration of environmental effects, energy, economic factors, and user needs (Zhao et al. 2015). For sustainable low-income housing policies that include the introduction of technology and designs, success depends largely on the community's understanding of the need for these policies.

Therefore, local governments should continue developing them by following an adaptive policy pathway to reflect community acceptance. Adaptive policy pathways have recently emerged as a way to increase the effectiveness of long-term policies in the face of unavoidable uncertainties. They include a progressive approach to incorporate flexibility into decision-making and avoid lock-in, threshold effects, and maladaptive consequences of interventions (Butler et al. 2016). Adaptive policy pathways can be an alternative strategy to design effective actions for multi-stakeholder implementation towards sustainable transformation (Werners et al. 2021). They could include identifying and discussing options and implementation constraints with stakeholders to increase housing satisfaction as part of climate adaptation measures (e.g., energy efficiency, rainwater harvesting).

Housing policies that adopt adaptive strategies can also engage public and private actors and institutions involved in different aspects and phases of housing projects, including the decision-making process. In developing these strategies, policymakers should consider that housing developers vary in size, resources, experience, and capacity. Partnerships with organised community groups, such as slum dweller federations in Mumbai, can pave the way for strategies that explicitly prioritise the needs of the most vulnerable groups of residents.

2. Utilise Social and Environmental Criteria in Site Selection along with Economic Viability

The social and economic development of a city is closely interrelated with the territorial planning and zoning used to determine the location and accessibility of urban functions, including housing. Local governments should consider access to amenities such as parks, hospitals, and other urban services as a vital factor for the success of housing projects. In the case of Mumbai, residential relocation has caused a loss of secondary income for some households.

Buildings should be integrated with public spaces, ideally parks where children can play, other common indoor or outdoor spaces, and well-lit walkways. The site selection process may also need to consider future city growth scenarios — for example, transit should link housing with job centres. As local governments often face a lack of favourable sites for low-income housing, improving governance and management of the land market is key to linking affordable housing and spatial planning. Innovative approaches to urban land management include instruments that are community-led (e.g., community land trusts); development-based (e.g., developer charges and impact fees, and land readjustment); and fee-based (e.g., sale of development rights).

3. Conduct Participatory Planning to Understand Residents' Needs and Reflect them in Housing Design

Integration of technology can lead to failure if not positively accepted by residents. The risk is higher for visually dominant and aesthetically varied technology, such as PV panels or vertical farming (Kosorić et al. 2019). Community acceptance that considers the interdependent dimensions related to individuals, communities, and their specific socio-cultural settings can be used to predict the success of integrating technology in housing (Kalantari et al. 2018). Proper identification of residents' exact needs is essential to improve the long-term success rate of projects. While examining user needs exhaustively and comprehensively is no easy task, housing developers can conduct a properly organised survey or consultations to accurately identify the needs, wishes, preferences, and expectations of future residents. For example, before installing PV panels, housing developers could consider residents' concerns related to the application, maintenance, and arrangement of PV panels. Additional efforts might also be invested in design and visualisation to illustrate for residents and communities that the introduction of technology can improve their quality of life and the aesthetics of the built environment.

4. Facilitate Community Ownership and Institutionalised Community Participation in Project Planning

An open and fair process involving the community and potential residents is crucial, and it can lead to increased trust among stakeholders. In Mumbai and Surabaya, in cases where community participation is viewed positively, the acceptance of sustainability measures implemented has increased significantly. Moreover, participatory community project planning can support design processes and increase community acceptance of the technology.

However, a participatory process may require additional time. Thus stakeholders involved in preparing a sustainable low-income housing project need to carefully address the issue of participation in project planning. Depending on the project, in addition to involving the community through information provision and planning, it could be possible for the community to engage in co-design and joint decision-making for the project. While such decisions might not be directly related to siting or not siting a project, they could include possible communal participation in maintenance or a platform for residents to effectively voice concerns relevant to building design and technology.

5. Foster Sustainability Consciousness among Residents and the Local Community through Capacity Building and Better Communication

Improvement in public perception can facilitate the introduction of technology in housing if projects rationally utilise its positive capabilities (Kalantari et al. 2018). Governments, developers, civil society, the private sector, and academia should actively cooperate with residents and communities to foster sustainability consciousness by organising awareness-raising activities. In the medium to long term, capacity-building activities should aim for a shift towards responsible consumption and sustainable lifestyles.

Two-way communication and stakeholder engagement are essential to foster sustainability consciousness. Communities are often aware of the challenges but lack avenues to participate and apply their knowledge. For example, technology and sustainable design features such as rainwater harvesting, garbage separation, recycling, and efficient use of energy; and maintenance of equipment such as PV panels and vertical farming should be presented in a user-friendly way that is sensitive to local contexts.

Note

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Publisher
United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS)
Tokyo, Japan