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DELTA PLAN 2100

Land reclamation in the Meghna estuaries

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Long term "Delta Plan-2100" has emphasized coastal zone development strategies to ensure long term water and food security and environmental sustainability in the face of vulnerability to cyclones, storm surges, tidal inundation, salinity and water logging. The coastal zone is physiologically and ecologically diverse. Of the total 3 coastal hydrological regions: south east, south central and south west - the south east part in the Meghna estuaries is most important.

The Padma along with the Jamuna join with the Meghna in Chandpur- the flow is the third highest of the world. After Chandpur, the combined flow moves down to the Bay of Bengal by four principal mouths- Tetulia, Shahbazpur, Hatia, and Bamni. Thus, the Meghna is split into several channels. Many old and new islands: Hatia, Sandip, and Nijhum Dwip are situated there. There are many land mass are still in the way being formation.

Daily high and low tides enter the Lower Meghna River through river channels. The tidal wave travels faster in the deep Sandwip channel at the eastern side than over the shallows west. During the monsoon, a large volume of water discharges through the Meghna estuary and consequently an increase of tidal height above the normal. Tidal bores often develop in shallow rivers that discharge from the higher upstream zone into a broad estuary.

A tidal bore is a situation- where the flow of water from the river into the ocean reverses, and the tide pushes water up the river. Bores cause an abrupt increase in salinity, suspended sediment, and bottom pressure. Tidal streams are important for sediment movement from sea to river side. The narrow channels and large flood dominated area at the south of Sandwip Island are trapping the sediments around Urir Char and nearby islands.

Almost 2.4 billion tons of sediment passes to the Bay of Bengal each year through Meghna, one of the world's highest. South east coastal regions are still in formation of new char lands within river mouth. The char land formations are welcoming situation. Many people try to make a living under those extreme and hazardous conditions in the face of flooding and erosion. People are displaced by char erosion- have no other alternative.

Land erosion and accretion are common natural phenomena. Only 40% of the char persists more than 6 years. Those alluvial low char lands below the sea level are prone to erosion. Sediments are raising coastal river beds and which is a cause of flooding. If char is formed in a location; high flow of water from char side hit other side- trends to widen and erosion in other side.

The char lands economy is based on agriculture, fishing and livestock-rearing. Education, health, and other support to cope with flood and erosion are minimal. During wet season, there are high tide and high river flow, over siltation and there are lack of proper navigation, culvert, roads, embankment, and drainage. Social surveying and providing a good physical environment and livelihoods is important for char areas.

The coast line configuration in the Meghna estuaries plays a vital role in building strong cyclones, mainly due to recent climate change. A cyclone and storm surge with 5-7 ft high (basically in October and November) can damage vegetation, ecosystems, and the soil through increasing salinity and can kill many people. During dry season, the river discharge is much lower than monsoon; saline water entire and crop could not be grown.

The morphology of the Meghna estuaries is dominated by many rivers, discharge of river water with high sediment, a large number of islands, chars and sand bars; a shallow and wide estuary; a narrow strip of coastal landforms, strong tidal actions and frequent tropical cyclones. But, through minimizing the forces- the country could explore extensive land reclamation to expand the coast beyond its original geographical borders.

The connection channel between Sandwip and Noakhali mainland are gradually being silted up and giving new char lands along 370 miles of coast lines in a natural process. The channel looks dry during winter low tides; landmass in Noakhali, Feni, and Lakshmipur coasts seems promising for easy reclamation. The natural process of accretion is slow. However, 'The Sandwip-Urir Char-Noakhali multi-disciplinary Cross Dam" project will give rise to about 18,000 ha new land within next 30 years.

Many islands including Urir Char were formed by the sediments derived from river system in eastern side of the estuary. The dynamics of natural land formation processes in Noakhali coastal region is crucial. Reclamation of large land areas from surrounding Meghna estuary is possible through rapid accreting natural reclamation process and controlling various negative expect of land erosion through river training.

This natural process of reclamation could be exploited to claim new lands. Coastal Embankment Project was initiated to reclaim or protect areas in Noakhali coastal zone. The major task of 'the Sandwip-Urir Char-Noakhali Cross Dam Project' is to close the channel between Sandwip-Urir Char-Noakhali directions and to close tidal creeks that lay below highest tide levels. The cross dam would have only favourable effects on more sedimentation - will not block drainage of channel.

Hydro-dynamic modelling (data on flow and depth) in the Meghna from Chandpur point to estuaries, as well modelling in 4 major channels could be done. Effective coastal embankment could be designed in accordance with long-term wave height, drainage, sea level information and environmental data. Then, one mega project "coastal protection and land reclamation" could be developed- integrating many activities: accelerating natural land reclamation process, river training, bank protection, and tide controlling etc.

This mega project could be implemented by 4 inter-linked sub-projects: 1. protecting entire sea sites from erosion, river training, dredging, and embankment/dikes/dam/road construction 2. Polders with drainage and de-stalinization, sea side constriction of fresh water reservoirs with irrigation net work, 3. Natural land reclamation by re-using dredging materials, 4. Human statement with fisheries and live-stock development, navigation, culvert, and road constriction with mangrove forestation, and eco- tourism.

New coastal lands having tide and saline free conditions will expend many income generating activities. 'Delta Plan 2100' might open the door to improve the economic condition of people in the coastal areas.

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ব্রিতে উফশী বিআর ১০০ ধানের জাত উদ্ভাবন

প্রতিনিধি, গাজীপুর

গাজীপুরে অবস্থিত বাংলাদেশ ধান গবেষণা ইনস্টিটিউটের বিজ্ঞানীরা বিভিন্ন পর্যায়সহ পাঁচ বছর মাঠ পর্যায়ে গবেষণার পর অধিকতর জিংক ও সালফার সমৃদ্ধ উচ্চ ফলনশীল একটি ধানের জাত উদ্ভাবন করেছেন। এটির নাম দেয়া হয়েছে বিআর১০০। এটি এর পূর্বে উদ্ভাবিত অন্যান্য উফশী জাতের ধানসহ বিআর৭৪ ধানের চেয়ে ১৯% বেশি ফলশীল। এছাড়া এতে জিংক ও সালফারের পরিমাণও তুলনামূলক ভাবে বেশি। বিআর১০০ জাতের ধানের গুণগত মান পূর্বের উদ্ভাবিত যে কোন জাতের চেয়ে ভালো এবং এজাতের ধানের চালের আকৃতি মাঝারি চিকন। বাংলাদেশ ধান গবেষণা ইনস্টিটিউটের গবেষণা মাঠে হোমোজাইগাস কৌলিক সারি নির্বাচন করা হয় এবং ৫ বৎসর ফলন পরীক্ষার পর কৌলিক সারিটি ২০১৭ সালে ব্রির আঞ্চলিক কার্যালয় সমূহের গবেষণা মাঠে ও ২০১৯ সালে বাংলাদেশের বিভিন্ন এলাকায় কৃষকের মাঠে পরীক্ষা-নিরীক্ষা করা হয়। অতঃপর ২০২০ সালে বীজ প্রত্যয়ন এজেন্সী কর্তৃক স্থাপিত প্রস্তাবিত জাতের ফলন পরীক্ষায় (পিভিটি) সন্তোষজনক হওয়ায় জাতীয় বীজ বোর্ডের মাঠ মূল্যায়ন দল কর্তৃক সুপারিশের পর জাত হিসাবে ছাড়করণের জন্য সংশ্লিষ্ট সংস্থায় আবেদন করা হয়। এ বিষয়ে বাংলাদেশ ধান গবেষণা ইস্টিটিউটের মহাপরিচলক ড. মো. শাহজাহান কবীর জানান ব্রি ধান ১০০ জাতটি মুজিব শতবর্ষ উপলক্ষে জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমানের নামে উৎসর্গ করা হয়েছে।