

Economic impact of floods in Bangladesh

Hossain, Mosharaff

1988

Hossain, M. (1988). Economic impact of floods in Bangladesh. In Economic perspectives of SAARC : Dacca, Bangladesh, 19-24 November 1988. Singapore: Asian Mass Communication Research and Information Centre.

<https://hdl.handle.net/10356/102808>

Economic Impact Of Floods In Bangladesh

By

Mosharaff Hossain

A Note on the Economic Impact of
Floods in Bangladesh

8

- Mosharaff Hossain

Introduction

Natural disasters are endemic in Bangladesh. Of these natural disasters the most frequent and devastating to the life and property are floods, cyclones, storm surges and tidal bores. Floods occur every year primarily due to monsoon rains that fall into the entire Ganges-Brahmaputra-Meghna basin between June and October. Flash floods may, however, appear in the Sylhet region as early as the months of April and May.

Floods can be viewed as inundation by overbank spills due to drainage congestion, rainfall run offs and storm-tidal surges. In Bangladesh drainage congestion arises not so much because of high precipitation within the country but mostly due to heavy rainfall and flow of water from outside. Only 7.5 percent of the total drainage area of the three rightiest rivers in the world which flow through Bangladesh-Brahmaputra, Ganges and Meghna, lies within the country. Of the 1200 million acre feet of water which flow through the river systems in Bangladesh, about 400 million acre feet originate from outside. Most of this vast amount of water passes through the lower Meghna into the Bay of Bengal during the months of June, July, August and September. Inadequacy in the drainage system leads to back water effect, congestion in water flow and over bank flooding.

Normally about 2.6 million hectares of land surface are inundated every year. During more severe floods, the extent of flooding may reach over 5.2 million hectares. Recent estimates show that more than 50 percent of the total land area of Bangladesh (about 14.4 million hectares) is vulnerable to floods of one kind or another. The flood depth to which the land is normally inundated range from 30 cm to 2.5 m.

Floods and Crop Production

The yearly inundation affects the economy and the society in many ways. But before embarking on an analysis of these effects it is important to point out the distinguishing characteristics of Bangladesh. First, it is an active delta where nearly 85 per cent of the people reside in the rural areas. Secondly, it is the most densely populated country in the world and about 50 per cent of the total domestic output is obtained from the agricultural sector. Thirdly, rice, a semi-aquatic crop, dominates the crop production sector. The gross cropped area amounts to about 33 million acres of which rice cultivation alone accounts for about 25 million acres. Fourthly, flood protection measures have been undertaken by the government since the fifties. But given the enormity of the problem, the incidence of flooding remains more or less unchanged.

Because of the predominance of rice cultivation in the economic life of the rural people, the timing and the location of flooding are important factors for consideration. Three rice crops are grown in Bangladesh - Aus, Aman and Boro. Both the broadcast and the transplant Aus rice is sown in March-April and harvested in July-August. The planting of the two types of Aman - Broadcast and Transplanted occur at different time. The Broadcast Aman is sown in the fields in February-March and is harvested in November-December while the Transplanted Aman is first grown in seedbeds and in transplanted in July-August and harvested in November-December. The Boro rice is sown December-January and harvested in April-May.

Of the total rice production of about 15 million tons in Bangladesh about 11 million or 73 percent while the rest 4 million tons are obtained from Boro cultivation. Excepting for the Sanger-shaped

depression in the Sylhet Haor areas where Boro is the principal crop, normally the crops grown between November and May including Boro rice are not subject to flood threats. Floods, however, appear as a major threat for crops grown in summer and autumn such as Aus and Aman rice and also jute.

Aus rice is grown on about 3.20 million hectares of land of these only about 0.65 million hectares are not subject to flooding. But the rest 2.58 million hectares are vulnerable to flooding. Aus plants grow up to a height of between 0.9 and 1.2 metres. If the water level in the rice fields, where Aus is grown, goes up more than 0.75 metres as a result of floods after the plants have grown to their full length, the chances of crop damage are considerable.

Aman is the most important rice crop in Bangladesh. Aman is grown in about 6.07 million hectares of which about 1.42 million hectares are under Broadcast on Deep water Aman and the rest 4.65 million hectares are under Transplanted Aman. The plant size in the case of Broadcast/Deepwater Aman varies from 1.8 metres to 6.0 metres while in the case of Transplanted Aman thus is between 0.9 to 1.1 metres. Normally Broadcast/Deepwater Aman is not affected by floods. This is because the Deepwater Aman can grow along with the rice in the water level and remain above the water so long the flood water does not rise above 0.3 m. a day. Transplanted Aman is grown in 1.2 million hectares which are liable to flooding. The rest 2.2 million hectares where Aman is grown are high lands and are not vulnerable to floods.

Jute is also sometimes affected by the on-guch of flood water. Jute plants grow between 2.4 metre and 3.6 metres in height. The average height is about 3.0 metres. About 40 per cent of jute growing area is vulnerable to flooding. Given the crop calendar and

the area under the different crops in the country, the threat of flood remains a major source of uncertainty in agricultural crop production in Bangladesh. If the water depth does not go up more than 0.3 metres in July-August, the chances of crop damage are rather low. In August-September, the safety margin for the size of water level may be considered to be after 0.45 metres. In September-October, an increase of water level in the fields upto 0.75 to 0.9 metres is unlikely to cause serious damage to crops. While considering flood damage to crops it is necessary to take into account the timing of the arrival of the flood water, the duration of such water in the fields, the sediment content of the water and the rapidity with which the water goes up. The crop is destroyed only when they are completely submerged under flood water. In the case of Aus rice, if the flood water is clear and the water recedes within five days serious crop losses can be avoided, but not with highly silted water.

It is important to remember that the floods are not only a curse but can also be a boon. Floods caused by waters carried by the rivers Brahmaputra and Ganges mean silt deposition in the depressed areas. Such silt deposits improve the fertility of the soil. The use of chemical fertilizers in the country is still very low. But despite continuous cultivation, the soil fertility in Bangladesh has not declined dramatically over the years. This is because "nitrogen fertility of Bangladesh's flood plain soils is provided by biological activity in the floodwater itself". One of the most noteworthy impact of silt deposition in Bangladesh relate to yearly subsidence in the southern areas of the country. Each year the level of land in the estuarine areas goes down by about an inch through the natural process of soil compaction which takes place in newly formed lands. Silt deposition on these lands, helps

to keep the level of land high enough to prevent encroachment of sea and help the formation of new land.

Analysis of the Economic Impact of the Floods

It is very difficult to systematically analyse the economic consequences of floods because no studies have yet been conducted covering all aspects of the effects of floods of all the flood-prone areas of the country. A one shot survey of some selected flood-prone areas of the country was conducted by me and some other colleagues in 1985. The present note is based on the results obtained from this survey.

First, our survey showed that the family size of the flood-prone areas was somewhat smaller than the flood-free areas of the same region. Sex distribution is also found to be different between flood-prone and flood-free areas. Another interesting feature is that while in Bangladesh as a whole, adults above 16 years constitute 51 percent of the population in the flood-affected areas they accounted for more than 57 percent of the sample population. This can only mean that many people in these areas prefer to keep their women folk and children in flood-free areas while the adult male members live in flood-prone areas because they believe that they can cope with floods better than women and children. Whether recurrent natural disaster; motivate people to have fewer children or not could not be clearly ascertained from our survey. But fertility rates in flood-prone areas are likely to be somewhat lower than flood-free areas because of separation of family members.

Secondly, our survey showed that crop losses were an endemic feature of the flood-prone areas. Floods do not occur in all the flood vulnerable areas of the country every year, but even where

chances of occurrence of flood are high, people plant some crops in the hope that at least some of the crops may evade the ranges of floods. People continue to cultivate their flood-prone lands every year despite losses because they do not possess alternative opportunities of earning a living. It is extremely difficult to prepare a dependable estimate of yearly crop losses for the country as a whole. But estimates prepared by various experts show that these losses range between 1 to 2 million tons a year. Normally forecasts about the extent of crop losses are found to be somewhat exaggerated. This is because of the difficulty of differentiating between the wholly and the partially lost crops until the flood waters have receded completely. Moreover, in many cases, if the floods occur early, the peasants try to replant rice in the flood devastated areas in the hope of getting some crops for survival until the next cropping season. Crop losses invariably mean more food imports. These imports are financed mostly by the food aid donors. In times of severe flood and crop losses, the government has to import grains with own foreign exchange earnings or with the help of commercial credit. Floods make the people increasingly more dependant on government transfers, NGO relief activities and on aid donors. The governments become more vulnerable to donor pressure as the 1974 flood showed that it can lead to mass starvation and famine.

Thirdly, floods not only lead to food shortage but it makes the peasantry unwilling to invest their resources for raising agricultural productivity. Peasants all over the world are found to be risk averters. This is because few of them are able to survive if there are crop losses excepting with the help of government subsidies. The natural risk aversion tendencies of the peasants are made even stronger by recurrent floods. Bangladesh is the most

densely populated country in the world with the lowest land-man ratio, excepting for city states like Singapore, Hongkong etc. The total cultivable land is more than 21 million acres or 8.5 million hectares. There are practically no cultivable waste lands in the country with a land productivity of less than 2 tons per hectare and a domestic ringout of about 3% the only hope for development lies in raising fields. This calls for investment in agriculture by both the government and the peasants. The government has adopted various measures during the last few decades to raise agricultural productivity. But unfortunately the rate of growth of agriculture in the eighties remains lower than that of population necessitating increasing imports of grains. Unless controlled conditions are created in agriculture, most notably through flood protection measures the peasants can not be persuaded to invest their own funds and achieve technological transformation in agriculture.

Fourthly, floods affect the fortunes of the rural poor more adversely than those of the affluent sections of the rural population. Crop losses and decline in the opportunities of earning an income during floods and in the post-flood situation mean that the small and the marginal peasants are obliged to borrow both for survival until the harvesting of the next crop and also to meet the costs of cultivation of crops. Income earned from the cultivation of small plots of land by the poor peasants can never yield a surplus over the consumption needs of the family. The small and the marginal peasants are thus rarely able to repay the loans incurred from the rural money lenders at exorbitant rates of interest. Borrowing thus inevitably leads to landlessness and pauperization of the marginal and small peasants.

Fifthly, it is not only the crops which are lost due to floods but the latter also cause serious problems for pond fishery and livestock. Many of the households of the rural areas own ponds where water is not only being used for washing^{and}/also to meet other domestic requirements of water but also for rearing fish. As soon as the tanks of ponds are submerged in flood water all the fish escape thus causing ruination to the owners of the ponds. In times of floods human beings are often mobile to find shelters for themselves. In such a situation there is no question of finding suitable high lands or other safe places for sheltering their domestic animals. Making adequate provision for animal feed poses even greater problem. Thus there is considerable loss of livestock during floods. Failing to provide shelter the poor peasants often are faced to sell their livestock at very low prices during floods leading to draught power shortage. In this situation proper development of a farming system becomes very difficult.

Sixthly, the floods cause serious damage to small businessmen and itinerant traders. Shortage of cultivable land and limitedness of the labour market pushes the rural poor with meagre amounts of capital become pedlars or set upon small shops and business establishments in the huts and bagars. When flood water washes away the meagre traded stocks of these people, they rarely able to collect additional funds to resume business activities and are often forced to become landless labourers. The fear of losses due to floods produces similar kinds of disincentive effects on businessmen i.e. investment stock building and trading activities as in the case of agricultural producers.

Floods not only affect adversely the poor and itinerant traders and businessmen but also largescale business establishments. Normally, factories and big business establishments are located in high grounds which are not vulnerable to floods. But in times of unprecedented floods such as the 1988 floods, many factories went under water causing large-scale damages and losses to the factory owners. In short, floods not only mean losses of life and property but also high risks and dislocation in production system of the country. It means sufferings to the flood-affected people and absence of a congenial climate for investment without which a country can never develop.

Floods not only adversely affect private productive activities and consumption but also government activities designed to bring development in the country. The largest portion of government development expenditure is directed to the building of economic and social infrastructure. In a delta like Bangladesh, the development of transport and communication network posed serious problems. That is why very little development took place in this sector during British rule. Low level of development of the transport and communication network acted as a major constraint to the integration of the national market and development of economic activities in the country. The government has been engaged in building up the infrastructure since the sixties. But recurrent floods wash away the roads, bridges and other structures necessitating costly repairs every year. As the size of the national infrastructure goes up along with development expenditure, the need for repairs of flood damaged structures also goes up. Estimates prepared for the repair of damages caused by the 1987 floods show that not only these will necessitate huge expenditure but the work cannot also be completed before three years. If devastating floods continue to

occur, all the funds will have to be utilized for repair work alone and no new development activities can be undertaken. As a matter of fact, the funds can marked for infrastructural development won't be adequate even for completing the repair work.

Another problem which the floods give rise to in the field of development activities relate to the need for relief distribution among the flood-affected people. The 1987 and 1988 floods resulted in inundation of nearly a third of the country. Nearly a quarter of population needed relief to survive until the harvesting of the next crop. While large sums were donated by the aid community, these were not adequate to meet the needs of the flood-affected people. The financial obligations of the government amounted to a sum which is more than the total public savings. The remission of interest on debt, new loans, distribution of food and other relief materials, expenditure on medical and public services etc. called for huge outlay. Diversion of funds for relief and expenditure brings down the total amounts available for development. In particular, increases use of domestic resources for meeting the situation created by floods effectively reduces the utilization of project aid.

We may sum up our discussion by saying that the costs of floods to the people and the government of Bangladesh are much higher than the benefits resulting from silt deposition and the filling up of the ditches, depressions etc. A densely-populated country like Bangladesh with a high growth rate of population can not enjoy the fruits of development until congenial climate is created for investment in productive activities. For this flood protection measures are a must.