



## LEARNING FROM THE ROOT- INTEGRATING TRADITION INTO ARCHITECTURE TOWARDS A SELF-SUBSISTENT MUNDA COMMUNITY

Pallabi Dutta\*, Dr. Md. Mustafizur Rahman

*Department of Architecture, Shahjalal University of Science and Technology, Sylhet-3114, Bangladesh*

KUS: ICSTEM4IR-22/0174

Manuscript submitted: July 28, 2022

Accepted: September 28, 2022

### Abstract

The forest-based Munda community is one of Bangladesh's many tribal communities, having their age-old religion, culture, customs, language, and knowledge, for which they are recognized as a unique group of people with different tribal traits. Originating in India, some of the Munda people travelled to Bangladesh around 300 years ago and have been living here ever since. Despite of their rich tradition and heritage, the Mundas are one of Bangladesh's most despised and disdained ethnic groups. Moreover, Mundas living in the Kalinchi village in the Sundarbans's ecological zone, one of the country's most vulnerable locations, are facing major challenges from saline intrusion, tropical cyclones, storm surges, and what not. This research aims to explore Munda's ancestral way of living, their traditional subsistence practices & their house pattern to infuse it to bring possible solutions towards a resilient Munda community. Initially, an anthropological study was conducted to uncover their indigenous foundations, traditional knowledge of living, and the events that shifted people away from their ancestral homeland. Later, architectural intervention was combined to achieve self-sustainability without losing the original traits. Additionally, this can help to preserve their ethnic identity and promote their indigenous heritage to the rest of the world. The final framework intends to increase the affordability of construction materials in an effective way to withstand climate challenges.

**Keywords:** Munda Community, Indigenous, Forest-based, Ancestral way. Subsistence, Tradition, House pattern, Self-sustainability, Affordability.

### Introduction

Bangladesh has been a land of different tribes on this plateau from the age immemorial. According to Virtual Bangladesh (2011), Bangladesh has approximately 45 ethnic minority with a population of about one million. These people lag behind the rest of the population in terms of economic, political, social, and technological advancements, and they continue to live by archaic lifestyles and ideologies in many ways. They have their own religion, culture, custom, and language for which they are recognized as a distinct group of people with distinct tribal characteristics such as "Mundas". In Bangladesh, they are found in Khulna, Satkhira and mostly near the Sundarbans, as well as in Joypurhat according to Knowledge World

\*Corresponding author: <pallabi33@student.sust.edu>

DOI: <https://doi.org/10.53808/KUS.2022.ICSTEM4IR.0174-se>

(2005). There are about 900 Munda families living in the 3 upazilas Shyamnagar, Koyra and Tala of Satkhira district stated by HRCBM (2004). The Mundas are one of Bangladesh's most reviled ethnic groups. Even though the Mundas have been a part of the Sundarbans for generations now, they are still seen as outsiders by the Bengalis and deprived of their basic needs. They tried to blend in with the local Bengali community by adapting their culture, as a result their cultural individuality is diminishing day by day. In addition, due to the consequences of climate calamities, Mundas living in the Sundarbans face serious challenges to their livelihood stated by Roy (2018). The Munda people, who live in abject poverty in this disaster-prone area of Bangladesh, have been subjected to the regular devastation of various natural disasters. The majority of them live in temporary shelters made of locally accessible materials such as straws, thatch, wood, or bamboo, all of which are largely sourced from the Sundarbans. The fragility of settlements is mostly generated by a lack of sufficient knowledge of disaster-resilient environments, increases the number of casualties according to Parvin (2012). As a forest-based community the Munda people wholly depend on the Sundarbans Forest socioeconomically. However, the ecological imbalance of the Sundarbans mangrove forest, pose significant risks to Munda's living with the according to Roy (1912). Moreover, due to the lack of opportunities to practice their culture they have almost lost the thread of their own heritage and are on the verge of becoming forgotten people stated by Danda (2007).

Despite the fact that the Munda people were more exposed to hazard shocks and suffered more severe financial, settlement, and physical damage, they had a superior capacity to respond to, cope with, and recover from shock than the local Bangali settler according to Roy (2018). This is because they are extremely diligent and over the years, they have extended their profound ecological knowledge. The community, however, remains vulnerable due to a lack of implementation and integration of traditional knowledge with coping strategies in face the of climate change. Therefore, the study focuses on to investigate this indigenous community's ancestral culturally transmitted practice, building materials and techniques, and the amalgamation of indigenous knowledge with scientific technologies through proper strategic assistance aimed at improving Munda community catastrophic resistance.

### **Anthropologic Identity of Munda Community**

The Mundas are an ethnic community of Chotonagpur plateau, Jharkhand, the southern part of the state of Bihar in India. According to the General Population Tables and Primary Census (2016) there were 2.2 million Munda in India which makes for 7.4% of the total population in the state. Munda people are considered proto-Australoid, and they speak the Mundari dialect of the Austroasiatic language family, which is regarded as India's oldest language as stated by Blench (2008). According to Das (2014) they are believed to be one of the major Austroasiatic speaking peoples who are the descendants of a human population who migrated from South-East Asia to India about 56,000 years ago. Due to a paucity of historical data and information, the Munda community's history has been based mostly on beliefs and assumptions. Similarly, the Mundas have not provided any substantial evidence of where their forefathers originated from, hence their actual history remained unclear.

Munda people call themselves as Horo-ko (Human being). The word Munda means Headman of the village. They are also known as Mundari, Sardar, Kuli (Roy,1912). According to Topno (1955), the Mundas are 'Prokitojon', they came before the Aryan. Roy (1912) also stated that they are assumed to relate to people of Kolarian, Mon-Khmer, WA Palaung language of Malacca and adopted in course by wandering before the came to Indian subcontinent. Numerous historical evidence suggest that approximately in 15<sup>th</sup> century the Munda started 'Ho' kingdom in Chotonagpur and introduced 'Manki-Munda' system believed by Topno (1955). Being defeated by the king Jai Singh Deo the Mundas continued to thrive in the area named 'Kukara'. In the 18<sup>th</sup> century when the area was invaded by the British they named it 'Jharkhand', The Munda tribe along with Santal and Oran staged one of the longest tribal revolts with the lead of Birsha Munda, who is considered India's national hero as stated by Roy (1912).

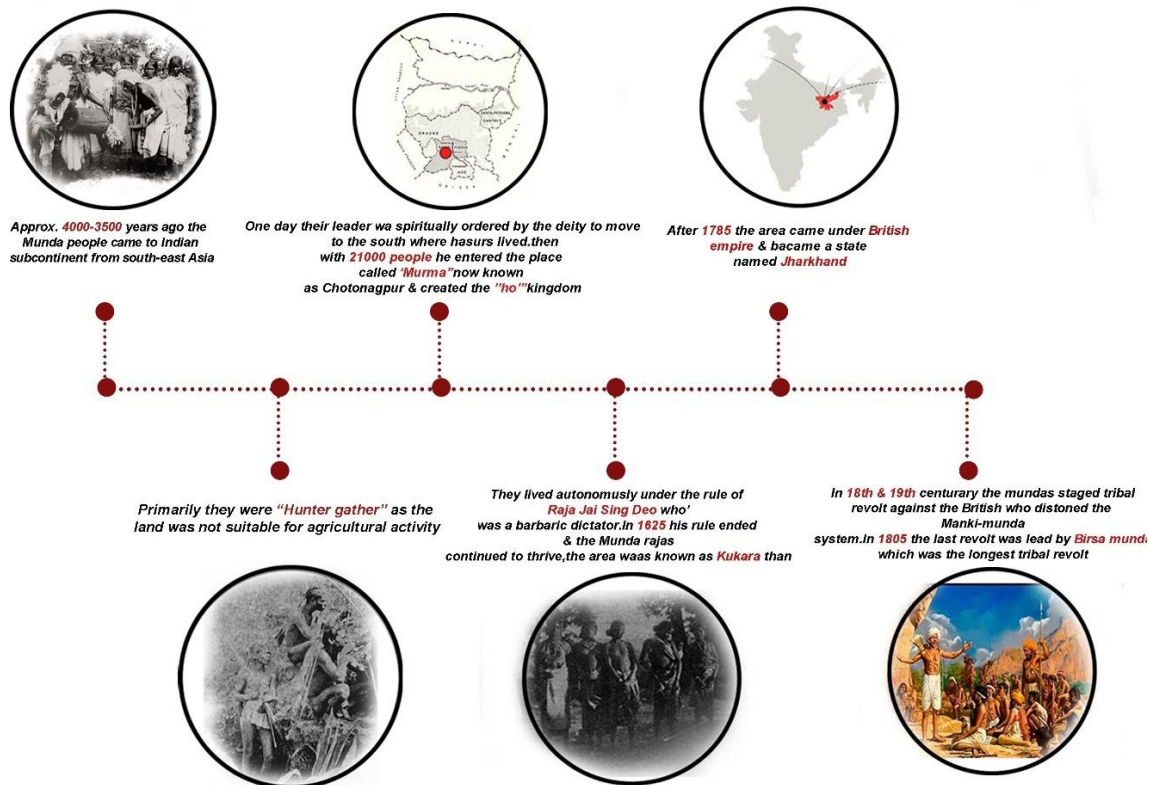


Figure 1. Historical Events of Munda Community (Prepared by Author).

Munda's traditional way of life has been "Hunting-gathering" since they are nature-dependent people. However, changes in context and environment have led to their evolution as an agro-pastoral community according to Agrawal (1992). Nonetheless, their way of life and livelihood are still inextricably linked to the forest in a variety of ways. The Mundas speak Naguri language also known as 'Mundari' language as stated by Roy (1912). Munda people are predominantly nature worshipers, with the majority of their rituals centered on the worship of various deities of natural agents known as 'bonga', as well as their ancestral spirits. The community follows 'Sarnaism'. They refer their God as 'Sing Bonga' (Sun god) so that the east side is very important to them as stated by Osada (1997). They are animists hence they do not have any religious structure. Osada (1997) also stated they pray to their ancestors and have a sacred corner in every Munda household. Some Munda have accepted Hinduism and Christianity, although they preserve many of their earlier religious practices.

They have their very own indigenous social structure that they follow. Since they are separated into clans, each clan has its own emblem known as a "Totem". Each village has its own headman known as Murha or Manki raja who is selected by a mutual decision by the villagers according to Topno (1955). Manki raja is the village's decision-maker, settles disputes and he is the center of the system according to Roy (1912). The forefather transmitted to the Munda people a set of unique rituals, customs, dances, and festivals. The main festivals are celebrated at the place called 'Akhara' where they participate without any clan distinction, according to Social Water (2010). However, there are some clan specific festivals which usually held in the household level.

### Architectural Characteristics of Traditional Munda Houses

Munda houses in Jharkhand, India were studied to collect to information.

#### ***Built form and household***

The primitive housing typology and spatial organization has an impact on traditional Munda houses with the vie of Krihan (2001). The houses are mostly single-room mud cottages with roofs of bamboo rafter and purlin covered with terracotta tile. A typical hut is around 5 to 6 meters long and 3 to 4 meters broad, however sizes vary. Since the east side is religiously significant to them, they try to make their entrance from the east.

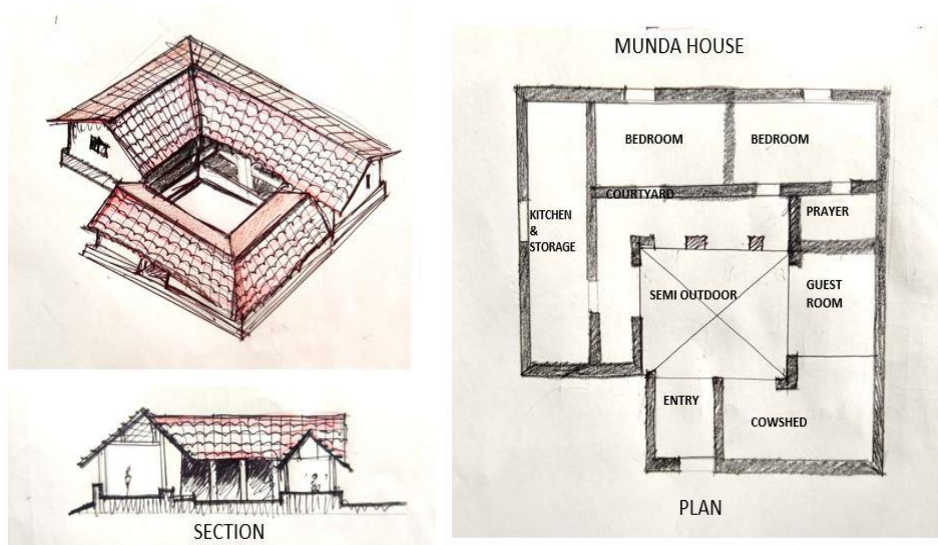


Figure 2. Traditional Munda house in Jharkhand (Prepared by Author).

These huts are arranged in a linear pattern along village's main thoroughfare. A group of linked units is organized to form a courtyard where the majority of the day's activities take place. The houses are typically built on a raised platform of compacted earth, which benefits in maintaining thermal comfort. Wells are frequently used as a source of water for everyday household chores.



Figure 3. Traditional Munda house exterior and interior (Source: Gupta, 2012).

### ***Exterior and interior impression***

The house's walls are typically composed of split bamboo plastered with a mixture of mud, cow dung, and straw. Munda houses have traditional art and paintings painted on the exterior walls. Multiple use of space can be seen in typical Munda houses. The interior space is sequenced according to the uses and privacy of the space. Every built form encompasses several spaces such as living room, sleeping room, kitchen, prayer space, storage and animal shed that are separated by thick mud wall in a single arrangement.

### **Analyzing Significant Characteristics of Traditional Munda Houses**

Table 1. Significant Characteristics of Traditional Munda House

| Type of significant Indicator | Significant Characteristics   |
|-------------------------------|---|
| Architectural Characteristics | <ul style="list-style-type: none"> <li>• Each household has its individual territory</li> <li>• All functions of household in a single structure</li> <li>• Multifunctional spaces rather than single use</li> <li>• Compact house planning alongside the main village circulation</li> <li>• Spaces are divided as public, semi-public, and private space</li> <li>• Central courtyard is used for common function and gatherings</li> <li>• Develop introverted courtyards to protect from wild animals.</li> </ul> |
| Cultural Characteristics      | <ul style="list-style-type: none"> <li>• Wall art, murals, paintings are integral part of the house</li> <li>• Dedicated space for prayer</li> <li>• “Totem” (clan symbol) can be seen in every house</li> <li>• Women’s privacy is maintained in the inner house</li> <li>• Dedicated space for guests.</li> </ul>   |
| Structural Characteristics    | <ul style="list-style-type: none"> <li>• Locally available, inexpensive building materials are used</li> <li>• Bamboo is used as a structural skeleton.</li> <li>• Rammed earth, adobe, mud mortar is as construction techniques</li> </ul>   |

### ***Sustainability features of traditional Munda houses***

They have been maintaining their traditional indigenous way of living and house building till date. As a forest-based community they protect their surrounding forest by their way of living.

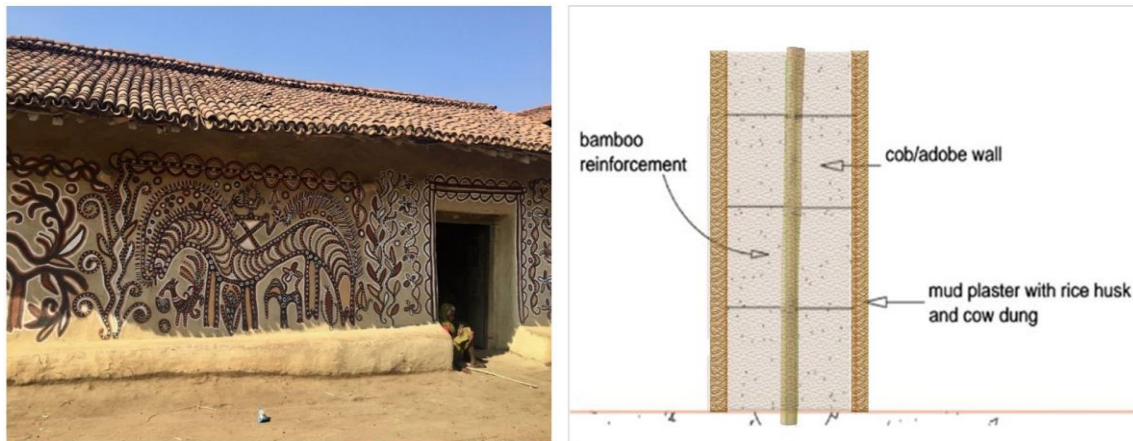


Figure 4. Traditional Munda Sustainability features (Source: Bharat, Gauri, (2015) and Author)

Table 2. Features for Sustainability of Traditional Munda House

| Type of indicator         | Sustainability Features   |
|---------------------------|---|
| Climatic Sustainability   | <ul style="list-style-type: none"> <li>• Built form and plan is evolved as per climatic conditions.</li> <li>• The low-rise entrance provides shade and reduces glare in the courtyard.</li> <li>• Central courtyard works as a buffer space</li> <li>• The small windows and doors keep out the scorching summer sun and the harsh winter weather while also providing privacy</li> <li>• Semi-outdoor space shields the interior from driving rain and summer heat</li> <li>• Extended roof protects mud wall from rainwater</li> <li>• Mud mixture of wall and raised mud plinth works as a thermal insulator</li> <li>• Roof structure allows rainwater harvesting</li> </ul> |
| Economical Sustainability | <ul style="list-style-type: none"> <li>• Use of locally available building materials such as mud, timber, bamboo, clay reduces construction cost by 20%</li> <li>• The majority of these houses built by family members themselves, saving another 10% on the cost.</li> <li>• They use their indigenous techniques in building houses</li> </ul>   |
| Structural Resilience     | <ul style="list-style-type: none"> <li>• Special type of mud mixture (by adding mature vegetable waste) in the wall increases mud's plasticity.</li> <li>• Resistant starches materials in the wall, such as straw and jute, enhance tensile strength.</li> <li>• Stepped rammed earthen plinth provide stability</li> <li>• Bamboo works as reinforcement for the mud wall</li> </ul>  |



## Research Objective

This research focused on;

- To integrate Munda's indigenous building knowledge with architectural interventions in order to overcome the challenges faced by this community with the respect to the context Thus;
- Introducing mainstream society with their traditional practices hence preserving the ethnicity
- Taking environmentally sound solution in all levels

## Study Approach and Methodology

The research primarily followed a bottom-up approach designed in two phases i) Literature review, ii) Field survey, to achieve the research objectives. Relevant literature review is an important part of research design to understand the traditional ethnic characteristics of this indigenous community and their practices thoroughly. The field survey was conducted using observation, Focus Group Discussions (FGDs), and Semi Structured Interviews (SSI) in order to i) observe the life pattern of this indigenous community in the study area, ii) to get a firsthand experience, iii) to unveil how the house form adapts the existing context and climatic setting and iv) to understand their socio-demographic pattern, what are the ways to earn their livelihood. The data was further analyzed to assess the vulnerability and design framework.

## Profile of the study area

### *Geographical location*

The study area is located in the remote village named Kalinchi in Shyamnagar upazila laying in the ecological zone of Sundarbans. People living in this area face the salinity intrusion, tidal surges, cyclones almost every year. There is also a huge lack of sweet water sources and cultivable land stated by SAMS (2010). Kalinchi is the last village in Bangladesh's southwestern region at the border of Bangladesh and Indian state of west Bengal. A river named Datinkhali divides site with the Sundarbans. The Mundas are perhaps the earliest settlers of this area, having lived here for more than 300 years. During the British time, the Munda people were forcibly moved in this area as indigo plantation workers, forest cleaners, and club men of local landlords stated by Shashi (1994).

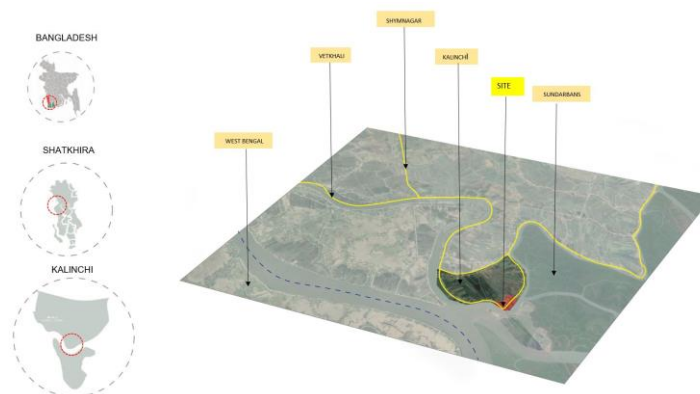


Figure 5. Study area location (Prepared by author).

## Socio-demographic analysis

The socio-demographic data showed that almost 50 households with around 350 people lived in the

village. Maximum family has an average of 4-6 members. It also shows previously they have been an agro-pastoral community. However, means of living have changed drastically after the shrimp revolution in this area. At present, 85% of people earn their livelihood working in the shrimp field. Although some of them are involved in agriculture, brick kiln work and day laborer, 99% of these people do not have any land of their own, so that they work as day laborers in others field. They do not get any work at all for about 5-7 months in a year. Many inhabitants moved temporarily or permanently to neighboring cities due to a lack of employment opportunities throughout the year in search of work.

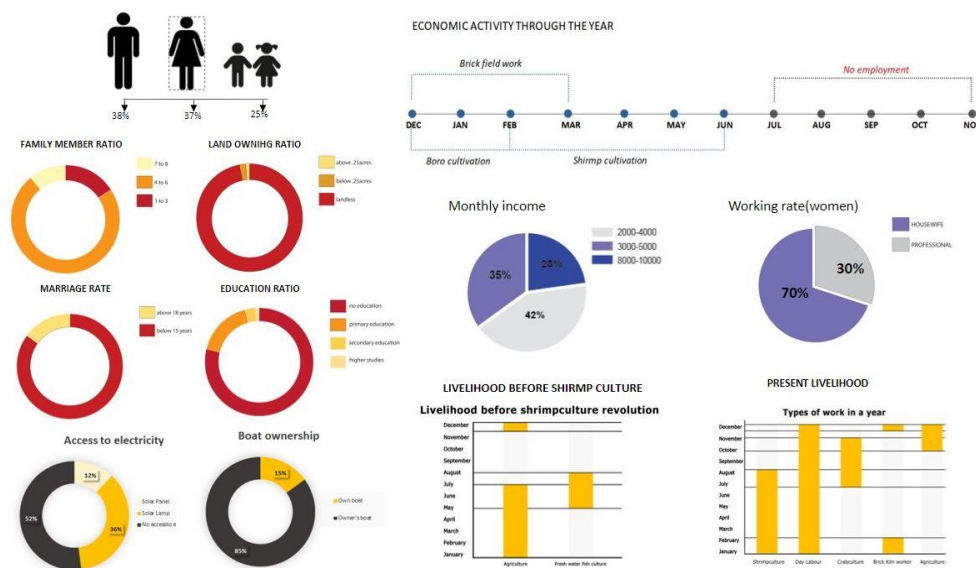


Figure 6. Socio-demographic data (Prepared by author).

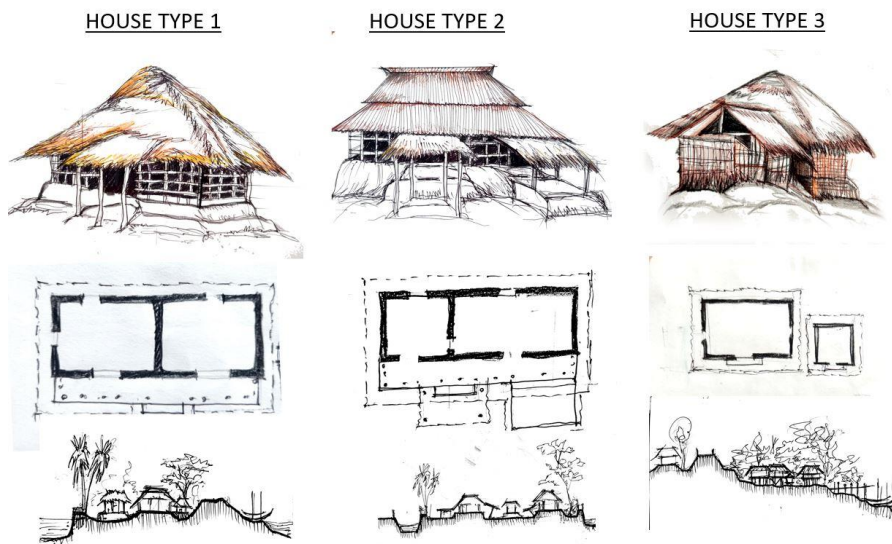


Figure 7. House pattern of Munda community in Sundarbans (Prepared by author).



### House pattern analysis

Their house is highly influenced by Bengali house. Compact settings, the plinth of the house is raised at least 3feet or more to protect from water clogging & insects. Very poor condition of structural junction and use of local materials from Sundarbans can be observed.

Table 3. House type assessment

| Assessing Features       | House Type 1                                      | House Type 2   | House Type 3                                   |
|--------------------------|---|--|--|
| Location                 | Alongside the embankment                          | Alongside the shrimp fields                              | Beside the river                               |
| Economic Status          | Landless, poor                                    | Less than .25acres land                                  | Very poor                                      |
| Climatic Vulnerability   | Vulnerable to cyclone, Salinity intrusion, Strome | Vulnerable to cyclone, Salinity intrusion                | Extremely vulnerable to cyclone, river erosion |
| Structural Vulnerability | Collapsible wall, saline affectable plinth        | Vulnerable roof which is acts as a cutter during cyclone | Most vulnerable structure, exposed to disaster |

### Results

Through considering aforesaid research and analysis, a theoretical model of resilient built form was developed, integrating Munda community traditional knowledge and techniques with architectural intervention to achieve sustainability and resilience throughout and post-disaster periods.

#### Theoretical framework for resilient built form

Individual house forms were developed considering the site context, climatic conditions, vulnerability, traditional building techniques, disaster withstanding measures and facilities of possible future expansion. Multipurpose uses and easy adaptability were taken into consideration to facilitate house module as post-disaster shelter. Affordability, cost effectiveness and use of local materials were the primary factors. Design of house module followed the following framework.

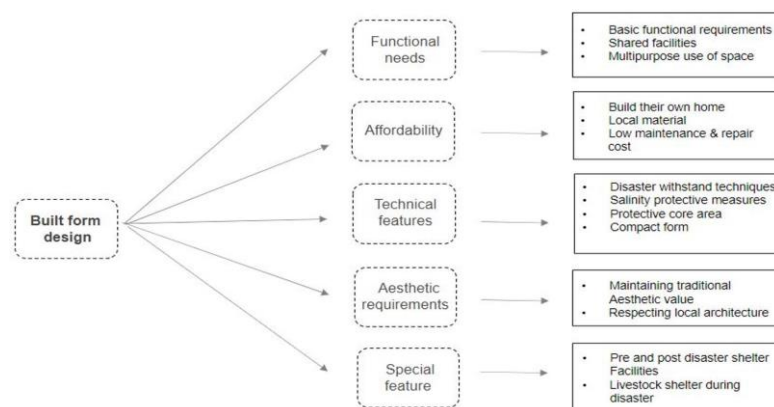


Figure 8. Built form development framework (Prepared by author).

### Built form development

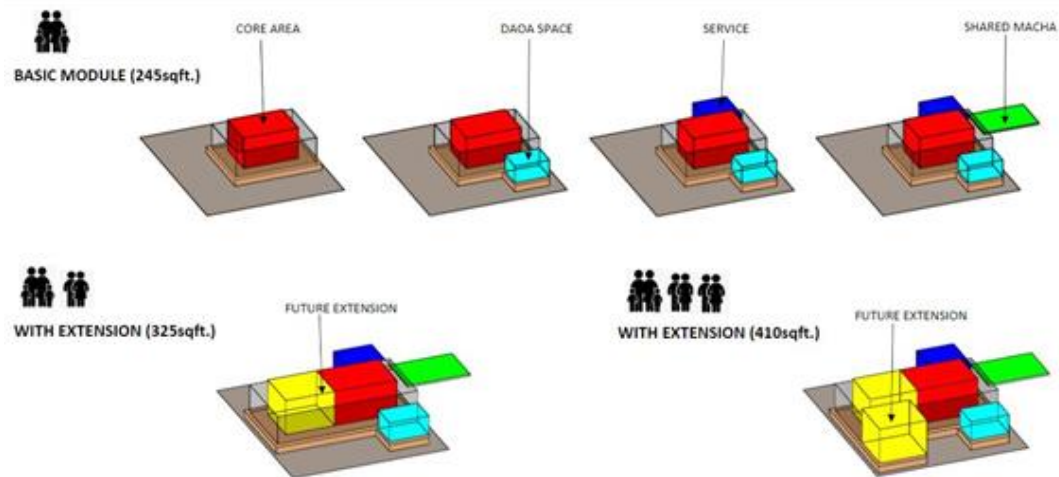


Figure 9. Cluster development (Prepared by author).

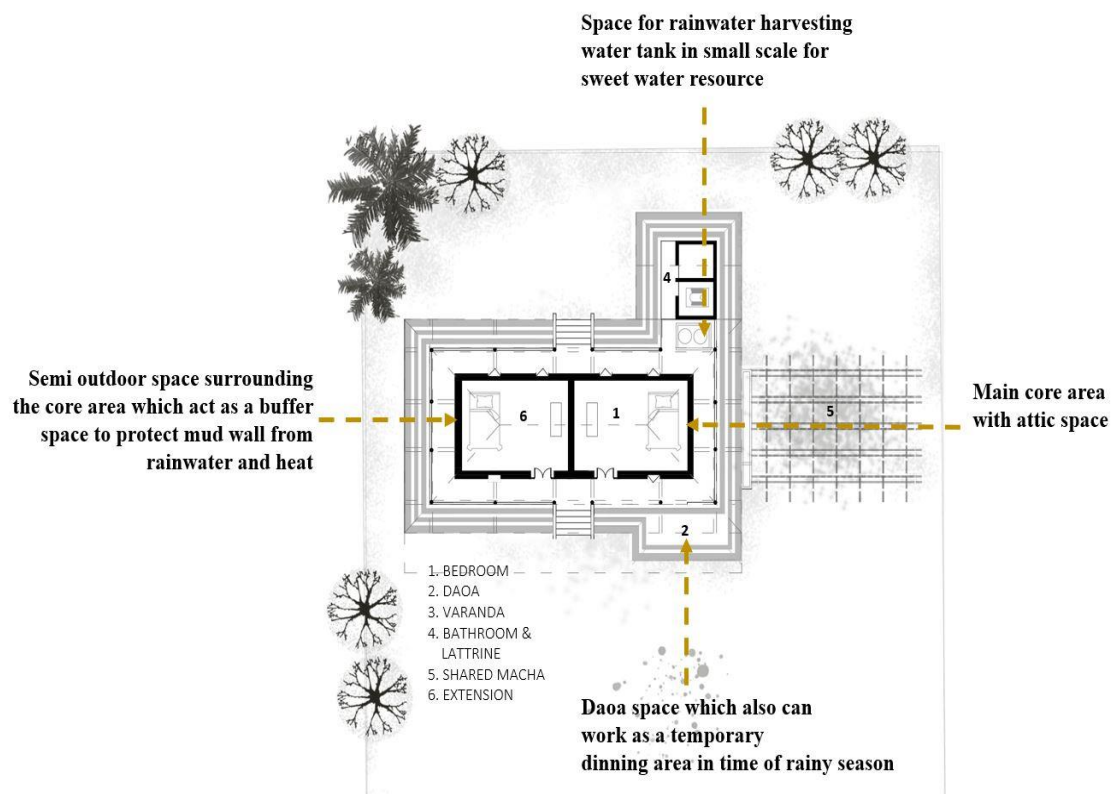


Figure 10. Developed built form Plan (Prepared by author).

Built form was developed considering the context, Mundas traditional building techniques, uses and spatial sequence of spaces. Basic form is generated with core area, *daoa* space, *varanda*, toilet and shared *macha* with cyclone resilient compact design consideration. Scope for future extension horizontally surrounding the core area. Basic module has 245 sqft area with scope of 325 sqft and 410 sqft with future extension in two stages. Cooking space is detached from the main built form likewise traditionally practiced.

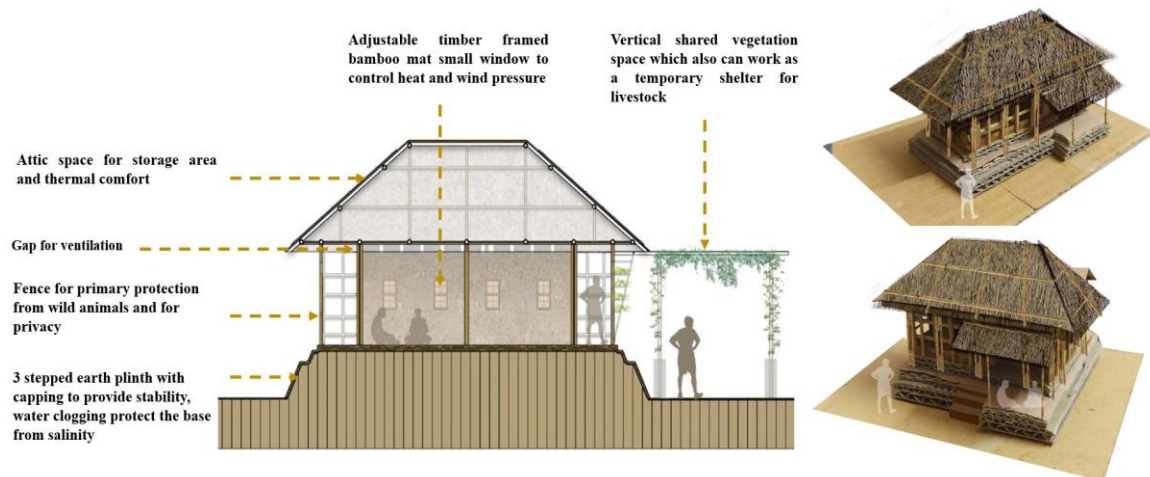


Figure 11. Section and 3-dimensional view (Prepared by author).

### **Structural resilience**

Easily producible, local, sustainable materials (such as: thatch, bamboo, mud mixture, jute, straw) were used to reduce cost. Lightweight materials were used to reduce damage in case of structural collapse during hazards. Capping on plinth to protect from saline erosion, special mud mixture with dried vegetable waste, cow dung and straw was used to increase tensile strength and plasticity of mud. Coal-tar coated bamboo was used to increase lifetime. Cross bracing, reinforcement between mud wall, bamboo slit frame on roof to withstand hazards.

### **Feature for disaster resilience**

Resilience was ensured through three major features; Response, Recover and Adapt. Shared vertical vegetation space can economically help the families. Also, it can be used as livestock shelter in time of water clogging. Hipped roof was designed with 30-degree angle. Varanda surrounding the core area can act as a buffer space for wind, can protect the mud wall inside, also can be used for various activities. In time of a disaster, attic space can be used as a temporary shelter and storage in usual time. Even if the proposed built forms are substantially damaged by severe cyclones, the dwellings may be quickly and simply restored because of the low-cost and lightweight materials.

### **Discussion and Conclusion**

In this age of modernization, people from all over the world are being facilitated by the streamlining amenities of life in every aspect, however the Mundas, an ethnic group of Bangladesh, particularly in the southern half, cannot even meet their fundamental needs. They have almost lost track of their own rich

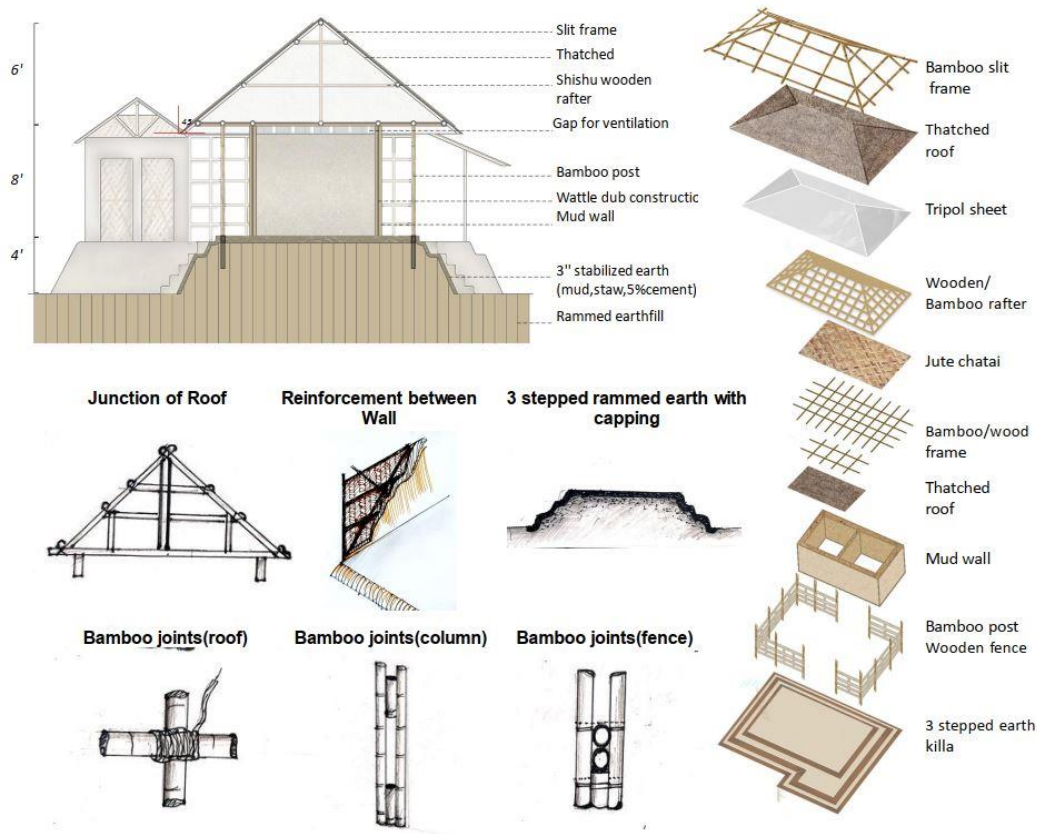


Figure 12. Structural details (Prepared by author).

heritage in the struggle for existence and are on the edge of becoming a forgotten community. According to Paggi (2001), due to a shift in environment and circumstances, it is evident that the Munda people have shifted from their traditional living to a domesticated agro-pastoral lifestyle. On the other hand, Munda people living in the Sundarbans mangrove forest's surrounding areas continue to rely on the ecosystem for their subsistence and livelihood with (Roy,2018). Sundarbans have been a part and parcel of their lives for years now. According to Paggi (2001) the situation for the Mundas of the Sundarbans has worsened due to the rising frequency of disasters caused by climate changes and their geographical location. With the view of Karim (2008) Bangladesh's southern area, is particularly vulnerable to tropical cyclones and tidal waves. Salinity incursion, waterlogging, and surges. Almost every year, disasters cause them to lose their houses, livelihoods, and livestock, and the physical damage is immense. Over generations, the Munda tribe in different parts of India have been using their indigenous knowledge and experiences to survive, cope with, and adapt to calamities. This vast knowledge base has aided in the development of community resilience and coping strategies. However, the Munda community in Sundarbans, Bangladesh possesses a different kind of scenario. Even though the Mundas have been a part of the Sundarbans for generations now, they are still seen as outsiders by the Bengalis and deprived of their basic needs. According to HRCBM (2004) they tried to blend in with the local Bengali community by adapting their culture, as a result their cultural individuality is diminishing day by day. Some government and non-government organizations (NGO) such as, Forest and Livelihood (SUFAL), and Sundarbans Adibashi Munda Sangastha (SAMS) has taken

initiative with the aim to assist this ethnic community mitigating their challenges and preserve their unique culture. However, in order to sustain the goal in long term a holistic development framework should be considered. To secure their social security and traditional cultures, more study and adequate action from the government and NGOs are required.

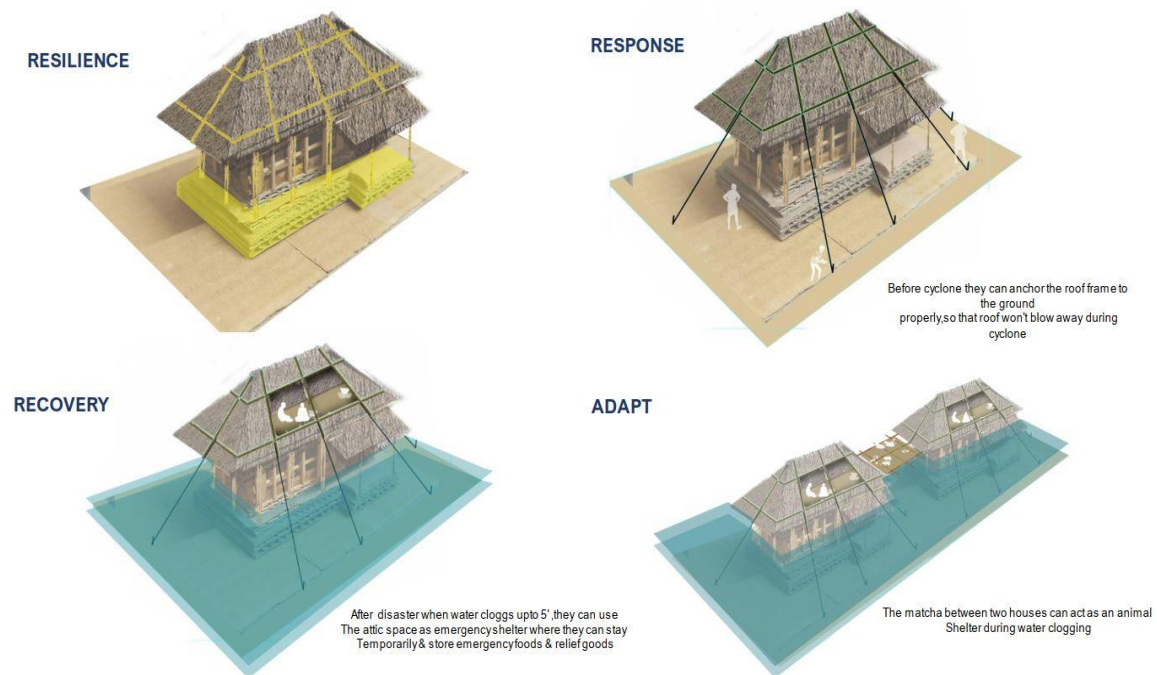


Figure 13. Disaster resilience (Prepared by author).

Throughout this research, an assimilation of indigenous knowledge with architectural interventions was proposed to assist this marginalized indigenous community to thrive while also conserving their ethnicity. The paradigm emphasizes the importance of research-based understanding in integrating indigenous knowledge with current scientific technology and straddling the line between indigenous knowledge and policy interventions. Further study is required to investigate traditional coping mechanisms and protect traditional knowledge guided by scientific understanding of future resilience.

This integrated development has the potential to serve as a prototype for other disadvantaged ethnic groups seeking to adapt to climate change while keeping their cultural identity.

### Acknowledgement

The authors want to acknowledge the contribution of the Department of Architecture, Shahjalal University of Science and Technology. The authors also greatly indebted to the Munda community of Kalinchi village and SAMS (Sundarbans Adibasi Munda Sangstha) for their altruistic cooperation.

### References

- Agarwal, B. (1992). The gender and environment debate: Lessons from India. *Feminist studies*, 18(1), 119-158.
- Blench, R. (2008). Re-evaluating the linguistic prehistory of South Asia. *Occasional paper*, 3, 159-178.



Dutta, P. et al. (2022). Learning from the root- integrating tradition into architecture towards a self-subsistent Munda community. *Khulna University Studies*, Special Issue (ICSTEM4IR): 878-891.

- Danda, A. A. (2007). Surviving in the Sundarbans: Threats and Responses. Doctoral dissertation The Netherlands, University of Twente.
- Das, S. (2014). Changing cultural profile of a tea garden community: A case study of Mundas in Tripura. *International Journal of Innovative Research and Studies*, 3(8), 338-346.
- Human Rights Congress for Bangladesh Minorities (HRCBM) (2004). “*The Mundas in the south-western region of Bangladesh: Their origin and their cultural dimensions*”.
- Karim, M. F., & Mimura, N. (2008). Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh. *Global environmental change*, 18(3), 490-500.
- Krishan, A. (Ed.) (2001). *Climate responsive architecture: a design handbook for energy efficient buildings*. Tata McGraw-Hill Education.
- Paggi, L. (2001). The mundas indigenous people in the South-west coastal region of Bangladesh. *Unpublished research report*, 1-12.
- Parvin, A., and Mostafa, A. (2010), Re-thinking Disaster-Prone Vernacular Settlement: A Comprehensive Strategic Planning towards Disaster-Adaptive Settlements in Bangladesh. Proceedings of 5th International Seminar on Vernacular Settlements (ISVS 5), 30-31 July, 2010, Colombo, Sri Lanka.
- Roy, S. (2018). Book review: gendered lives, livelihood and transformation: the Bangladesh context edited by Meghna Guhathakurata and Ayesha Banu. *LSE Review of Books*.
- Roy, S. (2018). Livelihood resilience of the indigenous Munda community in the Bangladesh Sundarbans forest. *Handbook of climate change resilience*, 1-22.
- Roy, S. C. (1912). *The Mundas and their country*. Bombay: Asia Publishing House.
- Singh, B. (2016). General Population Tables and Primary Census Abstract, Part II-A, B, Series24.
- Sundarban Adibasi Munda Sangstha (SAMS) (n.d.). *About SAMS*. Welcome To SAMS Sundarban Adibashi Munda Sangstha. <https://www.samsbd.org/about-sams/>
- Topno, M. (1955). Funeral rites of the Mundas on the Ranchi plateau. *Anthropos*, (H. 4./6), 715-734.

## Appendix

Semi-structured interview data

<https://drive.google.com/file/d/19smgS7Y1Z8SEEZxYNmcdm2Iefl4BniT9/view?usp=sharing>