COMMUNITY-BASED EARLY WARNING

Minimising flood risk and damage

SYED SADIQUR RAHMAN

Simplification of the flood forecasting warnings system has generated great interest about the matter among the people of all walks of life. Occasionally they could listen to different early warnings through Radio and TV previously too, but those were almost meaningless to them for mainly two reasons. Firstly, all of them do not have equal access to these electronic media and secondly, the language of the warning messages was not easily understandable to them.

LIKE on many occasions in the past, Bangladesh suffered colossal loss and damages, particularly in terms of assets, due to flood this year too. Unless some specific and effective measures are adopted the situation is likely to continue posing a permanent threat to our economy. Bangladesh, the largest deltaic region in the world, is located at the downstream end of two of the world's largest rivers, the Ganges and the Brahmaputra (Jamuna), both originating in the great mountain range of the Himalayas. The origin of the third longest river of the country, the Meghna, is also outside Bangladesh. About 93 percent of the catchment area of these rivers lies outside of the country's boundary, mainly in India. During the rainy season waters from a zone with an area equivalent to eleven times of the total area of Bangladesh flows into the Bay of Bengal through our territories making the country permanently prone to floods.

We cannot prevent floods with our currently available resources, but we can cope with it and minimise the losses by adopting different measures. The initial results of an USAID funded pilot project on flood warning, now being implemented in two selected upazilas of the country, indicate that timely warning followed by preparedness measures may play an effective role in reducing losses due to flood. The project has been briefly discussed later.

Living in Bangladesh without getting prepared to cope with flood means exposing yourself to a formidable danger, which has the potentiality to cause extensive damage to lives and properties, and thereby inviting a series of unbearable sorrows and sufferings. Flood is nothing new to the people of Bangladesh. Our forefathers had to live with flood and we are also destined to live with it as no human power can resist or prevent natural calamities. Moreover, in view of the present economic condition of the country we cannot even think of any structural measures to cope with flood... The best way to survive and overcome the sufferings, being posed by the occurrence of flood almost every year, is to build a capacity to cope with flood and get well prepared much before the advent of flood. The equation is very simple, the greater is our coping capacity and preparedness, the lower is the risk and scale of damages.

But for getting prepared against a hazard or disaster, one must get a clear idea about its strength and velocity and the actual time when it would come and hit. This is hundred percent true about flood in Bangladesh. If the people can have a clear idea about the time of occurrence of flood and the velocity with which it would hit, it would be possible to adopt preparedness measures right on time and successfully cope with it. In this case non-structural measures can be highly effective in mitigating the damaging impact of flood and that flood forecasting and warnings, in view of their favourable cost-benefit ratio, are the most appropriate means to achieve this goal.

Now the question naturally arises if we are doing anything practically in this field and if so what have we done so far and what can we do in the coming years in achieving a permanent solution to this old and lingering problem. We cannot leave this problem unsolved any more as it is a question of life and death for us. We must act now and act with all seriousness. Fortunately a beginning has been made in this field by undertaking a USAID funded pilot project titled 'Community-based Flood Information System (CFIS)' now being implemented in two small areas comprising about 650 selected households under the Dawlatpur and Nagarpur upazila of the districts of Manikgonj and Tangail respectively. Considering the importance of the subject, the project deserves a bit of elaboration to throw some light on the progress of implementation and the success achieved so far towards reaching the project goal. Many things towards finding a solution to this problem would depend on the success or otherwise of this project.

The five-year pilot project funded by the USAID through the River Technology Institute (RTI) of the United States was initiated in 2003 and the implementation work would be completed by the end of the current year. The rationale behind selecting the households from the above mentioned two upazilas of two districts is that these areas are inundated every year even during normal flooding... The project is being implemented jointly by the Bangladesh Disaster Preparedness Centre (BDPC) and the Centre for Environmental and Geographic Information Services (CEGIS). BDPC is specially responsible for disseminating the flood warning at family and community level based on the information provided by the CEGIS.

For general information of the readers it may be noted here that the FFWC under the Bangladesh Water Development Board (BWDB) under the Water Resource Ministry was established immediately after the independence for dissemination of flood forecast and warning nationally and till now it is playing an important role in this field. The FFWC disseminates warning messages mainly through the electronic media which is still not within the reach of all the grassroots level people who are extremely poor. The other problem inherent in this system is that it is not possible on the part of the FFWC to disseminate area specific flood warning. Moreover, it is difficult for the common rural people to properly understand and interpret the warning messages disseminated centrally. As a result most of the people of the highly flood prone areas cannot derive any benefit out of those warning messages. So, they are still compelled to develop their cultivation and harvesting plan on the basis of their indigenous knowledge and expertise.

The implementation strategy and modus operandi developed by BDPC seems to be effective and pragmatic. In the implementation process the participation of all the vulnerable people, local government bodies, local NGOs and national level expert organisations has been ensured. In designing the project due consideration was given to the issues like sustainability, affordability and participation of all the stakeholders. The most important thing is that BDPC has made the dissemination system most easy to make it understandable to all the grassroots people irrespective of their level of education.

By using flags of only two colours, blue and white, the messages are being disseminated and these are well received. Blue is used to indicate the increase in the water level while decrease in the water level is indicated by using white. The maximum number of flags, either blue or white, is two only. One blue flag means water level may go up by 'half hand' (9"), while two flags would mean increase by one hand (18"). Similarly, white flag would mean decrease in the same way. No flag means that status-quo will prevail. This warning is valid for 24 hours.

Four flag operators have been identified by the local stakeholders in consultation with BDPC personnel for the project intervention area and they disseminate the messages received from the CEGIS directly or through the UDMC. The availability of mobile phones in the rural areas has made the dissemination process easy. All the change agents (community trusted people like religious persons, school teachers etc.) responsible for the job, fortunately, have mobile phones while two mobile sets have been given, one each to UzDMC and UDMC, by BDPC making the system smooth and leak proof.

People may also get hour to hour development through the flood marker installed at different key points under the project. In the flood marker, three colours are used -- green, yellow and red. Green would mean that the situation is normal, yellow would indicate moderate danger and urgency of adopting preparedness measures and the red colour would indicate great danger and need of immediate action.

Simplification of the flood forecasting warnings system has generated great interest about the matter among the people of all walks of life. Occasionally they could listen to different early warnings through Radio and TV previously too, but those were almost meaningless to them for mainly two reasons. Firstly, all of them do not have equal access to these electronic media and secondly, the language of the warning messages was not easily understandable to them. So, in most of the cases they, even on receipt of the messages, remained unprepared as they ignored the messages.

Now, in the intervention area of the pilot project, the situation is quite different. The community receive the messages from their own people, their neighbours. So, there is no credibility or communication gap. They can see the warning flag, hoisted by one of their neighbours, sitting at their own homes and they also know the meaning which the flag carries. This qualitative change in the language and method of the dissemination system has brought

about a change in the mindset of the local community. As the flood season approaches, the people eagerly keep watch on the situation and remain alert about the flag. This change in the mindset of the people, their interest to know and act accordingly, is one of the major successes of the project.

Our past experience is that the generalised flood warning messages, in most of the cases, prove less effective or not effective at all as people are psychologically less responsive to those messages. Proximity plays an important role in the field of successful and effective communication. As the generalised messages are not area specific, they logically cannot create the desired level of interest among the people of a particular area. Naturally, the people would pay maximum heed to an announcement or warning message if that is directly related with their own area or locality. In view of this accepted reality, the warning message dissemination strategies and mythologies, now being practiced in the project intervention areas, deserve replication in other flood prone zones of the country.

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GLOBAL WARMING

Why must the poor suffer for the fault of the rich?

DR. MD SHAHJAHAN ALI

GLOBAl warming refers to a rise in the average land temperature around the earth. The Intergovernmental Panel on Climate Change (IPCC) concludes, "most of the observed increase in globally averaged temperatures since the mid 20th century is very likely due to the observed increase in anthropogenic green house gas concentration" which leads to warming of the surface and lower atmosphere by increasing the green house effect. IPCC predicts that global temperatures are likely to increase by 1.1 to 6.4ºC (2.0 to 11.5ºF) between 1990-2100.

In recent past, global observations have provided clear evidence of climatic changes resulting from anthropogenic activities. According to a report from World Watch Institute (1992), the earth's surface was the warmest in 1990. Six of the seven warmest years on record have occurred since 1980. Global warming may have brought severe consequences for Bangladesh with the rise in sea level by up to one meter by the turn of the next century and, as is being predicted, between 10-17 percent of our total land mass will be submerged. More than ten million people will be worst sufferer. Forest agriculture, infrastructures, coastal aquaculture and flora and fauna would be severely damaged.

Among the other predicted consequences of global warming are a rise in the frequency and intensity of tropical cyclones, increase in flooding severity and greater desertification in our northern districts. Now the question arises naturally in our mind regarding the causes and impact on environment irrespective of the countries of the world and possible solutions to be identified to curb this burning problem. There are several green house gases responsible for rapid increased in temperature. These are found due to fossil fuels, industrialisation and agricultural processes caused by humans, and natural activities and other gas emissions.

Carbon dioxide is the most common thought of as a green house gas directly involved in retaining about half of the atmospheric heat. Its production primarily depends on the burning of fossil fuels and deforestation accompanied by burning and biodegradations of biomass. As soon as the concentration of this gas increases in the earth, the temperature rises resulting in melting of ice causing flood and a dramatic rise in sea level. Roots of rice plants transport methane to the atmosphere. According to an estimate around 100 millions tonnes of methane are released annually. Methane (CH4) is 25 times more effective than CO2 in absorbing the outgoing infrared radiation. It produces in atmosphere carbon monoxide (CO) as an intermediate oxidation product influencing concentration of atmospheric hydroxide radicals and ozone.

CFCs (Chloro Fluoro Carbons) do not occur naturally and are totally man made. This green house gas built up in the atmosphere traps heat. This is the major cause of global warming. Energy from the sun heats the earth surface and in turn heat energy is radiated back into space. Green house gases trap some of the outgoing energy to retain heat and thus heat the planet. If these natural process would not have happened the global temperature would remain lower than it is now. This heat trapping phenomenon is known as green house effect.

With glaciers melting the world over and average temperatures becoming higher year on year global warming is well and truly upon us. The IPCC has recently concluded that this is primarily due to human activities. Developed nations are well equipped to face this type of disaster while developing nations fail to realise their bad infrastructure and poor disaster management practices which claim thousands of lives. The rate of global warming and sea level rise during this century could be devastating. Estimated land losses range from 0.05 percent for Uruguay to about 80 percent for the Majuro Atoll in Marshall islands.

A 1m (3 feet) sea level rise would affect 6 million people in Egypt, with 12 percent to 15 percent of agricultural land lost; 13 million in Bangladesh, with 16 percent of national rice production lost, and 72 million in China. Global warming is at the root of this increase as the earth's climbing temperatures melt the arctic sea ice and Antarctica. Around the world, ice sheets and glaciers are melting at a rate unprecedented since record keeping began. Changes in the area and volume of two polar ice sheets in Antarctica and Greenland are intricately linked to changes in global climate and could result in sea level changes that would severely affect the densely populate coastal regions in earth.

Three major impacts of global warming on Bangladesh may be categorised as climate change, sea level change and changes in the pattern of distribution and density of population. Global warming will raise the sea surface temperature

more than what it is now, thus increasing the possibility of cyclone occurrences. Bangladesh has been experiencing catastrophic cyclones. A warmer climate by increasing the frequency of natural hazards as floods and cyclones will further aggravate such situations and negate the development efforts of the country.

Some effective remedial measures need to be implemented as quickly as possible in order to reduce global warming and protect Bangladesh from further degradation due to emission of green house gas. The aims and objectives of the government should be to discourage deforestation and create mass awareness for a forestation in every part of the country. Emphasis must be given to crops which are most efficient in fixing carbon dioxide into bio-mass especially perennial tropical crops such as sugarcane and trees. Production of wetland rice in tropical countries may be discouraged in favour of dry land cereal production for human consumption. A massive programme is needed to promote strategies supplementation of ruminant diets in third world countries to optimise functions which lead to reduce methane and carbon dioxide production.

Maximum support should be given to research and development efforts which will enable fossil derived fuels to be replaced by biomass derived fuels like biogas. High cost systems of food production and other high fossil fuel dependent activities in industrial countries should be discouraged and discontinued on an emergent basis. The international agencies and government and non-government organisations can play an important role in ensuring the adopted polices for reducing the evolved green house gases. On December 11, 1997 in Kyoto, Japan 150 nations agreed in principle to the plant urging thirty-eight industrial nations to must reduce their emissions of green house gases to an average of 5 percent below 1990 levels by 2012. Although the average cut must be to only 5 percent below 1990 levels, for a country like the United States with steadily rising emissions, the Kyoto agreement would require cuts as great as 30-35 percent below.

China and India are asked to set voluntary limits. It is a matter of satisfaction to note that President Bush of USA has agreed in principle to hold a meeting with developed and developing countries to come to a consensus on the reduction of green house gases. So, it is expected there will be less possibility of increased temperature on the earth surface and the poor developing countries could get a relief from this impending danger and consequently these countries too would strictly follow the international laws with a view to safeguarding environment from pollution and degradation of sorts.

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War over water!

PALLAB BHATTACHARYA

THE next world war, so goes the saying, will be fought over waters. Imagine the huge glaciers in the Himalayan mountains melting under the impact of global warming, leading to fall in water levels of the mighty Ganges, Brahmaputra and other rivers, drought and severe water scarcity for millions in India, China, Pakistan and Bangladesh.

The picture may be too scary and seem like a doomsday piece but could turn into reality if prompt steps are not taken to tackle global warming caused by greenhouse gas emissions.

Indian Prime Minister Manmohan Singh is concerned over the rapidly melting glaciers in the Himalayas and his worry came out in the upper house of Parliament recently. "If the glacier system in Tibet and Indus rivers melts, then it will have a catastrophic effect because of the linking of Tibet and India."

Singh said he had taken up the issue with Chinese President Hu Jintao and emphasised that a joint study should be held to understand the dynamics of the water system.

An inter-governmental panel on climate change has found that Himalayan glaciers are melting faster than the glaciers in any other part of the world. The Chinese Academy of Sciences also found that glaciers in the Tibetan plateau are shrinking quickly.

Indian Minister of State for Environment and Forest Namo Narayan Meena said the melting of the glaciers would ultimately trigger more droughts, expand desertification and increase sand storms and disrupt water supply as many rivers originate from the Himalayas.

Several rivers originating in the Himalayas flow through India, Nepal, China, Pakistan and Bangladesh.

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AIR TRAVEL AND CLIMATE CHANGE

Concern over aircrafts' carbon footprint

MOHAMMAD SHAHIDUL ISLAM

RECENTLY, the tourism industry has drawn the attention of world environment leaders regarding tourism and climate change. This has been echoed in aviation, a part of the tourism industry. Aviation experts around the world believe there is just one way to reduce aircraft's carbon footprint: stop flying. It has been logical that, people cannot live without luxurious aviation and at the same time the industry is booming, swelling greenhouse gases just as the climate-change urgency starts to crunch. Time is due, it has to be balanced right back.

Climate experts, aircraft engineers and scientists around the world are straight away judging that technology, taxation, and rationing -- or a combination of all three -- is obligatory to discontinue aircraft from overbalancing the climate-change equation. The statistics look threatening. Aviation currently puts in about 3 percent of global carbon emissions, but air travel is mounting

at some 5 percent a year, meaning numbers of air passenger kilometers will triple by 2030. Boeing guesstimates that aircraft numbers will double to more than 30,000 in little more than a decade. Added to this is the complication that aircraft does not just give off carbon dioxide but nitrous oxide, considered to have at least doubled the impact of CO2, and condensation trails, which also may contribute to global warming. Aircraft manufacturers are all the time improving design of bodywork and engines, deriving greater fuel efficiency that reduces carbon emissions.

A British study group has recently started to look at a range of technological and other factors -- including aircraft design, sustainable fuels, and open rotor-propelled aircraft -- that reduce fuel burn, to assess how they could alleviate aircraft pollution. Boeing last month unveiled the 787 Dreamliner, which it says will use 20 percent less fuel than similar-sized aircraft. The UN International Panel on Climate Change also states that constant improvements have made planes 70 percent more efficient than they were 40 years ago. Another 40-50 percent improvement can be expected over the next 30 years. The problem, climate experts think, is that current projections indicate that air travel is set to grow 400 percent in the same time period.

Scientists are unconvinced, though, of the potential for running jets on biofuels. Then there is the area of land required to produce fuel in sufficient volume. Already, environmentalists are concerned at the way rainforest is being destroyed to make way for palm oil, a biofuel crop. Given the inadequate prospects for a technological solution, a growing body of opinion is arguing for efforts to manage demand for air travel. What matters is the next 10 to 15 years, and technology can do very little in that time frame. The principal issue becomes how to reduce the rate of growth of air travel.

Experts have pointed to several options. Europe is graphing to include aviation in its emissions-trading plan starting in 2011. The hope is to place an instance to the rest of the world, chiefly China and India, where aviation growth is rolling on, that concerted efforts can make a difference. Airlines will get a limited number of CO2 permits that can be traded; top polluters will have to buy additional permits, hurting their bottom line. The idea is to give airlines motivation to operate cleaner aircraft; higher ticket prices may take place as well, reining in demand. But experts have noted that caps will be set fairly high, weakening the imperative; ticket prices are anticipated to rise by only a couple of euros, if that. Consumer behaviour may thus be little affected.

It can be said that without a radical price change, it will be impossible to change the mind-set of a generation that thinks little of hopping $20 flights for weekend pursuits. Some have lobbied for cigarette-style health warnings on ads for air travel and long-distance holidays, but it has been argued that the only way to transform behaviour is to hit the wallet.

But it is not just about leisure travel. Business travel makes up, by some estimates, about 40-50 percent of all air travel. One element of the British Omega project is a study that looks at how business can reduce its aviation carbon footprint. It involves persuading businesses to gauge the carbon they consume, choose flights that are not just the lowest cost but are least environmentally damaging, all should use rail where possible, and make greater use of videoconferencing and webcast solutions.

All should aim at coming up with a range of practical tools that will help companies start managing their carbon consumption. One company in UK, Price Water house Coopers has introduced recently an internal 'carbon budget' whereby its 1,000 top travelers must reduce their CO2 footprint by 20 percent.

To be sure, some aviation specialists believe that personal carbon budgets -- rationing -- may be the only way out. It is too late for voluntary mechanisms in the aviation industry. Carbon allowances are the only fair way to deal with this. Technology, taxation, and rationing are all being justified as feasible solutions.

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