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Role of Government and Non-Governmental Organisations (NGOs) in Cyclone Recovery in Bangladesh

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Abstract

Immediate relief distribution activities are primarily focused on after a cyclonic event in Bangladesh, where proper long-term recovery and rehabilitation efforts are not strategized with much significance. This study concentrated on understanding and assessing the status and effectiveness of the post-cyclone recovery programmes to improve the lives of cyclone-affected households in southwestern Bangladesh. This study aims to examine the status and efficiency of Government and Non-government organisations (NGO) led cyclone recovery programmes for cyclone SIDR and cyclone AILA and identify the challenges that hindered the successful implementation of effective recovery programmes. The study reviewed existing literature on cyclone recovery in Bangladesh, including government and NGO reports, and conducted focus group discussions on cyclone-affected Dacope Upazila of Khulna. The finding indicates that the cyclone-affected community in southwestern Bangladesh has not recovered satisfactorily across all sectors and timescales from cyclone damages and continues to live in vulnerable conditions even after a decade of cyclonic events. The adopted recovery measures were not efficient and effective in returning to the everyday lifestyle of the affected people. Planned and coordinated recovery efforts should be executed with proper monitoring to ensure the effectiveness of post-cyclone recovery programmes.

Keywords: Cyclone recovery, effectiveness, challenges, Bangladesh, coastal communities.

Introduction

Bangladesh is highly vulnerable to natural calamities because of the topography, geographical location, and low socio-economic condition of the majority of the population (Haque et al., 2010; Hasegawa, 2008). The country is positioned in fifth place in the ranking of the world's most disaster-prone countries. It is critically exposed to various natural hazards, particularly floods and tropical cyclones (Mallick et al., 2017). Tropical cyclones increase the susceptibility of the inhabitants of the coastal areas to distress and decelerate development. The coastal areas of Bangladesh are severely exposed to cyclones and floods. Additionally, The infrastructure, economy, health service, and education systems are not proficient as required in the vulnerable zones of the southwestern portion of the country (Kabir et al., 2016). Thus, an effective disaster management plan is vital for our country to lessen the number of fatalities and damage to properties and recover from the devastating impacts of the cyclone. Government organisations and NGOs implement specific recovery programmes after the cyclone in impacted areas. However, those mainly accentuated post-disaster emergency relief and temporary shelter and overlooked the need for long-term recovery initiatives (Ahamed, 2013). The cyclones that struck Bangladesh in 1970, 1985, 1988, 1991, 1994, 1995, 1997, 2007 and 2009 were severely damaging in nature (Hasegawa, 2008; Khan & Damen, 1992; Khatun et al., 2017). Among those, Cyclone SIDR in 2007 and Cyclone AILA in 2009 are two of the most dreadful cyclones that hit the southwestern coastal region of Bangladesh in the last two decades. SIDR and AILA caused the loss of lives, extensive infrastructure damage, destruction of crops and livestock, and flood in 30 thirty districts across the southwestern coastal zone (Kibria et al., 2016a; Kibria et al., 2016b). Cyclone SIDR affected approximately 8.9 million people, and damages from SIDR totalled USD 1.3 billion (Government of Bangladesh, 2008). The cyclone SIDR in 2007 was the super cyclone in Bangladesh, and immediately after one and a half years, years cyclone AILA struck the southwestern region of Bangladesh in 2009 (Kabir et al., 2016). Cyclone

AILA affected nearly 3.9 million people and calculated the economic cost of damaged properties to be around USD 270 million (Shaw et al., 2013).

People continuously live at risk of losing their lives, houses, and livelihoods due to tropical cyclones in Southwest coastal areas with insufficient measures to recover after the impact. Therefore, implementing effective disaster management with proper recovery measures in such areas is an obligation to protect those people from cyclone-induced losses. Furthermore, the international aid level for recovering from the impacts is subjected to the country's national capacity to cope with disasters. Therefore, Bangladesh should develop nationally and locally organized sustainable strategies for impact mitigation and recovery of cyclone-affected people. Furthermore, post-disaster recovery initiation should be emphasized for executing effective disaster management following the immediate relief phase, preventing further casualties. Recovery efforts for two significant cyclones in Bangladesh, SIDR, and AILA, can be explored to understand this phase of the disaster management process in the country. After cyclone SIDR and AILA had struck southwestern Bangladesh, immediate relief distribution activities started by Government and NGOs, and several plans were composed to ensure the recovery of affected people. In this view, many types of research were also performed in SIDR and AILA affected areas to evaluate the emergency relief circulation situation of affected areas.

Nevertheless, if the national and national aids were sufficient against the need and whether the support was distributed properly sector-wise is not investigated adequately. Moreover, the study of whether the recovery activities were practically successful according to affected people and able to improve the living condition after a specific time was not elaborated on. The perception of Cyclone SIDR and Cyclone AILA affected people about benefit derivation of long-term recovery programs has not been focused much either, which is essential for developing a self-reliant community against disaster. Therefore, this study is designed to provide an overview of the status and effectiveness of the cyclone recovery programmes implemented in the southwestern coastal area of Bangladesh by the government and NGOs. From this study, the outcome of assistance provided by various organisations to cyclone victims can be understood, and the challenges of implementing effective recovery measures can be identified with solutions. The result of this study will also identify which sector receives less recovery support compared to the damages.

Literature Review

Geographical distinctive features, high population density, impoverished institutional capacity, insufficient financial resources, and insubstantial infrastructure have rendered Bangladesh highly susceptible to tropical (Haque et al., 2010; Hasegawa, 2008; Paul, 2009). The Bay of Bengal is the source of approximately 5.5 % of global total tropical storm formation, and about 1 % of them befall in Bangladesh (Haque et al., 2010). Over the last 100 years, 17% of the cyclone hit Bangladesh from nearly 508 cyclones originating in the Bay of Bengal, resulting in a severe cyclone occurring once every three years on average (Abedin et al., 2012; Ahamed et al., 2012). Therefore, the disaster recovery concept is currently included in the planning and application of sustainable development goals (SDG). The process comprises both pre-disaster planning and post-disaster actions that involve the process of restoring, reconstructing, and reshaping the physical, social, economic, and the natural environment affected by various disasters. The structure of effective cyclone disaster management is broadly organized into four phases which are reduction and preparation/planning, response and recovery (Cash et al., 2013; Hoque et al., 2017). The post-disaster recovery phase consists of restoring and rebuilding affected areas and monitoring the progress of the disrupted economic condition, livelihood opportunities, health, and sanitation system, and the reconstruction of settlements and structures. Power, class, gender, past disaster experience, and access to resources and information play critical roles in modelling the disaster recovery process for society (Smith & Wenger, 2007). Lindell (2013) stated disaster recovery as a post-disaster phase that initiates with the stabilisation of the affected conditions and continues till the community regains the usual dynamic life through the assistance of various

organisations. Therefore, disaster recovery combines disaster assessment, short-term aid, long-term refurbishment, and recovery management. Short-term recovery focuses on emergency tasks of ensuring the victims' survival and establishing an environment where people can continue the recovery process. The long-term reinstatement ensures the rebuilding the disaster-impacted area and mitigates the disaster's social, demographic, and economic effects. Finally, monitoring the performance of short-term and long-term recovery activities to verify that the functions are coordinated and affording resources completes the recovery management. Bangladesh needs to switch to a holistic approach from existing disaster management by integrating hazard source identification, impacts assessment, mitigation, community awareness, and unified response attempts (Ahamed, 2013).

SIDR and AILA

Bangladesh is one of the severest victims of cyclonic damages in the context of losses because, globally, 16 out of 35 tropical cyclones, which caused causalities of more than 5,000, struck the country (Mallick & Rahman, 2013). Considering from the year 1960 to 2019, approximately 45 cyclones of different intensities occurred in Bangladesh, of which more than 20 cyclones hit the southwestern region and affected people's lives directly (Centre for Research on the Epidemiology of Disasters (CRED), 2019; Khan & Damen, 1992). Therefore, the southwestern coastal region of the country is considered very hazard-prone and susceptible to cyclonic damages, and the highly vulnerable districts are Satkhira, Bagerhat, Barguna, Patuakhali (Fig. 1).

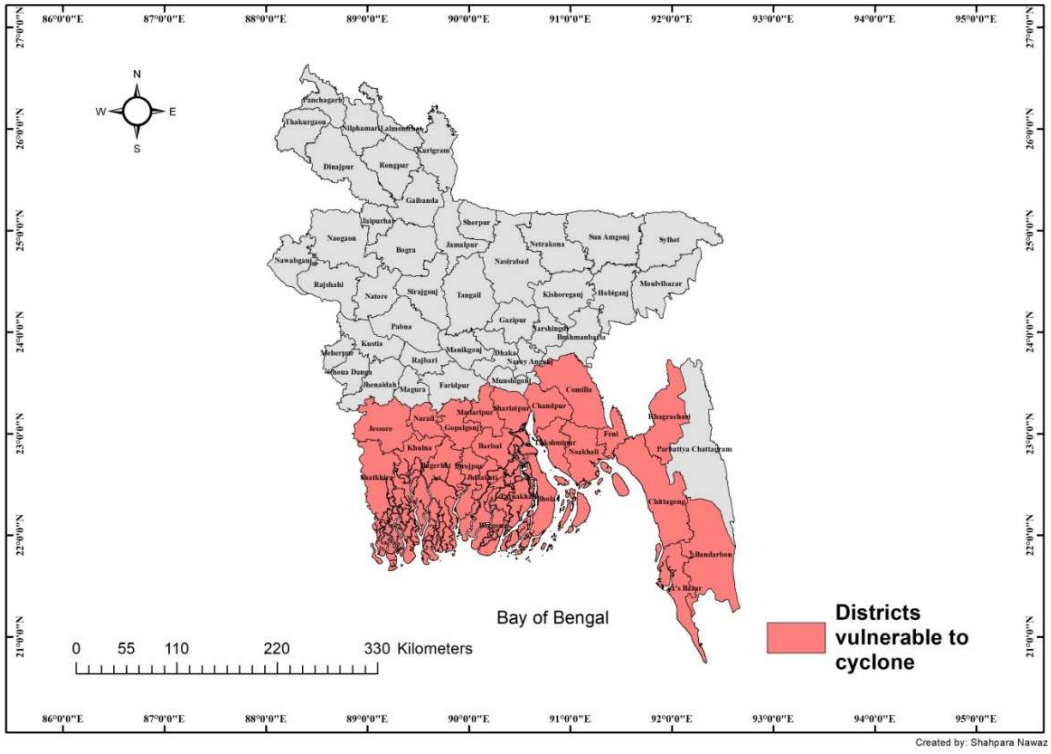

Figure 1. The areas vulnerable to the cyclone. Adapted from (Ahamed et al., 2012).

The two most devastating cyclonic catastrophes in Bangladesh's history are cyclone SIDR and cyclone AILA. Both struck the southwest region of the country in the year 2007 and 2009, respectively. Hasegawa (2008) ranked cyclone SIDR as one of the ten most severe and highly destructive cyclones among the tropical cyclones that fall in the southwest coastal area and caused the most severe damage in the past 131 years. SIDR formed in the Bay of Bengal and developed as a Category- 4 tropical storms with 215 km per hour peak wind speed and with a

maximum height of tidal surge about 3.5 m above mean sea level; and on November 15, 2007, made landfall in Bangladesh (Islam et al., 2011). The hazardous event of cyclone SIDR caused extensive destruction of residential, educational, and administrative infrastructures, transportation systems, utility, and service facilities, along with salinity contamination of drinking water. Approximately 19 coastal districts were fully affected, and the worst suffered areas (Fig. 2) were Bagerhat, Barguna, Barisal, Bhola, Gopalgonj, Jhalkhati, Khulna, Madaripur, Patuakhali, Pirojpur, Satkhira and Shariatpur districts and other 18 more districts were partially affected (Government of Bangladesh, 2008; Mallick, 2014; Ministry of Food and Disaster Management, 2008b). SIDR's total damage was estimated to be approximately USD 2.3 billion unofficially; 1 million households adjoining the southwest coastal region were severely impacted, and another 1.3 million were moderately impacted. The loss of lives was estimated at nearly a considerable number of 3406 people. Cyclone AILA, which hit Bangladesh on May 25, 2009, was a severe cyclone with a maximum of 65 knots of wind speed and minimum sea-level pressure of 974 Mb, which is similar to a Category-1 cyclone as per the Saffir-Simpson Hurricane Scale (Khatun et al., 2017; Kumar et al., 2010). Cyclone AILA was weaker than SIDR though it prolonged the distresses of the people of southwestern Bangladesh, as about 2 million people were seriously affected economically and socially (Sadik et al., 2017b).

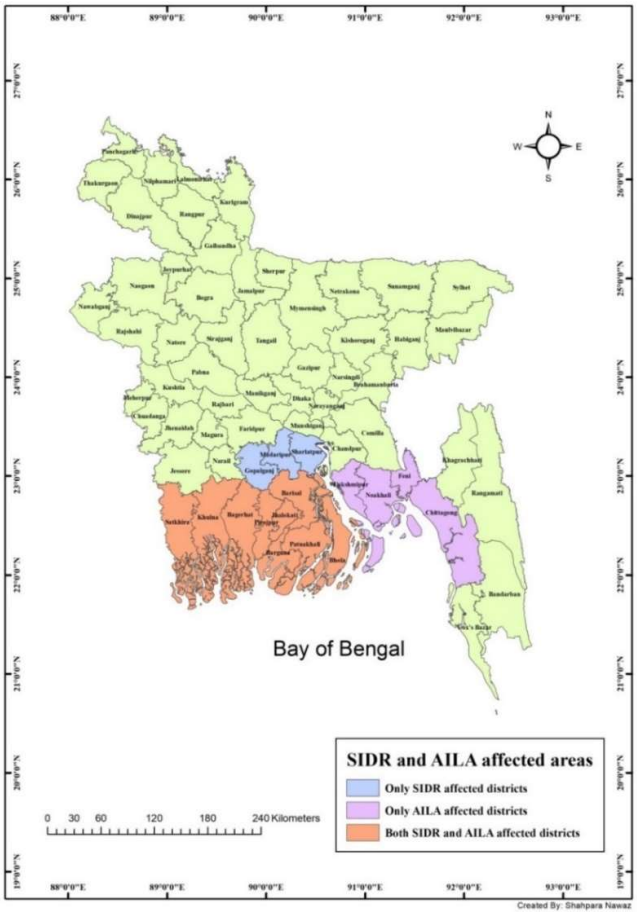

Figure 2. Super-cyclone SIDR and AILA affected areas in Bangladesh (Government of Bangladesh, 2008; Kumar et al., 2010).

Satkhira and Khulna districts of Bangladesh suffered the most massive damage (Fig. 3), followed by Bagerhat, Pirojpur, Barisal, Patuakhali, Bhola, Lakshmipur, Noakhali, Feni, Chittagong. AILA has hit 6 upazillas out of 9

upazillas of Khulna district and 545,954 people were distressed (Alam & Rahman, 2019). Jahan (2012) mentioned that the Cyclone AILA had hit the southwest coastal zone of Bangladesh when people were struggling to recover from the damages of the super Cyclone SIDR of 2007. Cyclone AILA forced to rehabilitate more than 1.5 million people from coastal areas and wrecked more than 700 km of embankments. The cyclone AILA drifted away 375,000 people from their homes, and nearly 200,000 people continued to survive in a very unfavourable condition in the severely affected Khulna and Shatkhira districts (Azad & Khan, 2015). Farmers suffered from losing three to four consecutive years of production loss and livelihood not only for the higher duration of submergence but also in the aftermath of AILA in the form of degraded soil quality (Kabir et al., 2015). Two consecutive cyclones, SIDR and AILA produced undeniable negative effects on the living pattern of the people in southwestern Bangladesh. Affected people were struggling to return to their previous quality of life even after passing several years of the occurrence of the disasters (Kabir et al., 2016).

Major issues identified on SIDR and AILA recovery

Different authors conducted several case studies to determine the status of recovery programmes for SIDR and AILA affected people by GoB and NGOs and the challenges that impede the success of the recovery programmes. Islam and Walkerden (2015) found out that in villages of Patharghata Upazila of Barguna district, local NGOs mainly focused on immediate relief activities rather than disaster risk reduction for future cyclone SIDR. Limited resources and lack collaboration and coordination among government and national and international NGOs. In some cases, NGOs were unable to provide proper support due to favoritism, and there were excessive interest rates of microcredit and complaints of corruption. Islam et al. (2017) Denoted that in the southwestern region, community people emphasized receiving more NGO assistance in re-establishing livelihoods than local government authority. Most of the rehabilitation work was done by NGOs with assistance from foreign organizations such as BRAC, USAID, Save the Children, and South Asia Partnership-Bangladesh. However, post-disaster rebuilding was marked as one of the most corrupt sectors. In general, it was discovered that the local government's post-disaster recovery efforts were centered on relief. Long-term recovery initiatives were prioritized less, including livelihood restoration, disaster risk reduction (DRR) education, prevention and preparedness, and job development. Local people identified that government authority representatives favoured their political party members and their family, relatives, and friends while distributing relief items and other forms of recovery assistance, such as building materials, cash, crop seeds, rice, and VGF (Vulnerable Group Feeding) cards. Due to favouritism, many non-farming households got crop seeds as a form of post-disaster livelihood assistance, denying other farming households the opportunity to restore their fields. Numerous households stated that they were required to pay bribes to obtain the cash grant. Similarly, some impacted homes were required to pay bribes to get building supplies. Another manifestation of corruption is the replacement of lower-quality commodities for those donated by foreign aid organizations, as well as the distribution of only a percentage of the relief supplies received (Islam et al., 2017; Mahmud & Prowse, 2012). Additionally, lack of collaboration between NGOs and local government authorities was another factor identified contributing to ineffective recovery performance as NGOs were averse to involving government officials in their post-disaster efforts (Islam et al., 2017). Kumar et al. (2010) mentioned that in Dacope Upazila of Khulna district and Shymnagar of Satkhira district, embankments and communication system repairing and reconstruction activities after Cyclone AILA were slow. There was a lack of long-term well-coordinated relief programmes for ensuring recovery. Masud-All-Kamal (2013) identified that there was an insufficiency of resources for victims to cope with the cyclone AILA in Dumuria village, Khulna. Moreover, measures to increase the coping and recovery capacity of the community were not entirely satisfactory, and there were no initiatives to identify root causes of vulnerability; therefore, rehabilitation projects did not contemplate access to resources (Masud-All-Kamal, 2013). Nadiruzzaman and Wrathall (2015)concluded that local authorities and elites' distribution of government relief and recovery funds did not fulfil government objectives by not addressing community vulnerabilities. Furthermore, resources are allocated through unequal distribution, coercion, nepotism, and abuse of political

power. Cyclone AILA recovery efforts from various perspectives in Koyra Upazila Khulna were investigated in several studies. Those studies discovered that lack of community participation in water management and inadequate water supply sanitation system led to prolonged suffering after AILA. Short-term initiatives were prioritised in the recovery period, and measures for eliminating vulnerability did not report the root causes. Moreover, the extent of inclusion of pre-disaster vulnerability reduction measures within AILA recovery was unsatisfactory (Sadik et al., 2018a; Sadik et al., 2018b). NGOs activities mainly focused on short-term measures. And there were weaknesses in the existing local level NGOs coordination mechanism. Build back better concept and involving disaster risk reduction strategies in the recovery process were neglected. Furthermore, disaster-resilient land use planning and reconstruction in vulnerable areas were absent (Sadik et al., 2017a; Sadik et al., 2017b).

Methodology

Description of Case study Area

Dacope Upazila of Khulna is one of the cyclone-prone areas of southwestern Bangladesh (Kibria et al.,2016). Sutarkhali Union is one of the most cyclones affected union of Dacope upazilla and Gunari, and Nalian villages are the significant cyclonic damage enduring villages (Khatun et al., 2017; Kumar et al., 2010). In Sutarkhali Union, local people's primary income sources are crop cultivation, wage labour, fishing, and fish farming. The economic and educational condition of most of the local people is underprivileged. Most lands in this union are agricultural land, fishing ground, human settlements, roads, institutions, and other infrastructures like primary and high schools, post offices, forest offices, land survey offices, cyclone shelters and Union Parishad. The Focus group discussions were carried out in these two villages of Sutarkhali Union of Dacope Upazila in Khulna district (Fig. 3) in November 2018. Gunari and Nalian were affected by SIDR in 2007 but devastated and severely damaged due to cyclone AILA in 2009. The high tidal surge of AILA caused more devastation than cyclone SIDR, seven unions of Dacope were inundated within a short time, and Sutarkhali was one of them(Kumar et al., 2010). The most affected segment of the livelihood was agricultural production because productive agricultural lands were submerged by saline water, making the farmers face unimaginable economic loss. Furthermore, in Gunari and Nalian villages, AILA damaged livestock and poultry resources, significantly reducing their farm income.

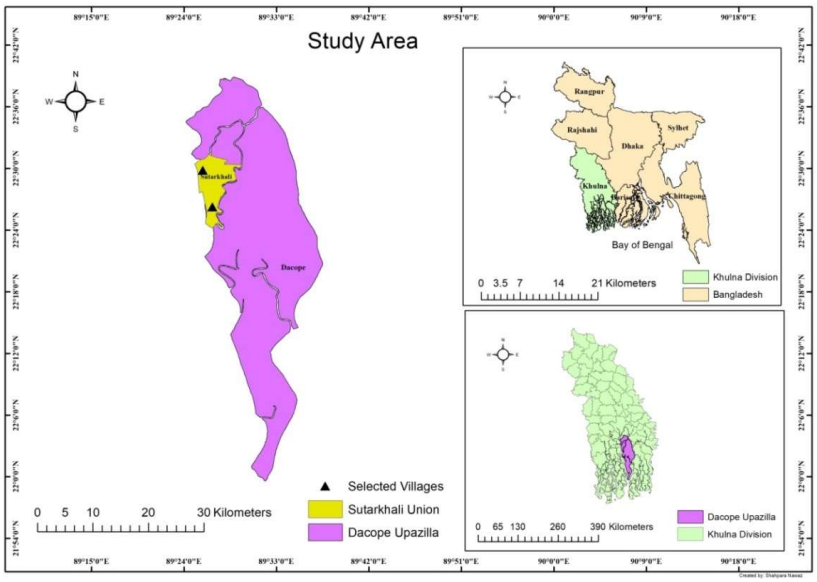

Figure 3. Map of the Gunari and Nalian village under Dacope Upazila in Khulna, Bangladesh.

Data Collection

A systematic literature review method with focus group discussions (FGDs) in selected two villages was used in this study to assess the recovery status of people from the cyclones. Four FGDs in both villages of Sutarkhali unions, with two in each village, were conducted to know the current situation of the recovery of SIDR and AILA-affected people of Gunari and Nalian Village. FGDs were divided into two categories: FGD with community people and FGD with knowledgeable people. In each FGD with community people, ten respondents of different occupations were selected using purposive sampling. The criteria chose the respondents who have been living in the village for the last 15 years and experienced the impacts of cyclone SIDR and AILA. Additionally, FGD with knowledgeable people included eight respondents who are present or former NGO workers, school teachers, health service providers, and local government employees who encountered both SIR and AILA in the study area. Each selected respondent was informed about the study's objectives in detail.

The systematic literature review was done by studying literature containing situation assessment reports, Government and NGOs' documentation, and relevant research. The principal source of data was the international and national NGOs reports, data about damages and relief distribution, recovery programmes of the cyclones published by the Ministry of Food and Disaster Management, and research papers published by different authors related to disaster recovery in Bangladesh. This systematic review was conducted to understand Bangladesh's overall cyclone recovery scenario and compare it with the case study areas. The systematic literature review followed a few steps suggested by Xiao and Watson (2019). At first, relevant literature was searched according to the study objectives and evaluated against the set criteria. Next, the relevant kinds of literature were identified through keyword searching. Then the found papers were screened for inclusion, and included papers were assessed for quality and eligibility. Finally, the selected literature was assessed and categorized. Finally, data from the literature were analyzed and extracted (Fig. 4). The literature was searched by focusing on the recovery from cyclone impact SIDR and AILA using scholarly electronic databases, including Google Scholar and Science Direct Springer, and Research gate.

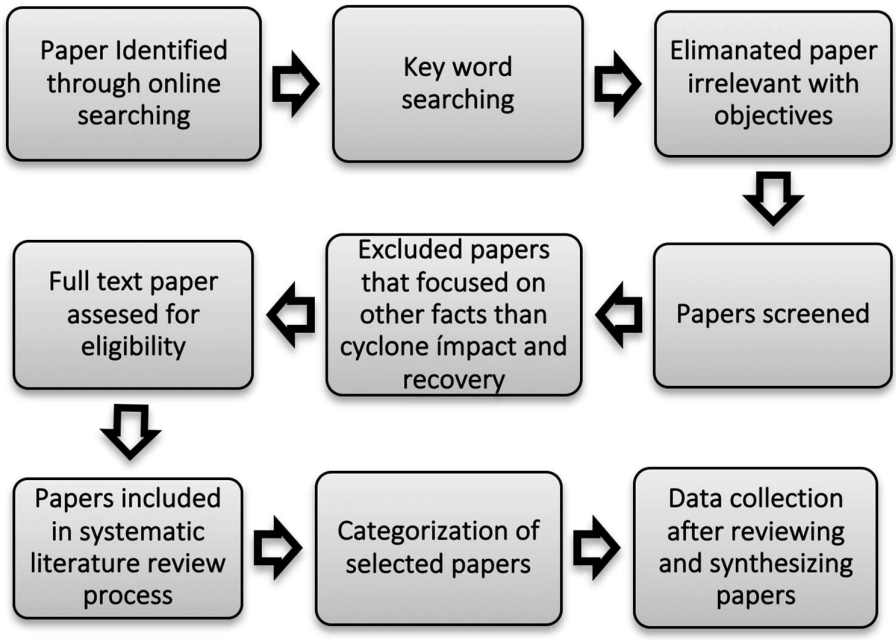

Figure 4. Steps of systematic literature review on cyclone recovery in Bangladesh.

The keywords used for the search were 'Cyclone in Bangladesh', 'Disaster recovery' and a combination of the following terms: 'Recovery assessment' 'Impact of SIDR', 'Impact of AILA', 'Recovery from SIDR', 'Recovery from AILA', 'Vulnerability and adaption', Disaster risk reduction', 'Government and NGO support', 'Cyclone recovery in Bangladesh', 'Disaster Management in Bangladesh', and 'SDG and disaster recovery'. A total of 50 relevant articles out of 65 were selected to scrutinise the status of cyclone recovery programmes in southwestern Bangladesh. The research papers were primarily categorised by focusing on the stage of cyclone recovery.

Data analysis

The data collected from FGDs were transcribed, translated, and then organized and summarised according to the categories. A priori and inductive codes were used to analyse the transcripts, and findings under similar codes were placed in a specific category. The categories were received aid, challenges in aid distribution, a period for recovery, and challenges identified in implemented programmes. Then all the categories were analysed to identify the pattern and interrelationships among them. The categories with similar characteristics were merged to form a theme.

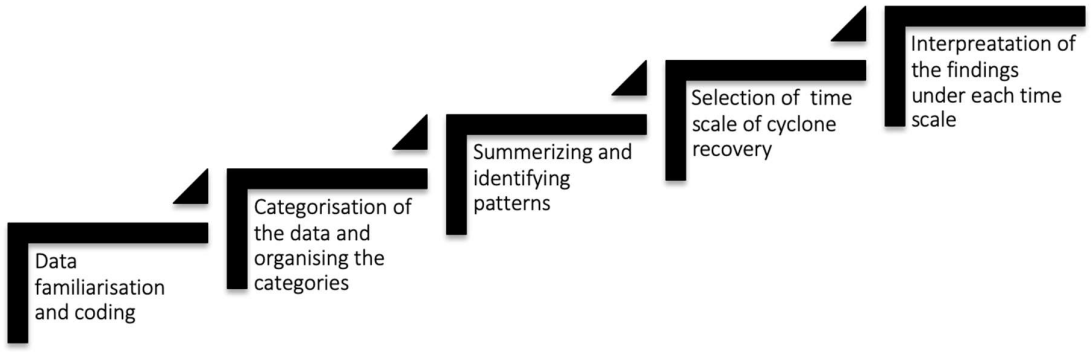

Figure 5. Focus group discussion data analysis steps.

Two-time scales were considered, which were short-term recovery and long-term recovery. Descriptions of the codes were also assessed for similarity. Finally, information was interpreted and presented (Fig. 5). After analysing all the summaries from the categories of recovery from SIDR and AILA, damages were understood. 'Microsoft Excel' statistical software was used to conduct the analysis and present the findings. After completing data processing, coding, categorising, and interpreting, separate tables, and figures were generated to visualise the results.

Results and Discussion

The government examined the details of SIDR and AILA affected people's financial and material aid needs and provided relief and aid. International assistance was also gathered and distributed through government collaboration with international organisations and assistance-providing countries.

Required and Provided Aid in SIDR Affected Areas

The need assessment revealed that Bangladeshi Taka (BDT) 24.83 Billion (USD 0.36 Billion) were required for immediate post-SIDR recovery, BDT 65.76 Billion (USD 0.96 Billion) and BDT 276.00 Billion (USD 0.96 Billion) were needed for the medium term and long term recovery respectively (Ministry of Food and Disaster Management, 2008b). Several humanitarians post-SIDR damage assessment assignments and started humanitarian relief operations focused on food aid, water and sanitation, and shelter with the cooperation of the GoB, United Nations, the National Red Crescent Society and the IFRC. For this purpose, the BDT 450 million (USD 6.7 Million) was allocated for emergency relief, repair and reconstruction of damaged houses and medical supplies (Government of Bangladesh, 2008; Ministry of Food and Disaster Management, 2008b). The funding had a shortage than the estimated need for the recovery of SIDR-affected people. However, the Ministry of Food and

Disaster Management had prepared an early, medium and long-term SIDR recovery action plan with the allocated grant. In February 2008, MoFDM allocated BDT 14.4 million (USD 0.21 million) as a cash grant and BDT 514.6 million (USD 7.50 million) as house building grants. Moreover, BDT 1.12 billion (USD 0.02 billion) from Chief Advisors Welfare Fund was distributed in the affected 12 districts (Ministry of Food and Disaster Management, 2008a, 2008b).

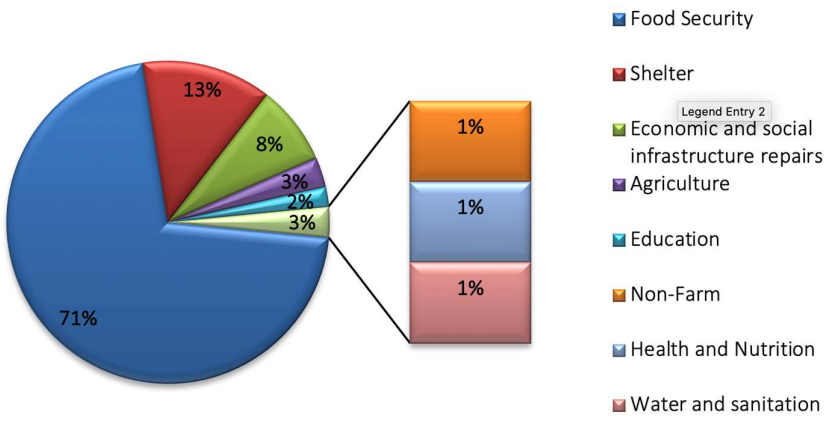

Figure 6. Distribution of spent funds for early recovery of cyclone in Bangladesh (Government of Bangladesh, 2008).

For short-term recovery of SIDR-affected people, an approximate amount of BDT 25 million (USD 0. 36 million) was provided by GoB. The highest portion (71%) of this allocated fund was used for ensuring the food security of SIDR-affected people. Only 3% and 2% of the allocated funding was used in the agricultural and educational sectors for early recovery. The SIDR destroyed 1.295 million metric tons of agricultural production and affected 2,224,462 families in the Southwestern zone of Bangladesh. A total of BDT 23.46 billion (USD 0.34 billion) was needed to recover in the agricultural sector, and for early recovery, an amount of about BDT 5 billion (USD 0.073 billion) was necessary. The amount required for short-term recovery from the livestock sector losses was calculated to BDT 12.78 million (USD 0.19 million). But the Ministry and the Finance Division allocated an amount of BDT 28.4 million (USD 0.41 million) only in the 2007-2008 period (Government of Bangladesh, 2008; Ministry of Food and Disaster Management, 2008a). The provided amount was very scarce than the need for early recovery in the agricultural and livestock sector, improvement of sanitation facilities, and the health of affected people used a very minute amount of funds (Fig. 6) which was only 1% for each sector. Department of Public Health Engineering (DPHE) analysed 10,951 mechanised water sources, tube-wells, rainwater harvesters, pond sand filters, etc., out of 12,984 contaminated and damaged sources. A total of 8,082 surface water ponds had been recorded cleaned among the affected 9,289 surface water ponds. Therefore, safe drinking water was still lacking for all the affected people (Ministry of Food and Disaster Management, 2008a). Well-adjusted allocation of the provided fund with a further concentration in the agriculture, health, and sanitation sector would have accelerated the entire early phase of the recovery process. Besides, the sum of BDT 18,975 million (USD 276.60 million) and BDT 9,315 million (USD 135.79 million) were respectively invested with the objectives of medium-term and long-term recovery from the damages of SIDR affected people(Ministry of Food and Disaster Management, 2008b).

The total value of the housing sector loss was USD 212 million, in respect of which the GoB and donor agencies provided an amount of USD 156 million. Chief Adviser's fund, Ministry of Food and Disaster Management, and National and local NGO community provided an amount of USD 29.4 million to reconstruct destroyed houses in the worst and badly affected 12 districts (Ministry of Food and Disaster Management, 2008b; World Bank & UNDP, 2014). There was a lacking USD 56 million to repair and reconstruct all the fully and partially damaged houses.

The amount of USD 126 million of the total donated amount was used for repairing 622,247 partially damaged houses, where 957,110 houses were estimated as partially damaged (World Bank & UNDP, 2014). While 3% of the allocated financial support was used for medium-term recovery in the housing sector, no funding was allocated for long-term recovery. The long-term housing recovery may include building more cyclone resilience households with durable materials in a more suitable area. Agriculture, transport, water and sanitation, and education sector was prioritised as higher funding was allocated for these sectors aimed at long-term recovery than medium-term recovery (Fig. 7). On the contrary, the health care and financial assistance sector received no funding for the longer term, where respectively 1% and 14% of the funding were used in the medium-term recovery activities for these sectors. However, GoB attempted to plan a long-term disaster risk management programme. The investment for such long-term initiatives was estimated terms for 5 years period starting from 2008 to 2022 after the occurrence of cyclone SIDR (Table 1). The investment in preparedness strengthening and risk mitigation fluctuated and delivered a decision to finance these activities considerably during 2018-2022. This is a vital aspect of the long-term disaster management programme for the country. However, the planned investment amount gradually reduced after the 2008-2012 period in 2013-2017 and 2018-2022 for risk assessment, institutional capacity building, and risk mitigation programmes.

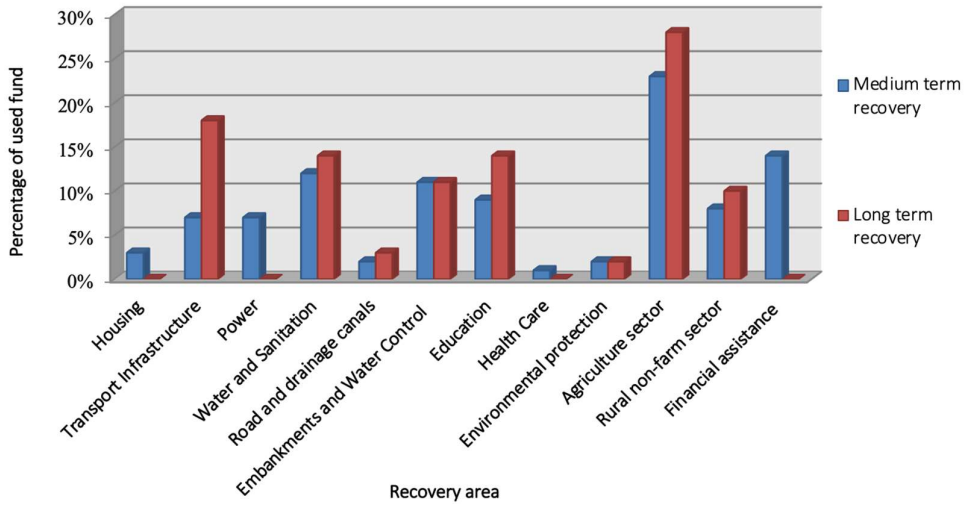

Figure 7. Sector-wise distribution of government funding for mid-term and long-term cyclone recovery in Bangladesh.

Table 1. Investment Programme for Long-Term Disaster Risk Management (Government of Bangladesh, 2008; Ministry of Food and Disaster Management, 2008b).

Programme concept	Estimated required investment (USD million) for each 5 years stage		
	2008-2012	2013-2017	2018-2022
Risk assessment	10	3	3
Strengthening preparedness	240	215	245
Institutional capacity building	10	2	2
Risk mitigation work	860	1160	830
Disaster response fund	300	0	0
Climate change fund	80	0	0

Moreover, disaster response funds and climate change did not have any funds allocated in the longer term. Neglecting these programmes can weaken the whole disaster management process and cyclone recovery programmes of the government. It is anticipated that a cyclone of the scale of SIDR can result in a total production loss of 186,234.70 million BDT (USD 2450.46 million) and significant income and employment losses. The current level of investment spending is insufficient to cover the losses from a cyclone disaster. Improved forecasting and warning systems, implementing coastal afforestation projects, constructing cyclone shelters in cyclone-prone areas, and people's timely evacuation and safe sheltering in the shelters can all help mitigate direct damage and loss of life caused by cyclone disasters (Haque & Jahan, 2016).

The international community worldwide responded rapidly after SIDR for support and committed approximately USD 263 million around the first half of 2008. The highest financial donation was USD 102.76 million from the kingdom of Saudi Arabia. Other than Saudi Arabia, USA, Kuwait, Netherlands also provided high donations for recovery. Canada, Belgium, Germany, Spain, India etc. countries also contributed to supporting recovery activities of SIDR-affected people (Ministry of Food and Disaster Management, 2008a). United Nations and European Commission offered direct financial support of USD 24,5 million. The World Bank contributed a sizeable amount of USD 100 million to reduce the financial pressure on the government for the restoration of livelihoods. A further USD 125 million was allocated for restoring and rehabilitating critical infrastructural assets. Additionally, the Asian Development Bank had launched a project of USD 150 million to finance the repairing of collapsed infrastructures (Ministry of Food and Disaster Management, 2008a). Despite a considerable amount of international donations, there was a shortage of economic support for SIDR recovery. The estimated need was more than USD 1 billion for short to medium-term recovery only and required more for long-term recovery. Many international and national NGOs working locally, including Save the Children, IFRC, CARE, Oxfam, Islamic Relief, Muslim Aid, BRAC, and ADRA, also stepped up to help SIDR struck people and committed USD 26.1 million to assist the cyclone victims. CARE Bangladesh (CARE-B) assisted over 350,000 households in recovering from the devastating effects of the cyclone. The recovery programme of Care-B comprised USD 10.37 million, and the programmes were implemented in parts of Barguna and Bagerhat. BRAC focused its response and recovery programmes on the severely impacted districts like Barguna, and Barishal. Pirojpur, Jhalokathi, Bhola, Patuakhali of Barishal division and Bagerhat of Khulna division (Sarkar, 2009).

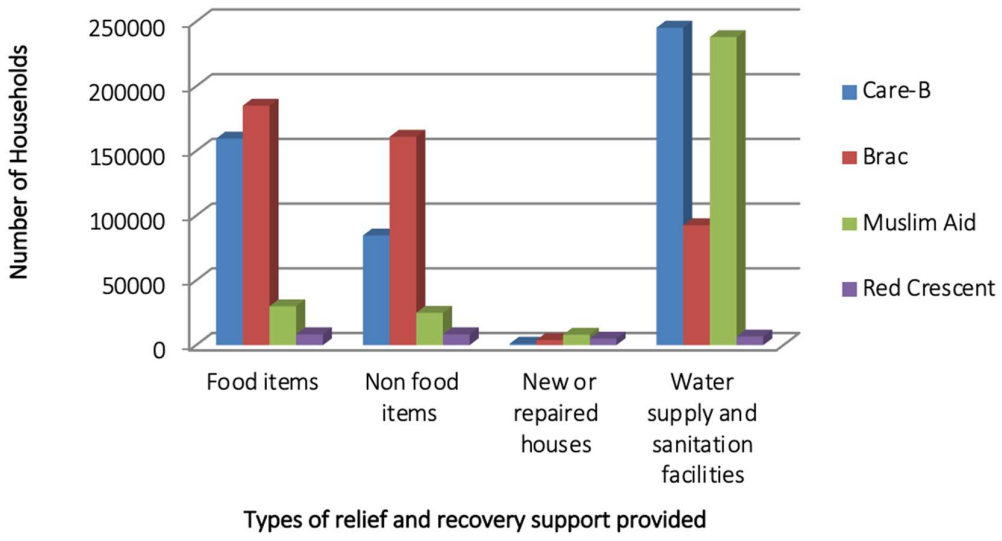

Figure 8. Role of different NGOs in Bangladesh for recovery from cyclone SIDR.

BRAC provided emergency food packages, blankets, clothes, water purification tablets and treatment for SIDR-affected people. Immediately after cyclone SIDR, Muslim Aid allocated USD 215,000 for emergency aid and afterwards initiated a fundraising campaign with the cooperation of The European Commission for Humanitarian Aid (ECHO) to raise USD 3 million to continue relief and rehabilitation activities in three of the most severely SIDR affected districts (Bagerhat, Patuakhali, and Pirojpur) on an emergency basis (Ministry of Food and Disaster Management, 2008a; Sarkar, 2009). The cyclone SIDR emergency response operation by the Bangladesh Red Crescent Society for the affected people began in November 2007 and was continued for two years. The early recovery operation was mainly focused on the four most affected districts; Pirojpur, Patuakhali, Barguna and Bagerhat. Bangladesh Red Crescent Society constructed 1,250 residential core shelters in the selected areas, and 4,997 families received cash grants for livelihoods through bank transfers (Bangladesh Red Crescent Societies, 2010). Despite providing financial support from different NGOs, the SIDR recovery efforts were disputed due to a lack of coordination and monitoring. BRAC provided the highest amount of food and non-food items, and Red Crescent provided the lowest amount. While all the NGOs contributed comparatively less to housing recovery than other sectors, Muslim aid had the highest housing recovery contribution. Water purification tablets, sand filters, and sanitary latrines were provided in the most significant amount by CARE-B and Muslim Aid to supply pure water and sanitation facilities (Fig. 8). On the other hand, BRAC contributed comparatively more minor, and Red Crescent had provided the minor support in the water supply and sanitation sectors. However, the support for recovering health and sanitation facilities after cyclone SIDR was reported to be effective. A study by Paul et al. (2011) demonstrated that the predicted enormous post-SIDR epidemic did not materialise due to ensuring affected peoples' access to appropriate medical care. Additionally, SIDR survivors focused on an adequate supply of suitable medicines, safe drinking water and sanitation, and the establishment of vaccination programmes and other health measures.

Required and allowed Aid in AILA Affected Areas

Cyclone AILA hit South-Western coastal region of Bangladesh in 2009 when the government was executing post-SIDR recovery programmes in affected areas. The UNDP updated an ongoing project for Cyclone SIDR Recovery and Restoration Project and integrated the recovery activities for Cyclone AILA affected areas in 2013 for emergency rehabilitation of infrastructure (Sadik et al., 2017a). Along with the government's emergency relief programme, humanitarian agencies responded quickly and delivered around USD 44.25 million as immediate emergency response in the form of food and water supply, health and sanitation, livelihood, and shelter support (Sadik et al., 2018a; Sadik et al., 2018b). Contrary to the SIDR recovery programmes, in most of the AILA recovery programme activities, NGOs were more involved than Government organisations and the highest time period of performing these activities was up to the year 2016 (Sadik et al., 2017a). Though more active participation of NGOs made the relief and rehabilitation activities quicker, the shortcoming of no monitoring programme to ensure the effective implementation of these programmes existed. Monitoring and evaluation with detailed documentation would have ensured well coordination of relief operations between government and non-government organisations at the community level. Thus, the relief distribution was disproportionate and suffered from a low level of corruption. As a result, the distribution of relief and recovery initiatives did not adequately assist in restoring their livelihoods and Masud-All-Kamal and Monirul Hassan (2018) explained similar scenario for cyclone AILA.

The AILA recovery programmes of GoB and NGOs focused on reconstructing the damaged houses and community infrastructures where less attention was paid to the recovery of livelihoods. In the Dumuria village of Khulna, NGOs provided working opportunities and employed people in the infrastructure restoration programmes for livelihood recovery. The amount of money paid to the workers was only Taka 150 per day, which was not sufficient to rebuild livelihoods (Masud-All-Kamal, 2013). Consequently, the beneficiaries of such livelihood support projects were unable to practice livelihood recovery efforts by. The AILA affected people of Koyra, immensely;

those dependent on shrimp farming and agriculture suffered the greatest (Sadik et al., 2018a; Sadik et al., 2018b). Introducing salt-tolerant crop varieties, land zoning for mixed shrimp-rice agriculture and technological improvements were the viable options for the recovery of livelihood in Koyra. However, the recovery initiatives did not consider these options (Sadik et al., 2017a; Sadik et al., 2017b). Consequently, the recovery programmes were not practical for the shrimp and crop farmers. Additionally, Mahmud and Prowse (2012) stated that undesirable practices like depriving of workers from wages and the misuse of resources were most prominent in post-cyclone interventions.

It is reported that GOs and NGOs offered emergency assistance such as food, clothing, medications, and other necessities for up to two years following AILA. Around 47,810 households in Khulna and Satkhira's four Upazilas received food items (rice) each month until November 2010 as part of the two-year Vulnerable Group Feeding (VGF) and Vulnerable Group Development (VGD) initiatives (Masud-All-Kamal, 2013; Subhani & Ahmad, 2019). The severity of the home damage mainly determined the distribution of relief supplies. Each impacted household received an additional USD215 to cover immediate needs. However, the amount was insufficient to compensate for the disaster's losses and damages. As a result, several household members were compelled to relocate. A daily stipend of USD 2 was also granted for up to seven to ten days each month; nonetheless, it was insufficient to meet the households' long-term requirements. Households demand to receive long-term relief or recovery aid, such as employment than immediate help. It is presumed that the relief help offered met their immediate requirements in the short term, though it has caused dependency in the long run. While impacted communities got external support and used various response tactics to recoup their losses, the strategies may not be long-term beneficial. Short-term plans and insufficient external help failed to alleviate the suffering endured by cyclone-affected households, resulting in out-migration (Sadik et al., 2018b; Subhani & Ahmad, 2019).

In the aftermath of Cyclone SIDR in 2007 and Cyclone AILA in 2009, the Bangladesh government launched an early recovery programme to offer temporary shelter for cyclone victims. Bangladesh Government provided one-time housing assistance of BDT 5000 to approximately 100,000 families whose homes were destroyed in the affected areas, as well as 13,000 bundles of corrugated iron sheets, 13,406 tents, and 15,000 plastic sheets to arrange shelters (Islam et al., 2018). While temporary housing provided by the government and other NGOs assisted victims in the short term in resolving their housing problems, it was insufficient, and many beneficiaries did not use the assistance for its intended purpose, instead of selling donated house-building materials and purchasing other essentials (Mallick et al., 2017). Overall housing recovery process started showing a slight improvement after several years of AILA occurrence in 2016-2017. Unfortunately, thousands of people lived in tents near the coastal belt of Khulna and Satkhira district even after two years of AILA due to the delayed reconstruction of cyclone AILA damaged embankments. Furthermore, in Dakshin Bedkashi, after three years of cyclone AILA, only half of the total affected people could reconstruct their houses between 2013-2015 (Sadik et al., 2017a; Sadik et al., 2018a). The destruction of embankments resulted in long-term inundation of almost two years due to a belated attempt to improve wrecked coastal embankments. The Ministry of Food and Disaster Management allocated BDT 1150 million (USD 16.4 million) to the Water Development Board in July 2009 for repairing vital embankments damaged or destroyed in AILA. The embankment reconstruction process was marked by irregularities, resource mismanagement, substandard work, and corrupt tendering. Moreover, the quality and suitability of products supplied by non-governmental organisations were questioned (Mahmud & Prowse, 2012). The Bangladesh Water Development Board (BWDB) began the Coastal Embankment Improvement Project (CEIP) in 2013 to upgrade coastal embankments after obtaining funds from the World Bank. The delayed initiatives for reconstruction after the occurrence of cyclone AILA reduced the effectiveness of recovery. Moreover, none of the embankment recovery initiatives involved improved disaster risk reduction (DRR) measures. Repairs of rural roads under the Food for Work and Cash for Work programmes were adjourned correspondingly (Sadik et al., 2017b). Furthermore, constraints in the budget obstructed the completion of urgent repair of the road network.

Different NGOs proposed support for repairing the embankments, while the BWDB could not accept that due to legal barriers and lack of confidence in the engineering capabilities of NGOs. Consequently, emergency repairs of polders and rural roads required five years to be finished after AILA(Sadik et al., 2018a; Sadik et al., 2018b).

Following cyclone AILA, the government and non-governmental organisations (NGOs) implemented several activities to improve the community's WASH situation, the majority of which include the installation of tube-wells with raised platforms, low-cost water treatment plants and rainwater harvesting plants, low-cost latrines ring slabs and Pond Sand Filter and distribution of chemical additives. To protect the tube-wells from salty and flood water, the platform of each tube-well was elevated with a concrete platform above the greatest known flood level. Additionally, mobile water treatment plants—a backup source of drinkable, safe water supply along Bangladesh's coast during an emergency—responded promptly, reliably, and cost-effectively to the water crisis during and after AILA. During post-disaster rehabilitation, Koyra residents received a variety of sanitary latrines under the WASH programme, including an eco-sun toilet, a sanitary latrine with a septic tank, and a sanitary latrine with a PVC ring slab. The WASH initiative assisted local governments in identifying community needs and developing effective emergency plans. Furthermore, a distinctive component of the WASH programme used in Koyra was the inclusion of men, women, and adolescents in hygiene teaching and promotion (Alam & Rahman, 2019; Sadik et al., 2017b). However, hand pump tube wells and new ponds were not functional in all the affected areas due to groundwater and surface water salinity. In Gabura, Dacope and Koyra, about 14.2 million litres of water supply were required to meet the drinking needs of the people immediately after the cyclone, however, DPHE and NGOs were able to supply only 0.11 million litter water (Jahan, 2012). Moreover, it was found that among the AILA-affected people of Gabura, Koyra and Dacope, 80% of people have no access to health facilities to recover health and sanitation system even after a year of AILA strike, where it is indicated a majority of people were unable to gain access to health care services (Roy et al., 2009). However, several NGOs were offering medical services in the affected areas, although those attempts were insufficient compared to community demands (Haque et al., 2010).

The international community, including the World Bank, the United Nations Development Programme (UNDP), the International Federation of Red Cross and Red Crescent Societies, local governments, and national and international non-governmental organisations (NGOs), has increased its efforts to reduce the affected people's vulnerability through the provision of humanitarian assistance after cyclone AILA. Despite their efforts and UN HABITAT's critical principles for durable, permanent, and cyclone-resistant housing, post-disaster rehabilitation projects continue to fall short of expectations. The failure of post-disaster reconstruction projects is attributed to the following factors: a lack of coordination among participating organisations, a scarcity of available resources, delays in project implementation, corruption, substandard quality of reconstructed houses, a lack of community participation, and ineffective design (Islam et al., 2018).

Evaluating the Effectiveness of Cyclone Recovery Programmes in Gunari and Nalian

More than a hundred thousand people of Dacope, including the study area (Gunari and Nalian villages of Sutarkhali union), were victims of the AILA devastation after SIDR (Kumar et al., 2010). The analysis of focus group discussions (FGD) showed different levels of recovery (Table 2) of the affected people in the study area from damages done by the cyclones. Participants of FGDs had different perceptions of how far they have achieved recovery from cyclone SIDR and AILA occurrence. Most respondents reported that they had suffered from house damage, loss of income or earning source, shortage of water and damaged sanitation facilities. So housing, livelihood and health and sanitation sector were considered mainly to evaluate the recovery of cyclone-affected people. Few participants mentioned that recovery measures had not improved their condition at all after the devastation of cyclone SIDR and AILA. Most participants recovered slightly and moderately, but no participant was able to recover fully until the year 2018 from the damages of both cyclones. Case studies previously

conducted on recovery from damages of SIDR and AILA affected different regions were also explored to synchronise and evaluate collected data regarding the effectiveness and efficiency of recovery measures.

Table 2. Summary of status of cyclone recovery in southwestern Bangladesh.

Time scale	Category	Code	Findings	Source
Short term recovery	Received aid	Food and Non-food items	The local government distributed food items, water, clothes, and a cash grant to affected people and fulfilled emergency needs for immediate survival.	FGD with community people
		Temporary shelter	Governmental and NGOs provided shelter, which assisted in overcoming shelter problems temporarily	
	Challenges in aid distribution	Sufficiency	Food, Non-food items and cash grant were insufficient for all the affected families.	
		Proper distribution	Existence of indiscipline and corruption were indicated in material distribution, and cash grant was not evenly distributed among affected families	
Long Term recovery	Time period for recovery	Housing	Recovery in the housing sector of most affected people needed 3 to 4 years	FGD with community people and FGD with knowledgeable people
		Livelihood	Recovery of damages from livestock and poultry farm, agricultural sector and fishing sector needed more than four years.	
		Health and sanitation	Health and Sanitation facilities needed 1 to 2 years to recover for most of the affected people.	
	Challenges identified in recovery Programmes	Quality	Provided housing and livelihood materials were low in quality and amount financial support for reconstructions was negligible.	
		Issues with allocation	Distribution of livelihood materials and cash grants were facing indiscipline and biasness due to lack of organised data and interference of people with social power.	

It was found that cyclone-affected people needed approximately 3 to 4 years to recover in the housing and livelihood sectors after the disaster. Health and sanitation sector recovered within 1 to 2 years as NGOs provided a substantial amount of water supply tanks, water purification tablets, and frequent primary medical treatment. It was evident that coping, and recovery in the livelihood and housing sector were unsystematic and lengthier, resulting in slow recovery after the cyclone (Table 2). NGOs played a significant role in government programmes in their locality to reduce the extensive damages and promote recovery. BRAC, JJS, DSK, Rupantar, Sushila, Caritas,

and Asha are some of the notable examples of such NGOs and international agencies like CONCERN worldwide, OXFAM, World Vision, IFRC, etc. for implementing the recovery programmes (Sadik et al., 2018a; Sadik et al., 2018b). Nevertheless, these activities were disapproved by people for lack of coordination among NGOs, overlapping activities and gaps in service areas, and negligence of local needs. Measures adopted by NGOs were focused on short-term recovery principally where long-term needs were neglected and similar issues were mentioned is the studies of Sadik et al. (2017a) and Sadik et al. (2018b) . Along the way, monitoring arrangements for such initiatives of both GO and NGOs remained absent. It was found out that the minimal number of the affected households received help in the form of a cash grant or loan and materials for house repair and livelihood materials such as agricultural or fishing tools, seeds, and livestock for recovery. The local NGOs were more active than the government in their locality in implementing recovery programmes in providing support. However, among the AILA-affected people who faced difficulties while receiving cash grants or materials, the majority said that Government and NGO staffs were biased while distributing support items. Remaining said that there was a lack of discipline while distributing relief and providing help, which was problematic for them. In that context, Mahmud and Prowse (2012) concluded that recovery assistance following AILA experienced varying degrees of corruption, such as low levels of bribery in the cash grant programme to extremely high levels of asset and wage stripping with uncertain payment by local government authorities in food distribution and other public supporting programmes. Such issues hampered the recovery initiatives, as the focus should be on establishing the economic foundation of livelihoods by furnishing the coastal people with skills and resources for self-recovery. Successful long-term recovery from cyclone damages depends on a proper inter-institutional coordination mechanism, community participation and compelling legal policies.

Analysis of case studies on cyclone recovery resulted in discovering a similar pattern of challenges with the field study done to investigate administration recovery programmes by Government and NGOs. For instance, difficulties such as lack of coordination among government and different NGOs, focusing on short-term recovery measures while neglecting long-term recovery needs, and not including disaster risk reduction measures in recovery plans and programmes were identified in most cases. Additionally, a few distinct drawbacks of effective recovery programmes were detected by conducting the study in Gunari and Nalian of Dacope. Those significant obstructions included the absence of the proper monitoring of the recovery programmes and no evaluation of the program's outcomes to assess the improvement of affected people. Moreover, hardship in maintaining proper jurisdiction of work among Government, NGOs, and other development agencies, and lack of proper planning before implementing recovery programmes with less opportunity to exchange opinions among different stakeholders of every level were noticed as challenges through analysing data. Consequently, the recovery measures are taken in response to SIDR and AILA hardly addressed these issues, and these measures did not enable the affected people to become self-reliant. According to the analysis and all these studies, people suffering from the devastation of SIDR and AILA could not return entirely to the normal condition in any social and economic aspects due to ineffective cyclone recovery programmes conducted by the Government of Bangladesh and NGOs. Mallick and Vogt (2015) mentioned that socially and politically powerful and economically stable individuals control the disaster relief and recovery efforts in Bangladesh and dominate the system of emergency and long-term aid-providing processes. Numerous governments, humanitarian organisations, and NGOs supplied aid, although emergency assistance was dispersed unevenly in terms of area and requirements. Political and social position and power distribution all played a part in this context. Interestingly, emergency relief projects were initially delivered to locations where media attention was garnered. Donors competed in such privileged places, whereas victims residing in hard-to-reach areas received little emergency aid. Most of those impacted were forced to seek different livelihood earning activities and rebuild their homes by themselves over a long period. Over the years, many institutions, non-governmental organisations, and organisations have contributed around USD1.4 billion to aid Cyclone SIDR and AILA victims. Several instances, it was discovered that help was given by

prioritising religious, social, and political concerns among communities. In other instances, some victims were selective about the type of assistance they received from donors, such as waiting for a higher-quality house from a certain NGO (Muslim aid) while ignoring assistance from other NGOs, arguing that the quality of the house was not suitable (Mallick et al., 2017).

Conclusions

Cyclone SIDR and cyclone AILA are the two of the most socially and economically devastating hazards in the history of Bangladesh that struck the southwestern portion of the country consecutively. Though the government and various NGOs initiated relief and recovery programmes to help affected people improve their post-cyclone vulnerable state, it is evident from this study that the status of recovery programmes was not satisfactory in all affected sectors. The health and sanitation sector was able to recover rapidly as national and international NGOs were more engaged in assisting in this sector. However, the housing and livelihood sector did not recover according to the demand of people, and it took a long period to implement recovery programmes targeted at these sectors. The employed recovery measures were not efficient considering the required and provided aid for upgrading the condition of the cyclone-struck people of southwestern Bangladesh. The recovery programmes were not supported as much as they should recover from the damages despite the passing of several years after the cyclonic events. This study found that Government and NGOs provided relief support intensely for a short period immediately after the cyclone's occurrence, although minimal efforts were given for long-term recovery. The recovery activities in Bangladesh should include repairing and reconstructing damaged infrastructures and transportation networks with technical and economic support to rehabilitate livelihood. It should involve agriculture, livestock, and fisheries recovery to confirm food security and create alternative income sources for the affected community (Hassan et al., 2013). Moreover, regular monitoring of the recovery functions while recording the condition of affected people should be focused. Most of the recovery programmes were designed at a higher national or regional level without considering the directly affected targeted communities' requirements. Few essential measures such as planning of hazard-based land zoning and land use, adequately linked and disaster-resilient road networks, technologically advanced agricultural, livestock and farming practices, the connection of social capital at all levels and coordination and harmonisation of NGO efforts at a local level were completely overlooked from recovery planning and execution (Sadik et al., 2018a; Sadik et al., 2018b). Even though the initiatives adopted by Government, NGOs, and international development partners aimed to increase the coping and recovery capacity of the community, it was only possible to achieve the goals partially. Thus, the implication of building better concepts and disaster risk reduction in the recovery process is the factor that should be reflected upon while planning and implementing. This study could not review all the literature due to access restrictions. It could not collect all the data related to damage assessment and funding allocation and distribution by government NGOs because of the lack of a proper database and time constraints. The influences of socio-economic characteristics have not been adequately dealt with to analyse the recovery status. Thereby, further studies are required to reveal what can make the recovery programmes successful and influential in regaining the everyday lifestyle of cyclone-affected people.

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