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Affordable And Climate-Resilient Housing In Urban India: Integrating Accessibility, Inclusion And Sustainability

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Abstract: India's rapid urbanization and the vision of Viksit Bharat @2047 necessitate a transition from housing provision to the creation of resilient, inclusive and sustainable urban communities. While flagship programmes such as PMAY-U and PMAY-U 2.0 have significantly expanded access to affordable housing, emerging challenges associated with climate change, service accessibility and housing affordability require integrated policy responses. This article argues that affordability extends beyond dwelling costs and encompasses access to livelihoods, mobility, social infrastructure, housing finance and climate-resilient services. It highlights the importance of preserving existing community resilience mechanisms, promoting in-situ upgrading, strengthening tenure security and expanding rental housing. The article examines the role of transit-oriented development, land management instruments, blended finance, digital technologies and institutional innovations in improving housing outcomes. It further emphasizes climate-sensitive planning, passive cooling, green building frameworks, circular construction practices and the integration of vernacular knowledge with modern standards. By aligning affordable housing with accessibility, resilience, sustainability and social inclusion, India has the opportunity to create future-ready urban communities that support equitable growth and advance the vision of a developed and self-reliant nation by 2047.

Index Terms **-** Affordable housing, climate-resilient housing, urban India, Viksit Bharat @2047, housing affordability, PMAY-U, PMAY-U 2.0, urban resilience, climate adaptation, sustainable housing, transit-oriented development, rental housing, tenure security, inclusive urban development, green buildings, passive cooling, circular construction, community-led upgrading, housing finance, climate-responsive design.

I. INTRODUCTION

India's urban transition is unfolding alongside rapid economic growth, expanding infrastructure and transformative urban development initiatives. Indian cities are expected to accommodate more than half of the country's population by 2050. As the nation advances towards the vision of Viksit Bharat @2047, articulated by the Hon'ble Prime Minister, cities are expected to play a central role in driving inclusive growth, innovation and sustainable development.

The Hon'ble Prime Minister's clarion call of "Housing for All" reflects a commitment to ensuring that every citizen has access to a safe, secure and dignified home, recognizing housing as a key pillar of social and economic empowerment. In this context, flagship initiatives such as Pradhan Mantri Awas Yojana–Urban (PMAY-U) and PMAY-U 2.0 have significantly strengthened the urban housing ecosystem by promoting affordable housing, improving living conditions and enhancing access to basic services. The sanctioning of more than 1.25 crore houses for the urban poor under PMAY-U and PMAY-U 2.0, along

with the completion of over 98 lakh houses across the country since 2015, stands as a testament to the Government's unwavering commitment to inclusive urban development and the realization of the Hon'ble Prime Minister's vision of "Housing for All."

As India moves towards becoming a developed nation by 2047, the focus is increasingly shifting from merely constructing housing units to creating resilient, inclusive, accessible and environmentally sustainable communities. Housing affordability today extends beyond the cost of a dwelling and encompasses access to livelihoods, public transport, social infrastructure, housing finance and climate-resilient urban services. With climate change emerging as a defining challenge of the twenty-first century, there is a growing need to integrate affordability, sustainability and resilience into urban housing policy. This article explores pathways for advancing affordable and climate-resilient housing in urban India in alignment with the vision of a prosperous, inclusive and sustainable Viksit Bharat 2047.

II. Housing Affordability Beyond Housing Cost

The affordability of housing is strongly influenced by its location within the urban fabric. Housing located far from employment centres may appear affordable in terms of purchase price or rent but often imposes substantial transportation costs and time burdens on households. Access to public transport, educational institutions, healthcare facilities and basic urban services directly affects household expenditures and quality of life.

Proximity to livelihoods is particularly important for low-income and informal-sector workers whose income opportunities are closely tied to specific urban locations. Similarly, access to housing finance remains uneven across income groups, especially for households lacking formal employment records or secure tenure documentation. Therefore, affordability must be understood as a composite outcome of housing costs, transport expenditure, service accessibility and economic opportunities.

III. Preserving Existing Urban Resilience Mechanisms

Informal settlements and low-income neighbourhoods often possess forms of resilience that are overlooked by conventional redevelopment approaches. These include strong social networks, proximity to employment opportunities, established community institutions, access to local markets and incremental housing investments.

Government interventions must therefore avoid dismantling these socio-economic resilience mechanisms. Instead, policy frameworks should prioritize in-situ upgrading, incremental housing improvement, infrastructure enhancement and tenure regularization wherever feasible. Redevelopment strategies that displace residents to peripheral locations frequently undermine livelihoods, increase commuting costs and weaken social support systems, ultimately reducing resilience despite improvements in physical housing quality.

IV. Climate Vulnerability and Housing Insecurity

Housing insecurity in Indian cities is increasingly shaped by the interaction between social vulnerability and climate risk. Low-income households often occupy environmentally fragile locations such as floodplains, coastal zones, steep slopes and heat-prone urban areas due to limited access to formal housing markets.

Climate hazards amplify existing inequalities. Flooding damages housing assets, heatwaves increase energy expenditure and health risks and water scarcity undermines daily living conditions. Households with insecure tenure, irregular incomes and limited savings possess fewer resources to recover from climate-induced shocks, creating a cycle of vulnerability and recurring housing insecurity. Consequently, housing policy must integrate climate adaptation into affordability strategies rather than treating them as separate policy domains.

V. Resilient Housing Design and Climate-Sensitive Planning

Climate-resilient housing requires a shift from reactive disaster management toward proactive risk reduction. Housing design should incorporate flood-resistant construction, improved drainage systems, heat-resilient materials, water-sensitive design and energy-efficient building technologies.

Climate-sensitive urban planning can reduce exposure to environmental risks through risk-informed land-use planning, preservation of natural drainage systems, green infrastructure networks and ecosystem-based adaptation measures. Disaster-resilient infrastructure—including resilient transport systems, reliable energy networks, decentralized water systems and emergency response facilities—strengthens both housing resilience and urban functionality.

The integration of housing, infrastructure and environmental planning is therefore essential for addressing co-occurring climate and socio-economic risks.

VI. Unlocking Well-Located Land for Affordable Housing

One of the principal barriers to affordable housing provision is the scarcity of serviced land in accessible urban locations. Several planning instruments can help address this challenge.

Transit-Oriented Development (TOD) can increase residential density around public transport corridors while reducing dependence on private vehicles. Public land banks can facilitate strategic land assembly and allocation for affordable housing. Transferable Development Rights (TDR), land value capture mechanisms and higher Floor Area Ratio (FAR) norms can generate land supply and capture value increments resulting from public investments.

However, implementation challenges remain significant. Institutional fragmentation, speculative land markets, limited local government capacity, regulatory complexity, infrastructure constraints and political resistance often impede the effective deployment of these instruments. Successful implementation requires transparent governance, strong regulatory frameworks and coordinated planning across multiple agencies.

VII. Financing Affordable Housing and Rental Housing

Affordable housing projects often face financial viability constraints due to high land costs and limited returns. Public-Private Partnership (PPP) models can help bridge these gaps by combining public support with private sector efficiency.

Viability Gap Funding (VGF) can improve project feasibility where market returns are insufficient to attract investment. Blended finance mechanisms that combine public funding, concessional finance, commercial capital and philanthropic resources can further mobilize investment in affordable housing and rental housing projects.

These instruments are particularly important for expanding rental housing supply, which remains underdeveloped despite growing demand among migrants, students, young professionals and informal workers.

VIII. Scaling Rental Housing Through Institutional Innovation

India's rental housing market remains constrained by regulatory uncertainty, fragmented ownership patterns and limited institutional participation. The ARHC framework and the Model Tenancy Act provide important foundations for reform.

Institutional innovations could include rental housing funds, housing cooperatives, community land trusts, employer-assisted housing models and specialized rental housing operators. Financial innovations such as rental housing bonds, guarantee mechanisms and tax incentives can improve investment attractiveness.

Together, these measures can support the emergence of a formal, professionally managed rental housing sector capable of serving diverse income groups.

IX. Digital Technologies and Rental Market Transparency

Digital technologies can significantly improve transparency and trust in rental housing markets. Online platforms can facilitate property verification, digital lease agreements, grievance redress mechanisms and rental payment histories.

Property databases linked with municipal records can reduce information asymmetries and transaction costs. Digital identity systems and standardized tenancy documentation can improve confidence among landlords, tenants and financial institutions. Such innovations can encourage formalization while improving access to rental housing.

X. Linking Tenure Recognition with Upgrading and Housing Finance

Tenure insecurity remains a major barrier to housing investment and access to finance. Formal ownership is not always necessary; various forms of tenure recognition can provide sufficient security for residents to invest in housing improvements.

Policies should systematically link tenure recognition with infrastructure upgrading programmes and housing finance mechanisms. Flexible tenure approaches—including occupancy certificates, community tenure arrangements and incremental regularization models—can accommodate the diversity of urban contexts across India while supporting access to housing loans and public investment.

XI. Community-Led Approaches and Adaptive Capacity

Community participation is fundamental to resilient housing development. Informal settlement upgrading programmes have demonstrated that local knowledge, collective action and community institutions can significantly improve project outcomes.

Government programmes should institutionalize participatory planning, community-based monitoring and local capacity-building initiatives. Strengthening adaptive capacity through livelihood diversification, risk awareness, local disaster preparedness and social capital development enhances resilience beyond the physical housing structure.

XII. Embedding Service Accessibility in Housing Delivery

Housing resilience depends not only on the dwelling itself but also on access to services. Affordable housing located in peripheral areas often lacks adequate public transport, healthcare facilities, educational institutions, markets and employment opportunities.

Housing policy should therefore adopt service accessibility as a core planning criterion. Accessibility indicators can be integrated into project appraisal frameworks, ensuring that housing developments contribute to everyday resilience and social inclusion rather than creating isolated residential enclaves.

XIII. Gender-Responsive and Inclusive Housing

Housing and neighbourhood design should respond to the needs of diverse urban populations, including women, children, older persons, persons with disabilities and other vulnerable groups.

Gender-responsive planning requires safe public spaces, adequate lighting, childcare facilities, accessible transport systems and secure tenure arrangements. Universal design principles should be systematically integrated into housing standards, ensuring that built environments remain accessible throughout the life cycle. Inclusive neighbourhood planning strengthens social equity while enhancing overall urban resilience.

XIV. Mainstreaming Green and Low-Carbon Housing

The affordable housing sector presents significant opportunities for advancing sustainability goals. Green building technologies, resource-efficient infrastructure and low-carbon construction materials can reduce environmental impacts while lowering long-term operating costs.

Policy interventions may include fiscal incentives, green procurement standards, performance-based regulations, carbon financing mechanisms and technical support programmes. Expanding local manufacturing and supply chains for sustainable materials can further improve affordability and market adoption.

XV. Passive Cooling and Climate-Responsive Design

Heat stress is emerging as one of the most significant climate risks for Indian cities. Passive cooling strategies—including building orientation, shading devices, natural ventilation, reflective surfaces,

thermal insulation and vegetation-based cooling—can significantly improve indoor comfort while reducing energy demand.

Affordable housing standards should systematically incorporate climate-responsive design principles adapted to India's diverse climatic zones. Such measures are particularly important for informal and low-income housing, where access to mechanical cooling remains limited.

XVI. Bridging Vernacular Knowledge and Modern Standards

Traditional building practices often embody valuable climate-responsive knowledge developed through long-term adaptation to local environmental conditions. Housing policy should seek to integrate vernacular construction techniques with modern performance standards rather than replacing them entirely.

Retrofitting existing housing stock should be recognized as a major climate adaptation strategy. Upgrading roofs, walls, ventilation systems, drainage infrastructure and structural elements can improve resilience while avoiding the environmental and social costs of demolition and reconstruction.

XVII. Mainstreaming Sustainable Building Frameworks

Green building frameworks such as GRIHA and Eco-Niwas Samhita provide important pathways for mainstreaming sustainability in affordable housing.

These frameworks can support the adoption of energy-efficient designs, sustainable materials, water conservation systems and climate-responsive construction practices. Simplified compliance mechanisms, technical assistance and incentives can help extend their adoption across the affordable housing sector while maintaining affordability objectives.

XVIII. Advancing Circular Construction and Resource Efficiency

The transition toward circular construction practices is increasingly important for reducing resource consumption and construction waste. The Construction and Demolition Waste Management Rules, 2016 establish an important regulatory foundation for material recovery and recycling.
Emerging technology ecosystems developed through Global Housing Technology Challenge-India and the Light House Projects demonstrate the potential of innovative construction technologies, prefabrication systems, recycled materials and industrialized building methods.

However, scaling circular construction requires attention to affordability, local material ecosystems, workforce training, supply chain development and quality assurance mechanisms. Policy support should therefore combine technological innovation with capacity-building and market development strategies.

XIX. Conclusion

The future of affordable housing in India lies at the intersection of accessibility, resilience, inclusion, sustainability and economic opportunity. As the country progresses towards the vision of Viksit Bharat @2047, housing will remain a critical foundation for improving quality of life, enhancing productivity and promoting equitable urban development.

Guided by the Hon'ble Prime Minister's vision of "Housing for All", urban housing policy is increasingly evolving towards integrated neighbourhood development that combines affordable homes with access to livelihoods, social infrastructure, climate resilience and environmental sustainability. Initiatives promoting green construction, innovative technologies, rental housing, transit-oriented development and community participation can collectively contribute to creating vibrant, future-ready cities.

By aligning housing policy with the broader goals of inclusive growth, sustainable urbanization and climate resilience, India has a unique opportunity to build urban communities that are not only affordable and accessible but also capable of supporting the aspirations of a developed and self-reliant nation by 2047.

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