



Resilience Gaps Analysis and Recommendation for Actions and Policies through Community Consultation in Six Hotspots

COMMUNITY RESILIENCE IN SIX HOTSPOTS

National Resilience Programme (NRP)
Programming Division Part Project
Programming Division, Planning Commission
Government of the Peoples' Republic of Bangladesh



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MESSAGE

MD. ASHADUL ISLAM

Senior Secretary, Planning Division
and Member, Programming Division

“Community Resilience is Six Hotspots”, the study report prepared by National Resilience Program (NRP) reflects the community voices for disaster risk reduction. This is a good practice to learn from the community and suggest for their wellbeing.

The Government of Bangladesh always emphasizes participatory development approach and major development plans have been formulated based on the hopes and expectations of the targeted groups.

General Economics Division is preparing 8th Five Year Plan (July 2020- June 2025) and we expect that this report will be supportive as a background document for identifying disaster management related actions in the 8th Five Year Plan.

I congratulate the study team members, the respondents, local administration, NRP Project Team and officials in Programming Division for their collective efforts in finalizing the report which I hope will pave the way to explore the avenues to make local voices be heard in national development plans.

Md. Ashadul Islam



FOREWORD

KHANDKER AHSAN HOSSAIN

Chief, Programming Division

The study on Resilience Gaps Analysis and Recommendation for Actions and Policies through Community Consultation in Six Hotspots is a bridge between community and the development plan of Bangladesh.

Five years plan is a broad development vision of the Government of Bangladesh and the Annual Development Program (ADP) follows the key issues on different areas from this plan. I appreciate the NRP initiative to support the General Economics Division (GED) in exploring community needs to be included in the 8th Five Year Plan

Community knows their needs for adapting to disaster impacts better than any outsider, researcher or policy makers. Community consultation has captured community voice from six hotspots identified by the Bangladesh Delta Plan 2100. Integrating the needs of grassroots people in the upcoming 8th Five Year Plan will help them in attaining resilience.

I congratulate the NRP team for successful completion of this study. I hope that, findings of this report is a good waymark for GED to address community needs in the 8th five year plan.

Khandker Ahsan Hossain





ACKNOWLEDGEMENT

DR. NURUN NAHAR

Joint Chief and Project Director, NRP Programming Division

I am very much pleased to acknowledge the sincere support from a wide range of stakeholders both national and at local levels. I would like to express special thanks to Prof. Shamsul Alam, Member (Senior Secretary), General Economics Division for his advice and suggestions for conducting such an important study. I am grateful to Nurul Amin, Senior Secretary for his guidance and encouragement for the commencement of the study. Mr. Ashadul Islam, Senior Secretary and Member, Planning Commission has given great support to effectively complete the study, for which I am grateful.

I acknowledge the contribution of the local community, local administration, especially the Upazila Nirbhahi Officers in hotspots -Derai, Alikadam, Chilmari, Nachole, and Amtali and the Study Teams for making the community consultations at the Hotspot study areas successful. I also acknowledge the sincere cooperation and assistance of locally elected representatives particularly the members of Upazila Disaster Management Committee (UZDMC), Pourashava Disaster Management Committee and Union Disaster Management Committee (UDMC) in the selected study areas for their active participation in the consultation process.

Thanks go to Dr. Md. Golam Mahabub Sarwar, NRP consultant for his hard work and dedication to make this report presentable. We are grateful to the members of Project Steering Committee (PSC) and Technical Advisory Group (TAG) for their comments and suggestions for finalizing study areas, methodology and approaches for this study. We also acknowledge the contribution of UNDP as technical partner of NRP. We are also grateful to, Khandker Ahsan Hossain, Chief, Programming Division for his guiding role for improvement of this report.

Last but not the least, my colleagues in Programming Division, officials from General Economics Division, NRP-Programming Division team and all other concerned persons and data providing organizations deserve special thanks for successful completion of the study on Community Resilience in Six Hotspots.

Photo courtesy: Shawkat Haider

Dr. Nurun Nahar



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ABBREVIATIONS

8 th FYP	8 th Five Year Plan	PDMC	Pourashava Disaster Management Committee
ADP	Annual Development Programme	PPP	Privat-Public partnership
BDP 2100	Bangladesh Delta Plan 2100	RLHP	Relatively Less Hazard Prone
CHT	Chittagong Hill Tracts	SSNP	Social Safety Net Programme
CPP	Cyclone Preparedness Programme	UBRP	Upazila Based Resilience Programme
CSC	Cyclone Shelter Centre	UDMC	Union Disaster Management Committee
DRR	Disaster Risk Reduction	UNDP	Union Nations Development Programme
FfPV	Flashflood Preparedness Volunteers	UNO	Upazila Nirbahi Officer
FPV	Flood Preparedness Volunteers	UP	Union Parishad
FSC	Flood Shelter Centre	UzDMC	Upazila Disaster Management Committee
GED	General Economics Division		
GoB	Government of Bangladesh		
GWP	Ground Water Pockets		
LPV	Landslide Preparedness Volunteers		

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EXECUTIVE SUMMARY

Community resilience is one of the most crucial factors integral to sustainable development. Bangladesh is frequently affected by different disasters. Implementing development programmes here require those to be sustainable in disaster-prone areas. Based on the topography of the land as well as the different disasters common to particular areas. Bangladesh Delta Plan 2100 (BDP 2100) has divided Bangladesh into six hotspots: (i) Coastal Zone; (ii) Barind and Drought Prone Areas; (iii) *Haor* and Flash Flood Areas; (iv) Chittagong Hill Tracts (CHT); (v) River Systems and Estuaries; and (vi) Urban Areas. Different disasters hit these areas differently, and the strategies in planning and implementing development programmes in these areas thus need to be tailored to the particular problems faced by the people and the specific solutions that might effectively address those. Community experience, therefore, inevitably becomes an essential dimension of any plans on Disaster Risk Reduction (DRR). The 7th Five Year Plan (FYP) mentioned key activities of Disaster Management and result indicators on some specific areas and the preparation of the 8th FYP is under process. Understanding the community needs on DRR in these hotspots is important and need to be addressed in the 8th FYP. Incorporating the insights of the communities, particularly on resilience, into the 8th FYP is crucial for placing the issues in the Annual Development Programme (ADP) affecting subsequent budget and allocation. This report explores resilience gaps of local people in the six hotspots identified in the Bangladesh Delta Plan 2100 and findings to relevant agencies to include the explored community voice in the upcoming 8th FYP

Resilience needs in different parts of the country have been explored through literature review, community consultation, case studies and field observation. Community consultation have been conducted in each of these six hotspots to sense their own thoughts on regional resilience. Representative field visits were undertaken in Amtali upazila of Barguna district; Nachole upazila of Chapai Nawabganj district; Derai upazila of Sunamganj district; Alikadam upazila of Bandarban district; Chilmari upazila of Kurigram district and Patuakhali Pourashava of Patuakhali district to capture community thoughts on resilience in Coastal Zone; Barind Areas; *Haor* Areas; CHT region; River and Estuaries; and Urban Areas, respectively.

Participants of the consultations covered wide range of people. Three broad categories of the participants are i) Community, ii) Public Representatives and iii) Representatives of different offices of government. Community participants comprised a wide range of people including but not limited to freedom fighters, local elites, women, teachers, students, politicians, journalists, entrepreneurs, development activists, religious leaders, indigenous community, etc. Public representatives are Upazila Chairmen, Mayors, Ward Councilors, Upazila Vice-Chairmen, Union Parishad (UP) Chairmen, UP members, and Karbaris in the paras of CHT. Government officers or representatives from

government offices includes respective UNO and officers or representatives of different offices at upazila or union level. Among all participants, government officers, community and public representatives formed 39%, 34% and 27%, respectively. With a noble vision of enhancing resilience, national and hotspot based recommendations have been indicated by respective community:

Through community consultations it was identified that resilience activities could be grouped under two main themes: i) Nationwide and ii) Hotspot-based. These resilience activities have been designed by keeping in mind the six hotspots.

Ten Nationwide Resilience Tasks (NRT) have been identified by the community.

1. Upazila Based Resilience

Programme: Different upazilas are impacted differently by disasters. Community members have identified that not all upazilas are vulnerable to natural or climate change induced hazards in the same way. Therefore, it is best to tailor resilience programme at the upazila level.

2. Resilient Housing and Emergency Shelter Reconstruction

Post-disaster housing and infrastructure rebuilding require massive financial support. Communities in the rural areas do not have the financial means to build their homes after a disastrous event. Regular assistance on shelter construction and emergency reconstruction facilities for damaged houses are prime expectation of rural community.

3. Bank Protection: Bank erosion is common problem in rural Bangladesh. The community's main suggestion is that canal bank maintenance should be prioritized as other services like

road maintenance. Protection of banks along *charas* and *jhiris* are especially important for the Chittagong Hill Tracts (CHT) hotspot.

4. Drinking Water Availability: Drinking water scarcity is a common problem in rural Bangladesh. People suffer from inadequate availability of drinking water in dry season. On the other hand, people get contaminated water during flooding season. It is suggested that Ground Water Pockets (GWP) should be explored to provide drinking water in rural and/or remote settlements, where there is acute water scarcity.

5. Excavation of Silted up Rivers and Canals

Dried rivers and canals are suggested to be dredged in order to allow water flow and improvement in moisture content of nearby soil. This NRT is especially applicable for the Barind, Haor and Coastal Zones.

6. Rehabilitation Program for Disaster Affected People

Disaster events such as flood, cyclone, flash flood and landslide affect low income groups disproportionately. Therefore, these households require special programme to help them build back their daily life after a disastrous event. The sixth NRT may be complemented by the second NRT.



7. Agro-Based Industry in Rural and Sub-Urban Areas:

The objective of this NRT is to use rural products on an industrial scale. It will ensure employment in rural areas and stir small scale industrial growth in the agriculture sector.

8. Food Storage Facilities: As some areas of the country are yielding more crops than local demands, it would be beneficial to build cold storage to preserve these produces accordingly. However, a thorough study is first needed to identify the location and types of these produces and their surplus amount. Suggested mechanism to build these storage facilities include Public Private Partnership (PPP).

9. Electricity Facilities in the Rural Areas: Bringing electricity to off-grid rural areas would enhance economic activities. For example, it would help meet energy demand for new agro-based industries. The ninth NRT may complement the seventh NRT.

10. Plantation: Tree covers help rural people by providing timber resources,

fruits for food services and defense against strong wind or flood water flow. Forest cover and different trees provide different types of resilience to different hotspots. It is crucial that this natural line of defense is utilized to strengthen resilience.

Hotspot based community resilience issues and concerns include but are not limited to:

Coastal Zone

- Constructing Cyclone Shelter Centre (CSC);
- Developing safer housing for coastal and flood affected people;
- Embankment building along eroding riverbanks and flood vulnerable areas.

Barind and Drought Prone Areas

- Recharging groundwater;
- Introducing less water consuming crop varieties.

Haor and Flash Flood Areas

- Addressing the risk of thunderstorms and lightning;
- Forming volunteer groups for flashflood preparedness;

- Introducing water tolerant varieties (submergible varieties).

Chittagong Hill Tracts (CHT)

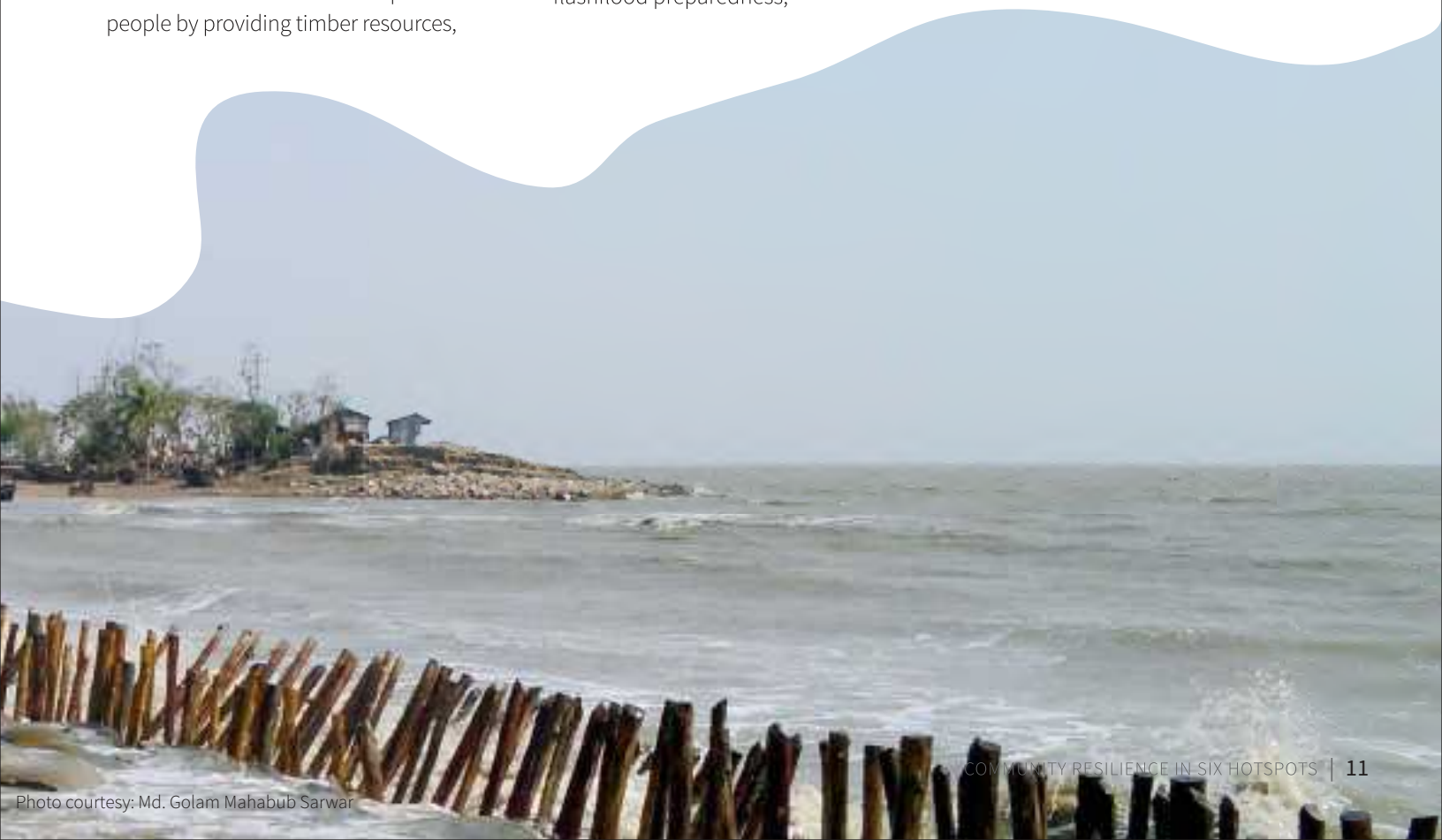
- Initiating slope maintaining programmes;
- Forming volunteer groups for landslide preparedness;
- Addressing the risk of thunderstorms and lightning;
- Ensuring required treatment for snake-bites.

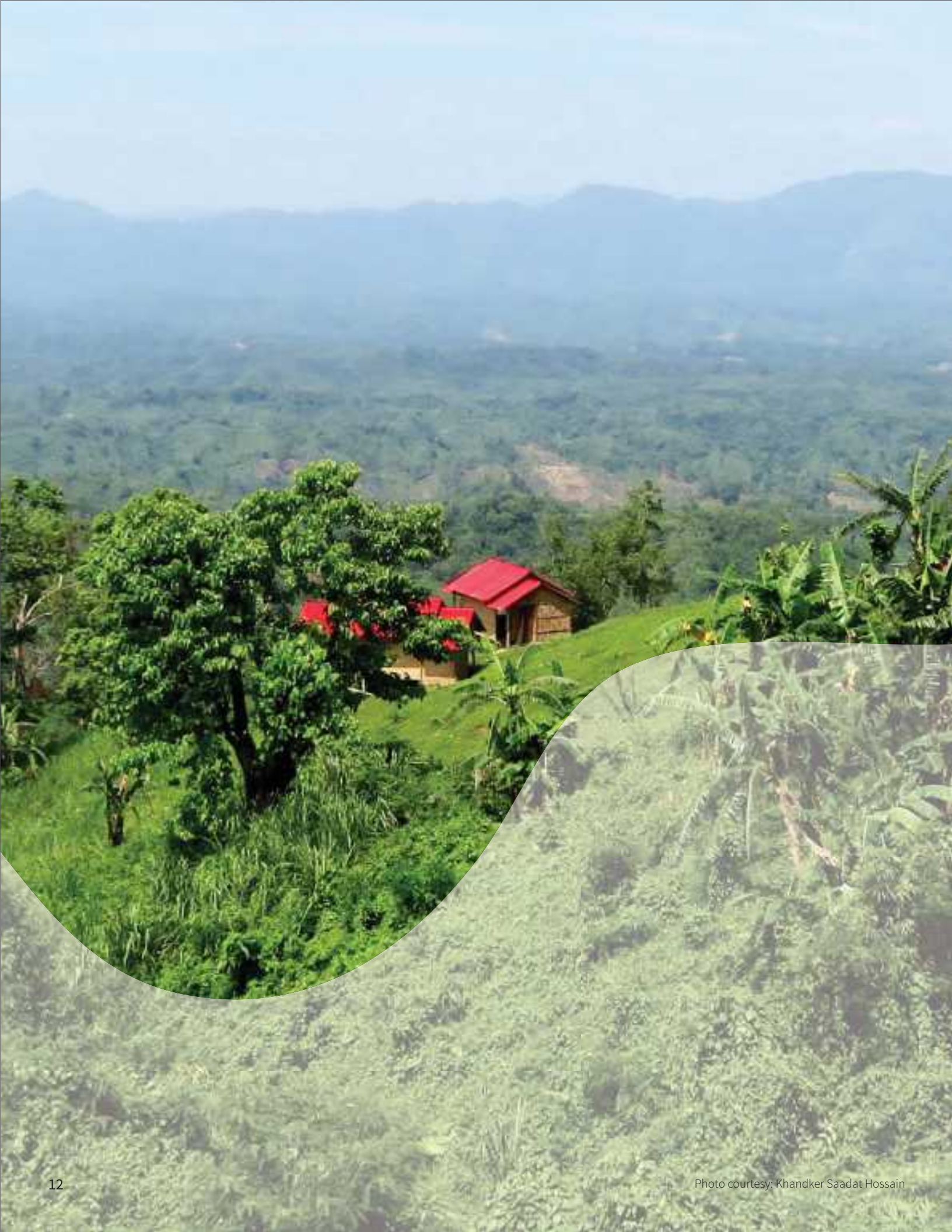
River Systems and Estuaries

- Constructing Flood Shelter Centre (FSC);
- Building embankment along eroding riverbanks and flood vulnerable areas;
- Expanding the coverage of the Social Safety Net Programme (SSNP);
- Forming volunteer groups for flood preparedness.

Urban Areas

- Managing water logging problems;
- Ensuring drinking water availability;
- Building and maintaining critical infrastructures.





1



INTRODUCTION

Understood as an opposite of vulnerability but similar to capacity, resilience has occupied special significance in discourses on disaster management since the 1970s. Resilience emphasizes the importance of not only managing an unexpected event but also building durable capacity in facing similar events in the future. Development projects end up in futile attempts if not planned with principles and measures to absorb shocks and overcome stresses. Resilience is the totality of those principles and measures that empower a community to re-build itself during the post-disaster periods. Defined by the UN, 'Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions' (UNISDR 2009).

Risk is the function of hazard, exposure and vulnerability of a system or a society. Its local, national or global aspects are linked to respective human, ecological, economic, infrastructure and political arena (UNDRR 2019) (Figure 1).



Figure 1: Different aspects of Risk

The Sendai Framework for Disaster Risk Reduction (SFDRR) guides us to reduce risk by escaping risk generating judgment, reducing prevailing risk and structuring resilience. Building community resilience is important to reduce their risk of loss of lives and properties. Deciphering community voice under the lens of resilience is important to facilitate their resilience development.

Out of four priorities of the Sendai Framework (i) Understanding disaster risk. (ii) Strengthening disaster risk governance to manage disaster risk. (iii) Investing in disaster risk reduction for resilience. (iv) Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction. The third one focuses on investing in disaster risk reduction for resilience. In order to have necessary investments in DRR, it needs to be included significantly in the national planning and budgeting system.

The 7th Five Year Plan (FYP) has addressed Disaster Risk Reduction for specific areas without due reflection of community voice regarding their resilience. Bangladesh Planning Commission is developing the 8th FYP

for July 2020-June 2025.

Inclusion of community resilience needs in the 8th FYP will help channel more resources towards resilience building at the local level. With this focus, this study has been carried out with a noble vision of reflecting grassroots voice on community resilience and forwarding it for the upcoming 8th FYP.

1.1 NATIONAL RESILIENCE PROGRAMME (NRP)

National Resilience Programme (NRP) is working to sustain the resilience of human and economic development in Bangladesh through inclusive, gender responsive disaster management and risk informed development. NRP is a joint programme being implemented by four agencies of Government of Bangladesh: Department of Disaster Management, Programming Division of Bangladesh Planning Commission, Department of Women Affairs and Local Government Engineering Department. NRP-Programming Division Part is designed to enhance the capacities for gender responsive, disability inclusive risk informed public and private investment. The specific objectives of NRP-Programming Division Part are:

- a) Capacity building for gender responsive, inclusive and risk informed development planning
- b) Facilitate access to information on disaster and climate risk through establishing a digital platform
- c) Enhance the capacity within the Planning Commission for disaster and climate risk screening of project
- d) Enhance knowledge base on disaster and climate risks in the implementing agencies of the Government of Bangladesh.

- e) Strengthening knowledge base on disaster risk for private sector investment and promote business continuity plan.

1.2 OBJECTIVE

The objective of the study is to identify community needs for DRR in hotspot areas which can be addressed in the 8th FYP.

1.3 SCOPE OF THE STUDY

The scopes of the study are as below:

- Produce and present inception report which will include methodology, workplan and other start up issues
- Develop tools for conducting grassroots consultation on DRR need assessment and share with NRP team
- Capture current disaster and hazard scenario at the hotspots and produce a combined report
- Conduct consultation sessions in six hotspot areas as decided by the NRP Team
- Keep liaison with local administration, locally elected representatives and members of local disaster management committees
- Prepare list of participants and facilitators
- Documentation of consultation proceedings
- Present field level findings at a national level workshop
- Produce final report containing findings generated through consultation

1.4 LIMITATION OF THE STUDY

Constrained time was the major limitation of the study as it was only for 30 work days. But this assignment covered field level consultation, field visits, case studies, data entry and reporting.

Planning such future studies should be designed with more time allocation and also with greater coverage of stakeholders and upazilas.

Report sharing workshop
January 30, 2020



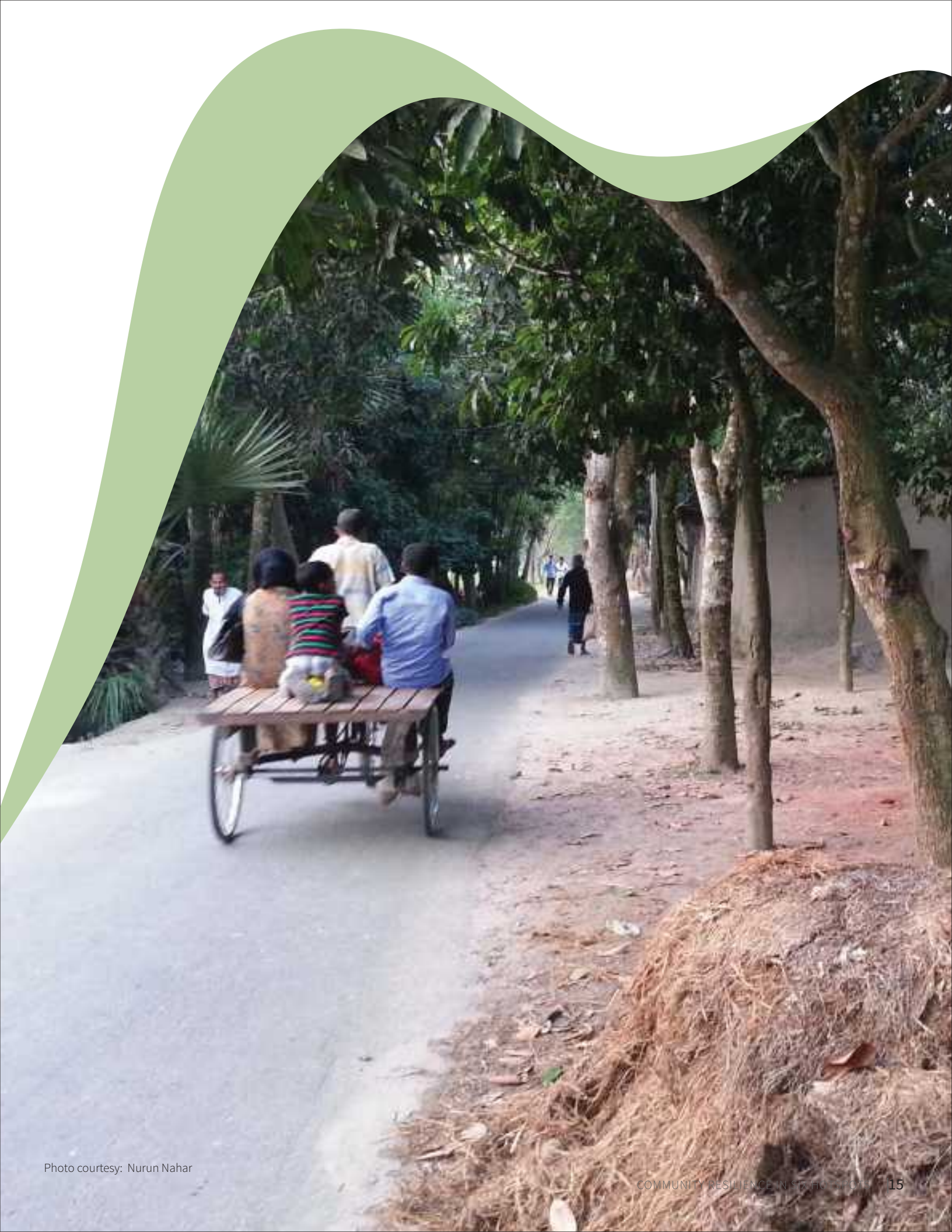


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Photo courtesy: Md. Golam Mahabub Sarwar



2 ■ ■ ■

SIX HOTSPOTS OF BANGLADESH

The Delta Plan 2100 is a massive development initiative undertaken by the Government of Bangladesh as a part of its visionary efforts to secure the future of water resources and mitigate the likely effects of climate change including natural disasters. It is expected that, through the implementation of the plan, the country could boost the GDP growth by another 1.5% by 2030. A total of 80 projects have been selected for implementation of this historic Delta Plan. The GoB will need to raise \$37 billion by 2030 to implement the plan over three phases: a short-term plan by 2030, a mid-term plan by 2050, and a long-term plan by 2100 for the effective implementation of this plan. (GED 2018)

The Bangladesh Delta Plan 2100 has identified six hotspots of the country (Table 1), as indicated below:

- i) Coastal Zone;
- ii) Barind Tract and Drought Prone Areas;
- iii) *Haor* and Flash Flood Areas;
- iv) Chittagong Hill Tracts (CHT);
- v) River Systems and Estuaries; and
- vi) Urban Areas.

The people in these specific areas have diverse experience of facing disaster risks and are rich with ideas not only to endure disasters but also to increase resilience capacities in post-disaster scenarios. It is important to capture community experience and learning on Disaster Risk Reduction (DRR). The 7th FYP



Consultation in Chilmari, Kurigram

mentioned key activities of Disaster Management and result indicators on some specific areas and the preparation of the 8th FYP is under process. Understanding the community need on DRR in hotspot areas is important, which can be addressed in 8th FYP.

Table 1: Six hotspots and respective districts (GED 2018)

Hotspots	Number of Districts	Name of Districts
Haor and Flash Flood Areas	7	Brahmanbaria, Habiganj, Kishoreganj, Moulvibazar, Netrokona, Sunamganj, Sylhet
Coastal Zone	19	Bagerhat, Barguna, Barishal, Bhola, Chandpur, Chattogram, Cox's Bazar, Feni, Gopalganj, Jashore, Jhalkati, Khulna, Lakshmipur, Narail, Noakhali, Patuakhali, Pirojpur, Satkhira and Shariatpur.
Chittagong Hill Tracts (CHT)	3	Bandarban, Khagrachhari, Rangamati
Urban Areas	7	Barishal, Chattogram, Dhaka, Khulna, Rajshahi, Rangpur, Sylhet
Barind and Drought Prone Areas	18	Bogura, Chuadanga, Dinajpur, Gaibandha, Joypurhat, Kushtia, Meherpur, Naogaon, Natore, Nawabganj, Nilphamari, Pabna, Panchagarh, Rajshahi, Rangpur, Satkhira, Sirajganj, Thakurgaon
River Systems and Estuaries	29	Barguna, Barishal, Bhola, Bogrua, Chandpur, Cumilla, Faridpur, Feni, Gaibandha, Gopalganj, Jamalpur, Kurigram, Lakshmipur, Lalmonirhat, Madaripur, Manikganj, Munshiganj, Narayanganj, Natore, Chapai Nawabganj, Noakhali, Pabna, Patuakhali, Rajshahi, Rajbari, Shariatpur, Sirajganj, Tangail, Khulna
Relatively Less Hazard Prone (RLHP) Area	6	Gazipur, Jhenaidah, Magura, Mymensingh, Nilphamari, Sherpur

2.1 COASTAL ZONE

Geomorphologically and hydrologically the coastal zone of Bangladesh is influenced by the Ganges-Brahmaputra-Meghna (GBM) river system and the Bay of Bengal. Total area of the coastal zone of Bangladesh is 47,201 km² that cover 32% of the country, being the landmass of 19 districts. Around 35 million people, representing 29% of the population, live in the coastal zone. Coastal zone of Bangladesh comprises of 19 coastal districts which are Jashore, Narail, Gopalganj, Shariatpur, Chandpur, Satkhira, Khulna, Bagerhat, Pirojpur, Jhalakati, Barguna, Barishal, Patuakhali, Bhola, Lakshmipur, Noakhali, Feni, Chattogram, and Cox's Bazar.

Stretching 710 km in length, the coastal zone combines the interface of various ecological and economic systems, including mangroves (world largest mangrove forest covers 6,017 km²), tidal flat Estuaries, almost 70 islands, accreted land, beaches, one peninsula, rural settlements, urban and industrial areas, and ports (Iftekhar 2006; Hossain 2001). Many of the coastal inhabitants are poor, and the population is exposed to both natural disasters and man-made hazards. Climate change driven events like sea level rise, cyclone, storm surge, coastal inundation, salinity intrusion and land erosion are affecting the coastal areas.

2.2 BARIND TRACT AND DROUGHT-PRONE AREAS

Barind Tract is the largest Pleistocene era physiographic unit in the Bengal Basin, covering an area of about 7,770 km². It covers most of Dinajpur, Rangpur, Pabna, Chapainawabganj, Rajshahi, Bogura, and Joypurhat districts. Adverse impacts of climate change have triggered recurrence of natural calamities in the high Barind tract posing a serious threat to the overall farming system as well as the living conditions of people.

Climate changes is accelerating the intensity and frequency of occurrences of drought, irregular rainfall, high temperature, etc. that resulted from global warming that is directly and indirectly related to crop production. Ensuring food security for all is one the major challenges that Bangladesh faces today. Despite important achievement in food grain production and food availability, food security at national, household and individual levels remains a matter of main concern for the government mainly due to drought (Kashem and Faroque, 2013).

Meteorological drought is a common phenomenon in this region, which is linked to rainfall pattern and related climatic conditions (Shahid et al., 2005). Since its independence in 1971, Bangladesh has experienced severe droughts in every decade: three times during 1970s (1973, 1978 and 1979), two times during 1980s (in 1981 and 1982), three times during 1990s (in 1992, 1994, and 1995), and three times during 2000s (in 2000, 2004 and 2006). It is a recurrent phenomenon in some parts of the country, but the northwestern region is relentlessly drought prone because of high rainfall variability (Shahid and Behrawan, 2008). The average annual rainfall in this region is 1,329 mm, whereas that in the northeastern part of the country is 4,338 mm (Shahid et al., 2005).

2.3 HAOR AND FLASH FLOOD AREAS

Some of the northeast regions of Bangladesh are highly susceptible to flooding: in normal conditions these regions remain under floodwater for months each year. The word '*Haor*' refers to a round to elliptical shaped, depressed marshy wetland located in Brahmanbaria, Habiganj, Kishoreganj, Netrokona, Moulvibazar, Sunamganj and Sylhet districts of northeastern Bangladesh. *Haors* are low-lying, physiographic depressions or floodplain wet-lands that are commonly found in northeast Bangladesh. The topography of *Haor* region is more or less flat with the maximum land surface elevation being <10 m. *Haor* wetlands are normally submerged under floodwater for 7–8 months to a typical depth of 0–5 m during the monsoon. These areas experience higher annual rainfall than the rest of the country. Due to their unique physical and social conditions, *haor* inhabitants tend to be vulnerable to flash flood.

Flashfloods are sudden, localized flood events that occur when an exceptional amount of rain falls over a short period of time (an hour to days) within a catchment producing a rapidly rising and fast moving river flows. Flash floods in Bangladesh are common and generally occur in early monsoon time (April-May), extensively in the *Haor* region due to intensive rainfall within the country and upstream catchments in India. The northeastern *Haor* region consists of nearly 400 wetlands covering an area of about 19,700 km². Floodplains of the *haor* region are used for rice cultivation both in rainy and dry seasons. High-yielding Boro rice is cultivated in most part of these wetlands in recent time, with supplementary irrigation by groundwater. Common occupations of the *haor* population are cultivation, fish, poultry, cattle farming, and day-laboring. The *Haor* inhabitants are especially vulnerable to the flashfloods as these coincided with the harvesting season of Boro rice, which is the only source of income for many households of the region.

Flashfloods sometimes kill tons of fishes and used to push the fish-farming households to critical economic condition. Compared to river floods that affect large proportion of land surface every year, flashfloods generally affect a much smaller area (typically < 5–20%) and the duration is smaller commonly a few weeks to a month. But this can have a catastrophic impact on human lives, properties and livelihoods. Flashfloods of 2007 in Northeastern Bangladesh affected ~10% area of the country but killed several hundred people and affected livelihoods in *Haor* communities (Hashem 2017).

2.4 CHITTAGONG HILL TRACTS (CHT)

The southeastern hilly region of Bangladesh is a part of the Hindu Kush Himalayan (HKH) region, known as Chittagong Hill

Track (CHT), and is highly vulnerable to landslides due to torrential rainfall and earthquakes (Sarwar 2009). Although landslide disasters were infrequent in densely populated Bangladesh in the past, increasing human activities such as hill cutting for residential development has resulted in many landslides. This is particularly evident in the CHT, putting people and properties at risk.

In recent years, devastating landslides have repeatedly hit CHT and caused casualties, damages and loss. People particularly living on the steep slopes in the hill districts are highly vulnerable to landslide disasters (Ahmed 2015a, 2015b). Most recently on 13 June 2017, rainfall triggered landslides caused at least 160 deaths in Rangamati, Chattogram and Bandarban districts. Thousands of families took refuge in different shelters. Till now, this is considered as the biggest landslide disaster in Bangladesh. Another notable landslide event occurred on 11 June 2007 that killed a total of 128 people in the vicinity of various hills of Chattogram city because of landslides triggered by heavy rainfall for eight consecutive days (Sarwar 2009; Ahmed and Dewan 2017).

Landslides in the CHT can be considered as socio-natural hazards (UNISDR 2017). There is no strict hill management system in the hills of Chattogram and Cox's Bazar districts. Many informal settlements have been developed on the landslide-prone hill slopes because of the absence of hill or slope management system. These settlements are considered as illegal by the formal authorities, while the settlers claim themselves to be legal occupants or owners of the hills. An acute land tenure conflict has been ongoing among the public agencies, settlers, powerful elites and the local community representatives over the past few decades. This kind of contradiction has undermined the institutional arrangement for reducing landslide risk in the urbanized hilly areas.

2.5 RIVER REGION AND ESTUARIES

Due to subtropical monsoon climate and the geographic location – downstream region of the Himalayan Rivers the Ganges, Brahmaputra and Meghna, every year, floods the low-lying areas of Bangladesh that cover a mean area of 20% of the 144,000 km² area of the country. Based on inundation depth, it is estimated that a 10, 50 and 100-year flood event is projected to inundate approximately 37%, 52% and 60% of the country's total land area, respectively (Kundzewicz, et al. 2014). The normal sequence of floods in Bangladesh starts with flash floods in the northeast, southeast and eastern hilly regions caused by pre-monsoon storms in April and May, and prior to the onset of the

monsoon rainfall generally commences in June that normally causes riverine flooding. There are four main types of flood in Bangladesh (WARPO, 2000): (i) monsoon, riverine floods when the major rivers overflow or cause their tributaries runs off into adjacent floodplains; (ii) flash floods in the eastern (hilly region), northeastern (*Haor* region) and northern areas (piedmont area) due to heavy and intense rainfall; (iii) localized coastal floods associated with tropical cyclones and storm surges in southern Bangladesh; and (iv) localized urban floods associated with intensive rainfall and/or onrush of river water when protective embankments breach takes place.

2.6 URBAN REGION

Although typically pictured as an agro-based country with most of its people living in rural areas, surprisingly more than one-third of the population in Bangladesh live in urban areas. With an area of only 1,48,000 km² accommodates over 160 million people and ranks fifth in the top fifteen countries on earth with high risks (Shaw et al. 2013), while the intensity and frequency of disasters are accelerating and urban areas, where half of the world population lives, have been exposed to numerous disasters (Rahman et al. 2016). In Bangladesh, 55.18 million

(34.28%) people live in urban areas. In these urban areas, people are living with various hazardous ways. The risk of these hazards is increasing due to limited access to urban amenities, climate change migrants, weak implementation of legislative provisions related to resilience.

The capacity of urban community to managed disasters depend on the integration of infrastructural, institutional, social, natural and economic resilience. Infrastructural resilience includes land use and housing, water and drainage system, sanitation and waste disposal, accessibility of roads and electricity. Urban area is suffering from drainage congestions and waterlogging, especially during the rainy season. Bangladesh introduced the Bangladesh National Building Code in 1993 to ensure building safety, which has been later revised and updated. More than 70% of the buildings are permanent structures but only less than 10% of them followed the Bangladesh National Building Code (Parvin et al. 2013). In urban area, about 25% of the population lives in close proximity to polluted industrial areas, dumping grounds, which makes the urban people more vulnerable.

2.7 UPAZILA BASED HAZARDS

Due to remarkable differences in terms of the nature, scope, and impact of disasters in areas from the same regions, it was necessary to segment the country into upazilas for a better understanding as well effective management of the disaster. One or more upazila may face multi-hazards risk. Upazilas from different hotspots face various types of disasters. One upazila may be susceptible to one type of hazard, whereas another could suffer from different hazards.

Furthermore, level of impact of a hazard may vary spatially. Based on the magnitude of a hazard, the upazilas of the country have been classed as highly susceptible, moderately susceptible, low susceptible and not susceptible. Annex-1 portrays a list of potential hazards for each upazila of the country.



Photo courtesy: SK Faruk Hossain

3

METHODOLOGY

The study has been performed using an integrated approach that includes literature review, community consultation, case studies and field observation (Figure 1). The 7th FYP is the source document that guided Annual Development Program (ADP) of Bangladesh. This 7th FYP of the country has been reviewed to explore relevant information on six hotspots of the country. Other policy documents have also been reviewed.

Community Consultation was the key method applied to perform the task. A total of 06 community consultations were conducted in six hotspots of the country. In order to capture representation of six hotspots, field visits were undertaken in 6 areas under 6 districts. This includes Amtali upazila of Barguna district; Nachole upazila of Chapai Nawabganj district; Derai upazila of Sunamganj district; Alikadam upazila of Bandarban district; Chilmari upazila of Kurigram district and Patuakhali pourashava of Patuakhali district that represent Coastal zone; Barind Tract; *Haor* areas; CHT region; River and estuaries; and Urban region, respectively (Figure 2).

STUDY TEAM:

Dr. Md. Golam Mahabub Sarwar served as a National Consultant for this assignment. The study plan was finalized having consultation with the officials of the Programming Division and General Economics Division (GED) of Bangladesh Planning Commission. The officials from Planning Commission also contributed in field level community consultation. The list of the officials is mentioned in Annex-II

Upazila Nirbahi Officers and other Government officials, public representatives, and civil society representatives of 5 upazilas (Alikadam, Amtali, Chilmari, Derai, Nachole) and Patuakhali Pourashava also contributed in respective field consultation.



Consultation in Derai, Sunamganj



Figure 2: Field visit location

Source: Author

One hotspot covers a vast geographic region. Time and resource allocation constrain did not permit us to conduct more community consultations. The participants of the consultation represented the Upazila Disaster Management Committee (UzDMC), Pourashava Disaster Management Committee (PDMC) and the management committee of the most disaster affected union of the upazila.

Participants of the consultations covered wide range of people. Three broad categories of the participants are i) Community, ii) Public Representatives and iii) Representatives of different offices of government.

Community participants include a wide range of people including but not limited to freedom fighters, local elites, women, teachers, students, politicians, journalists, entrepreneurs, development activists, religious leaders, indigenous community, etc.

Public representatives are Upazila Chairmen, Mayors, Ward Councilors, Upazila Vice-Chairmen, Upazila Vice-Chairperson, Union Parishad (UP) Chairmen, UP members, and Karbaris in the paras of CHT.

Government officials or representatives from government offices includes respective UNO and officers or representatives of different offices at upazila or union level. Among all participants, Government Officers, Community and Public Representatives formed 39%, 34% and 27% respectively (Figure 3).

There were a good proportion among three groups of participants in Alikadam and Nachole upazilla, and Patuakhali pourashava (Figure 4). In Derai and Chilmari upazilas, presence of community representatives and government officials were more than public representatives.

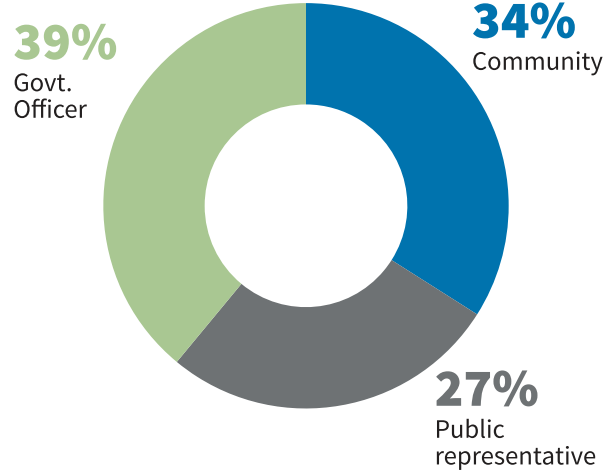


Figure 3: Stakeholder’s representation in the Community Consultation

Upazila Nirbahi Officers of the respective field were requested to organize a community consultation workshop with UzDMC, UDMC and local elites. The number of participants varied from 29 to 49 (Table 2). The highest number of partakers attended the consultation in Chilmari upazila where a total of 49 participants were present, whereas the lowest number of participants (29 people) showed up in Alikadam upazila. Geographic remoteness is the key reason for limited participation in the consultation.

A semi structured questionnaires has been used to explore resilience aspects of a hotspot. The participants of the workshop have been divided into three groups, assigning three types of response tasks: i) **Group A** was requested to assess anticipatory capacity of the community that figured out

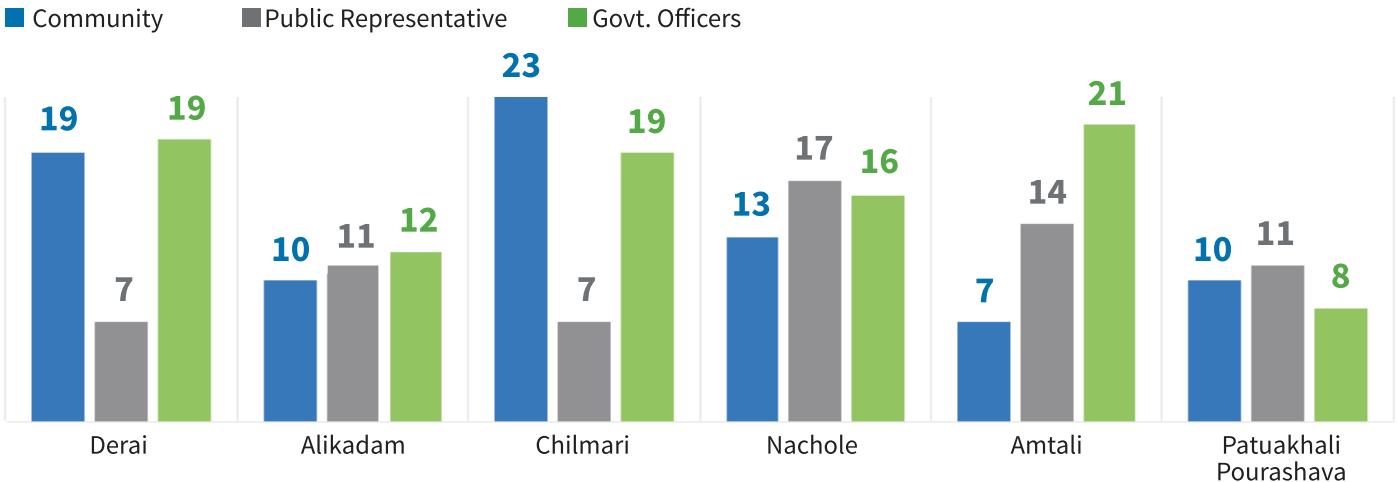


Figure 4: Number and type of representatives participated in the Community Consultations in five upazilas and one Pourashava.

Table 2: Community consultation details

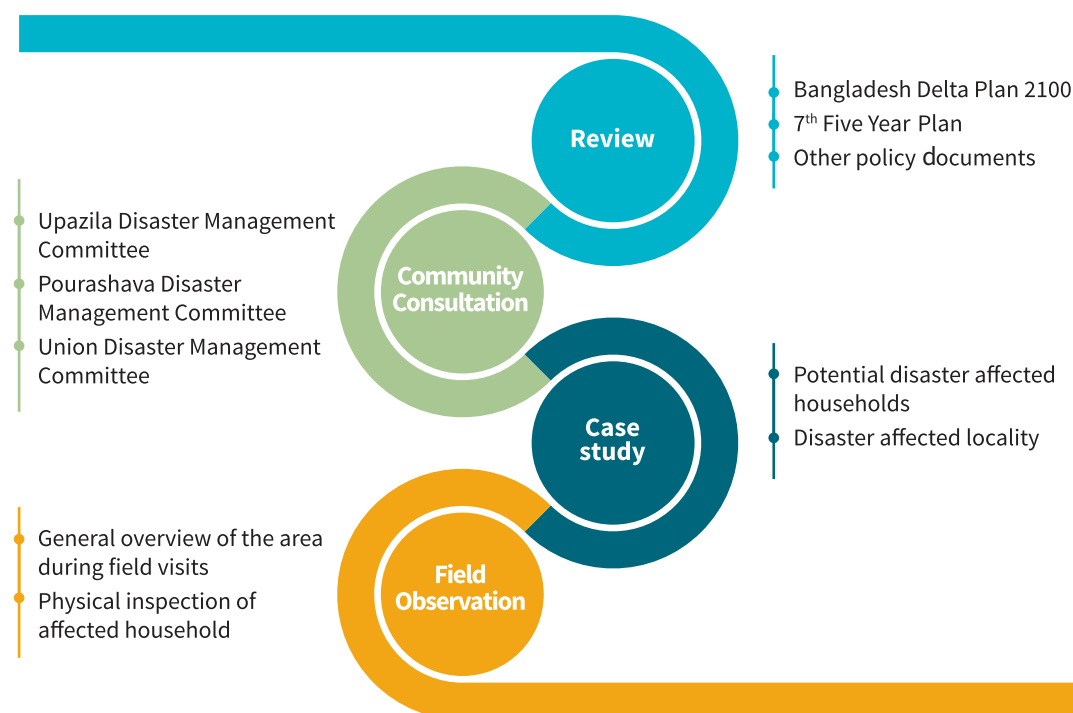
Date	Upazila/ Pourashava	Hotspots Covered	Number of Participants			Total
			Community	Public Representative	Govt. Officers	
14 Jan 2020	Derai	Haor and Flash Flood Areas	19	7	20	46
26 Dec 2019	Alikadam	Chittagong Hill Tracts (CHT)	10	11	12	33
17 Dec 2019	Chilmari	River Systems and Estuaries	23	7	19	49
12 Dec 2019	Nachole	Barind and Drought Prone Areas	13	17	16	46
09 Dec 2019	Amtali	Coastal Zone	7	14	21	42
08 Dec 2019	Patuakhali Pourashava	Urban Areas	10	11	8	29
Total			82	67	96	245

community preparedness and planning status; ii) **Group B** was assigned to assess absorptive capacity of the community in the hotspot, indicating community's statutes of preparedness for an immediate disaster event; and iii) **Group C** was requested to indicate the level of adaptive capacity of the community.

Each group selected a leader who presented their findings in front of the participants. Complementary points were mentioned by fellow team members. Additionally, relevant

information was added by other participants. There was a Question and Answer session at the end of the presentation of each group. Community thoughts on the selected issues have been listed against each hotspot.

Case studies were conducted in rural areas of the hotspots. Disaster affected families have been observed closely to explore individual level resilience context. Figure 5 outlines an overview of the methodology followed for the study.

**Figure 5:** Methodological approach

ISSUES AND CONCERNS FOR COMMUNITY RESILIENCE

Sea-level rise, low elevation of coastal land, storm surge and tidal inundation cause salinity intrusion along vast area of the coastal zone of the country. However, salinity problem is severe in the south-western coastal zone. Soil and water salinity affect agricultural crops, as well as fisheries resources of the



country. About 53 percent of the coastal region is affected by modest to extreme levels of salinity, which lowered the soil fertility of this area (Haque, 2006).

A higher salinity in water and soil will affect school buildings and other educational infrastructures along the coastal zone of the country.

Coastal erosion is another problem for rural community. Although some parts of the central coast along Noakhali district is accreting rapidly, most of the coastal area is eroding at an alarming rate (Sarwar and Woodroffe 2013). Erosion is a great resilience concern for affected coastal community.

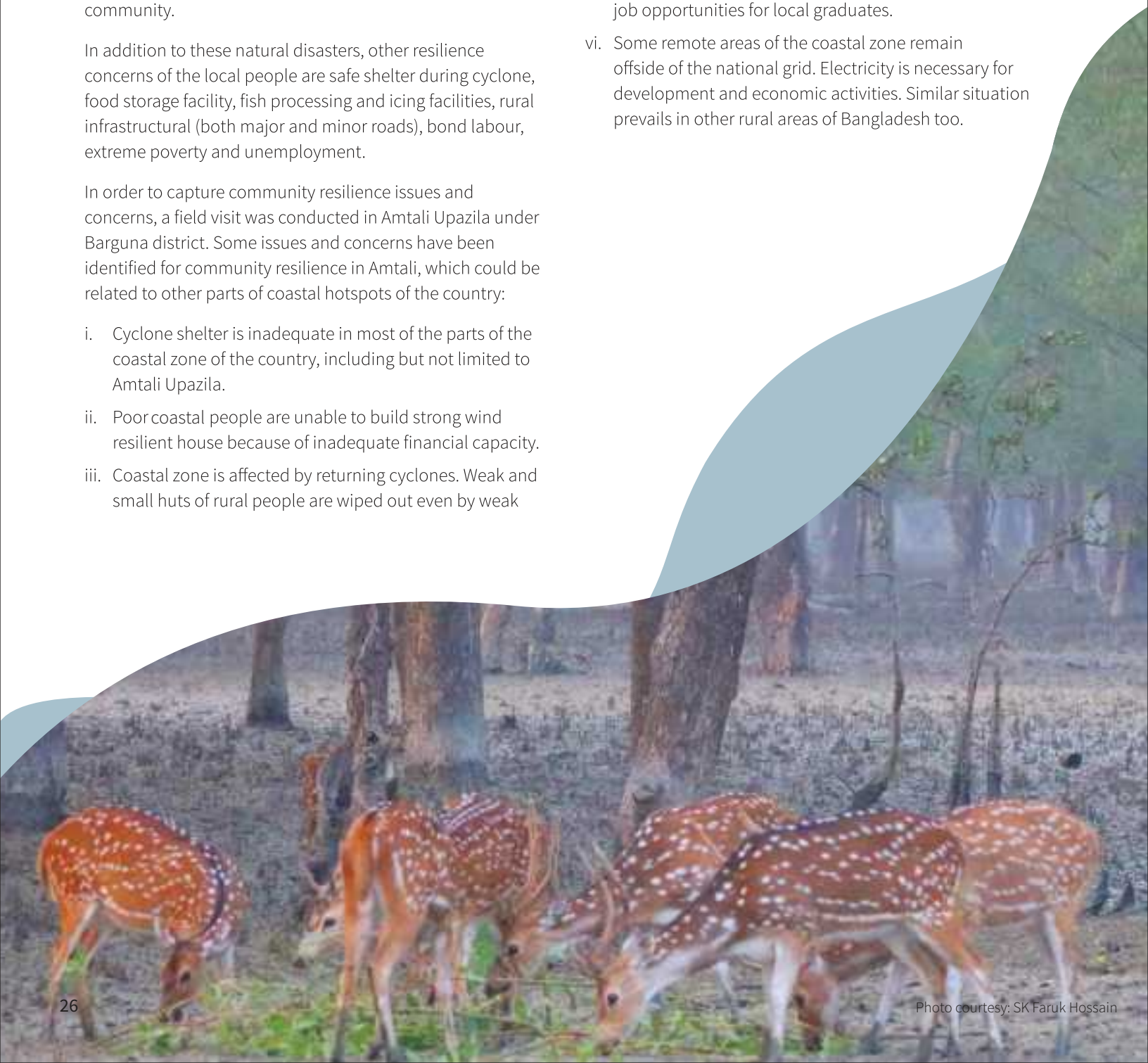
In addition to these natural disasters, other resilience concerns of the local people are safe shelter during cyclone, food storage facility, fish processing and icing facilities, rural infrastructural (both major and minor roads), bond labour, extreme poverty and unemployment.

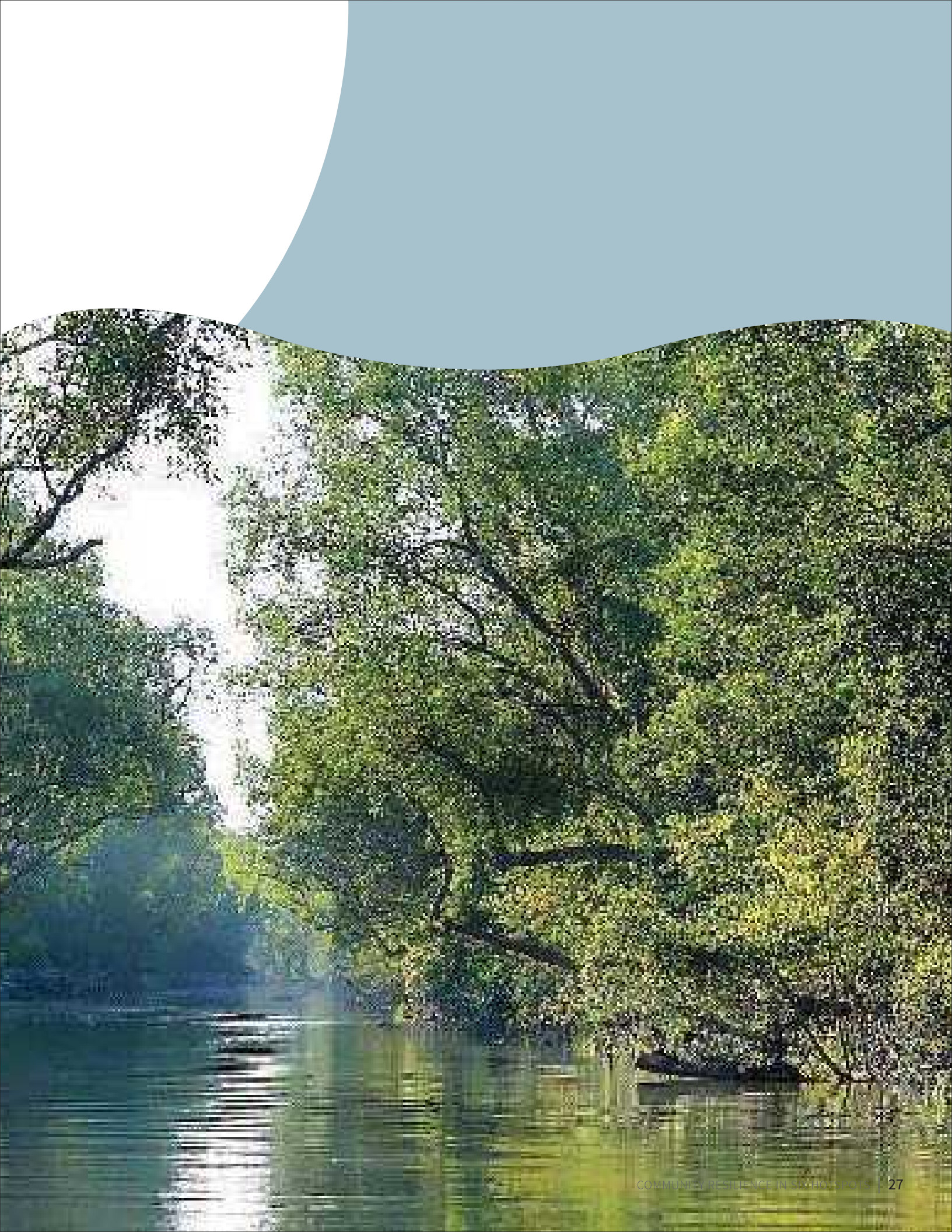
In order to capture community resilience issues and concerns, a field visit was conducted in Amtali Upazila under Barguna district. Some issues and concerns have been identified for community resilience in Amtali, which could be related to other parts of coastal hotspots of the country:

- i. Cyclone shelter is inadequate in most of the parts of the coastal zone of the country, including but not limited to Amtali Upazila.
- ii. Poor coastal people are unable to build strong wind resilient house because of inadequate financial capacity.
- iii. Coastal zone is affected by returning cyclones. Weak and small huts of rural people are wiped out even by weak

cyclone. Shelter destruction is one of the major causes for migration.

- iv. Banks of rivers and canals in Amtali upazila is eroding rapidly. Recent surge generated by cyclone Bulbul eroded banks of the Arpangashia canal, affecting hundreds of rural settlements and vast area of agricultural land. Other parts of the coastal zone also experience erosion that need to be addressed for community resilience.
- v. Agro-based industry will help to use local products as raw-materials of the industry. Furthermore, it will create job opportunities for local graduates.
- vi. Some remote areas of the coastal zone remain offside of the national grid. Electricity is necessary for development and economic activities. Similar situation prevails in other rural areas of Bangladesh too.









CASE STUDY

Community voice for cyclone shelters, Amtali, Barguna

People of Uttar Tarakarta village suffers from multi-hazards of cyclone, salinity and erosion. This small village is located in ward no 07 of Arpangasia union of Amtali upazila under Barguna district. Sheuli and Ruposhi are members of Prantik Matshya Dal who informed that the village has suffered badly by cyclone, including but not limited to Sidr, Aila, Mahasen, Nargis, Foni and Bulbul. The area is frequently affected by cyclone, bank erosion, salinity intrusion and tidal flood. Storm surge and tidal flood interrupt rural transport because of insufficient small village roads and flooding of the existing roads. Cyclone surges also erode villages road that affect transportation of local community. Building small connecting road to bigger roads are important priority of the community. Cyclone shelters is another priority of the community of the village. In the recent event of cyclone signals, they need to run to a cyclone center which is 3 km away from their home. Women, children and elderly people face the greatest challenge to move to the distantly located center. People demanded to construct at least one cyclone shelter for one thousand population. Additionally, people demanded regular maintenance of rural roads and bank protection of rivers and canals.

Regarding disaster warning people informed that, cyclone notice disseminated by the volunteers of Red Crescent Society is helpful, however community members expect more prompt warning services using modern technology, such as mass messaging.

4.2 BARIND AND DROUGHT PRONE AREAS

Drought is the major hazard impacting community resilience of the people of the Barind region. Drought-prone areas are mainly located in the northwestern and northern regions of Bangladesh and are spread over an area of 5.46 million hectares in the districts of Chapai Nawabganj, Naogaon, Rajshahi, Natore, Rangpur, Dinajpur, Joypurjhat, Pabna and Bogura. Among the regions, the northwestern Barind tract is especially drought-prone.

Lightning has caused death to people working in open areas. Farmers working in agricultural field are vulnerable to lightning. Frequent attacks by thunderstorm have been observed in Barind area. Death caused by lightning, as farmers are scared to work in field, especially during cloudy and rainy days. As a result, the land owners faces shortage of labourers in rainy season. Thus, thunderstorm affects agricultural production in the country.

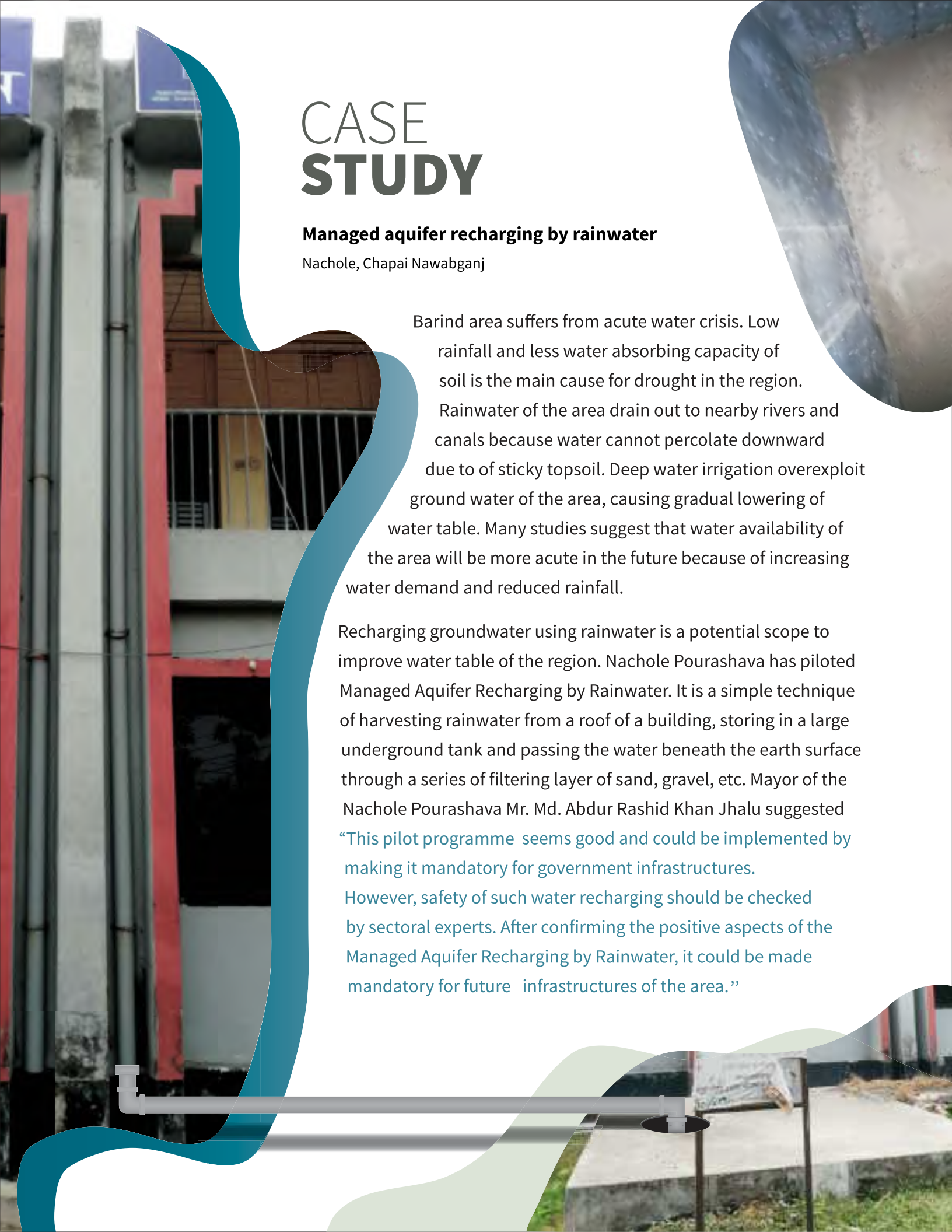
Lowering of ground water level is another important issue raised by the community. Excess withdrawal of ground water and insufficient recharge of GW because of poor rainfall in the area are causing the lowering of the ground water level. Tubewell running out of water results in drinking water scarcity.

In addition to these natural disasters, other resilience concerns of the local people are farming water scarcity, high rate of personal loan, rural infrastructure (both major and minor roads), extreme poverty and unemployment.

In order to capture community resilience issues in Barind Tract and Drought-prone region, a field visit was conducted in Nachole upazila of Chapai Nawabganj district and the following concerns have been noted:

- i. Lowering of ground water table is a major problem in the Barind and drought-prone zone, including but not limited to Nachole Upazila area. Excessive extraction of groundwater for irrigation purpose leads to underground water shortage.
- ii. Although erosion is not a great problem for the people in Barind area, still, some parts are vulnerable to erosion and flooding. For example, Fatehpur union of Nachole upazila is occasionally flooded by the Mahananda River. Some parts of the Barind area are also flooded by the Padma River.
- iii. Northern parts are high productive agriculture zone of the country. Some agricultural fields even produce more than three crops in a year. Because of high-yielding crops and surplus production, vegetables are often sold with extremely cheap price during the harvesting season. Establishing agro-based industry will help people to get the due price of their domestic products, as well as creating an employment opportunity.
- iv. Tree cover is minimum in the Barind area. The area is less green compared to other parts of the country. Local people demanded for immediate programs to increase tree coverage in the area.





CASE STUDY

Managed aquifer recharging by rainwater

Nachole, Chapai Nawabganj

Barind area suffers from acute water crisis. Low rainfall and less water absorbing capacity of soil is the main cause for drought in the region. Rainwater of the area drain out to nearby rivers and canals because water cannot percolate downward due to of sticky topsoil. Deep water irrigation overexploit ground water of the area, causing gradual lowering of water table. Many studies suggest that water availability of the area will be more acute in the future because of increasing water demand and reduced rainfall.

Recharging groundwater using rainwater is a potential scope to improve water table of the region. Nachole Pourashava has piloted Managed Aquifer Recharging by Rainwater. It is a simple technique of harvesting rainwater from a roof of a building, storing in a large underground tank and passing the water beneath the earth surface through a series of filtering layer of sand, gravel, etc. Mayor of the Nachole Pourashava Mr. Md. Abdur Rashid Khan Jhalu suggested “This pilot programme seems good and could be implemented by making it mandatory for government infrastructures. However, safety of such water recharging should be checked by sectoral experts. After confirming the positive aspects of the Managed Aquifer Recharging by Rainwater, it could be made mandatory for future infrastructures of the area.”

4.3 HAOR AND FLASHFLOOD-PRONE AREAS

Flashflood is the key hazards affecting community resilience along the *haor* region of the country. Recently, in 2017 and 2019, *haor* areas experienced severe flashflood, affecting rice production and rural infrastructures. *Haor* is an important rice producing area. Crop failure in *haor* zone may affect food security of the country. The key expectation of the people of the area is to address flashflood and related impacts in the region.

Lightning and thunderstorms are another problems of the *haor* region of northwest Bangladesh. A recent study suggests a total of 120, 114 and 94 thunderstorm days in Srimangal, Sylhet and Mymensingh stations of BMD, respectively, in 2014. These three stations are the top lightning observing stations of the country located within the vicinity of *haor* area. The frequency of lightning and thunderstorm days are increasing day by day affecting farmers working in agricultural field.

Earthquake is another hazards affecting community resilience in *haor* zone. Bangladesh has been divided into 4 vulnerable categories based on earthquake vulnerability. *Haor* zone falls in the highest earthquake zone. Thus earthquake needs to be addressed adequately to ensure community resilience of the

region. Drought is also a resilience affecting issue of the region. In spite of being frequently affected by flashflood, *haor* zone also experience severe droughts in dry season.

Other resilience issues and concerns raised by the community are river bank erosion, river dredging to increase water storage capacity of the region, maintenance of rural infrastructures and rural canals, high rate of informal personal loan, extreme poverty and unemployment.

A field visit was undertaken in Derai upazila of Sunamganj district to capture community resilience in *haor* and flashflood affected areas in the northeastern part of the country. Community identified resilience issues includes but are not limited to:

- i. Siltation has reduced water retaining capacity of *haor* areas. Haorbed, beels and riverbed have been filled up by thick layer of clay and silt, reducing water storing capacity of the region. These silts must be dredged to maintain sufficient depth of the wetlands of the region.
- ii. *Haor* region is a less forested area of the country. The area should be afforested by palm tree, and other wetland resilient species like Hijal and Karatch.



- iii. Lightning is frequently affecting natural disaster of the region. This disaster should be included in national disaster management activities. Installation of lightning arrester (similar to those installed in Rohingya camp) in haor area would be helpful in minimizing its impacts.
- iv. There are evidences that flashflood in *haor* region may prolonged for months. However, there is not sufficient food storage facilities those are able to supply long time food demand. Upazila based dry-food storage facility is needed for storing and distributing food in a crisis period.
- v. *Haor* is fish producing zone but lacks fish processing and icing facilities. Fish based industry could be grown in *haor* area.
- vi. *Haor* region is a good source of indigenous fish species. Local people demanded programs for the protection and conservation of local fish species.
- vii. Establishing cluster villages and its vertical extension will save people from being flooded in extreme flooding year.



4.4 CHITTAGONG HILL TRACTS (CHT) REGION

Landslide is a common problem in hilly areas of the country. It is the greatest resilience issue in CHT. Heavy rainfall in the monsoon causes landslides almost every year. The south-eastern parts of the country, especially CHT are experiencing frequent land slide events.

Banks of the river and chara of the CHT are very steep. Banks are eroded rapidly because of heavy rainfall, hill cutting and deforestation. In addition to bank erosion, top soil erosion is another resilience issue. Deforestation and slush and burn cultivation result in the exposure of surface of the earth and it is eroded because of heavy rainfall. Bank and top soil erosion cause silt transportation to nearby rivers and charras, resulting in siltation in theses wetlands.

Thunderstorm is another resilience issues of the CHT. A few deaths as a result of thunderstorm in the region have been reported. Thunderstorm keeps farmers away from working the field. On the other hand, the snake population of CHT has been increased in recent years. People are scared of snake bite because it is causing numerous deaths in the region.

Other resilience issues of the region are drinking water scarcity, deforestation, tobacco cultivation, shortage of rural electrification in the remote areas of CHT, non availability of health services, silt deposition in the bed of rivers, chara and jhiri and cyclone shelter centre.

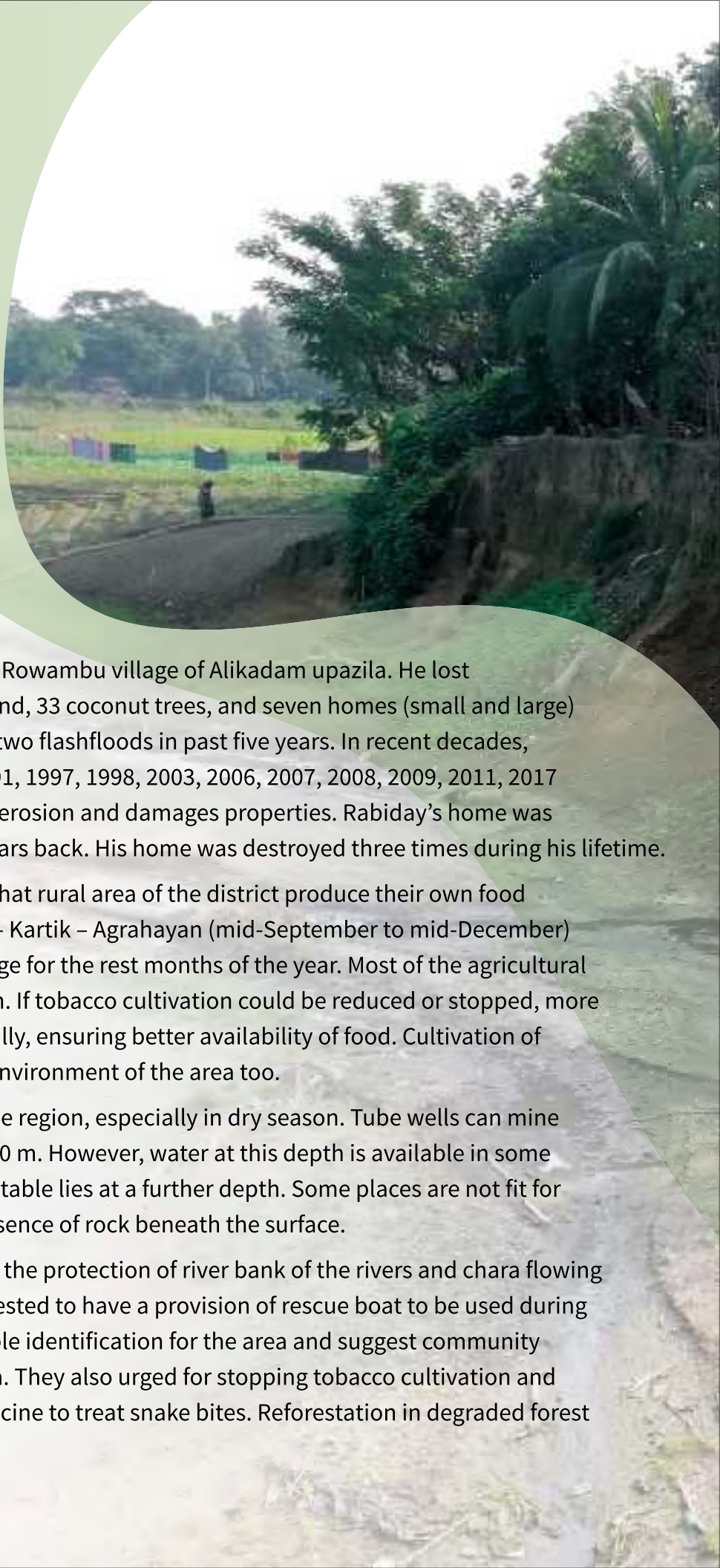
Field visit to Alikadam upazila of Bandarban district captured representative issues and concerns on community resilience in the region:

- i. Hill cutting is a major problem along different parts of CHT. Hill cutting and unplanned construction of housing along the slope of the hills are mainly responsible for landslide.
- ii. Drinking water scarcity is common in different parts of CHT. People should be provided with potable water exploring various available and feasible provisions, including but not limited to rainwater harvesting, exploring of water pocket suitable for extraction by tube well, or collection from chara/jhiri.
- iii. People affected by landslide or flashflood become helpless after the disaster is over. Special programmes are needed to rehabilitate landslide and flashflood affected people.
- iv. Lightning and thunderstorms are hitting CHT region very often. There are records of human causality in the region because of thunderstorm. Special programs are needed to address thunderstorms.
- v. Snake bite in the CHT is a great problem for community. Many people have died because of venomous bite. Treatment of snake-bitten people should be available in the region.

CASE STUDY

Flashflood, erosion and drinking water scarcity is a major problem in CHT

- Rabiday Tanchangya, Local inhabitants in Alikadam



Rabiday Tanchangya is a resident in Rowambu village of Alikadam upazila. He lost about 40 decimiles of agricultural land, 33 coconut trees, and seven homes (small and large) in past five years only. He observed two flashfloods in past five years. In recent decades, he observed flood in 1987, 1988, 1991, 1997, 1998, 2003, 2006, 2007, 2008, 2009, 2011, 2017 and 2018. Flash floods causes rapid erosion and damages properties. Rabiday's home was completely eroded in almost two years back. His home was destroyed three times during his lifetime.

Rabiday and other locals informed that rural area of the district produce their own food sufficient for the months of Ashwin – Kartik – Agrahayan (mid-September to mid-December) only. People experience food shortage for the rest months of the year. Most of the agricultural land are used for tobacco cultivation. If tobacco cultivation could be reduced or stopped, more edible crops could be produced locally, ensuring better availability of food. Cultivation of tobacco is also harmful for natural environment of the area too.

Drinking water scarcity is acute in the region, especially in dry season. Tube wells can mine drinking water at a depth of 100 - 150 m. However, water at this depth is available in some certain areas. In some places, water table lies at a further depth. Some places are not fit for tube well setting because of the presence of rock beneath the surface.

Rabiday and local peoples urged for the protection of river bank of the rivers and chara flowing through the locality. They also suggested to have a provision of rescue boat to be used during severe flooding condition. Water table identification for the area and suggest community regarding shallow water pocket area. They also urged for stopping tobacco cultivation and appealed for the availability of medicine to treat snake bites. Reforestation in degraded forest area is also expected.



4.5 RIVER REGION AND ESTUARIES

Bangladesh is affected by frequent flooding along river basin and estuary areas. Large area of Bangladesh is within the estuary of three large rivers – Brahmaputra, Ganges and Meghna. This large river system carry enormous water from the upstream. On top of that, the country is a place of heavy rainfall. Natural rain water and huge flow from the upstream bring flood to the country, almost every year. A recent flood in 2017 affected 3,917,184 people in 24 districts and damaged 309,542 hectares of cropland (Relief Web, 2017).

Erosion is another problem along different parts of the River Region and Estuaries hotspot of the country. River bank erosion force people to lose their productive land and become landless. Thus erosion is an important component imposing to the local people. Besides, additional resilience issues and concerns are drought, seasonal communication difficulties, rural infrastructures and unemployment.

A field visit was conducted in Chilmari upazila of Kurigram district to explore resilience issues and concerns in River Region and Estuaries hotspots of the country. Community have identified following topics, which could be similar to other riverine parts of the country:

- Erosion is a great problem in upazilas located along the bank of big rivers of the country. Human settlement are wiped out overnight in some parts of the country, because of rapid erosion rate. Riverbank protection is the prime concerns for the people of flood affected people.
- Rivers get over flooded in the monsoon season. Flood water destroy houses, business, roads, schools and other rural settlements. Embankments built on the bank of the rivers protects people from being

wiped out. Maintenance of existing embankments are as important as bank protection.

- Char* areas (river islands) are producing various agricultural products (e.g. pumpkins). Market linkage and value-chain development will increase people's economic activities and enhance resilience capacity.
- Rural infrastructures get destructed both by erosion and flooding impacts that affects development activities of communities. Rural infrastructures must be maintained regularly.

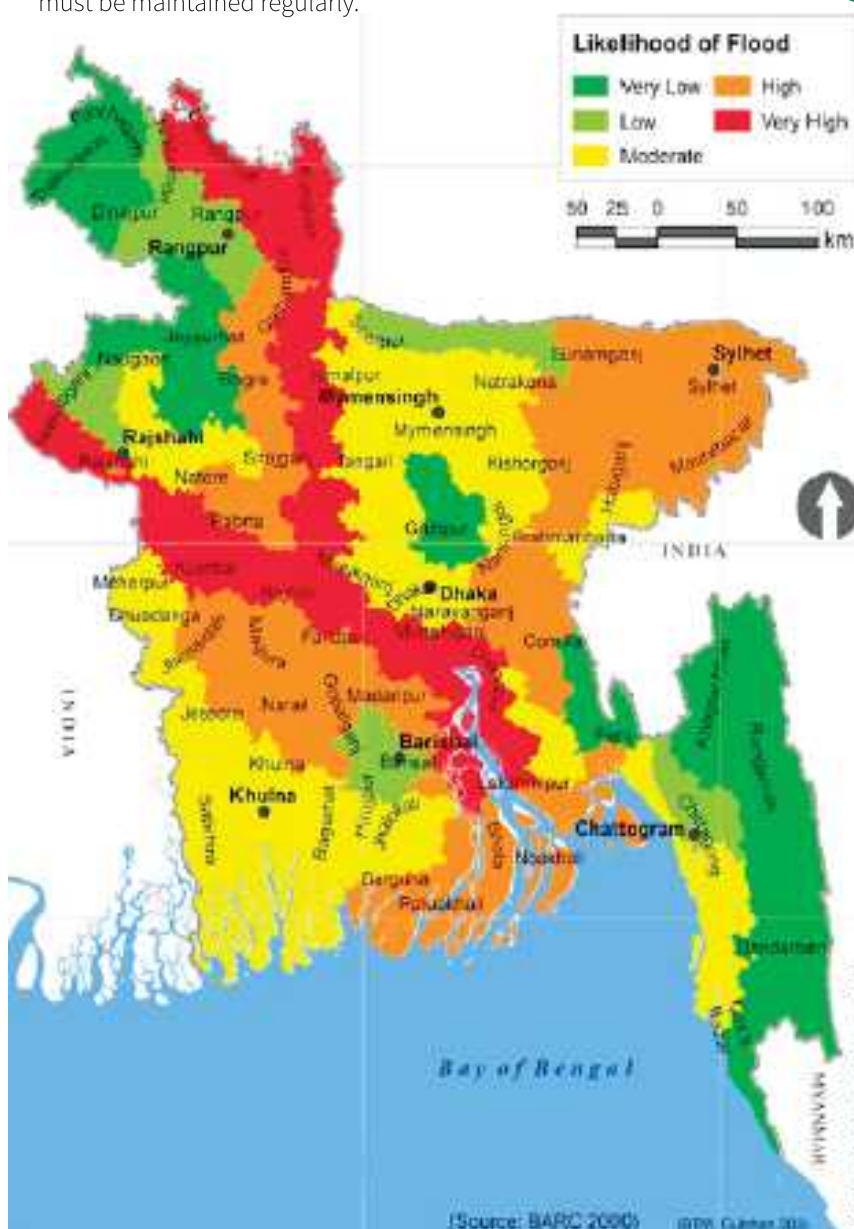


Figure 6: Flood hazards in Bangladesh



Photo courtesy: Md. Golam Mahabub Sarwar

CASE STUDY

Mrs. Zolekha (70 years old) is an inhabitant of Sonari para of Chilmari upazila in Kurigram district. Currently she is living with her brother Mr. Hazrat Ali (55 years) on embankment near Chilmari Jetty Ghat. She is a widow and she has 5 children. They have been displaced and have migrated in other cities due to poverty. Mrs. Zolekha as well as her brother Hazrat are victims of extensive riverbank spills and erosion. They lost about 10-12 acres land through riverbank erosion of the Old Brahmaputra river. Last year in 2019 they have suffered a lot due to flood. Their economic condition is so pitiable. At this elderly age of 70 years, Mrs. Zolekha lives in a shabby house made of mud and straw. She urges for government supports to build a house to stay, as well as financial supports under SSNP.





4.6 URBAN REGION

Resilience issues in urban areas are correlated to the geography of the areas and how rapidly these are being urbanized. However, one of the common urban issues is drainage congestion. Most of the urban settlements are developing in unplanned way, with poor or no provision for passing drainage water. Poor drainage system in an urban area cause drainage congestion. It is a common problem for most of the urban area of the country.

Drinking water for urban poor is another issue. Inadequate water supply to urban slum area force them to buy water from vendors at a higher price. Sometimes, people are forced to buy tube well water from local traders. Cyclone shelter centres are insufficient or absence in many towns. For example, there is no cyclone shelter centre in Patuakhali town and Ward Commissioners of Patuakhali pourashava expressed to establish at least one cyclone shelter centre in each ward.

Town protection dam is important for protecting a city or town from flood water or storm surge. The local leaders of Patuakhali expressed a great concern for town protection dam and functional sluice gates installed on the dam.

Patuakhali area is getting popular for fish production in recent time. However, there is no icing facilities for locally produced fishes and landing fishes captured from open water or seas. Similarly, the area is becoming potato producing zone in recent time but there is no cold storage for surplus potato grown in the area. Food storage facilities are needed for such surplus production in any area.

Other resilience issues and concerns raised by local community are infrastructural preparation for urban growth as a result of increased activities due to the start of Payra Deep sea port. Furthermore, urban poverty and unemployment need to be addressed across the country.

Urban area of Bangladesh covers vast areas and represent diverse geographic locations. However, a field visit was planned and executed to Patuakhali paurashava to capture community

resilience in built-up settings. Community consultation with Pourashava Disaster Management Committee (PDMC) and local people explored some resilience issues, including but not limited to-

- i. Construction of Cyclone Shelter Centre (CSC) is the prime issues of coastal towns of the country. In spite of being located in the cyclone vulnerable area, there are no cyclone shelter center in the town of Patuakhali. Similar situation prevails in most of the coastal towns. Public representatives expressed at least two CSC in each of the nine (9) wards.
- ii. City protection dam is crucial for Patuakhali town. The dam becomes vulnerable in the monsoon season. Sluice gates of the dam suffer from malfunction. For protection of the city protection dam is crucial for Patuakhali, as well as some other cities (e.g. Rajshahi) or towns of the country.
- iii. Weak and small huts of poor people are wiped out even by medium strength cyclone. Shelter destruction is one of the major causes for migration. Provision of emergency shelter reconstruction will help people to have safe shelter after a disaster is over.
- iv. Water logging is a key problem of Patuakhali and other towns along the coastal zone. Water logging drag down the progress of development of the urban community in the country. Water logging should be addressed by building good drainage system and developing functional sluice gates along key water outlets along a town.
- v. Patuakhali zone his highly productive area. Since a couple of years, bumper production of potato has been observed in Patuakhali. The area needs potato cold storage facilities, so that the vegetable can be preserved to serve in off season period.
- vi. Patuakhali is a fish producing area too. However, ice producing factories are limited in the area. More ice producing industries are expected.
- vii. In addition to food storage facilities, agro-based industry will help to use local products as raw-materials of the industry. Furthermore, it will create job opportunities for local graduates.



Photo courtesy: Md. Golam Mahabub Sarwar



5



COMMUNITY RECOMMENDATIONS FOR RESILIENCE

Theoretical ideas on resilience enhancing programmes may not yield anticipated outcomes, as vulnerability, capacity, and resilience are co-related to specific geographical, environmental, and socio-economic as well as infrastructural conditions of a region. Special attention should be given to region-specific needs while planning any resilience enhancing programmes. The following recommendations are developed based on the findings of field visits and consultation sessions with various representative groups from the communities in each of the hotspots.

Community representing six hotspots of Bangladesh Delta Plan 2100 have articulated their resilience aspects and presented hereunder in the form of thematic activities. The 8th FYP of Bangladesh will play the most important role in guiding Annual Development Programme (ADP) and subsequent projects and respective budget and allocation.

Including the following leading tasks in the 8th FYP will help to enhance community resilience. Community suggested resilience activities could be divided into two groups:

- i) Nationwide Resilience Task; and
- ii) Hotspot based Resilience Task

5.1 NATIONWIDE RESILIENCE TASK

Recommendations those are applicable for almost of the entire country, includes but are not limited to:

5.1.1 UPAZILA BASED RESILIENCE PROGRAMME: Key national task recommended by the community is the establishment of upazila based programme to address climate change and disaster at national level. All upazilas are not equally vulnerable to various natural hazards. Disaster management efforts of one upazila could be unique compared to another one. Upazila focused resilience plan is essential to enhance community resilience.

5.1.2 RESILIENT HOUSING AND EMERGENCY SHELTER RECONSTRUCTION: Reconstruction of damaged house is a great problem during post disaster time because rural poor people do not have sufficient savings to repair or rebuild smashed houses. Emergency reconstruction facilities for damaged houses should be in place. Regular assistance on shelter construction are also needed. It will provide resilient housing and mental support for affected people.



Group work during community consultation in Derai, Sunamganj.

5.1.3 BANK PROTECTION: Rapidly eroding banks of rivers, *charas* and *jhiris* in the CHT should be identified and protected from being eroded. Canal bank maintenance programme should be regularized similar to road maintenance.

5.1.4 DRINKING WATER AVAILABILITY: Drinking water scarcity is acute in the Chittagong Hill Tracts. Drinking water should be available in these remote areas with appropriate technology. There are some Ground Water Pockets (GWP) in the CHT. These pockets should be explored to supply potable water in the clustered rural settlement.

5.1.5 EXCAVATION OF RIVERS AND CANALS: Bangladesh is a country of rivers and canals. However, these water bodies are silted up and getting dried in dry season. Dredging dried rivers and canal will help to continue water flow and improve moisture contents of nearby soil. Excavation of dried water bodies is especially important for Barind, *haor* and coastal zone.

5.1.6 REHABILITATION PROGRAMME FOR DISASTER AFFECTED PEOPLE: Disaster affected people, especially those from low income groups find difficulties to build back better. Special rehabilitation programme are needed for disaster affected households. Flood, cyclone, flashflood and landslide affected people need immediate rehabilitation supports.

5.1.7 AGRO-BASED INDUSTRY IN RURAL AND SUB-URBAN AREAS: Bangladesh is getting industrialized over time. Agro-based industry will help people to get employment in the rural areas. Establishing economic zones in different parts of the country will help small scale industrial growth and create job opportunities.

5.1.8 FOOD STORAGE FACILITIES: Different parts of the country are suitable for the production of different crops, fruits or fish species. For example, in recent years, the production of potato in Patuakhali region has increased dramatically. The region produces surplus potatoes than local demand. Food storage facility will help people to preserve excess production. Cold storage could be built under Public Private Partnership (PPP).

Local level food storage facilities should be developed based on the local production and surplus. A thorough study is needed for various parts of the country for a better understanding of surplus production of any crops/products for those areas. After having in-depth value chain analysis for different product, suitable storing facilities should be ensured.

5.1.9 ELECTRICITY FACILITIES IN THE RURAL AREAS: Although Bangladesh has a vision for 100% electricity coverage, some remote areas still lack behind the grid connected areas. These off-grid rural areas should be covered

with electric supply, so that people can get opportunity for economic activities. It will help for the creation and expansion of rural agro based industries.

5.1.10 PLANTATION: Forest and tree covers are integral part of environment. It plays various roles in disaster risk reduction and resilience building. In coastal zone, tree cover acts as frontline defense against cyclone and storm surge. In the *haor* area, hizal and karatch plants reduces the strength of afal (big wave) that hit rural settlements. In barind region, plants help to increase moisture contents of air and thus reduces drought situation in the region. In the river area, plants helps to strengthen soil bonding and reduces erosion.

Plantation in CHT will help to regain degraded forest area of the region. Additionally, palm plantation in higher area may help to weaken down lightning effects. Plantation in different parts of the area will help to reduces disaster risk. Crash programme should be taken for plantation in different hotspots of the country.

5.2 HOTSPOT BASED RESILIENCE TASK

In addition to nationwide resilience activities, hotspot based activities includes but are not limited to:

5.2.1 COMMUNITY RECOMMENDATIONS FOR COASTAL ZONE

5.2.1.1 Cyclone Shelter Centre (CSC) construction: Cyclone Shelter Centres are not evenly distributed along the coastal zone. A CSC site selection guideline should be developed. People along the coastal zone instantly suggested that CSC should be constructed for each thousands of coastal inhabitants along the remote areas. Additionally, CSC should be constructed in each ward of a coastal town.

5.2.1.2 Safe housing for coastal and flood affected people: Weak and conventional rural housing structures are more vulnerable to cyclone than a strong building. Changing housing pattern is essential to sustain in strong wind condition. Poor coastal people need financial support for such housing. Vertical village can accommodate many people in a small place. It will also save them from being wiped out by storm surges.

5.2.1.3 Embankment eroding riverbank and flood vulnerable areas: Building of embankments along the riverbank may save large number of population living along rivers and estuaries.

5.2.2 COMMUNITY RECOMMENDATIONS FOR BARIND AND DROUGHT PRONE AREAS

5.2.2.1 Recharging Groundwater: Groundwater recharge is a prime need of drought-prone areas in the Tract or Area. Some pilots have been completed successfully to inject rainwater beneath the ground. These pilots could be up scaled.

5.2.2.2 Introducing less water consuming variety: Barind region is a water scarce area. Drought is the key hazard in Barind region that affect agricultural crops. Introducing less water consuming variety will help to have increased agricultural production and resilient food system.

5.2.3 COMMUNITY RECOMMENDATIONS FOR HAOR AND FLASH FLOOD AREAS

5.2.3.1 Addressing lightning effects: Lightning is becoming a major problem nowadays. *Haor* area is the highest lightning frequency area of the country. Lightning Arrester could be installed in the zone. Additionally, vast areas of haor could be covered with palm plantation to minimize its impacts. Thunder receivers could be installed at a certain distance of open spaces.

5.2.3.2 Flood Preparedness Volunteers (FfPV): Coastal area of the country is getting good result in managing cyclonic disasters. Cyclone Preparedness Program (CPP) Volunteers play important role during cyclonic event. Similarly, Flood Preparedness Volunteers (FfPV) system could be introduced in the *haor* region. It will help to rescue flashflood victims in the region.

5.2.4 COMMUNITY RECOMMENDATIONS FOR CHITTAGONG HILL TRACTS (CHT)

5.2.4.1 Slope Maintaining Programmes: Hill cutting and unplanned settlement on the slope of the hills should be stopped immediately. Programmes are needed for slope protection and also for slope stabilization, where possible.

5.2.4.2 Landslide Preparedness Volunteers (LPV): Coastal area of the country is getting good result in managing cyclonic through the help of volunteers of the Cyclone Preparedness Program (CCP). Similarly, Landslide Preparedness Volunteers (LPV) system could be introduced in CHT. It will help to rescue landslide victims in the region.

5.2.4.3 Addressing Thunderstorms and Lightning: Thunderstorms are becoming worse in the country. Vast areas could be covered with plantation to minimize its impacts. Thunder receivers could be installed at a certain distance of open spaces.

5.2.4.4 Special treatment for snake-bite patient: Snake bite is a great problem for CHT community. Many people have died because of venomous bite. Required medicines, specialized doctors and logistics should be available in the hospitals of the zone. Awareness programme should be taken so that people get to know how to avoid snake bite and also first aid for bitten situation.

5.2.5 COMMUNITY RECOMMENDATIONS FOR RIVER SYSTEMS AND ESTUARIES

5.2.5.1 Flood Shelter Centre (FSC) construction: Flood shelter centres (similar to CSC in the coastal zone) are needed in the zone. A FSC site selection guideline should be developed. Special attention is needed for the construction of FSC in highly affected area, such as flood affected upazilas in Kurigram, Sirajganj, Gaibandha, Bogura, Lalmonirhat, and Jamalpur districts.

5.2.5.2 Embankment along eroding riverbank and flood vulnerable areas: Building of Embankments along the riverbank may save large number of population living along rivers and estuaries.

5.2.5.3 Expansion of the coverage of Social Safety Net Program (SSNP): Social safety net program helps rural elderly, economically vulnerable and physically challenged people to maintain everyday life. SSNP is a noble initiative

of the government. However, demand for SSNP is far more than present delivery. SSNP coverage needs to be widen in rural areas.

5.2.5.4 Flood Preparedness Volunteers (FPV): Coastal area of the country is getting good result in managing cyclonic disasters, because of important roles played by the Cyclone Preparedness Program (CPP) Volunteers. Similarly, Flood Preparedness Volunteers (FPV) system could be introduced in the flood affected areas of the country. It will help to rescue flood victims.

5.2.6 COMMUNITY RECOMMENDATIONS FOR URBAN AREAS

5.2.6.1 Water logging management: Water logging should be addressed by building good drainage system and developing functional sluice gates along key water outlets along a town.

5.2.6.2 Drinking water availability: Urban poor suffers from drinking water scarcity. People should be brought under potable water coverage.

5.2.6.3 Building and maintaining Critical Infrastructures: Some infrastructures are critical for the existence of an area. For example, city protection dykes are crucial for Rajshahi, Chandpur or Patuakhali city. The dam should be maintained regularly and sluice gates should be managed properly.

6



CONCLUSION

Different disasters impact different parts of the country differently. People's vulnerability to these disasters as well as post-disaster re-building capacity significantly varies from region to region. Because of these differences, resilience enhancing strategies should be developed based on the experiences of the communities of each region.

Hotspot based identification of resilience issues and concerns are important to build community resilience. However, community preferences depend on the nature and extent of hazards and their own capacity. Although, Bangladesh is a disaster-prone country, all upazilas are not equally vulnerable to various natural hazards. Addressing the resilience issues identified by community will help them to build a resilient society. Upazilas have been identified for each hazard. Upazila based Resilience Plan should be developed based on identified hazards and respective resilience components.

This study report will serve as background information on community resilience in hotspots, which will be supportive to identify the disaster risk reduction interventions in 8th Five Years Plan. The indigenous knowledge on coping with disasters in hotspot areas can be replicable in other parts of the country. The lesson learned from this study can contribute towards innovations and new interventions for disaster risk reduction considering the diversity and livelihood patterns in hotspots.



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ANNEX



Photo courtesy: SK Faruk Hossain

ANNEX-1: HAZARDS AFFECTING UPAZILAS OF THE COUNTRY

[Note: ***/highly susceptible; **/moderately susceptible; */low susceptible; -/not susceptible]

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Barguna	Amtali	***	**	-	***	***	-	***	*
Barguna	Bamna	***	*	-	**	*	-	***	*
Barguna	Barguna Sadar	***	**	-	***	***	-	***	*
Barguna	Betagi	***	*	-	**	*	-	***	*
Barguna	Patharghata	***	**	-	***	***	-	***	*
Barishal	Agailjhara	**	*	-	-	*	-	*	*
Barishal	Babuganj	**	*	-	*	-	-	***	*
Barishal	Bakerganj	***	*	-	**	*	-	***	*
Barishal	Banari Para	**	*	-	*	*	-	**	*
Barishal	Gaurnadi	**	**	-	-	-	-	**	*
Barishal	Hizla	**	***	-	**	-	-	***	*
Barishal	Barishal Sadar (Kotwali)	***	**	-	*	*	-	***	*
Barishal	Mhendiganj	***	***	-	**	*	-	***	*
Barishal	Muladi	**	**	-	*	-	-	***	*
Barishal	Wazirpur	**	*	-	-	*	-	**	*
Bhola	Bhola Sadar	***	***	-	**	*	-	***	*
Bhola	Burhanuddin	***	**	-	**	*	-	***	*
Bhola	Char Fasson	***	**	-	***	***	-	***	*
Bhola	Daulat Khan	***	**	-	**	*	-	***	*
Bhola	Lalmohan	***	**	-	***	**	-	***	*
Bhola	Manpura	***	**	-	***	**	-	***	*
Bhola	Tazumuddin	***	**	-	***	**	-	***	-
Jhalokati	Jhalokati Sadar	**	*	-	**	*	-	**	*
Jhalokati	Kanthalia	***	*	-	**	*	-	***	*
Jhalokati	Nalchity	**	*	-	**	*	-	***	*
Jhalokati	Rajapur	**	*	-	**	*	-	***	*
Patuakhali	Bauphal	***	**	-	**	*	-	***	*
Patuakhali	Dashmina	***	**	-	***	*	-	***	*
Patuakhali	Dumki	***	*	-	**	*	-	***	*
Patuakhali	Galachipa	***	**	-	***	***	-	***	*
Patuakhali	Kala Para	***	**	-	***	***	-	***	*
Patuakhali	Mirzaganj	***	*	-	**	*	-	***	*
Patuakhali	Patuakhali Sadar	***	*	-	**	*	-	***	*
Pirojpur	Bhandaria	***	*	-	**	*	-	***	*
Pirojpur	Kawkhali	**	*	-	**	*	-	**	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Pirojpur	Mathbaria	***	*	-	***	**	-	***	*
Pirojpur	Nazirpur	**	*	-	*	*	-	**	*
Pirojpur	Pirojpur Sadar	**	*	-	**	*	-	**	*
Pirojpur	Nesarabad (Swarupkati)	**	*	-	**	*	-	**	*
Pirojpur	Zianagar	***	*	-	**	*	-	***	*
Bandarban	Alikadam	**	-	*	-	-	***	-	*
Bandarban	Bandarban Sadar	*	-	*	-	-	***	-	*
Bandarban	Lama	**	-	*	-	-	***	-	*
Bandarban	Naikhongchhari	**	-	*	-	-	***	-	*
Bandarban	Rowangchhari	*	-	*	-	-	***	-	*
Bandarban	Ruma	*	-	*	-	-	***	-	*
Bandarban	Thanchi	*	-	*	-	-	***	-	*
Brahmanbaria	Akhaura	*	*	***	-	-	*	-	-
Brahmanbaria	Banchharampur	*	**	-	-	-	-	***	*
Brahmanbaria	Brahmanbaria Sadar	*	*	***	-	-	*	**	-
Brahmanbaria	Ashuganj	*	**	**	-	-	-	**	-
Brahmanbaria	Kasba	*	**	***	-	-	*	-	-
Brahmanbaria	Nabinagar	*	**	**	-	-	-	**	-
Brahmanbaria	Nasirnagar	*	**	**	-	-	-	*	-
Brahmanbaria	Sarail	*	**	**	-	-	-	**	-
Chandpur	Chandpur Sadar	**	***	-	*	-	-	***	-
Chandpur	Faridganj	**	***	-	*	-	-	***	-
Chandpur	Haim Char	**	***	-	**	-	-	***	*
Chandpur	Hajiganj	**	*	-	*	-	-	-	-
Chandpur	Kachua	**	**	-	-	-	-	-	*
Chandpur	Matlab Dakshin	**	***	-	*	-	-	***	*
Chandpur	Matlab Uttar	**	***	-	*	-	-	***	*
Chandpur	Shahrasti	**	**	-	-	-	-	-	-
Chattogram	Anowara	***	*	**	**	*	**	**	*
Chattogram	Bayejid Bostami	***	*	*	*	*	**	-	*
Chattogram	Banshkhali	***	*	**	**	*	*	**	*
Chattogram	Bakalia	***	*	*	*	*	*	*	*
Chattogram	Boalkhali	***	*	**	*	*	**	*	*
Chattogram	Chandanaish	***	*	**	-	-	***	*	*
Chattogram	Chandgaon	***	*	*	*	*	*	*	*
Chattogram	Chattogram Port	***	*	*	**	*	*	*	*
Chattogram	Double Mooring	***	*	*	*	*	*	*	*
Chattogram	Fatikchhari	***	*	**	-	-	**	-	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Chattogram	Halishahar	***	*	*	**	*	*	*	*
Chattogram	Hathazari	***	*	**	-	*	**	*	*
Chattogram	Kotwali	***	*	*	*	*	*	*	*
Chattogram	Khulshi	***	*	*	*	*	**	-	*
Chattogram	Lohagara	***	*	*	-	-	***	-	*
Chattogram	Mirsharai	***	*	*	***	*	**	**	*
Chattogram	Pahartali	***	*	*	**	*	**	*	*
Chattogram	Panchlaish	***	*	*	*	*	*	-	*
Chattogram	Patiya	***	*	**	**	*	**	*	*
Chattogram	Patenga	***	*	*	**	*	*	*	*
Chattogram	Rangunia	***	*	**	-	-	***	*	*
Chattogram	Raozan	***	*	**	-	*	**	*	*
Chattogram	Sandwip	***	**	-	***	**	-	***	-
Chattogram	Satkania	***	*	**	-	-	***	*	*
Chattogram	Sitakunda	***	*	*	***	*	**	**	*
Cumilla	Barura	**	**	-	-	-	-	-	*
Cumilla	Brahman Para	**	**	***	-	-	*	-	-
Cumilla	Burichang	**	**	***	-	-	*	-	*
Cumilla	Chandina	**	**	-	-	-	-	-	*
Cumilla	Chauddagram	***	-	***	-	-	*	-	-
Cumilla	Cumilla Sadar Dakshin	**	-	***	-	-	*	-	*
Cumilla	Daudkandi	**	**	-	-	-	-	**	*
Cumilla	Debidwar	**	**	-	-	-	-	-	*
Cumilla	Homna	*	**	-	-	-	-	**	*
Cumilla	Cumilla Adarsha Sadar	**	-	***	-	-	*	-	*
Cumilla	Laksam	**	**	-	-	-	-	-	*
Cumilla	Manoharganj	***	**	-	-	-	-	-	*
Cumilla	Meghna	*	**	-	-	-	-	***	*
Cumilla	Muradnagar	**	**	-	-	-	-	**	*
Cumilla	Nangalkot	***	-	-	-	-	-	-	-
Cumilla	Titas	*	**	-	-	-	-	**	*
Cox's Bazar	Chakaria	***	*	**	***	**	*	***	*
Cox's Bazar	Cox's Bazar Sadar	***	*	**	***	*	**	***	*
Cox's Bazar	Kutubdia	***	*	*	***	**	*	**	*
Cox's Bazar	Maheshkhali	***	*	*	***	**	**	***	*
Cox's Bazar	Pekua	***	*	**	***	**	*	**	*
Cox's Bazar	Ramu	***	-	**	**	*	**	*	*
Cox's Bazar	Teknaf	***	-	**	**	*	**	**	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Cox's Bazar	Ukhia	***	-	**	**	*	**	*	*
Feni	Chhagalnaiya	***	-	**	*	-	*	*	*
Feni	Daganbhuiyan	***	-	*	*	-	-	*	-
Feni	Feni Sadar	***	-	*	*	-	*	*	*
Feni	Fulgazi	***	-	**	-	-	*	-	*
Feni	Parshuram	***	-	**	-	-	*	-	*
Feni	Sonagazi	***	**	*	***	*	-	**	-
Khagrachhari	Dighinala	*	-	*	-	-	***	-	*
Khagrachhari	Khagrachhari Sadar	*	-	*	-	-	***	-	*
Khagrachhari	Lakshmichhari	*	-	*	-	-	***	-	*
Khagrachhari	Mahalchhari	*	-	*	-	-	***	-	*
Khagrachhari	Manikchhari	**	-	*	-	-	***	-	*
Khagrachhari	Matiranga	**	-	*	-	-	***	-	*
Khagrachhari	Panchhari	*	-	*	-	-	***	-	*
Khagrachhari	Ramgarh	**	-	*	-	-	***	-	*
Lakshmipur	Kamalnagar	***	***	-	***	*	-	***	*
Lakshmipur	Lakshmipur Sadar	***	***	-	**	*	-	***	*
Lakshmipur	Roypur	**	***	-	**	-	-	***	*
Lakshmipur	Ramganj	**	*	-	*	-	-	-	-
Lakshmipur	Ramgati	***	**	-	***	**	-	***	*
Noakhali	Begumganj	***	*	-	*	-	-	*	-
Noakhali	Chatkhil	***	*	-	*	-	-	-	-
Noakhali	Companiganj	***	**	-	***	**	-	**	-
Noakhali	Hatiya	***	**	-	***	**	-	***	*
Noakhali	Kabirhat	***	*	-	**	*	-	*	-
Noakhali	Senbagh	***	-	-	*	-	-	*	-
Noakhali	Sonaimuri	***	*	-	*	-	-	-	-
Noakhali	Subarnachar	***	**	-	***	**	-	**	*
Noakhali	Noakhali Sadar	***	*	-	**	*	-	*	*
Rangamati	Baghaichhari	**	-	*	-	-	***	*	*
Rangamati	Barkal	*	-	*	-	-	***	*	*
Rangamati	Kawkhali (Betbunia)	**	*	*	-	-	***	-	*
Rangamati	Belai Chhari	*	-	*	-	-	***	*	*
Rangamati	Kaptai	**	-	*	-	-	***	*	*
Rangamati	Jurai Chhari	*	-	*	-	-	***	*	*
Rangamati	Langadu	*	-	*	-	-	***	*	*
Rangamati	Naniarchar	*	-	*	-	-	***	*	*
Rangamati	Rajsthali	*	-	*	-	-	***	-	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Rangamati	Rangamati Sadar	**	-	*	-	-	***	*	*
Dhaka	Adabor	*	*	-	-	-	-	*	-
Dhaka	Badda	*	*	-	-	-	-	-	*
Dhaka	Biman Bandar	*	*	-	-	-	-	-	-
Dhaka	Cantonment	*	*	-	-	-	-	-	-
Dhaka	Dakshinkhan	*	*	-	-	-	-	-	-
Dhaka	Demra	*	*	-	-	-	-	-	-
Dhaka	Dhamrai	*	*	-	-	-	-	*	*
Dhaka	Dhanmondi	*	*	-	-	-	-	-	-
Dhaka	Dohar	*	***	-	-	-	-	***	*
Dhaka	Gulshan	*	*	-	-	-	-	-	-
Dhaka	Hazaribagh	*	*	-	-	-	-	*	-
Dhaka	Jatrabari	*	*	-	-	-	-	-	-
Dhaka	Kafrul	*	*	-	-	-	-	-	-
Dhaka	Kamrangir Char	*	*	-	-	-	-	*	-
Dhaka	Khilgaon	*	*	-	-	-	-	-	*
Dhaka	Khilkhet	*	*	-	-	-	-	-	*
Dhaka	Keraniganj	*	*	-	-	-	-	*	*
Dhaka	Kotwali	*	*	-	-	-	-	*	-
Dhaka	Lalbagh	*	*	-	-	-	-	*	-
Dhaka	Mirpur	*	*	-	-	-	-	*	-
Dhaka	Mohammadpur	*	*	-	-	-	-	*	-
Dhaka	Motijheel	*	*	-	-	-	-	-	-
Dhaka	Nawabganj	*	*	-	-	-	-	**	*
Dhaka	New Market	*	*	-	-	-	-	-	-
Dhaka	Pallabi	*	*	-	-	-	-	-	-
Dhaka	Paltan	*	*	-	-	-	-	-	-
Dhaka	Ramna	*	*	-	-	-	-	-	-
Dhaka	Sabujbagh	*	*	-	-	-	-	-	-
Dhaka	Savar	*	*	-	-	-	-	*	*
Dhaka	Shah Ali	*	*	-	-	-	-	*	-
Dhaka	Shahbagh	*	*	-	-	-	-	-	-
Dhaka	Shyampur	*	*	-	-	-	-	*	-
Dhaka	Sutrapur	*	*	-	-	-	-	*	-
Dhaka	Tejgaon	*	*	-	-	-	-	-	-
Dhaka	Tejgaon Ind. Area	*	*	-	-	-	-	-	-
Dhaka	Turag	*	*	-	-	-	-	*	*
Dhaka	Uttara	*	*	-	-	-	-	-	*
Dhaka	Uttar Khan	*	*	-	-	-	-	-	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Faridpur	Alfadanga	*	**	-	-	-	-	**	*
Faridpur	Bhanga	*	**	-	-	-	-	***	*
Faridpur	Boalmari	*	**	-	-	-	-	**	*
Faridpur	Char Bhadrasan	*	***	-	-	-	-	***	*
Faridpur	Faridpur Sadar	*	***	-	-	-	-	***	*
Faridpur	Madhukhali	*	**	-	-	-	-	**	*
Faridpur	Nagarkanda	*	**	-	-	-	-	*	*
Faridpur	Sadarpur	*	***	-	-	-	-	***	*
Gazipur	Gazipur Sadar	*	-	-	-	-	-	-	*
Gazipur	Kaliakair	*	*	-	-	-	-	*	*
Gazipur	Kaliganj	*	-	-	-	-	-	*	*
Gazipur	Kapasasia	*	-	-	-	-	-	*	*
Gazipur	Sreepur	*	-	-	-	-	-	*	*
Gopalganj	Gopalganj Sadar	*	**	-	-	*	-	**	-
Gopalganj	Kashiani	*	**	-	-	-	-	**	-
Gopalganj	Kotalipara	**	*	-	-	*	-	*	-
Gopalganj	Muksudpur	*	**	-	-	-	-	*	-
Gopalganj	Tungipara	**	*	-	-	*	-	**	-
Kishorgonj	Austagram	*	**	**	-	-	-	**	-
Kishorgonj	Bajitpur	*	*	**	-	-	-	**	-
Kishorgonj	Bhairab	*	**	**	-	-	-	**	-
Kishorgonj	Hossainpur	*	*	*	-	-	-	*	*
Kishorgonj	Itna	*	**	**	-	-	-	*	-
Kishorgonj	Karimganj	*	*	**	-	-	-	-	-
Kishorgonj	Katiadi	*	*	*	-	-	-	*	*
Kishorgonj	Kishoreganj Sadar	*	*	**	-	-	-	-	-
Kishorgonj	Kuliar Char	*	*	*	-	-	-	**	-
Kishorgonj	Mithamain	*	**	**	-	-	-	*	-
Kishorgonj	Nikli	*	*	**	-	-	-	*	-
Kishorgonj	Pakundia	*	*	*	-	-	-	*	*
Kishorgonj	Tarail	*	*	**	-	-	-	-	-
Madaripur	Kalkini	**	**	-	-	-	-	***	*
Madaripur	Madaripur Sadar	**	**	-	-	-	-	***	*
Madaripur	Rajoir	*	**	-	-	-	-	*	-
Madaripur	Shib Char	*	***	-	-	-	-	***	*
Manikganj	Daulatpur	*	***	-	-	-	-	***	*
Manikganj	Ghior	*	*	-	-	-	-	**	*
Manikganj	Harirampur	*	***	-	-	-	-	***	*
Manikganj	Manikganj Sadar	*	*	-	-	-	-	**	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Manikganj	Saturia	*	*	-	-	-	-	**	*
Manikganj	Shibalaya	*	***	-	-	-	-	***	*
Manikganj	Singair	*	*	-	-	-	-	**	*
Munshiganj	Gazaria	*	**	-	-	-	-	***	*
Munshiganj	Sreenagar	*	***	-	-	-	-	***	*
Munshiganj	Munshiganj Sadar	*	***	-	-	-	-	***	*
Munshiganj	Serajdikhan	*	*	-	-	-	-	***	*
Munshiganj	Sreenagar	*	***	-	-	-	-	***	*
Munshiganj	Tongibari	*	***	-	-	-	-	***	*
Narayanganj	Araihazar	*	**	-	-	-	-	***	-
Narayanganj	Sonargaon	*	*	-	-	-	-	***	-
Narayanganj	Bandar	*	*	-	-	-	-	***	*
Narayanganj	Narayanganj Sadar	*	*	-	-	-	-	***	*
Narayanganj	Rupganj	*	*	-	-	-	-	**	*
Narsingdi	Belabo	*	*	-	-	-	-	**	-
Narsingdi	Manohardi	*	*	-	-	-	-	*	*
Narsingdi	Narsingdi Sadar	*	**	-	-	-	-	**	-
Narsingdi	Palash	*	-	-	-	-	-	**	-
Narsingdi	Royapura	*	**	-	-	-	-	**	-
Narsingdi	Shibpur	*	*	-	-	-	-	*	-
Rajbari	Baliakandi	*	**	-	-	-	-	**	*
Rajbari	Goalanda	*	***	-	-	-	-	***	*
Rajbari	Pangsha	*	***	-	-	-	-	***	*
Rajbari	Rajbari Sadar	*	***	-	-	-	-	***	*
Shariatpur	Bhedarganj	**	***	-	*	-	-	***	*
Shariatpur	Damudya	**	**	-	*	-	-	***	*
Shariatpur	Gosairhat	**	***	-	*	-	-	***	*
Shariatpur	Naria	**	***	-	*	-	-	***	*
Shariatpur	Shariatpur Sadar	**	**	-	-	-	-	***	*
Shariatpur	Zanjira	*	***	-	-	-	-	***	*
Tangail	Basail	*	*	-	-	-	-	*	*
Tangail	Bhuapur	-	***	-	-	-	-	***	*
Tangail	Delduar	*	*	-	-	-	-	*	*
Tangail	Dhanbari	-	*	-	-	-	-	*	*
Tangail	Ghatail	-	*	-	-	-	-	-	*
Tangail	Gopalpur	-	*	-	-	-	-	***	*
Tangail	Kalihati	-	*	-	-	-	-	***	*
Tangail	Madhupur	-	*	-	-	-	-	-	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Tangail	Mirzapur	*	*	-	-	-	-	*	*
Tangail	Nagarpur	*	***	-	-	-	-	***	*
Tangail	Sakhipur	*	*	-	-	-	-	-	*
Tangail	Tangail Sadar	-	***	-	-	-	-	***	*
Jamalpur	Bakshiganj	-	*	*	-	-	-	***	*
Jamalpur	Dewanganj	-	***	*	-	-	-	***	*
Jamalpur	Islampur	-	***	*	-	-	-	***	*
Jamalpur	Jamalpur Sadar	-	*	*	-	-	-	**	*
Jamalpur	Madarganj	-	***	-	-	-	-	***	*
Jamalpur	Melandaha	-	*	-	-	-	-	***	*
Jamalpur	Sarishabari	-	***	-	-	-	-	***	*
Mymensingh	Bhaluka	*	-	-	-	-	-	-	*
Mymensingh	Dhobaura	-	*	***	-	-	**	-	*
Mymensingh	Fulbaria	-	*	*	-	-	-	-	*
Mymensingh	Gaffargaon	*	*	*	-	-	-	*	-
Mymensingh	Gauripur	-	*	**	-	-	-	*	-
Mymensingh	Haluaghat	-	*	***	-	-	**	-	*
Mymensingh	Ishwarganj	-	*	*	-	-	-	*	-
Mymensingh	Mymensingh Sadar	-	*	*	-	-	-	**	-
Mymensingh	Muktagachha	-	*	*	-	-	-	**	-
Mymensingh	Nandail	-	*	*	-	-	-	*	*
Mymensingh	Phulpur	-	*	**	-	-	-	-	-
Mymensingh	Trishal	-	*	*	-	-	-	*	-
Netrakona	Atpara	-	*	**	-	-	-	-	*
Netrakona	Barhatta	-	*	***	-	-	-	-	*
Netrakona	Durgapur	-	*	***	-	-	**	-	*
Netrakona	Khaliajuri	-	**	**	-	-	-	*	-
Netrakona	Kalmakanda	-	*	***	-	-	**	-	*
Netrakona	Kendua	-	*	**	-	-	-	-	*
Netrakona	Madan	-	**	**	-	-	-	*	-
Netrakona	Mohanganj	-	**	**	-	-	-	*	-
Netrakona	Netrokona Sadar	-	*	***	-	-	-	-	-
Netrakona	Purbadhala	-	*	***	-	-	-	-	-
Sherpur	Jhenaigati	-	*	**	-	-	**	-	*
Sherpur	Nakla	-	*	**	-	-	-	**	-
Sherpur	Nalitabari	-	*	**	-	-	**	-	*
Sherpur	Sherpur Sadar	-	*	*	-	-	-	**	-
Sherpur	Sreebardi	-	*	**	-	-	**	-	*
Bagerhat	Bagerhat Sadar	**	*	-	*	*	-	***	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Bagerhat	Chitalmari	**	**	-	*	*	-	**	*
Bagerhat	Fakirhat	**	*	-	*	*	-	***	*
Bagerhat	Kachua	**	*	-	*	*	-	***	*
Bagerhat	Mollahat	**	**	-	-	*	-	**	*
Bagerhat	Mongla	***	*	-	**	***	-	***	*
Bagerhat	Morrelganj	***	*	-	**	**	-	***	*
Bagerhat	Rampal	**	*	-	*	**	-	***	*
Bagerhat	Sarankhola	***	*	-	**	***	-	***	*
Chuadanga	Alamdanga	-	*	-	-	-	-	*	*
Chuadanga	Chuadanga Sadar	-	*	-	-	-	-	*	*
Chuadanga	Damurhuda	-	*	-	-	-	-	*	*
Chuadanga	Jiban Nagar	*	*	-	-	-	-	*	***
Jashore	Abhaynagar	*	**	-	-	*	-	**	*
Jashore	Bagher Para	*	**	-	-	*	-	*	**
Jashore	Chaugachha	*	*	-	-	-	-	*	**
Jashore	Jhikargachha	*	*	-	-	*	-	*	**
Jashore	Keshabpur	*	*	-	-	*	-	*	*
Jashore	Kotwali	*	**	-	-	*	-	*	**
Jashore	Manirampur	*	*	-	-	*	-	*	*
Jashore	Sharsha	*	*	-	-	*	-	*	***
Jhenaidah	Harinakunda	*	**	-	-	-	-	*	**
Jhenaidah	Jhenaidah Sadar	*	**	-	-	-	-	*	**
Jhenaidah	Kaliganj	*	**	-	-	-	-	*	**
Jhenaidah	Kotchandpur	*	**	-	-	-	-	*	***
Jhenaidah	Maheshpur	*	*	-	-	-	-	*	***
Jhenaidah	Shailkupa	*	**	-	-	-	-	*	*
Khulna	Batiaghata	**	*	-	*	**	-	***	*
Khulna	Dacope	***	*	-	**	***	-	***	**
Khulna	Daulatpur	*	*	-	-	*	-	***	*
Khulna	Dumuria	**	*	-	*	**	-	***	*
Khulna	Dighalia	*	**	-	-	*	-	***	*
Khulna	Khalishpur	**	*	-	-	*	-	***	*
Khulna	Khan Jahan Ali	*	*	-	-	*	-	***	*
Khulna	Khulna Sadar	**	*	-	-	*	-	***	*
Khulna	Koyra	***	*	-	**	***	-	***	**
Khulna	Paikgachha	**	*	-	*	***	-	***	**
Khulna	Phultala	*	*	-	-	*	-	**	*
Khulna	Rupsa	**	**	-	-	*	-	***	*
Khulna	Sonadanga	**	*	-	-	*	-	***	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Khulna	Terokhada	*	**	-	-	*	-	**	*
Kushtia	Bheramara	-	***	-	-	-	-	***	**
Kushtia	Daulatpur	-	***	-	-	-	-	***	***
Kushtia	Khoksa	-	***	-	-	-	-	***	*
Kushtia	Kumarkhali	-	***	-	-	-	-	***	*
Kushtia	Kushtia Sadar	-	***	-	-	-	-	***	**
Kushtia	Mirpur	-	***	-	-	-	-	***	**
Magura	Magura Sadar	*	**	-	-	-	-	**	**
Magura	Mohammadpur	*	**	-	-	-	-	**	*
Magura	Shalikha	*	**	-	-	-	-	*	**
Magura	Sreepur	*	**	-	-	-	-	**	*
Meherpur	Gangni	-	*	-	-	-	-	*	***
Meherpur	Mujib Nagar	-	*	-	-	-	-	*	*
Meherpur	Meherpur Sadar	-	*	-	-	-	-	*	*
Narail	Kalia	*	**	-	-	*	-	**	*
Narail	Lohagara	*	**	-	-	*	-	**	**
Narail	Narail Sadar	*	**	-	-	*	-	**	**
Satkhira	Assasuni	**	*	-	*	**	-	***	**
Satkhira	Debhata	**	*	-	*	**	-	*	**
Satkhira	Kalaroa	*	*	-	-	*	-	*	*
Satkhira	Kaliganj	**	*	-	*	***	-	***	**
Satkhira	Satkhira Sadar	**	*	-	*	*	-	*	**
Satkhira	Shyamnagar	***	*	-	**	***	-	***	**
Satkhira	Tala	**	*	-	*	*	-	*	*
Bogura	Adamdighi	-	-	-	-	-	-	-	**
Bogura	Bogura Sadar	-	**	-	-	-	-	*	*
Bogura	Dhunat	-	**	-	-	-	-	***	*
Bogura	Dhupchanchia	-	-	-	-	-	-	-	*
Bogura	Gabtali	-	**	-	-	-	-	*	*
Bogura	Kahaloo	-	-	-	-	-	-	-	*
Bogura	Nandigram	-	-	-	-	-	-	*	*
Bogura	Sariakandi	-	***	-	-	-	-	***	*
Bogura	Shajahanpur	-	**	-	-	-	-	*	*
Bogura	Sherpur	-	**	-	-	-	-	***	*
Bogura	Shibganj	-	**	-	-	-	-	-	*
Bogura	Sonatola	-	***	-	-	-	-	***	*
Dinajpur	Birampur	-	-	-	-	-	-	*	*
Dinajpur	Birganj	-	-	*	-	-	-	*	*
Dinajpur	Biral	-	-	*	-	-	-	*	**

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Dinajpur	Bochaganj	-	-	*	-	-	-	*	*
Dinajpur	Chirirbandar	-	*	*	-	-	-	*	**
Dinajpur	Fulbari	-	-	-	-	-	-	*	*
Dinajpur	Ghoraghat	-	-	-	-	-	-	**	*
Dinajpur	Hakimpur	-	-	-	-	-	-	*	*
Dinajpur	Kaharole	-	-	*	-	-	-	*	*
Dinajpur	Khansama	-	-	*	-	-	-	*	*
Dinajpur	Dinajpur Sadar	-	*	*	-	-	-	*	**
Dinajpur	Nawabganj	-	-	-	-	-	-	**	*
Dinajpur	Parbatipur	-	*	*	-	-	-	*	*
Gaibandha	Fulchhari	-	***	-	-	-	-	***	*
Gaibandha	Gaibandha Sadar	-	**	-	-	-	-	***	*
Gaibandha	Gobindaganj	-	**	-	-	-	-	**	*
Gaibandha	Palashbari	-	**	-	-	-	-	**	*
Gaibandha	Sadullapur	-	**	-	-	-	-	*	*
Gaibandha	Saghata	-	***	-	-	-	-	***	*
Gaibandha	Sundarganj	-	***	-	-	-	-	***	*
Joypurhat	Akkelpur	-	-	-	-	-	-	-	**
Joypurhat	Joypurhat Sadar	-	-	-	-	-	-	-	*
Joypurhat	Kalai	-	-	-	-	-	-	-	*
Joypurhat	Khetlal	-	-	-	-	-	-	-	**
Joypurhat	Panchbibi	-	-	-	-	-	-	*	*
Kurigram	Bhurungamari	-	***	-	-	-	-	***	-
Kurigram	Char Rajibpur	-	***	-	-	-	-	***	*
Kurigram	Chilmari	-	***	-	-	-	-	***	*
Kurigram	Phulbari	-	***	-	-	-	-	***	-
Kurigram	Kurigram Sadar	-	***	-	-	-	-	***	-
Kurigram	Nageshwari	-	***	-	-	-	-	***	-
Kurigram	Rajarhat	-	***	-	-	-	-	***	-
Kurigram	Raumari	-	***	-	-	-	-	***	*
Kurigram	Ulipur	-	***	-	-	-	-	***	-
Lalmonirhat	Aditmari	-	***	-	-	-	-	***	*
Lalmonirhat	Hatibandha	-	***	-	-	-	-	***	*
Lalmonirhat	Kaliganj	-	***	-	-	-	-	***	*
Lalmonirhat	Lalmonirhat Sadar	-	***	-	-	-	-	***	*
Lalmonirhat	Patgram	-	***	-	-	-	-	***	-
Naogaon	Atrai	-	-	-	-	-	-	*	**
Naogaon	Badalgachhi	-	-	-	-	-	-	-	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Naogaon	Dhamoirhat	-	-	-	-	-	-	*	**
Naogaon	Manda	-	*	-	-	-	-	*	**
Naogaon	Mahadebpur	-	*	-	-	-	-	*	**
Naogaon	Naogaon Sadar	-	-	-	-	-	-	-	*
Naogaon	Niamatpur	-	*	-	-	-	-	-	***
Naogaon	Patnitala	-	-	-	-	-	-	*	***
Naogaon	Porsha	-	-	-	-	-	-	-	***
Naogaon	Raninagar	-	-	-	-	-	-	*	**
Naogaon	Sapahar	-	-	-	-	-	-	-	***
Natore	Bagatipara	-	*	-	-	-	-	-	*
Natore	Baraigram	-	**	-	-	-	-	-	**
Natore	Gurudaspur	-	**	-	-	-	-	*	**
Natore	Lalpur	-	***	-	-	-	-	***	**
Natore	Natore Sadar	-	*	-	-	-	-	-	*
Natore	Singra	-	*	-	-	-	-	*	*
Nawabganj	Bholahat	-	*	-	-	-	-	*	***
Nawabganj	Gomastapur	-	*	-	-	-	-	*	***
Nawabganj	Nachole	-	*	-	-	-	-	-	***
Nawabganj	Chapai Nababganj Sadar	-	***	-	-	-	-	***	***
Nawabganj	Shibganj	-	***	-	-	-	-	***	***
Nilphamari	Dimla	-	***	-	-	-	-	***	*
Nilphamari	Domar	-	*	-	-	-	-	*	*
Nilphamari	Jaldhaka	-	***	-	-	-	-	***	*
Nilphamari	Kishoreganj	-	*	-	-	-	-	**	*
Nilphamari	Nilphamari Sadar	-	*	*	-	-	-	*	*
Nilphamari	Saidpur	-	*	-	-	-	-	*	*
Pabna	Atgharia	-	**	-	-	-	-	-	**
Pabna	Bera	*	***	-	-	-	-	***	*
Pabna	Bhangura	-	**	-	-	-	-	*	*
Pabna	Chatmohar	-	**	-	-	-	-	*	**
Pabna	Faridpur	-	**	-	-	-	-	*	*
Pabna	Ishwardi	-	***	-	-	-	-	***	**
Pabna	Pabna Sadar	-	***	-	-	-	-	***	*
Pabna	Santhia	-	**	-	-	-	-	-	*
Pabna	Sujanagar	*	***	-	-	-	-	***	*
Panchagarh	Atwari	-	-	*	-	-	*	*	*
Panchagarh	Boda	-	-	*	-	-	*	*	*
Panchagarh	Debiganj	-	-	*	-	-	-	*	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Panchagarh	Panchagarh Sadar	-	-	*	-	-	*	*	*
Panchagarh	Tentulia	-	-	*	-	-	*	*	*
Rajshahi	Bagha	-	***	-	-	-	-	***	**
Rajshahi	Baghmara	-	*	-	-	-	-	-	**
Rajshahi	Boalia	-	**	-	-	-	-	**	**
Rajshahi	Charghat	-	***	-	-	-	-	***	**
Rajshahi	Durgapur	-	*	-	-	-	-	-	**
Rajshahi	Godagari	-	***	-	-	-	-	***	***
Rajshahi	Matihar	-	**	-	-	-	-	**	**
Rajshahi	Mohanpur	-	*	-	-	-	-	-	**
Rajshahi	Paba	-	***	-	-	-	-	***	**
Rajshahi	Puthia	-	*	-	-	-	-	-	**
Rajshahi	Rajpara	-	**	-	-	-	-	**	**
Rajshahi	Shah Makhdum	-	**	-	-	-	-	**	**
Rajshahi	Tanore	-	*	-	-	-	-	-	***
Rangpur	Badarganj	-	*	-	-	-	-	**	*
Rangpur	Gangachara	-	***	-	-	-	-	***	*
Rangpur	Kaunia	-	***	-	-	-	-	***	-
Rangpur	Rangpur Sadar	-	*	-	-	-	-	**	*
Rangpur	Mitha Pukur	-	*	-	-	-	-	**	*
Rangpur	Pirgachha	-	***	-	-	-	-	***	-
Rangpur	Pirganj	-	*	-	-	-	-	**	*
Rangpur	Taraganj	-	*	-	-	-	-	**	*
Sirajganj	Belkuchi	-	***	-	-	-	-	***	*
Sirajganj	Chauhali	-	***	-	-	-	-	***	*
Sirajganj	Kamarkhanda	-	**	-	-	-	-	***	*
Sirajganj	Kazipur	-	***	-	-	-	-	***	*
Sirajganj	Royganj	-	**	-	-	-	-	***	*
Sirajganj	Shahjadpur	-	***	-	-	-	-	***	*
Sirajganj	Sirajganj Sadar	-	***	-	-	-	-	***	*
Sirajganj	Tarash	-	*	-	-	-	-	*	*
Sirajganj	Ullah Para	-	**	-	-	-	-	***	*
Thakurgaon	Baliadangi	-	-	*	-	-	*	*	*
Thakurgaon	Haripur	-	-	*	-	-	*	*	*
Thakurgaon	Pirganj	-	-	*	-	-	*	*	*
Thakurgaon	Ranisankail	-	-	*	-	-	*	*	*
Thakurgaon	Thakurgaon Sadar	-	-	*	-	-	*	*	*
Habiganj	Ajmiriganj	*	**	**	-	-	-	*	-
Habiganj	Bahubal	*	**	**	-	-	*	*	*

District	Upazila	Cyclone	Flood	Flash flood	Storm Surge	Salinity	Landslide	Erosion	Drought
Habiganj	Baniachong	*	**	**	-	-	-	*	-
Habiganj	Chunarughat	*	*	***	-	-	*	*	*
Habiganj	Habiganj Sadar	*	**	**	-	-	*	*	-
Habiganj	Lakhai	*	**	**	-	-	-	*	-
Habiganj	Madhabpur	*	*	***	-	-	*	*	-
Habiganj	Nabiganj	*	**	**	-	-	*	*	-
Maulvibazar	Barlekha	-	**	*	-	-	**	*	*
Maulvibazar	Juri	*	**	*	-	-	**	*	*
Maulvibazar	Kamalganj	*	**	*	-	-	**	*	*
Maulvibazar	Kulaura	*	**	*	-	-	**	*	*
Maulvibazar	Maulvibazar Sadar	*	**	*	-	-	*	*	-
Maulvibazar	Rajnagar	*	**	*	-	-	*	*	-
Maulvibazar	Sreemangal	*	**	*	-	-	**	*	*
Sunamganj	Bishwambarpur	-	**	***	-	-	-	*	-
Sunamganj	Chhatak	-	**	***	-	-	*	*	-
Sunamganj	Dakshin Sunamganj	-	**	***	-	-	-	*	-
Sunamganj	Derai	-	**	**	-	-	-	*	-
Sunamganj	Dharampasha	-	*	***	-	-	-	*	-
Sunamganj	Dowarabazar	-	**	***	-	-	-	*	-
Sunamganj	Jagannathpur	-	**	**	-	-	*	*	-
Sunamganj	Jamalganj	-	**	***	-	-	-	*	-
Sunamganj	Sulla	-	**	**	-	-	-	*	-
Sunamganj	Sunamganj Sadar	-	**	***	-	-	-	*	-
Sunamganj	Tahirpur	-	**	***	-	-	-	*	*
Sylhet	Balaganj	-	**	*	-	-	*	**	-
Sylhet	Beani Bazar	-	**	*	-	-	**	**	-
Sylhet	Bishwanath	-	**	*	-	-	*	**	-
Sylhet	Companiganj	-	**	***	-	-	**	*	*
Sylhet	Dakshin Surma	-	**	*	-	-	*	**	-
Sylhet	Fenchuganj	-	**	*	-	-	*	**	-
Sylhet	Golapganj	-	**	*	-	-	*	**	-
Sylhet	Gowainghat	-	**	***	-	-	**	*	*
Sylhet	Jaintiapur	-	**	***	-	-	**	*	-
Sylhet	Kanaighat	-	**	**	-	-	**	**	-
Sylhet	Sylhet Sadar	-	**	*	-	-	*	**	-
Sylhet	Zakiganj	-	**	**	-	-	**	**	-

[References: Cyclone- Islam and Peterson 2009; Flood- BARC 2000; Flash flood- BARC 2000; Storm surge- BARC 2000; Salinity- SRDI 2010; Landslide- Sarwar 2009, Relief Web 2017; Erosion- Sarwar and Woodroffe 2013, Drought- BARC 2000]

ANNEX-2:

a) List of GoB officials and project team members contributed in filed level consultation:

1. Mr. Nazrul Islam, Joint Chief of GED
2. Dr. Nurun Nahar, Joint Chief, Programming Division and Project Director, NRP
3. Mr. Abu Sayed Md. Kamruzzaman, Joint Secretary and Project Director, NADA
4. Ms. Lasmi Chakma, Senior Assistant Chief (former APD, NRP),
5. Dr. SM Morshed, Project Manager, NRP
6. Mr. Abid Kamal, Junior Consultant, NRP

b) List of participants in community consultation

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
Derai Upazila, Sunamganj District 14 January 2020	Haor and Flash Flood Areas	Md. Shafi Ullah	Upazila Nirbahi Officer	MoPA
		Md. Muzibur Rahman	Chairman	Derai Upazila
		K.M.Nazrul Islam	Pio	DDM
		Md. Mosarraf Karim		
		Md. Anoar Uddin	Sub-Chief	
		Abid Kamal	Researcher	NRP
		Md. Golam Mahabub Sarwar	Consultant	NRP/UNDP
		Md. Monjur Alam		
		Dr. Bibekanondo Talukdar	Medical Officer	Upazilla Health Complex
		Md. Kamrul Islam	Upazilla Food Officer	Upazilla Food Control Office
		Jannatul Ferdous Sonia	Information Service Officer	Upazilla Totthocentre, Derai
		Rajmoni Singh	Upazilla Somobay Kormokorta	Upazilla Somobay Karzaloy
		Mosieur Rahman	Fish Somprosaron Officer	
		Liton Condro Pal	Forest Conservation Officer	
		Ripon Ali	SAE, BWDB	
		Shila Rani		
		Md Abdullah Al Amin	UP Secretary	
		Dipankar Dev	Upazilla Somonnoykari	Amar Bari Amar Khamar
		Jibonto Sutrodhar	UP Secretary	Bhatipara UP
		Soummo Chowdhury	Chairman	
		Bilas Das	Student	
		Banu ranjan talukdar	Secretary	
		Sotto ranjan das	Instructor	
		Bimol Nandi	student	
		Bitu Ranjan Das	UP Secretary	
		Hafsa Begum	Up Member	
		Arjun Das		
		Dr. Md Mijanur Rahman	Prani Sompod Somprosaron Officer	
		Mommoth Roy	UP Secretary	Jagadal Union
		Shuvo Das	UP Secretary	Rofinagar Union

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Amit Boron Das	UP Secretary	Choronarchar Union
		Ehsan Chowdhury	Chairman	
		Shibli Ahmed Beg	Chairman	
		Roton Kumar Das	Chairman	
		Md. Nazrul Islam		
		Md. Iftekhar Hossen	UE	LGED
		Ruhul Amin	URDO	BRDB
		Md. Delowar Hossain	USCO	MDC
		Md. Mahfujur Rahman	URDO	DYD
		Rafiqul Islam		DPHE, Derai
		Md Serajul Kuddus		
		Josim Uddin		PIO Office
		Delowar Hossain	Tax Assessor	Derai
		Akkas Uddin		
		Md. Musarraf Hossain	A.O	UNO Office
		Rupam Kumar Das	CA to UNO	UNO Office
Alikadam Upazila, Bandarban District, 26 December 2019	Chattogram Hill Tracts (CHT)	Songmonu Marma	Headman 287 No Mouza	
		Kazi Rokib Uddin	OC	Alikadam
		Sochindro Lal Tripura	Alikadam Fire Station	
		Dungri Mong Marma	General Secretary Awami League, Alikadam	
		Oshis Kumar Mahajon		
		Md. Abduls Salam	Gereneral Secretrary, 3 No Ward	
		Chathuipru Marma	Headman 29 No Chaingpra	
		Fazlur Rahman	Uttor Palongpara Sardar	
		Md. Abdul Hamid	Headmaster	Alikadam Girls School
		Md. Badiuzzaman	Upazila Manager, BRAC	
		Camoyaipru Marma	KARITAS, PAEPFF	
		Foggo Marma	Chairman	Noapara UP
		Karuna Chandra Biswas	SAE, LGED	LGED
		Md. Monsur Rahman	PIO	DDM
		Md. Nasir Uddin	Chairman, 1 No Mouza	
		Holaching Marma	Headman	Alikadam UP
		Mronmoy Das	Assistant Programmer	ICT Dept.
		Tanvir Hasan	Social Science Officer	Dept. Of Social Science
		Sushil Tanchangiya		Mone International
		Dhungmugh Marma	Food Inspector	Upazola Food Control Dept
		Md Golma Faruk	Credit Supervisor	Youth Development
		Abhijit Barua	Sub Assistant Forest Con. Officer	Agriculture Office
		Kh. Shamsula Haque	Forest Ranger	Forest Dept

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Md. Mannan Topaddae	Muktizudda Ahobayak	
		Kafil Uddin	Vice Chairman	Alikadam
		Md. Abdus Salam	General Secretary	3 No Ward
		Chathuipru Marma	Headman	29 No Ward
		Fazlur Rahman	Sardar	North Moronglol, Alikadam
		Rabeya Begum	Member	Alikadam Union
		Hasan Mahmud	President	Alikadam Press Club
		Bajlul Rahman	SI	DGFI Alikadam
		Md. Alomgir	Instructor	URC
		Md Aliur Rahman	Chairman	Alikadam
Chilmari Upazila, Kurigram District, 17 December 2019	River Systems and Estuaries	Shawkat Ali Sorkar Birbikram	UP Chairman	Chilmari Upazila Parishad
		Md Ajijur Rahman	UP Engineer	Chilmari Upazila
		Md Taher Ali	Education Officer	Chilmari Upazila
		Abu Motaleb	Somobay Officer	Chilmari Upazila
		Md Rayhan	V. W	
		Rozina		
		Md Aminul Islam		
		Md Rashedul Haq		
		Md Aminullah	WEO	
		Md Azizul Hoq		
		Md Mahmudul Hasan	Assistant Programmer	Chilmari Upazila
		Md Golam Mustafa	Station Officer Fire Service	Chilmari Upazila
		Md Obaydur Rahman	Up Training Officer	Chilmari Upazila
		Md Lutfur Rahman	Social Service Officer	Chilmari Upazila
		Md Aminar Rahman	Election Officer	Chilmari Upazila
		Md Fazlul Haq	Forest Officer	Chilmari Upazila
		Md Harunur Rashid		
		Md Abul Fajed Mondol		
		Md Abdul Razzak	BRDB	Chilmari Upazila
		Md Mahbubur Rahman	UP Secretary	
		Md Alomgir Hossain	Social Worker	
		Md Ahsan Habib	Member of Disaster Committee	
		Md Foyzur Rahman		
		Md Khayruzzaman Sarkar	Organizer, BRDB	Chilmari Upazila
		Md Golam Mustafa	Imam	
		Md Shafiar Rahman	Manager	
		Ahsanur Kabir	Coordinator	RDRS
		Md Rausan Ara Begum	Member	
		Md Rezaul		
		Md Nazrul Islam	Vice President	Chilmari Press Club

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Golam Mahbub	President	Chilmari Press Club
		Ziaur Rahman	General Secretary	Press Club
		Saurat Hossain Sohel	Journalist Forum	
		Md Mahbubur Rasid	Panel Chairman	
		Mizaffar Ahmed	Deputy Commander	
		Nurnabi		
		Md Abul Kashem		
		Md Fazlul Hoq	Chairman	
		Md Ajgor Ali	Chairman	
		Md Aminul Islam	UHSPPO	
		Mst Asma Begum	Woman Vice Chairman	Chilmari Upazila Parishad
		Sharmin Rahman	ICT Officer	Chilmari Upazila
		Abul Kalan Azad	Agriculture Officer	Chilmari Upazila
		Md Bodruzzaman	UFO	Chilmari Upazila
		Md Atikur Rahman	SAE	Chilmari Upazila
		Md Ranu Mia	ARDO, BRDB	Chilmari Upazila
		Md Safikur Rahman		
		S.M Nurul Amin Sarker		
		Md Sahidul Islam	Family Planning Officer	Chilmari Upazila
Nachole Upazila, C. Nawabganj District, 12 December 2019	Barind and Drought Prone Areas	Sabiha Sultana	UNO	Uno Office
		Dr Sultana Papia	UHFPO	Uhc Nachole
		Ali Hossain Shamim	SUFO	Senior Upazilla Fisheries Office
		Md Azharul Islam	Upazilla Controller of Food	Up Food Office
		Dr. Mst Sharmin Akter	VS	Up Livestock Office
		S. M Hassan	USEO	UP Secondary Education Office
		Md Mujibur Robin	UP Member	Fatahpur UP
		Md Harun Ar Rashid	URDO	BRDB
		Al Galib	USSO	UP social office
		Md Abdul Halim	UP member	Fatahpur UP
		Abdul Khalek	Social worker	
		Md Mujibur Rahman	Social worker	nachol
		Md Soriful Islam	UP member	fatehpur
		Md Alimuuddin	Social worker	
		Provati Begum	UP cultural member	
		Abdur Rahim	Imam	Fatehpur Mosjid
		Md Ismail Haq	UP chairman	Fatehpur
		Suma Karima	UP member	fatehpur
		Md Ashraful	UP member	fatehpur
		Md Abdul Bashar	Union Land Officer	Fatehpur
		Shwapon Kumar Male	Entrepreneur	

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Abul Kalam Azad	UP Agriculture Officer	
		Md Tarikul Islam	Social Worker	
		Md Abul Kalam	UP member	
		Sunil Kumar Sarkar	UP Somobay Officer	Somobay Office
		Md Sabur Ali	Member	Fatehpur
		Aliur Huq Dollarub	President	Nachole Press Club
		Nurul Islam Babu	President	Nachole
		Md Gulbahar Begum	UP Member	Fatehpur
		Md Matiur Rahman		
		Sremontee Shanti Bani	Social Worker	Fatehpur
		Md Ismat Ara Khatun	UP member	2 No Fatehpur
		Sree Natubar Barmon	Teacher	2 No Fatehpur
		Md Hafijur Rahman	Principle	Nachole
		Md Rabiul	Secretary	Nachole
		MD Mohafijur Rahman	Member	2 No Fatehpur
		Abul Kashem	Panel Chairman	Nachole
		Md Nayem Uddin	Member	
		Abdul Hamid	Meyor	Bashbaria
		Md Al Mahjar	Up Member	2 No Fatehpur
		Md Azizul Haq	Up Member	2 No Fatehpur
		Md Rokhsana Hamida	3 No Nachole	
		Md Mojidul Islam	PIO	Nachole
		Md Selim Reza	5 No Nachole	
		Md Nasib Hossain	Member	Nachole
		Md Sohel Rana	Assistant Programmer	ICT dept.
		Tarikul Islam	Office Assistant	
		Md Yusuf Ali	Sub Assistant Engineer	DPHE
Amtali Upa- zila, Bargu- na District, 09 Decem- ber 2019	Coastal Zone	Monira Parvin	UNO	Amtali, Barguna
		Md Mijubir Rahman	Vice chairman	Amtali Upazila
		Mst. Monira Begum	Vice Chairman	Amtali Upazila
		Md Shawpan Molla	Chairman	Gulishakhali, Barguna
		Sobir Uddin Akon	UP member	Gulishakhali, Barguna
		Feroza Begum	UP member	Gulishakhali, Barguna
		Sabina Easmin Moyna	UP member	Gulishakhali, Barguna
		Sohan Molla	UP member	Gulishakhali, Barguna
		Md Abul Hossain Sikdar	UP member	Gulishakhali, Barguna
		Ms Yusuf Mridha	UP member	Gulishakhali, Barguna

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Si Am Rejaul Karim	UP Agriculture Officer	UP Office
			Up Health Complex	UHC
		Dr Soiyad Altaf Hossain	Up Livestock Officer	Amtali Upazila
		Komolesh Majumdar	Asst Land Commissioner	
		Md Mahbulul Alam	Fisheries Officer	Amtali Upazila
		Md Mujibur Rahman	Education Officer	Amtali Upazila
		Abdullah Al Mamun	UP Engineer	Amtali Upazila
		Md Hemayet Uddin	UP Social Service Officer	Amtali Upazila
		Md Alomgir Hossain	UP P.P. Officer	
			Office In Charge	Amtali Thana
		Soiyod Faruk Hossain	UP Youth Development Officer	Amtali Upazila
		Md Nurul Islam	UP Somobay Officer	Amtali Upazila
		Md Selim Mahmud	Education Officer	Amtali Upazila
			Ansar VDP officer	Ansar VDP
		Moniruzzaman	Station Officer	
			Chairman	UCCA ltd
		Md Zakir Hossain	NGO	NSS
		Shamol Kanti Das	NGO	HRDO
		Md Kabir Dewan	President	Press Club
		Golam Sarwar	UP Member	Gulishakhali, Barguna
		Kazi Nijamul	UP Member	Gulishakhali, Barguna
		Golam Mostafa	UP Member	Gulishakhali, Barguna
		Md Sanu Mia	UP Member	Gulishakhali, Barguna
		Mst. Hawa	UP Member	Gulishakhali, Barguna
		Md Abdul Mannan	Administrative Officer	UNO Office
		Md Jasim Shikdar	President	Jounalist Unionon
		Md Harun Ar Rasid	President	Reporters Union
		Md Mujibur Rahman	Office Assistant	
		Shishir Kumar Sarkar	-	
		Md Tanim	PIO	PIO Office, Amtali Upazila
Patuakhali Pourashava, Patuakhali District, 08 December 2019	Urban Areas	Md. Nazril Islam	Asst Director	Fire Service
		H.M Solaiman	Asst. Engineer	Patuakhali Pourashava
		Md. Ziava Rahman	Si Patuakhali Thana	
		Md. Faruk Mridha	Councilor	Patuakhali Pourashava
		Sm Martin Mahmud	Councilor	Patuakhali Pourashava

Workshop Place & Date	Hotspot Covered	Name	Designation	Organization
		Rezaul Hasan	Councilor	Patuakhali Pourashava
		Zahid Hassan	Councilor	Patuakhali Pourashava
		Md Aliuddin	Councilor	Patuakhali Pourashava
		Kajol Boron Das	Councilor	Patuakhali Pourashava
		Zarina Begum	Councilor	Patuakhali Pourashava
		Nazira Islam	Councilor	Patuakhali Pourashava
		Nahida Akter	Councilor	Patuakhali Pourashava
		Mahfuza Islam	Director	Suktara Mohila Songstha
		Zakirul Hasan	Office Assistant	
		Eududur Rahman		
		Md Mizanun Rahman	MMCC	
		Kamrun Nahar		
		Md Delowar Hossain	Councilor	Patuakhali Pourashava
		Md Walid Miah	Student	
		Arnab Bhattachariya	Student	
		Mf Fuyad Hasan	Student	
		Md Lutfur Rahman	Councilor	Patuakhali Pourashava
		Md Shahin	Assistant Prof, PSTU	
		Mf Faruk Hossain	ULO	Red crescent
		Md Lutfur Rahman	Office Assistant	
		Md Habibur Rahman	Resilience Officer	CODEC
		Sharmin Sultana	Sanitary Inspector	
		Md Zabin Uddin Arzu	Executive Engineer	
		Md Helal Uddin	Secretary	Patuakhali Pourashava



Photo courtesy: Rizwanul Alam





NRP GOALS

The NRP's goal is to sustain the resilience of human and economic development in Bangladesh through inclusive, gender responsive disaster management and risk informed development.

OUTCOME

The outcome of the programme will be a substantial increase in resilience to disaster and reduction in disaster risk, loss of lives, livelihoods and health of men, women, girls and boys, and protection of persons, businesses and communities in Bangladesh.

OBJECTIVES

NRP will assist the Government to

- improve national-level capacities for risk informed, gender responsive and disability inclusive development planning.
- strengthen national capacities to address recurrent and mega disasters in a gender-responsive, and disability inclusive manner.
- improve the capacity of selected public institutions to achieve resilient outcomes through risk-informed, gender-responsive infrastructure systems.
- enhance women's leadership capacities for gender-responsive nation and local disaster management decisions, investments and policies.
- strengthen community-level preparedness, response and recovery capacities for recurrent and mega disasters

THE FIVE OUTPUT

1. Improved capacities for risk-informed and gender responsive development planning
2. Strengthened gender-responsive national capacities to address recurrent and mega disasters
3. Improved capacity of GoB to achieve resilience through designing and constructing risk-informed and gender-responsive infrastructure system
4. Enhanced women leadership capacities for gender-responsive disaster management decisions, investments and policies at national and local levels
5. Strengthened disability inclusive, gender responsive community preparedness, response and recovery capacities for recurrent and mega disasters.

