An appraisal of fresh water wetlands

There are a variety of wetlands in Bangladesh such as Haor, Baor and Beel, that are open in nature and, on the other hand, channel wetlands such as river and canal. These are inland and fresh water wetlands critically important for human settlements, biodiversity, fisheries, agricultural diversity, navigation and communication, and ecotourism. It is a matter of regret that due to natural and human induced causes many of these wetlands are at the verge of extinction.

MAHFUJUR RAHMAN

BANGLADESH possesses enormous area of wetlands. Rivers and streams, freshwater lakes and marshes (haors, baors, beels), water storage reservoirs, fish ponds, flooded cultivated fields and estuarine systems with extensive mangrove swamps are varieties of wetland in Bangladesh. However, the haors, baors, beels and jheels are of fluvial origin and are commonly identified as freshwater wetlands. These wetlands occupy four landscape units -- floodplains, freshwater marshes, lakes and swamp forests which have a wide range of ecological, socio-cultural, economic and commercial importance and values in Bangladesh.

Haors: Haors are large saucer-shaped flood plain depressions located mostly in north-eastern region of the country covering about 25% of its entirety. There are altogether 411 haors comprising an area of about 8000 km2 dispersed in the districts of Sunamgonj, Sylhet, Moulvibazar, Hobigonj, Netrokona and Kishoreganj. The Haors are enriched with various aquatic flora and fauna including 140 species of fish. About 8000 migratory wild birds visit the area annually. The extreme flashy character of the rivers and high rain fall compared to other parts of the country cause frequent flash floods in the Haors. In Haor area three major resources viz. land, water and human could not be utilized in an integrated way due to its unique geographical as well as complex hydrological characteristics. Some of the important aspects to utilize the resource are to ensure harvesting of principal crop (Boro), enhancement of communication net works, multiple uses of water resources with emphasis on fishery, agriculture, cattle farming and employment opportunities for both men & women throughout the year.

Baors: Baor or Oxbow Lake a crescent-shaped lake formed when a river bank across the neck of a well-developed meander; it is found on the floodplain of a river. Oxbows are caused by the loops of meanders being cut-off at times by floods, causing the river subsequently to adopt a shorter course. In Bangladesh, oxbow lakes are quite visible in the older floodplains. Locally, the feature is also known as beel and jheel. Usually, oxbow lakes become plugged with sediment where they adjoin the channel and then progressively get filled in. These abandoned channels are rich in organic matters, because of profuse aquatic vegetation growth in clay to fine silty-clay sediments.

Usually, oxbow lakes are deeply flooded during the monsoon, either through local rainfall and runoff water or by river flood. Depending upon the depth of flooding, the rims of the lakes are used for boro rice cultivation, at least in the early stage. Once the lake gets filled with alluvium, it comes under rice cultivation. These lakes support a large variety of aquatic flora and fauna. Some of the lakes are considered to be very important freshwater fishing grounds, and are locally called jalmahal. During the monsoon season oxbow lakes act as local water reservoirs, and help to control the local flood level. In some areas, these lakes serve as valuable source of irrigation during the dry season.

Floodplains: Apart from the major river courses and streams, the major wetlands of fluvial origin occupy the floodplains. The manmade wetlands including ponds, dighis and lakes are distributed all over the floodplains. Some important wetlands of the country are chalan beel, Atrai basin, lower Punarbhaba floodplain, Gopalganj-Khulna Beels, Arial Beel, and Surma-Kushiyara floodplain.

Beels: In the active floodplains of the Surma-Meghna, the Brahmaputra-Jamuna, and the Ganges-Padma river systems, there are several large and small beels. Thousands of beels of different sizes. Some of the most commonly known are Chalan beel, Gopalganj-Khulna beel and Arial beel. Beel a large surface waterbody that accumulates surface runoff water through internal drainage channels; these depressions are mostly topographic lows produced by erosions and are seen all over Bangladesh. The term beel is synonymous to baor, and familiar in greater Comilla, Faridpur, Dhaka and Pabna districts. Beels are small saucer-like depressions of a marshy character. Many of the beels dry up in the winter but during the rains expand into broad and shallow sheets of water, which may be described as fresh water lagoons.

Degradation: Most of these large beels have shrunk quite considerably in recent decades. For instance, in the early 19th century Chalan Beel used to cover an area of about 1,085 sq km but it was reduced to 368 sq km by 1909, of which only 85 sq km remained under water throughout the year. It has since shrunk to only 26 sq km. Beels are mainly fed by surface runoff water. A few larger ones are fed by floodwater during the wet season from the parent river channel. Normally, beels remain deeply flooded for most of the wet season and the rims are primarily used for either boro cultivation or deep-water rice. Like baors, beels are also important wetlands and regarded as valuable fish and wildlife habitat.

Degradation of wetlands has caused several problems including extinction and reduction of wildlife, extinction of many indigenous wild and domesticated rice varieties, loss of many indigenous aquatic plants, herbs, shrubs and weeds, loss of natural soil nutrients, loss of natural water reservoirs and of their resultant benefits, increase in the occurrence of flooding and degeneration of wetland based ecosystems, occupations, socio-economic institutions and cultures.

Conclusion: There are a variety of wetlands in Bangladesh such as Haor, Baor and Beel, as said, that are open in nature and, on the other hand, channel wetlands such as river and canal. These are inland and fresh water wetlands critically important for human settlements, biodiversity, fisheries, agricultural diversity, navigation and communication, and ecotourism. It is a matter of regret that due to natural and human induced causes many of these wetlands are at the verge of extinction. Taking immediate and long term action against degradation of the country's wetlands is a crying need of time.

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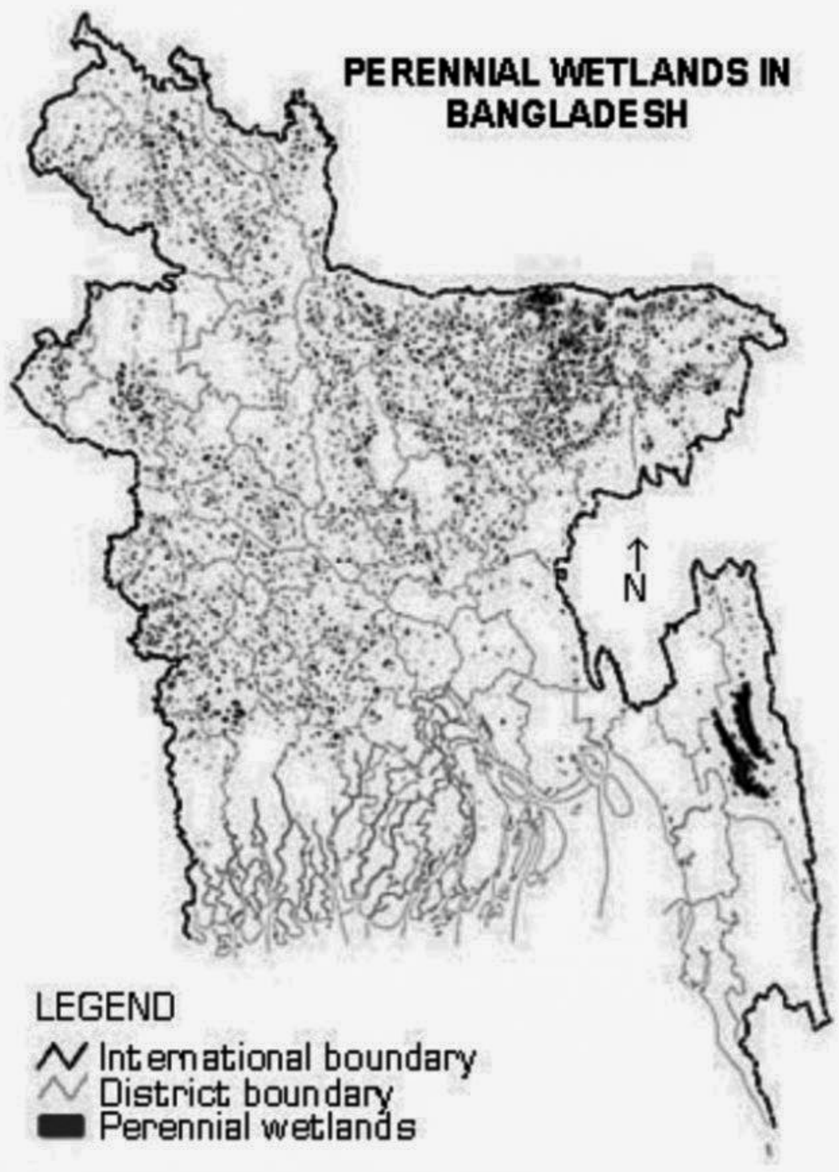
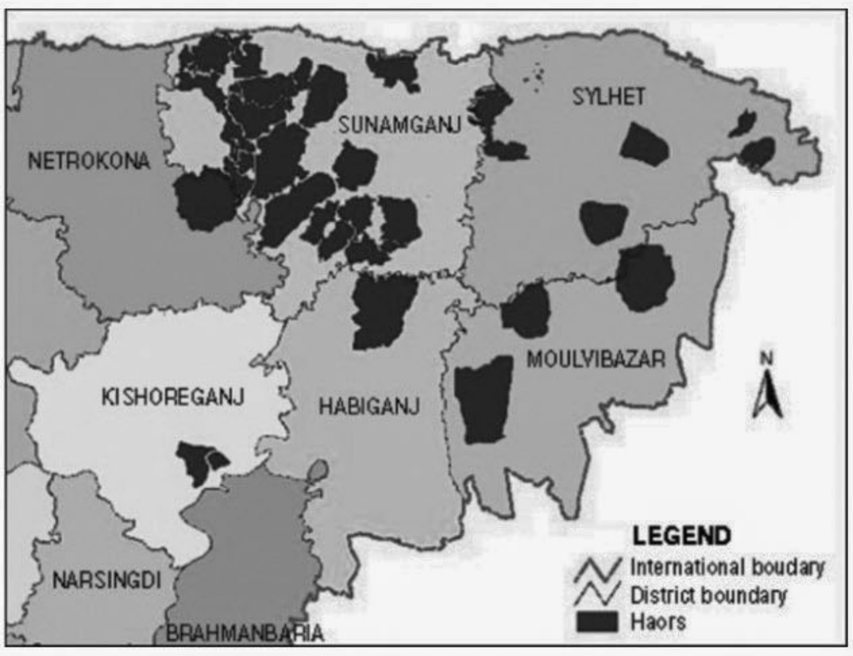
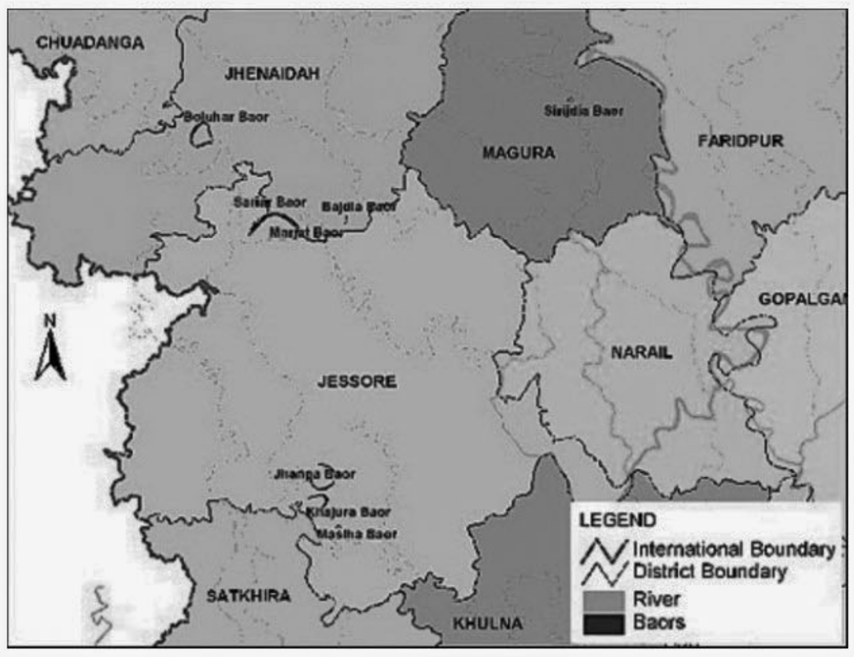


Map: Bangladesh Water Development Board (BWDB).



Haors



Baors

How sustainable is Dhaka city traffic-wise?

Bangladesh already has one of the highest traffic fatality rates in the world. Upgrading transport services for more efficient use of limited space is therefore critical for ensuring people's mobility, improving their quality of life, and boosting economic growth. Transportation appears to be one of the priority concerns for its sustainability.

ANGSHU RAHMAN

LET'S first discuss the characteristics of a sustainable city. Policy development and decision making in sustainable cities takes into consideration the complex interactions among a number of different related fields and tries to make an across-the-board progress by minimizing harmful effects, including the degradation and exploitation of the natural environment. The following provides a list of some of these important issues:

- Sustainable cities try to minimize urban sprawl. ·Material and energy input comes from renewable or recyclable sources (e.g. agriculture, waste, renewable energy sources). · Material output (solid waste, sewage, and air pollution) is kept to a minimal level. ·Extensive recycling. ·
- A sustainable city tries to minimize its ecological footprint. (I.e. the land/natural resources necessary to supply the city with raw materials/energy and to ensure its implementation.)
- Holistic system development in policy development and decision making. Individual problems are always addressed in a wider context, taking into consideration their complex interactions with related fields. The goal is to achieve an across-the-board improvement instead of solving one problem at the expense of others.
- Integration of advanced environmental principles into decision making and preparation. (E.g. reduce-reuse-recycle, polluter pays principle, internalisation of external costs, and eco-efficiency in industrial production, from cradle-to-grave approach/lifecycle analysis, environmental impact assessment, public participation in decision making etc.)
- Democratic society. (Primarily through public participation in decision making, an influential civil society, and democratic control.)
- Cooperation of different stakeholders in solving problems. (Stakeholders may include businesses, municipal/national governments, NGOs; universities/research institutes/think tanks etc.)

Three dimensions

Economy, ecology and social cohesion are the pillars of a sustainable city. These must be in balance and therefore require an integrated approach. The main components of sustainable developments are–

- Environmental or ecological sustainability.
- Economic sustainability.
- Socio-cultural sustainability.

The three dimensions of sustainability, sometimes also called pillars, or considered as subsystems of the general term sustainability, reflect the presence of three types of the so- called community capital–

- Natural capital like natural resources, services provided for human activity.
- Financial or built capital like manufactured goods, buildings, infrastructure, information resources etc.
- Human or social capital like cultural heritage, education skills and health of population.

Characteristics

A sustainable city is a city which has:

- A controlled population for whom adequate, meaningful employment is available.
- Adequate governance set-up which can meet the needs of the populace and ensures civic responsibilities, community participation, a sense of identity, transparency and equity in local institutions.
- Efficient basic civic amenities for a reasonably comfortable existence. For example, due to the shortage of power, more than 50% of power is illegally consumed without payment to the municipal corporation, leading to corruption, astronomical financial losses and inadequate supply to those who pay for its consumption. Same goes for water, which is inadequate to meet the demands of the population.
- Planned housing colonies with adequate infrastructure like schools, parks, drainage system, and local medicare establishments.
- An appropriate transport system, as transportation affects the environment. Transportation planning has to take into consideration a wide range of options and choices like adequate roads, parking lots, alternate system of transportation, mass transit facilities. The aim should be to reduce the total vehicle kilometers driven in congested areas, thus reducing the pollution and emission of green house gases. This can only be affected if the number of vehicles on roads is reduced.
- Effective environmental infrastructure to address the issues of untreated sewage and waste polluting rivers, lakes and coastal zones, (thus threatening water ecosystems).
- Empowerment of women and encouraging their participation in the political, social and economic life of a city and adoption of urban policies that takes into account women's needs and initiatives.
- Development of an efficient urban private sector, both formal and non-formal which reduces poverty by generating jobs and helping in economic growth.
- An efficient health-care system which would also address issues of nutrition, family planning and sanitation.
- A mechanism in the form of a policy initiative for industrial dispersal to satellite townships where better employment opportunities are created.

Dhaka

Dhaka is fast becoming one of the largest cities in the world. With over 14 million people residing within an area of 1529 sq-km., it is also one of the most traffic congested cities. By 2020, the mega city's population is expected to rise to 22 - 25 million. This rapid population growth together with the limited space available for new transport infrastructure will further aggravate the heavy congestion in Dhaka.

Bangladesh already has one of the highest traffic fatality rates in the world. Upgrading transport services for more efficient use of limited space is therefore critical for ensuring people's mobility, improving their quality of life, and boosting economic growth. Transportation appears to be one of the priority concerns for its sustainability. Severe traffic congestion on roads and long queues at bus-stops are omnipresent. Recently, however, the government has initiated devising a strategic transport plan for the city integrating peripheral areas and investigating alternate options.

Mode of travel

- More than half (54 per cent) the daily trips by sampled respondents are non-motorized, i.e. by walking, bicycling or on a rickshaw which is the single most used (46 per cent) mode of transport.
- Of the remaining 46 per cent trips, the dominant (25 per cent) mode is bus (public or office).
- There is not much gender variation in the choice of travel mode. Variation among the occupational categories is more distinct. For example, professionals seem to travel by rickshaws and private cars.
- Purpose-wise office travel is least non-motorized (49 per cent) while non-grocery shopping is most so (63 per cent).
- Rickshaws are most preferred for school trips (52 per cent), shopping (47 per cent), and college trips (46 per cent).
- Office travel is still mainly on rickshaws (42 per cent), followed by buses (39 per cent) and scooter/tempo (14 per cent) and private car (5 per cent).

Causes of congestions

- Narrow roads, broken roads and unplanned repairs appear as the 3 main causes of traffic jam to a section of city dwellers. This again is the result of asking the respondents to name only 3 main causes.
- When asked about the contribution of different road users to the traffic jam problem, the rickshaw wallahs were pointed out as a major culprit: 66 per cent thought they made very high contribution, while another 5 per cent thought they made moderate contribution.
- The truck drivers were next in line with about 50 per cent considering their contribution as moderate to very high.
- There were no significant variations in respect of the above findings between genders, incomes and occupations.

Recommendations

- There were more recommendations on the software (i.e. legal framework, planning, management, etc) than on the hardware side (i.e. brick and mortar stuff).
- The single most recommended measure was one way roads (28 per cent). Interestingly, the richer and the professional households were less vocal about it, while the labourers did not mention it at all. The demand came mainly from the businessmen and lower income households.
- The next most recommended (22 per cent) measure was to improve and enforce the traffic law. If one adds to that the recommendation of establishment and enforcement of sound parking rules (11 per cent), legal reform and enforcement emerges as the most recommended (33 per cent) measure.
- There was broad unanimity in this regard between the genders, incomes and most occupations except the professionals for whom flyovers were the second most mentioned remedy.

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