

Tidal river management

Can this be a solution for sea level rise?

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THE soil of this coastal region consists of silt mixed with organic matter produced by the decomposition of Sundarban detritus, stubble of crops and other vegetable matter. When this organic matter undergoes further decomposition, there results a vacuum, which is filled by subsidence of the upper layers of soil.

Before the implementation of the Coastal Embankment Project (CEP) during the 1960's, tides used to inundate all the lands that are now enclosed within polders. The tides deposited floating sediments when the flow came to a stand-still at high

tide. These silt deposits compensated adequately for the subsidence.

But after the CEP was implemented, tidal entry into the polders was blocked. When the flow ceased at high tide, the silt was deposited on the riverbeds, resulting in the silting up of rivers, and continued subsidence of the land within the polders. Naturally, the exit points of the sluice gates became blocked. This resulted first in drainage congestion, which later took on the character of permanent water-logging. By 1990, the water-logging had extended to more than 100,000 hectares of prime agricultural land.

The Beel Dakatia incident
The water-logging affected people

realised the role of the tides in land formation in this region, and accordingly, in early September, 1990, they gathered in their thousands and breached the embankment of Polder 25 which had enclosed Beel Dakatia in the northwestern corner of Khulna district. They had made four breaches, but the Bangladesh Water Development Board closed three of them. The one that remained, opened up an access to the Hamkura river, and siltation by the tides raised the level of 2500 acres (1000 hectares) of land sufficiently to grow rice in the Amon season of 1991.

There were drawbacks in the people's alternative concept, which later came to be known as the Tidal

River Management (TRM) Concept. They had acted under the heat of outrage at the inaction of the BWDB, and therefore, did not have any carefully thought-out plan to raise the level of the entire water-logged land in Beel Dakatia (Polder 25). The result was that the intake point for tidewater from the Hamkura river was silted up, resulting in large areas beyond the raised area being water-logged.

The BWDB also failed to take advantage of the people's action. Instead of following through by excavating a canal in the land being filled up to take the silt-laden tidal water to the interior of the Beel, they filed cases against the leaders of the peasants' organisations and had them arrested!

Other examples

The incident of Beel Dakatia was repeated in a few other smaller Beels, such as in Madhukhalir Beel and Patra Beel and these attempts were partially successful. The people took lesson from the Beel Dakatia experience and tried the same concept on Golner Beel, Bahadurpur Beel, Bharter Beel and Magurkhali Beel.

A few breaches caused by natural deterioration of the embankments or sluice gates also produced similar beneficial results as in Beel Dakatia, and when the lands were sufficiently raised, the people themselves closed up the breaches.

These examples of Tidal River Management also produced another beneficial result. The outward flow of water from the tide-inundated polders also created a strong current in the rivers concerned, and within a few weeks, the depth, width and navigability of the rivers had also increased. This result had a further beneficial effect in that the rivers became capacious enough to drain off surplus flood water in case of excessive rainfall.

Climate change

At present the entire world is going through a period of drastic climate change. On June 13, 2002, Khulna city experienced a record 311 mm of rainfall within 24 hours. The rainfall in Khulna during 2002 was about 25 per cent above normal and 40 per cent more than in 2001, which was a comparatively dry year. In 2003, rainfall in Khulna city and adjacent regions is following a rarely seen pattern. The quantity of rainfall is quite normal, or even more than that, but it has followed a sporadic pattern. There is light to moderate rainfall almost daily, or rather, nightly, as most days have been sunny or cloudy and rain fell mostly in the night, in many cases, after midnight.

West Asia, from central India westwards to the Mediterranean, after experiencing three years of drought since 2000, is now getting sufficient rain. In March this year, there was a newspaper report of four feet of hail falling on Islamabad, the capital of Pakistan. I am familiar with the region, and one of the reasons why Ayub Khan selected the area was because it was frost-free!

Western Europe experienced the hottest summer in decades, and according to newspaper reports, 11,000 people have reportedly died of heat-related causes.

Global warming and sea level rise

All secondary school students are taught that most materials expand when they are heated. One such material is water. The ever increasing warming of the atmosphere, caused by the huge quantities of greenhouse gases produced by the burning of fossil fuels in developed countries and wood-fuel in cooking fires of, say, South Asia, cause sea water to expand. It is apprehended that within

the next 30-50 years, the level of the oceans may rise by one metre.

Nearly 70 percent of the land in the southwest coastal region of Bangladesh is barely one meter above mean sea level, and below high tide level. These areas represent almost 15 percent of the land area of Bangladesh. If the sea level rises by one meter, all these lands will go under saline sea water permanently. Already reeling under the pressure of population, this will create massive demographic problems for the country.

The TRM concept

We have already seen, in the examples given in the foregoing paragraphs, how the tides were able to raise the level of the land within the polders by depositing silt carried by it. Apart from the labour involved in breaching the embankment and later on closing the breach, there is no expenditure involved in it. Even if wages have to be paid to the people performing the necessary earthwork, the costs will be negligible, compared to the US\$ 62 million spent on the Khulna Jessore Drainage Rehabilitation Project (KJDRP), which has failed utterly to provide any solution to the water-logging problem.

On the other hand, the Tidal River Management concept was forced on the KJDRP by the ADB, the lending agency that provided the funds for the KJDRP. The ADB, in turn, was pressurised by people's agitation, media coverage and NGO advocacy. The concept was unwillingly adopted by the BWDB, and implemented as an eyewash as a "Pilot Project" on a trial basis, in a small polder of a few hundred hectares (as against more than 100,600 hectares of water-logged land). But in the final year of the project (KJDRP), the BWDB claimed that the Tidal River Management concept was the most effective strategy for solving the water-logging problem! As if TRM was their own brainchild!

Now, this global warming, accompanied by climate change and sea level rise, is motivating many development activists in the Southwest, who had participated actively in the advocacy for implementing the TRM concept to solve the water-logging problem, to think about new uses of the TRM concept.

That the tides which enter the creeks and estuaries in the southwest coastal region carry heavy loads of silt, and that this silt is deposited when the flow comes to a stand-still at high tide, are proven facts. Anyone who has not seen it can verify the same by simply observing the process.

It is, therefore, time that the authorities concerned turn their attention to problems that are likely to arise in the long run, and for which cost-effective and proven solutions are already available. Do the guardians of the corridors of power at WARPO and BWDB have the courage and the imagination to catch hold of the idea and prove to the world that often the traditional cultural wisdom of illiterate peasants in Bangladesh is more effective in providing solutions to local environmental issues than the costly projects recommended by hired foreign consultants?

If the above appears to be excessively emotional, there is no dearth of organisations that would be willing to hold a few brain-storming sessions at national and regional levels, conduct field studies and garner public opinion on the issue. I have merely presented an idea, and others concerned with national issues may, if they wish, take it up.

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