

Naval War College Review

Volume 46
Number 1 *Winter*

Article 5

1993

Disaster in Bangladesh: A Multinational Relief Effort

Shafiq-ur Rahman

Follow this and additional works at: <https://digital-commons.usnwc.edu/nwc-review>

Recommended Citation

Rahman, Shafiq-ur (1993) "Disaster in Bangladesh: A Multinational Relief Effort," *Naval War College Review*. Vol. 46 : No. 1 , Article 5.

Available at: <https://digital-commons.usnwc.edu/nwc-review/vol46/iss1/5>

This Article is brought to you for free and open access by the Journals at U.S. Naval War College Digital Commons. It has been accepted for inclusion in Naval War College Review by an authorized editor of U.S. Naval War College Digital Commons. For more information, please contact repository.inquiries@usnwc.edu.

Disaster in Bangladesh

A Multinational Relief Effort

Captain Shafiq-ur-Rahman, Bangladesh Navy

NATURAL DISASTERS HAVE BECOME a *modus vivendi* for the unfortunate people of Bangladesh. Floods, tropical cyclones, tornadoes, and tidal bores ravage the country almost every year. Annual monsoon flooding results in the loss of human life, damage to property and communication systems, and a shortage of drinking water leading to the spread of diseases. Similarly, severe cyclones accompanied by tidal surges cause colossal loss of life and property.

Bangladesh lies in the humid tropics, with the Himalayas in the north and the funnel-shaped coasts stretching with deceptive beauty along the Bay of Bengal to the south. Offshore lie clusters of flat islands where more than five million people live, and from their faces the kind of apprehensions with which they live can easily be perceived. Throughout their lives they are exposed to the dangers of these natural calamities. This is a very different world, where people struggle for survival.¹

Cyclones and tidal surges in particular have become part of life for the people who live in the coastal region and the offshore islands of Bangladesh. There are no precautions against cyclones and tidal surges other than advance warnings and a few safe cyclone shelters. For many years the government has been unable to construct cyclone shelters sufficient for the entire coastal belt. Infrastructure and transportation facilities adequate to ease the sufferings of the affected people have yet to be established. Relief efforts, especially after severe cyclones, are far

The author joined the Pakistan Navy in 1970. He was interned in Pakistan in 1972 after the 1971 war and was repatriated to Bangladesh in December 1973. He graduated from the Naval Command College at the Naval War College in June 1992 and is presently the Senior Instructor (Navy) in the Defense Services Command and Staff College at Mirpur, Bangladesh.

The author expresses his special thanks to Colonel John J. Sullivan, USMC, of the Naval War College faculty, and also his gratitude to Captain M.G. Hussain, (S)psc, of the Bangladesh Navy, Commander Nicholas H.L. Harris of the Royal Navy, and to Major Almas Raisul Ghani, of the Bangladesh Army artillery.

The opinions in this article are those of the author and are not necessarily those of the Bangladesh Navy or the Bangladesh government.

from satisfactory. Adequate facilities are not available to government organizations; this is true especially for the armed forces, who are always tasked with helping the distressed people.

This paper discusses the latest in a long history of natural disasters in Bangladesh and recommends measures that should be taken by its government to improve defenses against such calamities.

Geography and Meteorology

Bangladesh, because of the configuration of the coast of the northern Bay of Bengal (Map 1), very often becomes the landing place of cyclones. The damage becomes so severe mainly due to three factors: the low or flat terrain, the marked variance of the times and height of high water between the east and west, and the high density and poorly built housing of the region's population. Ecological imbalance due to the "greenhouse" effect is another cause. Moreover, rapid morphological changes are going on in the cyclone-prone region of Bangladesh due to the simultaneous processes of soil erosion and accretion, which collectively result in the overall rise of the seabed in and around the Ganges estuary and in the emergence of new islands within the ten-fathom line. These factors all have great influence on tidal surge intensity.

Cyclones are not a new phenomena in Bangladesh; there are records of storm surges as early as the sixteenth century. Data has been kept regularly since the late nineteenth century on cyclones originating in the Bay of Bengal, one of the most volatile and unpredictable zones in the world. From 1891 to 1988 more than 175 severe cyclonic storms were recorded, with the highest frequency in October-November (post-monsoon), followed by April-May (pre-monsoon) (Figure 1).² Of these cyclones, not all moved towards Bangladesh. The cyclones that affected Bangladesh since 1960 are shown in Table 1.

Super Cyclone 1991

The cyclone that crossed the Bangladesh coast during the night of 29-30 April 1991 can only be described as a "Super Cyclone." Its size approached that of Bangladesh itself (Map 2).³ The maximum wind speed observed was 225 km (140 miles) per hour; since the measuring device was blown away at that point, the actual wind speed could have been higher. The barometric pressure might have fallen below 940 millibars (27.77 in/Hg). The cyclone was first detected on 23 April by the Bangladesh Space Research and Remote Sensing Organization (SPARRSO), as a low-pressure area in a satellite image. It turned into a cyclonic storm two days later, moving slightly northwestward in its initial stage and then northward up the Bay of Bengal. On 28 April it started moving in a northeasterly direction at a speed of twenty knots and crossed the Bangladesh

Table 1
Cyclones Affecting Bangladesh Since 1960

Date	Max. Wind Speed (kmh/mph)	Storm Surge Height (feet)	Deaths
9 Oct 60	162/100	10	3,000
30 Oct 60	210/130	15-20	5,149
9 May 61	146/91	8-10	11,466
30 May 61	146/91	20-29	
28 May 63	203/126	14-17	11,520
11 Apr 64			196
11 May 65	162/100	12	19,279
31 May 65		20-25	
14 Dec 65	210/130	15-20	373
1 Oct 66	146/91	15-30	350
11 Oct 67		6-28	
24 Oct 67		5-25	
10 May 68		9-15	
17 Apr 69			75
10 Oct 69		8-24	
7 May 70		10-16	
23 Oct 70			300
12 Nov 70	223/138	20-30	500,000
8 May 71		8-14	
30 Sep 71		8-14	
6 Nov 71		8-18	
18 Nov 73		8-13	
9 Dec 73	122/76	5-15	183
15 Aug 74	97/60	5-22	
28 Nov 74	162/100	7-16	(few)
21 Oct 76	105/65	8-16	
13 May 77	122/76		
10 Dec 81	97/60	6	2
15 Oct 83	97/60		
9 Nov 83	122/76		
3 Jun 84	89/55		
25 May 85	154/95	10-15	11,069
29 Nov 88	162/100	5-10	2,000
29 Apr 91	225/140	20-27	152,000
2 Jun 91	100/62	6	

Source: Official Bangladesh government figures.



Map 1

Jerry Iamotha

coast north of Chittagong Port during the night of 29 April (Map 1).⁴ The maximum storm surge height during this cyclone has been estimated to have been twenty to twenty-seven feet. The storm was especially devastating because its center was moving slowly, with greater and greater intensity, and hit the coast at midnight during the high-water spring tide.

The loss of lives and property was colossal. Destruction of property was estimated to be about \$4 billion (U.S.). Deaths are believed to have numbered 152,000, and hundreds of thousands more were left homeless and without basic necessities. The official statistics are shown in Table 2. Considering the fact that this cyclone was more fearsome than that of November 1970 and that the population in the coastal area had nearly doubled in the intervening twenty years, the half-million casualties in 1970 would have corresponded to a figure of a million lives this time. But due to timely and continuous cyclone warnings, the human casualty figures, although still high, were considerably reduced.

Notwithstanding, the appalling human tragedy and the mounting sufferings of the over eleven million people struck by the cyclone throughout the entire coastal belt were incalculable. The 1991 cyclone, the worst natural disaster in Bangladesh's history, was devastating not only in human terms, however, but also in terms of economic damage. No sector was spared by the cyclone. The entire industrial belt along the coastline suffered massive damage or complete destruction.⁵ Even the defense installations kept under immediate notice to launch post-relief operations sustained heavy damage. Most areas of the thirty-foot-high coastal embankment were washed away. Chittagong Port, the lifeline of Bangladesh, remained non-operational for more than a week. Many ships were sunk or damaged, strewn haphazardly in the channel and blocking or damaging jetties. It took the untiring efforts, over several days, of the naval and port hydrographers to mark the channel and make the port partially operational so as to handle the emergency cargoes of food grain, oil, etc.

Disaster Relief and Difficulties Experienced

The most taxing question immediately after the storm was how to get help to the distressed islanders. The coastal areas remained waterlogged, and the sea and weather continued to be very rough for several days following the cyclone, preventing the movement of smaller ships and aircraft. Through bureaucratic complexities and lack of infrastructure, no food or relief goods could be stored or made immediately available. Defense organizations were the only hope for those marooned people. However, Bangladesh Air Force (BAF) aircraft had extreme difficulty in dropping food to the islands during the initial days, since most of the disaster areas still remained underwater. Although the BAF was able to drop some relief goods, the whole effort was considered not to be very successful. In the absence of any relief organization, most items were grabbed

by the stronger victims before the weaker, particularly women and children, could reach them. Sadly, some loads splashed into the flooded rice fields and were destroyed.

A similar situation occurred in the Bangladesh Navy (BN). Electrical and communication facilities in Chittagong, site of the main naval base, were totally disrupted. The Maritime Headquarters and all shore establishments were unable to function effectively, being in distress themselves; all activities had at first to be coordinated from one of the frigates. The BN was asked to carry out relief operations in remote islands like Sandwip, Urirchar, Kutubdia, Channua, Manpura, and Bhola. Lack of infrastructure and sufficient resources made it difficult for the Navy to help and succour the distressed people in those far-flung areas during the critical periods immediately after the cyclone. The offshore waters, navigable only for shallow-draught vessels, remained very rough and were hazardous for small gunboats.

Moreover, sufficient relief goods were not immediately available at Chittagong to load the naval craft. The earliest that two gunboats from there could reach Kutubdia and Channua was the morning of 2 May. On 3 May one craft was sent to Sandwip, but because of very rough seas had to return without disembarking relief goods. However, on the 4th, three naval vessels were despatched to Sandwip and Urirchar and two for Kutubdia and Channua. Khulna Naval Command and the Bangladesh Army were able to carry out relief operations quite successfully from the very beginning in Manpura, Bhola, and other islands, using the inshore routes.

In the absence of jetty facilities, small craft had tremendous difficulties in disembarking relief goods ashore. A limited number of Geminis and Zodiacs (rubber boats) were the only hope. Remarkably, a few local boats were able to come alongside BN ships to assist in the naval relief operation. The Navy also faced command, control, and communications (C³) problems. Each relief team sent to the islands was provided with portable communications sets to pass periodic situation reports to Maritime Headquarters. Sometimes it was not possible to do so, due to range, weather, and other factors. Though the BN does not possess many ships, one small craft had to remain in the vicinity of each operation in order mainly to solve the C³ problem (and also to support the relief teams in case of difficulties). That meant overall that at least two craft which could otherwise have been utilized for carrying relief material had to act instead as communications and support ships. Landing ships would have been ideal under these circumstances, since they can carry a number of landing craft, relief teams, and huge amounts of relief material, and can even operate helicopters. Since the BN possessed no landing ships, however, the few available landing craft (LCTs and LCVPs) could not be ferried to the scene of operations. Yet the BN continued its relentless efforts during the most critical period and was able

<https://digital-commons.usnwc.edu/nwc-review/vol46/iss1/5>

Table 2**General Statistics**

Total Area of Bangladesh (sq. km)	144,000
Area Affected by Cyclone (sq. km)	15,000
Total Population of Bangladesh	110,000,000
Total Pop. Affected by Cyclone	11,000,000
Number Districts Affected (of 64)	14
Subdistricts Affected (of 462)	80

Affected Area

Dead	152,000
Missing	70,000
Cattle Destroyed	over 90,000
Educational Institutions Destroyed	over 2,000
Educational Institutions Damaged	over 4,000
Houses Destroyed	642,553
Houses Damaged	564,371
Crops Destroyed (acres)	over 74,000
Crops Damaged (acres)	over 300,000

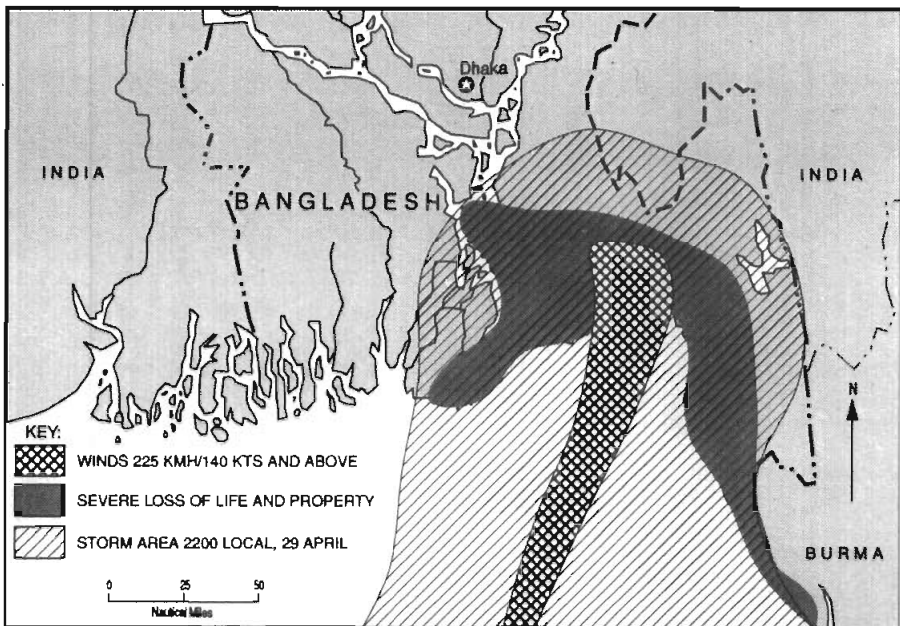
Major Facilities Damaged

Chittagong Seaport
Chittagong Airport
Export Processing Zone
Power Supply Systems
Telephone (Domestic and International)
Water Supply Systems
Coastal Embankments (122 miles destroyed)
Bridges and Culverts (50 destroyed)

Source: Official Bangladesh government figures.

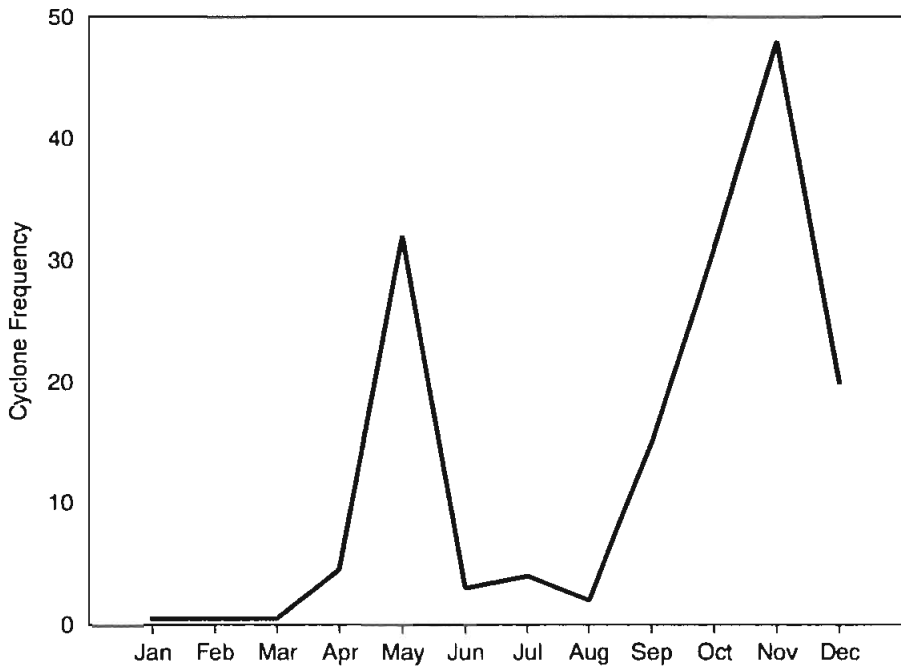
to carry hundreds of tons of relief goods. The Navy even provided lift to the remote islands for army contingents and various relief organizations.

Navy relief teams, in company strength and headed by a commander, were sent to the affected islands. They camped there for weeks and coordinated relief work. The situation on the islands was quite different from what had been expected. Most areas were waterlogged and not easily accessible. Hundreds of dead bodies and obstacles lay all around. Thousands of thirsty and half-naked



Map 2

Jerry Lamothe



Cyclones on the Bangladesh Coast 1891 - 1988

Figure 1

survivors were crying out for drinking water. Initially, much time was wasted organizing the islanders. Ideally, a good contingency plan should have already been in existence for the entire coastal belt, dividing the localities into various zones and subzones for smooth relief operations. Without a plan it was just not possible for the company commanders to pass situation reports with correct figures of casualties and survivors.

Most credit for overcoming difficulties goes to Rear Admiral M.M. Islam, ncc—a U.S. Naval War College graduate, and now the Chief of Naval Staff—for his initiative and guidance. On his advice, relief workers (including company commanders) having previous experience were selected for this operation. Tirelessly, these personnel continued helping the distressed and cleaning up areas as much as possible. Their sincerity and dedication helped to boost the morale of the poor islanders, who were organized quickly. The relief teams initially provided drinking water, cooked food for the islanders, provided medical care, and rigged tents for shelter. Once the situation was somewhat under control, they distributed food items, sank or repaired tubewells, pumped out saline water from ponds, and helped the islanders to rebuild or repair houses.

The Navy's experience in the 1985 Urirchar cyclone relief operation was very helpful, and the efforts of all the Navy members who participated in the relief work were remarkable; the survivors' needs, however, were enormous. They needed a whole season's food and immediate rehabilitation. Not only had they lost their near and dear ones, but the islanders, mostly fishermen, had lost their boats and nets, and the cultivators had lost all farming essentials. No yield of crops is possible even today, because the land became inundated with saltwater during flood tides when the embankments were washed away.

Operation Sea Angel

Bangladesh sought immediate assistance from world bodies. Many countries came forward in response to the tragedy. The United States, the United Kingdom, the People's Republic of China, Japan, India, and Pakistan were directly involved in relief operations. On 3 May, Mary C. Kilgour of the U.S. Agency for International Development (AID), and Lieutenant Colonel James A. Dunn, Jr., the U.S. defense attaché, visited the affected areas and stayed on board a BN frigate for briefings and to investigate the feasibility of American help. On 10 May, the United States responded in the form of a joint task force commanded by Marine Corps Major General Henry C. Stackpole III. The aim of the U.S. task force was to augment the relief effort.⁶

U.S. assistance reflected the necessity of using the military for humanitarian missions in addition to its primary task of defending the national interests.⁷ Almost 7,000 U.S. personnel participated in this disaster relief operation. Amphibious Task Force Three, an eight-ship force that was heading home after

Desert Shield and Storm, was sent to Bangladesh to provide emergency and mid-term relief assistance.⁸ Its units took part in the Bangladesh relief operation from 16 to 29 May. USS *St. Louis* (LKA 116) operated in the area from 29 May to 8 June. U.S. Army Black Hawk helicopters and U.S. Air Force C-130 transport aircraft also participated, to carry relief goods from the capital, Dhaka, to the port of Chittagong. Many Bangladeshi civil and military personnel were also involved in this joint effort. Bangladesh welcomed the U.S. task force, whose operation was named "Sea Angel." The British Royal Fleet Auxiliary replenishment ship *Fort Grange* also joined in the operation, under the code name "Operation Manna." U.S. ships and craft that participated in Operation Sea Angel are shown in Table 3.

The U.S. joint task force mainly transported relief items, huge quantities of construction materials, agricultural products, generators, etc., to the affected areas. It was hindered initially by a lack of awareness of the peculiar terrain and the poor living conditions in the coastal belt. However, U.S. forces, especially those personnel who directly took part in distributing relief material and medicines to the islanders and in setting up a large number of water purifying plants, soon appreciated the overwhelming extent of the problem and its logistical complications. The tremendous support facilities of the landing ships and good C³ enabled them to land quickly over 6,000 tons of food, water, medicine, and other relief supplies.⁹ They operated very effectively a number of utility and air-cushion landing craft (LCUs and LCACs) and also helicopters from the landing ships. All Bangladeshis will remember Operation Sea Angel as an example of the humanitarian service and good friendship of U.S. personnel. Above all, Sea Angel proved that joint services can operate very effectively during peacetime.

A High-Risk Zone

The greatest tragedy here is that with their increasing population and increasing shortage of land, the Bangladeshi people have no choice but to live in unprotected islands. It is sometimes very difficult to make people understand the problems such settlement will bring. The southeastern estuary is actually a death trap in the context of cyclonic tidal surges (Map 3).¹⁰ Whatever precautions are taken, it is almost impossible to stay alive unless strong shelters exist, built at a sufficient height; otherwise, even if people are well-informed they have no place to go. Shifting all the people from offshore islands to the risk-free zone in the mainland is an impossible task.¹¹

Cyclones cannot be avoided, but remedies are there. Bangladesh must prepare and implement, as a matter of national priority, a *comprehensive contingency plan* for adequate cyclone preparedness for the entire coastal belt.

Table 3
U.S. Ships and Craft Participating
in Operation Sea Angel

Amphibious Task Force Three

16-29 May 1991

USS *Tarawa* (LHA 1)
 USS *Vancouver* (LPD 2)
 USS *Juneau* (LPD 10)
 USS *Mount Vernon* (LSD 39)
 USS *Anchorage* (LSD 36)
 USS *Frederick* (LST 1195)
 USNS *Passumpsic* (T-AO 107)

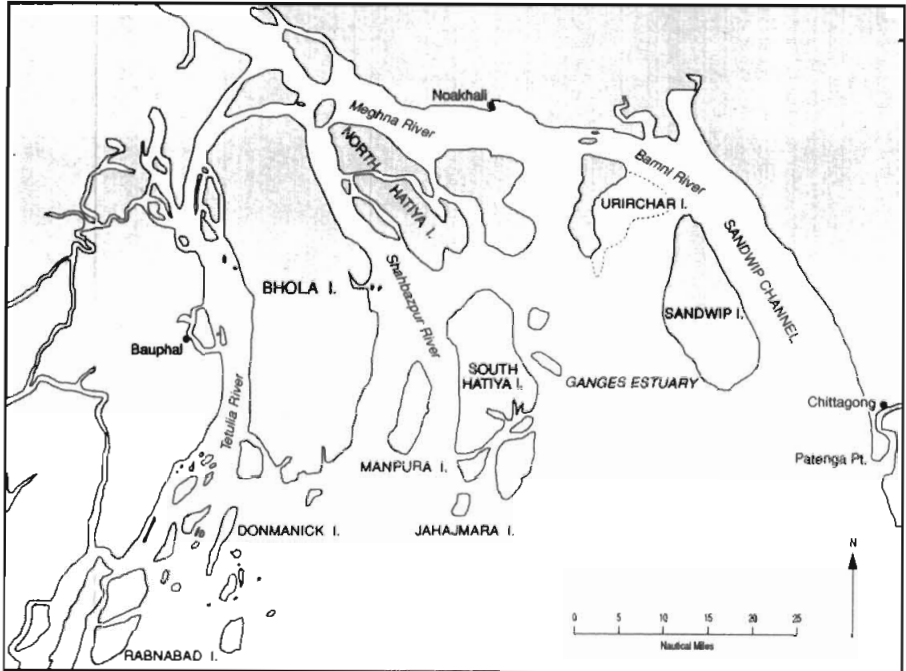
(29 May - 8 June 1991)

USS *St. Louis* (LKA 116)

Landing Craft, Helicopters, Fixed-Wing Aircraft
(Lift Capacity in Tons)

LCAC	184.2
LCU	168
LCM-8	60
LCM-6	34
LCVP	4
RH-53D Sea Stallion	5
CH-46E Sea Knight	2.5
UH-1N Huey	0.8
HC-130 Hercules	15
C-130 Hercules	19
C-141 Starlifter	32.5
C-5 Galaxy	82.5

Cyclone preparedness in the form of forecasts has developed significantly in recent years. But the necessary infrastructure to protect the people during and after storms is sadly lacking.¹² In the long-term rehabilitation program there should be at least one *cyclone shelter* (for approximately three thousand people) in each village or neighborhood; these shelters would normally be used as schools, for emergency food storage, etc. About three thousand cyclone shelters are necessary country-wide, at a total estimated cost of approximately \$3 billion. Also,



High Risk Zone
Map 3

Jerry Lemuelle

drinking water is a real scarcity after cyclones. A good-sized *pond* built for each locality may solve this problem, and their high banks would provide shelters for the cattle.

To protect crops from tidal bores, an immediate project has to be undertaken to construct *concrete embankments*, approximately thirty feet high, for the entire coastal belt and the inhabited islands. At the same time, *sheltered harbor facilities* have to be developed for each fishing village.¹³ To ease the problem of the islanders a good *water transport system* between the offshore islands and the mainland, along with jetty and other shore facilities, has to be developed in the long-term program.

The absence of adequate infrastructure and amenities causes relief work to be an even greater challenge than need be, because transportation of any kind becomes exceedingly difficult. As a part of the contingency plan, the localities of the entire coastal belt have to be divided into *zones* and *subzones*, and various civil, military, and nongovernmental organizations should be made responsible for designated areas in cyclone relief operations. This plan would also help to increase *public awareness* about cyclone preparedness and to organize the islanders quickly in time of emergency.

Time and again, Bangladesh has been beaten hollow by the ravages of nature. On every occasion, the Bangladesh armed forces have taken initiatives to
<https://digital-commons.usnwc.edu/nwc-review/vol46/iss1/5> 12

reach the doorsteps of marooned people to assist them. Their noble services over the years have been well recognized. The Bangladesh armed forces have gained considerable experience in recent disaster relief operations. Operation Sea Angel should serve them as an example for the future of joint force operation.

Good friends like the United States may not always be available during the critical period in future natural disasters. It would therefore be wise for the Bangladesh armed forces to acquire the necessary capabilities. In particular, the BN should pursue the acquisition of landing ships to solve the transportation and C³ problems. The addition of landing ships to the BN would also give it much-needed flexibility in joint operations: in providing lift facilities to the Army and other organizations, and operating helicopters with the BAF.

A country with a poor economic structure cannot build by itself the necessary cyclone shelters, arrange adequate transportation facilities, or provide other infrastructure. Therefore Bangladesh must persuade the world community that cyclones and other natural disasters are in actuality issues of a global nature. There is a fundamental message in all this: when a poor society finds itself unable to hold its own against nature's fury, it is for the rest of the world to come forward with relief.¹⁴

Notes

1. Mohiuddin Ahmad, "Not Taming Tempests but Saving Man," (Bangladesh) *Holiday*, 10 May 1991, p. 1.
2. *Ibid.*
3. (Bangladesh) *Bichitra*, 10 May 1991.
4. *Ibid.*
5. Ahmad, p. 1.
6. Gary Anderson, "Unity Rewarded in Typhoon Rescue," *U.S. Marine Corps Gazette*, November 1991, p. 90.
7. David R. Klubes, "Bangladesh Relief Effort," *Navy Medicine*, July-August 1991, p. 9.
8. Donald R. Salvage, "Operation SEA ANGEL: Bangladesh Disaster Relief," *U.S. Marine Corps Gazette*, November 1991, p. 89.
9. Klubes, p. 9.
10. Ahmad, p. 1.
11. *Ibid.*, p. 5.
12. *Ibid.*

13. Tidal bores and surges occur during cyclones when very high walls of onrushing seawater suddenly hit and flood coastal regions. Surge height is always well above the normal tidal range, and the water pressure is unimaginably tremendous. Damage and loss of life are severe during cyclones that are accompanied by strong tidal bores, as one can easily appreciate from Table 1. Only strong structures survive such powerful surges. Poorly built houses, and crops, are always damaged by any tidal bore. I have very bitter experience in this respect of the 1991 Super Cyclone: its tidal surge was as high as twenty-seven feet, and I estimate the surge speed to have been as high as fifty to sixty miles per hour—enough to destroy any structure. It flooded completely all islands in the high-risk zone and also coastal areas as far inland as four or five miles, causing severe loss of life and damage to property.

Embankments should be at least thirty feet high above mean sea level, since the most severe tidal surges rise to that height. A 122-mile-long coastal embankment exists and is thirty feet high; most of it, however, has now been washed away. To protect cyclone-prone areas, concrete embankments are (in conjunction with strongly built cyclone shelters) the only answer. In the 1991 cyclone, most of the inhabited islands had earthen embankments, and most of these were destroyed.

Only the most rudimentary harbors and jetties exist in the islands and coastal areas, where millions of people survive only by fishing and other seaborne trades. In a long-term program, harbors should be developed with jetties and sheltered basins to protect the boats.

14. Syed Badrul Ahsan, "Global Cooperation Needed to Save the Casualty," (Bangladesh) *Friday*, 10-16 May 1991, p. 8.

Ψ

To us to whom dreadful things have been done, kindness in all possible things
is of great importance.

Ernest Hemingway
The Fifth Column, 1938

Archbishop, secure and assured of your fate, unaffrayed
among the shades, do you realise what you ask, do
you realise what it means
To the small folk drawn into the pattern of fate, the
small folk who live among small things,
The strain on the brain of the small folk who stand to
the doom of the house, the doom of their lord, the
doom of the world?

T.S. Eliot,
Murder in the Cathedral

But do we in any profession cease to go to school? We may not attend classes,
but we must always, up to the last, be in school. And in no profession is this
more true than in the profession of arms.

Admiral Henry A. Wiley, U.S. Navy, Ret.
An Admiral from Texas, 1934