WATER MANAGEMENT IN BANGLADESH

Lessons Learned from the Recent Past

by Sarwat Chowdhury

Flood control measures generate a false sense of security with resulting construction of infrastructures along the riverbanks, which causes more damage and casualties with an eventual substantial flood. This has been experienced in the US throughout the century .

WHILE debate and discussions on water management in Bangladesh continues in our policy making arena, a renewed consideration of our past water management projects including the Flood Action Plan (FAP) may be appropriate. The FAP was developed as a joint effort by the international community to combat recurring floods that affect most of the plain lands of Bangladesh. The initial plan underwent significant changes after developers of the plan met with increasing challenges to their development model as voiced by local and global community.

Even though the misery, loss, and suffering caused by recurring floods is well-known to the outside world, these annual floods are the lifeblood to our millions of inhabitants. Annual floods created the vast Bengal delta over the millennia. Ninety per cent of the water discharge (1,360,000 m cubic meters per year) originates in India, Tibet, Nepal, and Bhutan. Bangladesh is also very much posed to environmental hazards including frequent typhoons and flooding in our low-lying coasts and pollution, erosion and inundation of the inland rivers. There are 54 rivers that flow into our territory from neighbouring India.

The balance of available water is crucial in the deltaic country where too little water means drought, but too much water can cause hardship as well. In 1988 floods, which were described by hydrologists as a "once-in-a-century event," caused widespread destruction by forcing millions of people to abandon their homes. The 1987 and 1988 floods combined resulted in about 1500 casualties, and damage to crops and infrastructure amounted to about $2 billion (Bangladesh Water and Flood Management Strategy, 1995)

At this juncture, a look into early studies of the flood problem may be of interest. In 1964, a long-term master plan was undertaken by United Nations Development Programme (UNDP) to solve the flooding problem in what is now known as Bangladesh, by constructing embankments and polders (defined as a tract of land reclaimed from the sea, or other body of water by dikes, dams etc) designed to exclude the annual inundation from most of the arable land. In the course of preparing specific projects, various shortcomings became apparent in the design of the recommended large scale projects, including the extremely high cost, difficulties in engineering, and questionable economic and environmental goodness. In 1972, the World Bank (which was to be a major financial supporter of the plan), and the Food and Agriculture Organization produced the well-researched nine volume Land and Water Resources Sector Study (LWR Study). The macro-engineering portion of the study pointed out that the yearly flow of the Ganges-Brahmaputra confluence is about double that of the lower Mississippi. The combined rivers flowing into the Bay of Bengal are surpassed in volume only by the Amazon River in South America and the Congo river in Africa. Moreover, there is no precedent anywhere for solving "the annual flood problem of such a river system." These conclusions are crucial because they seem to have been ignored repeatedly in the brief development history of Bangladesh.

Flood Action Plan Revisited

The disastrous floods of 1987 and 1988, described earlier, caused heightened international interest regarding the floods in Bangladesh. The following five studies were undertaken with funding from the UNDP, and by the French, US., and Japanese governments respectively:

1) The Government of Bangladesh (GOB) /United Nations Development Programme (UNDP) Policy Study (May 1989) proposed a new master plan (1989-2015) which would completely embank the Ganges, the Brahmaputra and the Padma rivers to ensure their safe passage to the sea during the monsoon. The idea of compartmentalization (compartment is defined as one of the parts into which an enclosed portion of space is divided) was used, and the total cost of the plan was estimated at $6.7 billion over 15-20 years.

2) The GOB/French Engineering Consortium (May 1989) operationalized the GOB/UNDP structural proposals. It reintroduced many of the large-scale projects envisioned in the 1964 Master Plan, with total cost estimated $5-10 billion to fully contain the major rivers.

3) The United States Agency for International Development(USAID) Eastern Waters Study (April 1989) examined the flood problem in the context of the Ganges-Brahmaputra-Meghna river basin; raised the environmental sustainability issue, cautioned against expensive structural solutions, and argued for increasing national resilience to floods, improving flood warning systems, and implementing flood-proofing programs. The US Congress commissioned this study.

4) The Japan: Survey of Flood Control Planning (Fall 1989) focused on urban protection of major cities and preparatory works for implementation of long-term flood control measures.

5) The China Flood Control and Training of the Brahmaputra River (March 1991) was kept confidential until 1992; it proposed structural control of the Brahmaputra at an estimated cost of $3 billion.

Overall, the FAP advocated controlled flooding. In fact, the primary economic justification for the FAP was that agricultural performance would improve and would continue to feed the growing population of Bangladesh. With embankments protecting fields from uncontrolled flooding, it is assumed that the farmers will be able to shift to flood sensitive high-yield rice varieties (HYV) in the wet season. According to the USAID study, the highest potential increases in food production are not wet season crops, but in dry season crops that use the small-scale technologies of tube wells and low lift pumps to irrigate otherwise dry fields.

The authors also stated that the alluvial plains of the Ganges-Brahmaputra basin hold the world's largest reserve of fresh, annually replenished groundwater. The cost of tube-well irrigation is around a $1000/hectare irrigated, which is a third of the cost of surface gravity irrigation and about twice as productive. However, the ground water extraction is no longer seems the most viable option.

Structural flood control projects along the rivers of Bangladesh do not show success in either dry season or wet season agricultural productions. Several studies have found that flood control embankments subject to erosion from a migrating river bed are poor investments for promoting wet season agriculture production because they cannot be made to work effectively. In fact, the danger of extreme dependence on structural solutions to floods is illustrated by the recent US experience of increasing flood losses despite very expensive dams, embankments, and river channel modification.

According to Patrick McCully of International Rivers Network, the conventional flood control method of building dams and embankments stop some devastating floods, but they also stop normal annual odds (quoted in FAP Newsletter 1994, 2,). In countries like Bangladesh, where millions of people are very dependent on the flood plains, the floods are also socially necessary. Flood control measures generate a false sense of security with resulting construction of infrastructures along the riverbanks, which causes more damage and casualties with an eventual substantial flood. This has been experienced in the US throughout the century .

Flood control structures cannot contain major floods because of two principal reasons:

a) Often dams do not have the capacity to hold enough water. With heavy rain, water held behind, the dams are filled, and the gates need to be opened, flooding downstream with extremely severe force.

b) Embankments can exacerbate floods, especially in Bangladesh where the rivers are widely braided with many channels. When these rivers are brought into one channel and restricted between two embankments, the same volume of water now runs much faster. Further downstream, embankments are more prone to erosion from faster water, and are more likely to disintegrate. People are most vulnerable since unlike a gradual water rise, there is no forewarning, or time for people to relocate. The Galloway Report published by the White House-appointed Interagency Task Force on Flood Control in June 1994 asserts that, to reduce the impacts of floods in the US, embankments should be taken down and wetlands should be restored. Significant changes in flood control concepts have occurred not only in the US, but also in France, the Netherlands, and Germany. The altered concept seems to echo the LWR Study forecast completed 26 years ago.

As the 34-year experience shows, there has been some improvement in the overall approach toward floods in Bangladesh. Compared to the 1964 Master Plan, the 1989 Flood Action Plan included social dimension, environment, resettlement, sustainability, and fisheries as relevant issues. Since 1989, the plan has been scaled down considerably from a mega project to a more reasonable one. Nonetheless, a root cause of frustration of people critical of action plans such as the FAP is their inability to change the development paradigm as envisioned by the proponents of these technical projects. The same mistakes are repeated, which adds to the misery of the people. The overwhelming belief in the power of capital and management experts is a misdirected, but very powerful force in a developing country like Bangladesh.

The Farakka Barrage and Related Environmental Issues Any water management discussion in Bangladesh would remain incomplete without the inclusion of the effects of the Farakka Barrage. The Farakka Barrage was built in 1974, about eighteen kilometers upstream of the Ganges from the Bangladesh border. Feeder canals were built by India to transport water downstream through West Bengal of India. As a result of the barrage, water flow on the Bangladesh side of the Ganges decreased over the years both in the flood and dry seasons. According to Professor M A Miah of University of Arkansas, the post-Farakka flood season flow in the Ganges basin is five per cent less, and the dry season flow is 10 times less than the pre-Farakka flows.

Inadequate water supply in the surface water sources causes the rivers, canals, ponds to dry out early and our people, over the last two decades, have become largely dependent on ground water for the day-to-day activities including washing, bathing, irrigation and fish farming. The extraction of massive quantity of ground water fueled by the unavailability of surface water has caused the ground water level to be pushed to further depths. In some areas, simple suction mode hand made pumps are now being replaced by deep-set hand pumps to extract water from greater depths. Such approach to solving water scarcity is hardly sustainable and should not be continued.

The paucity of year round surface water sources also has climactic implications. Researchers have found a noticeable rise in both the maximum and minimum temperatures in Bangladesh (MA Miah 1997). The former is thought to be caused by depletion of latent heat sources (since there is less water body to absorb heat and to vapourise it in the atmosphere), and the latter is caused by a loss of moisture in the soil (dry soil cools more rapidly compared to wet soil). Again, the absence of surface water and the decrease in ground water level with the resultant dry soil hinders the land surfaces capacity to provide additional vapour to the humid air flowing from the sea. Consequently, there is now less rainfall in the Ganges water basin. These findings seem to be significant, and should be explored further by our researchers.

Again, the depletion of ground water level in these areas has serious health effects. Scarcity of water results in improper sanitary conditions, and breeds diseases like cholera, diarrhea, hepatitis etc. In the last two years, a high level of arsenic has been detected in the lower Ganges basin ground water. Primary investigations reveal that tube-well water in 60 districts out of the 64 districts in Bangladesh is more or less contaminated with arsenic exceeding the World Health Organisation's permissible limit of 0.05 milligram per liter (Daily Star, Nov 21, 1997).

The Threat of Earthquakes

Another critical issue relevant to the discussion is the fact that the rivers in Bangladesh are constantly changing their paths. Barry Dalal-Clayton in his 1989 issues paper published by the International Institute for Environment and Development claimed that, the mouth of the Ganges river has shifted 250 kilo meters eastward in last 200 years, while the Brahmaputra is gradually moving westward. An earthquake around the year 1800 caused the Brahmaputra to abandon its channel and cut a new course 100 kilometers to the west. In 1988, Ganges and Brahmaputra combined moved 550 meters to the east, creating a new 45 meters deep channel. From a geological standpoint, the Indian subcontinent is plowing into the Eurasian landmass at the rate of five cm/yr. The enormous energy stored in this land deformation is released in earthquakes that shake the delta. It is most likely that strong earthquakes will strike this area during the life of the embankments, therefore we should be careful about permanent commitments in building barrages in our plain lands. The lone seismic observatory in Bangladesh is obsolete, and at present unable to read the intensity or to locate the epicenter of quakes as evidenced in the moderate earthquake in November 22, 1997 which cost more than ten lives. Undoubtedly as an earthquake-prone area, Bangladesh needs research and development work in meteorological arena. The earthquake issue, in terms of the water management structures, need to be thoroughly investigated.

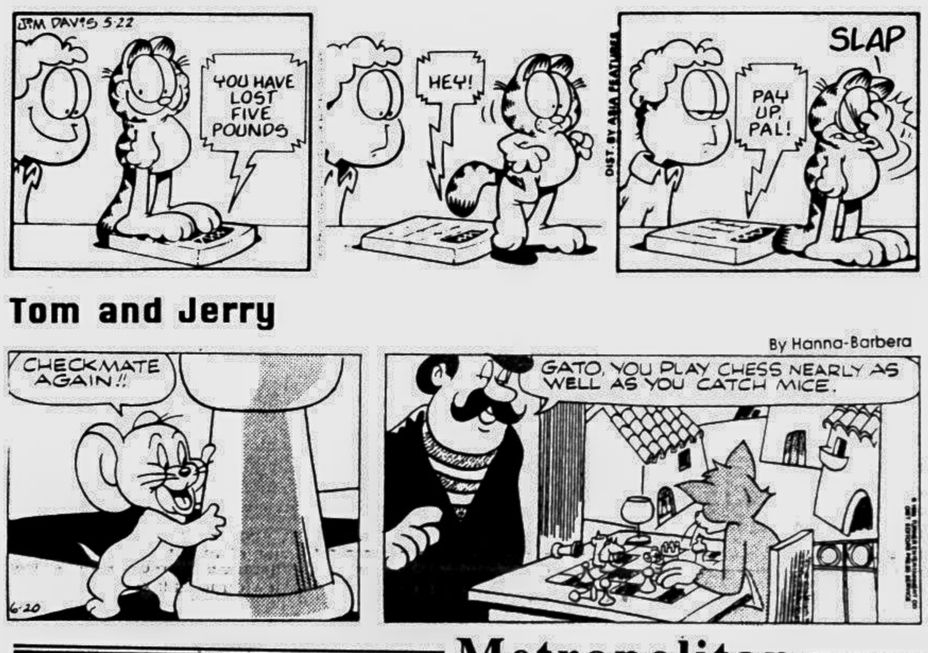
Some Concluding Thoughts

The water scarcity and drought problems in various parts of Bangladesh have become an even more persistent and alarming environmental problem as compared to the more publicised natural problem of floods. The emphasis of dredging rivers in the proposed Ganges Barrage project seems to be a welcome move. Instead of embankments, dredging of Jamuna, Meghna, and smaller rivers would probably prove to be a more holistic solution. As we approach these various methods, we must remember that, sustainable development is of highest priority for Bangladesh. However, this does not warrant that experiments with the "learning-by-doing" approach can be practised.

Considering the uneven social structure of the country, one has to be very careful about the authenticity of public participation efforts. The ideas of potential voluntary resettlement or proper compensation are often foreign or unrealistic to our policy makers. Questions of growth and efficiency very often gain precedence over justice and equity. If the aim is sustainable development, environmental and social justice issues must be integral parts of economic policy, and the targets should be the overwhelming majority of the poor. Programs should be geared toward the benefit of the underprivileged, including women.

The potential effects on biodiversity (especially of fisheries) in overpopulated Bangladesh should be considered as well. There should be concerted efforts toward conservation of our very limited natural resources including conserving the valuable ground water source, and regeneration of its bio-diversity. Over all, water management projects in Bangladesh is a part of the national planning process — it is not an end in itself. Considerable caution in our development approach can only bid well toward the attainment of a sustainable future.

The writer is a Ph.D. candidate in environmental policy at the University of Maryland.



Equity in Health : A Moral Issue

by Dr M Zakir Husain

When the international community had launched Health for All, there was an air of optimism. It was hoped that economic growth, if not prosperity, will benefit all countries, a new spirit of global solidarity and cooperation with peace will reign, and the world will come out of the poverty trap. That obviously did not happen. The global economic scenario remained inequitable with many poor countries in Africa, Asia, and South America falling into higher debt burden.

IN 1978, at the historic Conference at Alma Ata (former Soviet Union and now Kazakhstan), the international health community determined Primary Health Care as the key approach to the attainment of Health for All. Earlier in 1971, the World Health Assembly — the world parliament on health — had adopted Health for All by the year 2000 as the social goal that will permit all people to live a socially and economically productive life. More than 20 years have elapsed since then. A review of the situation shows that significant improvements have indeed been achieved globally as reflected in the aggregate health indicators.

Yet, it also shows that the health gaps between and within countries remain and in some cases have even widened. Millions of people still suffer unnecessarily from preventable infectious diseases and certain gross nutritional deficiency disorders causing debility, disabilities and premature deaths. Many millions do not yet have access to basic healthcare and adequate sanitation. This is reason for deep concern and reflection by the international community.

Poverty still remains widespread. This is a major obstacle to health and quality of life of nearly a quarter of world population. Under the structural adjustment regime countries are cutting the level of social spending; market economy is pushing the poor out of the growing private market for health in rich and poor countries.

When the international community had launched Health for All, there was an air of optimism. It was hoped that economic growth, if not prosperity, will benefit all countries, a new spirit of global solidarity and cooperation with peace will reign, and the world will come out of the poverty trap. That obviously did not happen. The global economic scenario remained inequitable with many poor countries in Africa, Asia, and South America falling into higher debt burden. The spirit of solidarity and enthusiasm with which Health for All was launched and pursued also appears to have diminished considerably.

In many countries, the true meaning of Primary Health Care approach was not fully grasped; many health systems failed to bring about structural, functional and financial reforms needed. Many continued, in effect, to emulate largely urban-centred and technology-driven predominantly curative care health systems of the West but not real system reordering to support primary care and population based public health functions. The world "strategy" has a military connotation.

Health for All is in a broad sense is a battle, a battle for elimination of disparity and protecting social justice. In the terminology of battle, it can be stated that HFA strategy was not followed by redeployment of regular personnel, retraining them, and a reorganised logistics of supply and support system. In fact, almost a parallel sub-system with community workers and volunteers was created; the primary care level was not at the centre of an integrated health system. These requirements were not foreseen. Thus the battle remains still to be won.

The Primary Health Care approach itself was not sufficiently elaborated in operational and in financial terms after launching it. Many countries failed to implement it with the required rigour and vigour. There was professional inertia, political ambivalence, and lack of public education regarding primary healthcare.

Health for All goal is still socially redeeming and technically feasible. But it is time for renewal of the strategy keeping in view the assessment of progress and the changed global situation. Many new factors namely social epidemiology, behaviour-related disorders, emerging and re-emerging infections, disease epidemiology and demographic transition, and political economy of health care. Have emerged. All of these add complexity to the process of renewal of strategy and a vision of a just and new world health order. Ironically, it is the countries whose resources are inadequate but whose health needs are greater will have to tackle multiple problems and diseases and disorders of a wider spectrum than countries who are better off and have completed their epidemiological and demographic transition.

This is a very tall order and a big agenda for all countries, especially for the poor countries. Nevertheless, it is perhaps not beyond the capacity of governments and societies.

In the wake of the twenty-first century, renewal of quest for Health for All requires countries to reformulate and follow a national health policy that gives primacy to primary health care and the health system to put primary healthcare at its centre. Primary health care using simple and affordable technologies, and for many developing countries, fertility regulation, disease prevention and control and removal of nutritional deficiency disorders must be on top of the policy agenda. Human resources redeployment with strong support systems to the PHC and referral levels must be established. Finances in public and private sector must be channelled preferentially into primary care and public health. The greatest health good for the largest number of people should be the guiding principle.

Equity should be the cornerstone of healthcare provision but need not be stretched to the point where it is not sustainable or economically unsound. Granted, inequities of income, opportunities, and social status will persist well into the twenty-first century. But the society will perhaps agree to strive for equity in health since health is a prime social good and is a single most effective equaliser for social and economic productivity according to individual ability.

In retrospect, Health for All strategies did not deal effectively and adequately with policy-making, planning, and especially financing and resource allocation apparatus of the Health Ministry. These now need correction. Planning, budgeting, epidemiology, demography, evaluation of outcomes must be linked together in decision making. A clear operational framework for implementation must be established at national and district levels. Support services including quality assurance and human resources development need to be stronger.

Equity and social justice will have to be given real meaning through resource allocation decisions. Money spent on disadvantaged groups will give greater health returns and successive plan cycles making preferential allocation of all additional resources for the poor and vulnerable will close the gap and bring about greater equity. Given the present disparity adversely affecting the female population, gender equity is necessary. The agenda to attain Health for All goal is to be re-written.

It will require re-setting the policy agenda and reordering the priorities. It will require mobilisation of financial and social resources through alliance and partnership between public and private sectors, and above all greater participation by people in communities taking charge of their own health. So far, the health professions as individuals or groups have shown insufficient interest in health services management, health promotion, community involvement or the challenge of Health for All. This needs to be corrected.

Health is at the core of human development and quality of life for the rich and the poor alike. It is the "raison d'etre" of human development and the hallmark of advanced human civilisations. It is a socially redeeming goal of high value for the world and its peoples in the twenty-first century. Let us hope that the world community will not fail to redeem its pledge to build a fair and just social order with health of its peoples at the core of it.

Metropolitan

Govt believes in equal development of all parts of country: Speaker

Speaker Humayun Rasheed Chowdhury yesterday said the present government firmly believes in equal development of all parts of the country, reports UNB.

"To achieve this goal, the government has taken various pragmatic steps for the development of the less-developed areas," he said addressing the golden jubilee function of Jalalabad Association.

Foreign Minister Abdus Samad Azad, Finance Minister Shah AMS Kibria, former finance minister M Saifur Rahman MP, Hafiz Ahmed Majumdar MP, Shah Azizur Rahman MP, National Professor Dewan Mohammad Azraf and association general secretary Abdul Kaiyum Chowdhury also addressed the function.

Association president EA Chowdhury presided over the function at Khamarbari, Farmgate in the city.

Speaking as chief guest, the Speaker said the government is very much aware about the problems of Sylhet division and other parts of the country. "But it is not possible to resolve all the problems within a short period."

He called upon all to work together alongside government efforts for overall progress of the nation.

Abdus Samad Azad referred to the under-developed *haor* areas of Sylhet and said the government has taken steps to remove the waterlogging problem of the area.

He also mentioned government's effort to upgrade the Sylhet Airport into an international one.

Kibria informed that construction work of the Dhaka-Sylhet highway will begin in the current fiscal year with financial assistance of the World Bank.

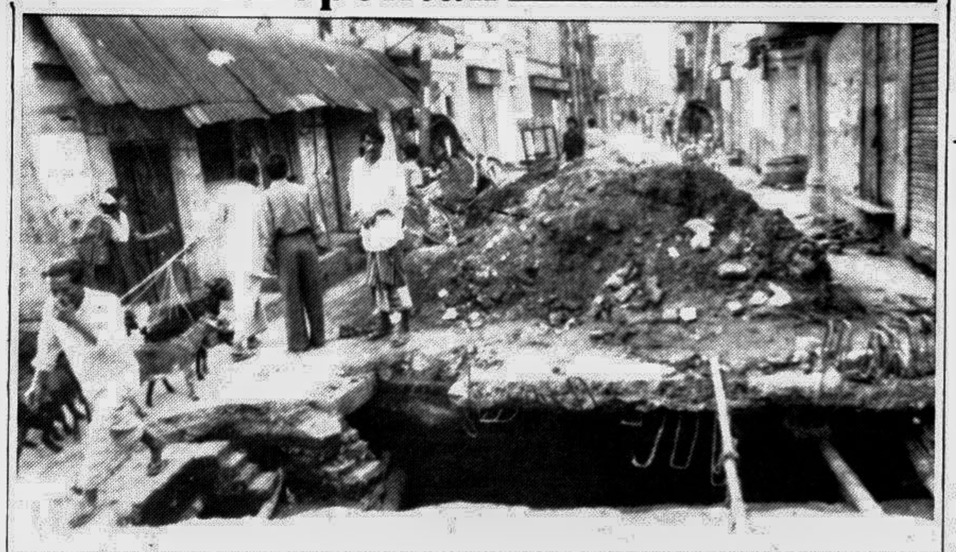
He further told the function that the British government would provide 50 to 60 per cent of the total expenditure for constructing the Bhairab bridge.

Obituary

Abu Hamid Anwarul Haque (Anna Miah), of Becharam Dewry, died on Thursday old-age ailments. He was 87, says a press release.

He left behind children, grand children.

His *qulkhwani* will be held at his house at Uttara after *Asr* prayers today and at Moulvi Abdullah Mosque (Becharam Dewry) tomorrow after *Magreb* prayers.



Heap of construction material for development of a road in Rishikesh Das Road, Sutrapur, in old part of Dhaka causing immense suffering to the people of the locality and its adjoining areas. — Star photo

Gaziul Haq indisposed

By Staff Correspondent

Language Movement veteran Advocate Gaziul Haq has been suffering from jaundice.

Haq, a member of the advisory council of Awami League, was advised by doctors to take one month full rest, says a press release.

Gaziul Haq sought *doa* from all for his early recovery.

Hasina visits Jabunnessa

Prime Minister Sheikh Hasina visited ailing Jabunnessa Ahmed, mother of martyred Sultana Kamal and mother-in-law of martyred Sheikh Kamal at a city clinic, reports BSS.

The prime minister enquired about the condition and treatment of Jabunnessa.

Jabunnessa, 79, has been suffering from chest infection and other old age complications.

Spring poetry festival Mar 28

Bashantakaleen Kabita Utshab '98 (spring poetry festival), organised by Kabikantha, a poetry magazine, will be held on March 28 at 'Jalshaghar,' Hotel Purbani, in the city, says a press release.

This year's festival will be participated by poets from the Bangladesh and India, including the award-winning Hindi poet Ashok Vajpayee, renowned poet and song-writer Javed Akhtar, and actress Shabana Azmi, who will read the famous poem 'Bangladesh,' written in the context of our War of Liberation, by her illustrious father Kaifi Azmi.

Weather

Thundershowers likely

Rain or thundershowers accompanied by temporary gusty wind is likely at a few places over Barisal and Dhaka divisions and the regions of Khulna, Jessore, Kushtia, Pabna, Bogra, Noakhali, Comilla, Chittagong and Sylhet till 6 pm today, reports UNB.

According to Met Office, weather may remain mainly dry elsewhere over the country during the period.

No appreciable change in day temperature is expected over the country.

Country's highest temperature 32.5 degree Celsius was recorded yesterday at Teknaf and the lowest 16.5 degree Celsius at Rangpur and Dinajpur.

The sun sets today at 6.07 pm and rises on Sunday at 6.08 am.

Maximum and minimum temperatures and humidity recorded in some major cities and towns yesterday were:

City/Town	Temperature in Celsius		Humidity in percentage	
	Max	Min	Morning	Evening
Dhaka	30.3	20.0	54	59
Chittagong	32.4	22.5	72	70
Rajshahi	30.0	17.0	77	81
Khulna	31.5	19.2	91	86
Barisal	30.4	18.2	91	97
Sylhet	32.0	18.3	73	43
Cox's Bazar	32.0	23.2	--	63

2 hand grenades, 286 bullets recovered in Ctg

CHITTAGONG, Mar 13: Kotwali police recovered two hand grenades and some 286 rounds of bullets of different firearms from a pond at Ranirdighi, Nandankanan here this afternoon, reports BSS.

According to Kotwali police, the grenades and 125 bullets of rifle, 132 of self-loading rifle (SLR) and 29 of sub-machine gun (SMG), wrapped in polythene, were found after draining the pond.

Urs

The holy *Urs mubarak* of Hazrat Shahjalal (R) will be held on March 19 and 20 at Dargah Sharif in Sylhet, says a press release.

The *akheri munajat* will be held on March 19 night at 3 am.