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Revisiting Attached Houses Typology: Evaluating Its Potential for Middle-Income Housing in Urban Dhaka

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Abstract

Dhaka, a densely populated city, faces significant challenges in providing affordable and adequate housing for its growing population. Land scarcity, rising housing demand and Dhaka's unique urban context require alternative approaches to urban housing development. Dhaka's urban landscape is characterized by a strong presence of informality layered over formal processes. Often, conventional planning and formal housing solutions fail to respond effectively to local needs, raising the need to explore housing typologies through the city's historical and cultural context. One such example is the compact attached house typology found in Old Dhaka, which evolved within highly constrained urban environments and accommodated dense populations. Despite its historical significance, the attached house has become increasingly rare in contemporary Dhaka due to various social, economic, and regulatory transformations. This raises an important question: can the attached house typology be reinterpreted as a viable housing model for contemporary Dhaka? Through a design-based comparative analysis, this research evaluates the potential of attached houses as a housing development option for middle-income residents in urban Dhaka. The study examines the spatial, social, and urban qualities of attached houses and assesses their relevance in the context of contemporary housing challenges.

Keywords: Attached house, Housing typology, urban Dhaka

1 Introduction:

Housing has become one of Dhaka's most critical urban challenges. Rapid urbanization and high rate of internal migration from rural areas have significantly increased the city's population, transforming Dhaka into one of the world's most densely populated megacities (Ahmed, Hasan, & Maniruzzaman, 2014). This rapid growth has created immense pressure on urban land, infrastructure, and housing provision. Like many developing cities in Asia, Dhaka faces major challenges in providing adequate and affordable housing for its growing population.

Contemporary residential development in Dhaka largely relies on plot-based apartment construction. This development pattern typically produces isolated apartment blocks that maximize floor area on individual plots while paying limited attention to neighborhood quality and collective urban spaces. As a result, opportunities for social interaction and community building are often reduced. The absence of meaningful communal spaces and the increasing privatization of residential environments can negatively affect urban livability and social cohesion. Kanak Saha, in 2025 documents how contemporary residential developments have compromised traditional intermediate community spaces, gradually becoming homogeneous elite enclaves or restricted gated communities. A study found that socio-physical features of the neighbourhood and community influence life satisfaction more than strictly physical design features of individual dwellings [1], indicating neighborhood quality significantly affects livability. Shammi Akter Satu & R. Chiu (2019) argue that housing form and planned community facilities that respect socio-cultural practices can significantly influence Dhaka’s livability. This study explicitly states that in modern urban communities, we lack this sense of belongingness due to the lack of social spaces among community people [2].”

Historically, Dhaka developed urban forms that were closely adapted to local social, cultural, and environmental conditions. Old Dhaka provides a significant example of compact urban living, characterized by dense street networks, mixed land uses, courtyard houses, and terraced building forms. The traditional urban morphology of Old Dhaka demonstrates how high-density development can coexist with strong social interaction, walkability, and community life [3]. Among the traditional housing forms of Old Dhaka, the attached house represents a particularly important typology. These houses evolved in highly constrained urban environments and could accommodate dense populations while maintaining strong spatial relationships with streets and neighboring dwellings. Studies on Old Dhaka's house forms suggest that these residential structures responded effectively to climatic conditions, family organization, and local cultural practices through compact planning and carefully structured

spatial arrangements [4]. Their organization promoted natural ventilation, shaded circulation spaces, and close social relationships among residents.

Despite their historical significance and urban efficiency, attached houses have become increasingly rare in contemporary Dhaka. Changes in land values, planning regulations, ownership patterns, construction technologies, and market-driven development practices have gradually shifted housing production toward apartment-based models [5]. Consequently, many of the social and spatial qualities associated with traditional compact housing forms have disappeared from contemporary residential development.

This transformation raises an important question: can the attached house typology provide relevant lessons for present-day housing development in Dhaka? Rather than viewing attached houses solely as a historical housing form, it is important to examine their underlying principles and evaluate their potential adaptation to contemporary urban conditions. Given land scarcity, increasing density, affordability pressures, and declining social cohesion, the attached house may offer an alternative housing model that balances density with livability.

Therefore, this research aims to evaluate the potential of attached houses as a housing development option for middle-income residents in urban Dhaka. Through a design-based comparative analysis, the study investigates the spatial efficiency, social qualities, and environmental performance of the attached house typology and assesses its applicability within the context of contemporary housing challenges in Dhaka. By revisiting a traditional housing model, the research seeks to contribute to the broader discussion on sustainable, affordable, and context-sensitive housing solutions for the city.

Research Question

How can attached housing principles inform the spatial organization of dense residential development in Dhaka?

Research Objective

1. To examine how the attached housing proposals organize dwellings, circulation, and communal spaces.
2. To identify their spatial opportunities and limitations through a qualitative assessment alongside cluster and high-rise housing proposals.

2 Literature Review

2.1 Typical housing model in Dhaka and the need for alternative housing models

Dhaka's prevailing housing model is predominantly apartment-based and plot-oriented. Most residential developments are designed independently on individual plots, resulting in fragmented urban form, limited communal space, weak neighborhood identity, and inadequate opportunities for social interaction. While these developments achieve high residential densities, they often fail to address broader issues of urban livability, social cohesion, and environmental quality.

In larger residential developments, a similar approach is often replicated by repeatedly placing individual building blocks across a site. These developments typically consist of low-rise or high-rise apartment blocks containing two to four dwelling units organized around a common circulation core. Although the overall site may be planned as a single project, the buildings are generally treated as isolated objects separated by mandatory setbacks and internal roads. As a result, the open spaces between buildings frequently function as residual spaces rather than integrated communal environments (Figure 1). Such arrangements often weaken the relationship between buildings and public space, reduce opportunities for meaningful social interaction, and fail to create a coherent neighborhood structure [6-8]



(a) (b)

Figure 1: (a) Rajuk's Uttara Apartment Project, Dhaka, the country's largest government apartment project; (b) THE OASIS at Ispahani Colony, Dhaka, the most prestigious gated community by private sector..

Studies of contemporary residential development in Dhaka have similarly observed that housing production is largely driven by building-level considerations rather than neighborhood-scale urban design, often resulting in fragmented urban environments and limited integration between buildings, streets, and communal spaces [5, 9]. Consequently, there remains a need to explore alternative housing models that can achieve urban density while fostering stronger social, spatial, and environmental relationships. Contemporary urban planning increasingly recognizes that housing should be evaluated not only by the number of dwelling units produced but also by its contribution to social sustainability, environmental performance, walkability, and quality of life [7, 10]. Consequently, researchers and planners have shown growing interest in medium-density housing typologies that can balance urban density with human-scale living environments.

For example, Rajuk's Uttara Apartment Project in Dhaka is the country's largest government apartment project (Figure 1). Though it was initially targeted at the country's lower- to middle-income group, it failed to provide affordable-rate flats for that group due to the increased construction cost for high-rise developments [11]. So, beyond spatial and social issues, we also need to rethink the housing development approach from an economic perspective.

2.2 Attached house as a Medium-Density Housing Typology

An attached house is a housing typology consisting of a series of attached dwelling units arranged continuously along a street and connected through shared side walls. Each dwelling generally possesses an independent entrance and may include private outdoor spaces such as courtyards, terraces, or rear yards. In many countries, attached houses are also called terraced houses or townhouses.

From an urban design perspective, attached houses are classified as medium-density housing because they fall between detached housing and high-rise apartment buildings. This typology combines efficient land use with individual dwelling identity, offering relatively high residential density while maintaining direct relationships between homes, streets, and public spaces [6].

Recent research continues to identify attached houses as one of the most efficient urban residential forms because of their compact layout, shared walls, reduced infrastructure requirements, and capacity to support walkable neighborhoods. Multiple studies identify attached houses as a prevalent medium-density urban archetype that remains relevant for addressing contemporary challenges related to energy efficiency, urban density, and climate resilience. The compact arrangement of attached houses reduces energy consumption through

shared walls and lower exposed surface areas. In addition, the direct relationship between housing units and streets promotes active public life, informal social surveillance, and stronger neighborhood interaction [12, 13]. These characteristics have made attached houses a widely accepted housing model in both historic and contemporary urban environments.

2.3 International Acceptance of Attached Houses and the "Missing Middle" Housing Debate

Over the past decade, urban planners have increasingly promoted medium-density housing as a solution to the limitations of both suburban sprawl and high-rise residential development. This movement is often described as the search for the "missing middle," referring to housing forms that provide higher density than detached housing while preserving human-scale urban environments. Attached houses are one of the most widely recognized forms of missing-middle housing. Cities such as Amsterdam, London, Copenhagen, Melbourne, Vancouver, Singapore, Adelaide, and Saudi Arabia have incorporated attached houses and townhouses into housing strategies aimed at increasing urban density without relying exclusively on residential towers. Recent planning initiatives continue to support medium-density housing models. For example, Australia's 2026 "Missing Middle Housing Initiative" promotes low-rise and medium-density housing forms as a means of improving housing affordability and urban livability while reducing dependence on high-rise developments [14-18].

These international experiences suggest that attached houses should not be viewed merely as historical building forms. Rather, they represent a contemporary, adaptable housing solution that can address challenges related to affordability, sustainability, density, and community development.

Attached Houses in the South Asian Context

The relevance of attached-house development extends beyond Europe and North America and is also evident in South Asian housing projects. Several influential Indian housing developments show that low-rise, high-density housing can accommodate large populations while maintaining social interaction, climatic responsiveness, and neighborhood identity.

One notable example is Charles Correa's Belapur Housing project in Navi Mumbai (1983–1986). Developed as an incremental housing scheme, the project demonstrated how relatively high residential densities could be achieved within a low-rise environment organized around a hierarchy of courtyards and community spaces. Rather than relying on vertical apartment blocks, the development utilized compact housing clusters and pedestrian-oriented open

spaces to create a socially vibrant neighborhood. The project remains an important reference for human-scaled, high-density housing in rapidly urbanizing cities.[19]

Similarly, Balkrishna Doshi's Aranya Housing project in Indore provides another influential precedent. Designed as a low-rise, high-density settlement for low- and middle-income households, Aranya combined compact housing units with a network of streets, courtyards, and shared public spaces. The project was organized around a hierarchy of communal spaces that encouraged everyday social interaction while maintaining environmental comfort through shaded streets, clustered building forms, and climate-responsive planning. Doshi's approach demonstrated that density can be achieved without sacrificing human scale or community life.[20]

These South Asian examples are particularly relevant to Dhaka because they emerged within climatic, economic, and cultural contexts comparable to those of Bangladesh. Both projects illustrate how compact low-rise housing can support high residential densities while preserving social cohesion, walkability, and environmental responsiveness. Their continued recognition in contemporary housing discourse suggests that attached-house principles remain a viable alternative to conventional high-rise housing models in rapidly growing cities.

2.4 Attached houses, Urban Livability, and Social Sustainability

The relationship between housing form and social life has long been a central concern in urban design theory. The study [8] argued that active streets and continuous building frontages contribute to safer and more socially vibrant neighbourhoods. Similarly, the study [7] emphasized the importance of human-scale environments that encourage everyday social interaction.

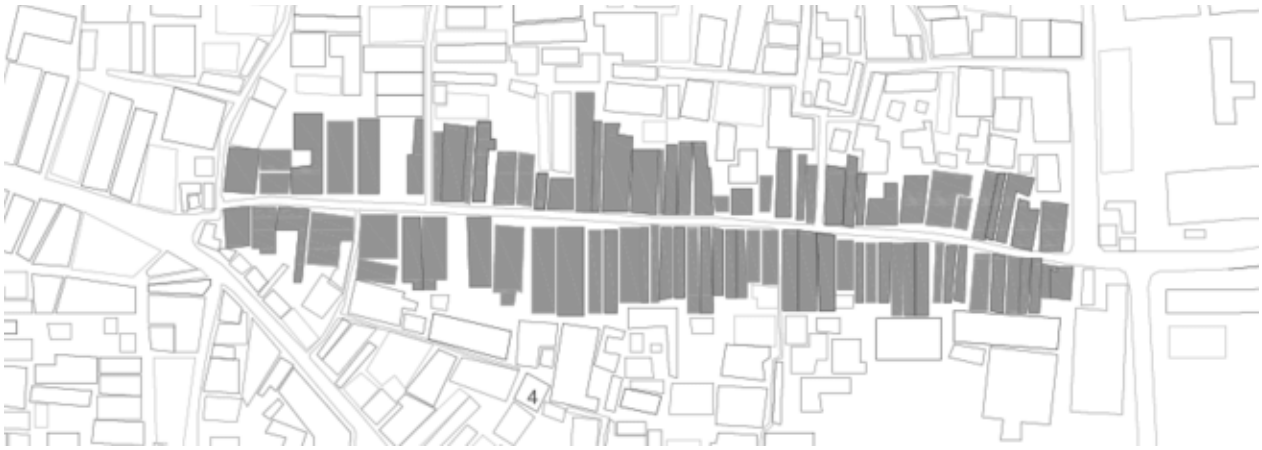
The physical characteristics of attached-house developments support many of these principles. Direct street access, active frontages, and relatively small building footprints encourage pedestrian activity and increase opportunities for neighbourly interaction. Compared with isolated apartment blocks, attached-house neighborhoods often create stronger visual and functional connections between private and public space.[6, 21, 22]

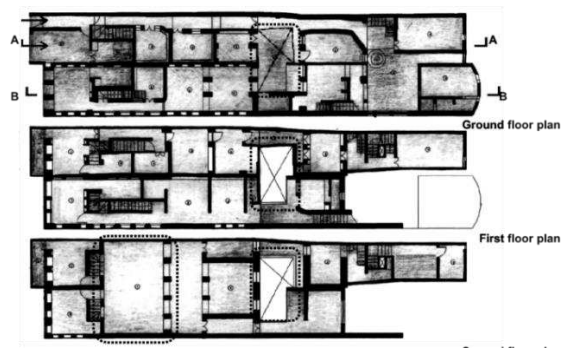
These findings reinforce the argument that housing design should be evaluated not only by density but also by its ability to support social relationships and community formation.

2.5 Revisiting Row-House Principles: Exploring Attached Housing in Urban Dhaka

Although attached houses are internationally recognized as a medium-density housing solution, their relevance to Dhaka is further strengthened by the city's own urban history. The traditional neighborhoods of Old Dhaka evolved through compact urban forms characterized by attached buildings, narrow streets, mixed land uses, and strong social interaction (Figure 2).

Research on the morphology of Old Dhaka demonstrates that attached residential forms (Figure 2) successfully accommodated high population densities while maintaining walkability, neighborhood identity, and social cohesion [3]. Similarly, another study [4] found that traditional house forms in Old Dhaka reflected local family structures, cultural practices, and environmental conditions. The spatial organization of these housing forms also responded effectively to Dhaka's tropical climate. Shared walls reduced heat gain, narrow streets created shading, and internal courtyards facilitated natural ventilation. These climatic strategies remain highly relevant in contemporary discussions of sustainable housing design. Therefore, Old Dhaka should not be viewed merely as a historical example but as evidence that compact attached-house-like urban forms have already demonstrated their adaptability to Dhaka's social, cultural, and environmental conditions.





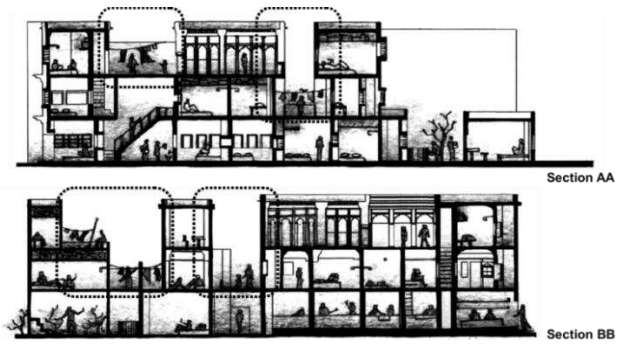




Figure 2: Site plan, building layout, sections and images showing the characteristics of Old Dhaka Neighborhood, Shakharibazar [23, 24].

2.6 Research Gap

Existing literature has extensively examined housing affordability, urban growth, and traditional residential forms in Dhaka. International research has also demonstrated the effectiveness of Attached houses as a medium-density housing typology capable of balancing density, livability, and sustainability.

However, limited research has investigated whether attached-house principles can be adapted to contemporary housing development in Dhaka. Most studies focus either on historical documentation of Old Dhaka or on apartment-based housing production. A significant gap remains in design-based comparative research evaluating the spatial, social, environmental, and economic performance of attached-house development relative to the dominant apartment typology. This study seeks to address that gap by evaluating the potential of Attached houses as a housing development option for middle-income households in urban Dhaka.

3 Methodology

3.1 Research Approach

This study uses an exploratory, design-based qualitative approach to examine the potential of attached housing as a housing development option in Dhaka. It draws on nine proposals developed in the Fourth Year, Second Semester housing design studio at Ahsanullah University of Science and Technology during Fall 2024. The studio brief required housing for government employees in grades 10-16 on two Public Works Department housing sites in Mirpur, Dhaka. The sites range from approximately 12 to 12.5 acres and have different shapes and surrounding conditions.

The studio explored three development approaches through different combinations of building height, ground coverage, and open space: attached housing, cluster housing, and high-rise apartment blocks. Nine individual groups produced three proposals for each type, for a total of nine proposals, as research material. We examine their site plans, dwelling plans, sections, elevations, and illustrative views to understand the relationships among housing form, circulation, communal spaces, and residential capacity.

Here, attached housing refers to proposals that adapt row-house principles through connected building forms, shared walls, and close relationships with adjoining open spaces. Some proposals include stacked dwellings and shared access galleries. The three groups describe the studio proposals; they are not mutually exclusive categories, as attached housing can also be arranged in clusters.

3.2 Qualitative Assessment

The assessment focuses on three related aspects:

Spatial organization: the arrangement of buildings, circulation, and open spaces, and their relationship with residential capacity.

Social and urban opportunities: access to communal spaces, pedestrian and vehicular movement, and visual connections between dwellings, galleries, courtyards, and streets.

Environmental design potential: shared walls, building spacing, orientation, openings, and opportunities for shading and natural ventilation.

These aspects provide a common framework for reading the drawings across the nine proposals. The attached housing schemes are the main focus, while the cluster and high-rise schemes provide references for understanding alternative spatial arrangements. Their inclusion helps explain how the attached housing proposals accommodate density, define communal spaces, and connect dwellings with shared activities. The assessment considers both opportunities and constraints, without ranking the three groups overall. Density, floor area ratio, ground coverage, and building height describe individual proposals. They are not treated as evidence that one housing typology performs better than another. Similarly, the drawings indicate possible opportunities for social interaction and climatic response; they do not demonstrate actual social or environmental outcomes.

3.3 Scope and Limitations

The proposals were developed on two differently configured sites and vary in design concept, planning efficiency, building height, and level of design resolution. These variations reflect the exploratory nature of the studio and differences in students' design experience. The schemes therefore do not provide a controlled basis for direct quantitative comparison, and their differences cannot be attributed to housing typology alone.

The study does not include resident evaluations, environmental simulations, or economic feasibility analysis. The government employee housing brief defines the intended user group but does not establish affordability or wider socioeconomic suitability. Consequently, the findings are limited to the spatial characteristics and design possibilities identified in the proposals. Their contribution is to clarify how attached housing principles may support substantial residential density alongside spatial opportunities relevant to livability in Dhaka, providing a basis for further testing.

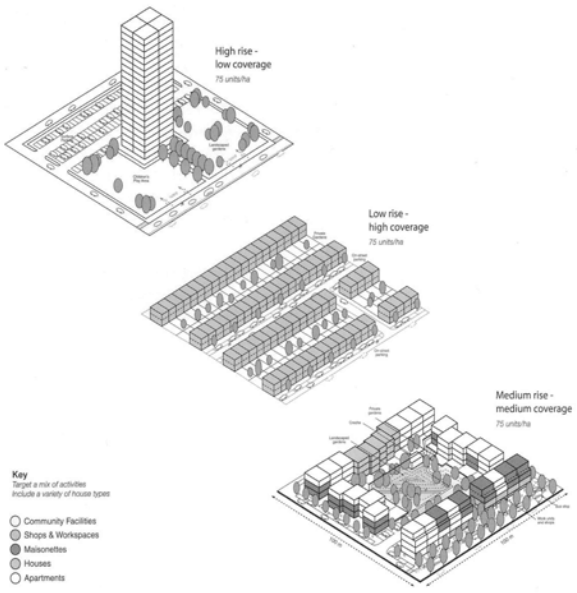


Figure 3: Housing development option to achieve the same density.[25]

3.4 Evaluation Criteria

The alternatives were evaluated through a comparative framework consisting of three performance dimensions:

1. **Spatial Efficiency** – including residential density, land-use efficiency, housing yield, and provision of open space.

2. **Social and Urban Performance** – including opportunities for social interaction, communal space provision, walkability, and the relationship between dwellings and public space.

3. **Environmental Performance** – including natural ventilation potential, daylight access, shading conditions, and overall climatic responsiveness.

The findings from the nine design alternatives were synthesized to compare the performance of the three development strategies and assess the applicability of attached-house principles as a housing model for middle-income residents in contemporary Dhaka.

The assessment examines how the nine proposals accommodate residential capacity and organize shared spaces. The numerical indicators describe the scale and intensity of each proposal, while the drawings explain relationships between buildings, access routes, and communal areas. As the sites and design decisions differ, the findings are interpreted as characteristics of the individual proposals rather than general performance differences between housing types.

3.5 Project Brief

This research uses a housing design studio project as an experimental platform to investigate alternative residential development models for middle- to lower-middle-income housing in Dhaka. The original studio brief required designing a housing complex for 10th–16th grade government employees on a site in Mirpur, Dhaka, under the Public Works Department (PWD). Students were instructed to explore housing solutions as new housing development with accommodating regulatory framework while maintaining neighborhood livability.

The studio framework emphasized the relationship between three fundamental housing development parameters: population density, ground coverage, and building height. Based on these parameters, three distinct development strategies were established: (1) low-rise, high-coverage development, (2) mid-rise, medium-coverage development, and (3) high-rise, low-coverage development. These strategies corresponded to three housing typologies frequently discussed in urban housing design: Attached houses, cluster housing, and high-rise apartment blocks.

Using two different sites (Figure 4, Figure 5, Figure 6) at Mirpur, Dhaka, a series of design explorations were undertaken to test the spatial and social implications of each development strategy. For each typology, we developed three design variations through iterative master planning and housing unit design exercises, resulting in nine alternative proposals. This

controlled design process enabled a comparative evaluation of how different housing forms respond to issues of density, land utilization, community interaction, open-space provision, and residential quality.

The design alternatives generated through the studio therefore serve as the primary research material for assessing the contemporary relevance of attached-house principles and their potential application as a middle-income housing model in urban Dhaka.

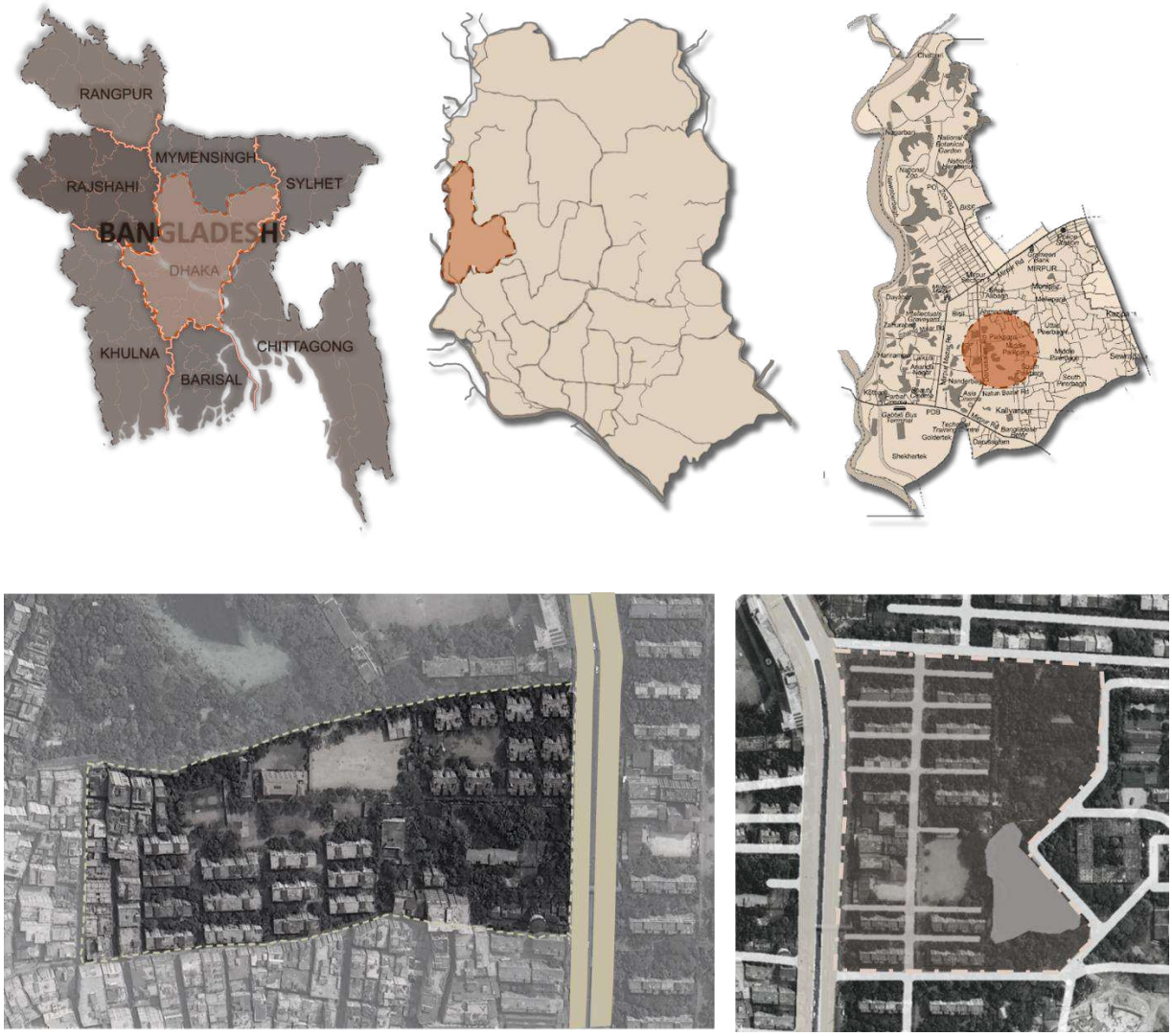


Figure 4: Location of two existing sites at nearby distant in Mirpur, Dhaka.



Figure 5: (from left) Site A and Site B; Existing building in the two sites.



Figure 6: Site Images of the existing building.

4 Analysis and Discussions

4.1 Spatial Efficiency

The spatial efficiency analysis reveals distinct relationships between building height, site coverage, and housing capacity across the three housing typologies. As expected, the high-rise alternatives achieved the highest residential densities, reaching between 400 and 610 persons per acre, significantly exceeding both the attached-house and cluster-housing schemes. The cluster-housing alternatives produced densities ranging from 305 to 330 persons per acre, while the attached-house schemes accommodated between 290 and 307 persons per acre (Table 1).

Although the attached-house developments generated lower densities than the high-rise alternatives, the results show they can achieve comparatively high urban densities within a low-

rise built form. With population densities consistently around 300 persons per acre and dwelling densities between 58 and 62 units per acre, the attached-house schemes provide substantial housing capacity while maintaining building heights of only four to six stories. This finding is significant in Dhaka, where contemporary planning policies increasingly emphasize density management over unrestricted vertical growth.

The Detailed Area Plan (DAP) 2022–2035 introduced area-based density controls and differentiated FAR regulations to ensure that population concentration remains proportionate to infrastructure and service capacity. The plan promotes planned densification while discouraging excessive development pressure on limited urban infrastructure. Within this framework, the densities achieved by the attached-house schemes are compatible with the objectives of sustainable urban intensification.

In terms of land utilization, the attached-house alternatives maintained FAR values of approximately 2.5 while limiting ground coverage to 33–40 percent. This balance left a considerable proportion of the site available for circulation, communal spaces, and environmental functions. By contrast, the high-rise schemes achieved substantially higher densities primarily through vertical expansion rather than improved spatial efficiency. The findings suggest that attached-house development can provide a viable middle-density housing model that accommodates a significant urban population while preserving a more human-scaled urban environment.

Overall, the results indicate that attached-house typologies offer an effective balance between density and spatial quality. While they do not accommodate as many people as high-rise development, they achieve densities that are already high by urban standards and sufficient to support compact, efficient residential development in Dhaka.

Table 1: Comparative data for different housing development options.

	A1	A2	A3	C1	C2	C3	H1	H2	H3
Site Area (Site A & B)	12- 12.5 Acres								
Dwelling Unit Area	60 sqm, 80 sqm and 100 sqm								
Floor area ratio (FAR)	2.5	2.4	2.5	2.4	2.4	2.5	4.7	3.5	3.2

Population Density(per Acre)	305	290	305	305	320	330	610	440	400
Ground Coverage (Built Area) %	35	40	38	28	34	38	40	30	28
Building Height	4-6	4-6	4-6	6-9	6-9	6-9	10-15	10-15	10-15

5 Social and Urban Performance

The comparative analysis demonstrates that the attached-house schemes provide stronger opportunities for social interaction and community formation than both the cluster-housing and high-rise alternatives. While all three typologies accommodate relatively high residential densities, the spatial organization of the attached-house developments creates a more human-scaled and socially responsive living environment.

At the site-planning level, the attached-house schemes allow the formation of semi-enclosed communal spaces through inward-oriented building arrangements (Figure 7 & Figure 8). Unlike the cluster (Figure 9) and high-rise (Figure 10) alternatives, where large open spaces often become residual areas between towers, the attached-house layouts create clearly defined social spaces that are directly overlooked by surrounding dwellings. These spaces support a wide range of everyday activities, including children's play, informal gatherings, outdoor recreation, and neighborhood interaction. The arrangement also enables pedestrian-oriented environments with minimal vehicular intrusion, increasing safety and usability for residents. A significant advantage of the attached-house typology is its ability to separate pedestrian and vehicular movement without compromising accessibility. Several design options provide vehicular access from the development's outer edges while preserving vehicle-free communal spaces within the residential clusters. This arrangement creates a safer and more socially active environment while maintaining convenient service and emergency access to all dwellings. In comparison, high-rise developments often require basement vehicular circulation networks to access all building.

At the building scale, several attached-house alternatives incorporate shared access corridors serving multiple dwelling units. Although corridor-based access is often criticized in conventional apartment developments, the corridors in the attached-house schemes function

differently. Rather than enclosed internal circulation spaces, they are designed with direct visual connections to communal courtyards and streets (Figure 12). These elevated circulation spaces act as intermediate social zones where residents can observe neighborhood activities, engage in casual interaction, and maintain visual contact with community life below. Consequently, social interaction occurs not only at ground level but also across multiple building levels.

Building height also plays a critical role in shaping social and urban quality. With heights ranging between four and six stories, the attached-house schemes maintain a strong visual relationship between residents and ground-level activities (Figure 14Figure 11). The relatively low building height contributes to a human-scale environment where residents remain visually connected to streets, courtyards, and communal spaces (Figure 15). This condition supports informal social surveillance and everyday encounters, reinforcing the social qualities described by Jacobs (1961) and Gehl (2011). By contrast, increased building height in high-rise developments tends to weaken the relationship between dwellings and public space, reducing opportunities for casual social interaction.

The attached-house typology further benefits from its compatibility with Dhaka's existing urban culture and morphology. Historically, compact attached housing, narrow pedestrian routes, and shared outdoor spaces have been integral components of traditional neighborhoods in Old Dhaka (sub-section, 2.5). The spatial logic of the proposed attached-house schemes reflects these established urban patterns, suggesting a stronger cultural continuity than isolated tower developments. In this sense, the attached-house model not only provides housing but also reproduces urban environments familiar within Dhaka's social and cultural context.

The attached housing proposals illustrate opportunities to connect dwellings with communal spaces through entrances, balconies, and shared galleries. These arrangements may support everyday encounters and visual connections with activities below. Their value also depends on privacy, accessibility, and how shared spaces are managed. The drawings indicate these opportunities but cannot establish how residents would use or experience them.

Overall, the findings indicate that the social and urban strengths of the attached-house typology extend beyond the provision of housing units. Through human-scale building heights, pedestrian-oriented site planning, active communal spaces, and visually connected circulation systems, the attached-house schemes create a richer social environment than the cluster-housing and high-rise alternatives. These qualities suggest that attached-house development can provide an effective balance between urban density and community-oriented living for middle-income housing in contemporary Dhaka.



Figure 7: Site Plan of Attached house typology in Site A.



Figure 8: Site Plan of Attached house typology in Site B

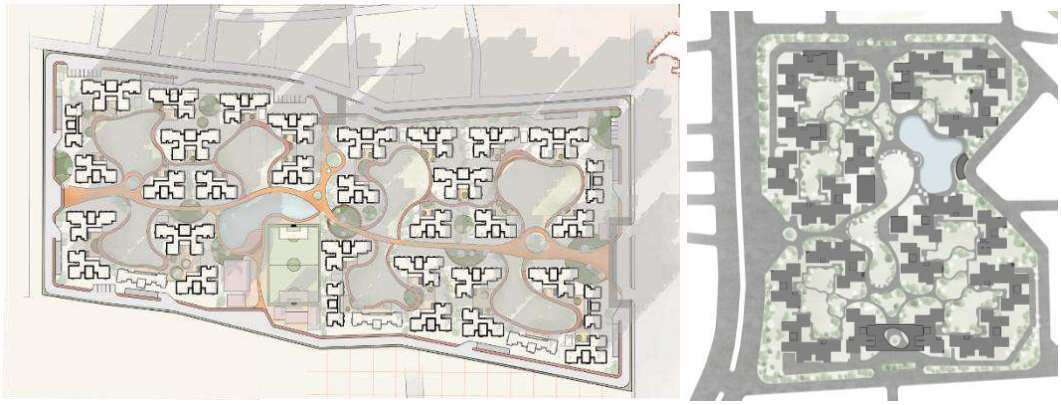


Figure 9: Site Plan of Cluster house typology in Site A

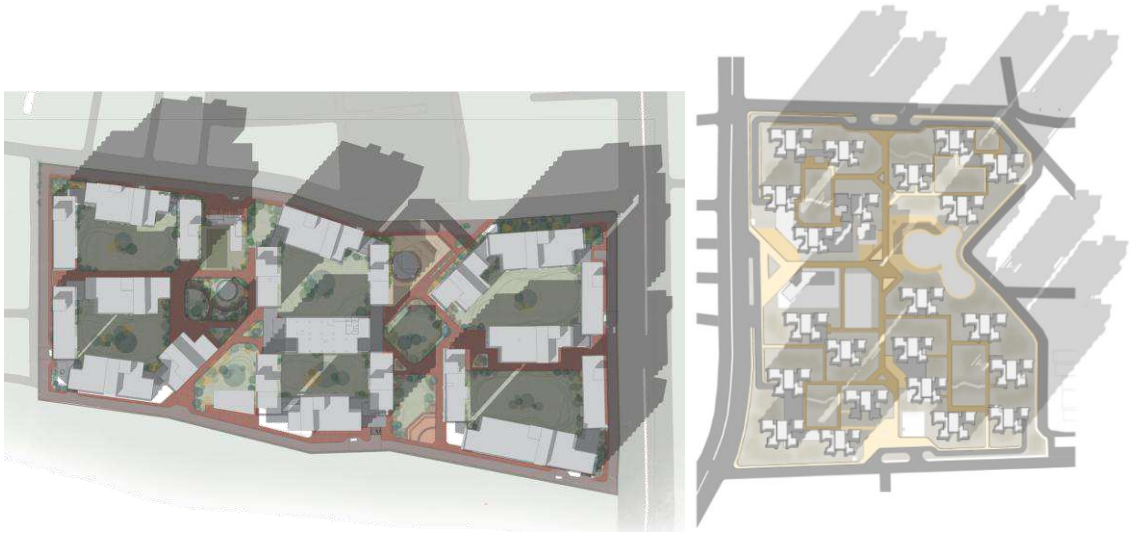


Figure 10: Site Plan of High-rise typology in Site A.



Figure 11: Cluster layout with Attached house development options. Pedestrian and vehicular access from opposite sides.

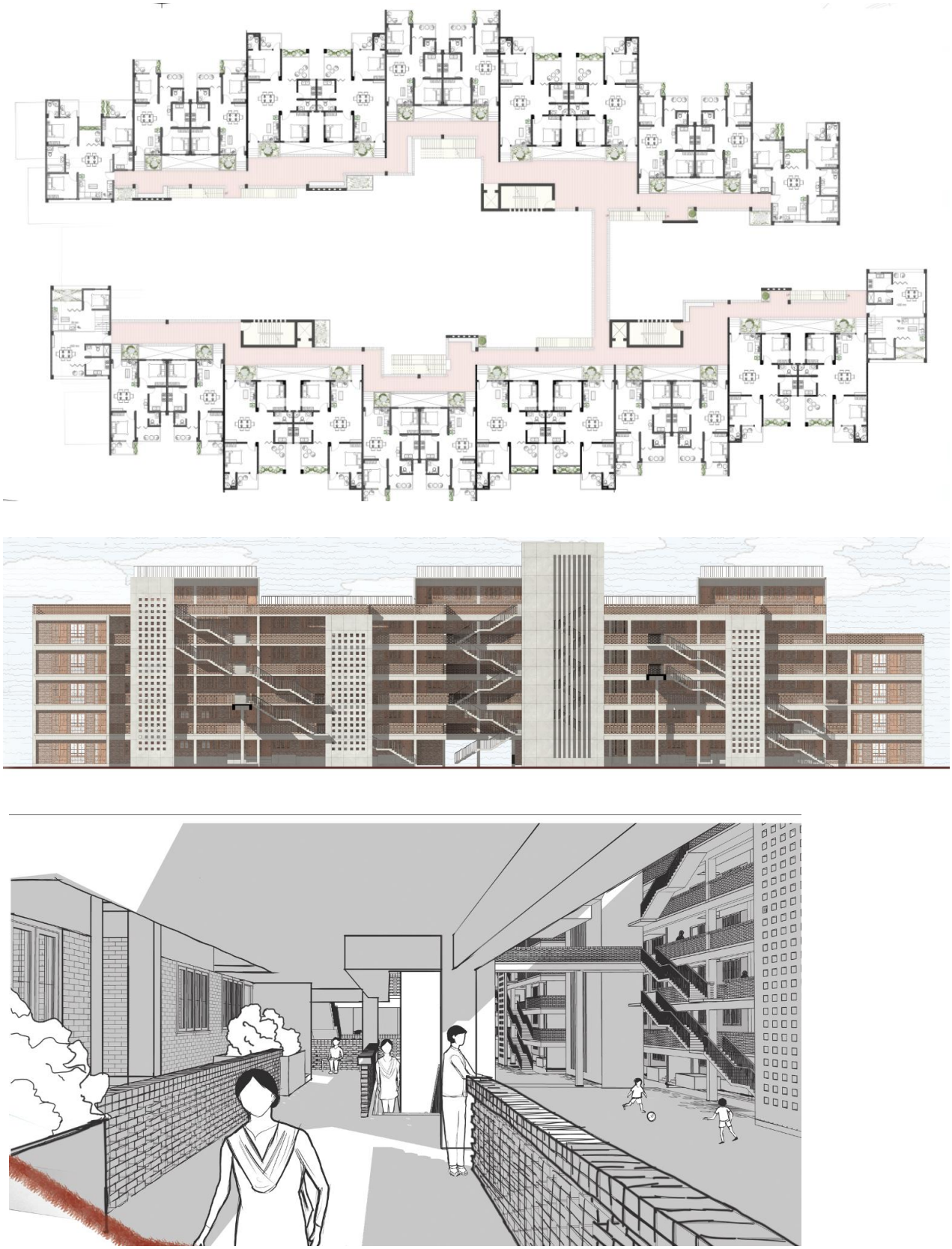


Figure 12: Plan, section and Elevation shows how circulation corridors act as a Social spaces at upper level.



Figure 13: human-scaled open spaces in row housing typology compared to larger open spaces required for high-rise development.



Figure 14: 4-6 storied building at Attached house development. Pedestrian-friendly social spaces overlooked by surrounding low-height buildings have the scope for a multilevel interactive social space.

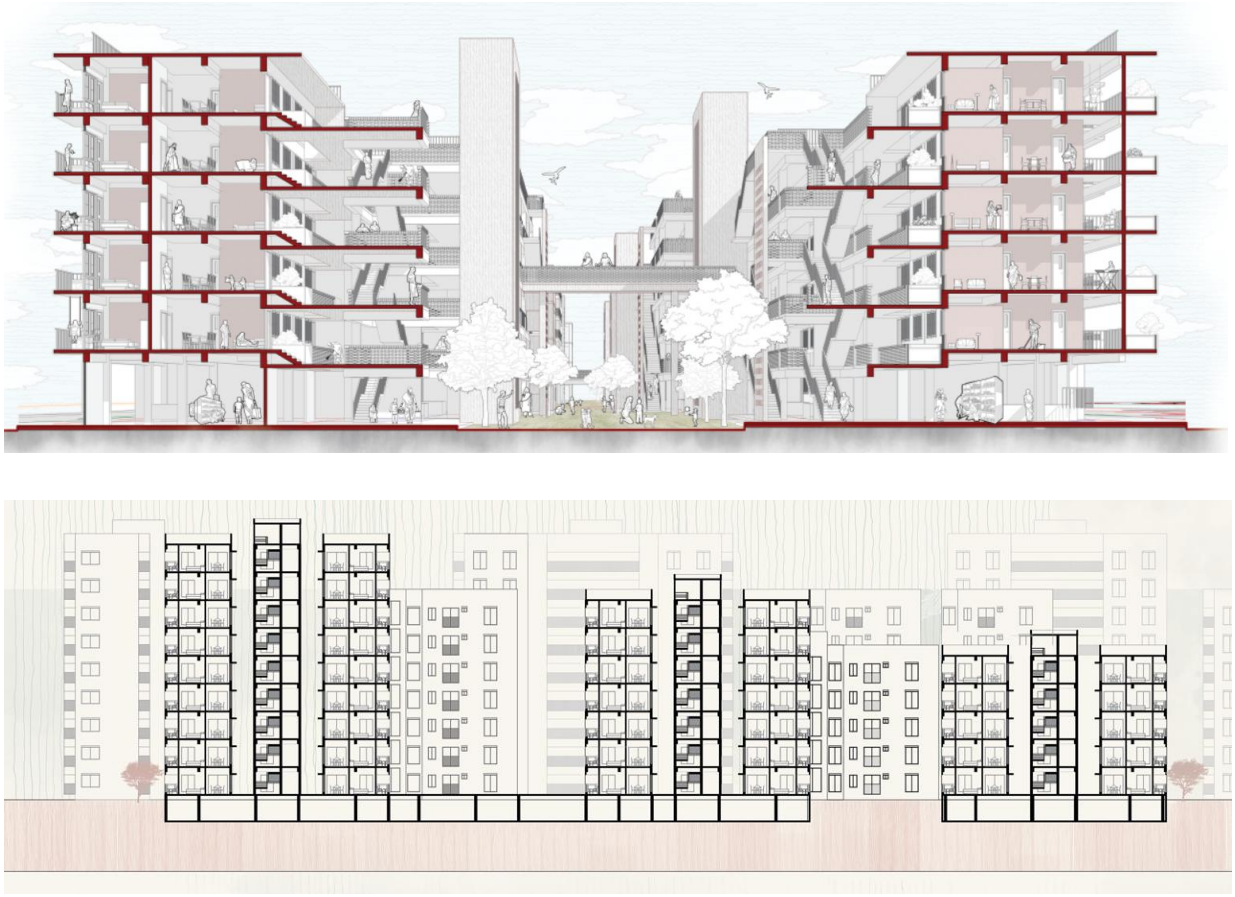


Figure 15: Relationship with ground level at Attached house development compared to mid-rise to highrise development where social spaces need to accommodate at different level of the building and residents at higher level actually detached from ground level.

5.1 Environmental Design Considerations

The environmental performance of the housing typologies was evaluated based on their potential to respond to Dhaka's hot-humid tropical climate, where reducing solar heat gain and ensuring adequate natural ventilation are critical considerations. The analysis (Figure 16) suggests that the attached-house typology offers several environmental advantages arising from its compact urban form and building arrangement.

One of the most significant environmental benefits of the attached-house schemes is the use of shared party walls between adjacent dwelling units (Figure 16). Unlike detached building blocks and high-rise towers, attached housing reduces exposed external wall surface, thereby decreasing direct solar heat gain. Previous studies have demonstrated that attached houses and terraced housing typologies generally perform more efficiently in warm climates because shared walls reduce heat transfer and lower overall cooling demand (Adhikari et al., 2025). The compact arrangement therefore improves thermal performance while accommodating relatively high residential densities.

The attached building form also minimizes the need for residual setback spaces that commonly occur between isolated apartment blocks. In many contemporary developments, mandatory setbacks often function as underutilized spaces while increasing building exposure to solar radiation. In contrast, attached-house schemes use land more efficiently through continuous building edges and compact site organization, allowing environmental performance and spatial efficiency to be achieved simultaneously.

Despite their compact form, the attached-house developments maintain adequate opportunities for natural ventilation. Several design alternatives (Figure 7, Figure 8) employ staggered building arrangements and strategically positioned open spaces that facilitate airflow through the site. These configurations support cross-ventilation at both the dwelling and neighborhood scales (Figure 16), an important environmental consideration in Dhaka where natural ventilation remains one of the most effective passive cooling strategies.

The low-rise building height of the attached-house schemes allows linear open spaces to further contribute to environmental comfort by creating shaded outdoor environments. The close relationship between buildings and communal spaces generates shaded pedestrian routes and reduces prolonged exposure to direct solar radiation. Similar environmental characteristics have historically been observed in the compact urban fabric of Old Dhaka, where attached building forms, narrow streets, and interconnected courtyards moderated microclimatic conditions while supporting high-density living [3, 4].

In comparison, the high-rise alternatives achieve high density primarily through vertical development. While larger open spaces are created at ground level, tower buildings generally possess a greater exposed surface area and receive higher levels of solar radiation on multiple façades. The cluster-housing schemes occupy an intermediate position, offering better ventilation potential than compact attached-house blocks but without the thermal advantages associated with extensive wall sharing.

Overall, the attached housing proposals incorporate shared walls, open spaces, and building arrangements intended to provide shading and ventilation opportunities. These features suggest possible responses to Dhaka's climate, although their effectiveness depends on orientation, spacing, openings, and dwelling depth. Compact arrangements may also restrict daylight and airflow. Without simulation or measurement, the study identifies environmental design intentions rather than demonstrated thermal or energy performance.

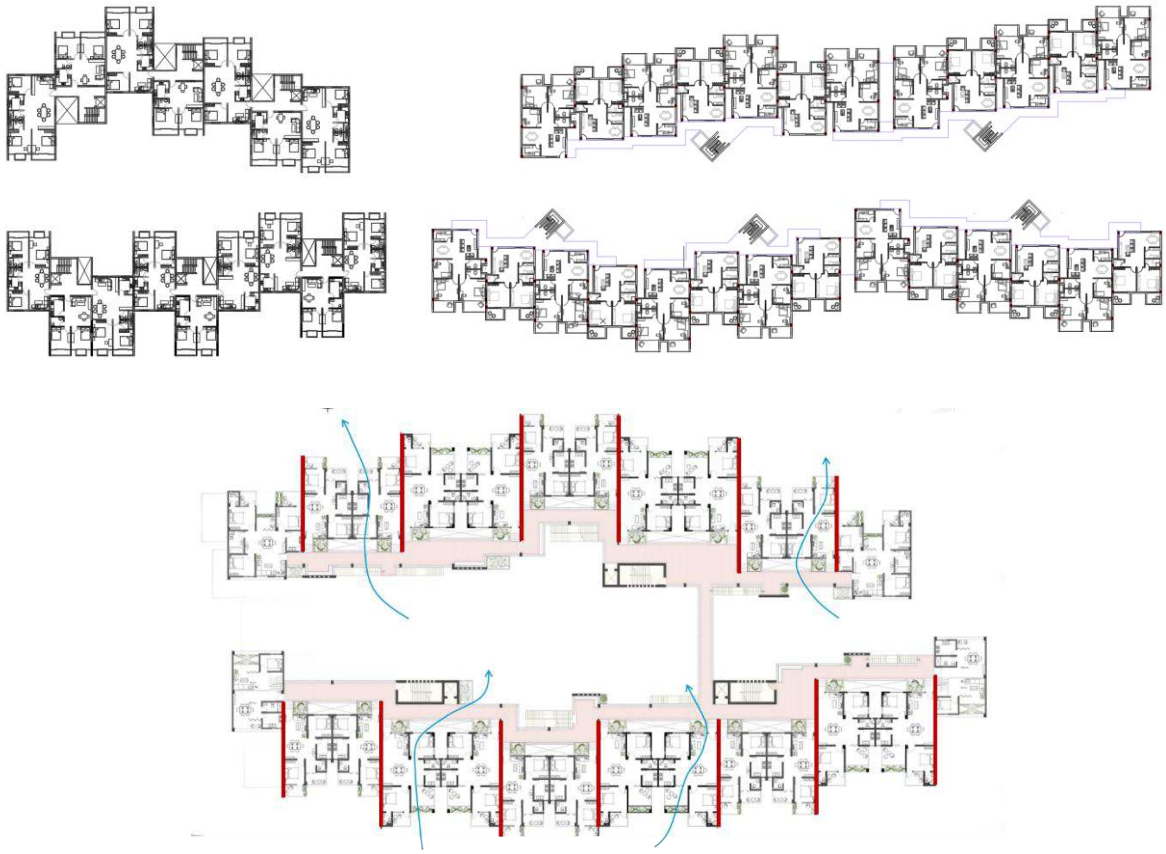




Figure 16: Dwelling Unit arrangement in Attached house development shows its appropriateness for availing cross ventilation.

6 Conclusion

This study explored attached housing through nine studio proposals representing attached, cluster, and high-rise configurations in Dhaka. The proposals illustrate different ways to accommodate residential capacity and organize relationships among dwellings, circulation, and communal spaces.

The attached housing schemes offer design possibilities through connected building forms, shared access, and close relationships with communal outdoor spaces. Their potential depends on how these features are resolved alongside privacy, accessibility, and environmental needs. The cluster and high-rise proposals provide references for understanding these choices rather than evidence of the superiority of attached housing. The study supports further exploration of attached housing as one possible direction for dense residential development in Dhaka. Its contribution lies in identifying spatial opportunities and trade-offs within the proposals. Resident acceptance, environmental performance, affordability, and implementation feasibility require further assessment.

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