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DELTA PLAN 2100

Land reclamation in the Meghna estuaries

CONCLUDING PART

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Land reclamation is a process of creating or restoring new land from the ocean. Reclamation can be achieved in the Meghna estuaries through many methods: a. bank protection and river training to save alleviated char lands from erosion, b. polder by embankment/dike with drainage and irrigation net-work in shallow tidal flooding areas, c. accelerating siltation and natural land reclamation by cross dam, d. artificial land reclamation by dam in deep sea.

In coast lines of Chandpur and Noakhali- Island and new char land dynamics relates to the morphological behaviour of rivers. Bank protection and river training in coasts could save new alleviated lands from erosion. River training is needed for improving char lands, and mitigating flood, tidal action and cyclone hits. The major objectives of river training are: safe passage of floods without overtopping the banks by stabilizing river channel.

The floods might be prevented from the Islands by earthen embankments parallel to the river channel. Guide banks protect the embankment from attack of the water and confine the flow in a reasonable water way. Dredging of river is needed to improve navigability of river and to increase the depth of flow. Dredging could increase water holding capacity of river- dredged material/sand could be re-used for land reclamation.

In Meghna river estuaries, huge quantities of sand have been deposited. A trailing suction hopper dredger could dredge sand/mud from the river bed for maintaining navigable waterways and the slurry of dredging could be pumped into pipes to deposit on nearby low lands. We could store million tons of sand from rivers by dredging and could accumulate in a low-lying pit area for re-use as valuable materials in land reclamation.

All the new char lands near offshore islands could be surrounded by sea wall/dike to form many large polders, and to keep tide/cyclone waters out. The reclaimed area includes: char lands- where new lands have already been formed. Polder by embankment/dike and pumped dry reclaimed land is feasible in shallow tidal flooding areas. Land could be used protected by embankment/dike. Fresh water reservoir with drainage and irrigation net-work could also be constructed.

The natural reclaimed area includes: eastern side of the Meghna estuary including Urir Char Island and its channels. 'The Sandwip-Urir Char-Noakhali Cross Dam Project' has already been contracted that have favourable effects on natural sedimentation enhancement- without blocking upland drainage of channel. In those estuaries having silted up sea bed - acceleration of natural land reclamation process is possible by constructing more surrounding cross dams.

More discontinuous dam could be built up in shallow sea side areas. Cross dam in narrow channels at the south of Sandwip Island will trap more sediment around Urir Char islands. A sediment-laden stream could be diverted into the area between dam and shoreline for accelerating natural land formation. Delta plan could give us guide lines- how to arrest a considerable portion of sediments for development of new lands.

Delta Plan 2100 emphasized the reclamation of more salt-affected lands from sea areas. A multi-purposes mega project has been proposed including: coastal protection, river training, poldering and land reclamation by different processes. The dam construction work could be started in dry season- when river flow is least. Natural reclamation can be accomplished by closing the mouth of tidal estuaries by dam. However, cross dam will not block any upland discharge in coastal region.

The cross dam could be built below the original ground level- that is strong enough for a good support. However, feasibility studies could be done on river estuaries for tide management and reclamation works through cost-benefit analysis. A pre-design dam construction study is needed and land reclamation process includes: site investigation, identifying viable fill/sand, identify existing tidal/flood control works; collecting hydrographical data, and assessing the impact on environment.

The dam construction works could be started from sea side and could proceed to surrounding sea areas having lower depths (3-4 m). Central core of dam is made by an impermeable concrete to prevent water passage- concrete and soils are then transferred to the dam. It is proposed to build dam using: compacted earth and rock. Natural siltation and land reclamation process could be expedited by cross dam and new landmass could be formed.

Another option of artificial land reclamation (artificial small islands) is in distance sea site. Surrounding sea side areas by sandy/rocky dam, pumping out the salty water and filled with dredged mud are artificial land reclamation process. Generally, mud dredged from navigation channels in estuaries is dumped at nearby dumping grounds. This process uses sand and clay from the seabed to contract new lands or deep sea-port in the distance sea water. The most notable example of artificial reclaims coastal lands in the Netherlands.

Once new coastal lands are formed, navigation, culvert and road construction, mangrove forestation, and eco-tourism could be expended. Cyclone risk, saline intrusion and crop loss will be minimized. Human statement with fisheries and live-stock development might be feasible to improve the livelihoods. Modern man rice (BRRI Dhan-78) based farming system could be implemented. Emphasizing export oriented crops and shrimp cultivation-economic condition of coastal people could be improved.

Land reclamation process is complex that is built in sea and involvement of hydro-technical, structural, geotechnical and environmental consultant is needed. A group of talented engineers of BWDB would work for planning and executing for the activities generation after generations.

The 'Delta Plan 2100' could improve tidal water management and expand the coast beyond its original geographical borders. It might open the door of coastal transport systems, industrialization of coastal belts, deep sea-port constriction, marine fisheries and coastal tourism etc. With proper implementation of 'Delta Plan 2100'- Bangladesh could reach the upper middle income status by 2030 and will be a developed country by 2041.

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