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Disaster Risk Reduction and the Capacity Building Plan: Mitigation of the Impacts of Climatic Disasters in the Coastal Area of Bangladesh

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Abstract: This paper analyses the local governmental and non-governmental plans and projects to mitigate the impacts of climatic disasters in Bangladesh. The paper considers the Disaster Risk Reduction (DRR) approach as a tool to mitigate the possible impacts of climatic disasters in the southwest coastal regions of Bangladesh. The study uses a qualitative research approach with interviews in the coastal area of Dacope upazilla under the division of Khulna, Bangladesh. The research explores the gaps for the application of DRR approach in the current governmental and non-governmental plans and projects for the capacity building to mitigate the impacts of climatic disasters. This gap has a significant impact on the mitigation of the impacts of climate disasters in the southwestern coastal part of Bangladesh. The researchers recommend that the incorporation of DRR approach in governmental and non-governmental plans and projects for the development of capacity building may be a way forward to mitigate the adverse impacts of climatic disasters in Bangladesh.

Keywords: Climatic disasters; Development plans; Coastal areas; Mitigation; Health; Water and transportation.

Introduction

This study analyses the governmental and non-governmental plans and projects for capacity building to mitigate the impacts of climatic disasters on the coastal community of Bangladesh. The coastal community of Bangladesh are very vulnerable and at high risk of climatic disasters including cyclone, storm, and flood (Akber et al., 2018). Nine in ten of the most commonly reported disasters are directly or indirectly related to weather or climate in Bangladesh (ADRC, 2017). Climatic disasters cause serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses, and impacts (UNISDR, 2009). Every year, climatic disasters cause a significant loss of life and erode gains in economic development. The global community has evolved many approaches to mitigate the conspicuous consequences of the disasters including the Disaster Risk Reduction (DRR) (United Nations, 2012). DRR is the concept of reducing disaster risks through a systematic effort for lessening the vulnerability of people and property, wise management of land and the environment, and improving capacity for preparedness (UNDRR, 2019). DRR approach plays a significant role in the mitigation of the impacts of the climatic disasters by facilitating the adoption of appropriate local plans and projects for capacity building (UNDRR, 2019). Although DRR approach may play a crucial role in the mitigation of the impacts of

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the disasters, the approach may have less application in the local plan and projects for capacity building in the coastal area of Bangladesh. This paper examines the impacts of previous climatic disasters and explores to what extent DRR approach has been applied in the subsequent local plans and projects for capacity building to mitigate the impacts of the climatic disasters on the coastal community. The research justifies how the application of DRR approach in the local plans and projects will accelerate the mitigation of the impacts of the climatic disasters on the coastal community of Bangladesh.

Research Method

The researchers utilized autoethnography as an approach for describing and systematically analysing personal experience of the local people to understand the impacts of two major climatic disasters: Cyclone Aila and Cyclone Sidr, on the coastal community of Bangladesh. The researchers interviewed 12 participants (seven males and five females) aged around 25–45 who were recruited from the local people, five participants from local government representatives, five participants from government offices and 10 participants from local NGOs. The participants were selected through purposive sampling technique based on the characteristics of population and the objective of the study. The local people were asked about the impacts of Cyclone Aila and Cyclone Sidr, and the other participants were asked about the governmental and non-governmental facility to mitigate the impacts of climatic disasters on the coastal community. The researchers conducted two months (1 December 2018 to January 2019) of fieldwork in Dacope upazila, Khulna division. The researchers clearly explained the aim of the interview to the participants and obtained consent for recording the interview. An audio recorder was used to tape conversations in interviews. The transcribed focus groups and interview data (Bengali texts, direct quotes) were coded. Afterwards, the thematic analysis was utilized to connect to the local governmental and non-governmental development plans and projects for the capacity building.

A Brief Overview of the Disaster Risk Reduction Approach

United Nations Office for Disaster Risk Reduction (UNDRR) defines DRR and explains its application to mitigate the impacts of the climatic disasters (UNDRR, 2019). DRR approach means lessening the risk of loss and damage of disaster by applying a systematic effort in the management and preparedness (Fakhruddin and Rahman, 2015). The adequate capacity building plays a significant role in the management and preparedness for mitigating the impact of the disasters (Goddard et al., 2010). Therefore, the DRR approach requires consideration of the disaster risk in adopting the necessary plans and projects for the improvement of the capacity building for management and preparedness. The definition of DRR has been diversified by research to explore the justiciability of the application of this approach to mitigate the impacts of the disasters on economic, social and cultural interests. The concept of DRR was integrated into the capacity building plan and policy after the adoption of the Sendai Framework for Disaster Risk Reduction. The Sendai Framework was adopted by UN Member States in 2015 at the third United Nations World Conference on Disaster Risk Reduction in Japan (UNDRR, 2019). The Sendai Framework is a non-binding agreement which recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders (UNDRR, 2019). Non-governmental Organization (NGO) is an important entity under the Sendai Framework to reduce the impacts of the disasters (Ha, 2015). Isadora Christel (2018) explores the design for the development of effective DRR (Christel et al., 2018). The research shows how DRR is useable in the decision-making process for the development of capacity building plan and project. Many states have applied the DRR approach in their national and local development planning for mitigating the adverse impacts of the climatic disasters. Although the coastal area of Bangladesh is at high risk of the climatic disasters, there is no systematic investigation as to the application of DRR approach in the governmental and non-governmental plans and projects for capacity building in the coastal area of Bangladesh.

Detailed Findings of the Study

Based on the literature review and analysis of governmental and non-governmental plan and projects, the researchers focused on the impacts of climatic disasters on roads and transports, drinking water and health service. The researchers selected these three sectors as the sectors are interconnected, which hamper the enjoyment of the basic human rights of the coastal community. The impacts of the climatic disasters on these sectors are analysed below.

Impact on the Road and Transportation System

Road and transport play a crucial role in mitigating the impacts of the climatic disasters. The road and transport system in the coastal area of Bangladesh is very vulnerable (Izumi and Shaw, 2014). This vulnerability is a suffering for the coastal community for long (Paul and Rashid, 2016). The World Bank pilot projects found that the maximum roads in the 17 coastal districts of Bangladesh are kuccha road (made of mud), which are very fragile (World Bank, 2019). Broken road and non-availability of transport create difficulties for the affected people to move out for the shelter home or hospital very quickly. It also hampers the emergency support for the people of the affected area. The Report from the Government of Bangladesh shows that the number of deaths caused by the Cyclone Sidr is estimated at 3,406, with 1,001 missing, and over 55,000 people sustaining physical injuries in 2007 (Reliefweb, 2019). Moreover, the Cyclone Aila killed 190 people and injured more than 7,000 people in 2009 (Reliefweb, 2019). The local participants noted that they lost their family members as they could not go to the shelter home (Cyclone Centre) even after 10 hours of the first hit of the cyclone. The participants also witnessed that there was no road for communication from the village to the Cyclone Centre during the Cyclone Aila. Although there were narrow kuccha roads (mud made roads), the cyclone washed away the roads, and the people could go nowhere because of the broken roads (Saha, 2015). The participants categorized two types of transports that they usually use: motorcycle and engine boat. Motorbike is used during the dry session, while diesel-run engine boat is utilized during the rainy session and disasters. During the disasters, the local people had the only option of a small boat for travelling from the villages to the Cyclone Centre or the hospital (Paul, 2016). During the disasters, many injured people died on the way to the hospital. The hospitals are about 5-6 kilometres far from the coastal villages, and it took about six hours to take the patient to the hospital.

The small boats are very risky for travelling from the village while crossing a high tidal river. Crossing the river by small boat is highly risky for women, children and the elderly people who do not how to swim in a dense river (Ikeda, 2009). Statistical data shows that about 47.75% of the total population of the coastal area are female and 23% are children and old people, who are at serious risk for this available transport (Bangladesh Bureau of Statistics, 2001). Moreover, these trawlers are not available all times. During a disaster, there is little possibility to get these trawlers as the owners of the trawlers are busy to save themselves. According to a local participant, he waited for about two hours and got no boat during the Cyclone Aila (2009). Finally, he and his family crossed the river by swimming.

There are several governmental and non-governmental plans and projects for the development of road infrastructure in the coastal area of Bangladesh. The Ministry has a Community Risk Assessment Programme which analyses the necessity of the community and adopts a Risk Reduction Action Plan according to the priority list. For example, repairing road, culvert, and bridge repair etc. Moreover, there is a Union Disaster Management Committee which is headed by the Chairman of the Union Parishad. The committee decides for the implementation of a plan according to the priority decided by the Risk Reduction Action Plan. The Committee makes a pilot project according to the allotted budget for the implementation of the plan. The projects are Rural Infrastructure Reparation; Cash for Work; and Maintenance of Rural Infrastructure (TRB). Furthermore, the government is implementing the Heise Bon Bon (HBB) project. These government projects have been developed for building kuccha roads (mud made road) in the coastal villages. There is no project for building a concrete road in the coastal area. However, there are several ongoing projects for a water dam to prevent entering water into the local coastal villages. The Water Development Board is implementing the projects. Although the on-going project will be new hope for the road of this village, the projects will not cover all the coastal villages.

In addition to the government plans and projects for the development of road infrastructure, some local NGOs have been working to provide necessary developments of the roads to mitigate the impacts of the climatic disaster on the coastal community of Bangladesh. World Vision, a local NGO, is implementing a water dam project in the field of study area. The projects for building road and water dam by the local NGOs are small scale plan and very limited. Although there are several governmental and non-governmental projects for the development of roads, there are no plans and projects for arranging safe transports for the coastal people during the disasters.

Impact on Drinking Water

The scarcity of drinking water is a primary concern for the coastal community of Bangladesh (Shaw et al., 2010). Where the rate of the population using improved drinking water source in other rural area is 97.8%, the rate is about 10% in the coastal area

(Sarker et al., 2015). The local participants noted that they severely suffered for drinking water during the disasters. All ponds and tube-wells were washed away by the cyclones. The government agency temporarily supplied drinking water by cargo and NGOs supplied some bottled water during the disasters, that were not adequate for the coastal people. In the absence of safe drinking water, the coastal people drunk salty sea water that caused waterborne disease. Many of them died because of diarrhoea and cholera.

The rainwater is the primary source of drinking water in the coastal area (Toufique and Islam, 2014). The rainy season lasts for 2-4 months (Bangladesh Meteorological Department, 2019). The coastal community reserves rainwater during the rainy season and drink for the remaining months of the year. Both government agency and non-governmental organizations have provided some plastic water reserve tanks. However, the provided tanks are very limited compared to the necessity. A local participant noted that they had not got any water tank from the local government. Figure 1 shows that only 5% people received support for drinking water from the government. A local public representative supported this statement. The representative mentioned that they got only 5-7 water tanks for the whole Union. Apart from the nominal water tank provided by the government, the local NGOs have provided water reserve tanks to the local community. As shown in Figure 1, about 20% villagers got support for drinking water from the local NGOs. However, the water reserve tanks are not adequate for the reservation of the drinking water for them. According to the collected data documented in Figure 1, 70% local people have not received any support for drinking water.

Although the support by the NGOs is limited and not adequate according to the necessity, it is better than the government support. However, both the governmental agency and the NGOs do not have any plan and project for the sustainable solution of the drinking water for the coastal people of Bangladesh.

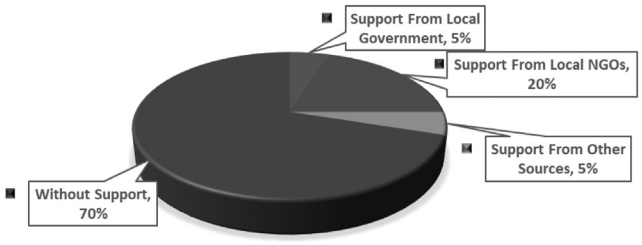

Figure 1: Drinking water facility for the coastal community.

Impact on Health Service

The climatic disaster has the most serious impact on the health service (Tal et al., 2018). Inadequate arrangement for health service maximizes the risk of severing impact of the disaster on the coastal community. The coastal people of Bangladesh do not have the minimum access to health service (Islam et al., 2013). The local participants noted that they got some temporary medical support by government and NGO mobile health teams, which was very nominal. It is documented in Figure 2 that about 40% villagers got only emergency health service immediately after the disasters, which was stopped after two weeks. They just got two oral saline and two soaps. Although there are local health clinics in the coastal villages, because of the absence of doctors and non-availability of medicine, those clinics add no value for the coastal community. The clinics are not capable enough for any emergency health service during the disasters. Therefore, the villagers have to go to Sadar Hospital (hospital located in the centre of Upazila) which is located about six kilometres from the village. They cross a river by ferry which takes a long time to go to the hospital. The villagers got health service from Sun's smiled symbolled health clinic after the disaster. However, these services are not available now.

The villagers got some health service from NGOs, for examples, saline, and first aid after the disaster. According to Figure 2, about 30% local people received general health service for one month after the disasters and they stopped the service. The NGOs are not providing health service anymore. There are no governmental and non-governmental projects for the development of the capacity building for providing health service for the coastal community of Bangladesh. Figure 2 presents that 20% local people did not receive any health service facility from the government and the local NGOs after the disasters.

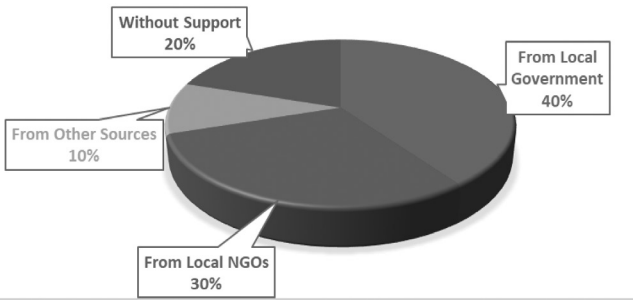

Figure 2: Post disaster health facility for the coastal community.

Application of the DRR Approach for the Mitigation of the Impact of Climate Disaster in the Study Area

The analyses of the impacts of the climatic disasters explore that the governmental agency and NGOs do not adequately apply DRR approach in the capacity building plans and projects to mitigate the impacts of the disasters on the coastal community of Bangladesh. The analysis shows that the local government agency knows the kuccha roads (made of mud) are washed away by the climatic disasters. Moreover, the field data presents that the kuccha roads (mud made roads) become clay and slippery if there is rain even for a moment. Concrete and pitch roads are essential for sustainable roads and communication in the coastal area (Shaw et al., 2013). However, the government has not taken any project for building the concrete and pitch road in the coastal area. The government does not apply the disaster risk analysis in the adoption of plan and project for the development of road infrastructure in the coastal area. Although the government is implementing water dam projects, that will be used for road, these are not adequate for all parts of the coastal area. Moreover, the projects under the local NGOs are very limited for the development of road and communication. Apart from the vulnerability of roads, the study explores that the available transports in the coastal area are not suitable for moving from the village to the Cyclone Centre and the hospitals. Neither the government nor NGOs have any plan and project for arranging available, affordable and safe transports for the local coastal people.

The analysis of the generated data also explores that the scarcity of drinking water is a primary disaster risk for the coastal community. They severely suffered for drinking water during the disaster. Supplying water by cargo for a few days is not a sustainable solution to the problem. Moreover, there are no sustainable arrangements for keeping the water tank during the disaster. Although the Government agency and Non-governmental NGOs know the risk of the scarcity of drinking water, the current plans and projects do not reflect adequate arrangements for mitigating this risk (Barua and Rahman, 2018). The climatic disaster creates both short-term and long-term health impacts on the coastal community (Kundzewicz et al., 2017). The analysis of the generated data explores that the governmental agency and non-governmental NGOs provide mobile and temporary health service provider team after a disaster. However, the mobile and temporary health service provider team is not a durable solution to provide health service for the coastal community. Inoperative health clinic without doctor and medicine do not add any value for the health service of the coastal community. Neither the government agency nor the local NGO has taken any projects for sustainable health service for the coastal people of Bangladesh.

Both the governmental agency and NGOs need to apply DRR for taking appropriate capacity building plan and project to mitigate the impacts of the climatic disaster on the coastal community of Bangladesh. The government should develop projects for building concrete and pitch road for the safe move out from the coastal village to the Cyclone Centre and the hospital. Moreover, the government should have a plan for arranging available transports for the coastal community. In particular, both the government agency and NGOs should take projects for providing safe and available emergency transports to carry the patient for health service.

For drinking water, the government agency should establish a large-scale water reservoir plant under the government project. The government agency and NGO should take into consideration the information as to the level of water during flood or cyclone to establish water purifier plant in the coastal area. The government and NGOs should arrange a water reserve in a safe place that is not down by flood or blown away by a cyclone. The government should take an immediate plan for adequate water reservoir tank for the coastal communities.

For health services, both the government and NGOs should take necessary plan for providing sustainable health service system for the coastal community. The government should continue the Sun Flower Smiled Health Service for the coastal people. Moreover, the local health clinic should be improved with the necessary doctors and medicine for the preparedness of disasters. Also, NGOs can play a supporting role by providing the necessary medicine and emergency service during the cyclones (Izumi and Shaw, 2015).

Concluding Notes

The climatic disasters cause huge loss of life and property to the coastal community of Bangladesh. The coastal community suffer badly because of the inadequate arrangements for moving out, safe drinking water and emergency health services. The vulnerable and fragile roads block even the minimum chance of saving a life during the disasters. The scarcity of safe and available transport makes it tougher to move out of the village to the cyclone centre. Moreover, the coastal

community faces a severe scarcity of drinking water during the climatic disasters. The plans and projects under the government agency and the local NGOs are not adequate to resolve the problem of drinking water. Furthermore, the arrangements for the health service of the coastal community are very nominal, which is neither adequate nor desirable for such a highly disaster risk area. The governmental agencies and NGOs did not adequately apply the DRR approach in the current plans and projects for the developments of capacity building to mitigate the impacts of the climatic disasters.

The application of DRR approach will facilitate the government and NGOs to design their plans and projects for the necessary developments and capacity building to mitigate the impacts of climate disasters. Application of DRR in the development and maintenance of road and transport projects will accelerate to reduce the risk arising from the fragile roads and communication. Application of this approach in plans and projects for safe drinking water will prevent the scarcity of drinking water during the disasters. Moreover, the application of the approach in enhancing the health service for the coastal community will minimize the unexpected death and injuries of the coastal people. Overall, the application of the DRR approach in all plans and projects concerning the development of the capacity building of the coastal areas will reduce the disaster risk and cause fewer sufferings of the coastal community in Bangladesh.

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