

## WATER POLLUTION IN BANGLADESH, ITS CAUSES AND IMPACTS: AN ANALYSIS BASED ON EXISTING REGULATORY AND INSTITUTIONAL FRAMEWORK

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### ABSTRACT

Water is the most significant resource in Bangladesh as the livelihood of the country's majority of people, directly and indirectly, depends on the natural resources. Alongside the use of domestic purpose; water is used mainly in agricultural, commercial, and industrial establishments in the country. Therefore, the quality of water is very essential for the livelihood of millions of people here. But the major concern is the level of water pollution is so high that it poses a serious threat to public health in Bangladesh. Despite the alarming levels of water pollution in the country, no significant or effective steps are taken or there is no clear or specific law to prevent ongoing water pollution. The existing environmental laws are not enough to address the problem and its implementations are also largely absent. So, existing laws and frameworks are not effective enough to address the cause of water pollution and its prevention. The article aims to determine the causes of water pollution and its impacts on the environment and livelihood; to scrutinize the prevailing related laws and policies and to conclude with recommendations to stop water pollution in Bangladesh. The paper makes use of secondary data i.e. books, articles, different national and international law reports, Acts etc.

**KEY WORDS :** Water pollution, Bangladesh, Effects, Surface water, Ground water

### INTRODUCTION

Groundwater is a major source of drinking water and water supply for the public utilities and private institutions in Bangladesh. Currently, around 70% of people have access to safe water in the country. About 95% of the domestic and the industrial water supplies in the major urban areas including the capital city Dhaka are met from groundwater (Khan and Siddique, 2000). Water pollution is the contamination of natural water resources by chemical, radioactive or pathogenic microbial substances and physical activities. Bangladesh has plentiful surface water in its rivers and canals, but most of the water is polluted for many reasons including industrial waste and agrochemicals; discharge of oil at sea and rivers. Currently, 82% of the urban people and 72% of the rural population have access to safe water (MGD: Bangladesh

Progress Report, 2005). Bangladesh government has already adopted several laws and regulations to prevent water pollution. But the water pollutions remain unabated despite the laws and regulations. The section 14 of Bangladesh Water Act, 2013 defined that water resources mean any surface water, groundwater and rainwater, i.e. water in the atmosphere; and shall also include water of estuary, aquifer, flood-plain, wetland, water source, foreshore, coast, and any other similar reservoir or places. As per section 20 of Bangladesh Water Act, 2013.

*“Water pollution means direct or indirect harmful changes of physical, chemical and organic properties of water.”*

Water pollution occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment of removing harmful compounds.

### **Causes and sources of water pollution in Bangladesh**

Bangladesh is one of the overpopulated countries in the world. Water quality in the country deteriorates due to human activities and natural causes. Its unplanned urbanization and industrialization are the key factors of water pollution, posing a serious social and health problem in both rural and urban areas of the country. Limited and unplanned sewerage systems, ineffective sanitary waste disposal system, untreated or poorly treated domestic sewage are the major source of water pollution in Bangladesh (Acharjee, 2011). The underground water level went down in the urban areas due to the heavy extraction of groundwater. Besides, low water flow in the river systems in the dry season, and also by substances such as arsenic in groundwater also contributed to the pollution. Consuming such polluted water, people in both rural and urban areas in Bangladesh are facing a huge health crisis.

Water-borne diseases like Diarrheal diseases rising for drinking unsafe water, causing deaths in rural areas. Lack of proper sanitation and drainage facilities, insufficient health and hygiene knowledge is contributing to the pollution of both surface and groundwater (Akter, 2017). Excessive use of fertilizers in agricultural fields, oil spillage in the rivers and sea are the other sources of water pollution. Usually, crude oil spills from tankers, offshore platforms, wells while refined petroleum products like gasoline, diesel and other fuels from the large ships such as bunker. The spillage oil may take months or even years to clean up. The sources of surface water in Bangladesh are rivers, lakes, ponds and floodplains and it is extensively polluted by industrial and urban wastes, agrochemicals and sewerage wastes and seawater intrusions. Groundwater is mainly contaminated with arsenic in many parts of the country. Water pollution can be described as any physical, chemical or biological changes in its natural quality they greatly affect safe and beneficial consumption (Amin, 2015). It may be caused by both natural and anthropogenic processes. Anthropogenic or man-made pollution is significant than the natural process in Bangladesh.

Usually, the rivers in Bangladesh are being polluted by untreated industrial effluent or waste, agrochemicals, sewage waste, solid waste dumping, tannery waste, oil spillage, sedimentation and encroachment. The water quality depends on the

types discharged waste, chemicals, water flow and dilution capability by the river system. Bangladesh major rivers specially Buriganga river in the capital city Dhaka is the worst example of serious surface water pollution in the country.

### **Impacts of water pollution**

In Bangladesh, the increasing rate of water pollution has become of serious health hazard. Not only the environment, but living organisms including human beings and animals are also being greatly affected by pollution. Numerous water-borne diseases like diarrheal diseases that cause fatalities arising largely thanks to drinking unsafe water in rural areas. The rivers were the main source of fish in the country couple of era back (Ahmed, 2015). But with the growing rate of water pollution, most of the rivers in Bangladesh are being depleted of fish. Many varieties of fish have already become extinct due to water pollution. Many anthropogenic disturbances like illegal encroachments, unplanned sand mining, construction of embankments, indiscriminate disposal of industrial effluents, agro-chemical remains and tannery wastes have taken the country's water pollution to a hazardous level. Besides, natural causes like high rates of siltation, decreased water flow is affecting navigability off the rivers.

### **Surface water**

The sources of surface water in Bangladesh are rivers, streams, lakes, ponds, canals. Besides numerous numbers of rivers, there are about 1.3 million ponds and lakes in the country, according to an article published in *The Daily Star* (*The Daily Star*, 2016). Alongside the decrease of surface water bodies day by day, the water of the sources is polluting extensively due to widely used for disposal of untreated industrial wastes. The increase of population and escalation of agricultural and industrial activities have led to the enhancement of natural surface water bodies, the source of various forms life including fish, and drinking water. And discharge of industrial wastes, chemicals, municipal sewage and agrochemicals and wastewaters are polluting the water extensively.

### **Ground water**

In Bangladesh, about 80 million of its 130 million population, depended on groundwater for their livelihood especially for the drinking water, are in threat due to contamination of arsenic (Ahmed,

2011). The infiltrations of industrial wastes are also the most crucial part of pollution to the groundwater is considered a safer source of drinking water. Besides, intrusions of salinity from seawater deep into the land in the Southwest part of the country are rendering groundwater unsafe for consumption.

### **Regulatory and institutional framework on prevention of water pollution**

Like other countries, Bangladesh has also some regulations for the prevention of water pollution. Aiming to prevent environmental pollution, Bangladesh first formulated a law which is known as Water Pollution Ordinance 1970. Later, this ordinance was repealed by Environmental Pollution Control Ordinance in 1977, incorporating the provision for the control, prevention and abatement of the environmental pollution. But the government of Bangladesh repealed the ordinance again in 1995 and adopted the framework legislation "Environmental Protection Act 1995", incorporating the provision for the conservation, improvement of environmental standard and control and mitigate the pollution of the environment.

The Bangladesh Environment Conservation Act, 1995 defines pollution as contamination or alteration of the physical, chemical or biological properties of air, water or soil including change of their temperature, taste, density or any other characteristics or such other activity which, by way of discharging any liquid, gaseous, solid, radioactive or other substances into the air, water or soil or any other component to the environment destroys or causes injury or harm to public health. The Act also includes water pollution in a broader framework of environmental pollution. The Act recommends some certain measures related to pollution prevention, provides remedies for environmental pollution, and instructs individuals and corporations to comply with those provisions. Article 8 of the Act states that any person affected or likely to be affected as a result of pollution or degradation of the environment may, in the manner prescribed by rules, apply to the director general of the Department of Environment for the remedy of the discharge or apprehended damage.

As per the Bangladesh Environment Conservation Act 1995, every factory with toxic waste must have to instal an effluent treatment plant to treat waste before they get dumped into rivers or water bodies. The law also states that every factory must have to take a clearance certificate from the

Department of Environment (DoE). In reality, most of the factories have not complied with the law yet. Only a few numbers of factories have the DoE clearance and TEP plant.

Department of Environment was formed in line with the Environment Conservation Act, 1995. The Environment Conservation Rules 1997 is also determined under section 20 of the law, which outline standards the air quality, water and environment component.

The Environment Conservation Rules of 1997 encompasses—

- Declaration of ecologically critical areas
- Procedure for granting environment clearance
- Outlining environment standards for air, water, noise, odour and other environment components
- Regulations of the industries and development activities discharge permit
- Setting waste discharge and emission standards

Apart from this legal framework, there are also policies of the government with directive and guidance on prevention of water pollution. National Water Policy, 1999 of Bangladesh government includes the national goals-economic development, poverty alleviation, food security, public health and safety, a decent standard of living for the people and protection of the national environment.

The National Water Policy provides the following measures to address water pollution:

**First**, facilitating the availability of safe and affordable drinking water through different ways including rainwater, harvesting and conservation.

**Second**, preserving natural depressions, water bodies, underground aquifers and rainwater.

**Third**, mandating the institutions dealing with the public water and sewerage to provide necessary drainage, treatment of domestic wastewater and sewerage in the interest of public health.

**Fourth**, empowering concerned municipalities and urban water and sewerage management institutions to prevent water pollution by human action.

**Fifth**, mandating the local government to create awareness among the people in combating pollution and managing wastage.

Arsenic contamination into groundwater has become a major cause of water pollution in Bangladesh, posing a serious threat to the health of a large number of people in the country. Despite the growing concern, there is no legal framework or regulation to fight water pollution. To maintain the

groundwater standard, the government's strong commitment and intervention alongside the legal and regulatory framework is very essential. An appropriate policy is also necessary to define the clean water and the use of groundwater.

The Bangladesh Water Act, 2013 principally establishes the right of watchdog role over the sources of water and ensures the right to drinkable water. As per the Act, the highest priority has been given to treat water for hygiene and sanitation. The Act also deals with the conservation of water resources. It restricts the abstraction of total water from any water body and control water pollution. It also envisages better management of water resources. As per the Act, all forms of water including surface water, groundwater, seawater, rainwater and atmospheric water within the territory of the country is belong to the government of Bangladesh on behalf of the people. According to the Act, it is mandatory for taking permits/licenses for withdrawal of large scale of water by individuals and organizations beyond domestic use. Without prior permission from the Executive Committee, no individual or organization will be allowed to extract, distribute, use, develop, protect, and conserve water resources. And no one will be allowed to build any structure that impedes the natural flow of water bodies. Section 28 of the Act defines water pollution as direct or indirect harmful changes of physical, chemical and organic properties of water. However, in case of water pollution prevention, the Bangladesh Environment Conservation Act, 1995 shall be applied. As water is inevitable for human existence, the right to the water has been included as a part of the right to life in Article 32 of the Constitution. But, the right to safe water has not been recognized in the present Act.

However, the National River Protection Commission Act, 2013 is represented as the legal watchdog of all the rivers in Bangladesh. The law defines the formation of commission aiming at preventing the encroachment of rivers, construction of illegal infrastructure on the river banks and conservation and management of rivers in the country.

#### **Effectiveness of regulatory and institutional framework**

The weak legal framework, its poor implementation, and ineffective steps and reluctance of the authorities concerned in water resource management are the main reasons behind the failure

of water pollution prevention in the country. The legal and institutional frameworks for the basic rights to safe water should be defined clearly and properly to control the ruthless pollution of water. Besides, the requirements for good governance in water resource management which is crucial for the prevention of water pollution should be ensured properly. The Ministerial Declaration of the International Conference on Freshwater in 2001 emphasized the good governance, integrated sustainable management of water resources and transparent rules for getting access to equitable water and protection of the water bodies (Faruque, 2017). The country has very few law to address the prevention of water pollution. Unfortunately, these are not being implemented properly due to inadequate institutional measure and lack of good governance, bureaucratic decision-making process and corruption. Besides, there is no separate regulatory authority to deal with the issues related to water pollution. So, there should be separate law and institutional framework, and separate regulatory body, to deal with the water pollution in the context of its severity in the country. The existing laws do not allow the country's citizens or individuals to file a complaint against any government agency or personnel responsible for water pollution. Besides, the present regulatory frameworks and systems for monitoring water quality are very poor in Bangladesh. The water pollution is going on abruptly thanks to the lake of preventive measures for inappropriate institutional structures, inadequate human resources, limited autonomy, and lack of proper management (Chowdhury, 2010). To prevent water pollution, the existing laws are also not properly enforced due to lack of its implementation, its weakness including the absence of details of offences and complicated proceedings. The DoE, the highest regulatory body to implement the environmental laws and oversee the environmental issues, is not functioning effectively. The director general of DoE has the power to take the sample of air, water and soil or other substances from any place to check whether the environment is being polluted and can prepare the reports after testing the samples for any legal proceeding. The Bangladesh Environment Conservation Act 1995 gives a wide range of power and authority to the DG. But there are no guidelines to appoint a DG, nor is there any legal framework to make him accountable.

### Recommendations and conclusion

Despite the existence of different laws and regulations, water pollution is going on unabated in the country. Weak regulatory system, institutional framework and poor governance in water resource management are the main causes behind the failure of preventing water pollution. Meanwhile, no inclusive and specific law will address the severity of water pollution. Besides, water pollution issue properly and its implementation is largely absent too. The current laws do not provide give any individual to file a complaint against the government agency or person responsible for water pollution. To stop the massive scale of water pollution in the county, it is urgent to amend the legal and institutional frameworks for ensuring the basic rights and entitlements to safe water. There is no separates regulatory authority in the country to deal with water pollution as the department of environment is the lone authority to oversee the whole environmental issues including the issues with climate change, sound pollution and air pollution. Considering the gravity of water pollution in Bangladesh, there is no alternative to formulate separate law and institutional framework to address the issue comprehensively. Effective waste management and pollution control mechanisms are very essential for treatment of urban and industrial wastes in city corporation, metropolitan and industrial areas to stop water pollution in the county. The existing legal and regulatory framework on prevention of water pollution is inadequate to address the problem and it has no specific guideline for the allocation responsibilities between different governments agencies concerned. Local government's strong initiative and commitment; clear and comprehensive regulation and efficient administration is essential for the prevention of water pollution in Bangladesh. Besides, reformation legal frameworks, strengthening institutions through adequate resources and expertise are also crucial for improving the present scenario of water pollution in the country.

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