

Living a Flooded Life: Women, City and Community in North East India's Dibrugarh

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The paper makes a case-study analysis of the annually flooded Dibrugarh town of the Brahmaputra valley of India's northeast, and looks at floods as disasters in the context of how women negotiate, adapt and survive an annual phenomenon of flood. The paper has tried to interweave multiple narratives arising from differentiated gendered roles played by women in the pre-flood, during floods as well as in the post-flood periods, as collected through interviews and discussions to showcase how women use their agency to make place within as well as outside the community through dialogues, shared experiences and inter-community social capital. It discusses gendering space through the changing lived spaces of a household in the flooded and non-flooded period for four different communities united by flood. The first section of the paper looks at the City as a site for recurring disaster. The second section discuss agency of women as an emanating tool to face, adapt and survive disaster, expanding beyond herself to family and community. The third section presents the spatialities of adaptation manifested through built-form, arising as an outcome of gendered vulnerability and adaptation practices, as translated onto the spaces they inhabit, throughout the flood-cycle.

Keywords: Urban Floods, Women, Assam, Adaption to Floods, Household Spaces, Women and Disaster

Introduction

Flood in Assam has made headlines not only as a disaster depriving people of their homes and livelihoods, but also as a challenge which has finally gripped the urban centres in almost equal magnitudes, if not worse, like its contiguous rural habitats. Mega flooding events in the last century in the state occurred in 1934, 1950, 1954, 1955, 1966, 1988, 2004 and the list is not exhaustive.¹ The ferociousness of flood in the urban centres of Assam is reflected in its 1954 occurrence, which severely eroded the town of Dibrugarh, tearing its major markets away into the floodwaters of the Brahmaputra. The earthquake of 1950 drastically changes the river regime, its impacts

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visible even till this day (Baruah, 2012). The earthquake raised the bed of the Brahmaputra, which ensured that concomitant floods threatened commercial centres of Assam, like Dibrugarh and Jorhat, thereby prioritising the flood control approach of building embankments to protect those urban areas (Baruah, 2017). . Barbora (2017) points out that the geological changes produced by the earthquake accentuate the ubiquitous presence of water around the town of Dibrugarh. Fifty years hence the local newspapers are still predicting the imminent total engulfment of the town into the river based on recurring floods and insufficient action on ground (Lahiri and Borgohain, 2011).

For developing countries like India, the 21st century has been an age of massive transformation, in the form of large-scale urbanisation accompanied by an equally ubiquitous rapidly-changing climate scenario. The world urban population rose from 39% in 1980 to 52% in 2011 with developing countries being the primary contributors in the urban hike (Chen et al., 2014). However, unlike developed countries, the rate of industrial growth within developing countries was unable to match the rate of rapid urban shift (Bharath and Ramachandra, 2020). As a result, the upcoming urban conurbations remained deprived of adequate urban infrastructure and utility services, and were predominated by urban poverty and climatic hazards (Chauvin et al., 2017). Globalisation and consequent relaxations in the Indian market in the 1990s witnessed an unprecedented rural influx towards urban centres, which resulted in the growth of peri-urban pockets with a discrete settlement pattern. Loss of ecology and disregarding hydrologic regimes in the rapid urbanisation process led to expansive encroachment of ecologically sensitive areas leading to severe repercussion such as urban floods (Bharath and Ramachandra, 2020, p. 134).

Urban floods are situations caused due to inundation of basic infrastructure services in a built environment (Bharath and Ramachandra, 2020, p. 134). The primary reason for such flooding is a failure of the catchment to retard water velocity coupled with the blockage of storm-water channels and disappearance of lakes. Urban flooding is a cumulative result of both natural and anthropogenic activities. For instance, changing climate scenarios are likely to alter the rainfall intensity over a given period and hence the peak discharge and runoff volume may exceed the capacity of conventionally designed drainage networks (Bharath and Ramachandra, 2020, p. 134). Urban Floods have increasingly been reported from all across the country: Ahmedabad (2001, 2017), Bengaluru (2005, 2009, 2013), Chennai (2004, 2005, 2015), Delhi (2003, 2009, 2010, 2013, 2016), Gandhinagar (2017), Guwahati (2010, 2011, 2015, 2016, 2017), Hyderabad (2000, 2001, 2002, 2006, 2008), Jamshedpur (2008), Kolkata (2007), Mumbai (2005, 2007, 2015, 2017), Srinagar (1992, 2014, 2015) and Surat (2006).¹ The “Economic Losses, Poverty & Disasters” report (1998–2017) identifies flood to be the most frequently occurring climate-related natural disaster in India and around the world.³

For the state of Assam, geographically located on the floodplains of the Brahmaputra and the Barak, rapid unplanned urbanisation accompanied by effects of climate change⁴ has translated into unprecedented challenges. The natural drainage system in the form of wetlands, ponds, lakes and channels which characterise the

topography of the Brahmaputra valley has been subjected to severe alterations due to rampant construction activities. A cover story on Assam Floods warns, “In a warming world, Assam’s Flood season is now a year-round crisis.”⁵ Scholars point out that as the valleys of Assam has been undergoing ‘development’, its fallout visible in terms of undermining “the ability of the floodplain to absorb and store water, reduction in its ability to transport sediment”⁶ on top of environmental degradation caused by flood, river-bank erosion and landslides. As most of the primary urban settlements of Assam are located along the banks of the Brahmaputra and the Barak, Assam’s cities and towns are prone to floods. The burden on the urban centres becomes more complex when they become the sites where internally displaced people seeks refuge. Over the years, environmental insecurity has increased substantially and so has the number of people displaced by river-bank erosion. The Geneva based Internal Displacement Monitoring Centre (IDMC), showed Assam as the only spot in India where people had been displaced due to disaster and were living in camps as on May 19, 2022. In recent years, monsoon rain induced floods have increasingly begun to be accompanied by dam-induced floods, which are spread across the Brahmaputra river basin, thereby leading to what Rahman calls, an ‘infrastructuring of floods’ (Rahman, 2020).

According to an official report, the river Brahmaputra eroded 4,29,657 hectares of prime agricultural land; roughly, 7 per cent of the land in the plains has been eroded between 1951 and 2000, resulting in the displacement of at least three million peasants (Hussain, 2006, p. 392). Lahiri and Borgohain (2011, p. 35) discuss how “one of the most important causes behind the social disturbance of agrarian origin in Assam is rooted in the massive rate of river-borne erosion which opens up a Pandora’s box of related issues. These comprise of encroachment of forests by the uprooted people from the erosion-affected places, subsequent eviction of these displaced peoples by the state, pauperisation of these affected people and then rapid rate of internal migration and overpopulation of the urban centres with (such) ‘unauthorised’ people”. In the absence of proper resettlement and rehabilitation policy, most of them have experienced multiple displacements, some finding their way into the towns of Assam only to face urban floods.⁷

The Flood prone City is a space of risk and vulnerability where adaptation becomes an immediate necessity. The capability of any community to adapt to the risks, to face vulnerabilities and disasters is gendered because men and women are vulnerable in different ways and therefore adapt to them differently. Who is most at risk and how they are able to cope with climate hazards varies by location, income level, age and gender during the different phases of the flood-cycle.⁸ Vulnerability determines the outcomes of the involved risks and adaptation strategies in the pre-flood, during floods as well as in the post-flood period. Vulnerability of a community and its adaptation outcomes are a gendered experience with the women taking on different responsibilities during the flood-cycle. This vulnerability is exacerbated by discrimination based on caste and community identities, often creating structural discrimination for lower castes. Sen et. al (2018: iii) points out that in the context of the riverine communities in the Brahmaputra valley, ‘the lives that depend centrally on water in particular and natural resources in general are predominantly of the rural poor, shaped by pluralities of caste, ethnicity and spatial contexts which are essentially

gendered'. Geographically they also inhabit the most vulnerable spaces, for e.g., the river banks prone to floods, resulting from their former displaced status. Such factors contribute in determining adaptation capacities of vulnerable people in urban areas.

Women in such communities, when vulnerable themselves, are responsible for making the household unit 'survive' the flood-cycle. Even prior to the floods and after the flood water abates, the women take on psychological and behavioural conditioning of the family members, especially of the children to prepare them for the floods and in helping them normalise into their daily lives in the post-flood period, while facing the disaster themselves. The role of women as managers of the household becomes more crucial as care-givers in times of displacement when the family seeks refuge in school buildings, atop river embankments or on the road-side makeshift tents. Among the urban vulnerable community, women are also responsible for earning their daily livelihood to sustain her family, which might sometimes expand beyond her household.⁹

In developing countries like India, women are more vulnerable than their male counterparts. In relation to the debates around the vulnerable position of women in the Global South, there are three arguments explaining the relationship between women and climate change: firstly, that women need special attention because they are the poorest thereby most vulnerable. Secondly, women have a higher mortality rate during times of disasters in relation to men.¹⁰ Thirdly, Women are more environmentally conscious.

Women's vulnerability is ascribed to cultural and gender structural institutions in the society wherein women are excluded from the decision-making bodies (Lee: 2009; Arora-Johnsson: 2011). Many policy level initiatives have recognised gender as one of the most important criteria for prioritizing adaptation needs and activities. The National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem and National Mission on Strategic Knowledge for Climate Change cumulatively aim for adaptive capacity development and effective climate change-related planning within the country, focusing on women, youth, and local and marginalised communities (Bharath and Ramachandra, 2020, p. 133). The National Institution for Transforming India (NITI Aayog) has been implementing SDGs in the policy framework, stressing the need for "adaptive capacity development" as the issue of prime importance in the road to sustainability (Bharath and Ramachandra, 2020, p. 133).

However, as Arora-Jonsson (2011) argues, policies fail to address the complexity of the intersecting power relations that marginalise women and men differently. Fostering capabilities, building resilience and incorporating gender roles in managing and living with the floods in the region might figure only as committee suggestions without its implementation into the existing governance modules. The Government approach outlined in the most significant policy reports, 'Assam Vision 2030' released in light of the implementation of the Sustainable Development Goals and the 'Strategy and Action Plan, 2017-2024' of the Urban Development Department (in)conveniently leaves out floods and flood effected people in spite of it being an annual occurrence. With the State's intensified planning and construction of large hydropower dams in the upper reaches of the Brahmaputra's tributaries, the region identifies as a disaster

risk.

Gender structures influence both men and women, flooding puts both men and women at risk but the difference arises in the differentiated impacts, differentiated risks perceived, differentiated adaptations and differentiated vulnerability arising out of the existing gendered space. Further, the assigning of specific roles to men and women deepens gender segregation amplifying vulnerability. Men and women have different access to time and space and use time and space differently (Massey: 1994). Additional structural variables like caste and ethnicity regulates gender roles often predisposing gendered outcomes in a hierarchal structure of segregation. Differentiated power relations influences spatial practices, which in turn reflect in the geographies of adaptability in disaster prone areas. These power relations translate onto the lived spaces, thereby characterising the built environment as a gendered landscape. Gendered adaptation characterises the built environment as it reflects in the nature of the non-flooded place in juxtaposition to the flooded place. The flood prone City, is therefore a gendered flood prone city, expressed in its built form.

A City exposed to flood as an annual routine becomes a place where ‘disaster’ as a concept is arguably normalised into the mundane daily geographies. Historically, the perception of flood as a problem is a 20th century phenomenon, as British administrators in the colonial period only began to see flood as a challenge when the jute crops cultivated in the low-lying areas near the river became flood-prone (Baruah, 2017). Annual prolonged exposure to floods makes the people of the Brahmaputra valley¹¹ communities with indigenous adaptation knowledge to an ecosystem, where occurrence of annual floods is widely perceived as a necessity when simultaneously also accepted as a disaster.¹² This paper discusses how vulnerability to recurring disasters and adaptation to the same, gains a gendered dimension in tandem with assigned gender roles based on community identities and the location of the household.

Materials and Methods

This paper makes a context-specific case-study analysis of the annually flooded Dibrugarh town¹³ of the Brahmaputra valley to understand the linkages between urban floods, gendered adaptation, and indigenous ingenuities in the face of inadequate addressal mechanisms. By examining relationships and adaptations on the ground by different communities in the flood-cycle, the paper contributes to understanding the very real challenge of urban flood in developing countries, increasingly worsened by climate change. Modes of adaptation are manifested in built-form in such riverine spatialities. It presents a compelling case of how vulnerable living is shaped around a recurring disaster and highlights the vantage point of women thereby offering broader insights crucial for an inclusive understanding of the challenge of flood, climate change and adaptation. The paper looks into:

- How community identity and physical location influences the ‘expected’ role of women in adapting to floods.
- How women use their agency to make place, within and outside the community, through dialogues, shared experiences and inter-community social capital.
- The role of women in managing the household spaces in the pre-flood, flood, post-flood situations and their experiences as an adaptation and mitigation strategy

for the community.

The first section of the paper looks at the City as a site for recurring disaster. The second section discuss agency of women as an emanating tool to face, adapt and survive disaster, expanding beyond herself to family and community. The third section presents the spatialities of adaptation manifested through built-form, arising as an outcome of gendered vulnerability and gendered adaptation, throughout the flood-cycle. It discusses gendering space through the changing lived spaces of a household in the flooded and non-flooded period for four different communities united by flood. The study is based on data collected over three years intermittently, observing two flood cycles for the City and its gendered adaptive capacity, pre-Covid 2020. Based on Focus group Discussions and interviews, it accounts for a study of households and community level datasets for four diverse communities of the Dibrugarh town: the middle-class Assamese (for lack of a better word), the Scheduled Caste¹⁴ Assamese, the internally displaced community (the Bengali community) and the Bihari community in Dibrugarh. Since Flood is a perennial occurrence, everybody has a story around floods, everybody has an opinion about it. The attempt has been at constructing a meta-narrative to retain the possibility for multiple flooded geographies.

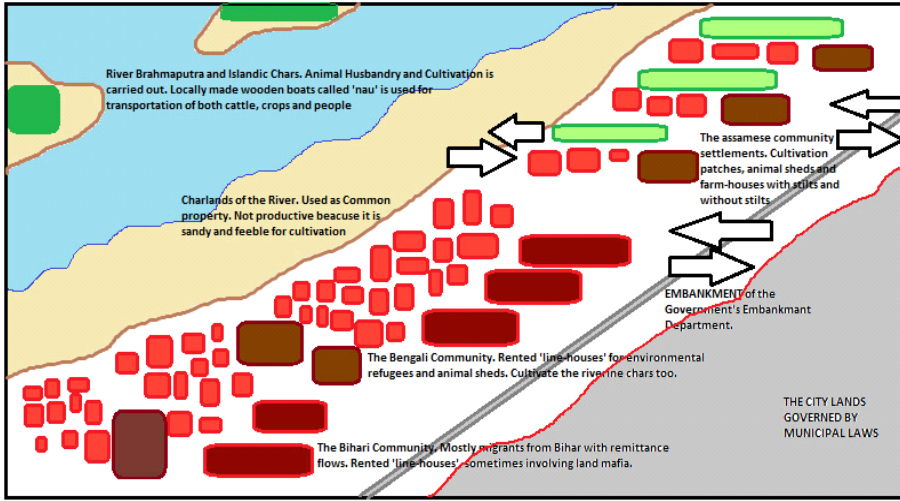
Results and Discussion

I. Conceptualising a Flood City: Vulnerable Livelihoods, Vulnerable Communities, Vulnerable Locations

Flood is a process in the Brahmaputra valley. It simultaneously creates and destroys its space, sometimes adding and at other times reducing habitable land in the City. New islands and sandbars are regularly created and engulfed by the river as a continuous process of flood. Termed as the char-lands or chars, these are non-cadastral, tax-free and unplanned land which are a common resource providing open access to whoever can lay claim to it. The morphology of the river and its islands therefore is crucially transitional, and by extension, so are the claims over such chars. Owing to such conditionalities, the chars have been called ‘negative spaces’ of the region (Praveen, 2018). Crucially however, the Government estimates 36,000 hectares of land to constitute such chars (Chakraborty, 2009), and its importance is acknowledged in the creation of the Char Area Development Committee by the State. According to the Committee, a total of 2,251 villages inhabits these charlands, comprising 9.3 percent of the total population of Assam.¹⁵ The politics of access play out a little differently when the chars are located along the crucial commercial centres of Assam, like Dibrugarh.

The Master Plan of Dibrugarh, 2021 shows that the town is settled linear on the southern bank of the ever-changing Brahmaputra, depicting the chars as the interface of the urban settlement and the river. In tandem with the flood cycle, as new chars emerges and old chars are lost to the river, a distinct population flow of the char-people also becomes visible within the town.. The people move into the river as the floods abate and move outward to the town when the floods hit, thereby creating a movement cycle.

Figure 1: The Transient Belt: Cyclic Migration in the Urban Chars of Dibrugarh



Source: Author, as digitised from the social map as created by the community members

The embankment in context of Assam floods has been seen as a limiting example of ‘engineering hubris’, against the natural meandering flow of the mighty Brahmaputra, reordering the river – people connect into segregated zones of ‘embanked-in protected zone’ vis-à-vis ‘embanked-away flooded affected zone’ (Rahman: 2020). Sen et. al (2018) also showcases how people of Majuli in Assam see embankments as causing more harm than good, although there is no singular view on embankments. During the annual flood cycle in Dibrugarh however, the embankment in itself becomes a site of refuge for the char people. The town of Dibrugarh had begun serious attempts at riverbank protection, beginning 1935 after the 1934 flood, with anchored trees, brushwood screens, tree branch revetments and anchored floating bamboo cages (Wasson: 2020: 95). The concrete phase of embankment making came later, when ‘450 m of a planned 6 km stone revetment was finished before the monsoon of 1954 struck, and floodwaters outflanked the entire structure’ (Wasson, *ibid*), washing away the main market of the Dibrugarh town with it. The streets of the new market constructed after this tragedy, are named after those brave citizens who died saving the lives of people of Dibrugarh when the embankment broke. Post this disaster of 1954, Dibrugarh town got visible protection works. Embankments built in 1954-1956 were raised and strengthened in 1963-1966, 1977 and 1980, and again after flood damage in 1988, and to this day continue to be refurbished, partly as a result of the heightened level of floods resulting from the increasing channel bed level (UN-Habitat: 2002, ADB: 2009 as cited in Wasson: 2020: 96). This embankment guards the Dibrugarh town and acts as the site of shelter for the flood affected char people of the town.

A more nuanced population arrangement also occurs temporarily within the flooded urban space, in the municipal town, especially with people moving out from the flood-hit areas into their relatives’ and friends’ ‘safe-from-water’ houses. People also

chose to live in their flooded homes by modifying the arrangement of their furniture. This is not cyclical but is limited to fixed urban localities, the low-lying flood prone areas of the town where flood is a certainty. In Dibrugarh, the rent in the residential zones has a flood or non-flood determinant to it. This also explains the adaptation and acceptance that such urban spaces have to floods.

In the City, economic utility of such land overshadows the character of temporality associated with the chars. In the non-flood period, the riverbed, its sandbars, and its islands are an economic space for the marginalised section of the town. The livelihood of thousands of people living near the river are intricately connected with such land, so much so that the very identity of the people living on these lands is assigned by their location - the ‘char-people’. Assigning of this identity is where the disaster of flood in the city becomes political. Hazarika (2005b) calls it the story of the poor and the underprivileged on one hand and lawmakers and policy-makers on the other, with business in between. These ‘river-dependents’ (Hazarika: 2005a) are ‘resource-poor’ and also the most under-represented and voiceless group of people in the entire north-eastern India. Politically, the river-dependents are nobody’s children and no one’s constituency (Hazarika: 2005a: 248).

They cultivate the riverbed, constructs farms in the fertile silt of the river to grow vegetables and catch fish which finds a ready market in Dibrugarh. The City chars serve as a resting joint between the fishing schedules for the travelling fishermen; it is used for drying of clothes by the dhobi¹⁶ community; as a dock for repairing of boats apart from being enjoyed for its picturesque beauty by the entire City as common resource. For the char-people, their economic existence is intricately connected to the river as they venture into many livelihood options, all dependent on the river.

Table 1: Gendered Livelihood Options adapted by the Communities of the Urban Chars of Dibrugarh

Gender assigned Livelihood avenues	No Flood	During Flood	Post-Flood
Assamese Ethnic Community ¹⁷ Deuri tribe,			
Women	Fishing with pole, Pre-Cultivation preparation, planting and transplanting (in case of rice) the plants, Providing Food to the people working the Fields, Post- Harvest clean up and storage	Fishing with pole, collecting fire-woods that floats in the floodwater for fuel, taking care of the seeds for the next season, taking care of the animals	Preparing the Field for cultivation, Fishing with pole, pooling resources available for immediate consumption
Men	Fishing with nets and boats, Cultivation- Tilling the soil with animals and Harvesting	Building chaangs for survival and storage, collecting firewoods, fishing with nets and pole solely on the river bank, making banana plant rafts and bamboo rafts for transportation of people and goods, transport of selected articles to the relief shelter	Tilling the soil, Repairing the boats and houses, building bamboo bridges over the stagnant water left behind by floods, might take up daily wage labour work for a season

Assamese Non-Ethnic Community (Fishing community, Tea tribe community, Washer Community, Assamese)			
Women	Household works, selling fish, washing clothes small business, selling milk, feeding the cattle and poultry	Special Care of the children, elderly and the animals, household works, fishing with pole, collecting fire-woods	Cleaning the house, making the house liveable again
Men	Fodder for cattle, fishing with nets, washing clothes small business	Building temporary shelters when displaced, arranging and making chaangs to manage the household assets, transport of selected articles to the relief shelter, fishing with nets on the river bank	Rebuilding activities, repairing the bamboo bridges within community, fishing, animal husbandry
Bengali Community (Local residents and Environmental refugees internally-displaced)			
Women	Daily Wage Labourer, Household chores, vegetable cultivation small scale, maid service, assist the husband's trade, look after the cattle and poultry, sell poultry and poultry products	Daily wage labourer, arrangement of the house into chaangs, maid service, assist the husband's trade, caring for the cattle and poultry, make-shift tents when displaced, caring for the children, manage the household when displaced, work as a community in shelter camps	Daily wage labourer, make the house liveable, arrangement of the household back to normalcy, look after the cattle and poultry, sell poultry and poultry products, provide for healthcare for the family, assist the husband's trade
Men	Daily wage labourer, small informal business and service works, animal husbandry	Daily wage labourer, claim relief food if provided, make the displaced tents, seek potential places for migration, make chaangs	Rebuilt and repair houses if there is land to return to, migrate and set up new house for the family, daily wage labourer, animal husbandry
Bihari Community			
Women	Household chores, looking after the cattle, making cow-dung cake for fuel, assist the husband in his trade	Caring for the children, household chores, managing the household in a displaced or refuge place, assist the husband in his trade	Make the house liveable again, provide healthcare for the family, assist the husband in his trade, look after the cattle
Men	Daily wage labourer, small business, animal husbandry	Find shelter for the cattle in some highland, mostly a relative's place, arrange for the household for the displaced shelter, refuge shelter, daily wage labour	Rebuild and repair the house, resume daily wage labour, animal husbandry, small business

Source: Data as collected from community surveys, interviews and participant observation

The utility and economic opportunities of the City chars have given rise to land mafias in Dibrugarh, who regulates these coveted lands, by providing low-rent housing

options to the migrants and displaced people seeking minimum livelihood options.¹⁸ In the absence of rent houses, the people live in adapted ‘stilted houses’ at best and in ‘make-shift’ tarpaulin tents. The displaced community who mostly finds shelter in the rent houses of the char are environmental refugees themselves because they have migrated to the City from the rural charlands in order to escape floods, only to find that they cannot afford to rent the places in the dry lands. They live with the floods, with water inside their houses and when it gets to a point where they cannot ‘adjust’ anymore, they seek refuge in the embankment. Such movement of people from their flood-hit-home to the embankment or roadside ‘second homes’ is not limited to the city. A cover story on Assam floods quotes, “For people here, moving to camps is like a ritual that happens first in June, then in August and in October”.¹⁹

Roughly twenty thousand vulnerable people, calls the chars of Dibrugarh their home.²⁰ These ‘visibly-invisibles’ are unauthorised residents of the city, as the City Master Plan, 2021 designates the chars as ‘open spaces’.²¹ This designated ‘Green Zone’ near the river, as the land-use master plan describes, obliterates the existence of thousands in the town of Dibrugarh, thereby challenging the legitimacy of such settlements. The Deputy Commissioner’s office and the District Disaster Management Authority (DDMA) office coordinate with the Dibrugarh Town municipality in order to address problems arising out of unregulated construction, much of which adds to the floods in Dibrugarh during monsoon (Barbora, 2017). The char dweller’s lives are administered by the Embankment Department, the Public Works Department or The Flood Control Department by virtue of the authority they have over the land on which they dwell. They are therefore not any institutions’ responsibility, even while they contribute to the economy of the town, showcasing the complexities of institutional authority and responsibility. In this sense, it demonstrates the applicability of de Certeau’s (1984) argument that institutions are able to claim ‘power of knowledge’ over a space and are able to represent those spaces in amendable ways that suit their purpose, thereby creating privileged spatial relationships.

The Dibrugarh chars are spaces of struggle and survival- economic, political, social and environmental. They are constructed, perceived and lived differently by different communities, who strives for access and claim over the chars. In such vulnerable spaces of survival, the challenges of the flood prone City comes to the fore as fractured because it relies on spontaneous exclusion of different groups over time. Struggles over space reveal the implicit hierarchies, the ordering of space, the rules, and the exclusions in order to maintain particular visions of the orderly city (Beebejaun: 2016: 3). Gender becomes the sub-altern structuring within such broad domains of struggle and survival, which presents a spatial and material dimension, manifested in the lives of such vulnerable communities.

II. Making Place in the anticipation of flood: Women as vulnerable, Women as capable

The capacity to anticipate the flooding process- the onset of the flood, the water-logging period and its aftermath, preparedness and reactive action during and before the onset of the flood are determined by preparedness of the community. It involves

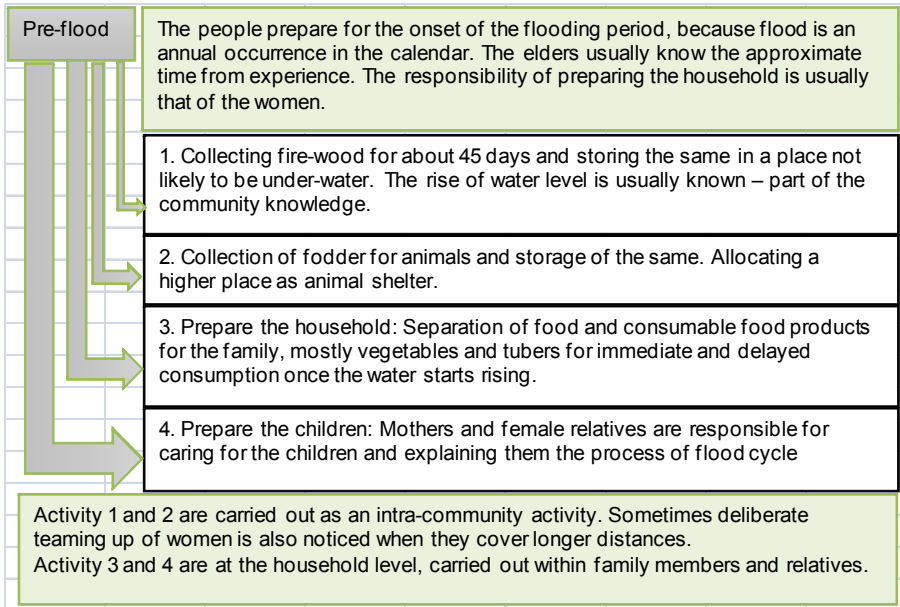
shared narratives of previous years experiences of adaption and survival, the problems encountered and how to handle them, the futility of expecting assistance from the Government institutions and the potential they possess and the helplessness they encounter in the face of the floods.

Everyday life in times of flood could mean complex negotiations, embodied in the sites of struggle. The 'valuing' of some social groups over the other, by the State as well as public opinion, reflected through interactions with the people shows that their access to shelter in times of flood can also be differentiated. Under such apathetic conditions, women crucially become the medium negotiating the intra-community and inter-community relations. During the flood cycle, such negotiations determine access to food and shelter. In the chars, where the very legality of settlement is contested amongst the various communities, power relations assign a 'position' to the community's capacity to negotiate, which is governed specifically by women in the communities.

The central role of women as the facilitator of the family's adaptation process throughout the flood cycle is not defined by the economic status of the family in the communities living in the flood prone area. The economic status of the household facilitates their access: to dry land and relief facilities but within the community, women are the negotiating agencies for surviving the floods, thereby regulating social capital. This is further complicated by the cultural identities of the communities. The Bengalis and Biharis have assigned gender roles which is not strictly true for the Assamese indigenous and non-ethnic communities. The Assamese women would easily access the banana-bamboo rafts to cross about, sometimes without any men to provide her with 'security'. The same does not hold true for the women of the Bihari Community, especially for the younger women. Women's social conditioning may make them so risk-averse that this becomes a risk in itself as they remain in their homes despite rising water levels, waiting for a male authority figure to arrive to grant them permission and/or assist them in leaving.²² The cultural location of the women among the different communities contributes to the women's attitude towards adaptation practices.

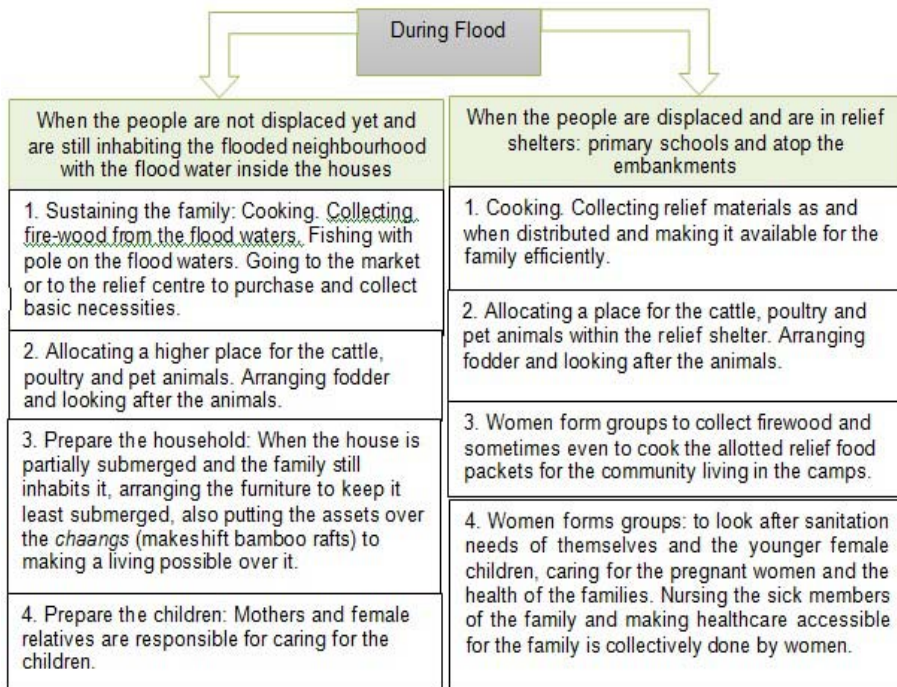
In Dibrugarh, men living in the flooded belt are equally vulnerable like women, but the social structure allows men to adapt in easier ways compared to women, assigning a place of exclusive vulnerability for the women. An example for this is adaptation to sanitation during the flooded period. Men often bathe in the open in the community, uncontested, citing floods as the cause whereas women necessarily construct ablution facility, even in the midst of the flooded places to bathe. Interviews also show that while it is acceptable for the working-men to not wash clothes, crockery or take care of the children during the floods but the same activities are always mandatory for the women, irrespective of her role as an employed worker or homemaker. The cycle of flooding mandates that women shoulder new responsibilities of looking after the household and family members in three distinct periods- in the non-flooded period, during the floods and post-flood period; assigning her an agency of power within the gendered social environment she necessarily inhabits. This duality of her role as a vulnerable member as well as a survivor manifest simultaneously in Dibrugarh as the flood cycle unfolds.

Figure 2a: Women’s Responsibilities and the Flood Cycle: Gendered Riverine Spatialities in the Pre-Flood period



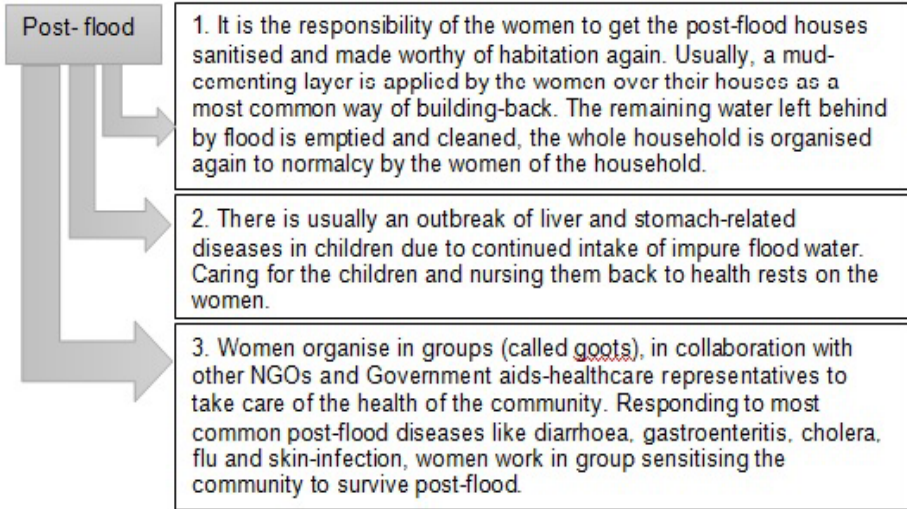
Source: Interviews, Discussions and Participant Observation Diaries

Figure 2b: Women’s Responsibilities and the Flood Cycle: Gendered Riverine Spatialities during Flood



Source: Interviews, Discussions and Participant Observation Diaries

Figure 2c: Women’s Responsibilities and the Flood Cycle: Gendered Riverine Spatialities in the Post-Flood period



Source: Interviews, Discussions and participant Observation Diaries

Note 1: The stated awareness of the people about the approximate time of the onset of the flood is exclusively about the annual flood caused by continuous rainfall and excess rainfall, arguably the ‘conventional’ floods. This is not to mean the sudden anthropogenic floods of the Brahmaputra valley which causes more casualty and destruction.

Note 2: Broad generalisations are applied to tabulate the data. Individual specific behavioural patterns are present otherwise.

Women are consistently more concerned about administering the household spaces and caring for the family, which can be attributed to the assigned social roles for women as care-givers and their everyday activities. Women of all the communities prepare for the floods and the risks associated with it in every possible capacity; and such activities routinely includes visits to relatives, repairing their house, adding new poultry or cattle, investing in a new economic venture among plethora others. In Dibrugarh, concern over the family’s well-being is at many times guided by a survival and protection-seeking dialogue within the community. Since the floods are annual, living is about survival in those specific ‘difficult but un-avoidable’ days which they try to ‘make as normal as possible’. Men and Women prioritize different risks; women are more concerned about the family members coping, sexual assault²³ and managing the household space and hence administering the household and the family during the floods and post-flood revert becomes a direct responsibility of the women. Men and women perceive risks differently, or at least give priority to different risks.

III. Gendering Space and Adaptive Capacity: Household and Intra-Community Relations

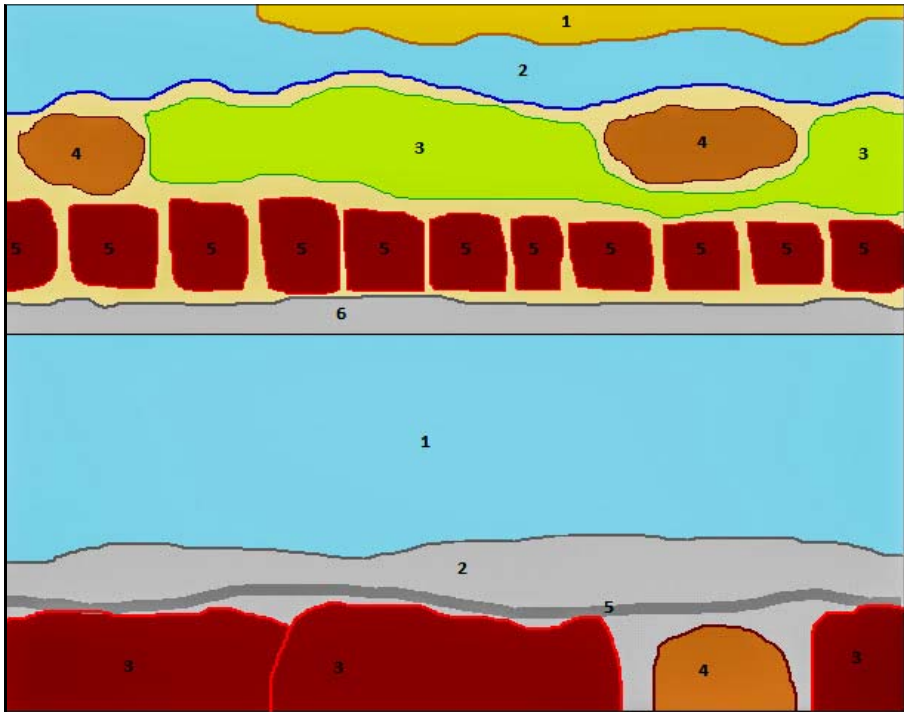
Adaptive capacity of a community is conceptualised as the ability to anticipate, absorb,

accommodate or recover from the effects of a hazardous event through change. In an urban context, Satterthwaite et al. (2007) define it as "...the inherent capacity of a system, population or individual/ household to undertake actions that can help avoid loss and speed recovery from any impact of climate change." The adaptive capacity for the communities living in areas effected by perennial floods manifests a detailed conceptualisation of the impact of annual flooding on their lives through the possible adaptation measures learned through memories²⁴ of loss. They rely on a complex mixture of intra-community closed system of adaptation where the cultural identity of the people living within the perennial flooded belt gains prominence in determining the adaptation process itself.

Sen et. al (2018) study on the Genderscape of the Brahmaputra point out that there is a spatial pattern in which different communities live with respect to the distance from the river; ethnic and Assamese communities live farthest from the river and scheduled caste communities and most recent migrant communities live nearest. This rural spatiality is replicated in terms of the urban chars of Dibrugarh where the ethnic and Assamese communities enjoy comparatively better locations along with better social capital, compared to the Bengali and Bihari communities. These 'plural genderscapes' and 'plural patriarchies' (as termed by Sen et. al: 2018) of the Brahmaputra valley are distinctly visible in the char dwellers of Dibrugarh.

Although multiple communities in the Dibrugarh chars share the contiguous flooded space, the response mechanisms, actions, loss and recovery of the people is determined in relation to their cultural and economic location in the society. Adaptation is not only gendered, but also directed by a set of subtle cultural norms which defines the responsibilities, assigns expectations to, characterises behaviour and sometimes governs even the responses that the women of that particular community is "supposed to" have. This is to say that in the duration of the floods, a Bengali women is "supposed to" behave in a particular way because she is a Bengali; whereas the Assamese women "would be expected to behave" in another way. The women's performance in the flooded space is what assigns meaning to such perceived notions, as different lived experiences begin shaping their adaptation mechanism, dependent again on their cultural community identities. Whereas different communities share the same vulnerable flooded space, there is hardly inter-community dialogue or shared methods of adaptation when the floods hit. The adaptive capacities of different communities are simultaneously guided by the shared experiences of different households, the previously lived experiences of their own community and modified gender roles within the community. These interactions differ for the flooded, post-flooded and the normal period so that changing adaptive behaviour patterns are translated onto the places where they are enacted upon; creating gendered vulnerable spaces for each of these differing periods. The perennial flooded belt is continuously transformed into an intra-community bounded spaces wherein spatialities of adaptation are distinct for every community. Every year as the flooded and the non-flooded cycle period obediently continue the routine, gendered adaptation practices is enacted at both household and community levels.

Figure 3: Community Map: Comparative Spatial Representation by Community members during the Flooded and Non-Flooded Period



Source: Digitised from the social map as created by the community members

Arrangement of Spaces in the Non- Flooded Period

1. Charland (Riverine Island) used for cultivation and Animal Husbandry
2. River in its non-flooded state
3. Cultivation carried out by the Community
4. Animal Shelter
5. Residential Units
6. Embankment, Dyke

Separation of public and private spaces. Separate spaces for livelihood pursuits: both within land and inside the riverine areas

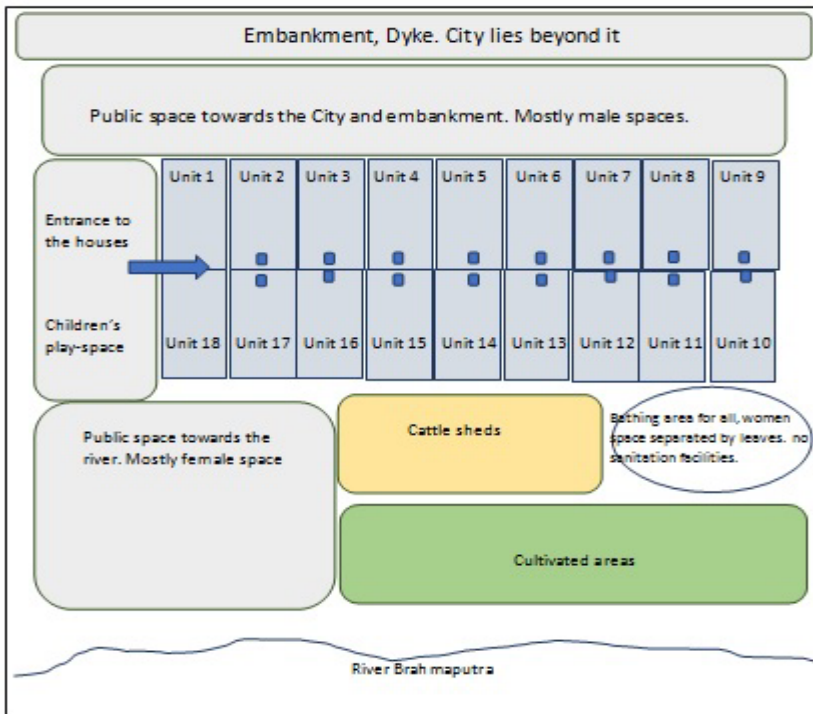
Arrangement of Spaces in the Flooded Period

1. River in its flooded state
2. Embankment, Dyke
3. Community Residential Sheds (Tarpaulin) of the displaced people
4. Community Animal Shed
5. Light boundary separation from the public atop the embankment

No separation of spaces. Public spaces shared by the households becomes a community space. Note that the City people not displaced by floods still use the dyke as a place to visit as a public space of the City hence requiring the boundary separation as depicted through no. 5

Physical vulnerability, disaster preparedness and the inter-community relations is strongly lived and performed upon the flooded space, and is manifested through the arrangements of space within the houses and in the arrangements of the shared spaces within the communities. A place is assigned its meaning based on its current utilisation as a shelter, cooking area, bathing area and so on, for specific durations of the flooded period. Space is socially produced, as per the adaptation requirements of the communities undergoing the flooding process. In this sense, spaces differ in terms of its content, context and conceptualisation. They are unique and contextual and the perspective with which they are gazed or interpreted assigns different characteristics to space (Agnew: 1987, 1989; Agnew and Duncan: 1989; Merrifield: 1993). Every social space is the outcome of a process with many aspects and many contributing currents’ (Merrifield: 1993 citing Lefebvre). Places are produced, assigned meaning and destroyed (Merrifield: 1993: 527) and this process depict how human relations are played out in space assigning it its character.

Figure 4: Structure of Rented Line Houses for the Bengali Environmental Refugees and Bihari Migrants: Non-flood period



Source: Based on Field surveys

Line Houses in Urban Chars

The household units are arranged in conjunction with no ventilation. Each of the dwelling unit houses a family of average six members. Same community people are offered rent on such ‘line-houses’ The public spaces are strongly differentiated for men and women with the women looking after the household, the cattle, cultivated

plots as well as the children and elderly. Strong intra-community ties between women are noticed in terms of household chores, looking after children, in both the flooded and non-flooded period. The people seek refuge in the Dyke, when flood-waters reach a level the people cannot live with (usually when it crosses above the upper thigh).

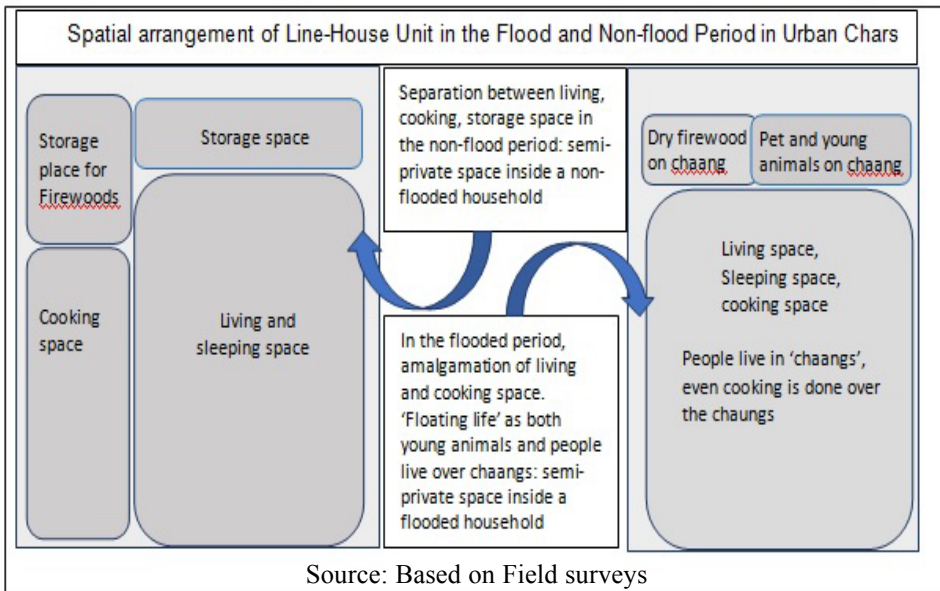
The figure depicts how spatial practices are differently manifested in the non-flood, flood and post-flood situations and is visible in the organisation of the household spaces and in the community spaces. Separation of spaces into male-specific and women-specific shows how gender roles are assigned, which translates onto the spaces they inhabit. It not only allocates women with 'a women's work' but also constructs a movement space to which the women will be limited to given her set of chores. Such representations of space were noted to be strictly bounded for the Bihari community, loosely bounded for the Bengali and Assamese. The mobility of the ethnic Assamese women was noted as most interactive because, such 'allocated' spaces were very limited, and when present were private spaces.

The workspace for women: open or close, visible or hidden are defined by the cultural norms of that community; as such practices define access to space, mobility and adaptation during the flood process. In the Bihari Community, for example, the City was understood to be the workspace of the male, even in times of flood whereas the domestic spaces was exclusively for the female. In the Bengali community however, access to work in the city is not exclusive for the men. In the cities of the post-colonial South, increased participation of women in the labour force has become crucial for survival, especially in the neo-liberal economies (Peake: 2009; Jabeen: 2014). Poverty and the potential scope of increasing income in the face of marginal employment also contributes in deciding the employment of the women; albeit in the informal sector. For Dibrugarh flood belt residents, patterns of spatial segregation still continue, based on the cultural norms and gender assigned positions to women in the household as well as in the community, so that, the household chores- cooking, cleaning, looking after the children are exclusive women representational spaces. In these representational spaces, space is utilised, performed and contextualised by women differently in different communities.

Conclusions

This paper shows the gendered spaces of risks, survival and adaptation in a perennially flooded City of North east India's Dibrugarh . The Flood Cycle not only transforms the physical spaces of inhabitation, it also modifies the social and cultural norms that shapes the lives of the people. Mostly urban poor, and culturally different from one another, the people connect at a disaster assigned concept of belonging- as the cyclically displaced. The social geographies of these fluid urban spaces are gendered and are embedded in the livelihood pursuits intricately connected to the river where climate change has increasingly made the environment peculiarly extreme, making adaptation a way of life. These are spaces of such desperate adaptation; these are spaces of collective survival.

Figure 5: Comparative analysis: Representations of spaces in the Flooded and Non-Flooded Period



Endnotes

¹ Saikia, Arupjyoti and Krishnaswamy, Jagdish. 2022. Learning from Deluge. Op-ed. The Indian Express. 6 July.

² As mentioned in Bharath and Ramachandra (2020, pp. 130 -31).

³ Wallemacq, Pascaline; House, Rowena. 2017. Economic losses, poverty & disasters: 1998-2017, United Nations Office for Disaster Risk Reduction. Accessed 08-7-2022.

⁴ Climate change has led to uncertainty of rainfall, mostly showing an increase, thereby lengthening the flooding period. The floods occur between April and September, making a substantial part of the year disaster-prone. The fragile ecosystem nesting this valley also experiences landslides apart from also being the most earthquake prone zone of India. This vulnerability can be assessed from the fact that both of India's most powerful earthquakes have occurred in Assam, in the years c.1897 and c. 1950, measuring 8.7 on the Richter scale.

⁵ Cover Story Assam Floods. 2022. Down to Earth.

⁶ Based on Bharath and Ramachandra (2020).

⁷ This is based on interviews from such people, who lost their lands multiple times to river-bank erosion, before arriving in Dibrugarh, only to face flood again, albeit in an urban area.

⁸ The flooding process is an annual occurrence hence use of the term 'cycle'.

⁹ The Census of India defines a household as a group of persons who live together and take their meals from the same kitchen. During floods, food might be shared between different households sharing a common kinship. ¹⁰ According to Brody et. al. (2008: 6) women and children are 14 times more likely to die than men during

disasters.

¹¹ Brahmaputra is trans-boundary river draining China, Bhutan, India and Bangladesh over a length of 2880 km. This paper discusses the river in its middle stage of flow in north-eastern India, creating the Brahmaputra valley with a wide floodplain. With a catchment area of 178,213 km², the valley is the most densely populated of the north-eastern region of India. It receives a mean annual rainfall of 2,678 mm, drains a volume of 485.290 km³ and is among the wettest regions of the country. It drains the region with seventy-nine tributaries in the territory of India alone.

¹² As noted from the interviews conducted with the people affected by annual floods and narratives of the people of Dibrugarh not directly affected by the floods. Flood is regarded to be a process instead of an event where the deposition of fertile alluvium in the floodplains increases the natural productivity of the soil, leading to a rich harvest for the people. As an agrarian economy, the people accept the flood as a boon for agricultural production and hence a “positive” process. The respondents regarded the floods as “natural” and integral to their culture itself, floods as embedded in the cultural identity of the region in itself. In spite of the loss it inflicts, the people understood it as a welcome problem. In this sense, flood is both a boon and a curse.

¹³ As per the definitional criterial of demarcating a town and a city by the Census of India, Dibrugarh with 1,39,565 people is a town although as per the new OCED-EC definition of Cities in Europe, Dibrugarh would qualify as a City. Refer Dijkstra, L and Poelman, H. Cities in Europe: The new OECD-EC Definition. European Commission. Regional Focus. RF 01/2012

¹⁴ The Scheduled Caste is a Constitutionally designated group of people accepted as one of the most disadvantaged socio-economic groups in the country.

¹⁵ Socio-Economic Survey Report 2003-04, Directorate of Char Areas Development, Guwahati.

¹⁶ A community in Dibrugarh exclusively engaged in the profession of washing clothes.

¹⁷ In the river banks, people of same community stay in one contiguous well-defined socially fixed space. In a sense, it is a congested neighbourhood called a ‘suburi’. It roughly translates into community, hence the use of this term.

¹⁸ Based on field interviews, focus group discussions and testimonials of people inhabiting the area close to the chars. The houses are constructed in a line, each room rented to a family size as large as six. In 2018, each room cost 1000 rupees for a month. The houses begin from the embankment and ends almost on the river.

¹⁹ Cover Story Assam Floods. 2022. Down to Earth.

²⁰ Based on data collected from interviews conducted during fieldwork.

²¹ The chars of Dibrugarh are officially zoned as ‘open space’ in the Dibrugarh Master Plan, 2021. Accessed on 26.07.2022

https://tcp.assam.gov.in/sites/default/files/swf_utility_folder/departments/dtcp_medhassu_in_oid_4/this_comm/sl.no_15_dibrugarh.pdf

²² Based on interviews with different communities of Dibrugarh.

²³ During the floods, while men fear mostly fear physical harm, women also fear violence, sexual assault and rape. Multiple studies (Sjoqvist and Ungefialt: 1992; Stanko: 1995; LaGrange and Ferraro: 1989; Burt and Estep: 1981; Warr: 1985) as quoted in Gustafson (1998) have found that what appears to be the same risks may

have *different meanings* for women and men, because of women's underlying fear of sexual assault (emphasis original).

²⁴ Memories act as a powerful tool in defining people's behaviour towards adaptation because they influence opinions and beliefs constructed in the context of the hardships faced during the flooded period.

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