

Dr. A. M. Choudhury

Natural Catastrophes:

Bangladesh currently ranks as one of the world's foremost disaster-prone country. The situation is aggravated, all the more by its being the most densely populated country in the world. Environmental disasters like tropical cyclones, storm surges, floods, norwesters, tornadoes and droughts ravage the country almost every year. During the period 1960-2000, the country was devastated by forty severe cyclones of varying intensities. One of the severe ones in recent times was that of 29 April 1991, when material damage was to the tune of about 2.4 billion US dollars and human casualty of about 1,40,000 lives. On a previous occasion of a similar catastrophe in 1970, about half a million lives were lost. The Bangladesh flood of 1988 caused economic loss to the extent of about one billion dollar. The loss due to the 1998 flood of Bangladesh has exceeded that due to any previous flood and may be around two billion dollars. The flood of 2004 was also similar to 1998 flood though its duration was less. And flooding in Bangladesh is a perennial problem. Every year Bangladesh is also affected by norwesters and tornadoes causing loss of lives and immense damage to property. Though Bangladesh is affected by floods frequently, it is not spared from drought which occurs in Bangladesh occasionally causing extensive damage to crops. Bangladesh also lies in the seismic zone and hence comes under the risk of earthquakes.

2. TROPICAL CYCLONES

The tropics can be regarded as the region of the earth lying between 30°N latitude and 30°S latitude. All the tropical seas of the earth with the exception of the south Atlantic and east south Pacific give birth to deadly atmospheric phenomena known as tropical cyclones. On the average, 80 tropical cyclones are formed every year all over the globe. Bangladesh is a part of humid tropics, with the Himalayas in the north and the funnel shaped coast touching the Bay of Bengal in the south. This peculiar geography of Bangladesh causes not only the life giving monsoons but also catastrophic ravages of cyclones, norwesters, tornadoes and floods. The Bay of Bengal is an ideal breeding ground for tropical cyclones. A tropical storm does not form if the sea temperature is less than 27°C. A condition which is satisfied in the Bay of Bengal most of the time.

3. FLOODS

The primary cause of flood in Bangladesh is rainfall in the catchments areas of the rivers of Bangladesh. Situated in the monsoon belt with the Himalayas in the north, Bangladesh falls in the region of very heavy rainfall. About 80 percent of the rainfall occurs during the 5 month period from May to September. The annual rainfall varies from about 60

inches in the western part of the country to about 200 inches in the north eastern part. At Cherapunjee in Assam very near our Sylhet Border the average annual rainfall is about 500 inches which is the highest in the world. But the average rainfall in Bangladesh generates annually only 100 million acre feet of water whereas 1100 million acre feet of water comes from outside Bangladesh. Thus about 90 percent of the water carried by our river system, the Brahmaputra, the Ganges, the Meghna and other smaller rivers is brought from outside the country. These rivers carry water from an area of about 600,000 sq. miles of which only 7.5 percent lies in Bangladesh. Water enters in Bangladesh through three major channels but the discharge takes place through one major channel. The river system has evolved to carry the normal flow of water generated in the catchment area. Whenever the inflow of water is greater than the carrying capacity of the rivers (and this happens very often) flood results. The magnitude of the flood depends on the magnitude of excess water that is generated.

4. NORWESTERS AND TORNADOES

Though cyclones are the most devastating storms affecting Bangladesh, there are other kinds of storms which affect Bangladesh. Of these, mention may be made of Norwesters and Tornadoes which cause lot of destruction of lives and property.

Norwesters come mainly from the north westerly direction (and hence the name) and are land based. They are a very common phenomenon in Bangladesh during late Chaitra and Baishak months and are known in Bengali as Kalbaishaki.

Another kind of storm very similar to a tropical cyclone but is of much smaller dimensions and very destructive is known as a Tornado. A tornado is also a low pressure region where strong winds blow around a centre in an anticlockwise direction in the northern hemisphere and clockwise direction in the southern hemisphere. But unlike a cyclone a tornado develops on land. A cyclone lasts for days whereas a tornado lasts for a very short duration.

A tornado is formed because of the interaction of two air masses, one moist and warm air and the other dry and cold air resulting in extreme form of instability. Tornadoes often form a series and travel in almost parallel paths. The whole tornado moves at a speed of 25-30 miles an hour, whereas the maximum wind in a tornado could be 300 miles/hr.

Since the horizontal diameter of a tornado is so small and it forms so suddenly that it is difficult to recognise a tornado either in the surface weather map or in the satellite picture and hence forecasting of a tornado well ahead of occurrence becomes very difficult.

5. DROUGHT

Though Bangladesh is a land of abundant rainfall, drought is very familiar to us. It is difficult to define the term drought precisely and hence any definition is rather subjective. It simply means lack of water and may be defined as lack of sufficient water to meet requirements. Thus, drought can be of various kinds according to various requirements. Some of the droughts in Bangladesh seem to be related to El-Nino phenomenon.

6. EARTHQUAKES

There is ample evidence from various geological studies that the earth's crust is in motion both horizontally and vertically. The modern theory of this aspect of the earth's surface is called plate tectonics.

Earthquakes occur in regions of the earth's crust which are undergoing deformation. As the region is deformed, energy is stored in the rock in the form of elastic strain. This continues until at some point the accumulated strain exceeds the strength of the rock. Then fracture or faulting occurs. Of the theories of earthquakes, perhaps the elastic rebound theory is the most successful one. This states that opposite sides of the fault rebound to a position of equilibrium and the energy is released in the form of heat, in the crushing of rock and in the vibration of elastic waves. The waves or vibrations which are generated at the moment of fracture produce the shaking which is experienced in earthquake.

The major earthquakes that have affected Bangladesh since the middle of the last century are the Cachar Earthquake of January 10, 1869, the Bengal Earthquake of July 14, 1885, the Great Earthquake of July 12, 1897, the Srimangal Earthquake of 8th July, 1918, the Dhubri Earthquake of July 3, 1930, the Bihar-Nepal Earthquake of January 15, 1934 and the Assam Earthquake of August 15, 1950. Of these, only the Bengal Earthquake of 1885 and the Srimangal Earthquake of 1918 had their epicentres in Bangladesh.

The damages caused by these shallow focus earthquakes however were restricted to narrow zones surrounding the epicentres. The greatest damage was caused by the 1897 earthquake. The tremors were felt all over the country and severe damages were caused in the northern parts of Sylhet and Mymensingh districts and in the eastern part of Rangpur district. The 1950 earthquake was also felt all over the country though no damage was reported.

Thus we see that Bangladesh is not entirely free from the menace of earthquakes. Specially the northern belt of greater Sylhet, Mymensingh and the eastern part of Rangpur Districts could be vulnerable. Bangladesh should develop adequate facilities for detection and study of earthquakes.