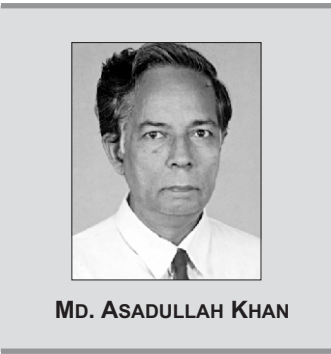


WORLD WATER DAY

Drying up of a riverine delta



WORLD Water Day is observed on March 22 every year in both rich and poor countries but with little exuberance these days rather with a sense of alarm and so we along with many others observed it yesterday.

The dire warning that hurried urbanization coupled with rapid industrialization and wasteful use of water are devastating fragile natural resources and undermining the health and well-being of a growing number of people has gone unheeded. Without a shade of doubt, water, not oil is the most precious fluid in our lives, the substance from which all life on earth has sprung and continues to depend on. To be more precise if

we run short of oil or other fossil fuels we can use other alternative sources but if we have no clean, drinkable water, we are doomed.

Shockingly for a planet that is 71 per cent water less than 3 per cent of it is fresh. And most of it is in the form of ice and snow in Greenland and Antarctica or in deep underground aquifer. And less than 1 per cent of that water -- to be more precise 0.01 per cent of all earth's water -- is considered available for human needs. But even then much of it is far from large populations. At the dawn of the 21st century, more than one billion people do not have access to safe drinking water and some 2.4 billion -- 40 per cent of the world population -- lack adequate sanitation.

Alarm bell has been sounded from various international organizations like the World Bank, UNDP, WHO, FAO, UNIDO, UNESCO etc. on the availability of fresh water resources. Reports circulated by these organizations indicate that the world's supply of clean fresh water already threatened by growing levels of pollution, is going to be so scarce in some areas that if current trends continued, two thirds of humanity will suffer moderate to severe water stress within 30 years. The report warns that the



Much of the blame rests with the authorities that would not curb the siphoning of ground water. Dependence increases as surface water sources, mainly rivers and lakes, are sullied by sewage and industrial pollution. In rural Bangladesh drinking water availability is severely affected when ground water is sucked away by unregulated bore wells now in operation for irrigation. But irrigation is a cash cow on which water needed for drinking is squandered by a group of people desperate to meet the immediate needs.

situation not only imperils human health and development on a large scale, but also aquatic and terrestrial ecosystems on which much of the human life depends. There is clear and convincing evidence, the report says, that the world faces a worsening series of regional water quantity and quality problems largely as a result of poor water allocation and wasteful use of water resource and lack of adequate management.

The World Bank estimates that 3.3 billion people in the 127 countries of the developing world suffer from water related diseases like diarrhea, dysentery, infection by intestinal worms, dengue fever and Malaria. Here are some more statistics compiled by the United Nations university in Tokyo.

>Every 8 seconds, a child dies from a water related disease.

> 80 per cent of diseases in the

developing countries are caused by contaminated water.

> 50 per cent of people on earth lack adequate sanitation. 20 per cent of fresh water fish species have been pushed to the edge of extinction due to contaminated water.

Unfortunately, such statistics don't seem to be persuasive enough for either the world or regional leaders to act expeditiously, or meaningfully, on water management issues.

The glaring lack of attention to water issues seems especially puzzling in light of the fact that the estimated cost to provide safe water in rural areas is \$50 per person per year and about \$100 per person in cities, according to UN estimates. Current world investment in water related development projects is \$8 billion per year, an amount roughly equal to the annual pet food purchases in Europe and the United States of America, said Klaus Toepfer, former head of the UN Environment Programme. The apathy of the state governments in developing countries or more pronouncedly of the world leaders to water issues may be termed as the most critical failure of the 20th century and a major challenge for the 21st century, contends Peter Gleick, one of the world's leading experts on fresh water resources.

Gleick further says that there are many tools for doing so, and the economic costs are not high compared to the costs of failing to meet those needs. There is hardly any second thought about the fact that we are now facing a world water gap and because of our apathy it is getting worse with each passing day. The consequences of failing to bridge the gap will be higher food prices and expensive food imports for water scarce countries that are predominantly poor. Hunger and thirst are linked to political instability, bad governance and low rates of economic growth resulting from perils in water supply system.

Moreover as much as the world

becomes urbanised, its water crisis deepens. Large cities already bursting at seams -- Dhaka, Cairo, Mexico -- rely on ground water but aquifers take decades to recharge while the population growth in these cities is exponential. And as urban demands for water increases, supply of the developing world's already water starved areas will be further affected creating an insurmountable food security crisis. Experts agree that the crisis is partly due to natural cycles of extreme weather and the expansion and contraction of arid regions. But human activity is playing an ever greater role in creating water scarcity and "water stress" -- defined as the indication that there is not enough good quality water to meet human needs.

Against the backdrop of severe water crisis hitting almost two thirds of the global population, Bangladesh once considered a country of abundant water resources or otherwise known as a country of rivers, is also now facing an acute water crisis. This is due to the fact that out of 230 big and small rivers in the country, there now exists about 175 rivers and most of them with a meandering flow. From the north east of Bangladesh to south west rivers namely Chitra, Barak Kaliganga, Kartoa, Garai, Bhairab, Bhadra, and Kumar and a host of others are now only names to be traced in a book of geography. This is due to several factors: Rivers and lakes are drying up due to siltation, most rivers have changed their original course because of obstructions raised here and there with unplanned dikes and sluices; no new tanks, lakes and reservoirs in any part of Bangladesh have been excavated during the last few decades and lastly the river water has been dangerously polluted.

Because of careless and senseless human activities, rivers now contain many bacteria from human waste and other harmful effluents like cadmium, ammonium, chro-

mium, and even mercury thrown in the rivers Buriganga and Shitalakhya, Turag and Balu surrounding the city of Dhaka and Narayanganj. Noticeably, an estimated 90 per cent of sewage and industrial wastes in our part of the world is discharged into rivers, lakes and seas without any treatment. To make things worse, as already mentioned, conservation and supply of fresh water that might dilute the sewage are dwindling in many areas. Say for example Uttara lake just in the outskirts of the city is a large water body running through the densely packed residential blocks on the western side of the Dhaka-Tongi highway is now a giant sewer. With the sewer lines and waste water pipes of the fast growing residential area, garments and knit wear factories, shopping malls and kitchen markets put inside the lake at different locations, it is now a cesspool of blackish stagnant water laced with human excreta, animal residue, toxins and poisons of all varieties.

The woes of the residents do not end there. With encroachments of the lake going apace and garbage and piling materials of the apartment builders finding way into the lake its bed has raised. Pathetically true, living and breathing have become difficult because of the horrible stench coming from the polluted toxic water of the lake.

For centuries water in lakes and rivers has meant purity and life. Sadly true, poisoned waters in the Uttara and Gulshan-Baridhara lakes now symbolize not life but death. Alas! these could have been, if properly preserved, pure surface water sources in a country hit by acute water crisis.

Dhaka city's ground water aquifers, the veins of water below the ground were emptied so drastically that polluted water laced with toxins rushed in, destroying them for good. Reports have it that residents of Wari, Gandaria, Lalbagh and most



of older part of the city fill their pitcher with water that is yellowish. They don't know if they are drinking poison! A disaster is unfolding all over the 1500 km. Greater Dhaka city area as the recent World Bank report on Dhaka city water situation reveals.

With pipes drying up, the search for water is frenzied. The first trickle now comes up from a depth of about 100ft. Dhaka WASA now lifts about 160 crore litre of water per day, about 90 crore litre less than what the citizenry needs. As the WASA supply falls, everyone from the apartment builders to individual house owners in all parts of the city frantically bore into the earth for water. But these unseen store-houses are drying up with frightening regularity.

Matters are worse in villages, despite the spread of bore wells in most villages. And so a great thirst settles over the country every summer. But as the growing desperation of the towns and villages of the country indicates, we are nearing a catastrophic drying. The demands for water for drinking, irrigating fields, industries and even power stations -- are skyrocketing. There

are pointers to the fact that we are fast approaching a point of absolute scarcity.

Much of the blame rests with the authorities that would not curb the siphoning of ground water. Dependence increases as surface water sources, mainly rivers and lakes, are sullied by sewage and industrial pollution. In rural Bangladesh drinking water availability is severely affected when ground water is sucked away by unregulated bore wells now in operation for irrigation. But irrigation is a cash cow on which water needed for drinking is squandered by a group of people desperate to meet the immediate needs.

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ECO-FERTILISER

Improving output, reducing impact on environment

NASIR UDDIN KHAN

BDHAKA has a huge population in a small area of land. Day by day the population is increasing but farmland is decreasing due to urbanisation, natural disaster, human settlement etc. We should plan now by setting a goal for sustainable development. We know the modern world is planning everything keeping environment in mind, since they believe sustainable development could only be achieved through a good environmental management practice.

In the United Kingdom, there are more than 13,000 employees working for environmental management with an annual budget of 1 billion pound in Environment Agency. Though the amount sounds huge in Bangladesh context, but is not a big budget compared to total British annual budget. Everything depends on plan, British government doesn't need to allocate money to Environment Agency; it earns its own budget by imposing different taxes, licence fees, monitoring fees, fines and compensations.

Before coming to Britain, I worked for 6-7 years on environmental management in Bangladesh. I know the related legislation, acts and rules that Bangladesh has for environmental management; all are backdated, partial and mostly impractical. The world is changing everyday, so, environmental and other legislations also need to be updated and modified often. Overall, the way of thinking, concept and rules and regulations regarding environment should be changed and updated to ensure a pollution free Bangladesh. If we look back, we see we were much more conscious about environment in the past than current years. We installed sewage treatment plant and sewer line for Dhaka city in 1960's but didn't develop on it further. Now there live around 10-12 million people in Dhaka city but there is no acceptable pollution management system for them or for other cities in the country

though the domestic pollution is the major part of environment pollution in any country.

We never learn from others. Our neighbouring countries like India, Thailand, Malaysia etc. have already developed their environment management significantly. So far I know, the concept of pollution or waste management is not totally clear in our current legislation and there is no clear definition of "waste" as well. So, with this partial determinant, the total pollution management of the country could not be achieved. In UK, there are lots of regulations and directives to handle different sectors and their pollution management. Waste management is a profitable business in UK, carrying waste illegally is a crime, tipping waste anywhere is an offence.

It is now evident that the more a country is careful about its environment the rapid it develops. So, an integrated and modern waste management plan should be necessary for a country like Bangladesh immediately. There should also be co-ordination with various other sectors on their activities. I am working here to "create a better place for present and future generation of UK" which is the main theme of environment management in UK. I also believe once we would be able to work on the same theme in Bangladesh.

**Sustainable rice production**

We have a huge population in the country; our cultivable land is decreasing but population is increasing day by day. Yet we shall have to take a determination that "we will produce our own food" and start work on it immediately. Previously, all governments tried in their own way to make the agriculture production stable, mainly of rice. They introduced subsidy on fertiliser sale and import, distributed free seeds to farmers, mainly the Department of Agricultural Extension (DAE) is working for stable farming ultimately to ensure adequate supply of food to the people. But all the efforts they took were not so planned, partially planned or not synchronised.

Eco-fertiliser can adjust and regulate soil, acting as a microbial fertiliser to substitute or substantially reduce use of chemical fertiliser ultimately leading to sustainable agriculture. It also leads to healthier food, better crop yield, higher income for farmers, lower input cost, longer efficiency and less work. It will also reduce the direct subsidy needed for chemical fertiliser, save plenty of natural gas and ensure supply of fertiliser during peak period by local manufacturers.

Being an agriculture dominated country, we depend on chemical fertiliser with an annual demand of around 3.5 million metric tons of which around 68 percent is urea. Urea is produced in Bangladesh using natural gas as raw material by 5-6 state owned fertiliser factories which are old, backdated and partially operated. Other fertilisers like, Triple Super Phosphate (TSP), Murate of Potash (MOP), Di-ammonium Phosphate (DAP), Gypsum etc. are being imported. Bangladesh Government gives regular subsidy on the urea production and on imported fertiliser to ensure sustainable production of rice and other crops to meet the primary needs of the huge population of the country.

A significant quantity of the country's natural gas is consumed for fertiliser production and a handsome amount is spent as subsidy every year. Nevertheless, supply of fertiliser during pick period could not be managed. Bangladesh also faces shortage of power supply and should concentrate more on stable power generation. Experts presume that the reserve of natural gas will be finished by 2020 if Bangladesh does not explore and produce gas from new wells or save gas from existing ones. It is so essential to take a wider look into this sector to make the rice production sustainable in an environment friendly way and achieve a better and optimised yield. Presently the country is concentrating on the highest yield only by use of maximum chemical fertiliser, which is ultimately degrading the soil quality, polluting ground water which is the main source of potable water for the whole nation, and finally making the earth more warm by contributing green house gas to the



atmosphere.

However, in order to balance crop nutrients, improve soil fertility and reduce environment pollution, a non-chemical eco-fertiliser at low price would be an ideal substitute.

I started working with an active eco-fertiliser which is a proven technology being tested in more

than 13 countries in Asia, Europe and America within the last 2-3 years. This fertiliser is manufactured from weathered coal, phosphate rock, starch and microbes -- all organic matters. Moreover, this fertiliser would need to be applied once in the soil during preparation of land and it will release the nutri-

ent gradually according to need and growth of crops. This fertiliser is able to provide the three major nutrients -- Nitrogen, Phosphorus and Potassium -- that crops need. Since it has the ability to generate adequate amounts of NPK by naturally adjusting the microbial existence and enzyme activities of

the soil, the crops are able to absorb sufficient nutrients directly from this fertiliser, with only negligible amounts of Nitrogen and Phosphorus being leached into the soil. We tried it on different crops in different seasons with the help of Sher-e-Bangla Agricultural University, Dhaka in 2005-2006. We found tremendous good result on aman and boro rice. This eco-fertiliser could replace 50 percent of the chemical fertiliser. It also meant that if we use 50 percent of traditional chemical fertiliser of grower practice along with 50 percent of this eco-fertiliser, a significant benefit in terms of energy saving, soil quality improvement, cost reduction, higher yield and environment pollution control could be achieved. Moreover we could save 50 percent of natural gas which is being consumed for fertiliser production.

It should also be mentioned here that agriculture involves lot of environment pollution in terms of Carbon Dioxide, Nitrous Oxide and Methane emission which are called "green house gases" from different activities, mainly from chemical fertiliser manufacture, transport and application to the field. The following environmental benefits can be achieved by using this active eco-fertiliser:

- Improvement of surface water quality by reducing washout of chemical fertiliser.
- Improvement of ground water quality by improving leaching to the ground.
- Enhancement of bio-diversity.
- Improvement of soil quality.
- Improvement of air quality due to less use of chemical fertiliser and pesticide.
- Reduced green house gas emission.

This eco-fertiliser can adjust and regulate soil, acting as a microbial fertiliser to substitute or substantially reduce use of chemical fertiliser ultimately leading to sustainable agriculture. It also leads to healthier food, better crop yield, higher income for farmers, lower input cost, longer efficiency and less work. It will also reduce the direct subsidy needed for chemical

fertiliser, save plenty of natural gas and ensure supply of fertiliser during peak period by local manufacturers.

Now, about prospect of local manufacture. After having the result, I started thinking of the potentiality of local manufacture of this eco-fertiliser, source of raw materials locally and technological know-how. I spoke with different potential entrepreneurs who showed interest to invest in such a field. I found that there are some pit soil available at Gopalganj and surrounding areas which could be used as very much suitable substitute of weathered coal. We could also import weathered coal from Meghalaya or Assam of India. Phosphate rock is also available in India and China and the other raw materials are widely available in the country. The manufacturing plant is not a big sized one like that traditional fertiliser industries and affordable by small and medium size entrepreneurs.

This active eco-fertiliser, could be initially thought as partial replacement of the chemical fertiliser. The implementation of this replacement is necessary not only to reduce the green house gas emission from agriculture, but to abate the other major obstacles on way to sustainable and environment friendly agricultural production in Bangladesh. Therefore a prompt national attempt is necessary in this regard to make the agriculture production environment friendly and sustainable which would ultimately save huge amount of money and natural resources of the country.

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