

Polluted rivers, risky water

The Buriganga Conservancy Commission should have power and authority to undertake or assert to suggest enacting/strengthening law/regulations, identifying causes and sources of pollution, domestic sewage and industrial effluent, monitoring problems, and identifying defaulters and take punitive measures for the polluters.

PROF MUSTAFIZUR RAHMAN TARAFDAR

THE water of Buriganga, Balu, Sitalakhya and Turag are severely polluted. No biological survival can occur there as oxygen is depleted and might have reached nearly 0 level. Oxygen level in fresh river water is 9mg/l at 20°C and 7.6mg/l at 30°C (Summer).

BOD5 (consumption of oxygen for decomposition of microbes) indicates organic pollution. River Buriganga receives the following types of sewage.

Nature of Sewage	BOD5, mg/l
Strong Sewage	450-550
Average Sewage	350-400

The sewage of 400 mg/l, and higher BODs shows mixing of industrial effluent with domestic sewage. Untreated industrial effluent is discharged from the dispersed and cluster of industries. Most industries do not have in-house treatment plants, and even if some of them had it, they would not use it perhaps to save operation cost in blatant violation of environmental rules without any concern for pollution of the rivers.

Industrial waste should not be allowed to enter the domestic sewage network as it interferes with treatment plants. In fact there is only

one sewage treatment plant at Pagla for treating domestic wastes, operated by WASA with capacity of 0.12x106m3/d. Industries should be responsible for treating their own waste in-house. The city may have up to a dozen or more such domestic sewage treatment plants.

Hazaribagh's 500 tanneries including 200 large units discharge daily 4950 m3 of obnoxious organic wastes which is a major factor for causing severe pollution in the Buriganga. The waste near Hazaribagh penetrates horizontally in underground aquifers causing groundwater pollution, a new and dangerous phenomenon, which is reported only recently. 700 different industrial units discharge untreated effluents of 1.3 million cubic metre. Millions of cubic

metres of domestic sewage is generated daily of which a good portion enters Buriganga. WASA's only treatment plant at Pagla, treats 0.12 million m3/day.

Poor people bathe in, even drink the polluted water and suffer from diarrhoea, dysentery, cholera, hepatitis, jaundice, skin disease etc.

At present WASA's 514 and other tubewells pump 1800 million litres per day, Saidabad plants provide 225 million litres and Chadnighat 39 million which is much short of the present requirement. But already these extractions are causing fall in ground water level.

On an average nearly 2m fall of GW level annually is alarming. Continuous withdrawal of GW from aquifers with attendant fall of GWL renders the trillions of pores of soils dry and empty which may accentuate subsidence of aquifer layers for self-weight of overburden layers above. The phenomenon of subsidence through a long-term process but it is real with impending danger in the near future. For this, the use of surface water for the city water supply becomes an urgent necessity.

Treatment of polluted groundwater

WASA undertakes the treatment of surface water at Saidabad Plant with intake from the Sitalakhya. For heavy organic pollution treated

more importantly, people are aware about danger of pollution and shoulder responsibility to keep the environment clean and river free from pollution. The Nile river is the lifeline of Egypt in general and Cairo in particular. All environmental and economic activities revolve around the river. With nearly 20 million people, in the city, the river water and environment are clean and congenial. During Pharaohs time the river was revered as a 'river god'. The river was clean then and it is now after thousands of years.

Buriganga conservancy commission

A Commission/authority is suggested by eminent experts in their recent deliberations with The Daily Star. The proposed Buriganga Conservancy Commission will be exclusively responsible for improving quantity and quality of flow and rejuvenate the river Buriganga, Balu, Sitalakhya and Turag from pollution by long term plan like the river near Singapore which took 7-8 years for its rejuvenation and got it free from pollution. The Commission will be responsible for water, sewage treatment and disposal and pollution control of the rivers.

There is Ganga Commission for the Ganges and Hoogly Commission for the Hoogly river near Calcutta. River Thames Conservancy Commission (or Authority, I am not sure). So exclusive river Basin Commissions are not new.

The Buriganga Conservancy Commission should have power and authority to undertake or assert to suggest enacting/strengthening law/regulations, identifying causes and sources of pollution, domestic sewage and industrial effluent, monitoring problems, and identifying defaulters and take punitive measures for the polluters. It should impose, mandatory in-house waste treatment for each industry or a group/cluster of industries and continuously monitor their activities. The Commission should quickly take steps to relocate hundreds of tanneries at Hazaribagh elsewhere (Savar) away from Dhaka.

Ministry of Environment is responsible for the overall issue of environment for the whole country and the proposed Buriganga Commission will be solely responsible for rivers and water bodies in the greater Dhaka city.

Long distance transportation of water

Since all the rivers around Dhaka are biologically dead and groundwater is severely exploited causing fall of WL by about 2m annually with fear of land subsidence and possible upheaval during earthquake, experts are proposing to transport fresh water from long distance for the existing treatment plants and the future plants at designed locations around the city.

Side by side attempts should be made to clean the river from further pollution by stopping/banning indiscriminate disposal of domestic raw sewage and industrial effluents. Laws should be strictly imposed, monitored and industries made to comply with or before face penalty/fines. The Tipaimukh dam under construction in India may render the Surma, Kushyara, Meghna river system dry during the lean season (Dec-May). Without ensuring equitable and fair share of water of Barak-Surma-Kushyara by quick bilateral negotiation with India, transportation of water from the Meghna may be ruled out.

Water from the Padma needs to be pumped on adverse slope to Dhaka. Continuous pumping may face logistic problem. There will be erratic power supply. Separate power station is costly in construction as well as operation for many reasons. The project may not be feasible and should be discouraged. Only feasible solution is, therefore, transporting water from Jamuna by gravity canal with intake at a suitable point, so that canal cost becomes minimum. Water will be flowing through Turag to

Buriganga, through Tongi Khal to Balu and from Balu to Sitalakhya. Water should be transported from Turag point which is not yet polluted by separate pipelines to treatment plants set at required designed points around Dhaka City.

However, a designed part of the transported water should be allowed to flow through Turag to Buriganga and Tongi Khal to Balu and Sitalakhya to flush the rivers of pollution by diluting process of self-cleansing of river. Side by side disposal of untreated domestic sewage and industrial effluents should not be allowed to enter the Buriganga, Turag, Balu and Sitalakhya. Over the years, the rivers will be clean and rejuvenated.

One of the main mandates of the proposed Buriganga Commission will be to take up steps to clean the rivers by taking long term plans and bring fresh water from Jamuna by canals. Works will involve banning the disposal of domestic sewage and untreated industrial effluents and quick relocation of Hazaribagh tanneries, on lands given at subsidised rate, bearing part of relocation cost, which may mean to give some incentives to tannery owners to leave Hazaribagh quickly.

Inter-basin water transportation in other countries

There are instances of transporting water from mountainous northern California to water-starved deserts in the southern California around Los Angeles through a 600 mile concrete water tunnel. In Libya water is pumped by tubewells some kilometres deep in the very bosom of the Great Sahara desert and then transported northwards by thousands of km long tunnels/link canals to cities like Tripoli and Benghazi. The writer participated in the design of a water transfer project by construction of a dam on the famous Congo river in Zaire, construction of tunnels, link canals and large pumping stations, canals traveling thousands of km to lake Chad, bordering Nigeria, Cameroun, Niger and Chad.

Concluding remarks

Pollution points of domestic sewage and industrial waste should be identified and barred from further polluting the rivers Buriganga, Balu, Sitalakhya and Turag. Violators should be identified and monitored to impose punitive measures, such as fines or jails or cancellation of license of business to the defaulters. There should be in-house treatment for both dispersed and cluster of industries. Domestic waste must be treated in treatment plants. Treatment plants should be established at more stations than Pagla, so also separate pipelines for storm drainage.

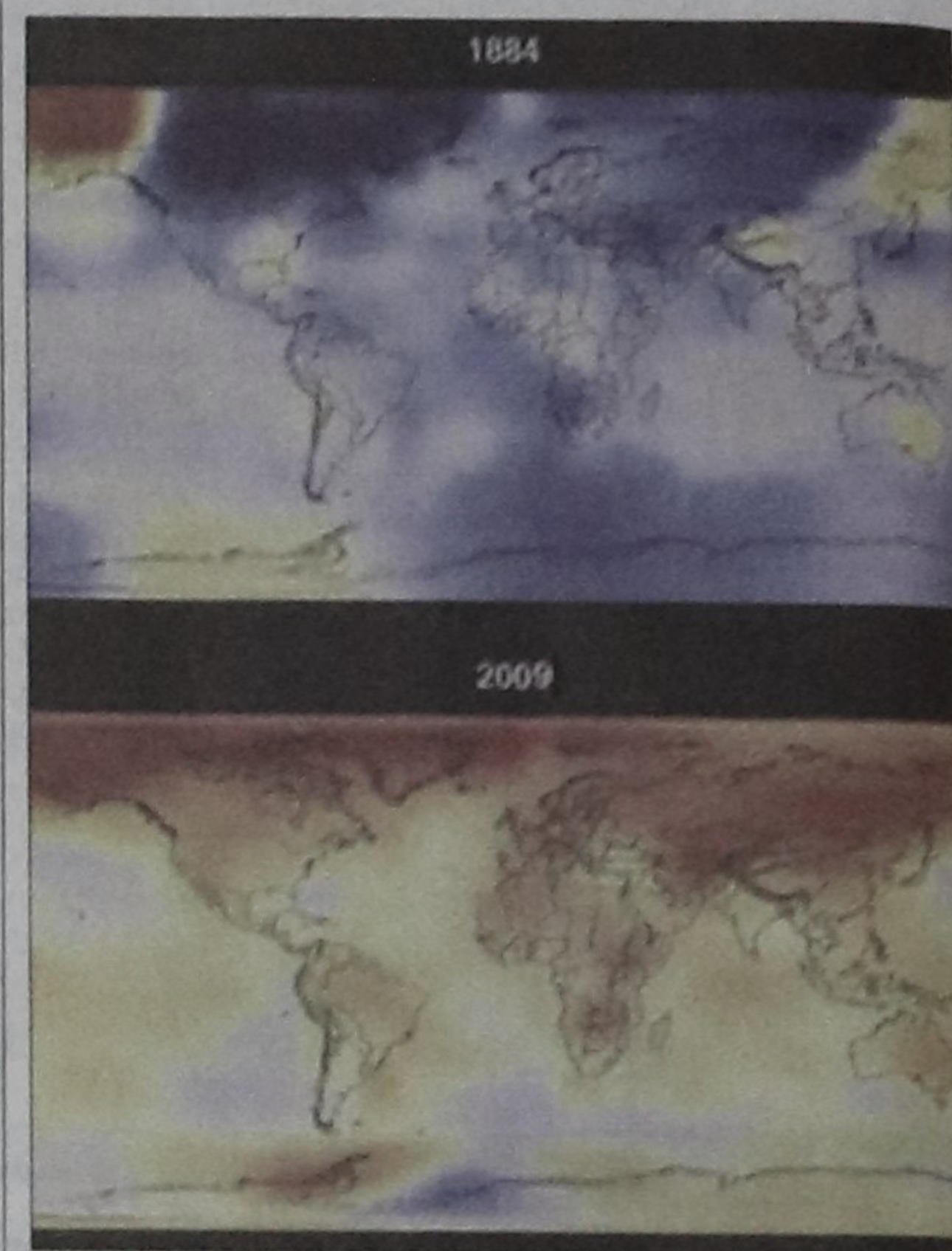
More treatment plants like the one at Saidabad will be needed when water will be transported from the Jamuna. Gradually, groundwater pumping should be phased out. World's some of the great clean rivers flowing by great cities should be as examples as to show how public aversion to pollution and environmental degradation can keep them clean and safe against health hazards. Examples are the river Seine by Paris, Nile by Cairo, Mekong all way from source via Vientiane and Savanakheth to Cambodian border, Niger upto estuary etc.

Soon the government may set up a conservancy commission with the sole responsibility of looking after the health of the rivers Buriganga, Balu, Sitalakhya and Turag. Savar and Gazipur should be included in this project. Commission will monitor violator of pollution control and impose punitive measures. The commission should be autonomous with necessary administrative power and finance management.

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The action beyond a day

We hope we will concentrate not only on observing the day, meetings, seminars, workshops, researches etc. on climate change, but also on real actions if we truly wish to change the situation.



S. M. ZAKIR HOSSAIN

ONLY one day is not sufficient to unite people to combat climate change but it should be sufficient to give a message -- "Your planet needs you: Unite to combat climate change." Bearing this theme, the whole world is celebrating today the World Environment Day (WED) 2009 with a view to raising worldwide awareness of the environment as well as enhancing political attention and action. The world observes WED, which was established by the UN General Assembly in 1972, on June 5 to mark the opening of the Stockholm Conference on the Human Environment.

This year's WED falls on the eve of 15th Conference of the Parties (COP), which will be held in Copenhagen in December. The parties will meet to conclude an agreement that will succeed the Kyoto Protocol. In 1992, the United Nations adopted the UN Framework Convention on Climate Change (UNFCCC) at the Rio Summit, which entered into force in 1994 with a key provision aimed at stabilising climate change to a safe level. Without the participation of the USA, the UNFCCC Kyoto Protocol, containing binding emission reduction commitments for 37 developed countries, was adopted in 1997 and came into force in 2005.

While the protocol aims to achieve a 5.2% reduction in greenhouse gas emissions, to below the 1990 level by 2012, the 13th COP in Bali in December 2007 recognised that the most recent scientific findings required far more wide ranging activity. This new approach should ensure that deep emissions cuts are made by 2050 to levels compatible with limiting the rise in global temperature above the pre-industrial level so as to avoid huge and unmanageable changes in climate. The Bali plan of action is the basis for ongoing UNFCCC negotiations, aimed at achieving an agreement at the 15th COP.

The USA and other developed countries are the biggest carbon emitters while the impacts of climate change will fall unreasonably upon poor and developing countries, even though they are the smallest carbon emitters. Bangladesh, a low-lying country, as per UNFCCC report, is one of the most vulnerable countries to the impacts of climate change. So, Bangladesh and other vulnerable countries should get prepared to combat climate change and seek technical support as well as compensation from the countries contributing most to climate change. The upcoming COP 15 could be the platform for the vulnerable to raise their voice.

Rise in sea level, changes in rainfall and temperature, frequency of floods, droughts, soil erosion etc are the generally identified impacts of climate change, and some countries, including Bangladesh, are already experiencing some of them. According to the United Nations, an estimated 200,000 deaths each year in the world's low income countries can be linked to the impact of climate change on health -- through crop failure and malnutrition, diarrhoeal diseases, malaria and flooding.

The impacts will also be felt in the economy, which will be an obstacle in achieving the Millennium Development Goal (MDGs). Kamalash Sharma, the secretary general of the intergovernmental organisation said: "Climate change could reverse progress made towards achieving the MDGs in human development. Tomorrow will be too late to regain the progress we have lost today."

There is no way to wait for tomorrow, and we should start acting from today's WED to combat climate change. We should remember that everyone's actions, individually or collectively, have impacts on climate change. We should try to reduce carbon emissions and find out the alternatives for our lovely planet. A range of practices in our diverse physical, social, economic and political environment can help us to adapt to climate change. The illiterate people, especially the women who are more vulnerable, are unaware about climate change and conscious people should take action to raise awareness on the issue.

The government also has the responsibility of taking effective measures to adapt to climate change. It is praiseworthy that the Bangladesh government declared a climate change Strategy and Action Plan in 2008, and the cabinet approved in principle the Climate Change Trust Policy (CCTP) to help face the adverse impacts of global warming. In addition, the government has created a climate change fund from the current fiscal year.

Besides, a number of national and international development agencies working in Bangladesh are concentrating seriously on the issue and taking various actions. So, it requires effective coordination between the government and other agencies, and involvement of the vulnerable groups, in planning, designing and implementing climate change mitigation programs.

We hope we will concentrate not only on observing the day, meetings, seminars, workshops, researches etc. on climate change, but also on real actions if we truly wish to change the situation. Remember the words of Mohandas Gandhi: "Be the change you wish to see in the world."

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water supplied in March/April was tinted and odorous which almost created a stir in media with public reaction.

Reportedly groundwater is also becoming polluted in area near Hazaribagh. May be in near future we will have to treat GW for removal of Co2 by lime treatment and suspended solids by pressure filtration plants which will also remove iron (Fe) and water should be chlorinated for disinfection.

Some clean rivers in the world

The Seine by Paris, a city of 8-10 million people and industrial and commercial centre is a fresh flowing river. It is not only environmental rules which are strictly enforced and monitored,

A plea to combating climate change and water scarcity

Water is central, as it always has been. The availability of freshwater to meet the demands of a growing and increasingly affluent population while sustaining a healthy environment has emerged as one of the nation's primary concerns at this moment.

SHAILA SHAHID

TO everything there is a season; but water is eternal. However, despite the looming crisis of water, the scenario is getting worse day by day because of nature's unpredictability along with industrialisation, illegal encroachment, negligence and ignorance of the authorities, which are turning our once pristine fresh water resources and riverine waterways into sewers. Thus water is becoming increasingly scarce in consequence.

After the devastation by Sidr, the coastal zone is again facing the challenges of survival after cyclone Aila. Although it is difficult at this stage to directly link Sidr and Aila to climate change, the nature of these two cyclones is totally consistent with the IPCC's predictions for future weather conditions. Immediately after the cyclone, it was observed that the demand for safe drinking water was the ultimate concern.

Trapped between the Bay of Bengal and the Himalayas, and with 20 million people living less than one metre above sea level, Bangladesh has always been particularly susceptible to extreme climatic variability and natural catastrophes like flooding and cyclones. Here, freshwater resources are highly sensitive to variations in weather and climate change. It also compounds the complexity and costs of ensuring water security, particularly in countries and regions with difficult "hydrologic legacies" (Agenda 73, 2007). Water-related issues are critical in determining key regional vulnerabilities also, which we are familiar with from our historical experience of water sharing with the neighbouring countries.

The World Commission on Water estimates that water use will increase by about 50% in the next 30 years. An estimated four billion people (half the planet) will, at that time, live under conditions of severe water stress. The UN's Intergovernmental Panel on Climate Change (IPCC 2007) predicts that climate change will have a graver effect, and Bangladesh is no

exception to that. The country is highly exposed to adverse impacts of climate change mainly due to its geophysical location, hydrological influence by erratic monsoon rainfall and changes in regional water flow patterns, etc. The projected changes in water use will be driven by the combined effects in water availability, in water demand and management. Sea level rise may bring the water line further inwards and aggravate the existing situation, and storm surges may cause significant casualties and destroy infrastructure including water supply and sanitation.

Climate change induced challenges are mainly: (a) scarcity of fresh water due to less rain and higher evaporation and transpiration in the dry season, (b) drainage congestion due to higher water levels in the confluence with the rise of sea level, (c) river bank erosion, (d) frequent floods and prolonged and widespread drought, (e) wider salinity in the surface, ground and soil in the coastal zone.

An assessment of the impact on drinking water and livelihoods in the Chittagong Hill Tracts (Conducted by WaterAid 2008) also identified climate change as one of the major reasons for water scarcity problems in the hilly area. According to the study, the dense forest in CHT has drastically been reduced in the recent years. Between 1989 and 2003, an estimated 170,000 hectares of forest (approximately 50%) were lost in the CHT area. Essential natural water sources such as springs (jhris) and streams (charas), in CHT are reducing; some have already dried up and several Gravity Flow Systems have insufficient flows for use.

This type of change facilitates fast surface runoff, thereby reducing the soil's water retention capacity and percolation into the water table, an overall decreasing rainfall pattern, increasing evaporation and sunshine hours due to climatic variability. Thus, the increased degradation of ecosystems, excessive consumption of water, contamination and salination of water bodies, aquifers and dams along with the impact of climate change, have



been worsening the overall scenario and increasing the extreme poverty.

Adapting to a new climate regime

The socio-economic impacts of floods, droughts, climate and non-climate factors affecting the supply and demand for water depend in large part on how society adapts. However, there is no strong consensus yet about the effectiveness of different coping and adaptation approaches to deal with climate change. It is evident that some climate change may be rapid or some will be of such a large magnitude that they will overwhelm existing systems before current management approaches can react.

Therefore, water related actors should begin to re-examine engineering design assumptions, operating rules, system optimisation, and contingency planning for existing and planned water-management systems under a wider range of climatic conditions. Current laws and policies affecting water use, management, and development are often inefficient and unresponsive to changing conditions. The costs of these inefficiencies will significantly rise if water becomes scarcer and supply and demand conditions change.

Water is central, as it always has been. The availability of freshwater to meet the demands of a growing and increasingly affluent popula-

tion while sustaining a healthy environment has emerged as one of the nation's primary concerns at this moment. Although there are several reasons for this, which are not necessarily linked to climate change, a lack of available water, a higher and more uneven water demand resulting from population growth in concentrated areas, an increase in urbanisation, more intense use of water to improve general well-being and the challenge to improve water governance, are variables that already pose a tremendous challenge to providing satisfactory water services.

In a situation of climate volatility, supply of and control over water is made more acute -- climate governs the weather, weather dictates water distribution and water distribution controls life (Leonard, nd). As the theme of this year's World Environment Day goes "Your planet needs you- Unite to combat climate change," we need to ask ourselves, "should there be any environmental limit to the number of people and their un-thoughtful acts and quality of life that this mother earth can support?" We have to search for the answer and act now, our time is running out -- we are in the thin red line.

The writer is an environmental activist and works for WaterAid Bangladesh as Programme Coordinator-Advocacy.