

Riparian vegetation: A corridor for environmental stability

Riparian vegetations stabilize stream banks by providing deep root systems which hold the soil in place and by providing a degree of roughness capable of slowing runoff velocities and spreading flow during storm surges. One of the most important roles of riparian forests on their immediate environment is to reduce wind speeds. Many parts of the world use these forests as windbreaks or shelterbelts -- to protect crops, water sources, soils and settlements.



Protecting riverbank slopes.

DR. MD. MIZANUR RAHMAN

THE word "riparian" is derived from the Latin word 'Ripa' (river bank). Vegetations bordering water bodies are technically known as riparian vegetations. These vegetations are also called riverine or gallery vegetations as they are grown adjacent to or near rivers. Plant habitats and communities along the river margins and banks are called riparian vegetation, characterized by hydrophilic plants. Riparian vegetations form the transition between the aquatic and the terrestrial ecosystem. A riparian zone or riparian area is the interface between land and water body. Riparian is also the proper nomenclature for one of the fifteen terrestrial biomes of

the earth. They occur in many forms including grassland, woodland, wetland or even non-vegetative.

Role in ecology: Tropical and sub-tropical riparian vegetations are characterized as being extremely dense and productive, and have large numbers of climbing plants. They are important in preserving water quality and controlling erosion. They provide habitat for wildlife refuges especially for amphibians and reptiles. Birds, monkeys and tree dwelling mammals are highly abundant in these forests. Riparian vegetations are the habitats of many fish species. They supply shelter and food for many aquatic animals and shade that is an important part of stream temperature regulation. The riparian zones increase

biodiversity, and provide wildlife corridors enabling aquatic and riparian organisms to move along river systems avoiding isolated communities. They provide forage for wildlife and livestock.

Role as a bio-filter: Riparian zones play significant roles in ecology and environmental management because of their role in soil conservation and the influences they have on fauna and aquatic ecosystems. They are vegetative buffer which prevent sediment reaching water bodies and trap agricultural chemicals from overland water flow contributing to downstream water quality. They maintain stable water temperatures and prevent sedimentation both of which are important for maintaining fish populations. Riparian

forests decrease soil salinity. Deforestation leads to a rise in the water table level. Capillary action draws water to the surface and salts are concentrated by surface evaporation. Seepage of water also causes down-slope salinity. Riparian zones play a role in lowering nitrate contamination in surface runoff from agricultural fields.

Role in preventing soil erosion: Riparian vegetations stabilize stream banks by providing deep root systems which hold the soil in place and by providing a degree of roughness capable of slowing runoff velocities and spreading flow during storm surges. They prevent erosion of stream banks and the production of sediments. Without forest buffers, stream flow scours the streambed and banks leading to bank erosion and channel straightening. The straight channels lead to accelerated stream flow velocity and additional stream bank erosion.

Role as a shelterbelt: One of the most important roles of riparian forests on their immediate environment is to reduce wind speeds. Many parts of the world use these forests as windbreaks or shelterbelts -- to protect crops, water sources, soils and settlements. They are essential for dune stabilization as well. Windbreaks reduce wind speeds; prevent wind erosion and the damages it causes. The damages include the loss of nutrient-rich topsoil and physical injury to crops and livestock. Riparian forests have a considerable influence in reducing wind velocity at the soil surface.

The biodiversity of riparian vegetation in Bangladesh: The vegetations of the banks of Naf, Kornofuli, Pusur, Bishkhali, Payra, Agummukha, East-Baleswar (or Haringhata), Raimangal and Hariabhanga rivers, and Hatia Channel can be considered as the riparian vegetations. The floral diversity of riparian

vegetation is characterised by Keora, Gewa, Kakra, Khalsi, Hargoza, Bain, Golpata, Hanthol, Pandanus (Screw pine) and Hogla (a robust herb). They are home to Corals, Crabs, Snails, Oysters, Mollusks, Brittle Star, Algae, Nudibranch, Bryozoans, Tortoises, Snakes and Weeds. They provide excellent nurseries for Shrimps, Hilsha Fish, Zebra Fish, Hamilton Fish, Asian Sea Bass, Black Sea Bass, Silver Pomfret and Dolphins. They are very important habitats for Monkeys, Wild Boar, Wild Buffaloes, Fishing Cat, River Terrapin, Bengal Monitor, Black Lizard, Yellow Monitor, Swamp Partridge, Trogon, Ground Thrush, Water Monitor, Macaques, Forest Wagtail, Green Frog, Grey Mongoose, Scarlet Minivet, Ring Lizard, Pangolin, Drongo, Oriental Small-Clawed Otter, Chital and other threatened species. Riparian vegetation is the paradise for Black-Crowned Night-Heron, Pond Heron, Grey Heron, Purple Heron, Cattle Egret, Little Egret, Lesser Whistling-Duck, Bar-Headed Goose, Cotton Pygmy-Goose, Common Shelduck, Ruddy Shelduck, Tufted Duck, Water Cock, Ring-Billed Gull, Herring Gull, Noisy Gull, Hawks, Swallows, Falcons, Small Cranes, White-Winged Duck, Sarus Crane, Eurasian Thick-Knee, Indian Cormorant, White-Bellied Heron, Pacific Reef Egret, Pigmy Woodpecker, Brown Wing Kingfisher, Malayan Night Heron, Glossy Ibis, Woolly-Necked Stork, Asian Openbill, Indian Pond Heron, Black-Bellied Tern, Gull-Billed Tern, Spot-Billed Duck, etc.

Conservation

- Declaring riparian vegetation as the refuge ecosystem for plant and wildlife
- Prohibiting clearance of wood and shrubs within 25 m on both sides of any waterway
- Rare species will not be cut either inside or outside of the gallery vegetation



Guarding against erosion.

- Preserving not only the river front, interior and riparian forest edge but also parts of the adjacent upland forest
- Promoting local people in conservation programme
- Aforestation in the open sand dunes by the plant species which have 'prop roots' to anchor itself in the loose sand
- Monitoring of biological resources of riparian vegetations
- Establishing an information system of riparian biodiversity
- Emphasizing on ex-situ conservation of endangered species
- Creating public awareness by using different media
- Raising funds for conserva-

- tion programme
- Maintaining and restoring mangroves
- Maintaining at least two canopy layers (bimodal or reverse J-shaped diameter distribution)
- Maintaining at least two main canopy tree species suited to the sites
- Passive management to develop tree size canopy structure and decadence
- Planting large diameter trees with strong root systems to provide critical structure for fish habitat and to prevent chronic erosion of stream banks
- Strengthening forest monitoring, research and development, education, and capacity building to maintain a "cradle" of

- biodiversity in the riparian buffer zone
- Halting the continued introduction of alien invasive species
- Gap filling by rare tree species
- Facilitating natural regeneration in degraded areas
- Protecting natural regenerations (seedling, sapling and juvenile trees) from cutting
- Establishing gene banks to conserve the gene pool of endangered species
- Bringing endangered animals in captivity for breeding

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Save flood vulnerable eastern fringe of Dhaka

Under the Dhaka Integrated Flood Protection Project, the western part was protected by embankments and the drainage system. But during the 1998 flood, even some of the protected areas were inundated; this indicates that the existing adaptive measures needed further to be improved. The eastern part of Dhaka city is still unprotected. This increases the urgency of the need to take adaptive measures against current climate variability and impact of future climate change to protect the eastern fringe of Dhaka.



Water clogged access road.

ANIKA NASRA HAQUE

UNITED Nations warned that a quarter of Bangladesh coastline could be inundated and about 17% of its land mass would go under water, if the sea rises 3 feet in the next 50 years. Approximately 30 million people will be displaced from their homes, making them 'climate refugees'. A recent World Bank report lists Bangladesh as one of the 12 countries most at risk for climate-related problems. Though Bangladesh's contribution to global green house gas emissions is one of the lowest in the world, its low topography, disadvantageous geographic location, high density of population etc make it more vulnerable

to climate change. According to researchers, climate change poses risks to Dhaka city in two ways: one is flooding and the other is heat wave. Besides flooding, the key climate driven variability is erratic and prolonged rainfall with the increase in precipitation and river flow changes caused by sea level change.

Dhaka is situated in the central area of the flat deltaic plain of the three large rivers, the Ganges, the Brahmaputra and the Meghna. Dhaka falls under the active river tidal zone. The low-lying areas are often engulfed by the high tide influenced by the sea tide. Flooding has become a regular event in Dhaka not only by the overflow of rivers but also through water clogging.

The low-lying area of Dhaka city, which is mainly

the Eastern part, is at high risk. It forms some two thirds of the greater Dhaka drain-



Flooded road network.

age basin. Eastern fringe is defined as flood flow zone for the drainage, navigation or retention of urban runoff in the structural plan proposed for 1995 to 2015. Basically the low lands and the water bodies act as the water retention areas, which help sustain the natural ecosystem as well. Traditionally, the water retention areas of Dhaka city have been efficiently storing the excess water caused by excessive rainfall and the canals connected to the rivers gradually draining the water to the rivers. As a result, there was no water clogging. But the scenario is changing.

The population of Dhaka is increasing alarmingly and there is land scarcity. It is leading towards the encroachment of these water retention areas, which mostly lie in the eastern part of Dhaka city. The city drainage system has also not improved with the pace of rapid growth of urbanization, while most of the canals out of around 50 in the city have either been filled up entirely or partially over the last two decades. Consequently, these low-lying areas suffer from inundation.

The eastern area of Dhaka city is the most vulnerable part and susceptible to annual flooding. According to available literature, the

eastern part (nearly 119 square kilometers) of Dhaka was 100% inundated in the floods that occurred in 1988, 1998 and 2004 and it was inundated for the longest period of time than the other parts of the city. It is not only affected by the external flood, which is caused by the rise of river water level, but also by the internal flood caused by the storm water and lack of drainage.

Under the Dhaka Integrated Flood Protection Project, the western part was protected by embankments and the drainage system. But during the 1998 flood, even some of the protected areas were inundated; this indicates that the existing adaptive measures needed further to be improved. The eastern part of Dhaka city is still unprotected. This increases the urgency of the need to take adaptive measures against current climate variability and impact of future climate change to protect the eastern fringe of Dhaka. There is also need for assessing different adaptation measures to be undertaken in the Eastern fringe of Dhaka city.

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Corrigendum

The invitation for tender (IFT) for "PROCUREMENT OF A CUTTER SUCTION DREDGER WITH ANCILLARY FACILITIES" circulated vide Invitation for Tender No: MPA/XEN/SB/192(1)/2010-429, issued on: 17-06-2010 is amended as follows:

Sl No.	Description as per tender	Amendments
1	Tender last selling date: 17-08-2010	Tender last selling date: 31-08-2010
2	Tender closing date and time: 18-08-2010, 12:00 hours.	Tender closing date and time: 01-09-2010, 12:00 hours.
3	Tender opening date & time: 18-08-2010, 12:30 hours.	Tender opening date & time: 01-09-2010, 12:30 hours.

Place, time shall remain unchanged.

Project Director
&
Chief Engineer (Marine)
Mongla Port Authority
Mongla, Bagerhat, Bangladesh

No. MPA/B&PR/PR/49
GD-3527

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

সিকিউরিটিজ ও এক্সচেঞ্জ কমিশন

জীবন বীমা টাওয়ার (১৫, ১৬, ১৭ ও ২১ তলা)
১০ দিলকুশা বা/এ, ঢাকা-১০০০, বাংলাদেশ

পুঁজিবাজারের সম্মানিত বিনিয়োগকারীদের জন্য জরুরি জ্ঞাতব্য বিষয়

- ❖ পুঁজিবাজারে বিনিয়োগ একটি সুচিন্তিত, পরিকল্পিত ও বিশ্লেষণধর্মী বিনিয়োগের ক্ষেত্র।
- ❖ পুঁজিবাজারে বিনিয়োগে লাভের সুযোগ যেমন আছে, আবার ক্ষতির ঝুঁকিও তেমনি আছে।
- ❖ কোম্পানীর/মিউচুয়াল ফান্ডের অতীত, বর্তমান ও আর্থিক ফলাফল/অবস্থা, ভবিষ্যত সম্ভাবনা ইত্যাদি নিবিড়ভাবে বিশ্লেষণপূর্বক বিনিয়োগ করা অত্যাবশ্যক।
- ❖ বিনিয়োগের পূর্বে পুঁজিবাজারের বিভিন্ন দিক, বিষয় ও ঝুঁটিনাটি সম্পর্কে পর্যাপ্ত তথ্য ও জ্ঞান অর্জন করা অত্যাবশ্যক।
- ❖ বিনিয়োগের সময় কোম্পানীর নিরীক্ষিত আয়-ব্যয়সহ সার্বিক আর্থিক অবস্থা সম্পর্কিত সর্বজনবিদিত ও সর্বাধিকৃত কতিপয় মানদণ্ড/তথ্য, যথা Price Earning (P/E) Ratio, Earning Per Share (EPS), Dividend Yield, Net Asset Value (NAV), Cash Flow Per Share প্রভৃতি বিষয় অনুসরণ করে বিনিয়োগ সিদ্ধান্ত গ্রহণ করা সর্বোত্তম।
- ❖ মিউচুয়াল ফান্ডে বিনিয়োগের ক্ষেত্রে স্কিমের ধরণ, মেয়াদ (maturity), অভিজিত মূল্য, Dividend Yield ইত্যাদি বিষয় সম্পর্কে জানতে হবে। এছাড়া সংশ্লিষ্ট মিউচুয়াল ফান্ডের সর্বশেষ ঘোষিত নীট সম্পদ মূল্য (Net Asset Value) এর সাথে উহার বর্তমান বাজার মূল্য তুলনা সাপেক্ষে/সামঞ্জস্যতা বিবেচনাপূর্বক বিনিয়োগ সিদ্ধান্ত নেয়া উচিত।
- ❖ যথাযথ বিশ্লেষণ ও পরীক্ষা-নিরীক্ষা ছাড়া পুঁজিবাজারে বিনিয়োগ করলে বিনিয়োগে ঝুঁকি অনেক বৃদ্ধি পায়।
- ❖ সিকিউরিটি আইন, এসইসি'র আদেশ, নোটিফিকেশন, ডাইরেক্টিভ, গাইডলাইন, স্টক এক্সচেঞ্জের কার্যক্রম ইত্যাদি বিষয়ে সম্যক ধারণা রাখা প্রয়োজন।
- ❖ কোনক্রমেই গুজবের ভিত্তিতে বিনিয়োগের সিদ্ধান্ত গ্রহণ করা উচিত নয়।
- ❖ এমনকি গুজব রটানোও আইনানুগভাবে নিষিদ্ধ।
- ❖ সম্মানিত বিনিয়োগকারীদের জন্য এসইসি প্রতি মাসে দুটি করে ইনভেস্টরস এডুকেশন প্রোগ্রাম পরিচালনা করে আসছে, যেখানে বিনিয়োগকারীরা বিনা খরচে অংশগ্রহণ করতে পারেন। মার্চেন্ট ব্যাংকগুলিও প্রতিমাসে দুটি করে এধরণের প্রশিক্ষণ কর্মসূচি পরিচালনা করছে। এছাড়া স্টক এক্সচেঞ্জসমূহ সময় সময় এধরণের কর্মসূচি পরিচালনা করে থাকে। এসকল কর্মসূচিতে বিনিয়োগকারীগণকে অংশগ্রহণ করে পুঁজিবাজারে বিনিয়োগ সংক্রান্ত জ্ঞান আহরণ করার পরামর্শ দেয়া যাচ্ছে।
- ❖ মনে রাখতে হবে, বিনিয়োগ থেকে লাভ বা লোকসান যাই হোক তা প্রকৃতপক্ষে আপনারই। তাই জ্ঞানভিত্তিক এবং মৌলভিত্তিক অনুযায়ী সুবিবেচিত বিনিয়োগ সিদ্ধান্তই হতে পারে আপনার প্রকৃত সহায়ক।

জিডি-৩৫২০