

Interplay of Disaster Risk, Climate Change, and Uncertainty



Photo: Shibaji Bose.

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ABOUT THIS ISSUE

This issue of *Southasiadisasters.net* is titled "Interplay of Disaster Risk, Climate Change and Uncertainty" and highlights how the uncertainty related with disaster risk and climate change marginalizes at-risk communities by posing a serious threat to their overall development outcomes. Not only does this uncertainty manifest itself in different ways, it is also perceived by different people differently. For instance, there is a big gap in the way scientists and climate experts and at-risk communities perceive this uncertainty. While experts rely on quantitative models and projections, they are far removed from the lived experiences of at-risk communities who bear a disproportionate burden of the adverse impacts of this climate uncertainty.

This issue also contains examples of how at-risk communities are affected by the interplay of disaster risk, climate change and uncertainty. For instance, indigenous tribal communities have been living braving the natural uncertainties for centuries whether it's precarious living in forests, deserts, on seashores or facing 'natural' disasters. However, the anthropogenic intrusions into their lives by 'contacts' 'integration', 'development' led to diseases, displacement and despair in their lives. It is the task of our times to pursue the imperative of climate justice by empowering these at-risk communities with the skills and assets is to build resilience to climate uncertainty and associated risks. ■

- Kshitij Gupta

INTRODUCTION

Interplay of Disaster Risk, Climate Change, and Uncertainty

While there is overwhelming scientific evidence establishing a causal link between anthropogenic activity and climate change, there is a degree of uncertainty on the precise impacts of this phenomenon on the environment and human society. The uncertainty induced by climate change poses a threat to the ecology, human settlements, biodiversity and economy. Greater uncertainty makes the prediction of extreme climate events like droughts, floods and extreme temperatures tougher which in turn causes problems for preparation against such contingencies.

Thus, uncertainty is an integral part of disaster and climate risk. In poor and densely populated regions like South Asia, local people, planners and policy makers regularly confront climatic shocks and stressors such as cyclones, floods, droughts, changing rainfall patterns and extreme temperatures. Yet, the knowledge about the scale and impacts of these changes remain deeply uncertain. The interplay of disaster risk, climate change and uncertainty is manifested in a number of ways. It marginalizes at-risk communities posing a serious challenge to overall development outcomes.

The articles in this issue try to explore some of the consequences of the interplay between disaster risk, climate change and uncertainty. For instance, this interplay has spurred the rate of migration from the countryside to urban areas in Sri Lanka in the past decade. Migration is seen as an adaptive measure for climate shocks within the climate

change adaptation discourse. In Sri Lanka, climate shocks such as prolonged droughts have necessitated farmers to seek alternative livelihood sources in the cities.

In the Sundarbans, the largest mangrove forest in the world, climate change related uncertainty is driving the disadvantaged communities of the area to indigence and deprivation. The most visible stresses brought on by climate change in the Sundarbans is the decline in forest and aquatic resources, increased salinity of rivers and higher frequency of cyclones and floods. Since a large number of people living in this area are extremely disadvantaged and dependent on natural resources for their livelihoods, their situation deserves a closer attention.

A powerful way of building resilience of at-risk communities to the interplay of disasters, climate change and uncertainty is by leveraging the strengths and assets of these communities to respond to the stress and shock they experience. For instance, in the Dagara community of Ghana, the women and men farmers strengthened indigenous agro-ecological farming practices, and experimented with farmer managed natural regeneration while the elders of this community have catalyzed discussions about revitalizing indigenous foods and revalorizing a proud farming lifeway for youth. Empowering at-risk communities with the skills and assets to manage their own resilience is the first and most vital step towards climate justice. ■

- Mihir R. Bhatt

Migration – A Last Resort or An Adaptation Measure: A Case Study from Sri Lanka

Why do People Migrate?

People migrate for a variety of reasons. The "push and pull" hypothesis by Lee (1966) indicates that the decision to migrate is shaped by multiple factors associated with: (i) area of origin; (ii) area of destination; (iii) intervening obstacles; and (iv) personal attributes. For example, conflicts, poverty, lack of economic opportunity, low living standards, displacements, natural and ecological disasters in the area of origin function as push factors, while prosperity, opportunity, absorptive labour markets, political stability, and higher standards of living in the place of destination act as pull factors (Kalinowska & Knapinska, 2009).

Although high levels of economic disparities between locations, a "pull" factor, was once considered a primary cause for migration (Todaro, 1980) recent research reveals that an economic downturn or deprivation at home and information about opportunities elsewhere garnered through social networks also at one's home location, both "push" factors, were stronger motivators for migration (The Economist, 2018).

Climate Vulnerability has three interacting facets: (i) Exposure to potential hazards; (ii) Sensitivity to hazards, and (iii) The lack of capacity to respond / adapt to external shocks (Ali, 2013). A successful climate adaptation measure has to deal with all three facets. As climate change shocks continue to increase the vulnerability of many communities it is expected that environmental changes will be of greater

significance in human migration. However, this relationship is not entirely clear, as there is a lack of verifiable data to indicate overall population flows triggered by climate change (IPCC, 2007). Yet, it is likely that climate change can be a push factor – a catalyst for migration or have a multiplier effect as it adds to the pressure to migrate.

Coping with Climate Change through Migration – The Sri Lankan Context

Throughout Sri Lanka, climate induced natural hazards have become more frequent in recent times, with farmers, agricultural workers and fishers being the hardest hit. The increased frequency of flood and drought hazards in the last decade have caused severe hardships particularly to poor farmers across Sri Lanka (UNDP et al., 2016). Coinciding with this, there are anecdotal accounts of large numbers of farmers in Sri Lanka moving to cities due to climate volatility. According to the Department of Census and Statistics, approximately four million people

in Sri Lanka are internal migrants (almost 20% of the population). However, data shows that 35% of these migrations are temporary, as migrants return to their villages when the climatic conditions become more favourable for farming. The majority of these migrants who come from the country's agricultural areas such as the Central, South, North Western and North Central Provinces, head for the main urban areas, particularly in the Western Province (Perera, 2017).

Coping with Climate Change through Migration

The literature on environmental security highlights climate change as an external push factor for migration. Migration is seen as an adaptive measure for climate shocks within the climate change adaptation discourse (Raleigh, et al., 2008; Scheffran, et al. 2011). Thus, in order to explore the circumstances involving the impact of climate change on the decision to migrate, the Centre for Poverty Analysis (CEPA) carried out three case studies with farmers who faced a prolonged drought, which is symptomatic of the changing climatic patterns. In these cases, the decline in agriculture caused by drought conditions had severely impacted household incomes compelling them to consider alternative livelihoods. Thus, it can be concluded that climate conditions were catalytic for migration. Yet, social vulnerability to climate change, particularly for vulnerable and marginalized groups, is often complex and linked to many intertwining social, economic, political and demographic drivers, including personal/household

Migration can increase household resilience in times of environmental stress and should be viewed as a valid climate change adaptation response.

(Kartiki, 2011; McLeman & Smit, 2006).

characteristics¹ and intervening obstacles and facilitators² that influence the decision to migrate (Black, et al., 2011; Piguet 2008; McLeman & Smit, 2006; Adger 1999). Therefore, it is an oversimplification to just point to environmental factors alone. For example, Cambrézy (2001, 48, as quoted by Piguet, 2008) points out the inherent danger in "evacuating political responsibility by overplaying the hand of nature", when migration takes place due to climate shocks.

Appropriate social policy and social protection measures, can build climate resilience for rural communities (Heltberg, et al., 2009), while the absence of these mechanisms or other assistance, heightens the uncertainty faced by communities and can be seen as another push factor in people's decision to migrate. For example, Somadasa (Respondent 1)³, who engaged in farming with his two sons in the Galgamuwa area had obtained insurance cover for their seven acres of farm land, yet received no compensation for the loss of agricultural income associated with the drought. Had he been supported by this safety net, his circumstances may have been different. Similarly, Samantha (Respondent 2) from Galnewa, felt that if the government supported drought affected farmers like himself with interest free loan schemes, it would have provided some relief that may have staved off the need to migrate. While, Jayantha (Respondent 3) who engaged in paddy and cash crop farming, relied on financial support from his sons to supplement his household expenses as he had no social safety net. This highlights the importance of looking beyond environmental

factors. As Piguet (2008) points out, in the case of famines, many researchers hold views similar to that of Amartya Sen (1981), who maintained that famines are, usually only marginally attributable to environmental factors, but more the result of political ones. In the same manner, this also holds true for migrations. Policy and institutional factors play a prominent role in peoples' decisions to migrate. As illustrated in the case studies, it appears that policy and institutional inertia to provide social protection measures to affected households played a role in the respondents' decision to migrate.

Migration can increase household resilience in times of environmental stress and should be viewed as a valid climate change adaptation response (Kartiki, 2011; McLeman & Smit, 2006). The three respondents, in fact did improve their household resilience by migrating and taking up alternative livelihoods – despite the limitations. The alternative – the absence of opportunities to migrate may mean greater hardships for communities facing climate induced disasters. Studies indicate that labour migration can support sustainable livelihoods and resilience especially in continuously challenged environments (Raleigh, et al., 2008). This is a desirable outcome when migration is planned and supported, instead of when migration takes place under highly distressing circumstances (Kartiki, 2011) Therefore it is necessary to make channels for voluntary migration – that is duly supported – with adequate lag times, information, skills, etc. available to those affected by climate shocks (Black, et al., 2011).

The literature also shows that migration caused by environmental factors is usually temporary, as most people return to re-create their lives once conditions normalize (Perch-Nielsen, et al., 2008). All three respondents expressed the desire to return when conditions improved for farming and the choice to migrate was undertaken as a last resort. The respondents did not see any other advantage of being a labour migrant other than the ability to survive their economic crisis. In the new location, their living conditions, quality of life, nature of work, social dignity, separation from family and lower incomes compared to their income from farming were sources of dissatisfaction for these migrants, while similar levels of decline in the subjective well-being of migrants is also corroborated by other studies (Mulcahy & Kollamparambil, 2016; Tacoli, 2009). However, it can be a different scenario in the future in the face of sea level rise, inundation or desertification that can permanently destroy the liveability of a locality.

Conclusion

The first key argument here is that migration is a valid climate change adaptation response as it offers opportunities to build resilience to climate shocks for those engaged in natural resource based livelihoods. It is necessary to recognise though that this migration is not always planned or voluntary and can have different dynamics.

Secondly, as policy and institutional factors also play a prominent role in peoples' decisions to migrate, there needs to be a better understanding of the role that local and national level institutions can play in facilitating migrations when

1 For example, age, sex, education, wealth, marital status, preferences, ethnicity, religion, language etc.

2 For example, political/legal framework, cost of moving, social networks, recruitment, technology etc.

3 Names of the respondents have been changed.

it becomes necessary due to climate factors. As these two subjects are almost always handled by two different processes and regulations, it is necessary to work in collaboration to provide solutions. It is also necessary to provide information, skills, negotiations, options before it hits a crisis point.

In addition, a migrants' sense of wellbeing may be compromised to a certain extent when moving away from one's home setting to an unfamiliar urban centre. Support and assistance provided through sustainable migrations may be able to address some of these distressing effects and struggles faced by labour migrants.

Lastly, as seen in the case studies, farmers making a decent living became vulnerable due to climate shocks and were forced to migrate. For them the option to stay, to be supported to take up drought resistant farming, to have safety nets to aid adaptation – can also be a way to reduce the risk of exposure and sensitivity and increase their capacity. This highlights the importance and urgency of building resilience to climate shocks throughout other sectors and services and transforming the fragmented way in which development is designed and delivered. ■

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Shifting from Climate Change to Catalyzing Community Change – A View

Humankind's actions have led to climate change, and that is contributing to increased unpredictability and disasters. Compassionate voices call on all nations to consider vulnerable people, those who suffer the worst and have the fewest resources to respond. My own experience has shown the benefits of shifting focus from climate change to the men, women, children and communities that are vulnerable because their agency has been denied and whose lifeways have been destroyed.

Research has demonstrated the differential impacts of climate change. Often rural people, tribal groups, women, children, and people with disabilities are hardest hit. My experience in Ethiopia, Ghana, and Canada confirms these facts. The first step in enabling people to overcome their vulnerable situations is to appreciate their skills, talents and abilities for survival, and not to view them as victims. People can thrive given the opportunity to build on their own assets. To engage them in revitalizing local and indigenous knowledge's and to pursue deep democracy empowers them to utilize their own agency for change and resilience.

Building community resilience is a powerful approach that values the strengths and assets of marginalized people to respond to the stresses and shocks they experience. In working with the Dagara people of Ghana, for example, I learned of five interdependent actions they thought were essential to build the resilience of their communities. The five actions are: revitalizing culture and spirituality, healing the ecological



Indigenous food exhibition.

system, enhancing sustainable livelihoods, remembering the strengths and values of women and men, and taking actions to overcome challenges. For the Dagara people revitalizing culture and spirituality was essential to maintain a lifeway that was not dominated by outside forces. Healing the ecological system confirmed a relationship of responsibility that people have to the environment. Enhancing sustainable livelihoods was an aspiration as the demands of youth and challenges of survival intensify, but were always tempered with the desire that livelihoods be sustainable for generations without damaging the ecosystem. Remembering the strengths and values of women and men was fundamental. This reminder was to start proudly with peoples' own skills and resources and to affirm social memories of how people had overcome hard times in the past, before seeking outside collaboration.

Finally, Dagara men, women, elders and youth all spoke of the need to take actions to overcome difficulties, to honor the power of their own agency as actors for change, and to collaborate to make change happen. Perhaps there are lessons from Dagara people for others.

Eco-activist Joanna Macy has argued there are three types of actions we can take to make change: holding actions, creating alternatives and changing consciousness. These are all things people can do to alter the trajectory towards further climate change and planetary destruction. Holding actions are to stop, or at least slow down, the trend towards neo-liberal, corporate, global domination that sees the environment as a resource to exploit. Creating alternatives are the proliferation of socio-economic experiments that recognize the value of bio-cultural diversity and the power of citizen-led, community-

driven, asset-based initiatives. Changing consciousness is to question the inequitable, industrial, technology-based development of the past 250 years and to think differently about a relationship of stewardship with the natural environment and an appreciation of multiple knowledge's and ways of being. Dagara people have shown actions in all of these areas. Dagara organizations led a campaign to halt a National plant breeders' bill that would take away the rights of farmers to save and share their own

seeds. Dagara women and men farmers strengthened indigenous agro-ecological farming practices, and experimented with farmer managed natural regeneration. Dagara elders have catalyzed discussions about revitalizing indigenous foods and revalorizing a proud farming lifeway for youth.

Building community resilience is an act of justice. Climate justice, common in the Indian government's discourse, has to be negotiated for in international forums, and is also

a stance that can be taken on the local level. The differentiated impacts of climate change on marginalized people must be considered. The full participation of marginalized people in decision making roles, with access and control of resources, and within an enabling environment of respect, has been shown to catalyze significant positive change and address uncertainties. ■

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UNCERTAINTY AND LIVELIHOODS

Uncertainty and Sundarbans Communities: A View from Bangladesh

Neglected Community?

This largest mangrove forest in the world, *Sundarbans*¹ cannot be viewed in isolation of the community of people living there for centuries who cannot be regarded as intruders. It is true that with the growth of population in the country, the 'reserved forest' has experienced an external human pressure. Inhabited mainly by poorer people, the *Sundarbans* communities have been facing an increased frequency

of cyclones and floods in recent years which have affected both people and the forest adversely. Studies show that there were occasions following disaster events when some people had to migrate to urban centres in search of work and income². The poverty stricken communities of the area and the forest have long suffered neglect and apathy from policy makers and development planners. With the decline of the Jute industry since late 1970s, the whole

of Khulna division within which the *Sundarbans* lie, suffered an economic slump. A sharp decline in trade and commerce had caused the sea port at Mongla, near *Sundarbans*, to become almost non-functional. The recession had not only affected the jute growers and millers, the poor agricultural producers as a whole have experienced difficulties. A part of it was due to an increasing level of water-logging and incursion in of salinity in their lands. Among other reasons, building of polders to reclaim land from the sea was held responsible for the situation. Although, commercial shrimp farming has now replaced small scale agricultural production activities in many places of the area, the situation of the poor living near the forest have only worsened.

***Abstract:** The impact of Climate Change has been most visible in the Sundarbans area with its declining forest and aquatic resources, increased level of salinity in the rivers (possibly caused by sea level rise and infrastructural development activities) and an increased incidence of cyclones and floods. Since a large number of people living in this area are extremely disadvantaged and dependent on natural resources for their livelihoods, their situation deserves a closer attention. Many community development programmes with disaster risk reduction components have been operational in the area that cater to a comprehensive socio-economic upliftment of the poor. While these are creating some positive results in reducing poverty and building community resilience, some large scale industrial development initiatives including a coal-fired power plant in Rampal, close to Sundarbans, has created concern among civil society groups in the country. This brief paper tries to highlight some of the challenges created by this and proposes to find ways to resolve dispute of opinions and continue to assist the poor.*

The turn of the Tides

However, the situation at the macro-economic front appears to have suddenly changed over the past few years. A flurry of economic development activities in the area has created a lot of excitement for large national and local

entrepreneurs and political leaders. They envisage a huge growth potential of the area following the decision by the government to build a large 1,320 MW coal fired power plant in *Rampal*, only 14 kilometres from the *Sundarban* forest. This excitement however, has not been shared by the Environmental Experts, Civil Society Groups (CSOs) and local communities. Because, they have reasons to fear that the plan to build a coal-fired power plant and an unplanned growth of hundreds of industrial units in the close proximity of the *Sundarbans* will seriously affect this world heritage site and its biological diversity. This will in turn, negatively affect the lives and livelihoods of the people living around the forest.

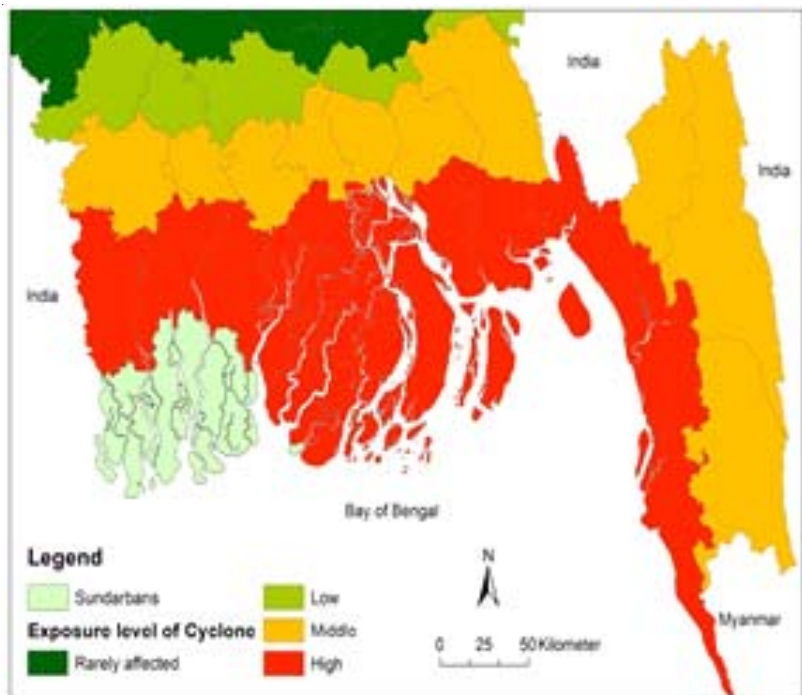


Figure 1: Location of Sundarbans in Coastal Bangladesh.

Disputed Development

The wisdom of the decision to put a coal-fired power plant so near the *Sundarbans* has been challenged by many experts through empirical studies. Yet, the project seems to be going ahead without heeding the warnings given by the environmentalists. When the government claims that the project will use most modern technology to minimise emissions³, independent environmental experts and scientists are not convinced at all. The Environmental Impact Assessment (EIA) report produced by the government differs significantly with those prepared by the critics of the project⁴. According to them, the proposed USCT (Ultra Super Critical Technology) might bring efficiency in the production of electricity, but it cannot arrest the pollutants, which would still be emitted. They say that harmful pollutants such as "SO_x, NO_x and mercury will disperse at least 25 km from the source⁵". Moreover, the project will use 9,000 cubic meters of water per hour and discharge 5,000 cubic meters of it per hour into the river. As it sucks in more water to make up for the

portions that is lost in the process, it will put a serious pressure on the quantity and quality of water in the river. It will reduce oxygen of the water and damage the fish stocks of the Passur river that flows through the Sundarbans to the sea. About 13 thousand tonnes of coal will be transported everyday to the plant through this river to run the plant. All of this carries a high level of risks that includes coal spillage, spillage of ballast water, bilge water, oil spillage, and garbage⁶.

Implications for People and Communities

When many community development projects, initiated particularly in the aftermath of cyclone Sidr (2007) and Aila (2009), have been successfully helping the disaster affected poor, the recent developments around the *Rampal* project comes to them as a big damper. There have been a range of community development programmes implemented in the area with different focus. For example, the projects worked on skills development for income

generation, women's empowerment through capacity building, and establishment of community based disaster management and emergency response mechanisms. Besides, awareness building on human rights issues, including the use of newly enacted Right to Information law (RTI Act, 2009) in favour of community access to resources and services also featured as innovative interventions.

Organised actions such as these have helped the people with knowledge and skills to build their resilience against disaster impacts as well as in reducing many negative social practices and prejudices. For example, evaluation studies have revealed how the incidence of violence against women, marriage of under-age girls, dowry and polygamy have been reduced⁷. Moreover, awareness on education, democratic rights and good governance, improved hygiene practices through proper use of water and sanitation systems and community rights to natural resources and services have helped

people become responsible and active citizens. Now, with the new developments based on *Rampal* and its associated projects, which will cause serious damage to local environment and natural resources, one is apprehensive about their future of the communities living there.

The Multipliers

The story of human threat to the *Sundarbans* does not end there. A recent newspaper report says that many new manufacturing units have cropped up within the 10 km of the forest. Twenty four of 190 such industrial units have been identified as seriously hazardous. According to a study by the Khulna University, which was completed in April 2018 has given some alarming indication of loss caused by pollution from new industrial units. According to them industrial pollution has particularly affected the tigers and river dolphins in the area, while its water and air is filled with poisonous sulphur and nitrogen oxide. The increased level of industrial activities in the area has threatened the biological diversity of *Sundarbans*.

If this is the situation in *Sundarbans* area now, the worsening situation after the power goes into operation, can easily be imagined. According to the "National Committee for Saving Sundarbans", the government has been provided with 13 such study reports in response to their (government) view that there was no scientific evidence in support of the claim that *Rampal* power plant will cause harm to *Sundarbans*. But no response has yet been received from their end.⁸

Conclusions

*Sundarbans*⁹ is a forest; a safe haven for some of the endangered species like Bengal tiger and river dolphins – among other species. It therefore concerns people mainly for its flora and fauna, not so much for the poor people living there. But forests of densely populated developing countries such as Bangladesh cannot be thought of without people and communities living around them. Although, these people belong to most disadvantaged and vulnerable communities of the country, development efforts for them in the past have remained ad-hoc and very limited. Impact of climate change has

set in motion problems like incursion of salinity (in water and soil) deep inside the coast, declining wood and non-wood forest resources and increase in the frequency of cyclones accompanied by tidal waves and flooding. Disasters such as these have caused further impoverishment and displacement of communities living around the forest.

In response to the situation, NGOs and government agencies have developed programmes of work and community based systems to reduce disaster impact which remains one of the most impressive achievements in community development efforts in Bangladesh. Here, women and marginal groups play an important role. But gains in this area seem to face a challenge now from the major economic development projects imposed from the top by the government. The question now is, how do we convince the government authorities that they need to be extra careful about the longer-term interest of the country by safe-guarding its environment and eco-systems? How do we effectively hold the government



A women's group of an indigenous community organised by an NGO near Sundarbans.

accountable for its controversial decisions and actions? Some of these projects (and investments) are linked with and financed by multi-lateral aid agencies and external investors (FDI). We need to find ways to influence them so that they do not participate in projects that harm our environment. Ways also need to be found to engage government departments and CSOs in constructive debates by shunning any prejudice, ego and obstinacy on both sides. ■

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Water logged paddy field.

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1 The forest is shared between Bangladesh (60%) and West Bengal (40%) in India. The map shows its location in the south-west corner of the country.

2 For example, Mallick, B & Vogt, J. 2014. "Population Displacement after cyclone and its consequences: empirical evidence from coastal Bangladesh, Nat Hazards 73:191. Institute of Regional Science (IfR) of KIT, Germany.

3 "Hasina defends Rampal plant" in the session on Climate Change at the 47th World Economic Forum in Davos. The Daily Star, January 20, 2017, Dhaka. cyclone and its consequences: empirical evidence from coastal Bangladesh, Nat Hazards 73:191. Institute of Regional Science (IfR) of KIT, Germany.

4 Unesco World Heritage Centre and IUCN. Dr. Abdullah Harun Chowdhury, Environmental expert and Professor of Environmental Science, Khulna University and Prof. Anu Mohammad, Jahangir nagar University and Dr. Ranjit Sahu from USA. Source: Star Weekend, The Daily Star, 2 June 2017. Page 8-9.

5 The Daily Star. 2017. "How valid are the claims in favour of Rampal?" *ibid.*

6 Muhammad, Anu 2017. "YES to Sundarbans NO to projects of environmental destruction". Building Blocks of Tomorrow. Special Supplement: Environment and Climate Action, The DS, 26 Feb, 2017 p-22.

7 Author's own participation in the evaluation of projects by USAID (Proshar), ECHO (DIPECHO) and Bangladesh Water Alliance are among a few of them.

8 Ms. Sultana Kamal, Convenor, National Committee for Saving Sundarbans in the Daily Prothom Alo, 29 April 2018. page 1 & 4.

9 This is said to be the largest mangrove forest in the world with, roughly, sixty percent of it is in Bangladesh and the rest in West Bengal in India.

Anthropology of Uncertainty Among the 'Tribes' in India: A View

Anthropologists study human societies, their evolution, history, culture and development. Though the discipline is laced with colonial baggage, is also misunderstood as studying only the indigenous people. However, Anthropology has moved on to become one of the most interesting disciplines, diverse and popular with ethnography and fieldwork as its strengths. Having its own rich diverse knowledge base about humans and their variations, it has contributed to the understanding of everyday life beyond tribes.

Understanding discourse on risk and uncertainty was never a central theme in Anthropology. However, the main focus of anthropology of studying indigenous population living close to nature, laced with so many uncertainties, has been well documented. The worldview of indigenous people, to preserve, conserve and propagate their cultural and natural resources,



Rehabilitation Peoples Perspectives, Nicobare Hut.

revolve around spirits and Gods, oracles, magic and witchcraft. Monographs written by classical anthropologists Evans Pritchard's on Azande or Bruno Malinowski's on Trobriand Islands shows how indigenous people lived precarious

everyday life revolving around their rites and rituals. Whether its Trobriand Islanders of South Pacific or Andamanese, Onges, Jarawas, Shompens, Sentineles and Nicobarese of Andaman and Nicobar Islands, all have braved the uncertainties of life and risk of living in the forests by revering the Gods or propitiating the witches and evils through rituals and magic. They lived peacefully and contently, till we the 'civilized' made inroads into their lives.



Indigenous Tribes of Andaman and Nicobar Islands.

Andaman Nicobar islands are the abode for curious anthropologists to research and so was it for me. Studying the so-called particularly vulnerable tribes in the islands was a dream come true. With the textbook knowledge, the first encounter with 7-year-old young Andamanese kid playing with video games, and speaking English made me realize the ethnocentric biases, we still carry, presuming them to be living in stone age. Yet there are Sentinelese, one of the very few



New Initiatives in Agriculture.

tribes still untouched by outside world, living in Sentinelese islands on their own surviving for ages¹.

The indigenous communities have been braving the natural uncertainties for centuries whether it's precarious living in forests, deserts, on seashores or facing 'natural' disasters. However, the anthropogenic intrusions into their lives by 'contacts' 'integration', 'development' led to diseases, displacement and despair in their lives. The examples are numerous; the Jarawa children dying of measles, large-scale displacement due to the construction of dams or mining in Niyamgiri hills.

The Asian Tsunami 2004 led to numerous losses; though the tribes in A & N islands survived and some of the Nicobarese died. The tsunami was uncertain but became a certain event, which led to long-term

"Anthropology is the most humanistic of the sciences and the most scientific of the humanities."

- Alfred L. Kroeber

rehabilitation, leading to many unintended consequences. The only mistake we did and we have been doing, is undermining their knowledge base, their agency and we the 'civilized' took them to be 'tribals' 'Jungalese' to be tamed, controlled and educated. Post-tsunami, we build modern houses for them, which led to disintegrating their joint houses 'tuhet' systems and community living to nuclear families. The breaking up of community living and the presence of outsiders made the Nicobarese life vulnerable. The older generation is uncertain about the youth who are into consumerism, alcoholism and distancing themselves from their traditional ethos and value system

due to cash compensation that brought the vices of modernity.

Ulrich Beck in his book 'Risk Society: Towards a new modernity' talks about the global risk society, where globalization and technology produce new forms of risks. We, on the other hand, produce uncertainties in the lives of traditional societies, which have been living simple, harmonious life with their natural ecosystem. The loss due to tsunami has been momentary but the losses post-tsunami and the uncertainties into the lives of Nicobarese are of a certain reality. ■

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1 <https://www.survivalinternational.org/tribes/sentinelese>.

Communicating Climate Change and Mobilising Action: The Role of Faith Traditions and Human Rights

Scientific consensus and strong legislative and policy actions, and even significant investment, by the Government of India (GOI), Indian states and actions by municipal authorities are not enough to adapt to climate change if the mass of India's 1.3 billion children, youth, women and men do not understand what is at stake, are motivated to act, also demand implementation of laws and policies. Religion is a strong influence in daily life and culture in India. So what can be done to use faith traditions as platforms for communicating with the people about climate change, engaging them in dialogue about its significance and what is to be done?

Firstly, in the Indian context, one has to begin with the reality that the world's largest democracy is composed of many cultures and many faiths. Notwithstanding the aspirations of a dogmatic minority, India is a pluralistic state and any attempt to mobilise faith communities must be addressed with equal respect to all of them. I will return to this most important issue at the end.

Secondly, what do the two major faith traditions have to say about climate change?

The Hindu Declaration on Climate Change¹ cites the Mahâbhârata (109.10) to the effect that "Dharma exists for the welfare of all beings. Hence, that by which the welfare of all living beings is sustained, that for sure is dharma." It also cites

Srîmad Bhâgavatam (11.2.41): "Ether, air, fire, water, earth, planets, all creatures, directions, trees and plants, rivers and seas, they are all organs of God's body. Remembering this a devotee respects all species." The Declaration goes on to say that "knowing this, Hindus strive for ahimsâ, to minimise the harm we cause through our actions in our ordinary, day-to-day lives. As Hindus we revere all life, human, non-human, plant, and animal" and that "we must base our response to climate change on a number of central principles, expanding on the truism that the Divine is all and all life is to be treated with reverence and respect: Internalising *vasudhaiva kutumbakam* (the family of Mother Earth), promoting *sarva bhuta hita* (the welfare of all beings), and acting with an understanding of karma and the cycle of birth, death, and rebirth".

Islam has a similar approach. **The Islamic Declaration on Climate Change**² states:

"We affirm that -

- God created the earth in perfect equilibrium (*mîzân*);
- By His immense mercy we have been given fertile land, fresh air, clean water and all the good things on Earth that make our lives here viable and delightful;
- The earth functions in natural seasonal rhythms and cycles: a climate in which living beings - including humans - thrive;
- The present climate change catastrophe is a result of the human disruption of this balance".

The Declaration calls on people of all nations, among other things, to

- "Set in motion a fresh model of wellbeing, based on an alternative to the current financial model, which depletes resources, degrades the environment, and deepens inequality.
- "Prioritise adaptation efforts with appropriate support to the vulnerable countries with the least capacity to adapt, and to vulnerable groups, including indigenous peoples, women, and children".

Hinduism and Islam cover 79.8% and 14.2% of the population of India respectively, according to the 2011 Indian population census. Together, their adherents amount to 94% of the population. The earth care elements in both Hinduism and Islam are very strong. Combined, they could be a very effective platform for communication with and motivation of a huge majority of India's people.

So where do human rights come into this, as advertised in the title of this brief note?

There are two rights-based implications. Firstly, as I wrote at the beginning, all religions in India and all cultures have a right to exist side by side and their adherents have a right to practice them. This is a principle grounded in the "UN Universal Declaration of Human Rights" and specifically articulated in the 1981 Declaration on the Elimination of All Forms of Intolerance and of Discrimination Based on Religion or Belief".³

Secondly, it is also clear from the two doctrinal declarations on climate change cited earlier that both

1 <https://www.hinduclimatedeclaration2015.org/english>.

2 http://www.ifees.org.uk/wp-content/uploads/2016/10/climate_declarationMWB.pdf.

3 <http://www.un.org/documents/ga/res/36/a36r055.htm>.

Hinduism and Islam believe that each individual human being has worth and a right to life and dignity. Without regard to the influence of political parties, the GOI has a legal, moral and prudential duty to promote both major religions as bases for raising consciousness about climate change and mobilizing action at the grassroots.

Legally, the GOI is committed to the numerous UN agreements that

require non-discrimination. Morally, the ethical systems of both major religions contain strong endorsement of the equal worth and right to life of all persons. Prudentially, if the GOI is serious about implementation of its climate change agenda against the inertia of vested economic interest at many scales, it needs the people – all citizens of India – to demand accountability, especially at the local scale, where it is difficult for national

policy makers and legislators to exercise control.

Climate change mitigation and adaptation, religion and human rights are tightly entangled in India. Acknowledged and treated with respect, all religions in India (not only the largest two) can be a dynamic force for transformation. ■

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UNCERTAINTY AND MIGRATION

Erosion and Displacement – The Uncertainty in Indian Sundarban Delta (ISD)

The Indian Sundarban Delta (ISD) region between 21°30'N to 22°40'48"N latitude and 88°01'48"E to 89°04'48"E longitude. The Indian Sundarban is bounded by the River Hooghly on the western side and Ichamati-Raimangal in the eastern side, with the Bay of Bengal in south, and the Dampier Hodges line in the north (Das 2006). The area is best described as a low-lying alluvial plain covered with mangrove swamps and marshes, intersected by numbers of tidal rivers and creeks. The drainage network and dynamic flow patterns of tidal water, along with the erosion-accretion of land, have built up a complex geomorphology in this region (Das 2006). Hazra et al. (2001) have reported the sea level rise for the Sagar Island is 2.6 mm/year. Allison, et al (2003) has stated that the western Sundarban is undergoing subsidence at the rate of 1–4 mm/year. Morgan and McIntire (1959) showed that the Bengal basin is gradually tilting towards east associated with a significant subsidence (Milliman et. al. 1989).

Both climatic and non-climatic events adversely affect the livelihood of the

people of the Indian Sundarban Delta (ISD). Land loss due to submergence and increasing soil salinity, along with land fragmentation resulted with a difficult life for the islanders of ISD. The ISD appears as one of the most under-developed area in India, with 34% of the 4.6 million people who inhabit the islands living below the poverty line (Census 2011). The people of ISD are mostly dependent on traditional mono crop (Aman paddy) cultivation and riverine fishing, crab collection, honey collection, etc. The loss in agricultural productivity linked with

poverty is also producing migrants from this delta (Hajra and Ghosh, 2018). The forest and water based ecosystem services are playing a major role for the livelihood of the people, and its gradual depletion impacting the traditional farm based economy.

Coastal regions have long been settled by humans due to their abundant resources for livelihoods, including agriculture, transportation, and rich biodiversity. However, natural and anthropogenic factors, such as climate change and sea-level rise,



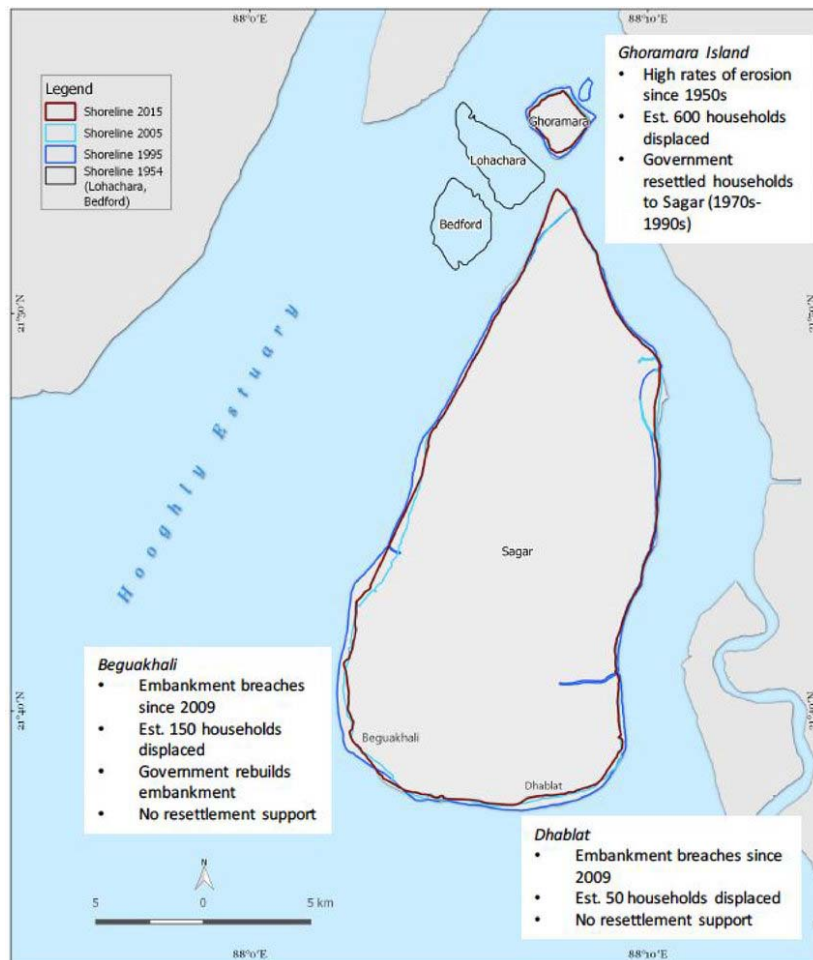


Figure 1: Sagar Block showing the number of households displaced and subsequent government responses (Mortreux et al., 2018).

and land subsidence, population pressure, developmental activities pose threats to coastal sustainability. Natural hazards, such as fluvial or coastal floods, impact poorer and more vulnerable communities greater than more affluent communities. There is strong association between household poverty and the likelihood of material and human loss following a natural hazard in the islands of the Indian Sundarban Delta (ISD). It is also evident that the poorest households are most likely to suffer from deteriorating livelihoods following a natural hazard (Hajra et al., 2017).

The rivers of ISD are dynamic with changing hydrodynamic conditions due to natural causes and

anthropogenic interventions. In the western part of ISD, in and around River Hooghly, major anthropogenic interventions are observed. The major intervention was the flow diversion by Kolkata Port Trust (KoPT; earlier known as Calcutta Port Trust or CPT) for increased navigability around Haldia Port, installing a guide wall at the north of Nayachar Island (earlier name 'Agnimari Char') in 1992–93 (Sanyal et al., 1995). The KoPT authority did not construct remaining six guide walls, suggested to prevent coastal erosion in the adjoining islands due to the resultant hydro-dynamic changes. As a consequence, two islands, Lohachara and Bedford, submerged and another, Ghoramara, experienced tremendous amount of

erosion, reduced around 50% in last three decades (Ghosh and Sengupta, 1997; Ghosh et al., 2003; Ghosh et al. 2014). People from Lohachara and Ghoramara Islands relocated themselves to Sagar Island (Fig. 1). The south-west part (Beguakhali) of Sagar Island has also experienced excessive erosion for this, while the south-east part (Dhablat) experiences the encroachment by sea. In contrast, the eastern part of ISD is with less intervention, but more dynamic for natural changes in river course, causing erosion. The earthen embankments often collapse due to undercutting of the rivers, partially caused by the eastward shift of the river courses, due to the gradual tectonic tilt, and also due to significant land subsidence. Gerir Char, within the Gosaba Island, just beside River Ganga (local name) has experienced entirely washed out, where around 42 households lost their land and assets, displaced, migrated internally without any resettlement support (personal observation). Erosion is causing loss of private and public property like agriculture land, houses, jetties, natural vegetation including mangroves, etc. and also producing displaced people.

In ISD, the observed displacement is historically quite high, and people face difficulties after losing their habitat, migrate internally or distant locations. The relocation process is not supported by any defined uniform policy, rather normally depends on the diversity of responses from the local governance. Planned relocation decisions and non-decisions by government agencies for communities seeking relocation due to coastal flooding and erosion are responsibility of the government for the protection of the community and their wellbeing. But with diverse elements of accountability and perceptions of risk, responses are uneven and patchy. Much focus of research to date has been on the

processes of stakeholder engagement and consultation, and the human rights aspects of relocation.

Here, the government action and inaction co-exists and relocation planning is piecemeal, rather than follow a unitary consistent resettlement policy. The example of Sagar Block demonstrates uneven government responses, where relocation inaction is an expression of state interest and power. The lack of institutional arrangements to plan for displacement and relocation in the state of West Bengal allow for this inaction to occur. In the absence of defined roles and responsibilities in managing displacement there is a lack of state accountability, with no guidance in how to evaluate state action and inaction related to environmental displacement (Mortreux et. al. 2018). The reality is government chooses to intervene for political compulsion and again not intervene due to lack of policy, while the action is with diverse in nature it will produce social inequality and violate human rights. Again, the inaction is likely to induce migration by individuals and in-situ adaptation responses. With increasing exposure to risk the consequences of inaction will end up

with trapped population in vulnerable areas of ISD. ■

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It is Possible, It is Right, It is the Future: Just Transition to a Green Economy

Humanity is under stress. Climate change impacts lives, jobs, and human advancement. The latest ILO report 'World Employment and Social Outlook 2018: Greening with jobs'¹ says that around 194 million jobs in India rely directly on the effective management and sustainability of a healthy environment. These are particularly jobs like farming, fishing and forestry that depend heavily on natural processes such as air and water purification, soil renewal and fertilization, pest control, the moderation of temperatures, and protection against storms, floods and strong winds. Developing countries often disproportionately depend on natural resources for income and livelihood generation.

Environmental degradation threatens ecosystem services and the jobs associated with it. It creates challenges such as unemployment, poverty, migration, lack of access to basic services, among others. Today there are also the costs related to climate hazards. The impact of climate change is particularly severe for the most vulnerable workers. Effects of natural disasters, exacerbated by unchecked human activity, reduce productivity. They resulted in an annual average loss of 5.7 working life year per person in India between 2000 and 2015.

Heat Stress and Work Hours

The report says that temperature increases in India will make heat stress a common phenomenon. It will have an impact on the total number of work hours produced. In 1995, an estimated 4.2 per cent of total hours worked were lost due to high heat levels. This represents around 15.1 million full-time jobs. Estimates combining a global temperature rise of 1.5°C by the end



Photo credit: ILO.

Using green jobs technology to alleviate rural poverty: Two female trainees getting trained as barefoot solar engineers.

of the twenty-first century with the labour force trends suggest that by 2030 the percentage of total hours of work lost will rise to 5.3 per cent, a productivity loss that is equivalent to 30.8 million full-time jobs.

The agricultural workers will be the worst-affected. They would account for around 64 per cent of hours lost due to heat stress in India in 2030, explained by the physical nature of their work undertaken outdoors, and the fact that a large number of workers are engaged in agriculture in areas most affected by future heat stress.

Job Losses are Offset by Job Opportunities

However, there is also more encouraging news. The employment projections in the WESO report say that the net effect on job numbers will be positive in India. The transition to a green economy will cause job losses in certain sectors – typically the carbon and resource-intensive industries – but this trend would be offset by new job opportunities. The net increase of

approximately 2.8 million jobs would be the result of the adoption of sustainable practices, including changes in the energy mix, the projected growth in the use of electric vehicles, and increases in energy efficiency in existing and future buildings. This overall net jobs benefit comes with sectoral differences. In the case of India, all the sectors, except the mining industry, will experience an increase in employment. For example, 1.5 million jobs are expected to be created in the renewables sector, 466,200 new jobs in the construction sector and 285,200 new jobs are expected in the services sector.

The challenge though remains how during this transition period decent work opportunities can be maximized and job losses be minimized.

Public Employment Programmes: A Critical Policy Tool

Social protection systems are the first line of protection against the negative effects on income, including those stemming from

climate change and local environmental degradation. They support the economy by stabilizing household incomes.

Public employment programmes have become critical policy tools that can combine economic, social and environmental objectives in support of adaptation and mitigation of environmental degradation and climate change. In India, for instance, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) aims to guarantee 100 days of employment, in a financial year, to any rural household whose adult members are willing to do unskilled manual work. The goal is to provide social protection and economic security for rural people in poverty by for example strengthening drought-proofing and flood management measures and empowering marginalized communities.

These unskilled rural workers are employed to develop ecosystem services, build community infrastructure, and/or construction. However, the government faced acute shortage of local engineers and technicians to ensure effective construction and maintenance of the rural infrastructure works, created under MGNREGA. This in turn caused delay in launching rural infrastructure works, and the quality of the works suffered on account of lack of monitoring and supervision.

Local Employment and Training

The Ministry of Rural Development decided to build a cadre of Barefoot technicians by training at least 10,000 rural youth in basic concepts of civil engineering – involving them in planning, doing layouts, measurements and supervision of MGNREGA works in 2500 remote areas across India. Starting 2014, the ILO has provided technical assistance in this initiative. It developed National Occupational Standards (NOS) and Qualification Packs (QP) as well as training materials for the barefoot technicians and the consequent training of trainers programme. Key elements of decent work were integrated in the training modules, especially those relating to rights at work, equal wages for men and women, occupational safety and health, detection of child or forced labour, crèche facilities at the work sites, provision of drinking water and workers welfare activities. As per the latest press release of 2 April 2018, issued by the Ministry of Rural Development (MoRD) – over 6,500 barefoot technicians have been trained thus far. A substantial amount of the work hours provided through the programme relate to water conservation and the provision of irrigation facilities. The programme also increased female labour participation and in some cases women's autonomy in household decision-making by providing higher wages than other rural employment opportunities.

Stepping up

India stands firm on its commitment towards climate action. By ratifying the Paris agreement and taking the lead to set up the International Solar Alliance (ISA), in little over two years, India has shown tremendous political will and progress. The alliance aims at reducing the cost of finance, and technology – while mobilizing more than USD\$1000 billion of investment needed by 2030 – for deployment of solar energy. To date, 33 countries have signed as well as ratified the ISA framework agreement while 65 countries have for now signed it. The alliance aims to make energy access a reality for all.

In fact, India has set itself a target of achieving 175 GW of renewable energy capacity by 2022. To reach this goal, the Skills Council for Green Jobs launched in 2015 also plays an important role. The Council identified key skills needs in renewable energy, energy efficiency, as well as waste and water management, and developed 26 courses for occupations in demand such as water treatment plant helper to solar photovoltaic project manager. Private institutions too are involved and they have developed 70 courses related to environmental sustainability.

As India hosts the global celebrations for World Environment Day on June 5, it is time we take bold steps towards transitioning to a green economy, an economy that has strong decent work dividends for the population. Sustainable development is only possible with the active engagement of the world of work. Governments, employers and workers are not just passive bystanders but rather they act as agents of change. ■

– **Dagmar Walter**, ILO Director, Decent Work Team for South Asia & Country Office for India; with **Diya Banerjee**; and **Sudipta Bhadra**, ILO, New Delhi, India



A young girl undergoes training to become a barefoot technician for MGNREGA rural works at the State Institute of Rural Development (SIRD) in Raipur, Chhattisgarh.

1 International Labour Office (ILO). 2018. *World Employment and Social Outlook 2018: Greening with jobs*, (Geneva).

Disaster Preparedness: A Shift in Paradigm

Since the late-20th - century, a shift in paradigm has happened in the intellectual arena of architecture, art, literature, philosophy, history, economics, etc. It happened mostly in the industrialised countries and emerged as Postmodernism, a critique of "modernism". Terminologies such as "deconstruction" and "post-structuralism" have also gained popularity in the twentieth-century.

"Economic growth is not necessarily good" or the notion of sustainable development ("Our Common Future", 1987) urging for "meeting the needs of the present, without compromising with the ability to meet the needs of future generation" directed a rethink of the ways in which economic growth are generated. The shift in paradigm (from human exceptionalism) was also connected to ecological disruptions in many parts of the world.

People in industrial societies identified changes in air and water qualities and expressed certain environmental concerns. Voices were also raised by affected women and men in non-industrialised countries (ecofeminism and post-modern feminism). By this time, rapid and unplanned industrialisation and urbanisation grasped almost all the industrialised and some non-industrialised countries following the Durkheimian model. Those who have not stepped into the so-called development process identified with "mechanical solidarity". Green movement and environmental think-tanks argued that people living with "organic solidarity" did not realise that consumption; resource extraction would turn the

world into a fire-ball. Globalisation has exhilarated and extended the process of win-win situation and made the genetically modified varieties common for all. Researchers and policymakers started to search for linkages between increased frequency of disasters and climate change with this historical process mostly in the twenty-first-century.

However, the discussions on double exposures and emerging new risks due to climate change and disasters on people living in extremely fragile environments have only started over the last couple of decades. Floods, cyclones, storm surge, heat-waves, cold-waves, drought, erratic rainfall, forest-fires, landslides, scarcity of surface and groundwater etc. continuously attracted international attention. To mitigate and reduce the loss of disasters, United Nations called for action through the declaration of Hyogo Framework of Action (HFA, 2005-2015) and the post 2015 Sendai Framework for Disaster Risk Reduction (SFDRR, 2015-2030, UNISDR). The four priorities for action and seven targets of SFDRR have to be followed as risk reduction and preparedness mechanisms for member countries.

In Bangladesh, though rapid development has not occurred through industrialisation and urbanisation, the then government's exploitative nature of resource extraction from East Pakistan to West, gradually led to the extinction of many of our natural species. The nature of exploitation at all levels forced the people of the land to fight for the independence of the country in 1971. The new country was identified as one of the most disaster prone in the world. Therefore,

disaster preparedness has become an integral part of the country and her people. Bangabandhu inaugurated the "Cyclone Preparedness Programme (CPP)" and constructed "Mujib Killa" to protect people and their livestock.

However, massive initiatives to manage disasters have not followed these early initiatives. This was reflected in the lack of preparedness to face the challenges of the two consecutive floods of 1987 and 1988 and the cyclone of 1991. The devastating nature of these two floods and casualties in the 1991 cyclone attracted international attention and criticism against the government as an example of lack of disaster preparedness. It has been identified that massive destruction and death due to disasters in Bangladesh were not only related to her geographical settings, but also to try to "control" disasters instead of "managing" or taking risk reduction efforts.

Since then there has been calls for disaster management and for disaster risk reduction following HFA. Large number of changes were made in the policy environments and institutional structure: now we have Standing Orders on Disaster (1997, revised 2010); Disaster Management Act (2012); National Plan for Disaster Management (2010); Disaster Management Policy and some other relevant documents published by the Ministry of Disaster Management and relief. The disaster management model has shifted its paradigm from mere relief distribution to risk reduction mechanisms, which acclaimed international recognition, terming Bangladesh as a role model for disaster management.

People in Bangladesh have developed an approach to disaster preparedness by combining science with indigenous knowledge to pursue the ideal of resilience. Being one of the early researchers in social science discipline, I feel privileged to have produced a grounded theory in the mid-nineties, showing a gender dimension in disaster preparedness at household levels. During those times there was almost no early warning or institutional support for affected people in coping with or better prepare for disasters. It was women's home-based preparedness which was vital in living with an imminent threat of disaster. Over the past decade these home-based initiatives have been strengthened through central to local level institutional support and response.

The natural disaster related casualties have been reduced to a remarkable level following improvement in early warning system and constructing multipurpose shelters in both cyclone and flood plains. It is expected that technology based early warning system will be more accurate and advanced with the information flow from the newly launched Bangabandhu satellite.



Photo: Dilip Roy.

Inclusive approach is one of the recently emphasised agenda in disaster preparedness for Bangladesh at the government level in collaboration with academia and civil society. The country has successfully organised two conferences on disability and disasters towards achieving the inclusive principles of the Seventh Five Year Plan (interfacing climate change and disaster risk reduction) and Sustainable Development Goals (leaving no one behind).

However, although Bangladesh is doing well in context of managing

"natural" disasters, social disaster or human induced disasters require more focus. Emerging "natural disasters" such as thunderstorms, landslides, early flash floods in hoar areas, are also indicating that further research and initiatives are needed. Most strikingly, the influx of Rohingyas from Myanmar has shown us the increased need for preparedness in case of social disasters. ■

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