Use of ICT for adaptation to climate change

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It is a high time to create enabling conditions in Bangladesh for promoting adaptation to climate change and climate variability in national policies and plans and also to create awareness of the phenomenon at the local community level with special focus on the residents of the north, south and eastern areas.

MANGO buds, honeysuckle and muster-flower are blooming earlier in the winter. Foggy days are longer than in the past and northern part of Bangladesh is no more cooler. Cyclone and flood are becoming common and frequent every year. These are indications of a warming climate.

The Bangladesh is particularly vulnerable to the sea level rise (SLR) on account of its low-lying deltaic topography. The total area of the coastal belt is about 39,300 sqkm (27 percent of the country's total area), and more than 29 million people (22 percent of the national population) live in this vulnerable area. Climate change may influence erosion, accretion, floods, water logging, cyclones and tidal surges in the coastal region.

Sea levels rise because warmer water takes up more room than colder water, a process known as thermal expansion. Melting glaciers compound the problem by dumping even more fresh water into the oceans. Rising seas threaten to inundate low-lying areas and islands, threaten coastal populations, damage property and destroy ecosystems such as mangroves that protect coasts against storms and wetlands. Sea levels have risen between four and eight inches in the past 100 years. Current projections suggest that sea levels could continue to rise between 4 inches and 36 inches within the next 100 years. A 36-inch increase in sea levels would swamp all low-lying areas and islands around the globe including southern Bangladesh and also every city on the east coast of the United States, from Miami to Boston.

Sea level rise associated with other effects of climate change could displace tens of millions of people in low-lying areas -- especially in developing countries. Inhabitants of some small island countries that rest barely above the existing sea level are already planning to abandon their islands, some of the world's first climate change refugees.

Unfortunately, however, it is precisely this topography that makes Bangladesh particularly vulnerable to the effects of global climate change. If these environmental effects converge with the country's high population and widespread poverty, they will create a perfect storm of disaster.

Even if greenhouse gas emissions were to stop today, scientists believe that warming already underway will cause seas to rise two inches over the next century. If nothing is done to curb emissions, sea levels could climb more than three feet. If this happens, 15% of Bangladesh could be under water. The mangrove forests of the low-lying Sundarbans, a world heritage site, as well as its Bengal tiger and hundreds of bird species may disappear.

Mounting sea levels and loss of land will also create human disasters and dilemmas. Where will the tens of millions of internally displaced people go and how will they live? What will they drink when salt water contaminates fresh water supplies? Who will provide health care to combat the diseases that are sure to spread?

Bangladesh's food supply is already threatened by flooding due to melting glaciers in some areas and droughts due to heat in others. Moreover, the typhoons and monsoons that routinely pummel Bangladesh are intensifying because of climate change. Life in Bangladesh is already harsh. In an overpopulated Earth, millions of people may have no choice but to live on the fringes of habitable environments. This in turn can severely increase the human toll of environmental disasters.

ICT's contribution and mitigation

Information and Communication Technologies (ICTs) have a critical role to play in combating climate change through the reduction of global green house gas (GHG) emissions. The increased use of ICTs contributes to global warming -- millions of television sets and computers are never fully turned off at night in homes and offices. But ICTs can also be a key part of the solution, because of the role they play in monitoring, mitigating and adapting to climate change.

The ICT sector itself (in this definition, telecommunications, computing and the internet, but excluding broadcasting) contributes around 2 to 2.5 percent of GHG, at just under one Gigatonne of CO_2 equivalent. The main constituent (40 percent) of this is the energy requirements of personal computers and data monitors, with data centres contributing a further 23 percent. Fixed and mobile telecommunications contribute an estimated 24 percent of the total.

International Telecommunications Union (ITU) working in this area focuses on the use of ICTs (including weather satellites, radio and telecommunication technologies) in weather forecasting, climate monitoring and predicting, detecting and mitigating the effects of natural disasters.

Another important way in which ICTs can respond to climate change is in the area of disaster prevention and relief. In Bangladesh we can promote the use of telecommunications/ICT for disaster prevention and disaster relief. In many cases when disaster strikes, the 'wired' telecommunication infrastructure is significantly or completely destroyed and only radio communication services can be used for disaster relief operations -- especially radio amateurs and satellite systems. We had tremendous experiences during Cyclone Sidr (November 15, 2007) that Radio and Cell phone were engaged in direct missions to help affected people.

We can work in this field with standardisation of call priority in emergency situations, for example Recommendation E.106 on the International Emergency Preference System for disaster relief. ITU-T has also assigned a special E.164 country code (888) to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) for the purpose of facilitating the provision of an international system of naming and addressing terminals involved in disaster relief activities.

Adaptation

It is a high time to create enabling conditions in Bangladesh for promoting adaptation to climate change and climate variability in national policies and plans and also to create awareness of the phenomenon at the local community level with special focus on the residents of the north, south and eastern areas.

The impact of global warming on the world's climate will continue, even if the level of GHG emissions is stabilised. Further, the impact is likely to be highly uneven. With low-lying coastal areas (such as small islands states, the Bangladesh delta and the Netherland) at risk because of rising sea levels and food insecurity, health hazards, growing number of environmental refugees, and increased pressure on sources of fresh water and vulnerable ecosystems, adaptation to climate change is a key necessity for us and the global community at large.

Conclusion

The government alone cannot address the response measures to adaptation of ICTs for mitigation of climate change impact in Bangladesh. The civil societies, NGOs, local communities will have to be sensitised and prepared to work with the government agencies. Public awareness, education and training will be most critical tool to involve all sections of the public in the process.

Funding can be realised for capacity building and other measures, which will help implement parts of the national development plan. It will require the human resources development in ICT sector. The Ministry of Science and Technology can take the lead.

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Dhaka's environment suffers urban impact

DR. MD. SHAIRUL MASHREQUE

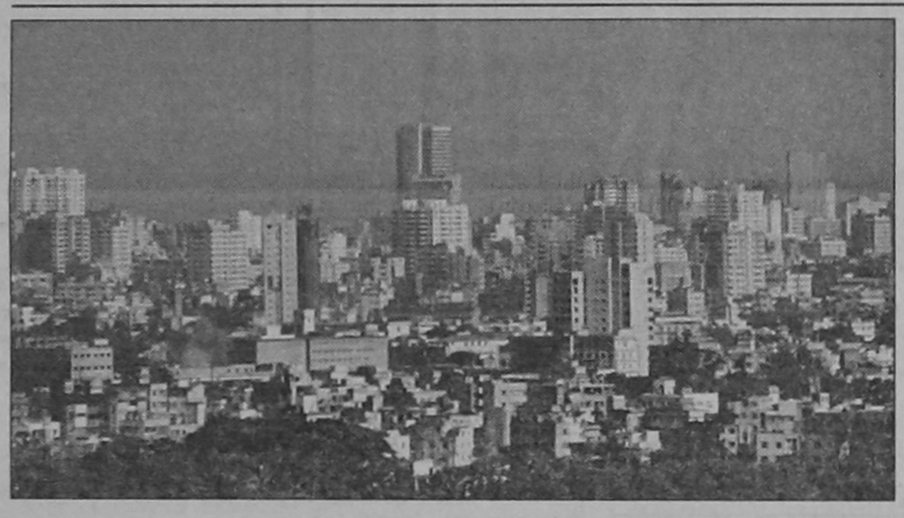
Dhaka is virtually seething with urban impact on its environment. Any time it may burst to the utter distress of its dwellers. So far we have failed in taking preventive measures. Now, should we fail, too, to take any curative measures?

URBAN studies of late obviously aim at environmental issues. As a matter of fact there is a thrust on the impact of unplanned urbanization on city environment. Admittedly major urban areas in Bangladesh are the seats of the forces of civilization.

Dhaka is the capital as well as district and divisional headquarters. The total population of the city is13 million. Dhaka is a 'historic city' with a legendary past 'running into hundreds of years.' It possesses a distinct 'cultural identity'. It is the seat of central government growing up as a politico-administrative centre with the preponderance of political and bureaucratic influences. The city has gradually turned into a hub of cultural and commercial activities. A lot of educational institutions scattered here and there represent one of the marked patterns of its contemporary phase of urbanization.

Dhaka represents a prototype of cosmopolitan urbanization with technological revolution in communication, ICT for illustration, and strikingly dynamic trends in mobility pattern. At times it is swamped with environmental hazards reflected in conflicting variables. All development management with input needs like water, gas, power and energy including the environmental attributes of land-use, drainage, solid and liquid wastes, air and adjoining sub-urbs, has turned out to become counterproductive increasing stress on environment.

Developmental trends in the city emphasizing environmental modifications are rather non-ecological. Man-environment interface in Dhaka in the wake of misdirected urban development that seriously impairs ecology has become a matter of concern for the urban planners.



Recently growth in and around Dhaka is extremely unplanned showing a high degree of congestion and overcrowding and malfunctioning of the traffic system. High-rise buildings are springing up . Many of such buildings tend to serve commercial purposes. Business activities are found in 'greater or lesser degree all along the roads' and pavements but 'intensify at the cross-roads.' The city exhibits a very high density 'human population' with inadequate space to live and much lesser road infrastructures to move. The rapidly growing urban population in Dhaka and its outskirts is enhancing environmental pollution posing 'problems to human health and threatening the general quality of life'

Environmental degradation stems from rural-urban migration. Folks from villages and small market towns with rural characteristics flock to the metropolitan urban centers full of development activities. All such development activities centering on urbanization come in disharmony with ecological factors leading to 'gradual degradation of life-support systems including air, water and land'. Enormous population pressure in the core of the city and even its sub-urbs aggravates situation.

Drainage is poor. Most drains remain chocked. Flooding and water logging during rainy season very much trouble the pedestrians. Rain water with waste accumulates; resultantly roads, lanes and by-lanes become the 'polluted pools'.

Over the recent couple of decades urbanization in Dhaka has assumed 'greater significance' influencing 'growth, distribution, density and structure of population.' Even then there is no proper system of waste disposal. There is a generation of 'organic pollution hazard'. The garbage spreads in heaps all over the filthy city points. Well maintained garbage disposal system is lacking. In many city-points some amount of solid waste is discharged into the drains or canals causing a great deal of pollution. Garbage disposal requires responsible urban governance which is supposed to take immediate action.

Dhaka is virtually seething with urban impact on its environment. Any time it may burst to the utter distress of its dwellers. So far we have failed in taking preventive measures. Now, should we fail, too, to take any curative measures?

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Preserving green spaces in Dhaka city

MAHFUJUR RAHMAN

Most areas, old or new, of Dhaka city are unplanned and have little scope for creating any green space or enhancing the existing ones, if any still worthy to be called so. But the importance and necessity of green space is simply great and you cannot do without it in too crowded a city like Dhaka.

VEGETATION in a city is sometimes synonymous to presence of nature in the predominantly man made environment. Urban vegetation is an important point for sustainable development, environmental conservation and urban planning process of a city (Tunay et al, 2007).

The urban environment is characterized by an intense use of the available space, where the preservation of open green spaces is of special ecological importance (Roessner, 2001).

In urban areas various processes are responsible for destruction of vegetation such as construction and infrastructure development. And, green areas are dwindling at unprecedented rate in Dhaka city. However, still there are various types of green areas or vegetation cover in the city. Major types are botanical gardens, homestead gardens, public parks, vegetation around government offices, graveyard and playgrounds. These need to be religiously preserved and, if possible, enhanced.

Urbanization and land use: The urban area is a sharp manifestation of transformation where the land is acquired and put under concrete at a very fast rate. Usually vegetated area decreases. In one stage of urbanization people start to migrate to urban area for jobs and better life standard. The demand for land, a basic requirement for any development, is high and its scarcity acute. Then the pressure on the land becomes intense and unused green patches are lost to residential-commercial complexes. Against high demand for land people are willing to pay huge amount of money for buying land .In such a situation it becomes economically less attractive to conserve the homestead garden.

Environmental importance: Exclusive vegetation cover is a good indicator of environmental health in the urban areas. Vegetation or living biomass is natural store of carbon and source of oxygen. Presence of vegetation in significant amount in urban area is also reported as a means of reducing sound and air pollution since leaves of trees make a huge surface area for settling down of dust particles and absorption of noise.

Vegetation abundance influences environmental conditions and energy fluxes by selective reflection and absorption of solar radiation, by modulation of evapotranspiration and by sequestration of pollutants. Vegetation in urban locality is the niche of urban ecosystem .Ecosystem services such as fresh air generation, maintenance of local hydrogeology for perpetuation of fresh water supply and balancing the temperature for the dwellers depend on the amount and quality of green spaces.

Vulnerability of green spaces in Dhaka: The presence of vegetation in Dhaka is diminishing fast. In many cases, the parks and playgrounds are encroached upon illegally by powerful people. On the other hand the poor rootless people occupy many parks. Many parks are infested with slums and unhygienic condition is created there by these people. The open space or area in the city is also decreasing at an alarming rate. Once open spaces found around the government quarters in Azimpur, Sobhanbag and Mirpur are occupied by new buildings erected to make room for more government officials.

AERIAL VIEW OBTAINED FROM GOOGLE EARTH

While greening the urban area, whatever small effort is made as such, there is no consideration for indigenous species of plants. Many alien species are planted to the detriment of exiting ecology pattern. A notable problem for the vegetation of the city is air pollution. Various toxic gases such as NOX, SOX have adverse effect on the vegetation. The particulate matters in thick layer of dust on the leaves beside the road reduce the sunlight incidence on the leaves, hence hinder photosynthesis.

Green spaces of Dhaka: An overview: Vegetation zones of Dhaka City are -- Agargaon, Dhanmondi, Khilgaon, Kamrangir Char, Banani and Ramna. Various green spaces are --Panthokunjo park, Shahidbagh park, Bahadur Shah park, Chaudhuripara Shishu park, Taltala High School, Vegetation around Dhanmondi lake, Vegetation around Gulshan lake, Osmani Uddyan, Zia Uddyan, Ramna Uddyan, Suhrawardi Uddyan. By now extinct or almost extinct parks are -- Kamlapur park, Karwan Bazar park, Shamibagh park, English Road park.

Playgrounds: Playgrounds can be considered as vegetation or green space because at least for certain part of the year these lands remain covered by grasses and plantation of some common tree species such as raintree and Mahogany occur surrounding these. Many playgrounds are encroached upon in the city and used for different purposes such as slum or market.

Graveyards: In the city environment graveyards also have very important ecological role as green space. The land occupied by the graveyards is not negligible and the amount is on an increase. Graveyards support very sound and undisturbed ecosystem. Most prominent and large graveyards are Azimpur Graveyard, Mirpur Graveyard, Banani Graveyard and Iraqi Graveyard.

Government and public offices: Vegetation around the government offices are sometimes almost in natural condition. The vegetation in western part of the Sangsad Bhaban and some vegetation in the park near Bangabhaban are examples. Such prime sites, are: Prime Minister's Office, Prime Minister's Residence, Saangsad Bhaban, Bangabhaban, Old airport, Bangladesh Betar, Meteorological Department.

Reserved area: The reserved areas are examples of some conserved areas in the city .In Dhaka reserved areas are mainly the Bangladesh Rifles Headquarters, Rajarbagh Police Line and Dhaka Cantonment. These areas are out of anthropogenic activities .The land cover changes is not significant in these three areas .These areas contain comparatively more open spaces covered by green vegetation.

Educational institutes: Dhaka University, Eden University College, Bangladesh University of Engineering and Technology (BUET), Jagannath University and Sher-e-Bangla Agriculture University --these public educational institution s have appreciable green areas in their respective big and small campuses.

Pressure on the parks and open spaces: The existence of public parks in the city is greatly threatened by various agents. It is a matter of great regret that many parks are first converted into playgrounds and then occupied by encroachers. Most of the parks are occupied by floating people. Due to their presence the condition of many parks is not good enough to be visited by the city dwellers. In some cases they even turn parks into slums.

Movement for conservation: Various environmental pressure groups are raising their voice for conservation of parks and playgrounds in the city. Bangladesh Paribesh Andolon (BAPA) and Bangladesh Engineers' Institution (BEI) vowed to clear the grabbed lands of parks and playground (Prothom Alo, 2 December 2007). Citizens are also becoming more conscious about green areas in the city. The mayor of Dhaka city held a meeting with BAPA, Nagorick Sanghoti and Nagorick Committee seeking way-out to save the Osmani Uddan from illegal grabbing (Dainik Samokal 4th January 2008). But nothing has appreciably worked or is working.

Ecological importance: Preventing destruction of natural ecosystems and restoring the denuded ecosystems are basic objectives of any conservation programme in an urban area. Ecosystem comprises the physical environment and the biotic components. The physical components and the biotic community cannot be separated in the real environment. When we separate themit is simply environmental disruption. In an ecosystem the producers are the basic and primary element which exist as biotic components. Vegetation creates the basis for the ecosystem in the urban area providing various environmental services often called 'Ecosystem Services' such as fresh air generation, water shed management, waste assimilation and waste water purification. In the urban area fresh air generation and water shed management are two most important services provided by vegetation.

Conclusion: Presence of vegetation in the city is presence of nature. In Dhaka, like other cities, all the existing vegetation is man-made or altered by man to a great extent. There is almost no natural vegetation. In the city these green cover contain the remnant biotic diversity of this part of erstwhile green and vast landscape of Modhupur tract. Most of the vegetated areas of the city are publicly owned. These vegetations occur in or around such organizations that are important to people for various purposes. So the importance is enhanced.

Most areas, old or new, of Dhaka city are unplanned and have little scope for creating any green space or enhancing the existing ones, if any still worthy to be called so. But the importance and necessity of green space is simply great and you cannot do without it in too crowded a city like Dhaka. So the authorities concerned as well as the respective area dwellers must be consciously eager to preserve whatever green spaces the city still have and call all others to join effort.

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