

Aranya Housing Project: A Paradigm of Affordable Housing and Inclusive Design

Shruti H. Kapur^{1*}, Rajni Kumar²

Abstract

The Aranya Housing Project, designed by the visionary architect Balkrishna Doshi, stands as a benchmark in the realm of affordable housing and sustainable urban development. Situated in Indore, India, and completed in 1987, the project was conceived to address the acute housing shortage faced by low- and middle-income groups in rapidly urbanizing regions. Moving away from conventional grid-based layouts, the project adopts an innovative, community-focused approach that integrates incremental housing solutions with participatory planning processes. Aranya prioritizes flexibility, allowing residents to gradually expand and modify their homes according to their evolving needs and resources, fostering a sense of ownership and empowerment. The project's design incorporates open spaces, mixed-use areas, and pedestrian-friendly pathways, promoting social interaction and inclusivity. Its use of cost-effective materials, innovative service delivery mechanisms, and efficient land use exemplifies a model for sustainable and equitable urban development. Beyond its architectural achievements, Aranya has had significant socio-economic impacts, enabling improved living standards, enhanced social cohesion, and economic upliftment for its residents. This paper critically explores the design philosophy, spatial organization, and socio-economic outcomes of the Aranya Housing Project while evaluating its relevance in addressing contemporary challenges of urbanization, affordable housing, and social integration. By drawing parallels with modern urban planning practices and global case studies, the analysis underscores the project's enduring legacy as a pioneering example of inclusive urban design. Aranya continues to inspire policymakers, architects, and urban planners worldwide, offering valuable lessons for creating resilient and equitable housing solutions that are adaptable to diverse socio-cultural and economic contexts. This abstract highlights the importance of Aranya Housing as a transformative model for sustainable and inclusive urban development, reaffirming its relevance in the discourse on affordable housing solutions globally.

Keywords: Affordable housing, dwelling, infrastructure, spatial organization, urban development

*Author for Correspondence

Shruti H. Kapur
E-mail: shrutihkapur@gmail.com

¹Professor, Department of Architecture and Planning, CT Institute of Architecture and Planning, CT Group of Institutions, Fatehpur, Partappura, Punjab, India

²Ph.D. Scholar, Department of Architecture, Apeejay Stya University, Gurgaon, Haryana, India

²Assistant Professor, Department of Design (Interiors), Apeejay College of Fine Arts, Jalandhar, Punjab, India

Received Date: December 08, 2024

Accepted Date: January 31, 2025

Published Date: February 10, 2025

Citation: Shruti H. Kapur, Rajni Kumar. Aranya Housing Project: A Paradigm of Affordable Housing and Inclusive Design. International Journal of Housing and Human Settlement Planning. 2025; 11(1): 12–19p.

INTRODUCTION

The 1980s marked a period of rapid urbanization in India, accompanied by a growing housing crisis. In cities like Indore, slums expanded exponentially as inadequate infrastructure, and unaffordable housing left many urban dwellers without proper homes [1]. The Aranya Housing Project, initiated in 1983 under the Indore Development Authority (IDA), sought to address these challenges by providing affordable housing solutions tailored to the needs of low-income and middle-income groups. Designed by Balkrishna Doshi, a prominent figure in Indian architecture, the project aimed not only to provide shelter but also to foster community cohesion and economic self-sufficiency. This paper

delves into the design principles, socio-economic impact, and legacy of Aranya, illustrating how its success lies in its adaptive approach to housing and its potential for scaling up in similar urban contexts worldwide [2]. The Aranya Housing Project covers a total area of 220 acres, with the first phase developed over 100 acres. Initially projected to accommodate 65,000 people, the project ultimately served 45,000, reflecting the adaptability and scalability of its design. This paper focuses on the innovative planning strategies and the inclusive design approach that sets Aranya apart from conventional housing developments, with an emphasis on sustainability and community engagement (Figure 1).



Figure 1. Aranya Housing Project. (Source: <https://architectureindevelopment.org/project/401>).

LITERATURE REVIEW

The field of affordable housing and urban development has seen significant shifts over the past few decades, with increasing emphasis on participatory design and sustainable development. Early theories of housing, as discussed. The authors highlighted the importance of self-built housing, community participation, and flexibility in design. Turner's *Housing by People* argued for the role of users in the design and construction of their homes, a philosophy reflected in Aranya's participatory approach. Abrams, in *Man's Struggle for Shelter in an Urbanizing World*, emphasized the need for adaptable housing solutions to address the rapid urbanization in developing nations.

The concept of flexible, incremental housing, as seen in Aranya, was also influenced by global movements toward self-help housing, where residents are empowered to expand their homes over time. in *Housing Without Houses* explored the potential of flexible, incremental housing, and Aranya's design is a direct response to these ideas. In addition, authors [3] and [4] argued that urban planning should integrate social spaces, sustainability, and local context. Aranya's design, by prioritizing pedestrian pathways, open spaces, and sustainable services, reflects these principles.

CASE STUDIES

The Correa Experiment: New Landscape Housing in India

Charles Correa's approach to housing design also shares some similarities with Aranya, particularly in terms of cultural context and social integration. Correa's projects, such as the *Kanchanjunga Apartments* and *Mangalwadi Housing*, also embrace the principles of adaptability and community [5]. Both Correa and Doshi's projects emphasize user participation and the accommodation of various socio-economic groups in urban spaces.

The Baan Mankong Housing Project in Thailand

The Baan Mankong project in Thailand, another example of inclusive housing, focuses on upgrading informal settlements and providing secure tenure to low-income residents [6]. Like Aranya, it uses a participatory approach and emphasizes the importance of community-based solutions to urbanization challenges. The project's success in improving living conditions and fostering community cohesion provides valuable lessons for similar projects worldwide.

CONTEXT AND OVERVIEW

Located in Indore, Madhya Pradesh, Aranya spans 220 acres and was planned to accommodate a population of 65,000. The site's topography, characterized by natural undulations, played a critical role in determining the layout of roads, drainage systems, and other infrastructure (Figure 2). The planning process leveraged gravity flow to optimize resource distribution, reducing the need for extensive excavation or land modification. Situated near an industrial area, the project aimed to provide housing for a mixed-income population, including laborers, middle-class professionals [7], and higher-income residents. This diverse demographic integration was central to its design philosophy, which sought to break down socioeconomic barriers and foster community interaction.

Project Statistics

- *Client:* Indore Development Authority
- *Design Population:* 65,000 (projected); 45,000 (realized).
- *Year of Inception:* 1982.
- *Year of Realization:* 1987.
- *Total Site Area:* 220 acres.
- *Phase 1 Development:* 100 acres.

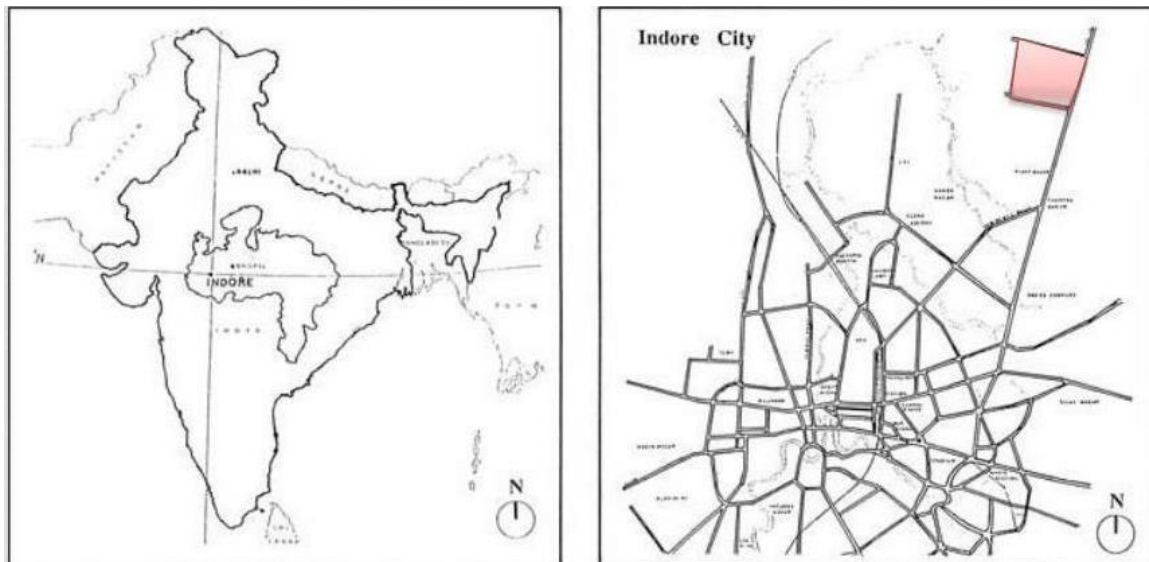


Figure 2. Aranya Housing Project. (Source: <https://www.architectural-review.com/buildings/revisit-aranya-low-cost-housing-indore-balkrishna-doshi>).

DESIGN PHILOSOPHY AND PLANNING PRINCIPLES

Replacing the Grid: A Human-Centric Approach

Aranya departed from the rigid grid layout traditionally associated with site-and-services projects. Instead, the design prioritized organic, human-centric planning that responded to the socioeconomic and climatic context of Indore (Figure 3). The township was divided into smaller sectors, each functioning as a self-sufficient neighborhood with its own amenities. Incremental and affordable architecture formed the core of the design. Housing units were conceived as modular kits of parts, allowing residents to expand and personalize their homes over time [8]. This flexibility not only accommodated the evolving needs of families but also ensured cost-effectiveness during initial construction.

Planning Strategies

At the township level, the planning discouraged traffic to create an environmentally friendly and secure area while centralizing community facilities for easy access (Figure 4). A well-defined hierarchy

of roads, open spaces, and commercial zones ensured smooth movement and connectivity. Future population growth was accommodated through scalable density planning, while economic feasibility was maintained through a self-financing model that relied on cross-subsidization.

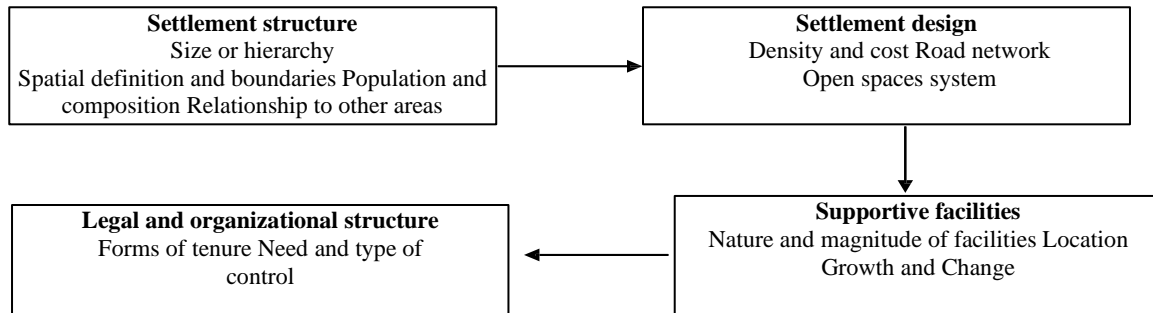


Figure 3. Design process. (Source: Author).

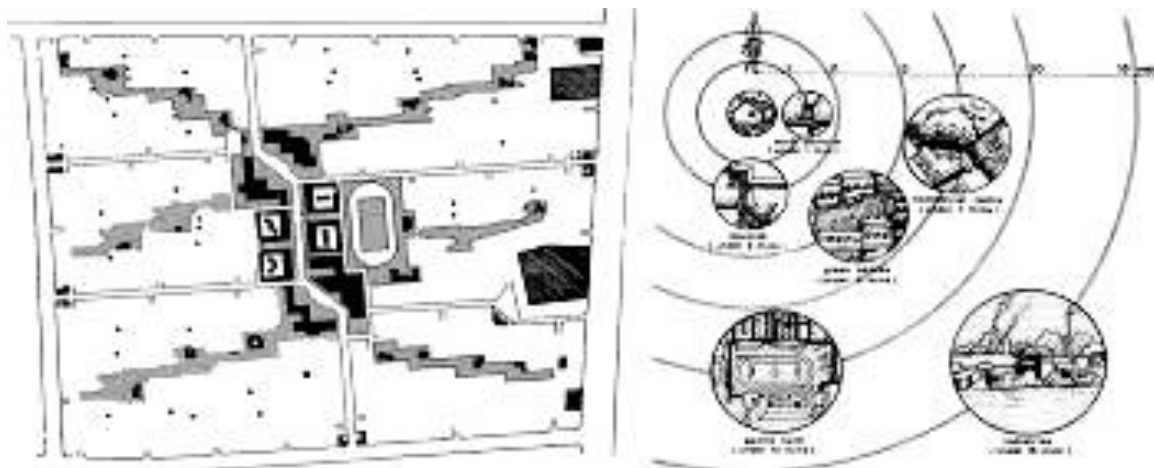


Figure 4. Planning strategies at the township level. (Source: <https://hiddenarchitecture.net/aranya-low-cost-housing/>).

At the sector level (Figure 5), natural landmarks were used to guide the layout, promoting interaction and integration among diverse income groups. Pedestrian and vehicular movements were carefully segregated to enhance safety, and local amenities were strategically placed for accessibility. Each sector was designed to function as a cohesive unit, fostering a sense of identity and belonging.

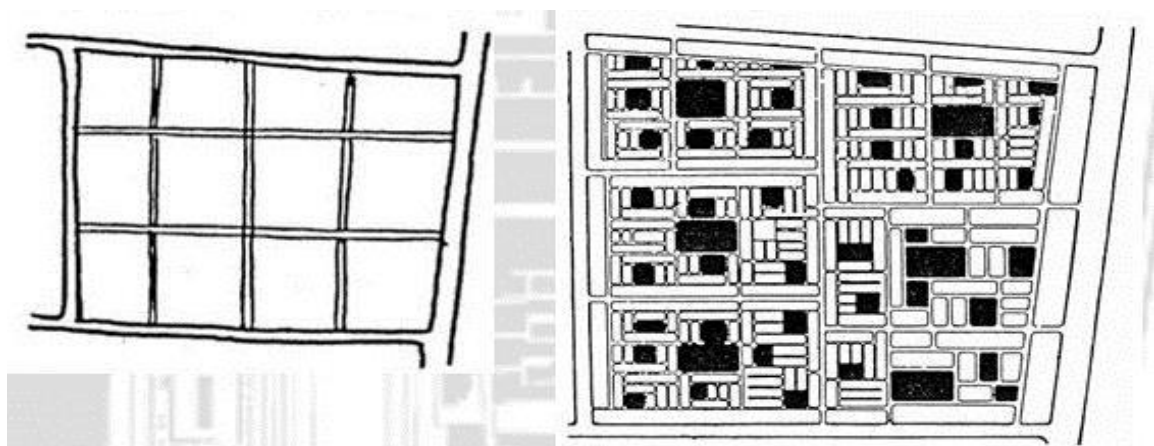


Figure 5. Planning strategies at the sector level. (Source: <https://hiddenarchitecture.net/aranya-low-cost-housing/>).

At the dwelling level (Figure 6), the design tailored homes to the lifestyles of their residents. Core units were designed to accommodate vertical and horizontal expansions, offering flexibility for future growth. The integration of indoor and outdoor spaces and the adoption of a self-built approach encouraged residents to personalize their homes, fostering a sense of ownership and pride.



Figure 6. Planning Strategies at the dwelling level. (Source: <https://hiddenarchitecture.net/aranya-low-cost-housing/>).

At the community and street level (Figure 7), planning emphasized interpersonal connections by clustering homes at a human scale. Each cluster was imbued with a distinct character, with spaces designated for social, religious, and economic activities. Streets were equipped with essential amenities and utilities, ensuring a high quality of life for all residents.

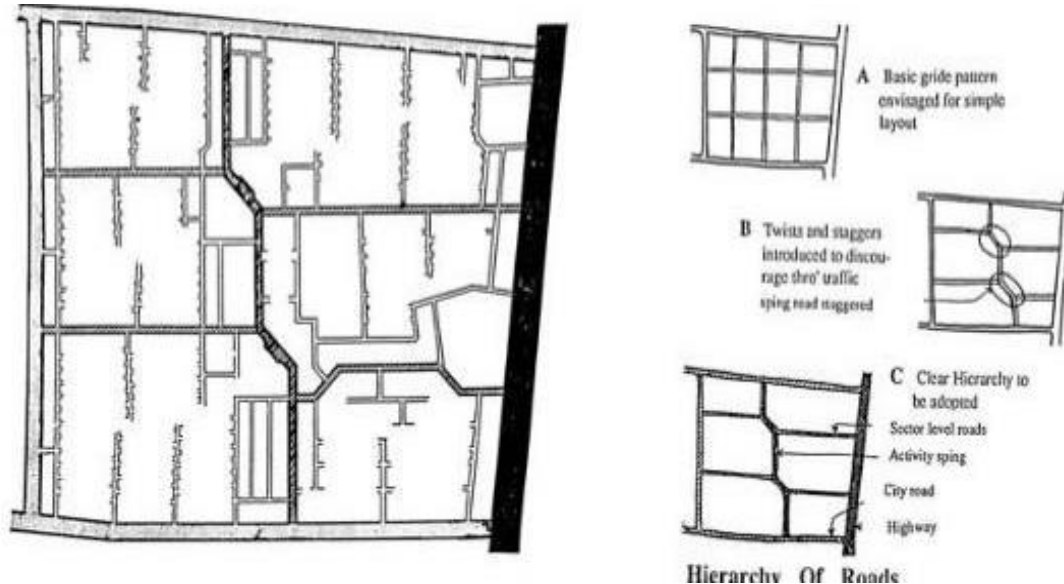


Figure 7. Hierarchy of Roads. (Source: <https://hiddenarchitecture.net/aranya-low-cost-housing/>).

Infrastructure and Services

The infrastructure design was innovative and cost-effective (Tables 1–3). The project incorporated shared septic tanks, with every 20 houses connected to one tank, reducing costs while maintaining efficiency. The water supply was managed through three interconnected reservoirs, ensuring redundancy and reliability. The electricity distribution system is differentiated between income groups, with overhead wiring for higher- and middle-income areas and underground networks for lower-income sections [9]. A unique feature was the open service slot around the core utilities, which enhanced efficiency while doubling as a play area and space for social interaction.

Table 1. Areas statement of housing.

Typology		Size (meters)	Area (sq.m)	No. of Plots
EWS	EWS-1	3.66 × 9.65	35	-
	EWS-2	6.1 × 7.32	45	-
	EWS-3	6.1 × 7.62	46	
				4262
LIG	LIG-1	4.75 × 12.20	55	-
	LIG-2	6.10 × 12.20	74	-
	LIG-3	7.62 × 12.20	93	
				1095
MIG	MIG-1	9.15 × 15.25	139	-
	MIG-2	12.20 × 18.30	223	
				891
HIG	HIG -1	15.25 × 21	325	
	HIG-2	16.30 × 25.9	474	
				255
Flats		16.30 × 33.55	618	40

Table 2. Areas statement of amenities units.

Particulars	Area (Hectares)		Percentage (%)	
Net Planning Area	86.24		100	
Marketable				
Plot Area	50.17		58.17	
Shooping				
Commercial Center	1.68		1.95	
Shopping (Main Roads)	0.58	2.80	0.67	3.25
Internal Shopping (1/2 Double Slots)	0.54		0.63	
Industrial	0.14		0.16	
School and Community	5.81		6.74	
Non Marketable				

Table 3. Planning impact.

Planning Level	Features	Impact
Township level	Hierarchical road network, centralized community facilities, scalable density planning	Reduced through traffic, improved accessibility, future growth accommodation.
Sector level	Integration of natural landmarks, mixed-income clusters, segregated pedestrian and vehicular zones	Fostered socio-economic integration, enhanced safety, encouraged interaction.
Dwelling level	Incremental housing, indoor-outdoor integration, customizable core units	Enabled user-driven expansions, promoted affordability, and flexibility.
Community/street level	Human-scale clusters, spaces for social/religious activities, localized amenities	Strengthened community bonds, supported economic activities, and enhanced quality of life.

Source: Author.

Socio-Economic Impact

The Aranya Housing Project successfully integrated diverse income groups through its cross-subsidization model. Plots for high- and middle-income groups were sold at market rates, generating revenue to subsidize housing for the economically weaker sections. EWS residents received loans for core housing units and repaid them in affordable monthly installments (Tables 4–5). Training programs

were introduced for self-help construction, empowering lower-income residents to build and expand their homes [10]. The participatory design approach enhanced community cohesion, while the provision of essential services improved living standards. By integrating spaces for economic activities within residential clusters, the project encouraged entrepreneurship and income generation at the community level. This holistic approach not only addressed housing shortages but also fostered social equity and economic resilience.

ANALYSIS OF THE ARANYA HOUSING PROJECT

Below is a table summarizing the key aspects of the Aranya Housing Project with a focus on its strengths, challenges, and relevance:

Table 4. Planning impact.

Aspect	Strengths	Challenges	Global Relevance
Design Philosophy	Incremental housing allowed flexibility for residents to customize their homes.	Ensuring uniformity and quality in incremental upgrades.	Serves as a model for user-centric affordable housing globally.
	Mixed-income integration fostered social harmony.	Addressing income disparities in customization led to visible inequalities.	Can inform strategies for mixed-income housing development.
Spatial Organization	Hierarchical planning ensured efficient movement and shared spaces.	Maintenance of communal spaces and infrastructure over time.	Highlights the importance of shared spaces for fostering community cohesion.
	Shaded streets and courtyards enhanced thermal comfort.	Overcrowding in some areas due to population growth.	Demonstrates innovative climate-responsive design applicable to various geographies.
Sustainability	Effective water and waste management systems minimized resource wastage.	Scaling sustainable systems for larger urban contexts.	Aligns with sustainable housing practices for developing countries.
	Integration of green spaces promoted well-being.	Loss of greenery in some areas due to unauthorized constructions.	Provides insights for eco-friendly urban planning in dense environments.
Economic Impact	Facilitated home-based businesses, enhancing economic self-reliance.	Limited support for formalizing these businesses into larger ventures.	Inspires entrepreneurship-oriented housing designs.
	Empowered residents through skills training during construction.	Lack of structured programs for ongoing skill development.	Advocates for combining housing initiatives with skill-building for economic growth.
Community Participation	Involving residents in planning fostered ownership and self-reliance.	Variation in participation levels created disparities in execution.	Highlights participatory design as a cornerstone of sustainable housing projects.
Scalability	Modular design adaptable to other urban and rural contexts.	Political and administrative barriers in adopting similar models elsewhere.	A replicable model for global affordable housing programs, particularly in the Global South.
Cultural Integration	Respect for traditional values made the project culturally resonant.	Balancing modern needs with traditional practices in evolving urban settings.	Encourages culturally sensitive design in global housing solutions.
Post-Occupancy Evaluation	Residents gradually improved housing conditions, showcasing long-term success.	Maintenance and unregulated changes leading to infrastructure strain.	Provides a case for long-term evaluation to improve future housing projects.

Source: Author.

CONCLUSIONS

The Aranya Housing Project, through its innovative design, participatory approach, and commitment to affordability and sustainability, provides a comprehensive and forward-thinking blueprint for future urban housing projects, particularly in developing countries. By prioritizing the needs of low-income communities and involving residents in the design and decision-making processes, the project not only addresses the pressing issue of housing shortages but also fosters a sense of ownership and community

among its residents. While challenges remain – particularly in areas, such as ongoing maintenance, scalability, and the long-term adaptability of the design – the Aranya Housing Project offers invaluable insights into overcoming these obstacles. Its success highlights the importance of thoughtful urban planning, the integration of sustainable building materials, and the promotion of social cohesion in addressing housing deficits. Furthermore, Aranya has set a global precedent, inspiring similar initiatives across the world that aim to create affordable housing solutions while promoting environmental stewardship and social equity. As urban populations continue to grow, Aranya stands as a testament to the power of innovative thinking and community-centric planning, demonstrating that, with the right combination of strategic planning, community engagement, and government support, affordable housing can be a catalyst for creating more inclusive, resilient, and sustainable urban environments.

Table 5. SWOT analysis.

Strengths	Weaknesses
1. Affordable and adaptable housing solution	1. Long-term maintenance challenges.
2. Community participation and social integration	2. Reliance on continued self-financing.
3. Scalability and flexibility	3. Difficulty in replicating in diverse contexts.
4. Use of local materials and sustainable design	4. Potential overcrowding and strain on infrastructure.
Opportunities	Threats
1. Model for affordable housing in other regions	1. Socio-political and economic instability.
2. Integration of sustainable design principles	2. Overburdened infrastructure due to population growth.
3. Expansion of the self-help model	3. Climate change impacts on infrastructure.

Source: Author.

REFERENCES

1. Doshi BV. *Urban Housing: The Lessons of Aranya*. Vastu Shilpa Foundation; 1985.
2. Turner JFC. *Housing by People: Towards Autonomy in Building Environments*. Marion Boyars; 1976.
3. McHarg IL. *Design with Nature*. Natural History Press; 1969.
4. Hamdi N. *Housing Without Houses: Participation, Flexibility, Enablement*. ITDG Publishing; 1991.
5. Abrams C. *Man's Struggle for Shelter in an Urbanizing World*. MIT Press; 1964.
6. Correa C. *The New Landscape: Urbanisation in the Third World*. Butterworth Architecture; 1989.
7. Gehl J. *Life Between Buildings: Using Public Space*. Danish Architectural Press; 1987.
8. UN-Habitat. *The Challenge of Slums: Global Report on Human Settlements*. Earthscan Publications; 2003.
9. Patel S, Arputham J. An incremental approach to addressing shelter needs in urban areas. *Environ Urban*. 2007;19(2):445–62.
10. Mitlin D, Satterthwaite D. *Urban Poverty in the Global South: Scale and Nature*. Routledge; 2013.