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ORIGINAL ARTICLE

SCIENCE & ENGINEERING

TRANSFORMATION OF RURAL HOMESTEADS IN THE URBAN FRINGE AREAS OF BANGLADESH: A CASE OF KAKON HUT, RAJSHAHI

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Abstract

The early agrarian community was established in the northern part of Bangladesh because of its unique Barind tract formation. Rural homesteads were the core building block of these settlements. Though 70% of Bangladeshi still live in rural areas, the rural homesteads are being transformed rapidly. Many socio-economic indicators such as population density, limited expansion opportunity, access to modern technology and diverse types of materials and many more are working as a core driving force behind these changes. This article investigates the transformation pattern of the rural homesteads in Kakon Hut Paurashava of Godagari Upazilla in Rajshahi District, in terms of both spatial pattern and construction materials, to develop an in-depth understanding of the impact of adaptation of modern techniques, technologies, and materials in the urban fringe areas. This research is based on an empirical research strategy and consequently progressed through qualitative data collection, observation, questionary survey, and key person interviews. The study produces a thorough analysis of three core types of homesteads in the site area. Finally, a comparative analysis of traditional homesteads with the existing types that have gone through the transformation process is produced to identify the spatial and material transformation in these settlements.

Keywords: Rural homestead, homestead transformation, spatial pattern, urban fringe, technological adaptation

Introduction

Bengal is a steered settlement where culture and social aspects along with diverse geophysical characteristics, materials, climate, and technology guided the spread of human settlements. Settlements in Bangladesh primarily took place in the plateaus of southeastern areas shielded with forestation that gave natural defense from floods, tides of the rivers and sea, and cyclones (R. Rashid, 2007). Settlement regulators are the result of two conditions. Some are caused by natural factors such as the availability of clean water, the location of cultivable land, the placement of dry land, topographic characteristics, solar angle, climate, and the availability of construction materials. Others are determined by socioeconomic variables such as location, technology, religion, common beliefs, personal choice, and financial solvency. (M. U. Rashid, 2017). These controllers function as background factors in a settlement, contributing to the settlement's transformation through time. This transition begins at the homestead level. (Baqee, 2011).

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A rural settlement's homestead is a socio-regional notion (Hasan, 1985). The arrangement of a few closely spaced single-story (or occasionally double-story, or rarely multi-story) one to two-roomed rectangular houses known as Ghor around a square or rectangular open courtyard named Uthan is a common morphological element of the rural homestead or Bari. A single row of buildings usually surrounds the courtyard. To gather soil for raising the land, a pond is first excavated; a backyard pond with a bathing and washing facility known as Pukur Ghat can be seen in many substantial homesteads across the country. The pond allows for the rearing of ducks and fish, as well as the washing and bathing, which is a common cleansing rite in this tropical area. Every homestead begins with the Main Dwelling Unit called Boshoth Ghor after the land has been raised. Other structures, such as the kitchen (Ranna Ghor), granaries (Gola Ghor), and cowsheds (Goyal Ghor), are constructed progressively around the central open space, Uthan. The name Ghor means "room." Individual units are described as rooms with specialized functions rather than buildings; the Bari (House), which consists of multiple Ghor arranged around a courtyard, is the unit of residence. The main Ghor is normally a well-constructed structure within the homestead, whereas the peripheral constructions are frequently semi-permanent and made of perishable materials. As the family grows, these are relocated to the outside of the courtyard, and more dwelling units are built around it (Ahmed, 2012).

Changes in people's views regarding life, the introduction of new material and technology, changes in climatic circumstances, changes in government legislation, and so on all have a direct impact on homestead transformation. Houses were traditionally built with timber poles, sloping thatched roofs, and thatched or mud walls all around. As time passed, these were eventually replaced by brick-walled, burnt-tile-roofed, corrugated iron (CI) sheet-walled and roofed constructions, and lastly RCC-framed and RCC-roofed structures. Changes occurred in planning and organization as well. There was no scarcity of land in the past, therefore dwellings were spread out to offer seclusion and climatic benefits. The usage of sloping roofs, which pose a potential fire hazard, necessitated such a settlement. Closer placement or even combining many compartments under the same roof became conceivable with the introduction of CI sheets and brick walls. The concept of multi-level living was promoted when sloping roofs were replaced with flat RCC roofs. (R. Rashid, 2007).

The Inquiry

The goal of this study is to investigate, analyze, and present the spatial and material transformation patterns of rural homesteads in the urban periphery areas of Kakon Hut Paurashava, Godagari Upazilla, Rajshahi District, Bangladesh.

The study's main goals are to:

- Investigate the traditional homestead pattern of a typical Bangladeshi rural homestead.
- To analyze the present conditions of rural homesteads in the selected site area.
- To determine how rural homesteads differ from traditional homesteads in terms of both spatial and material transformation.

Literature Review

T.L. Smith used the phrase "urban fringe" in 1937 to describe "the built-up area immediately beyond the corporate bounds of the metropolis." This terminology was commonly used in academic literature to describe the transition zone between the city and the rural (Pryor, 1968). The urban fringe is seen as a transitional zone between city and countryside, defined as a diffuse territory defined by combinations of traits and phenomena caused mostly by activity within the urban zone (Natural Resources International, 1999). The transformation of the social context in the urban fringe is significant since this zone is determined by the blending of urban and rural lifestyles. As we go out from the city centre, the infrastructural amenities deteriorate with increasing distance. The character of the urban fringe varies greatly depending on the extent of urbanization, the economy, and its geographical location with respect to the urban core (Banu & Fazal, 2016b). Economic and social development, as well as land demand, have resulted in the continual conversion of cultivated land to building

land, which has become the dominant method of land conversion. Land transfer from rural to urban sectors, as an essential production element, satisfies the need for urban development land and has expedited the progress of urbanization and industrialization (Liu, 2021). The urbanization process is highly prevalent in developing nations, and as it progresses, the barrier between rural surroundings and cities (the urban fringe) becomes increasingly blurred. The traditional separated connection between city and rural surroundings has now been replaced by a new partnership in which they rely on and permeate each other (Banu & Fazal, 2016a).

While the entire rural settlement is undergoing this shift, the urban peripheral communities, particularly those that are directly connected to the metropolitan, are experiencing it at a rapid pace. We selected Kakon Hut, a neighboring and well-connected rural business hub only a 30-minute train ride from the Rajshahi Metropolitan Area, to facilitate our research. It is also one of Rajshahi's busiest business districts

Methodology

This study is based on a qualitative research strategy. In order to draw upon a comprehensive range of information, the study makes use of a variety of resources and methods which is mainly based on primary data derived from the field survey. The work also uses secondary data based on extensive literature review.

During survey we followed Naturalistic Inquiry strategy to determine the overall site and its surroundings at first. After initial documentation we identified some core typology of household as core ones and followed Purposeful Sampling strategy to identify the homestead pattern and characteristics of the core types. Throughout the data collection and fieldwork strategy, we collected qualitative data. We used observation, questionary survey, and key person interviews for preliminary data collection as a part of the housing studio 2019 exercise. Later we analyzed and synthesized the data to identify the core typologies by using Context Sensitivity approach (Patton, 2015). Thereafter we came up with 5 parameters for spatial layout analysis and 5 parameters for materiality analysis. For a holistic view we conceptualized a framework for comparative analysis of the existing homestead types with the traditional homestead. The research progresses according to the following sequential stages-

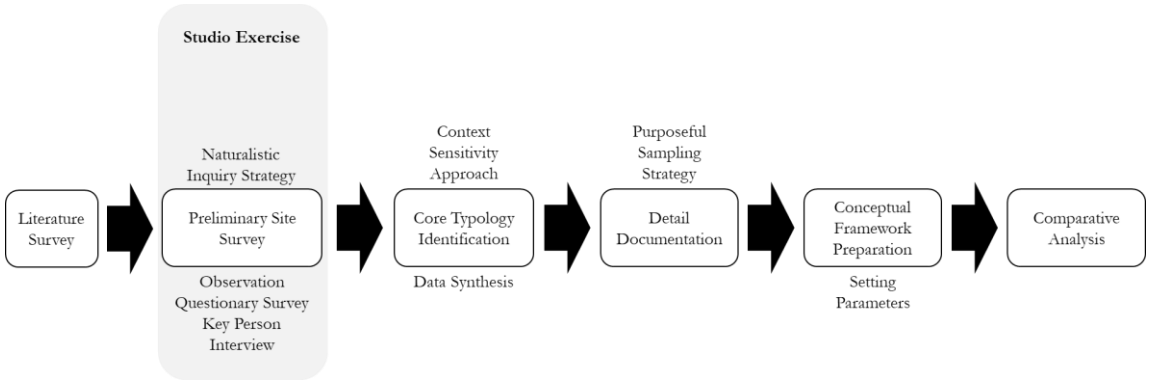

Figure 1. The sequence of the research (source: author).

The site

The Barind Tract, also known as the Varendra in English and the Barendra Bhumi in Bengali, encompasses the majority of Bangladesh's Dinajpur, Rangpur, Pabna, Rajshahi, Bogra, and Joypurhat districts, as well as the entirety of West Bengal's Uttar Dinajpur, Dakshin Dinajpur, and most of Maldah districts. A lower fault escarpment runs along the tract's eastern border. The rivers Jamuna, Atrai, and Lower Punarbhaba flow through the fault troughs. The major region is inclined up to the west, while it is tilted down to the east. (Banglapedia, 2014). The tract's climate differs from that of the rest of India in that it experiences more dramatic temperature changes (ranging from 45 degrees Celsius to five degrees Celsius). The Recent Alluvial Fan, the Barind

Pleistocene, and the Recent Floodplain are the three units. Long, narrow patches of recent alluvium separate them. (Bangladesh Asiatic Society, 2006).

The Barind Tract being on the edge of Rajshahi City has quite an influence over its traditional rural homestead development. To ensure the quality of the research and accumulate the data to determine the changing patterns or the transformation, we selected a rural settlement in the nearby Barind region placed on Kakon Hut Paurashava of Godagari Upazilla in Rajshahi District, Bangladesh. The reasons behind the selection of that particular area are easy accessibility to collect information, data, photographs, etc. required for comparative analysis.

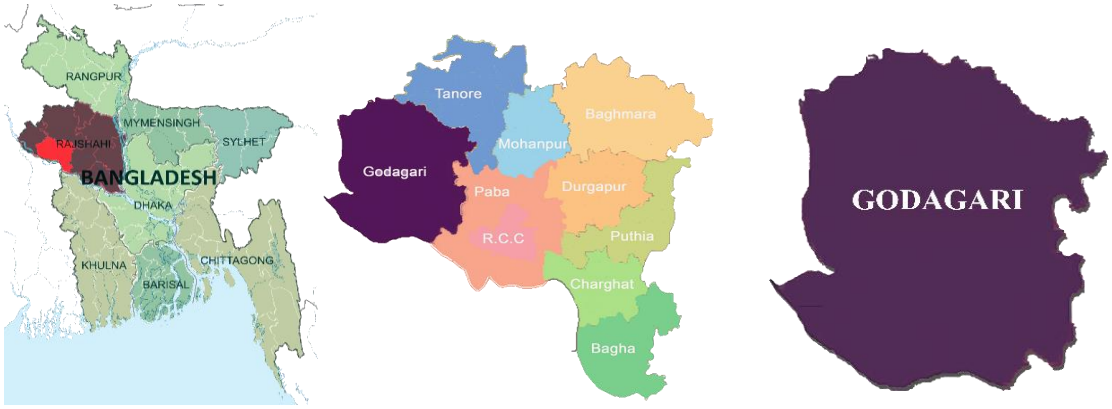

Figure 2. The location of the site (source: author).

Kakon Hut Municipality is located 25 kilometers northwest of Rajshahi town in Rajshahi district's Godagari Upazilla. The municipality has nine wards and eleven mouzas and covers an area of 20.05 square kilometers. The municipality is in the Barind area and has good road and rail connections to other parts of the country, particularly Dhaka. This indigenous territory has a population of 16,515 people. The municipality of Kakon Hut features a large market, a train station, a single bus stop, government buildings, and a few small businesses. In addition, the municipal territory contains ten elementary schools, three high schools, one Degree College, two madrasas, a public library, an auditorium, a police station, 31 mosques, two temples, eight Eidgahs, and churches.

Within the Ward 07 of Kakon Hut Paurashava, we found 03 different clusters. If we look closely at Figure 3, we will find 3 clusters identified with 3 different colors. The Black one is Cluster 03 and is closest to the Kakon Hut Commercial hub. The next close is Cluster 02 defined by blue color. This cluster is the smallest one of the bunches. Cluster 01 is at the farthest distance from the commercial hub.

The settlement patterns

Following a preliminary assessment, detailed research on cluster 03 was performed, considering its proximity to the commercial hub and the hub's influence on its development and transformation. Cluster 03's homestead footprints reveal several issues. Most homesteads have an open to the sky courtyard and a four-sided house around the courtyard, and they are generally clustered around the village; single homesteads in open spaces are uncommon. Mud, CI sheet, and mud tiles are traditional building materials in this village, however, modern building materials such as brick, flat concrete roofs, and metal window grills can also be found.

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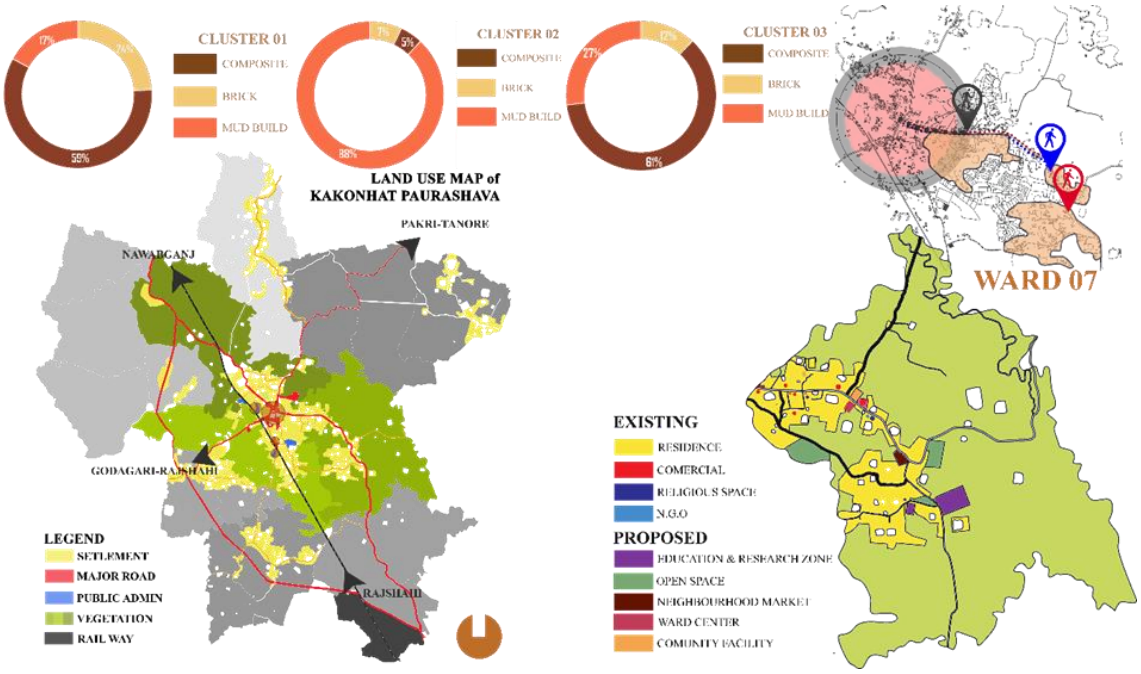

Figure 3. Site overview and location of the cluster (source: Housing Studio 2019).

Figure 4. Overview and location of cluster 03 (source: Housing Studio 2019).

Typical homestead layout analysis

In different parts of Bengal, housing forms, building styles, and construction materials differed significantly. The grouping of houses in specific locations to make a para, a few of which joined together to form a village, was maybe the only thing in common. Bamboo has traditionally been the most important building material in Bangladesh. Bamboo is still commonly utilized now, and it works well as room fences, pillars, and crossbars to support roofs, just as it did in the past. Canes, jute sticks, CI sheets, wood, and mud or mud bricks are some of the other items utilized in rural areas to make room or house fences. The material used to cover the tops of the village huts is Khad (straw from dried paddy or wheat plants), San or Ulukhad (reed), Kash (tail grass), and Golpata (leaves of a special species of a small tree growing mostly in mangrove marshland). CI sheets are stretched over a flat frame or supported on a triangle-shaped bamboo or hardwood base to create relatively stable constructions. (R. Rashid, 2007).

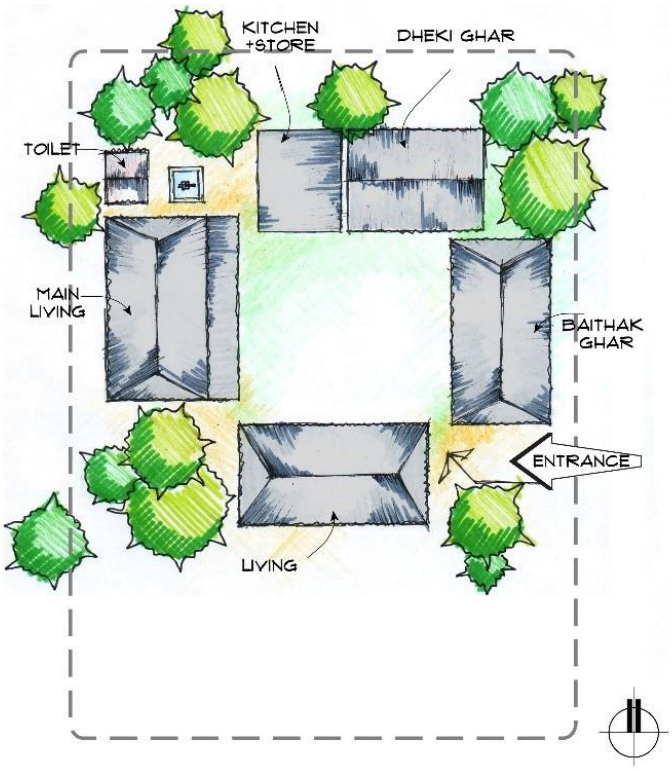

Figure 5. The common spatial form of rural settlement (source: (M. U. Rashid, 2017)).

Traditional rural residences have a similar layout: constructed forms are grouped together, sharing private courtyards that keep all males but direct family members out. They typically use adjacent ponds and wells for bathing, washing clothing and pans, and cooking. Due to the lack of a sewage system, toilets are nearly always positioned far away from the main living areas, with waste being dumped into moving streams or buried pits. Kitchens are also located outside of the main residence. The most popular roofing materials are straw and bamboo, with CI sheeting over wooden beams coming in second. Because communities lack electricity, they must rely on natural ventilation to the best extent possible. There is little doubt that the modern designer can

learn a lot from traditional or vernacular dwellings, which have evolved to meet the social and physical needs of the people who live in a particular location (R. Rashid, 2007).

There are seven types of traditional rural dwellings in Bangladesh: Chouchala (four rooms on four raised sides with an open space in the middle) Britighar (the home and all of its rooms are surrounded by a single fence); Postoghar (home built on an elevated platform); Dishala Bandh Ghar (house with two huge rooms on two distinct platforms and an open space between them); Susthita Ghar (house encircled by verandas on all four sides; and the house of the tribal people). (Khan, 2005). Mud houses, bamboo houses, timber houses, and stilt houses are all examples of traditional dwelling types. Traditional dwellings are often categorized into three groups based on the use of locally accessible materials: -

- Kutcha House (Raw building)
- Semi-Pucca House (Semi-structured building)
- Pucca House (Structured building)

Homestead formation and the surroundings

The conventional house layout is fading day by day as history and time pass. A traditional pattern had been discovered through a questionnaire study, interviews, and observation of the settlement. These trends are typical of rural agrarian society. Backyard, Porch, Courtyard, Front-yard, and other locations were created using traditional principles. These were intangible architectural spaces that served as barriers between private and public areas. As a result, the spaces took on an identical, ethnic, and distinct personality.

The community collaborates as an integral element of the settlement and is involved in the agricultural living and working process. This community grew up around little ponds. The amount of open space and courtyard (Uthan) in this community that existed 50 years ago has steadily decreased over time. New dwellings have been built around the pond as a result of the family's growth. As a result, the settlement density has substantially expanded. There are other major determinants for the construction of new dwellings aside from the increasing number of families.

Configuration of the interior spaces

In all sectors of the world, transformation is a constant process. As a result, the case study homestead was changing day by day, and the homestead village was changing as well. The interior design patterns of evolving households evolved dramatically. In our study, those three sorts of constructions depict three distinct images of plinths. Mud was traditionally utilized as a plinth material in dwellings. In general, the height ranged from 2-3 feet. The material of the plinth evolved throughout time, from mud to brick soiling to concrete. The height fluctuated between 1.5 and 2 feet. Traditional household finishes and mortar materials included mud, bamboo, wood, and other natural elements. But that is no longer the case. Brick is now the most preferred partition and structural wall material. RCC is occasionally utilized as a column material, although for light structures, CC is mostly employed to support the roofing.

The roofing used to be composed of perishable materials like stalks. Over time, however, it evolved into Mud made tiles and CI Sheet. RCC, on the other hand, RCC is currently in the majority. Climate considerations were incorporated into the design of traditional dwellings, but modern homes lack the means and attitude to do so. Indoor, semi-outdoor, and outdoor facilities were thoughtfully planned to accommodate a wide range of common household activities. Over time, agrarian civilization surpassed the need for these locations and relegated them to history. The courtyard is the most prominent feature of a typical house. It has recently been reduced to dwelling units.

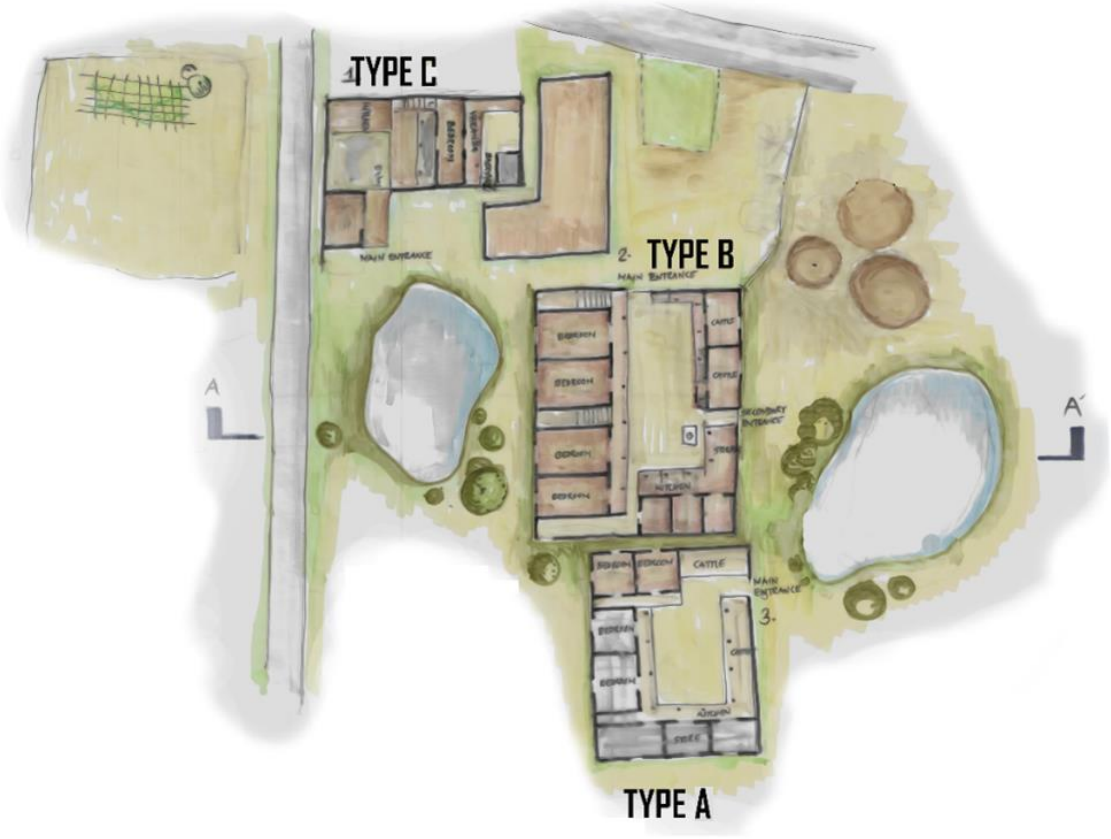

Figure 6. Types of rural homesteads in the site (source: Housing Studio 2019).

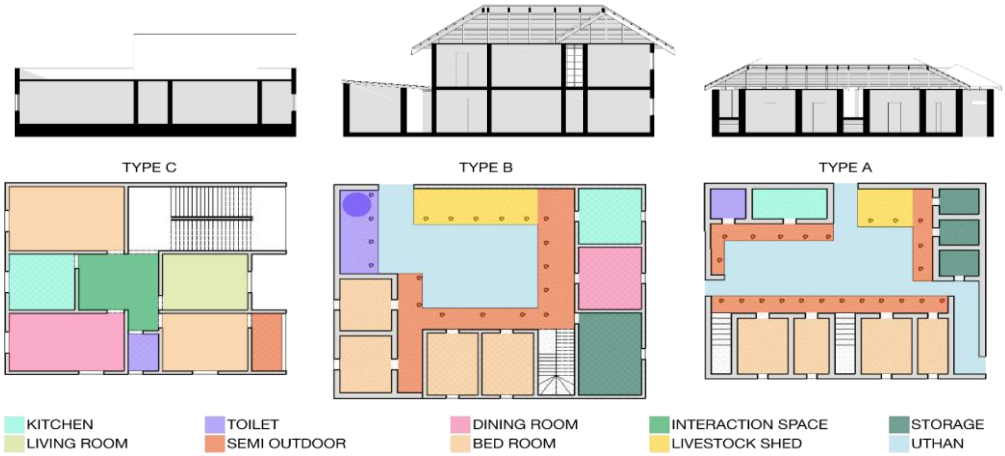

Figure 7. Spatial Layout of the three Homestead types (source: author).

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Type A

Kutcha Bari is Type A's most basic layout. This is the abode of a type of person who still makes a living from farming and animal husbandry. The kitchen space is on one side of the four-sided building, which provides an open-to-the-sky courtyard. A Baithak Ghor stands in front of every household, while a Gola Ghor stands on one side of the courtyard in the dwelling zone. Both the original and new homesteads have front and back yards. Tala (Storage space above the false ceiling) can be found in both old and new homesteads. The living area is isolated from the toilet and kitchen. The houses are cheap, but they require a high level of maintenance.

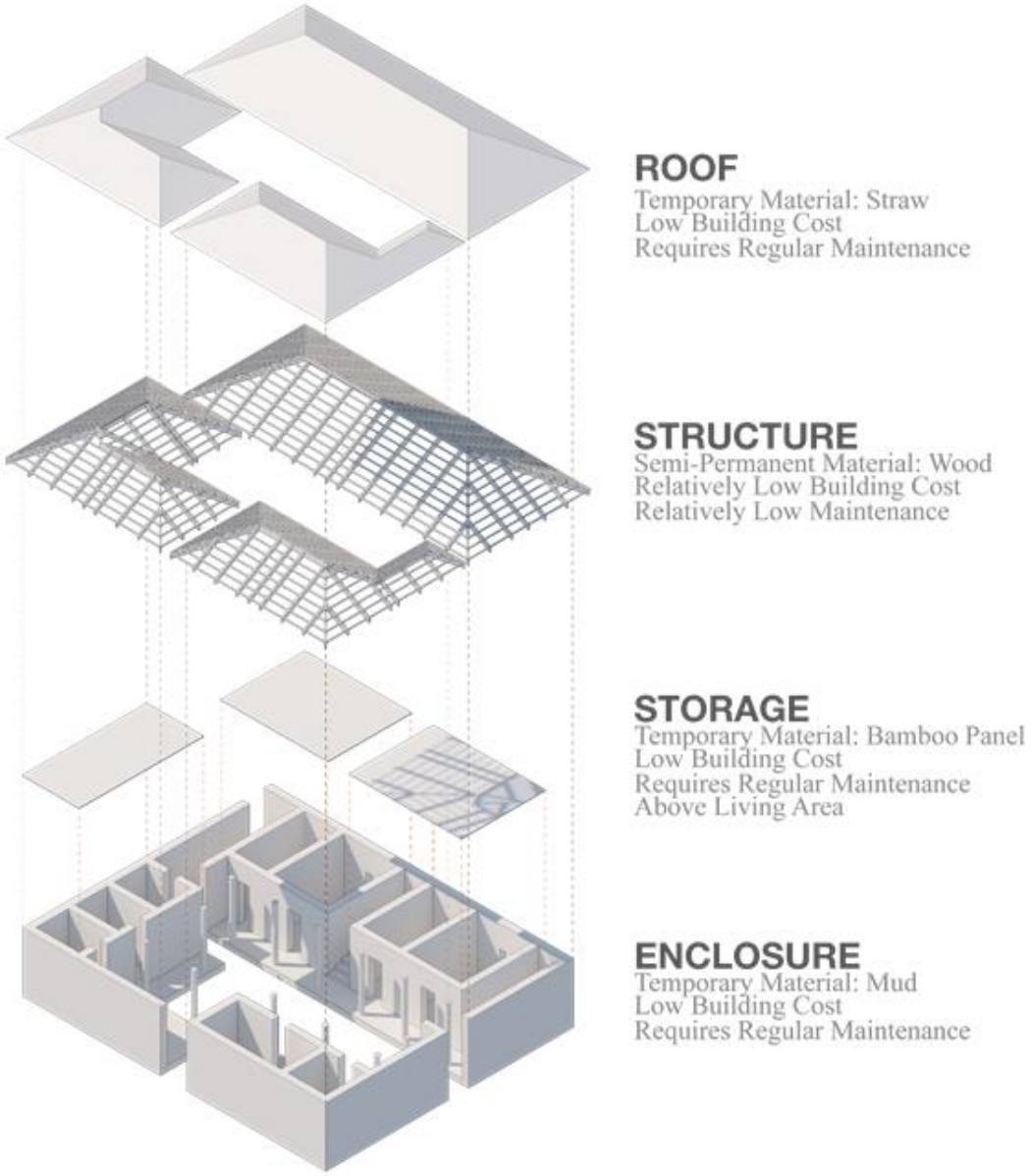

Figure 8. The materiality of Type A homestead (source: author).

Type B

Type B's fundamental layout is that of a Semi-Pucca Bari. This type is owned by local landowners and landlords. Type B's design is nearly identical to Type-A. The materials utilized end up making the most distinction. As the houses are mostly two-story, materials that are durable and low-maintenance are preferred to build such structures. As a result, the newer envelopes are often made of brick, and the roofing is made of CI sheets.

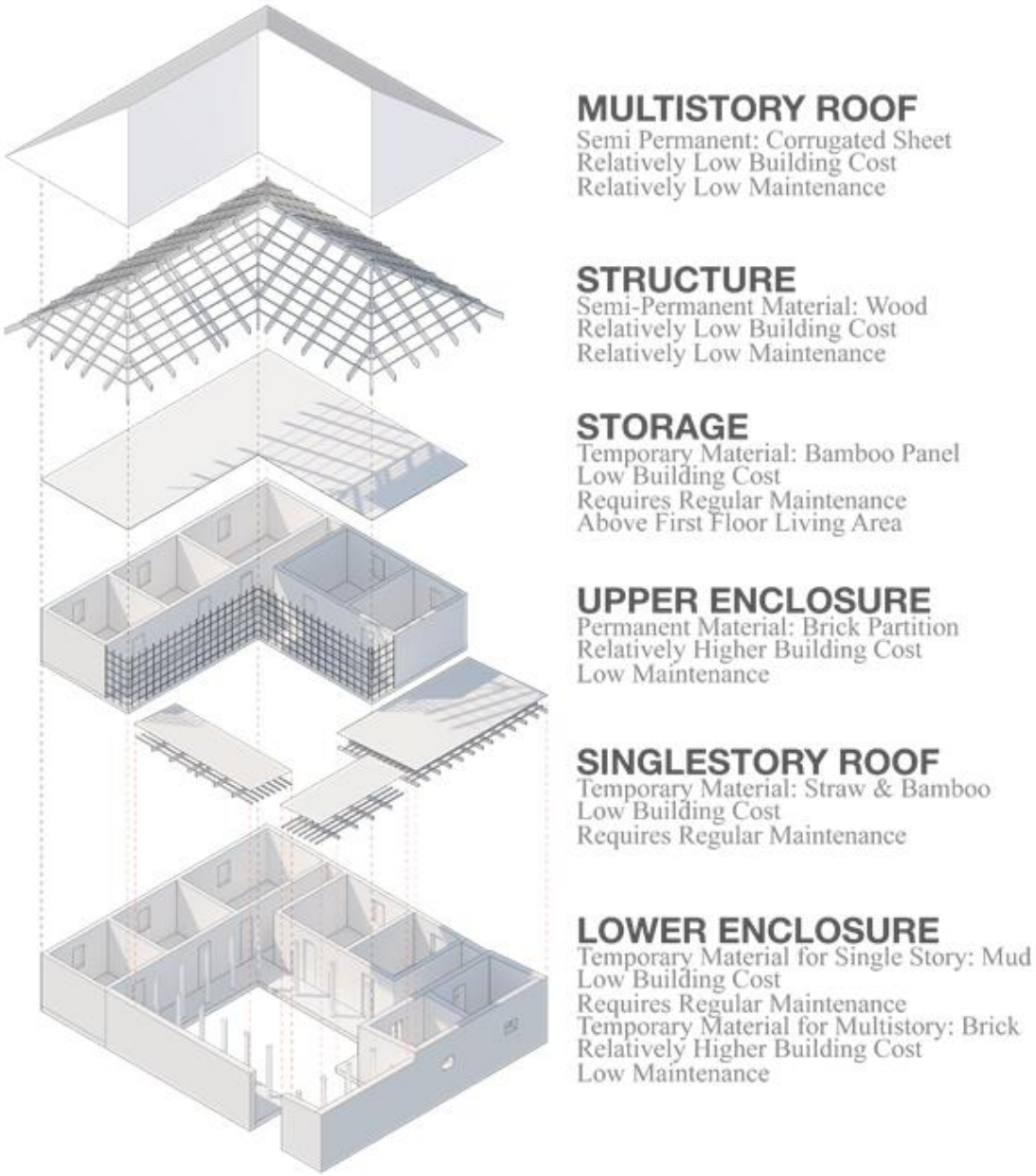

Figure 9. The materiality of Type B homestead (source: author).

Type C

The Type C homestead is a sizable outcome of the area's urbanization. It features a modern layout as well as modern construction materials. The houses are mostly single-family residences. Most people who own this type of residence work in the service sector. They work in a wide variety of occupations that offer them better access to the metropolitan areas. Since a dedicated staircase is a design criterion, the residences are frequently made as a precedent for the vertical extension. Two bedrooms, a living room, a dining room, a kitchen, and a bathroom comprise the prototype. There is no courtyard, no space for livestock inside the household, and it is only partially outside sometimes, which differs substantially from the conventional plan.

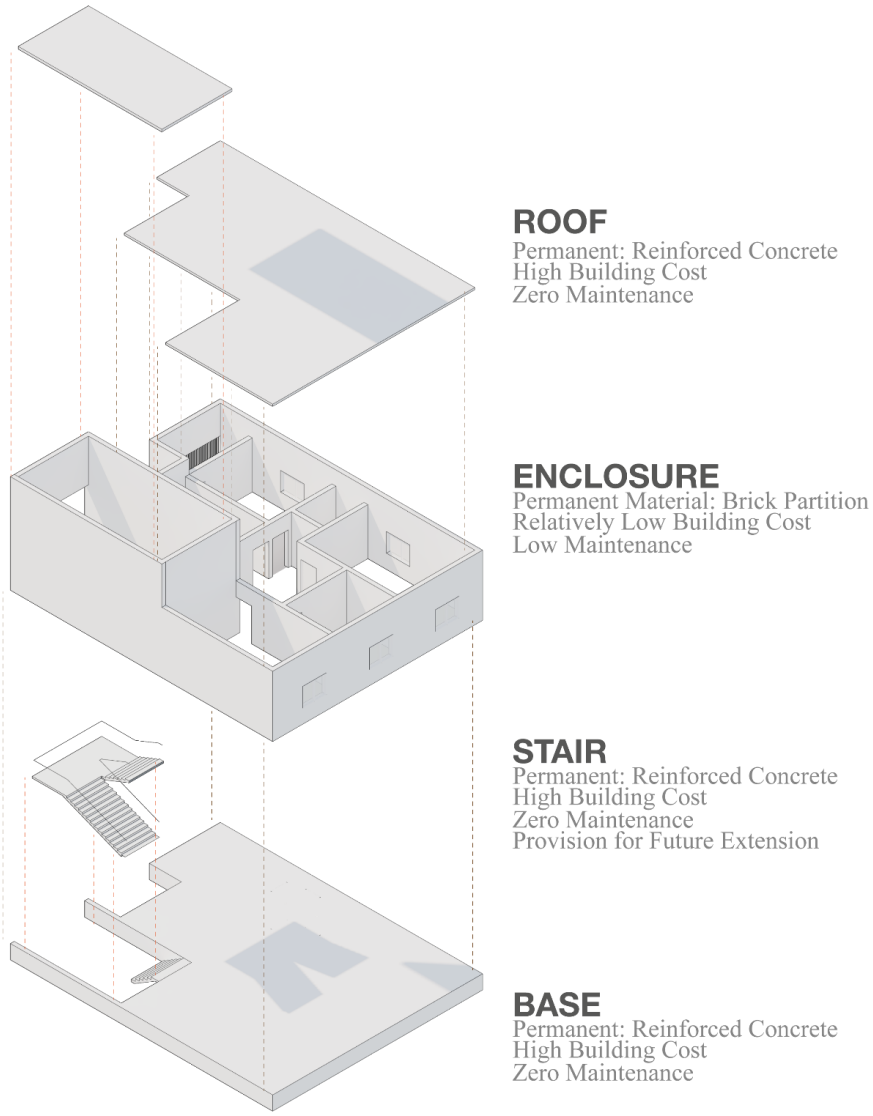

Figure 10. The materiality of Type C homestead (source: author).

Comparative analysis of homestead types

To understand the complex scenarios of the abovementioned 3 homestead types found in cluster 03, an in-depth comparative analysis of the three kinds of homesteads is mentioned in the objectives of the study. The analysis would be conducted on two aspects– materiality and spatiality. To measure each aspect few factors have been set.

Comparison based on spatiality

- Functionality
  It is important to analyze how the built structure interacts with the demands of the individuals who use it on a daily basis in order to assess the performance. The courtyard has traditionally been a vital element of people's lifestyles, catering to the necessities of an agrarian lifestyle. Indoor, semi-outdoor, and outdoor spaces were strategically designed to facilitate a variety of conventional household chores. Traditionally, activities like husking rice, drying various elements, preparing food, socializing, and so on took place in the courtyard. This courtyard serves as the focal point for a variety of income-generating activities and even some festivities. A courtyard can be found in types A and B, implying that they are still attached to agrarian society's roots. There is no courtyard in type C. The open-to-sky courtyard has been converted into an indoor living area courtesy to the spatial plan. The income generated here is no longer reliant on the courtyard.

- Climatic Considerations
  The dwellings in the Barind region are traditionally made of mud. Passive cooling is enabled by the tiny openings and high windows, as well as the mud structure itself. Heavy rain is deflected by the sloping roof. A courtyard is found in types A and B, which makes staying within the dwelling more pleasant. The courtyard and the use of a pitched roof allow for passive cooling between the structures. However, there is no courtyard in type C, and no evidence of inclined/pitch roof extensions in the semi-outdoor, implying a general trend toward active cooling. Traditional residences had climatic concerns as a fundamental component of the plan, however modern households lack the possibilities and mentality to respect that aspect of design.

- Expandability
  Houses are traditionally built around a courtyard, with limited opportunity for vertical development. It may be noted in type A that there are no prospects. It is constructed in a linear direction. It can be evident in type B that there is a specialized staircase, which provides for future vertical expansion. However, due to the materials used and the roofing system, the scope is constrained. The separate staircase and flat roof of type C provide plenty of room for vertical extension in the future.

- Structure
  Mud has traditionally been used as a plinth material in Barind households. In general, the height ranged from 2-3 feet. They use low-cost materials like bamboo and wood for wall structures, with mud as mortar and finish material. The door, window frames, and paneling are all made of wood and bamboo. The window openings are small and narrow, and they are placed high to keep interior cool from the exterior heat. Traditionally, the roof structure is made of bamboo and wood frames and covered with straw or leaves. These structures are temporary. As a result, the price of such materials was reasonably low. This porotype is still found in Type A because they are low-income. The addition of one upper floor has evolved the basic layout of Type B. As a result, materials such as brick and mud are used in the upper story. Although the single-story roof is still made of straw, the upper floor roof is made of CI Sheets. However, Type C tends to take a more modern approach to construction and material use. Reinforced concrete is used for the plinth, roof, and stairs, while brick is used for the walls. The plinth's height also changed from 1.5 to 2 feet. Glass panels with steel frames and iron grills are used to construct the windows.

- Indoor-outdoor relationship
  Traditional homestead designs are always built around a courtyard. Boundaries surround all four sides, with the central courtyard playing an important role. As a result, the layouts are always linked to the outside via the central courtyard. The built forms are linked to the courtyard by semi-open shades formed by the extension of pitch roofs. Type A and B of our study are still using this layout. Type C has lost all contact with this configuration. The space is introverted in nature, with interactions taking place in enclosed rooms.

Comparison based on materiality

- Construction cost
- In our study, the three types of structures depict three distinct images of plinths. Mud was traditionally used as a plinth material in households. The plinth's material evolved over time, from mud to brick soiling to concrete. Traditionally, mud was used as a finish and mortar material, with bamboo, wood, and other materials as the base. But scenario has changed. Brick is now a popular material for both partition and structural walls. RCC is sometimes used as a column material, but CC is more commonly used to support the roofing in light structures. As a result, Type A and B are made with relatively low-cost materials. Type C is constructed with high-cost materials.

- Maintenance
- As per the preceding discussion, types A and B are made of low-cost materials such as mud, wood, bamboo, straw, mud tiles, and so on. Since these materials are semi-permanent, they need to be maintained on a regular basis. Type C is built with permanent materials such as brick and RCC, so no maintenance is required frequently except for the brick walls.

- Availability of materials
- Types A and B are constructed of low-cost, semi-permanent materials. These materials are easily procured from the extraction of natural resources. As a result, they are local and readily available. Type C is constructed from more modern commercial construction materials. These are readily available for purchase in the local market.

- Ease of construction
- The construction of Type A and B still heavily relies on human labor. As a result, it is quite exhausting and takes some time to construct. While type C is easy to execute due to the modern technique, as it readily utilizes the advantages of different technologies.

- Material Permanence
- As types A and B are built with locally available, unadulterated natural, raw materials, the structures have a semi-permanent quality. They are easily and greatly affected by weathering in a short span of time. Almost every season, they require maintenance. Type C is built with long-lasting modern building materials. As a result, the weathering process is slower than that of natural resources used in other types.

Summary

Table 1. Comparative analysis of traditional homestead and selected site area's homestead types based on spatiality

Topic	Traditional Type	Type A	Type B	Type C
1. Functionality	Rooms are arranged around a courtyard.	Similar to the traditional type	Similar to the traditional type	No scope for the traditional courtyard.
2. Climatic Considerations	• Courtyard helps in passive cooling • Use of smaller high windows • Mud is used as the building material • Use of Pitch roof	Similar to the traditional type	Similar to the traditional type	• There is no courtyard • Windows are big, with no proper shading • Active cooling is preferable • Flat roof
3. Expandability	Can be expanded horizontally only	Similar to the traditional type	Can be expanded both horizontally and vertically (limited)	Can be expanded vertically, multiple stories
4. Structure	• Plinth made of mud, height 2-3 ft • Wall made of wood or bamboo with mud as mortar and finish material • Roof structure made of wood, bamboo frames and covered with straw or leaves • Frames and panels of windows and doors made of wood and bamboo	Similar to the traditional type	• Due to the double story, the plinth has brick soiling or sometimes RCC • The use of brick for the enclosure is there • The single-story roof is the same as the traditional type • The roof for the upper story is made of CI sheets	• The plinth is made of RCC, height 1.5-2 ft • The walls are made of brick • The roof is made of RCC slab • Windows are made of glass with steel frames
5. Indoor Outdoor relationship	The courtyard connects the built forms with outdoor through shaded verandahs	Similar to the traditional type	Similar to the traditional type but the upper floor has a visual connection to the court	No connection with the outdoor

Table 2. Comparative analysis of traditional homestead and selected site area's homestead types based on materiality

Topics	Traditional Type	Type A	Type B	Type C
1. Cost	Low building cost	Low building cost	Low building cost for single story For Upper story relatively more building cost	High building cost
2. Maintenance	Regular maintenance	Regular maintenance	• Regular maintenance for single story • Relatively low maintenance for upper story	Zero maintenance except for brick walls
3. Availability of Materials	Local material, hence easily available	Similar to the traditional type	Due to multi-story along with local materials, materials from the market are availed.	Can be availed from market
4. Ease of construction	Due to dependency on human labor, construction is tiresome and lengthy	Similar to the traditional type	A mixed approach is seen	The help of modern technology is there, hence it is less troublesome and less time consuming
5. Material Permanence	Constructed with semi-permanent materials	Similar to the traditional type	Constructed with semi-permanent materials	Constructed with permanent materials

Conclusion

In Bangladesh, rural households are mostly built using traditional knowledge where spatial features and locally available building materials are extremely crucial. This paper depicts a detailed analysis of the rural homestead transformation pattern in terms of both spatial structure and construction materials. The spatial pattern and availability of durable materials are highly adopted in urban fringe areas on a regular basis, as per the key findings of this research. In terms of spatial patterns, a traditional courtyard, climatic considerations, and the indoor-outdoor relationship are set aside in favor of a more permanent structure and expandability. Local and traditional materials, on the other hand, are being replaced by construction materials such as brick, cement, reinforcement, and so on due to their availability in rural markets. Although building costs have gone up, people chose those materials due to the homestead's durability and ease of construction. This analysis is limited to investigating the spatial patterns and materiality of the rural homestead. Therefore, there is a great scope to conduct this research

in the future to explore the socio-cultural, environmental, and other factors leading to rural homestead transformation in the urban fringe areas of Bangladesh.

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