



Livelihood Resilience of the Indigenous Munda Community in the Bangladesh Sundarbans Forest

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Abstract

The Indigenous (Adivasi) Munda community in the village of Kalinchi in Shyamnagar upazilla (subdistrict), Satkhira of Bangladesh has undergone severe threats to livelihood due to the long-term effects of climatic disasters (such as: tropical cyclones, floods, salinity intrusion, famine, and heat waves). Kalinchi is situated adjacent to the riverbank of Dhojikhali near the Sundarbans Forest. This is the largest mangrove forest in the world, and it provides livelihood support to a large number of the coastal populations southwest of Bangladesh. The Adivasi Munda Community at Kalinchi has been traditionally earning a livelihood (such as harvesting honey, catching fishes and crabs in the forest surrounding rivers and channels, cutting trees and timbers) in the Sundarbans Forest. The earning of livelihoods was severely threatened, due to the severe Cyclone Aila on 9 May

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2009. This chapter primarily considers the long-term socioeconomic and ecological impacts of Aila on traditional livelihoods in the Sundarbans. The current study then documents resilience with a particular focus on the human livelihood of the untouchable Adivasi Munda Community dwelling near the Bangladesh Sundarbans Forest. An autoethnographic approach combining both focus groups and face-to-face life story interviews has been utilized in this study.

Keywords

Livelihood resilience · Cyclone Aila · Sundarbans forest · Adivasi Munda community · Intersectionality

Introduction: An Overview of Resilience and Livelihoods Literature

Livelihood resilience is a globally pressing subject in critical disaster and cultural studies (Bahadur et al. 2013; Watts 2015). Resilience is conceptualized as the capacity of a system to absorb disturbance and still retain its rudimentary function and structure (Walter et al. 2006). There are two main purposes for building resilience: firstly, to prevent the system from moving to an undesired, alternative regime in the face of climate disaster. Secondly, to nurture and preserve the components of the system that build resilience and allow the system to renew and reorganize after a disturbance (Walter et al. 2006). Broadly, livelihood resilience explores adaptive changes because it provides a way for analyzing how to maintain stability between livelihood resources and livelihood stresses in the face of transformation (Berkes 2006).

There are three main ways for extending the application of resilience in research studies (Tanner and Allouche 2011). Firstly, resilience can be regarded as an “end” process and a product of that process. It is contingent on social values concerning what is deemed important, and how to allocate resources to foster it. Disaster survivors may be continually locked into resilient but undesirable states of poverty and marginalization (Tanner et al. 2014). That is, disaster shocks at times paralyze the community and shackle them into poverty. The southwest coastal inhabitants of Bangladesh are solely dependent on a monolithic livelihood option in the Sundarbans Forest (Roy 2013).

Secondly, values and ideologies are translated into the activities and institutions that characterize livelihood resilience (Tanner et al. 2014) in the Munda Community in Kalinchi. The Adivasi Munda Forest Community has drawn a low level of priority from the local government to deal with hazards, livelihood insecurity and mitigation. The Munda people, who are locally treated as *Buno* (forest people), have inadequate access to political and economic power for earning a livelihood without the Sundarbans (Paggi 2001; Sharmeen 2013). For example, resilience in ecosystem services for human well-being needs to focus more on whose needs are being met, and on the politics of ecosystem management and distribution of benefits (Beymer-Farris et al. 2012). For livelihoods, the Munda Community have been surviving with

unequal power relations, differing access to resources, and issues of inequality for many years (Sharmeen 2013; SAMS 2016). The local institutions (such as local government, development NGO) could not ensure livelihood benefits for the marginalized groups (Roy 2013). Hence, it is of utmost importance to ensure the beneficiaries' interests in the process of resilience.

Thirdly, despite disasters, impacts manifest through local ecosystems and the focus of resilience thinking on "natural" systems may lose sight of the people inhabiting these ecosystems. Both disturbances and responses to the shocks of disasters are determined by levels of on-the-ground social inequality, rights and unequal access to resources, poverty, poor infrastructure, lack of representation, and inadequate systems of social protection, planning, and risk management (Tanner et al. 2014). The unevenness of these factors translates climatic fluctuations into disproportionate concentrations of suffering and loss (Tanner et al. 2014). These issues have been historically experienced by the inhabitants of the Munda Community in Kalinchi (Roy 2018; Guhathakurta and Banu 2017).

The livelihood of a rural poor community includes the capabilities, assets (stores, resources, claims, and access), and activities required for a means of living (Chambers and Conway 1991 cited in Tanner et al. 2014; Roy 2013). Livelihood resilience as a process depends on a number of issues, such as previous condition, the time between disturbances, and their severity. The social infrastructures and institutions are one aspects of socio-ecological resilience which emphasizes peoples' capacities to absorb and recover from hazards and disturbances (Reid and Vogel 2006). This study takes a Munda people-centered perspective on resilience that emphasizes not only the ability to absorb shocks and recover from cyclone Aila but also livelihood improvement, despite hazards and disturbances.

Bangladesh is acknowledged as one of the most vulnerable countries due to its exposure to frequent and extreme climate events, such as cyclones and associated storm surge. According to Center for Research on the Epistemology of Disaster, globally 606,000 lives have been lost and 4.1 billion people have been injured, left homeless, or in need of emergency assistance as a result of climate change induced disasters (Kaluarachchi 2018). According to Paton and Johnston (2006), the magnitude of physical hazards, poor land-use decisions, and unenforced public policy are the main causes of disaster-related death and casualty. Susceptibility of communities to loss from hazards could be reduced by creating a community that is resilient (Johnston et al. 2006). According to the International Strategy for Disaster Risk Reduction of the United Nations (2014), Bangladesh is ranked as the most disaster-prone countries in terms of the impacts of tropical cyclones. Cyclone-related immediate and long-term death rate was highest in Bangladesh amongst other cyclone prone countries at 32.1 deaths per 100,000 people over 100 years (UNDP 2004).

The southwestern coastal areas of Bangladesh were heavily impacted by Cyclone Aila, which struck on May 25, 2009. Despite the fact that Aila (2009) was a weak cyclone by classification, its monetary cost exceeded the effects of Sidr (2007) for the general population of southwestern Bangladesh (Roy 2013). About 2.3 million people were affected by Aila, and many of them were stranded in flooded villages as they had no alternative to save themselves (Mallick et al. 2011). Most of the

Aila-affected people could not reach a safer place due to the rush of seawater intrusion and inundation of roadways. The effect of subsequent saline water intrusion inside embankments caused the destruction of houses, roads, and culverts. This added more obstacles to the post-disaster activities and also increased the sufferings of those affected. The coastal residents were impoverished and lived in poorly constructed houses, and the cyclone shelters were inadequate to protect them all (Paul and Dutt 2010). In a previous cyclone, Gorky in 1991, the loss of lives was largely attributed to a lack of adequate housing capable of providing shelter (Mathbor 2007). Casualties due to Gorky were directly related to the types of housing and shelter seeking activities; no deaths occurred among individuals living in pucca houses (made of brick and concrete) and the ones who sought shelter in these buildings (Mathbor et al. 1993). During Aila, a large number of people lost their houses and livelihoods along with capital equipment (Mallick et al. 2011). These situations called for community capacity building that encompasses housing conditions, livelihoods, and preparedness regarding the cyclone's consequences (Vogt et al. 2009).

People of the Aila affected area employed a range of strategies for their survival. Some strategies involved diversification of income sources by seeking second jobs, cultivating a variety of crops including saline tolerant rice, vegetables on floating beds, and poultry and livestock rearing. At times, the Aila affected people utilized their social and family relationships for continuing survival in the local town of Shyamnagar (Roy 2013). According to Hussein and Nelson (1998), livelihood diversification is normal for most people in rural areas and nonagricultural activities are critical components of the diversification process. People with better socioeconomic circumstances were more likely to cope with impacts and were better prepared in responding to the aftermath of Aila (Roy 2013). However, effective utilization of social capital, such as, social networks, social cohesion, social interaction, and solidarity, are crucial for the capacity building of the community (Mathbor et al. 1993). In this regard, various community activities, such as Community Risk Assessment and Risk Reduction Action Plan, can act as a catalyst towards building a resilient community in post-disaster situations (Department of Livestock Services n.d.). Community people may take part directly in the development process of disaster preparedness activities to reduce the disaster risk (Miththapala 2009). This approach places community people at the heart of decision-making and implementation of disaster risk management activities (Miththapala 2009).

In this chapter, livelihood resilience is defined as the capacity of the Munda people to sustain and improve their livelihood opportunities and wellbeing despite environmental, economic, social, and political disturbances caused by a disaster event, like Cyclone Aila. The resilience, hence, depends on the Munda people's agency and capacity to combat the disturbances within the dynamic social transformations that occurred in the post-Aila period within and beyond Kalinchi. Thus, the Adivasi Munda Community, as the primary player, is engaged with a wider development process concerning their livelihoods in the Sundarbans (Perucca 2013) and beyond.

Case Study: The Adivasi Munda Community

The researcher considered autoethnography as an approach to “research and writing” that seeks to describe and systematically analyze (graphy) personal experience (auto) in order to understand cultural experience (ethno) (Ellis et al. 2011). This approach was utilized along with two focus groups (one with the Munda females, another with the mixed group participants) and fifteen life story (livelihood stories) interviews. In addition, direct observation was conducted in the Sundarbans Forest and households of the Munda people. A gatekeeper (a Munda male, who is a college student aged around 22) was voluntarily recruited before the fieldwork, to introduce the researcher to the Munda Community. This allowed the researcher to establish a rapport and build trust with the Mundas. A total of 30 participants (15 males and 15 females) aged around 35–80 were recruited through purposive sampling technique. This age group was selected to allow the participants to share their past memories of Cyclone Aila, along with its associated consequences on the livelihood and local infrastructures. The researcher conducted 3 months (April 2018 to June 2018) of fieldwork in Kalinchi. Before starting focus groups and interviews, the researcher clearly explained study aims to participants and recorded their consents. Each focus group lasted for 90 min, whereas a life story interview consumed around 50 min. The researcher conducted the life story interviews and moderated the focus groups. An audio recorder was used to tape conversations in focus groups and life story interviews. Participants in life story interviews shared livelihood-earning stories and described impacts of Aila on livelihood activities in the Sundarbans. The transcribed focus groups and interview data (Bengali texts, direct quotes) were coded. Afterwards, the thematic analysis (Braun and Clarke 2006) was utilized to develop key-themes and associated subthemes of the study.

Discussion of the Results and Findings

An Overview of the Adivasi Munda Community in Kalinchi

According to the Article 23A of the Constitution of Bangladesh, “the state shall take steps to protect and develop the unique local culture and tradition of the tribes, minor races, ethnic sects and communities.” This article does not recognize Munda people as an indigenous community; rather it defines Munda as an ethnic community. Despite this debate, research studies (Perucca 2013) recognize the Munda Community as an indigenous community. The Munda Community has retained their own language (Mundari), food (a local drink of *Haria*), cultural performances (such as singing, dancing, worship, caste system, marriage, drama, and clothing), and faith in animism (Sharmeen 2013). Due to globalization, cultural transformation, and in the hope to be integrated with the mainstream Bengali Community, the Munda Community in the greater Shyamnagar region has been practicing rituals of Hinduism in the recent past. Apart from this, inhabitants of the Munda community also prefer to

represent themselves as an indigenous community. Since 2003, the SAMS (Sundarban Adibasi Munda Sangstha) has been intervening to build cohesion within the Munda Communities.

There are around 1770 Munda males and female inhabitants living in the greater Shyanmanagar region, where 27 Munda households are found at Kalinchi (SAMS 2011). Unfortunately, the Munda Community does not own the land, on which they have been living for many years. According to the elderly male participants, for establishing landownership, the existing Munda people have been fighting with local land grabbers and some elites of the Muslim community, who are involved in the local politics at Kalinchi. The ancestors of the current Mundas also fought for the ownership of land, in which they had lived in.

Since the war of independence of Bangladesh in 1971, this community has experienced severe threats of climatic disasters, such as cyclones (that happened in 1988, 1991, 2009), flash floods, drought (1974), on-going salinity intrusion in the farming land, and severe scarcity of pure drinking water. The long-term effects of these disasters have positioned them to earn their livelihoods from diverse sources including the Sundarbans Forest. Despite this, the socio-environmental perspectives and identities of the Munda community with the Sundarbans forest in the post-Aila largely shape their economic geographies and earning of livelihoods (Perucca 2013).

Socio-Environmental Identities of the Munda People with the Sundarbans

“The relationship between human beings and forests has been important for the development of society” (Ritter and Dauksta 2013, p. 645). This relationship particularly between a natural resource-dependent community (such as, Munda) and the Sundarbans Forest is constructed through the provision of cultural, spiritual, and symbolic roles of forest. Likewise, Munda forest peoples have been essentially utilizing the Sundarbans Forest since the British colonial era for obtaining socio-ecological, entertaining, cultural, and economic support services. Through obtaining such services, the Munda people of the Eastern and Western Kalinchi have developed an in-depth ecological knowledge (Houde 2007) about harvesting resources in the Sundarbans.

The in-depth socioecological connections, the Munda people have developed through their direct contact with the Sundarbans and its resources are unique. Such connections have been built up through cutting wood, gathering honey, fishing, and receiving ecological protection of the forest during and after climatic disasters, such as river erosion, salinization, and floods. These are supported by long-established traditional ecological knowledge (Berkes et al. 2000), which has been following adaptive processes and passed down through generations by cultural transmission for years within the Munda Community and beyond at Kalinchi. The direct involvement of the Munda people with the forest is, of course, specific to Kalinchi, and it includes their associations with trees, conquering the threats of wild animals (tigers, deer, estuarine crocodiles), honey gathering in the risky hives, fishing in the adjacent



Fig. 1 Relics of a colonial-era salt industry, source: researcher's fieldwork

river channels, canals and large tracts of the forestland in the Sundarbans. In addition, the Munda peoples' traditional ecological knowledge integrates techniques, which are related to both legal and illegal hunting inside the forest, fishing, trapping, and conserving forest for obtaining future livelihoods in the Sundarbans.

There is a deep ecological bond between the Munda Community, Sundarbans, and Kalinchi itself. Historically, the construction of ecological bonding of the Munda people commenced when they had started clearing the Sundarbans Forestland for expanding agriculture during the British colonial era. This was done to promote the economic interest of both colonial administrators and local zamindars (landlord) of the greater southwestern region of Satkhira and Jessore. Utilizing the physical labor of the Mundas, the colonial administrators established an industry inside the forest. While conducting observations inside the forest, a relic (Fig. 1) surrounded the river Dhojakhali and small canals were visible to researcher.

While asking the about history of relics to a Munda boatman (The boatman, aged around 55, has been plying motorboat for the domestic and international tourists since 1993. He is originally a high school graduate, and capable of describing the history of Kalinchi and Sundarbans forest to the visitors. His ancestors used to earn livelihood through boating domestic and international tourists in the Sundarbans.), who accompanied the researcher in the forest, he informed that:

The relics is originally a part of a colonial-era salt industry. It is assumed that the colonial administrator constructed this salt industry. Saline water was utilised to run the industry. This was first explored around 100 years ago by a tiger hunter, who was a brave Munda male. He observed the relics while checking the footprint of a tiger in the forestland. Returning to

Kalinchi, he informed the local forest office and local residents about the sault industry. Over the years due to the over exploitation of the forest resources and authoritative interest in the post-colonial forest administration, the salt industry (pictured above) has been damaged.

The Munda boatman also confirmed that:

The first wooden boat that the Munda people utilised for going to the Sundarbans and plough (wooden) for cultivating forest land were made of sundari wood. During that period the edible fishes gathered from the canals and rivers were burned into the firewood and leaves gathered from the Sundarbans. Interestingly, livelihoods of the Munda people were then largely dependent on the traditional agriculture. Munda people cleared the forest to make space for fields and pastures. This hindered regeneration of the mangrove twigs, plants and the natural expansion of the Sundarbans forest land.

There was a lack of regulations for protecting resources of the Sundarbans and its land during the period of colonial administration. This administration developed the first forest act in 1927 for conserving Sundarbans. The laws were not strictly followed thinking the protection of the broader ecological future of the forest. This lack of legal regulations encouraged both colonial administrators and Munda Community to remove a considerable amount of sundari (*Heritiera fomes*) and gewa (*Excoecaria agallocha*) timbers. These were exported to several East Asian countries. This timber trading gained enormous popularity in the colonized Kalinchi. This would link the then Sundarbans Forest to the East Asian countries opening new opportunities for tourism. In contrast, it resulted in a significant depletion of the forest timbers, which were valuable to Kalinchi and the ecology of the Sundarbans itself. Trading timbers generated a considerable amount of revenue to the forest administrators. Unfortunately, the forest was not managed sustainably by the colonial administrators. The amount of revenue earned through timber trading was not disclosed to the Munda forest people. As a consequence, there was no financial incentive to manage the Sundarbans forest sustainably. In addition, the colonial administration and the zamindars forced bolder Munda young males to hunt a great considerable amount of Royal Bengal Tigers (Bagh) and deer from the forest. The hunted tigers' hairs and skins were given as gifts to the leading colonial administrators and zamindars. These were used for decorating the living rooms of the colonizers and zamindars. The local Muslims and Hindus at Kalinchi called the Munda people as *Buno* (which means primitive people of the forest) because they were involved in hunting tigers, gathering forest resources, and clearing the Sundarbans.

While harvesting forest resources and trading timbers were enhancing the economic interests of the colonial administrators, the groups of Munda people brought from Ranchi informally interacted between them and with groups both inside the forest and at Kalinchi. This was done through the maintenance of the internal networking among Munda people. This allowed them to share experiences of harvesting forest resources, adopting the rules and regulations imposed by the colonial administration and continuation of the clearance of the forest. Following animism as a spiritual faith, some Munda males wedded females, who lived in other

villages near Kalinchi. Their livelihoods both before and after wedding were earned from the Sundarbans Forest. Historically, the socio-environmental identities of the Munda people represented a collective group centering on hunting and gathering in the greater Sundarbans Forest region. This is also an outcome of the traditional ecological bonding of the Munda people with the forest and Kalinchi. It reflects their contacts and attitudes towards the forest, which are linked to the socio-environmental identities of the Munda Community in the greater Kalinchi region.

The Forest Act of 1927 confirms Sundarbans as a reserve forest, which was regulated by the state-led Forest Department. There was a lack of execution of this law, which enabled the Munda people to frequently and illegally harvest logs from the forest's enormous resources. It also ensured their access to the forest without obligations allowing them to roam the forest for checking the availability of resources and their possible extraction mechanism. While carrying out resources extraction for many years, the Mundas within the Munda Community developed an in-depth understanding that Sundarbans was a forest under their ownership. Perceiving this indirect ownership of the forest, obtaining its protection from natural disasters (such as: cyclone, flood and river erosion) and utilization of resources for recreational services (tourism) confirm the long-established socio-environmental identity of the Munda forest community. Munda people believed that to have access to the forest and harvesting resources expressed authority, a sign of wisdom, shelter for life, and fertility. Primarily practicing these beliefs through worship of *Bonbibi* and other trees and the sun as they were considered as sources of energy, longevity, and welfare. The Munda forest community gradually organized themselves as a collective group at the greater Kalinchi for the further continuation of livelihoods in the Sundarbans Forest.

Globally forests have been manipulated through hunting, gathering, and shifting cultivation, used primarily for agriculture and commercially intensive consumption for industrial products and processes (Russell 1999 quoted in Ritter and Dauksta 2013). Historically, there is evidence that Kalinchi's Munda Community were involved in small-scale hunting of wild animals and fishes for supporting the colonial administration. There were very poor literacy skills among the Munda people due to the use of *Shardi* as their primary language of communication since their arrival to Kalinchi. Lacking literacy skills inadequately positioned the Munda Community to develop a broader sense of self-determination, which limited their relations with the remaining Hindus and minority of Muslims in Kalinchi. This double burden obliged them to strictly follow the colonial rules of clearing forestland and continuation of hunting and gathering in the Sundarbans. A female participant noted that "the British colonial administration and zamindars forced our husbands to serve as slaves. We were compelled to follow the colonial regulations for clearing the forest. We were collectively thinking to get rid of the severity of lives inside forest."

During the British colonial administration, there was no industry available at the broader Shyamnagar region, where forest products could be commercially utilized and processed. At the end of colonial administration, the Munda Community realized that hunting- and gathering-based livelihoods in the Sundarbans made their lives and survival precarious. This perception led them to look for an alternative

source of livelihood by reducing their dependency on the Sundarbans. The Munda people then engaged in rain-fed agriculture and started serving as a domestic labor to the Hindu and Muslim households in Kalinchi. The Munda Community and their utilization of the forest for gaining monetary benefit drew significant attention of the post-colonial administration of the then West Pakistan. The forest department of the post-colonial administration imposed an official order on the Munda community for an inadequate use of the forest resources, which intervened in the traditional earning of livelihoods in the Sundarbans.

Hossain (2011) in the Bengali book entitled *Satkhira Zillar Itihas* (The History of Satkhira District) stated that after abolishing the British colonial administration in 1947, two independent nation states – Indian and Pakistan – emerged. This emergence separated the unity between Muslims and Hindus in the greater Indian subcontinent. According to mixed focus group participants, the majority Hindus, some Muslims and people from other castes and creeds were included in current India, whereas majority Muslims and a little number of Hindus were placed in current Pakistan East Pakistan and West Pakistan. Before the war of independence (1971), the current Bangladesh was part of East Pakistan (East Bengal), where Hindus, Muslims, and Adivasi communities lived with solidarity, peace, and unity. The administrative and political power was vested in West Pakistan. Between 1947 and 1971, the administration of the West Pakistan ruled the Eastern Pakistan (current Bangladesh), where a majority were Bengali people. During the formation of Pakistan as an independent nation state, it was governed by the army-backed administration. This administration only included the majority of the elite class inhabitants of the West Pakistan, except some chosen few from the East Pakistan. As a result, having no representation in the governance and political system, majority inhabitants of East Pakistan experienced marginalization occupying secondary status in citizenship; severe unemployment; sociopolitical, cultural, and linguistic exploitation.

According to an elderly participant, the existence of East Pakistan in terms of its land, sovereignty and the economic contribution of the people to the national income were not recognized in the constitution. This participant also reported that the political exclusion and inadequate constitutional recognition of the West Pakistan administration particularly compelled the Hindus and indigenous communities (who were living in and around the southwest coastal regions of the then East Pakistan) to realize the crises of “identities” and “existences.” The involvement of the Munda Community in agriculture, forest and landownership, as well as economic marginalization was not drawn to the attention of the local administration of the West Pakistan. Living within the duality of lacking recognition from the Kalinchi’s local authority and continuous struggle for a permanent source of earning, a considerable number of young males of the Munda Community expressed a reduction in earning capacity in the Sundarbans Forest. In contrast, the elderly people were involved in the paddy production, serving as domestic servants, and performing at the land cultivation activities. These small-scale paid jobs were done by the Munda males during this period. Females tended to occupy the domestic sphere cooking at home and caring for livestock including cows, pigs, and goats within their homesteads.

Effects of Aila and Associated Climate Stressors on the Forest-Based Livelihood

There have been three main impacts – immediate, short-term, and long-term – which cyclone Aila created, according to the participants in the focus group. These have affected the livelihoods of the inhabitants of the Munda community since Aila in 2009. As a result of Aila, there was severe damage to cyclone centers, roadway, and mud-built houses. The subsequent floods also washed away saline water ponds used for fishing (Gher). Aila's severe wind velocity imperiled a large amount of woodland of the Sundarbans Forest and affected the Munda peoples' everyday forest-going activities.

In the absence of adequate numbers of cyclone shelters, the Munda people sheltered on the rooftop of the primary schools and top branches of trees. Many women and children, who did not know how to swim, died while moving to a safe place. According to female focus group participants, there was an acute scarcity of pure drinking water, dry foods, and sanitary equipment, which are considered as essential requirements for the Mundas immediately after a cyclone. There were differing immediate livelihood impacts as a result of Aila on the inhabitants of Eastern Kalinchi and Western Kalinchi. The west Kalinchi Munda Community is quite isolated from the upazilla of Shyamnagar. This isolation seemingly delayed and slowed down the provision of the support services from local and national NGOs and public services from the Government of Bangladesh, according to a male elderly participant. This also created inertia in managing the immediate shocks experienced by the Munda Community.

A male focus group participant stated that:

Cyclone Aila's short-term consequences hindered recovery; limited the overall livelihood restoration process; and turned the previous brief saltiness issue into a lasting one. The short-term effect of Aila included complexities around economic and social inequalities (such as: physical security, constraints in finding out a good source of cash income, homelessness), which further led to livelihood insecurities in the long-term both in the Sundarbans and other alternative sources. Due to the salinity water trapped in the fishing pond, there was a sharp decline in the shrimp cultivation in Gher, where Munda people used to work as day labourers.

Due to Aila (2009), seawater entered and submerged farmlands, fresh water fish-ponds, and vegetables growing areas. Subsequently, numerous farmers in the entire southwest waterfront locale, including the ponder zone, could not proceed with ordinary crops and fish cultivation as a result of non-accessibility to freshwater and water system infrastructure. These calamities constrained numerous individuals and groups to move to saline water shrimp cultivating (Baghda). The traditional "Gher" aquaculture had been practiced in coastal areas to grow shrimps and other white fishes long before the introduction of current shrimp culture practices. During the 1960s, a large number of coastal embankments were constructed to protect agricultural land in the coastal areas from tidal waves and saline water intrusion. Since the 1970s, strong international market demand and high prices for shrimp

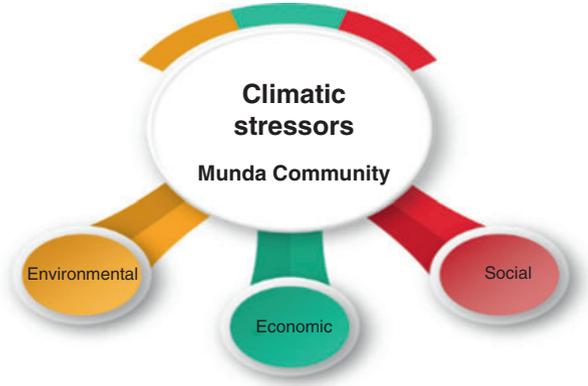
product have encouraged farmers to recommence shrimp farming in polders within the embanked areas. Contrastingly, to cultivate rice was no longer financially viable because the polders had become waterlogged due to poor drainage.

Saline water shrimp cultivation is financially more profitable than the freshwater shrimp cultivation (Galda). The observation data reveals that the conventional Munda fish farmers adequately took part in shrimp culture in the hope of earning high capital. Due to the long-standing floodwater, there was a high level of salinization in the agricultural land of Kalinchi. This further encouraged the fish farmers to be engaged with Galda cultivation. The Munda female fish farmers reported that saline water shrimp cultivation has significantly replaced the traditional rice cultivation in the farmland since 1983 to date. This was anticipated to cover in excess of 75% of rural land by 2020. Historically, the Munda people had undergone severe financial hardship, which further expanded in post-Aila. This ultimately discouraged many farmers in developing shrimp businesses in the study site. In this circumstance, the Munda people were able to continue earning a livelihood in the Sundarbans despite the stress on earning capacity through the environmental shock caused by Aila.

Since Aila (2009) to date, there has been an increase in bribery of forest officials to gain access to the Sundarbans Forest. The Munda forest dependents have usually paid a high-level bribe particularly for harvesting honey, which annually begins in April and ends in May. In the remaining 10 months, Munda forest people go inside the forest to net crabs, catch juvenile shrimps, and white fish. For this, they also need to pay a bribe to both the local forest officials and the ranger inside the forest. Participants frequently reported that after Aila, there were numerous robbers inside the forest. Asking for a ransom from the fisher folk is a good way for the robbers to earn their livelihoods. A participant opined that he was robbed quite a few times by a troop of armed robbers, but he was freed when he gave money amounting to at least Taka (TK) 15,000 each time. In the post-Aila period, earning a livelihood in the Sundarbans has become increasingly difficult, which in the long run has trickled down to the poor economic situation of the Munda Community in Kalinchi. Figure 2 shows that Mundas have been undergoing three key climatic stressors – environmental, economic, and social – affecting traditional livelihoods in the Sundarbans Forest. A participant opined that over the years due to the climatic stressors, there was a significant reduction of cash income in the Sundarbans Forest. In particular, the large-scale extraction of forest resources (honey, trees) through illegal logging has decelerated the regenerative functions of the mangrove saplings. The Forest Department does not undertake reforestation of mangrove plants.

The male focus group participants reported that before Aila, there was only one cyclone center in the Kalinchi that did not accommodate all of the community during a disaster. During Aila, a large number of people lived in a confined space, which created unhygienic sanitation and caused health hazards. The participants suggested that the government could aid locals to build their own housing capable of resisting cyclones rather than investing in poorly managed cyclone centers. However, in the Munda Community, the male focus group participants revealed that they are now moving from one economic activity to another. This is how the stressors are affecting income of the people Munda Community.

Fig. 2 Climatic stressors that the Munda Community experienced due to Aila



Present Livelihood Context

Cyclone Aila disturbed the ecosystem of the Sundarbans in various ways. The sway of Aila on honey and wax harvesting had significant negative impacts in the Sundarbans. The male focus group of the Munda Community revealed that honey harvesting had plummeted during the Aila period. This caused a severe economic loss to the honey gatherers, who are locally known as *mawali*. During the absence of honey collection, many Munda forest dependents migrated from Kalinchi to the divisional town of Khulna and Barisal in the hope of being employed in the paddy field for harvesting rice. Three years after Aila, the harvesting of honey is back to its normal pace.

Figure 3 shows the varied livelihood approaches that the Mundas have adopted post-Aila. The Munda people have utilized traditional ecological knowledge, which their ancestors used for harvesting honey, chopping wood, trees and timbers in the Sundarbans Forest. The Forest Department did not offer scientific training to the Munda forest people for gathering forest resources in the Sundarbans. Therefore, an excessive extraction of forest resources has caused a significant decrease in honey, timbers, wax, golpata, fish, shrimp, and seashell inside the Sundarbans, as narrated by an adult Munda fish catcher.

Post-Aila, the local Forest Department has become more alert about the extraction of forest resources. The strict enactment of the forest law inadequately enables the people to collect honey and catch crabs and fish in the forest’s contiguous channels and small rivers. A focus group participant reported that “pre-Aila, there was availability of deer meat in the forest surrounding coastal villages. The dishonest hunters in collaboration with the officials of the Forest Department killed the deer inside the forest, and sold the meat in Kalinchi. Deer meat was sold at a high price. For example, 1 kg of deer meet cost around TK. 1000. Post-Aila, due to strict monitoring by the forest guards (staff of the Forest Department) in the Sundarbans, the extent of deer hunting has significantly reduced”.

Historically, inhabitants of the Munda Community have led their lives under extreme poverty. They have been dependent on the Sundarbans and local agriculture



Fig. 3 Livelihood approaches that the Munda Community adopted in Kalinchi

for their subsistence for the last 200 years. The elderly members claimed that they were brought by the zamindars, during the British colonial administration, to clear land to expand agriculture. In the Sundarbans, members of the Munda Community would primarily catch fish and collect wood, which was transported to their homes for their family's consumption such as food, firewood, fencing, house building roofing, and so on. In terms of agriculture, both males and females have served as day laborers for cleaning Gher (saline water fishpond) of weeds. During the 1980s, many males served as domestic servants to the houses of local elites of the Muslims and Hindus. They were recruited for 12 months for the purpose of household activities and working in the farmlands for cultivating rice and vegetables. This employment would ensure that expenses were covered with regard to daily food, accommodation, and health. The Munda males established trust and faith working as domestic servants in the greater Kalinchi region.

Gher cultivation was introduced at Kalinchi in 1983. The Gher landlords are the local Muslim elites who are the principal landowners in the area. Working in the Gher generated a new form of livelihood. The Gher cultivation requires only a minimal amount of labor to initiate saline-water fish culture. Some Munda females were recruited as cheap laborers for ploughing Gher land and subsequently applying fertilizer. There is an income disparity for working in the Gher. The Munda males' 6 h of work at the Gher earns around TK. 200, while for similar work, a female laborer earns only TK. 120. This gendered wage gap reflects patriarchal dominance of the Muslim elites in the study site. Nowadays, the Gher laborers demonstrate a negative perception about Gher cultivation. It was reported that Gher cultivation has increased salinity in the farmland, restricted the movement of cattle, and significantly reduced the production of rice paddies and other crops. Participants considered Gher cultivation as a curse for them, as in the long run it has completely constrained the opportunity for agriculture posing a severe threat to livelihood.

Due to the gradual increase of thieves and fear of the wild animals (such as tigers and estuarine crocodiles) inside Sundarbans in the recent past, there is an uncertainty about the future livelihood of the Munda Community. Cyclone Aila has caused a shift in males' access to an income. A decent portion of Munda young males (aged around 25–35) has employed themselves in the brickfields in Barisal region. This seasonal employment lasting around 6 months (commencing in the Bengali month of Kartick and until the end of Chaitra) involves gathering soil for making bricks, transferring water for converting soil into mud, preparing the kiln, manufacturing bricks, and moving bricks from the kiln to trucks. The value of these 6 months of employment is between TK. 50,000 and 60,000. Treating the human body as a machine for earning livelihood, Munda males (who are the workers in the brickfield) reported that working in the brickfields is an extremely physically labor-intensive job. The working conditions are really poor in the brickfields. Females are usually recruited for cooking in the brickfields though their numbers are few.

After Aila, there is a growing interest in building a crab industry at Kalinchi and at the greater Shyamnagar region. Crabs caught from the Sundarbans Forest surrounding rivers and canals are fattened at home; afterwards, they are sold in the district town, Satkhira at a higher price (a female crab weighting 300 g is sold in TK 600). The large sized crabs have a demand in the international market of China, Hong Kong, and Singapore as reported by a female participant, who is involved in crab fattening in her homestead. This new economic possibility in the post-Aila has generated a new livelihood approach for the Munda people. Interestingly, participants in the male focus group suggested that the existing laws and regulations for crab collection should be revised. Participants also noted that the Forest Department is not intended to revise the existing laws thinking the need of the local residents who have been catching crabs as their sole means for livelihood. It has also been suggested that crab collection should be stopped in the April-May period, which is the reproduction time of the crab. One of the suggestions included “it would be better to revise the current laws governing the crab collection.” It also requires keeping in mind about the reproduction phase of the crab. This will allow crabs to grow more so that residents can get more benefits out of it.

Despite the fact that the Munda Community has a historical socio-environmental connection to the Sundarbans forest, SAMS together with Relief International (RI), an NGO, initiated a project entitled “Promotion of Local Culture in the Sundarbans Impact Zone in Bangladesh through Cultural Eco-tourism and Entrepreneurship.” This project began in late 2014 with the Munda Community living in and around Kalinchi and the broader Shyamnagar region. The objective of this project was to engage Munda people for expanding the heritage of the Sundarbans forest and culture of the Munda people to domestic and international tourists. Through this project, 10 cottages were built in the Munda Community. The cultural team from the Munda Community received financial support to purchase musical instruments, costumes, and materials required for cultural performances. In addition, members of the community were trained as eco-guides, in hospitality and services, in finance and in security, while their performances have been streamlined to include diversity. Mixed focus group participants revealed that ecological cottages have engaged



Fig. 4 Eco-cottages established by the Relief International in the Munda Community in Kalinchi. (Source: researcher's fieldwork)

18 families of the Eastern Kalinchi Munda Community, allowing them an opportunity for making money from the domestic and international tourists. There is an influx of tourists in December, January, and February. The tourists visiting Sundarbans are accommodated in the eco-cottages (Fig. 4) built within the homesteads of the Munda Community. The money earned from the tourists are equally distributed among the families involved in eco-tourism. A Munda female reported that:

I have been cooking for the tourists since 2015 to date. The Relief International has trained me on cooking hygienic food. I have been usually earning around TK. 5000 between December and February. During these months, many tourists come to Kalinchi to visit the Sundarbans forest. The tourists like to take our local food and prefer to entertained through songs and dances performed by the Munda cultural team. Cooking for the tourists has indeed created a new livelihood for me. Nowadays, I do not go to Dhojakhali for fishing.

In the post-disaster period, the diversification of livelihoods is considered as a process in which rural households adopt increasingly wider varieties of livelihood portfolios combining many distinct resources and assets (Niehof 2004). In addition, diversification encompasses a variety of dissimilar income sources of the disaster affected to support their livelihoods in a particular geographical location (Niehof 2004). Livelihood diversities post-Aila can be viewed as adaptive and survival strategies, which create space for continuous basic support by providing extra monetary income and resources to rural households (Ellis 2000). The diversification of livelihoods among the Munda Community in eco-tourism, which was explained earlier, exposed their traditional culture, and ensured an annual fixed income from tourists. Moreover, it has given economic sustainability among the Munda peoples households in the study region. According to the male focus group participants, 70% of Munda males rely on catching several fish varieties (such as: Basa, Vatkee, Passaya, Tangra) and harvesting honey for livelihoods. If the Forest Department

enforces the relevant rules and regulations, it obstructs Munda people's livelihoods in the Sundarbans, and it has direct impacts on their family income.

In the post-Aila period, livelihood resilience requires looking beyond a return to the status quo to address the root causes of socioeconomic vulnerabilities of the coastal people and particularly the Munda Community. This needs to “build both resilience to cope with future threats and ability to exploit opportunities” (Pomeroy et al. 2006, p. 787). Cyclone Aila resulted in direct and indirect impacts on livelihood opportunities of the Munda Community in the study site. Aila severely damaged a large number of Ghers and crop fields. Inhabitants in the Munda Community, who could not cultivate crops and expand Gher, were forced to switch their livelihood during the post-Aila period. Munda people utilized distinctive survival mechanisms to enhance income sources by looking for alternative employment, developing an assortment of food production techniques including saline tolerant rice, vegetables on skimming beds, poultry, and rearing of cows and goats within homesteads.

In the post-Aila period, building human capital (such as education, developing self-awareness of disaster) is considered as a determinant for livelihood resilience in the Munda Community. SAMS has been running two home-based schools for children aged between 8 and 10 in the community since 2013. A female Munda tutor (who is a college graduate) teaches preliminary subjects, such as the English language alphabet, vocabulary, mathematics, Bengali language, ethics and morality, cultures of Munda Community, concepts of disasters and religion. The school study curriculum helps children to develop a solid understanding on the Munda society, its lifestyle, traditional culture, hygiene, and consequence of a disaster. The tutor also arranges a monthly parents' meeting. In this meeting, either a government officer or a SAMS trainer is invited to briefly discuss sociopolitical rights (e.g., right to vote, having national identity card), disaster preparedness, warning system, and roles to be played in post-disaster. Each meeting consumes around 1 h focusing on a particular subject matter (such as, disaster warning system). This meeting motivates parents to educate their sons and daughters in high schools, colleges, and universities. Both the home-based schooling and a series of parental meetings have radically increased awareness of education and alternative employment (rather than eaning livelihoods in the Sundarbans) among the Munda Community. In addition, this created more awareness and resilience against forthcoming disasters. The livelihood damage Munda people experienced in earlier cyclones (during 1988, 1991, and 2009) was higher in comparison with the ongoing climatic disasters (salinization) in Kalinchi.

To mitigate livelihood scarcities in post-Aila, the government of Bangladesh utilized social safety nets such as employment generation for the extreme poor and providing rice to the poor households. The initiative was taken to help people to cope with disasters and anticipated climate impacts so as to protect millions of vulnerable men, women, and children (DMB 2010). Following Aila, the government mobilized resources through different social safety nets to reach out to those who had lost their houses and personal belongings as well as livelihoods. Although safety nets can reduce resilience by increasing reliance on external sources (such as wheat, bottled water, lentil) depending on what form they take and how they are administrated at community level. However, the safety nets given to the Aila affected Mundas

included supplying food, providing seasonal employment, and expanding livelihood assets bases for at-risk people. The aforementioned social safety nets created resilience in the Munda community. In addition, the safety nets allowed the Munda people to promote alternative livelihoods. A safety net recipient informed that he received a packet of 15-kg of dry biscuits from the officials of the local government. From these biscuits, he fed his family 25 meals. This assisted to mitigate the initial livelihood crisis created immediately after Aila. Two weeks after receiving the biscuits, he moved to the district town of Satkhira in the hope of looking for an alternative income. He found a rickshaw-pulling job, which is a highly physically laborious task. Another participant reported that there were significant institutional and structural barriers in the local government for distributing safety nets facilities to Munda people. Afterwards, the ongoing financial hardship (before, during, and after Aila) severely deterred Aila-affected Munda people to bounce back to the pursuit of traditional livelihoods in the Sundarbans Forest.

Intersectional Dimensions of Livelihood Resilience of the Munda Community

This section looks at the intersectional dimensions of gender, marital status, and mobility in building livelihood resilience of the Munda community in post-Aila context. Gender plays a significant role in understanding how males and females differently experience climatic disasters (Agarwal 1992; Carr and Thompson 2014). According to Dey and Laila (2017), the Garo Adivasi women's role in their traditional livelihood system has been transformed with the backdrop of the state-community conflicts over right of access to forest and control over forest resources in Bangladesh. However, there is a key gap in the existing literature documenting gendered livelihood resilience of an indigenous community in the southwest of Bangladesh. Thus, adopting a gender lens unpacks complexities around differing sensitivity and adaptive capacity in livelihood resilience of the Munda individuals in Kalinchi.

In the Munda Community, livelihood resilience is largely constructed by socio-economic roles, responsibilities, and entitlements of individuals and social groups. These are historically linked to social positioning and power relations in mitigating challenges for earning livelihood in the Sundarbans and other alternative sources. These are deeply rooted in ethnicity and socioeconomic class (Adger 2006; Reid and Vogel 2006; Segnestam 2009; Djoudi and Brockhaus 2011; Carr and Thompson 2014). In the mixed focus group, six of 10 Munda males completed primary school (capable of signing name and reading a book written in Bengali), while the female participants were illiterate as they did not complete primary school. Despite the seemingly poor literacy level in the study location, each participant was eager to be employed as a full-time worker. According to participants, full-time employment would ensure livelihood security, and reduce the extent of livelihood dependency on the Sundarbans.

The Munda females do not obtain full-time employment either in local NGOs or in Government Offices because they do not hold the required educational qualification. Livelihood earning of females is limited to fishing in the river of Dhojikhali, which is contiguous with the Sundarbans Forest. They are also employed as day laborers for clearing weeds in the Gher. Female unpaid work, which has been performed for years, includes cooking for family members, rearing home-based poultry and goats. The cultivable land is primarily used for shrimp aquaculture and producing paddy, which are considered a male occupation. The Munda males have been traditionally playing the role of the sole livelihood earner of each Munda family. Both before and after Aila, there are no visible changes in the position of the male as a breadwinner and female as a domestic worker and basic care provider in a family. Historically, these divisions of gendered roles and domestic responsibilities have confined Munda female's economic mobility only within in the labor force of Kalinchi.

The Munda females have less mobility than their male counterparts do. As members of an Adivasi community, they are discriminated against by the majority of local Muslims and Hindus in Kalinchi. Historically, females were confined within their homesteads or to visiting a relative living in a nearby village. Between 1980 and 2000, each Munda married female was accompanied by her husband while going to the local market at Vetkhali, for casual shopping and buying groceries. The unmarried adult females were accompanied by either their brother or father while going one place to another. This was done to ensure physical security in the public space. In the post-Aila, due to shyness, stigma, and fear of losing prestige, the Munda females did not take part in the construction of the embankment, which was offered by the local government. There are negative attitudes of Munda males towards females' paid-work, which redefines females as traditional housewives and financially dependent on husbands' income.

There was always severe scarcity of livelihood opportunities for Munda females within and beyond Kalinchi. A few Munda females reported that they worked as cooks in the brickfields situated in Khulna, Barisal, and Gopalganj. While working in the brickfields, some experienced sexual harassment from other workers and employers. Despite this, they did not complain about sexual harassment to the local police station due to the fear of being fired from their cooking job. Though males and females in the community do not have ownership of the land on which they have been living in for centuries, they are not legally entitled to lease land to develop their own Gher business. There was an inadequate period of time for livelihood restoration after the cyclone Sidr (2007) and Aila (2009). The local roadways and river-based transportation system at Kalinchi are in a fragile condition since cyclone Aila. This geographical isolation has decreased Munda Community's lack of access to asset bases, financial services, and livelihood mobility. This, in the long run, has increased the economic vulnerabilities of both Munda males and females.

The Munda people believe in rituals, which are practiced on birthdays, deaths, engagements before marriages, and during wedding ceremonies. The birth of a boy is considered as an earner and permanent asset for the family, while a girl is seen as a

family caretaker. *Dali Takka*, a monetary gift to paternal guardians, is generally paid before the marriage. This is considered as one of the main rituals of life lasting for a weeklong festivity. Marriage as a traditionally male-biased social institution in the Munda Community encourages a male to be dominant over his wife while making familial decisions and household governance. Participants informed that before marriage an adult male leads an indifferent life financially depending upon his father and senior brother in the family. While after marriage, an adult male is compelled to earn more money for a smooth running of a family. The better income of a husband is treated as a sign of welfare by the wife. The husband is also treated as a primary provider of financial security, source of livelihood, and defense for a wife.

Early marriage (a girl aged between 12 and 14 would marry a male aged 25–34) has been historically practiced in the Munda Community for centuries. This age-related heterosexual marriage inequality shouldered upon adequate familial responsibilities of the newly married husbands and wives. These include everyday activities in the Sundarbans for a viable income, giving birth to children, working for community solidarity, and taking care of wife's parents. These social burdens would affect the earning of livelihoods in the Sundarbans. In contrast, it was expected that a wife would have to be a very good cook and bearer of all domestic duties. If a newly married wife failed to perform the expected duties of her husband's family members, she would have been physically tortured. In addition, a wife had no choice in decisions to have children. There were large amount of unwanted pregnancies, which forced a wife to give birth to a large number of children. This heinous marriage system was abolished after the evolution of SAMS in the late 2000. This NGO ran a series of courtyard meetings to build awareness against early marriage. As a result, the Munda males and females became aware of their future livelihood and economic opportunities. Since Aila to date, there have been fewer cases of early marriage and associated livelihood stresses in the Munda Community in Kalinchi.

Concluding Notes

This paper has documented ways the Adivasi Munda Community in the Bangladesh Sundarbans Forest region responded to and coped with cyclone Aila. It has also tried to reflect how livelihood resilience in the post-Aila has been built. The findings of the study suggest that livelihood resilience of the Adivasi Munda community was inbuilt within Kalinchi, both before and after cyclone Aila. The over extraction of Sundarbans forest resources by the Munda people and residents of the other local elites has been continually causing an imbalance between survival and on-going threats posed by climatic disasters. The loss and damage of physical assets due to Aila and associated climate stressors deterred the livelihood resilience among households in Munda people. Despite the fact that the Munda people were more vulnerable to hazard shocks and severely affected by higher financial, settlement, and physical damage, they showed a comparatively better ability to respond to, cope with, and recover from shock than did the wealthier Muslims and Hindus. This is because the Munda people are extremely hardworking and inclined to make an

income to continue their survival in Kalinchi. However, the increasing risks from tropical cyclones are likely to affect livelihoods in the future and the living standards of coastal residents of Munda Community. The intersectional dimensions of gender, marriage, and mobility in livelihood resilience show a clear connection between the Munda people's livelihood-seeking behaviors and their on-going survival in the periods of before and after cyclone Aila.

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