

ASSAM AND THE BRAHMAPUTRA: RECURRENT FLOODING AND INTERNAL DISPLACEMENT

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Assam epitomizes images of natural beauty: wild-life sanctuaries, tea estates and lush rainforests. It is the largest of the “seven sisters”, the states that make up the north-eastern wing of India. Right through the heart of this state runs the Brahmaputra, the second largest braided river in the world, known for its meandering and frequent changes of course (Brahmaputra Board, 2013). The name Brahmaputra means “the son of Brahma”, who in Hindu mythology is the creator of all humans and along with Vishnu, the preserver, and Shiva, the destroyer, forms the “Great Trinity”. The Brahmaputra created Majuli, a river island situated mid-stream, by gradually depositing sediment to form an alluvial plain (ASI, 2004). However, the Brahmaputra over time is transforming into Shiva, evidenced by the destruction it has caused in the Assamese part of the Brahmaputra river valley. The most vulnerable to this destruction are the 168,000 residents of Majuli, who have been the victims of constant flooding of the river for decades (Census of India, 2013). The communities struggle to save themselves from the wrath of the river; some migrate out of the flood-prone region while others remain in temporary settlements along the riverbanks. Despite financial losses to the tune of INR 2 billion per year, government attempts to curb the damage are both negligible and ineffective (Kalita, 2013).

In the context of climate change, the frequency and intensity of flooding is likely to increase, implying that best practices for flood control need to be identified immediately; in cases where flood control is not possible, plans to minimize the impact on local populations need to be developed. Given that 9 per cent of the 40 million hectares of land prone to flooding in the country is located in Assam, tackling the problem posed by the Brahmaputra is critical for India (Kalita, 2013). Further, any effective policies in disaster management implemented in Assam could act as a prototype for other

flood-prone regions of the country and even for other countries in South Asia, like Bangladesh, who confront the same issue. Also, solving the conundrum faced by Majuli, a sinking river island, would contribute to possible solutions for island nations that could face the same predicament in the future.

The first section of the paper will give an outline of the demographics of the region, including the existing migration patterns. The second section will discuss the floods (focusing on 2012) and consequent environmental degradation, its influence on demographic trends and the prospects in light of climate change. The final section will assess the policies relating to flood control and dealing with internal migration.¹

1. KEY DEMOGRAPHIC CHARACTERISTICS OF ASSAM STATE AND MAJULI RIVER

1.1. Background

The State of Assam has a population of 31 million people, of which the majority is concentrated in the two river valleys of the region: in the Brahmaputra valley, that covers 24 districts, and in the Barak River, that covers 3 districts. Only 13 per cent of the total population lives in urban areas, far lower than the Indian average of 27 percent (Census of India,

1. Since compiled data on the floods and their impact on Assam (such as numbers affected, people displaced, etc.) are scarce, the paper will rely upon news reports and grey literature. It is interesting to note that these flood-related news reports are prominent only in the regional newspapers rather than the national the problem is perceived in India; it is newspapers, implying that access to information on the area is limited even in the Indian capital. This reflects how reduced to a ‘regional’ issue instead of a ‘national’ problem, much to the frustration of locals in the region.

2011). The population density in Assam of 396 people per square kilometer exceeds the nationwide rate of 382 persons per square kilometer (Census of India, 2011).

The main occupation of the Assamese people is farming (mainly of paddy) followed by work in the service sector or in crafts such as pottery. This high dependence on agriculture, where over 95 per cent of the people rely directly or indirectly on the land, is risky considering that 23 per cent of the state's cultivable land is vulnerable to floods or drought. As it is, Assam witnesses a higher incidence of poverty of 37.3 per cent, (in comparison to the rest of the country where the rate is 32.67 per cent) particularly in rural areas where 90.2 per cent live in poverty (Directorate of Economics and Statistics, Assam, 2011).

Within the state of Assam is the small river island of Majuli, bound by the Brahmaputra to the south and one of its larger tributaries, Subansiri, to the north. The island houses around seven different tribes who live in 243 small villages spread across the island (ASI 2004). Majuli is also the nucleus of Vaishnavite faith (a main branch of Hinduism), as it hosts 22 Vaishnavite monasteries. Each of these monasteries, known as *sattras*, imparts teachings to disciples, while also fulfilling civic functions like the settlement of disputes.

Majuli frequently faces the rage of the river. Following an earthquake in 1950, the Brahmaputra changed its course, eroding the island's area from 1,244 sq km to 514 km². The river's potential for destruction and creation of fertile lands through inundation has made it an integral part of Majuli's spiritual culture. It is for these reasons that the island lies at the heart of the Assamese civilization, with its intricate web of interaction between indigenous groups, the environment, spirituality and culture (Pisharoty, 2011; Choudhary, 2011).

1.2. Migration trends in Assam: Growing in-migration fuels ethnic tension

The state of Assam is extremely ethnically and religiously diverse. This plurality is reflected in the 200 different mother tongues that were spoken in 1971 (Assam Online Portal, 2013). This diversity can be explained by immigration into the region, which is facilitated by the state's geographical position between seven Indian states, Bangladesh and Bhutan. Entry points are therefore numerous for migrants who wish to benefit from the state's increasing prosperity. Yet, immigration can be traced back to the colonial period, when migrants from Nepal, Bihar and Bengal moved to Assam to work on the tea estates. Many of the Bengalis

settled down in the Brahmaputra valley to cultivate the *char* areas (riverine land), which continues to influence the migration patterns of today. Two subsequent waves of Bengali immigrants followed Indian independence and partition in 1947, and Bangladeshi independence from Pakistan in 1971. Like before, these newer Bengali immigrants settled in the floodplains of the Brahmaputra River (Singh, 2008).

Over the past four decades, the influx of immigrants has persisted. Assam's population has been growing at a rate faster than the whole of India, despite a falling birth rate, which is attributed to heavy immigration flows from neighboring regions (Directorate of Economics and Statistics, Assam, 2011). Amongst the immigrants, there are second/third generation Bengali immigrants whose families have been in Assam for decades and have integrated with the Assamese culture, and recent immigrants whose culture is distinct from that of the older immigrants (Dasgupta, 2001). However, precise data concerning both recent and historical immigration flows remains scarce or completely inexistent in Assam. Though there are assumptions concerning high levels of illegal immigration from Bangladesh to Assam, the numbers are mainly speculated.

As a consequence of immigration, tension has been escalating in the region. Assam has become a hotbed of contention between the indigenous tribal population and groups of Muslims, who are believed to be illegal Bangladeshi immigrants (irrespective of their actual migration status, nationality and timing of migration). This friction has intensified to violent levels on several occasions, most recently in 2012 with the riots between the Bodos, the chief tribe in the state, and the Muslims (Bhattacharyya & Werz, 2012). This particular outbreak led 400,000 people to flee their home, considered as internally displaced persons (IDPs) (IDMC, 2012).

Many speculate that the influx of Bangladeshi immigrants is a consequence of adverse environmental factors, indicating that environmentally induced migration is already underway. According to Reuveny (2005), "when asked why they (*Bangladeshi migrants*) moved, they often provide natural disasters, land scarcity and degradation and poverty as reasons". These immigrant communities are vulnerable to environmental catastrophes as, according to a study conducted by Shrivastava and Heinen (2005), many of them continue to establish temporary settlements in low-lying areas highly prone to flooding. This is a consequence of the tension as immigrants are not welcome in the mainland towns and resort to setting up homes only in regions not densely inhabited by local populations,

which are, incidentally the low-lying char areas. On one hand, by settling there, these immigrants free themselves from the risk of ethnic conflict as these regions are mainly traditional “ghettos” of the Bangladeshi communities, but on the other hand, they expose themselves to natural disasters like flooding (Dasgupta, 2001).

Emigrants from the state of Assam represent a negligible amount of all internal migrants in India, only 0.22 percent. Over half of the 700,000 Assamese emigrants were women, migrating for more than half of them for marriage purposes (Census of India, 2011). However, there is considerable rural-urban migration within Assam. This increased urbanization, coupled with industrialization has caused significant environmental degradation that correlates with the increasing destruction caused by floods (TERI 2008).

2. FLOODING OF THE BRAHMAPUTRA RIVER

2.1. The Brahmaputra’s geomorphology and the impact of the floods

Originating from the Kanglungkang Glacier in Tibet, China, the Brahmaputra River traverses the Tibetan Plateau before bending into Arunachal Pradesh in India, after which it runs through Assam, merges with its tributaries in Bangladesh and drains out into the Bay of Bengal. Along the rumbling journey from a high altitude in Tibet till the Assam valley, the river picks up a large load of sediment, making the river highly unstable in the upper reaches of the Assam Valley. With deforestation caused by shifting cultivation - a particular method of cultivation, often employed in South Asia, soil erosion has increased, which in turn has increased the amount of sediment carried by the river (Sharma, 2012). In addition to a large amount of sediment, the river also carries a large volume of water. The Brahmaputra has over a 100 tributaries, of which 15 large ones originate in the north due to the melting of snow on the Eastern Himalayas (Ghosh & Dutta, 2012). Once the river enters the Assam Valley, the silt is deposited, leading to a change in the slope of the river, erosion of river banks, frequent migration of the river’s course and heavy floods as the river cannot contain the volume of water (Sharma, 2012). To exacerbate the situation, the region receives high amounts of precipitation (in the range of 1100-6500mm) and is a seismically active zone (NDMA 2008). This high amount of rainfall during the monsoon season is equally to

blame for the river’s deluge. Landslides and flash floods occurring due to a combination of all these factors are, as a natural consequence, extremely common. Unfortunately, the disaster does not end there; a vicious cycle follows the onset of landslides, as the falling debris block the course of the river, forcing it to flood elsewhere (TERI, 2008).

Due to these factors, the flood-prone area in Assam totals to 3.1 million hectares, which is 40 per cent of the state’s area, of which, 560 villages dotting the banks of the Brahmaputra are particularly vulnerable (TERI, 2008; TNN, 2013) Every monsoon, the state experiences flooding, with major floods occurring at least once every four years (Directorate of Economics and Statistics, Assam, 2011). Despite the suddenness of such events, the government has ample warnings of their potential magnitude and should be therefore able to implement flood-control measures to minimize the destruction. However, they still cause immense destruction: 931,000 hectares are affected each year, eroding at least 8,000 hectares annually. According to the Assam State Government (2013), at least 7.4 per cent of the total landmass of the state has been eroded since 1950. Financially, the cost of major floods is extremely high - INR 7.7 billion in damages to utilities, crops and houses when Assam was badly hit in 2004 (Kalita, 2013). Majuli has also been heavily eroded due to the annual inundation of the Brahmaputra and the migration of the rivers bounding the island. Between 1998 and 2008, the island lost an average annual amount of 5,000 hectares, while 14,834 hectares of land remain constantly under water (Dutta, Barman, & Aggarwal, 2010). Subtracting this land from the island’s total, along with the land unsuitable for agriculture and the land reserved by the government, only 32,237 hectares, or 25 per cent of the island’s total area remains available for cultivation (ASI 2004).

2.2. The floods in 2012: How relief efforts were obfuscated by outbreaks of violence

In 2012, a first wave of floods occurred from April to June as it crossed the danger mark by 43.8 cm, with subsequent waves of flooding in the following months. As of the 21 October 2012, the Assam State Disaster Management Authority (ASDMA) stated that 2.9 million people were affected, from 3,354 villages (ASDMA, 2012).² Dhemaji, Morigaon, Dhubri, and Lakhimpur, the most densely populated districts in Assam were worst affected by these floods. The government set up 340 relief

2. No updated date could be found.

camps at the peak of the flooding, mainly in school buildings, to provide assistance to 485,000 people. Furthermore, 67 raised platforms and 188 shelters were also constructed. On the 28 August 2012, 17 of the 23 relief camps sheltered a majority Muslim displaced persons. Despite governmental efforts, many communities remained outside the relief camps because the government didn't have the capacity to provide shelter to all of them and were struggling to survive by setting up temporary shelters. These populations were even more vulnerable to subsequent waves of flooding than those in the camps (ASDMA, 2012).

Following the floods in 2012, 36,000 people were actually living on the dykes constructed to protect Majuli and that this number had risen by 6,000 from the previous year (TNN, 2012). As floods had deluged the whole island, the government needed to evacuate large numbers of people living on these embankments. However, relief efforts were obfuscated due to the geography of the island.³ As a sign of the government apathy, the President of Congress Sonia Gandhi and the state minister aeri-ally surveyed the flood affected areas (ACTED, 2012). Damage to infrastructure like highways further disrupted any quick attempts at providing relief to the population. To aggravate the flood situation, riots also broke out in July, creating an additional challenge during the relief efforts and leading the state into a complex crisis.

According to situation reports by the International Federation of Red Cross (IFRC, 2012), the IDPs on the riverbanks and trapped populations in Majuli were facing dreadful living conditions as food, water, shelter, health and sanitation facilities remained lacking. The government provided them with staples of rice and dal (lentils), nutrient supplements and baby food for children. The floods had destroyed the hand pumps, the main source of clean water, and the provision of purified water was therefore extremely critical. The government also provided tarpaulin sheets that were however insufficient for the large numbers of IDPs and certain relief camps were extremely make-shift. Fortunately, there was no epidemic outbreak following the floods, though IDPs suffered from malnutrition (IFRC, 2012). In the context of humanitarian crisis, provision of education was extremely difficult (TNN, 2012). Relief efforts following the retreat of the monsoon seemed to slowly dwindle down;

3. Usually one needs to take two ferry rides across the river to get to Majuli, but during the floods when the water was at dangerously high levels, traversing the river was near impossible. Army helicopters were thus used for dropping essential supplies like packaged food and drinking water to the marooned population, but could not land on the island because it was submerged.

funds became scarce since donors believed that flood-affected populations returned to their homes as the displacement was supposed to be only short term (Joseph, 2012). In reality most families have nothing to return to as the lands are still submerged. For those able to go back to their re-merged areas of origins, they often face challenges in getting back their lands due to unfair relocation processes (Dasgupta, 2001). Many of them may remain permanently displaced persons within Assam, yet close to their original villages (Dasgupta, 2001).

A great polarization on the basis of different ethnicities is found amongst IDPs, due to the ethnic tension that has been bubbling in Assam for years (Dasgupta 2011). Based on this diversity division among the communities themselves, camp managers have divided the displaced population because of fears that violence would erupt between the polarized groups of IDPs. The composition of the camps reveals that majority of the displaced, are Muslims followed by members of marginalized tribes, acknowledgement that interrogates on the linkages between daily persecutions and marginalization and vulnerability to natural disasters Dealing with the tension between the originating tribes and the Muslims is therefore very sensitive during the relief phase, as resettlement and return always raises issues regarding land ownership and legitimacy. Several tribes argue that the land is their rightful property and that the Muslims should vacate it, while the latter refuse to do so arguing that they have been farming there for years. If Anandita Dasgupta (2001) professor at Guwhati University argues that "the use of violence, dispossession, murder, and confiscation of crops and animals have almost become established patterns of *char* life", they seem particularly sensitive during post-disaster relocation processes. Considering therefore environmental factors but also ethnic tensions as incentive for displacement, it is difficult to ascertain the exact degree of environmental influence in the displacement processes – an important consideration to keep in mind in the labeling process of such displaced groups.

2.3. Is growing out-migration a consequence of recurrent floods?

With the flooding of the Brahmaputra over the years and the subsequent slow-onset event of erosion of riverbanks, there has been large displacement of people every year. Whole villages have been erased or washed away due to the force of the river. Unfortunately, official statistical databases for the number of villages displaced and details regarding the relocation of the population - where they move to and how they survive - remain vague.

Table 1. Number of erased villages in ASSAM

District	Number of "erased villages"
Dhubri	71
Jorhat	2
Kamrup	14
Goalpara	75
Chars (Riverine areas)	181

SOURCE: TNN

Revenue Minister, Prithivi Majhi, though, states that data collection is underway (TNN, 2013). This collection of information is likely to be an arduous task as with recurrent inundations, villages located in low-lying char areas, separate over time to combine with different villages in the high lands, as seen in a study conducted by the NGO Arayanyak (Das, Chutiya, & Hazarika, 2009). Similarly, in Majuli, according to the state government, since 1969 approximately 9,566 families have been left homeless due to land erosion. The government has relocated only 500 families, leaving the approximately 10,000 remaining displaced peoples to fend for themselves (Choudhary, 2012). Since government resources provide no information on this relocation, Mr Choudhary was interviewed for an insight into the state of the displaced persons. These populations, according to the journalist, have been relocated to "some other villages. They now survive on farming, a few on fishing; others have taken up petty jobs. They have coped since survival is inherent to them."⁴

The damages of floods on livelihoods are tremendous. With increased siltation, fertile land is no longer productive, rendering Assamese farmers landless with very limited opportunities to find remunerative employment (TERI, 2008). Thus, these populations, dependent on agriculture, livestock production and fishing, either abandon their lands and homes in search of work by migrating to other cities where they become rickshaw-pullers or cart-pullers earning dismal daily wages, or remain displaced (Pisharoty, 2011; Dasgupta, 2011). Many of these displaced persons especially vulnerable to labour exploitation and trafficking (Dasgupta, 2001).

Information available on relocation of displaced villages and families and on out-migration of Assamese living on the banks of the Brahmaputra is based on newspapers. As reporters note, many of the youth leave the difficult flood-ravaged regions with few employment opportunities to work in big cities in other states like Kerala, in the south or Nagaland, which is also within the north-eastern

region (Das et al. 2009). These youth migrate on a temporary basis to earn a modest income, which they remit back to their families for making repairs, buying food and maintaining livestock. Though these remittances are useful, there is a decline in the workforce for agriculture, which increases the burden on the older generation who stay behind (Das et al. 2009). However, the youth work initially as seasonal farmers on the less flood-prone, fertile lands, before migrating for the rest of the season. (Das et al. 2009) Others migrate over short distances to northern districts to engage in menial labour like pulling rickshaws (Dasgupta, 2001; Das et al. 2009). In Majuli, the youth, often more educated than the older generation, have migrated to the southern city of Hyderabad in search of work. At the same time, many in Majuli do not have the resources to migrate and remain trapped on the island (Pisharoty, 2011).

Following the Bodoland riots in 2012, the visibility of the Assamese "ghettos" in other parts of India became more visible, as their population increased due to a mass exodus of Assamese people (Devulapalli, 2012). This large number of Assamese workers in other Indian states suggests that first, people are emigrating from the state not only in search of jobs, but perhaps also as an adaptation strategy to deal with the floods and infertile lands. Second, it suggests that though census data reflects low out-migration from Assam, the figure is possibly higher than estimated. Migration flows, therefore, are changing in Assam due to the impact of the Brahmaputra on the lives of the local population.

Based on the newspaper reports and other sources of data, the state's migration flows can be summed up as follows: first, temporary intrastate displacement during the monsoon seasons with return to the homeland when the lands re-emerge; second, permanent intrastate displacement to embankments faced by the poorer and marginalized IDPs; third, permanent migration of whole villages, which are proactive in order to avoid the floods; and fourth, long-distance, interstate, temporary and seasonal migration for additional economic reasons. It is interesting to note that, apart from the last group of migrants, most others remain fairly close to their original locations.

The likely reasons behind migration, and how one is affected by the floods in Assam, include level of education, income and occupation. Public sector employees are less likely to be displaced because they have a secure livelihood despite frequent inundations. Furthermore, those who have higher levels of education are more adaptable to migration, as they have better skills, making the probability of finding employment higher. Income is also important in migration as the people in the

4. Interview with Ratnadip Chaudhary, Principle Correspondent, Tehelka, conducted on 30 March 2013 via email.

high- and middle-income groups sometimes already have property in safer areas to where they relocate (Choudhary, 2011). Thus, those who cannot move away from the floods are the peasants and the indigenous tribal groups who are bound to the land. Culture is a second important determinant in migration. For the tribal populations inhabiting the riverbanks, coping with the flooding is natural to them. The Mishing tribe for instance, builds houses on stilts, known as 'Char ghars' that have been emulated by governmental relief programmes. This riparian culture of the tribes often impedes them from migrating too far from the river, owing to sentimental attachment, implying that these communities are highly unlikely to migrate long-distances and for the long-term (Das et al. 2009).

2.4. The climate change challenge

Climate change is likely to have an extremely adverse effect on flooding and erosion in the region. First, since rainfall is currently one of the root causes behind overflowing of the river, any increase in precipitation as predicted in a few studies outlined in the State Action Plan on Climate Change is likely to make the floods more extreme (TERI, 2008). Second, since the river also receives glacial run-off through its tributaries, the rapid melting of snow due to global warming will also increase the volume of water that the river holds (Sharma, 2012). Hence, floods are likely to become more frequent and more destructive in the near future, which may also accelerate out-migration from the region. Though this latter process allows people to cope with the disaster, there are many questions concerning relocation that need to be addressed.

First, in the case of Majuli, the protection of cultural integrity is an imperative. Due to the changing course of the river, the people living in Assam have imbibed migration as a trick for survival, migrating within ten kilometers or to entirely new districts in the upper reaches of the river to avoid flooding. This adaptation mechanism has a detrimental impact on culture, as villages do not move in totality, because of population density constraints (Das et al. 2009). In Majuli, the number of *sattras* has declined from 65 to 22, and in the event that the island becomes engulfed by the river and its inhabitants have to relocate, it is likely that the translocation of these monasteries will not be successful (Choudhary, 2012). In this context, believers of the Vaishnavite faith fear the erosion of an important part of their culture along with the river island. Consequently, it is important to think not only of how to preserve populations, but also their unique cultural identity when formulating rehabilitation plans.

Second, increased out-migration from the floodplains is also likely to create a labour shortage for the farms that are not submerged. Furthermore, it is likely that this out-migration will be a generational issue as the youth is more willing to migrate in search of work, leaving their parents behind to work on the land. Third, given the ethnic divisions in Assam's society and the hostility faced by IDPs and immigrants, increasing migratory movements due to environmental factors is likely to be a huge challenge. As it is, when the Bengali Muslims living in riparian areas migrate upwards during the floods, locals view this as an influx of new illegal immigrants from Bangladesh (Dasgupta, 2001). In the face of climate change, dealing with these challenges will be essential.

3. POLICY ANALYSIS

Given the destruction caused by the floods each year, the state and central government have implemented a series of disaster management policies in order to curb the harm caused by the floods. Large-scale floods that occurred across the country in 1954 prompted the Indian Government to look into flood control measures. Since then, the government has taken steps to implement this objective by creating the High Level Committee on Floods (1957), the Ministers Committee on Flood Control (1964), the Rashtriya Barh Ayog (National Flood Commission, 1980) and Task Force on Flood Management/Erosion Control (2004) (NDMA 2008). In December 2005, the government enacted the Disaster Management Act, which established the National Disaster Management Authority (NDMA), which presides over the State Disaster Management Authorities (SDMA), Disaster Response Forces and the State Funds for Disaster Relief. This approach was expected to ensure an integrated disaster management approach in the whole country (NDMA 2013), while the direct responsibility of relief, rescue and rehabilitation measures lies in the hands of the state governments concerned.

In addition to the SDMA, each state must adopt a State Disaster Management Act to identify responsibilities and coordination mechanisms. For flood management, State Governments and local authorities need to refer to the guidelines put down by the NDMA when developing action plans. Below the state level, district-level and village-level bodies have been created with the responsibility of disaster response and relief, mitigation and prevention at the district level. In case of a disaster, it is these bodies that coordinate the functions of local authorities, health facilities and primary schools (Ministry of Home Affairs, 2005).

In Assam, the ASDMA (Assam State Disaster Management Authorities) works within this institutional framework. The ASDMA has taken both structural and non-structural measures for flood preparedness. Structural measures to mitigate flooding include the construction of embankments, water reservoirs, retention basins and buildings on elevated areas. Non-structural measures include flood-forecasting mechanisms and floodplain zoning that check uncontrolled settlement in vulnerable areas (ASDMA, n.d.). A flood-hazard atlas has already been developed for each of the districts in coordination with the Indian Space and Research Organization. An *Assam Relief Manual* also exists, though it was created in 1976 and does not include preparedness strategies (TERI, 2008). Additional measures include building community awareness, stockpiling emergency essentials, creating early warning systems, identifying areas for settlement, conducting drills, and developing coordination plans with NGOs and other local organizations (ASDMA, n.d.).

In addition to the ADSMA, developing a master plan for flood control in the Brahmaputra valley is under the jurisdiction of the Brahmaputra board, created by the central government through the Brahmaputra River Act in 1980. This master plan for the control of floods and erosion entails the construction of “multipurpose dams”, which would provide extra benefits like hydroelectricity and irrigation. In 2003, protection of Majuli was placed under the responsibility of the Brahmaputra board (Brahmaputra Board 2013).

When developing an effective strategy for flood control in Assam, it is pertinent to look at policies influencing migration trends in the region. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been reported to alter the rural-urban migration flow in other states of India as it provides 100 days of guaranteed employment in rural India. However, according to research conducted by the Agro-Economic Research Centre, the scheme has had little impact on slowing down this trend in Assam, largely due to the fact that the days of work promised by the act was not yet a reality in the state and, as a consequence, wages in urban centers still remained higher than those provided by the MGNREGA (Bordoloi, 2011). Thus, the rural populations in Assam (and perhaps many living on flood ravaged river banks) consider migration to cities as a better option, adding to the rapid urbanization of Assam. In the absence of urban policies or policies protecting internal migrants in India, these populations are often very vulnerable, given a low priority by the government and have no social or legal protection (UNESCO, 2012). In fact, the only policies in Assam dealing with

migration call for the detection and deportation of illegal immigrants, implying that cross-border migration occupies the public discourse far more than internal migration (Singh, 2008).

4. KEY CHALLENGES IN ADDRESSING THE FLOODING AND DISPLACEMENT IN ASSAM

Firstly, the institutional capacity and resources among the state and district authorities may be too limited to implement the outlined priorities. The ASDMA’s Annual Report 2012 outlined that State Disaster Response Force consists of only 263 personnel, with roughly 11 from each district. In 2012, ASDMA conducted 1,482 training programmes and workshops to build capacity among different demographic groups like health professionals, students and teachers, volunteers and NGOs. Though such programmes indicate a positive step, they were able to reach only 457,145 participants, which is very low given that 2.9 million people were displaced in 2012 (ASDMA, 2013). This dearth in capacity leads to a dependence on external assistance from non-local bodies, which do not coordinate well with the existing NGOs and other informal institutions set-up in the state (ASDMA, 2013).

Secondly, existing policies do not take into account ground realities. The training programmes, for example, seem to target very specific communities, i.e. those people with a basic level of education, with the risk of marginalizing communities living in rural or remote areas. In a state like Assam where only 73 per cent of the population is literate, developing effective training programmes that empower those who are illiterate is crucial (Directorate of Economics and Statistics, Assam, 2011). Additionally, floodplain zoning, which prevents people from setting up houses on the riverbanks, is not implemented in Assam due to the state government’s argument that the thick population density in the state impedes the implementation of such a policy (Planning Commission, 2011). Though the government’s claim has merit, a check on human activity in these floodplains must be ensured in order to prevent such a damaging effect year after year.

Thirdly, the construction of multipurpose dams for flood control is also questionable. In the midst of frantic construction of three dams upstream on the Brahmaputra by China, India seems to have forgotten the central objective behind building dams of flood control, and focuses instead on ensuring the hydroelectric opportunities of the river (Orland, 2013). Until now, embankments have not only been ineffective in controlling the damage, but

actually further aggravate the situation by creating drainage issues in areas outside the dam (Das et al., 2009). In addition to creating instances of dam-induced flooding, these dams have also been responsible for displacing populations (mostly indigenous people, sometimes comprising of whole tribes) but this is often brushed aside as the displacements in the north-east are “relatively small” in comparison to other parts of India (Vaghlikar, 2011). Furthermore, apart from the construction of new dams, old embankments need to be repaired. In 2012, 74 embankments were breached during the flooding according to Water Resources Minister, Rajib Lochan Pegu. The minister also added that, “3,918.82 km of a total 4,773.82 km of embankments have surpassed their effective life-span”, implying that 82 per cent of the embankments in Assam were technically beyond their expiry date (Kashyap, 2013). Lastly, such dams do little to control siltation, which causes as much damage as inundation (Sharma, 2012).

In Majuli, despite the construction of a few embankments and the recovery of land in the form of sandbars, no concrete moves have been taken to avoid further erosion. In order to ensure the cultural identity of Majuli, the State Government applied to UNESCO for the status of “World Heritage Site”, on the premise that recognition of the island’s cultural value would increase both national and international attention for its protection (ASI, 2004). Unfortunately, the island remains on the list of nominated sites. Assam’s flooding problem also gets lost in the politics between the central and the state government. The Assamese believe that the central government remains apathetic to the situation. Protests led by the Assamese Student Union against negligible budget allocation to the strengthening of embankments and for the declaration of annual Assam floods as a national problem, rather than a state problem are frequent (TNN, 2013). The central government reiterates however, that this is a state issue, despite Chief Minister Tarun Gogoi’s assertion that the debt burden of the floods is too immense for the Assamese government to handle on its own (North East News Agency, 2003). However, the state government has received INR 11.38 billion from the central government to tackle the flood challenge, which is far more than the INR 8.32 billion recommended by the Task Force on Floods (Kashyap, 2012). Furthermore, the state government has demanded funds to respond to annual floods but despite receiving the requested money, projects are still delayed. Skeptics question whether the funds are actually being employed, or simply siphoned off (Chaudhary, 2012).

This slow implementation of schemes, according to a member of the Central Water Commission, is supposedly the reason behind the slow release of funds. The absence of state representatives from

Assam in the first meeting for the working group on flood management for the twelfth five-year plan was also symptomatic of the apathy on behalf of the state government (Planning Commission, 2011). Another indication of the ASDMA’s lackadaisical attitude is evidenced by fact that the 1976 draft of the “Assam Relief Manual” was revised for the first time in 2011 (Henriques, 2011).

Coordination between ASDMA and NDMA is also lacking. As a recent audit by the Comptroller and Auditor General on the NDMA revealed, it is “ineffective in its functioning in most of the core areas.” (Supreme Audit Institution of India, 2013). Key projects like hazard mapping have not been completed, while poor inter-governmental agency communication is a hindrance to the disaster management process. Furthermore, rescue and relief teams were inadequately trained, while the disbursement of funds was delayed (Supreme Audit Institution of India, 2013). Though the report included eight state-specific observations, an audit of ASDMA was not undertaken. However, given the lacking capacity of the national agency, ASDMA has little support and guidance from the central government to deal with disasters effectively. The Brahmaputra Board also lacks coordination with the state government: set up by the central government, the control of its activities remains in New Delhi (Government of India, 1980). States should be given increased control and autonomy over the determination and enforcement of their flood control master plans.

International coordination to manage the Brahmaputra’s water resources is fairly tense, despite cooperation on other riparian systems in India, as suggested in the rejection of a recent Indian proposal for a new mechanism on water sharing by China (PTI, 2013). Despite this attempt by India (advocated by the central government) to improve international coordination, political will to do the same amongst north-eastern ministers is weak. For example, Mr Gogoi, Assam’s state minister argued that when flood management coordination between north-eastern states remains deficient, international cooperation on the matter remains out of the question (North East News Agency, 2003).

A last challenge with the floods occurs with the retreat of the monsoons. As the rains disappear, so does attention to the issue. However, many IDPs continue to live in relief camps and issues with nutrition, health and sanitation remain. Some IDPs in camps are even forced to leave, since the camps located in school buildings need to reopen (Joseph, 2012). The crux of the issue lies in the fact that the IDPs are not legally recognized. The Guiding Principles on IDPs as formulated by the UN are not recognized by India and not implemented by the Assamese Government (Dasgupta, 2001).

CONCLUSION

Though the basic structure for flood management has been established, policies are often misguided and worsened by the lack of attention given to north-eastern states due to the region's limited political clout. Instead, both the central and state governments need to coordinate and strengthen their institutional capacities in order to successfully employ a multipronged approach looking at different dimensions - social, economic and environmental - that will be most effective at alleviating the situation. At the outset, it is essential for the government to safeguard the rights of IDPs, which includes recognizing them, particularly in the context of ethnic violence. The ethnic challenge acts as an impediment to relief efforts and so policies to encourage economic and social development among tribal and marginalized Muslim populations should be a priority. Furthermore, livelihood support for those whose lands have been destroyed needs to be provided by the government, rather than just provision of food supplies following the floods. The existing policy misses the point that crops were sold for monetary purposes and not merely for sustenance (Talukdar, 2013). To prevent the problem of food and job insecurity following the floods, the government should consider providing training for agriculture in flood-affected areas, and targeting particularly and youth to increase the labour force in case of young males migrating (Das et al., 2009).

With regard to migration, policy makers are oblivious of the temporary migration among the tribes that allow them to survive (Das et al., 2009). The government also fails to recognize migrant flows- both into and out of Assam - that are crucial in order to draft policies dealing with unplanned urbanization and to effectively manage flood control. To begin, the Government could consider facilitating migration of these tribes. It should also create a temporary and circular migration scheme within the country that may also help redistribute income to the north-east through remittances. They could be used to ensure that these tribes have sufficient resources in the face of flooded agricultural land.

Local knowledge, particularly among the tribes with a strong riparian culture, should also be tapped into by ASDMA (Das et al., 2009). The ASDMA could utilize the existing networks to more efficiently provide aid to those in needs. In Majuli, in particular, the sattra is a key informal institution that is non-discriminatory and overarches all

aspects of life from education to disputes with its giant halls called 'namghars' where the villagers collect. Thus, imparting knowledge of flood preparedness from these institutions would ensure local mobilization. The community-run early warning systems for floods in the disaster prone area from Assam to Bangladesh is an example of the role informal institutions can play in disaster management (NDMA, 2008). Effective policies need to include civic participation and since "NGOs are ready to take up the issue but government is in denial" as Mr Choudhary argues,⁵ it is useful to increase their engagement prior to and during the floods.

As for structural measures, steps to deal with the excessive silt carried by the river also need to be taken when constructing dams. As Nayan Sharma (2012), a professor at IIT Roorkee asserts, "a massive soil conservation campaign is needed to effectively reduce the sediment volume of the Brahmaputra, along with the creation of flood detention reservoirs, river training for erosion control, land reclamation and channelling." Sharma also suggest that India takes a leaf out of China's flood management book by using similar technology for sediment control as used on the Yangtze River.

The lack of accurate data is a huge challenge, which mires the whole relief operation as the numbers affected are undercounted. The state government needs to update its databases and keep a record of the number of inhabitants of all villages (TERI, 2008). A good practice of ASDMA was the daily reports published on the floods in 2012, which kept an account of numbers in relief camps and those affected including livestock. By looking at these reports, it is easier to determine trends and best practices that can help formulate effective policies for the years to come.

Finally, flood preparedness and disaster risk mitigation needs to be streamlined into development policies. There is hope that the government is moving in this direction, as it recently approved a IDR 1.16 billion project to ensure economic development, social improvement and preservation of the remaining 22 sattras in Majuli (PTI, 2012). Thus, for the people of Assam, while the Brahmaputra continues to destroy, preservation and creation lies within the hands of the government. ■

5. Interview with Ratnadip Chaudhary, Principle Correspondent, Tehelka, conducted on 30 March 2013 via email.

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