

Climate Change and Upstream Abstractions Impacts in Bangladesh Water Management: A Coping Practice

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Starting with the most recent natural disaster while over 100 fishing trawlers with some 1200 fishermen aboard went missing in the Bay of Bengal due to high waves triggered by a sudden storm on September 20, 2007, Bangladesh frequently faces crucial natural behavior not only for its geographical position but also for the rapid changing of world climate which is largely caused by human activity.

The effects of global climate change are evident now, as the people across the planet are experiencing through irregular weather conditions. These effects are multidimensional. Among the many effects, scientific evidence has proved that several low-lying countries of the world will be badly affected by climate change, and scientists are predicting that Bangladesh will be among the countries worst affected by the change. This will have an impact on the composition of the atmosphere, hydrology, geomorphology, ecology, soil, land use, biological diversity, vegetation etc. The individual impacts on each environmental component also have interactive effects. Environmental components are interrelated, and the world's ecosystems are linked to these components. Therefore, many natural ecosystems will be changed as a result of climate change.

The tropical and subtropical countries will be more vulnerable to the potential impact of global warming through the effects on crops, soils, insects, weeds, and diseases.

Bangladesh is in the subtropical region. Therefore, the agriculture of this country will be affected. The effects of climate change are already evident in the agro-ecosystem of the country. The sea level along the Bangladesh coast is rising at about 3 millimeters a year, and the sea surface temperature is also showing a rising trend.

Bangladesh being a deltaic land blessed with the Ganges-Brahmaputra-Meghna rivers systems and the key realities in the water sector of the country are too much water during the monsoon causing floods and too little or scarcity during the dry season. And being the lowest riparian in the Ganges- Brahmaputra-Meghna (GBM) river systems, this country bears the brunt of floods, discharging over 80 percent of the GBM basin-wide runoff within the five-months, and receives residual flows from the trans-boundary rivers during the lean season. All 57 Trans-boundary rivers of Bangladesh flow in the country from India and 3 from Myanmar. But callous interventions along the upstream course of common rivers kept on hugely costing Bangladesh economically and environmentally.

All should give the recognition of Ganges, Brahmaputra and Meghna as international Basins and the approach should be taken for regional sustainable and integrated water resource management involving all co riparian countries. The principle of low flow in the international rivers during all seasons should be ensured. All stakeholders should have a say and work towards regional cooperation in the water sector as a top priority.

One of the most critical challenges Bangladesh faces is the management of water resources during their excesses and acute scarcity. It is particularly difficult when only 7% of the catchments areas of the very international rivers, the Ganges, the Brahmaputra and the Meghna are in Bangladesh while 97% is outside Bangladesh where unfortunately, Bangladesh has no control on upstream diversion and water use.

The Indian River-linking Project (IRLP) is an euphemism for a massive plan for diversion of waters from the international rivers that flow down the Himalayas into the Indian plains. The objective is to transfer waters from the international/common rivers into the vast internal network of waterways of India. That such trans-river diversion of significant quantum of waters would effectively reduce the historical flows of the major rivers into the lower riparian Bangladesh can hardly be debated. It is somewhat reassuring to note that an international conference on Transboundary Rivers: Impact of the Indian River-Linking Project held last year in Dhaka with a set of recommendations. To be fair, these are very useful ones, but to be realistic, these very suggestions have indeed been adorning the conclusion ceremonies of almost all the meetings on water resources during the past two decades or more in the three countries (Bangladesh, India & Nepal) of the region.

Bangladesh has Treaty with India but the Treaty provisions are not being honored. At present India is building another hydro electricity plant on Barak River in India above Bangladesh's Sylhet district without sharing information or consulting with Bangladesh. It will have far-reaching impact in the entire North East and South Eastern part of Bangladesh as the country is experiencing in her North West and South West parts due to Farakka dam on the Ganges. No amount of aid will be able to mitigate the suffering of the people, economy, agriculture and environment if one after another common rivers are diverted unilaterally. Water should be included in all peace and development talks with India and other neighbors.

Bangladesh does not wish to make the water issue an international one unless it is pushed back to the wall. In 1976, Bangladesh had to raise the issue of the sharing of the Ganges water at the UN General Assembly. Despite strong opposition from India, the General Assembly found the issue as one that might endanger peace and stability in the region.

India realized that there was no way to get out of the issue and agreed to a Consensus Statement of the President of the General Assembly, rather than a UN General Assembly resolution. The statement of November 26, 1976, urged India to commence negotiations immediately with Bangladesh, that eventually resulted in the conclusion of the 1977 Ganges Water Agreement.

Another agreement was signed in 1996. India has only to abide by the provisions of the 1996 Ganges Water Treaty and rules of international law on uses of international/trans-boundary rivers. This is not a big ask from India because India has to respond to the lawful right of Bangladesh on uses of waters of common rivers through cooperative basis.

The construction of Farakka Barrage and its operation in 1975 demonstrates that if India wants to undertake interventions (such as dam, barrage, or other river construction work) on the natural flow of trans-boundary rivers, it will do so despite Bangladesh's opposition. India is an upper riverine country and is placed in an advantageous position *vis a vis* lower riverine Bangladesh. Bangladesh does realize this hard fact.

The people of Bangladesh always remember with respect the support and cooperation extended by the people of India during our liberation war. The people of Bangladesh are basically democratic minded, non-communal and value good neighborly relation. We are always proud to have a vast neighboring country like India with significant resources. India is perceived as "big brother" by its small neighbors. The people of Bangladesh always extended their hands of cooperation and goodwill in the past and they are ready to do so in the future. However, it is a universally accepted fact that good neighborly relation is not a one-way traffic. If the United States can show respect for a weaker neighbor like Mexico in resolving the issue of sharing water resources of Colorado River, India could show similar attitude towards Bangladesh.

The UN Conference on Environment and Development in its Agenda 21 emphasizes the importance of Integrated Water Resource Management (IWRM). The core point of IWRM is development of all aspects of entire basin in a basin wide approach, that all relevant agencies of the government and water users must be involved in the planning process and that the goal should be use of water resources in a manner that is sustainable, taking into account

environment protection, economic development and social well-being. Friendly countries and United Nation are to come forward to the aid of Bangladesh's water problems. Bangladesh is an agro-economy based developing country. There is no doubt that its agriculture seriously effected by the climate change and that accelerated by upstream abstractions in Trans-boundary rivers. Loss in agriculture would increase many social problems, and force the import of food, which will require spending of hard currency. Therefore, from now on, adaptation and awareness about the impact of climate change and upstream abstractions in agriculture, and many other sectors, are imperative for the development of Bangladesh. In this respect, the government, the people of Bangladesh and international bodies will have to work untidily to adopt and cope with the manifold disasters particularly and immediately in agriculture sector.

'Dhap' cultivation: An indigenous coping practice: The 'Dhap' cultivation is an indigenous agricultural practice to extend farming in wetlands and adopt the farming in flood-affected areas in the country.

Floating '*Dhap*' (raft like) producing substantial quantity of *kochu* i.e. esculent root and its subsidiary production, *lati* i.e. tendrils, the local vegetables in Bil Baghiya in Rajoir & Kotalipara upazila under Madaripur district in Bangladesh. The area is located nearly 200 km south-west of the capital Dhaka.

Bil Baghiya, a famous and huge wetland that remained under water most of the time of the year. The adverse weather and natural hazards like flood and extreme hot climate damage its natural vegetation and fish wealth. Other than producing some sweet water fish this huge wetland remained as a non-productive water body for centuries long. From recent past few areas, where water is dried up or water level reduces to few inches deep in dry season, have been put under some rice cultivation; but that also sometimes swept away by flood or heavy rainfall. The recently started "*Dhap*" cultivation has created a revolution in this wetland. Few innovative minded energetic people live adjacent to this wetland, recently started to think to make the best use of this wetland productively in the existing and changing climate as well and also to innovate some ways to promote livelihood of the surrounding people from this water body. They found that naturally grown water-hyacinth is massive in the water body which prompted them to think if this water-hyacinth could be used anyway towards implementing some ideas cropped up in their minds.

As an experiment firstly they earmarked few square meter of water-hyacinth area and started dumping of the surrounding areas' water-hyacinth in the earmarked area to build a floating bed. The dumping resulted in forming an immediately viable raft bed (locally called '*Dhap*') by the perished water-hyacinth. The farmers found the bed is quite feasible for farming and they decided to plant the saplings of esculent root. Within few weeks the esculent roots grown up and started producing tendrils, which is also a very good and tasty vegetable. The experiment found to have been very successful and this '*Dhap*' farming has extended to Baikanthapur, Tetulbari, Hijalbari of this Bil Baghiya which is stretched to few square kilometers area. According to some agricultural experts the '*Dhap*' is very much potential for producing the valuable kitchen item including turmeric and few other vegetables in all weather including extreme rainfall, flood, draught, hot and any other inclement weather.

While talking with IEDS the farmers of this '*Dhap*' farming told that they prepared a number of *Dhap* which is 30-35 yards long and nearly 10 yards breadth. To prepare *Dhap* only BDT. 500-700 costs and to make the '*Dhap*' cultivable 15 to 20 days are required. After it becomes cultivable the *kochu* i.e. esculent saplings are planted which within 10 weeks grown mature and then it starts producing *lati* i.e. tendrils. No extra fertilizer and irrigation is necessary; because perished water-hyacinth becomes good fertilizer and water is available under the bed. Every week the farmer sale *lati* of taka 300 and this sale is continued for 3/4 months. After that every plant of matured esculent root became 3/4 kg weight and is sold BDT. 15-20 taka each. Every '*Dhap*' produce nearly 100 esculent roots.

The farmers become very much confident that they would be able to run this farming as a part of their climate proofing activities and they are thinking to strengthen the *Dhap* to use it for

other cultivation in time of flood and in severe draught. They believe that if they are to live with water they are to organize and extend the *Dhap* farming.

The *Dhap* cultivation now extended to some adjacent wet-land districts in Bangladesh including greater Faridpur and Barisal. If proper patronization including financial assistance could be provided then this climate proofing 'Dhap' cultivation could massively be implemented in all wetland areas in Bangladesh and be practiced in flood- affected elsewhere in the country.

'Dhap' cultivation picture

Indigenous 'Dhap' cultivation gives some direction to cope with climate change in Bangladesh—IEDS