

Why unabated deforestation?



M. ABDUL LATIF MONDAL

WHILE inaugurating the National Tree Plantation Movement 2006 and National Tree Fair 2006 in Dhaka city on June 5, Prime Minister Khaleda Zia urged each of the families of the country to plant 10 wood, fruit-bearing and medicinal plants this year to save lands, environment and earn some extras for affluence. Mentionable that while consciousness is growing among the people for planting trees in their homesteads on the one hand, dwindling of state-owned forests is going on unabated on the other. Only a week before the inauguration of the tree plantation movement by the Prime Minister, the US Ambassador to Bangladesh Patricia A Butenis said at Srimangal that "conservation of biodiversity has become a great challenge for the country as its forests had dwindled by 30 to 40 percent due to unabated deforestation in the last three decades" (The DS, 30 May).

What is a forest? A forest has been defined "as an ecosystem or assemblage of ecosystems dominated by trees and other woody vegetation. The living parts of a forest include trees, shrubs, vines, grasses and other herbaceous (non-woody) plants, mosses, algae, fungi, insects, mammals, birds, reptiles, amphibians, and microorganisms living on the plants and animals and in the soil. These interact with one another and with the non-living part of the environment -- including the soil, water, and minerals, to make up what we know as a forest." So, trees planted by the people in their homesteads do not strictly come under the

BARE FACTS

As a member state of the UN, Bangladesh is under obligation to undertake activities suggested in Agenda 21 not only for combating deforestation, but also for the conservation, promotion and development of forests. And all these need strong commitment of the government. Motivation, awareness creation among the general public, updating and enforcement of laws, employing trained, honest and efficient manpower equipped with forestry knowledge are equally important in this regard.

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Controversies exist regarding forest coverage in the country. In Bangladesh, though forest land is 18-19 percent of the total land area, 10-12 percent is declared as forest and tree cover is only 5-7 percent according to a present estimate. Other estimate says that the total natural forest cover is 769,000 ha which is 5.9 percent of total land area and the area of plantations is 335,000 ha which is 2.5 percent of the total land area (FAO, 1993).

Bangladesh State of Environment Report of June-2001 says: "Bangladesh has a classified natural forest area of about 10 percent of the total land area, but only 6-8 percent of this has good canopy cover, which is far below the desired level. About 50 percent of the destruction of forests has taken place during the last 20 years, affecting topsoil and causing land erosion."

In his article "Environment: Hope for the best" printed in some English language dailies of Dhaka on June 5, Jafar Ahmed Chowdhury, Secretary, Ministry of Environment and Forests wrote: "While in 1970 forests accounted for 30 percent of total land in Bangladesh, it came down to 9.2 percent in 1990. Recent survey suggests that the forest area under tree coverage has increased to about 14 percent while it was 9.2 percent in 1990." He has attributed this success primarily to the comprehensive programmes under social forestry and mangrove coastal afforestation. If we take this figure to be true, still we have to go a long way to reach the forest area of 1970.

In Bangladesh, annual rate of

deforestation has been estimated at more than 3.5 percent (Bangladesh Forestry Master Plan, 1993). Experts, researchers, academics and others have attributed the deforestation, particularly in three main classes of the country's natural forests namely, hill forests, the sal forests and the Sundarbans mangrove forests, primarily to the following factors:

? Conversion of forest lands into agricultural land to meet food requirement of the growing population.

? Conversion of forest lands into shrimp farming.

? Use of forest lands for new settlements, construction of new roads, bridges, embankments etc and grazing by domestic animals.

? Illegal and / or deliberate wood cutting, felling and thinning.

? Indiscriminate use of chemical fertilisers and insecticides in crop lands and adoption of unplanned agricultural practices resulting in low productivity of forests.

? Uncontrolled diseases causing havoc mainly on the sundari trees in the Sundarbans.

? Unregulated testing and exploration activities by the International Oil Companies in the Sundarbans.

? Low flows in the distributaries of the Ganges due to water withdrawal at Farakka barrage in India during lean season, which cause serious problems for the regeneration and growth of different forest species.

? Jhum cultivation in the Chittagong Hill Tracts (CHT) in the absence of alternative livelihoods to Jhumias.

? Natural disasters that destroy forests.

? Improper implementation of policies, plans and programmes so far recommended / approved for conservation, promotion and development of forests.

The present rate of deforestation is seriously affecting the country's economy and ecology in the following ways:

-- Due to uncontrolled logging in the CHT, jhum cultivation, construction of roads and other physical infrastructure, land slides and soil erosion have significantly increased in the region.

-- Soil degradation in the plain lands due to the nutrient deficiency is common. Previous natural nutrient cycling from the forest to the plain arable lands has been destroyed by clearing the forest and afterwards using huge overdose of chemical fertilisers and uncontrolled use of the hazardous toxic pesticides.

-- The conversion of some lands of the Sundarbans for agricultural use, construction of houses for human habitation coupled with unabated poaching, hunting, illegal felling of trees by the unscrupulous traders and dacoits in connivance with the corrupt forest officials, insufficient conservation effort have already threatened the forest's bio-diversity. Some ecological changes like salinity, outbreak of diseases like "top dying" of the sundari trees pose a serious threat to rich bio-diversity of the Sundarbans.

-- The desired level of forests for a country is 25 percent of its total land area. The existence of forest area much below the desired level

has influenced the climatic behaviour of the country. Experts are of opinion that the abnormal variation in diurnal temperature and seasonal weather than the past records indicate to be alarming. The devastation after the cyclones and storms in exposed areas to the Bay near the coastal lines is now more severe than the past. The situation is becoming worse as time passes.

In order to combat deforestation, Agenda 21, a principal outcome of the UN Conference on Environment and Development (commonly known as Earth Summit) held in Rio de Janeiro,

Brazil in June 1992, has listed a number of activities for a member state, which, inter alia, include: (a) ensuring the sustainable management of all forest ecosystems and woodlands; (b) carrying out community forestry, social forestry and agroforestry taking into account the role of forests as national carbon reservoirs and sinks; (c) developing industrial and non-industrial planted forests in order to support and promote national ecologically sound afforestation and restoration / regeneration programmes in suitable sites; (d) developing / strengthening a national and / or master plan for

planted forests as a priority; (e) increasing the protection of forests from pollutants, fire, pests and diseases and other man-made interferences; (f) stimulating development of urban forestry for the greening of urban, peri-urban and rural human settlements; (g) launching or improving opportunities for participation of all people in the formulation, development and implementation of forest-related programmes; and (h) limiting and aiming at halting destructive shifting cultivation by addressing the underlying social and ecological causes.

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A section of the Sundarbans: Let's preserve our forests.

Each city flooding brings an assurance

MD. SAEEDUR RAHMAN

FLOODING of Dhaka city, in recent times, throughout the wet season has become a major concern for all. Fifty years back the far tinier Dhaka had no such problems of flooding or drainage. Public and private bodies or agencies including individuals are accused of and abused for the immense sufferings of the common city residents caused by flooding. Physical interventions for and by the drifting population are said to be the principal reasons.

The sufferings are the honestly paid price for the benefits of development. The comparable best example is the impact of climate change resulting from emission of gases from industrial development.

City flooding is not an uncommon phenomenon across the world. Many famous cities of the developed countries are facing flooding. Heavy monsoon rain in and around India's commercial capital Mumbai, in the year 2005 caused severe flooding. World's major cities, including Bangkok, London, Miami and New York, could be flooded by the end of the century, according to a new analysis of current temperatures in the Arctic region. By then, global temperatures will be at an average of 3 degrees C. higher than now or about as hot as it was nearly 130,000 years ago, when ocean levels were four to six metres higher. Dhaka city is no exception. So too Chittagong. Developments

The Dhaka city needs to take the bold decision to move away from the conventional "structural approach" to adaptive "hydrological improvement approach" and to embrace a program of floodplain and wetland preservation and restoration. The first step would be to free the natural drainage channels, detention ponds, water bodies, lakes and lagoons and, any other open space.

may not pause and sufferings may not be eliminated. Mitigation or adaptation as such is the only route out from hazards of development and the resultant floods in the city.

With forty percent of the country's land mass only one meter above the sea level Dhaka city has an area of 360 square kilometres virtually built on and spread over low lying deltaic zone. So why should there not be floods? The city of Dhaka is said to have once plus-minus 50 criss-cross canals facilitating upland drainage. Most of them in any case disappeared and the visible rest are though dysfunctional or have lost the hydraulic characteristics of a stream, channel or a pond. In the process of urbanisation of Dhaka as water bodies has been converted into lands and land has been converted from fields or forestry to roads, buildings and car parks, it lost its hydraulic properties to store, absorb and convey the surface runoff. Urbanization has multiplied runoff roughly by 5 times that of what would occur on natural terrain. During the periods of flooding, the city streets become flowing rivers, while basements become traps as they fill with water. A start-monsoon rainfall with 50mm a day may cause floods in

the city. The 150 mm torrential rain is experienced to have disrupted the normal city life. The highest ever recorded 341 mm rainfall a day in 2004 snapped all activities at the national level. Along with immense sufferings to the city population the rain generated flood severely damages and disables the infrastructures eventually surcharging pressures on prefecture budgets for recurring expenditures on its rehabilitation.

Not more than thirty percent of the city area during torrential rain remains flood free. Fifty percent faces floods and the rest twenty percent that practically floats on waterlogged area is subjected to severe flooding. Inadequate drainage in general has been known as the reason for such flooding. Unplanned building constructions are taken as the wide spread impression for such poor drainage while the Building Code of Bangladesh similar to other countries do not provide for any flood risk. Blocking drainage conduits by dumping solid objects and polythene into it, reducing water absorption capacity of soil by concreting the surface area, obstructing run-off discharge by building unplanned or ill-planned

concrete structures, shrinking drainage cross-sections by grabbing the natural outlet canals, squeezing the storage capacity by encroaching the fringes of the detention pond, and strangling the peripheral channels by obstructing the drainage are accepted as the major cause of city flooding. The climate change impacts altering the precipitation patterns are close behind these reasons. The cumulative neglects of the urbanisation process have the progressive impacts. Added to it is the inadequacy of professionals' vision and residents' awareness.

Every time the city is flooded a high level expert committee has been formed to study and investigate into the causes and recommend remedies for such calamities. The politicians flanked by experts frog-jump into the media-riding assurances and relief operations with commitments of high sounding plan. The problem is thus buried well before it is realized at the level of policy and decision making process.

Not accepting flooding as inevitable the city residents, political leaders, engineers and environmentalists have to ask what

human interventions increased the severity and what steps should be appropriate to mitigate or adapt recurrent flooding. Structural measures may provide safety from floods but consequently shall result in a net increase in habitation density in protected areas. These improvements will also provide politicians with visible evidence to city residents that resources were being put to work. The much talked about flood project widely known as eastern bypass-cum-flood embankment for instance may provide reduced flooding depths in specific areas thereby increasing the habitation which over time shall turn into today's problematic DND project; if implemented in a traditional manner.

Dhaka city flooding may not be labelled as misdeeds of individuals or engineers. The dynamics of social developments knew no consequences. Once realised the problems there is nothing wrong in try-bringing corrections or diversions to the process. The city of Dhaka requires preserving floodplains and seeking to accommodate floods not control anymore; this has to be given the due

cognisance. In doing so the issues of recharging ground water basins, increasing soil moisture storage by absorption, providing facilities for non-consumptive use of water, flushing city surface through creeks, creating ponds for use as emergency fire hydrants and restoring open water bodies for aesthetic and ecological needs are to be taken into consideration.

The Dhaka city needs to take the bold decision to move away from the conventional "structural approach" to adaptive "hydrological improvement approach" and to embrace a program of floodplain and wetland preservation and restoration. The first step would be to free the natural drainage channels, detention ponds, water bodies, lakes and lagoons and, any other open space. Two of the steps that may be used next are acquisition of flood-prone property and implementation of mitigation projects which will maximize vegetative cover and minimize structural components. The innovative measures to adapt to city flooding may include using open spaces and underground areas, and stormwater infiltration. The city residents are expected to voice now reconsidering the ongoing development practices in the city floodplains and upstream segments of its watersheds; not really staying satisfied with assurance one after another.

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Plastic waste to liquid fuel

S A MANSOOR

PLASTIC has become a part of our daily life. It is employed in many areas of industrial and domestic uses. Chemically, plastics are non-biodegradable polymers of carbon, hydrogen and some chlorine and nitrogen. The non-biodegradable nature of plastics is a big headache for municipal waste management. It goes on accumulating, and we do not know what to do with it; may be eventually burn it! Part of this waste on a selective basis is recycled. Based on studies it is indicated that Dhaka city recycles around 45% to 50% of the waste plastics created.

However there is a silver lining to this dark cloud. In Nagpur (India) a Professor of Chemistry has invented an eco-friendly catalytic process of producing liquid fuels like gasoline, diesel fuel and LPG. This fantastic information is not well known here in Bangladesh. We should in the national interest contact the company that has been set up by the professor in Nagpur and set up similar plant in Dhaka on joint venture, licensing or any other acceptable commercial basis to really add value to our plastic waste. It will not only solve the unending problems of plastic waste management, but also provide a product that saves foreign exchange.

Based on studies carried out a few years back, Dhaka City Corporation collects over 50,000 tons of plastic waste annually. The average collection rate is around 137 tons per day. Roughly around half of this collected waste is recycled. The balance half of the waste can be converted to liquid fuel. If we can manage to recycle all the plastic waste, we can produce liquid fuel where the value addition scope is much higher. The annual foreign exchange saved in terms of fuel import can be estimated at well over \$250 million annually. However this will need a large conversion plant which we may have at a later stage, after the process is set up in a smaller scale and we learn to operate it effectively.

Briefly the conversion process starts with sorting of the plastic waste, and cutting, shredding and crushing into more or less uniform size. The sized waste plastic is fed into a reaction vessel after preheating. The process material (waste plastic) is heated to around 250°C and melted. Depending on the waste plastic melt composition, scavenging material may be needed to remove excess chlorine as Hydrogen Chloride gas through

the gas scrubber giving Hydrochloric acid as a by product. The rest of the hydrocarbon gas is separated and used independently. It can be used as a fuel to melt the charge of waste plastic. Molten material (waste plastic) is next fed into the main reactor where reaction temperature is maintained between 300-350°C at atmospheric pressure. Reaction takes place in the presence of small quantities of coal and a catalyst which converts the molten waste plastic to hydrocarbons.

Gaseous hydrocarbons are condensed and separated into liquid and gas streams. The gas stream goes through an absorption column where the remaining traces of chlorine and chlorine compounds are removed. This chlorine free gas can be reused in the process for heating, or generating process power. A similar process, popularly called C2F (conserve & convert to fuel) is also available but the cost of the plant, technology and its operating cost based on normal capital financing is higher.

The estimated cost of production including financial cost (at 12% every year) could be about ± Taka 16 per litre of fuel produced. This however does not include any financial subsidy which the government normally provides for imported fuel. Even half of the subsidy based on the cost of imported fuel on commercial basis will considerably reduce the cost per litre of this waste recycled fuel. Further, we can claim carbon credit funds available per UN formulae for using recycled fuel which has not been incorporated and it can further reduce the production cost.

Given this opportunity for recovering useful liquid fuel from waste plastic, which also solves the problem of urban waste management the government should provide all logistic and financial support to this worthwhile enterprise which should be a top priority project for Bangladesh. Private sector should be a party too, it may be on a joint venture basis, to progress the project speedily. This double benefit of environment improvement and availability of much needed liquid fuel is an opportunity we should not miss. Once a plant is set up at Dhaka, it should then be replicated in other urban areas. Assuming that the collection of waste plastics in all urban areas in Bangladesh is double that of Dhaka we can recycle over 275 tons per day of waste plastics.

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