

Environmental Problems in Bangladesh

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Abstract

Our environment is deteriorating for the last two centuries and almost every part of the planet has been touched by it in one way or the other. The primary cause of environmental degradation is human disturbance. The industrial revolution of the 19th century mechanized the production and manufacturing of goods and introduced the use of machinery and other heavy equipment - which in turn, used fuels as the source of energy, which deteriorate the environment. The modern technological progress, for which we are so proud of, is the root cause of environmental deterioration. Environmental changes are based on factors like urbanization, population, and economic growth, an increase in energy consumption, and agricultural intensification. The degradation has adverse impacts on humans, plants, animals, and micro-organisms.

Introduction

The environment can be defined as the physical surrounding of man/woman of which he/she is a part and on which he/she is dependent on for his/her activities like physiological functioning, production, and consumption. His physical environment stretches from the air, water, and land to natural resources like energy carriers, soil, plants, animals, and ecosystems. The relationship between the physical environment and the well-being of individuals and societies is multi-fold and multi-faceted with a qualitative as well as a quantitative aspect to it. The availability and use of natural resources have a bearing on the outcome and the pace of the development process.

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water, and soil; the destruction of ecosystems; habitat destruction; the extinction of wildlife; and pollution. Environmental degradation is one of the ten threats officially cautioned by the High-level Panel on Threats, Challenges, and Change of the United Nations. The United Nations International Strategy for Disaster Reduction defines environmental degradation as "the reduction of the capacity of the environment to meet social and ecological objectives, and needs".

Causes of Environment Degradation

The three major interlinked causes of environmental degradation are:

Overpopulation

Overpopulation is defined as the condition of having a population so dense as to cause environmental deterioration, an impaired quality of life, or a population crash. The rapid population growth and economic development in country are degrading the environment through the uncontrolled growth of urbanization and industrialization, expansion and intensification of agriculture and the destruction of natural habitats. One of the significant reasons for environmental degradation in Bangladesh could be ascribed to quick development of population which is antagonistically influencing the natural resources and condition. The current population of Bangladesh is 164,725,975 and with a rank of eighth by population with a critical density of 1265 per square km. The developing population and the ecological weakening face the test of maintained improvement without natural harm. Population is an important source of development, yet it is a major source of environmental degradation when it exceeds the threshold limits of the support systems. Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like loss of biodiversity, air and water pollution and increased pressure on arable land.

Industrialization

Industrialization is the period of social and economic change that transforms a human group from an agrarian society into an industrial society. This involves an extensive re-organization of an economy for the purpose of manufacturing. Industrialization has brought economic prosperity; additionally, it has resulted in more population, urbanization, obvious stress on the basic life supporting systems while pushing the environmental impacts closer to the threshold limits of tolerance. With booming industrial growth and relatively low land mass, environmental degradation is biggest negative effect of industrial development process. Pollution is the most common by-product of industrialization. However, the degradation of ecological systems, global warming, greenhouse gas emissions, and the adverse effect on human health have garnered widespread concern. Because many industrialized companies are often not forced to pay damages for the environmental harm they cause, they tend to impose a

major negative externality on human society in the form of deforestation, extinction of species, widespread pollution, and excessive waste.

Urbanization

Urbanization refers to the population shift from rural to urban areas, the decrease in the proportion of people living in rural areas, and the ways in which societies adapt to this change. It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in central areas.

Lack of opportunities for gainful employment in villages and the ecological stresses is leading to an ever-increasing movement of poor families to towns. Such fast and spontaneous extension of urban areas has brought about debasement of urban condition. It has extended the hole amongst request and supply of infrastructural administrations, for example, vitality, lodging, transport, correspondence, instruction, water supply and sewerage and recreational pleasantries, along these lines exhausting the valuable ecological asset base of the urban areas. The outcome is the developing Environmental Degradation in Bangladesh: pattern in decay of air and water quality, age of squanders, the expansion of ghettos and bothersome land utilize changes, all of which add to urban poverty.

These three factors as briefly discussed introduced many events that continuously and exaggeratedly diminishing the health of the environment which are mentioned below:

Land Degradation

Land degradation is any change or disturbance to the land perceived to be undesirable. Land degradation can be caused by both manmade and natural reasons such as floods and forest fires. It is estimated that up to 40 per cent of the world's agricultural land is seriously degraded. The major causes of man-made land degradation are:

- Land clearance, such as clearcutting and deforestation
- Agricultural depletion of soil nutrients through poor farming practices
- Livestock including overgrazing and over drafting
- Inappropriate irrigation and over drafting
- Urban sprawl and commercial development
- Vehicle off-roading
- Quarrying of stone, sand, ore and minerals
- Exposure of naked soil after harvesting by heavy equipment

- Monoculture, destabilizing the local ecosystem
- Dumping of non-biodegradable trash, such as plastics
- Loss of soil carbon and Residual Sodium Carbonate

Air Pollution

Air pollution in Bangladesh is a serious issue with the major sources being fuel wood and biomass burning, fuel adulteration, vehicle emission and traffic congestion. Air pollution is also the main cause of the Asian brown cloud, which is causing the monsoon to be delayed. The major sources of air pollution are:

- Stationary sources include smoke stacks of fossil fuel power stations (see for example environmental impact of the coal industry), manufacturing facilities (factories) and waste incinerators, as well as furnaces and other types of fuel-burning heating devices. In developing and poor countries, traditional biomass burning is the major source of air pollutants; traditional biomass includes wood, crop waste and dung.
- Mobile sources include motor vehicles, marine vessels, and aircraft.
- Controlled burn practices in agriculture and forest management. Controlled or prescribed burning is a technique sometimes used in forest management, farming, prairie restoration or greenhouse gas abatement. Fire is a natural part of both forest and grassland ecology and controlled fire can be a tool for foresters. Controlled burning stimulates the germination of some desirable forest trees, thus renewing the forest.
- Waste deposition in landfills, which generate methane. Methane is highly flammable and may form explosive mixtures with air. Methane is also an asphyxiant and may displace oxygen in an enclosed space. Asphyxia or suffocation may result if the oxygen concentration is reduced to below 19.5% by displacement.
- Fertilized farmland may be a major source of nitrogen oxides.
- Dust from natural sources, usually large areas of land with little vegetation or no vegetation.
- Methane, emitted by the digestion of food by animals, for example cattle.

Water pollution

Water pollution is the contamination of water bodies, usually as a result of human activities. Water bodies include for example lakes, rivers, oceans, aquifers and groundwater. Water pollution results when contaminants are introduced into the natural

environment. The specific contaminants leading to pollution in water include a wide spectrum of chemicals, pathogens, and physical changes such as elevated temperature and discoloration. Leading factors of water contamination are discussed below:

Pathogen

Coliform bacteria, which are not an actual cause of disease, are commonly used as a bacterial indicator of water pollution. Other microorganisms sometimes found in contaminated surface waters that have caused human health problems include:

- High levels of pathogens may result from on-site sanitation systems (septic tanks, pit latrines) or inadequately treated sewage discharges. Older cities with ageing infrastructure may have leaky sewage collection systems (pipes, pumps, valves), which can cause sanitary sewer overflows. Some cities also have combined sewers, which may discharge untreated sewage during rain storms. Silt (sediment) from sewage discharges also pollutes water bodies.
- Pathogen discharges may also be caused by poorly managed livestock operations.

Organic contaminants

- Detergents
- Disinfection by-products found in chemically disinfected drinking water, such as chloroform
- Food processing waste, which can include oxygen-demanding substances, fats and grease
- Insecticides and herbicides, a huge range of organohalides and other chemical compounds
- Petroleum hydrocarbons, including fuels (gasoline, diesel fuel, jet fuels, and fuel oil) and lubricants (motor oil), and fuel combustion byproducts, from storm water runoff.
- Volatile organic compounds, such as industrial solvents, from improper storage.
- Chlorinated solvents, which are dense non-aqueous phase liquids, may fall to the bottom of reservoirs, since they don't mix well with water and are denser.
- Polychlorinated biphenyl, Trichloroethylene, Perchlorate
- Various chemical compounds found in personal hygiene and cosmetic products.
- Drug pollution involving pharmaceutical drugs and their metabolites, this can include antidepressant drugs or hormonal medicines such as contraceptive pills. These molecules can be small and difficult for treatment plants to remove without expensive upgrades.

Inorganic water pollutants

- Acidity caused by industrial discharges (especially sulfur dioxide from power plants)
- Ammonia from food processing waste

- Chemical waste as industrial by-products
- Fertilizers containing nutrients--nitrates and phosphates—which are found in storm water runoff from agriculture, as well as commercial and residential use.
- Heavy metals from motor vehicles (via urban storm water runoff) and acid mine drainage
- Secretion of creosote preservative into the aquatic ecosystem
- Silt (sediment) in runoff from construction sites, logging, slash and burn practices or land clearing sites.

Macroscopic pollution

- Trash or garbage (e.g. paper, plastic, or food waste) discarded by people on the ground, along with accidental or intentional dumping of rubbish, that are washed by rainfall into storm drains and eventually discharged into surface waters.
- Nurdles, small ubiquitous waterborne plastic pellets.
- Shipwrecks, large derelict ships.

Sound pollution

Noise pollution is generally defined as regular exposure to elevated sound levels that may lead to adverse effects in humans or other living organisms. Poor urban planning may give rise to noise disintegration or pollution, side-by-side industrial and residential buildings can result in noise pollution in the residential areas. The major sources of sound pollution are:

- Street traffic sounds from cars, buses, pedestrians, ambulances etc.
- Construction sounds like drilling or other heavy machinery in operation
- Airports, with constant elevated sounds from air traffic, i.e. planes taking off or landing and train station traffic.
- Workplace sounds, often common in open-space offices
- Constant loud music in or near commercial venues
- Industrial sounds like fans, generators, compressor, mills
- Events involving fireworks, firecrackers, loudspeakers etc.
- Conflicts generate noise pollution through explosions, gunfire etc.

Light pollution

Light pollution is the presence of anthropogenic and artificial light in the night environment. It is exacerbated by excessive, misdirected or obtrusive use of light, but even carefully used light fundamentally alters natural conditions. As a major side-effect of urbanization, it is blamed for compromising health, disrupting ecosystems and spoiling aesthetic environments.

Depletion of Resources

Resource depletion is the consumption of a resource faster than it can be replenished. Natural resources are commonly divided between renewable resources and non-renewable resources. Depletion of resources feeds the major causes of environmental degradation. Some of the events and causes that sustains on depletion of resources are as follows:

- An increase in the populace expands the need for resources and conditions necessary to sustain it. Developing countries are using more and more resources to industrialize and support their ever-increasing population. Hence, the depletion of natural resources will continue as long as the world population increases.
- Poor irrigation practices, soil management, excessive use of pesticides, fungicides, and herbicides equally kill important soil micro-organisms that are essential in replenishing nutrients in the soil.
- Through deforestation, the planet not only loses tress but also thousands of animals and great plant biodiversity due to the destruction of their natural habitats. Moreover, increased logging activities lead to soil erosion that degrades natural soil minerals.
- Large-scale exploitation of minerals began in the Industrial Revolution around 1760 in England and has grown rapidly ever since. Gasoline, Copper, Zinc, Aluminum, Coal, Iron are continuously being reaped from the heart of nature.
- Extraction of mineral oil, continuously funded by the governments, aided by money and technology, used for all sorts of purposes by humans is backstabbing and accelerating the environmental degradation for decades.

Besides these, there are many other causes behind the cyclic perpetuation of environmental degradation.

Environmental Concerns in Bangladesh

Bangladesh saw around 234,000 deaths, including 80,000 in urban areas, due to environmental pollution and related health risks in 2015, making it one of the worst affected countries in the world, reveals a World Bank report. Some 18,000 lives and 578,000 years of potential life were lost in Dhaka city in 2015 – **the second least livable city** in the world, showing the urgency to immediately address the city's environmental issues.

Some of the major environmental concerns currently faced by Bangladesh have been mentioned in the following points:

Jeopardized public health due to particulate air pollution:

Particulates – also known as atmospheric aerosol particles/suspended particulate matter are microscopic particles of solid or liquid matter suspended in the air. Particulate Matter (PM) is the principal component of air pollution whose predominant sources are vehicular and industrial emissions. PM induces inflammation, oxidative stress and aggravates respiratory symptoms in patients with chronic airway diseases. Inhalation of airborne PM produces a range of adverse respiratory health outcomes like asthma, lung cancer, chronic obstructive pulmonary diseases etc. In a steadily urbanizing country like Bangladesh where there is inadequate technology and economy to manage particulate wastes compared to the growing number of industries, public health is at serious risk.

Loss of significant amount of water resources due to unrestrained discharge of wastes into the water bodies:

Dhaka and its adjacent districts like Gazipur, Narayanganj are the worst victims of unplanned industrialization. Massive amount of effluent water is being discharged in the nearby water bodies such as Mokosh Beel, Turag river and Ratanpur Khal. Textile dyeing industries situated surrounding D.N.D. embankment discharge huge amount of effluents and solid wastes which eventually enter the Shitalakshya river. A vast amount of untreated effluents from industries such as spinning mills, dyeing, cotton, textile, steel mills, oil refineries, and others industries is discharged regularly into the Karnaphuli river, Chittagong. This is endangering the marine biodiversity and causing a lot of fish species to go extinct.

Groundwater contamination by trace elements:

In Bangladesh, trace elements in ground and surface water often exceed the guideline values recommended by WHO. Trace metals are elements like Chromium, Zinc, Manganese, Arsenic etc. Presence of these metals in drinking water above a certain amount can be detrimental to human health. In Bangladesh the most common trace

contamination is Arsenic contamination. Overexposure of arsenic not only increases the probability of diseases like lung cancer, renal cancer, skin cancer but also it may create a generation like “arsenic orphans”.

Biodiversity depletion (in Chalan Beel, Sundarbans, Modhupur forest and Chokoria mangrove forest):

Industrial, domestic, agro-chemical and other pollution and irrational use of chemical fertilizers and pesticides, rapid, unplanned and uncontrolled industrialization, imbalanced competition between the local varieties consequent to the introduction, adoption, and promotion of the exotic and High Yield Varieties (HYV) are causing biodiversity depletion in Bangladesh.

Reduction of fertility and cultivable lands due to heavy metalloid contamination in soil:

Major sources of soil heavy metal and metalloid pollution include municipal wastes, industrial effluents, chemical fertilizers, and pesticides. Irrigation with contaminated groundwater and river water are also responsible for soil contamination. Heavy metal and metalloid pollution of farmland and crops can substantially impact food safety as well as human health. In Bangladesh, cultivation in the dry season mostly depends on irrigation by deep shallow tube wells (STWs). Bangladesh has the highest percentage of As-contaminated STWs, and yearly increases. In Bangladesh, cultivation in the dry season mostly depends on irrigation by deep shallow tube wells (STWs). Bangladesh has the highest percentage of As-contaminated STWs, and yearly increases. Soil from Chittagong and Bogra city were found to be polluted by Cd mainly due to rapid industrialization and urbanization in recent decades. Excessive use of phosphate fertilizers and pesticides are responsible for increasing heavy metals and metalloids in the soils of commercial and residential vegetable plots in Pabna.

Increase in natural disasters due to climate change:

Bangladesh is highly susceptible to varying climate changes. It is a country where three major rivers converge, a country largely made up of low-lying flood plains and that is the statistical focus of the cyclone generating Bay of Bengal. The past has demonstrated how devastating major climatic events can be. Storms, such as Cyclone Gorky (1991) - which killed more than 130,000 people and left 10 million people homeless - demonstrate the extreme severity of these events. Many of the impacts of climate change will reinforce the environmental, socio-economic and demographic stresses already faced by Bangladesh. Climate change is likely to result in:

- **Increased Flooding:** Coastal flooding is a major impact of sea level rise. This is higher in Bangladesh because of the effects of tectonic subsidence. Sea level rise is also associated with increased riverside flooding, because it causes more backwater effect of the Ganges-Brahmaputra-Meghna Rivers along the delta. This will result in increased drainage congestion due to higher water levels, which will be exacerbated by other factors associated with climate change such as siltation of estuary branches in line with increased surface runoff, and higher riverbed levels.
- **Increased Droughts:** Climate change will exacerbate drought in Bangladesh both in terms of intensity and frequency. The Southwest and Northwest regions are particularly susceptible to drought. Greater precipitation extremes associated with climate change also mean less rainfall in the dry season, which will increase water stress on those areas that already experience water shortages, particularly in the winter months. This will be worse for those areas that depend on glacial melt water for their main dry-season water supply, as glaciers recede with rising temperatures.
- **Increased vulnerability to cyclones and storm surges:** 5-10 percent increase in intensity (wind speed) that would contribute to enhanced storm surges and coastal flooding, and also project a 20 per cent increase in intensity of associated precipitation that would contribute to flooding. Cyclonic winds are likely to increase in intensity because of the positive correlation with temperature rise in sea surface. In November 2007, for example, the tropical cyclone SIDR, with a 100-mile-long front covering the breadth of the country and with winds up to 240 km per hour, hit Bangladesh. This was noted to be an unusual occurrence given the intensity and timing of the storm, particularly the fact that it occurred in the same year as two recurrent floods.
- **Decreased availability of fresh water:** The availability of freshwater will be reduced by increased intrusion of salinity into fresh water sources during the low flow conditions. In the coastal regions this is brought about by sea level rise resulting in saline water intrusion in the estuaries and into the groundwater. The effects are intensified by greater evaporation of freshwater as temperatures increase, coupled with a greater demand for fresh water in times of water stress.
- **Greater temperature extremes:** Climate change is associated with warmer summers and colder winters. Temperatures in Bangladesh have increased about 1°C in May and 0.5 °C in November between 1985 and 1998, and further temperature increases are expected. However, although the overall climate is warming, temperature extremes are increasing, and winter temperatures as low as 5°C have been recorded in January 2007, reportedly the lowest in 38 years.

These are the current leading environmental concerns of Bangladesh.

Effects of Global Problems in Bangladesh

Ozone Depletion, Greenhouse Effect and Global Warming

All the three physical phenomena are related to one another to a great extent. Ozone is a form of oxygen, which is away from the earth's surface at a height of about 20 to 30 km in the atmosphere. It is scattered in the stratosphere in the form of a layer about three millimeters thick. This layer works as a shield to protect the earth against the ultraviolet radiation that comes from the sun.

Near the earth's surface, ozone is an increasingly troublesome pollutant but it is also as important to life as oxygen itself. If this layer disappears or thins, all terrestrial life will be annihilated. The thinning and depletion of the ozone layer has generated global concern during the last few years.

This is due to several chemical pollutants discharged by industries and produced through other chemical reactions. The main cause of the ozone depletion is generally attributed to the chlorofluorocarbons (CFCs) which are mostly produced by highly industrialized developed countries. CFC is a source of energy which is needed most in the modern life.

It is found in many households implements and products. When it is released into the air, it accumulates in the upper atmosphere which destroys the ozone layer. The depletion of ozone layer is linked to both 'greenhouse effect' and the phenomenon of 'global warming'.

The phenomenon commonly known as 'greenhouse effect' occurs due to the emission of certain gaseous pollutants (methane, CFCs, water vapor and carbon dioxide are known as greenhouse gases) in the air which after the heating of the atmosphere causes the average global temperature to rise. This is known as 'global warming'.

In fact, the buildup of carbon dioxide in the earth's atmosphere functions like the glass of a greenhouse. It allows the sun's rays to pass through, but acts as a barrier to prevent them from passing back. The effect is to heat up the earth. Global warming is sometimes termed the 'greenhouse effect' for this reason. Carbon dioxide emissions which because global warming is mostly from automobiles.

The gases used in the aerosols and refrigerators produce particles that react with the ozone layer in such a way as to weaken it. It is thought that these chemicals have produced detectable holes in the ozone layer at both poles and thinning it elsewhere. These holes have become a serious cause of concern for the environmental scientists of the whole world.

The increase in ozone layer depletion will invite the lethal ultraviolet rays from the sun which will increase cancer (especially skin cancer), eye damage (increase in cataracts of the eyes) injure plants and animals and marine life. It will also help in the re-emergence of diseases such as cholera and viral fevers. (Recently spread bird flu and swine flu may be transformed form of the old viral fevers).

Not only this, it may even reduce our immunity to many diseases. Where population concentration is more, such as in big cities, the effects of ozone depletion will be more disastrous on human health, crops and ecosystem. It has it effect on the earth's climate by adding to the greenhouse effect which ultimately results in global warming.

The consequences of global warming are likely to be very devastating and disturbing. Among other things, sea levels will rise as a result of melting of glaciers at the poles and the oceans will warm and expand. Cities that lie near the coasts or in low-lying areas will be flooded and become inhabitable. Large tracts of fertile land will become desert.

Looking at the above cited consequences of depletion of ozone layer and global warming, it has been increasingly realized that human existence is in peril unless something is done to check the depletion of ozone layer and global warming. It has become a major concern of the world today.

It is not a local, regional or national problem but a global problem and requires solution at the global level itself. It is only through the combined efforts of the people of this planet that we can, if not fully solve, at least, minimize these environmental problems.

Desertification

There is no environmental problem in the world that affects people, especially poor people, as extensively as land degradation or desertification. UNCOD defines desertification as 'the diminution or destructing of the biological potential of land, which can ultimately lead to the desert-like conditions. The causes of desertification are numerous.

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Deforestation

Deforestation is one of the important issues of environmental change and degradation of soil. About 30 per cent of earth's surface is covered by forests. South America,

especially Brazil, West Central Africa and South-East Asia, are home to regions of dense forests.

The human pressure on forests has significantly increased in recent decades. The need for agricultural land, increased demand for fuel and commercial wood, more and more dam construction, large-scale ranching and mining along with growing industrialization and urbanization have ruthlessly exploited the forests and have in turn created chaotic conditions and severe environmental imbalances.

The main cause of deforestation is commercial exploitation of forests. Besides this, as a part of developmental drive, large dams are constructed across many rivers thereby destroying forests. The forests play a pivotal role in balancing the ecosystem or, in other words, in maintaining the oxygen and carbon balance of the earth. Forests have a multiple ecological role to play which affects all types of life in a variety of ways.

They thwart the dangers of cloud drifting, soil erosion, floods, wind erosion and groundwater evaporation. They also protect a wide variety of flora and fauna, provide recreation and can effectively control air pollution. Deforestation destroys symbiotic relationship between ecological infrastructure and animal and human species also.

There has been a growing concern among professional foresters along with social workers about the rate of deforestation everywhere. FAO, UNDP, World Bank and other government and non-governmental organizations (NGOs) have expressed their opinion about deforestation and suggested plans to protect and renewal of forests.

Loss of biodiversity

Today, the extinction of several species or loss of biodiversity is a much-debated issue among the environmentalists at international level. Many species are disappearing rapidly. According to an estimate, 20 to 75 species are becoming extinct each day because of deforestation. This loss of biodiversity is mainly due to the degeneration of life support system. It provides the basis for life on earth. Biodiversity means the variety of life on earth.

The diversity is a condition for long-term sustainability of the environment. The maintenance of its integrity is, therefore, recognized as being indispensable to sustain human life. Biological diversity encompasses all species of plants, animals and micro-organisms and the ecosystem and ecological processes of which they are a part.

The increasing interest in biodiversity is a result of concern regarding species extinction, depletion of genetic diversity and disruption to the atmosphere, water supplies, fisheries and forests. Some bird species such as vultures and kites became almost extinct.

Many species of animals and plants are disappearing rapidly because of their high consumption or destruction. All the species are the integral part of ecosystem and extinctions of some species threatens the balance of ecosystem, and also diminishes the well-being of the remaining species, including human beings. Our earth's biodiversity provides varied sources of food and medicinal plants.

The main causes identified for the loss of biological diversity are:

- Habitat loss, fragmentation and modification;
- Overexploitation of resources; and
- Chemical fertilizers, pesticides and oil pollution.

Disposal of wastes

The high energy consumption and high population densities of the urban societies give rise to large quantities of waste water and sewage as well as household rubbish. Industrialization and urbanization are the main causes of domestic, industrial and nuclear wastes.

The contaminated water supplies cause many diseases of epidemic nature. The industrial waste consists of chemicals, detergents, metals and synthetic compounds besides the solid waste and garbage. Thousands of tons of mercury, nitrogen, phosphorus, cadmium, lead, zinc and other waste is dumped every day in the river and sea waters.

The increased nuclear fuel is becoming as one of the sources of non-conventional energy. The nuclear waste contains radioactive isotopes which generate large quantities of heat. The domestic, industrial and nuclear wastes are serious health hazards and may endanger the biosphere as well.

Industrial waste, pesticides and herbicides enter the waterways through dumping as well as runoff from farms and homes. Many rivers of India including the long seashore are the victims of this disposal of waste. Because of dumping of heavy waste, it is now very difficult to get a cup of totally uncontaminated water from the so-called sacred rivers like Ganga and Yamuna. Inadequate system of solid waste disposal causes adverse impact on health, infant mortality and the birth rate.

Bangladesh Environment Conservation Rules, 1997

An act is a law or the statute which has been passed by the legislature and approved by the President or the highest authority of a nation. However, most laws are not complete code in themselves, i.e. certain provisions as to their application or enforcement etc. are deliberately left out by the legislature. That is where rules come into picture. Rules help govern the law. They are secondary. They are in place to make the Act work effectively.

Back in 1995, The Government of Bangladesh enacted upon a set of laws known as Bangladesh Environment Conservation Act (BECA) in order to help conserve our nation's environment. Later on, to govern those laws Bangladesh Environment Conservation Rules (BECR), 1997 was adopted.

The Act was formulated on the basis of the policy framework provided by the Environment Policy of 1992 and the National Environment Management Action Plan (NEMAP) of 1995. The act also defines certain environmental offences and prescribes for their punishments.

Objectives

The Bangladesh Environment Conservation Act 1995 had three major objectives.

- Conservation of environment
- Improvement of environmental standards
- Control and mitigation of environmental pollution.

So, in order to supplement and fulfill the objectives of the Act, the Bangladesh Environment Conservation Rules (BECR), 1997 was approved by the government in accordance with section 20 of the BECA, 1995.

Structure of the Document

The rules consist of four forms and fourteen schedules. It is also divided upon seventeen different contents. The contents start off with titles and definitions. The rest of the content generally goes to describe procedures, restrictions, notices, validations, fees etc. There is also a declaration for critical ecological sites and information on special incidents. The fourteen schedules that are stated in the rules are mainly on standards about the elements that are relevant to the environment i.e. air, water, various emissions etc.

Overview

The Rule 7 classifies industrial units and projects into four categories depending on environmental impact and location for the purpose of issuance of ECC. These categories are: Green, Orange A, Orange B, and radial existing industrial units and projects and proposed industrial units and projects, that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. For proposed industrial units and projects falling in the Orange-A, Orange-B and Red Categories, firstly a site clearance certificate and thereafter an environmental clearance certificate will be required. A detailed description of these four categories of industries has been given in Schedule-1 of ECR'97. Apart from general requirement, for every Red category proposed industrial unit or project, the application must be accompanied with feasibility report, Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) based on approved ToR by DOE, Environmental Management Plan (EMP). As per ECR'97, water resources development projects fall under the 'Red' category project. Therefore CEIP-I project is 'Red' category project which requires IEE, EIA and EMP for environmental clearance from DOE. The ECR'97 describes the procedures for obtaining Environmental Clearance Certificates (ECC) from the Department of Environment for different types of proposed units or projects.

Any person or organization wishing to establish an industrial unit or project must obtain ECC from the Director General. The application for such certificate must be in the prescribed form together with the prescribed fees laid down in Schedule 13, through the deposit of a Treasury Challan in favor of the Director General. The fees for clearance certificates have been revised in 2010.

Rule 8 prescribes the duration of validity of such certificate (three years for green category and one year for other categories) and compulsory requirement for renewal of certificate at least 30 days before expiry of its validity. This certificate helps make organizations and personnel sincere in the overall conservation of the environment.

The Rule 3 defines the factors to be considered in declaring an area 'Ecologically critical area' (ECA) as per Section 5 of BECA, 1995. It empowers the Government to declare an area 'ECA', if it is satisfied that the ecosystem of the area has reached or is threatened to reach a critical state or condition due to environmental degradation. The Government is also empowered to specify which of the operations or processes shall not be carried out or shall not be initiated in the ecologically critical area. Under this mandate, MOEF has declared Sundarbans, Cox's Bazar -Teknaf Sea Shore, Saint Martin Island, Sonadia Island, Hakaluki Haor, Tanguar Haor, Marjat Baor and Gulshan -Baridhara Lake as

ECA and prohibited certain activities in those areas. Beside these, recently the government of Bangladesh has declared four rivers such as Buriganga River, Turag River, Shitalakha River and Balu River around Dhaka City as ECA. This declaration raises awareness for conserving these critical sites.

It is also important to mention the four forms regarding Application for remedy, Notice of intention for collection of samples, Application for Environmental Clearance Certificate, Pollution under Control Certificate.

Loopholes and Shortcomings

However, nothing is free of loopholes and shortcomings and so is the BECR, 1997. It consists of a number of concerning loopholes and shortcomings which are briefly criticized below:

- The third of the four forms from the rules provide an application for environment clearance certificate. The 7th rule and section 12 of the act also speaks about it. But it is unclear what will happen if the Department of Environment (DoE) is unable to meet the timetable to grant the Environment Clearance Certificate (ECC).
- Section 12 is silent about the standards and parameters upon which the ECC should be obtained. Section 12 also speaks about the formulation of Environment Impact Assessment (EIA) report, but it does not prescribe the role of environment experts in preparing the EIA report. However, it provides for EIA reports only of the industrial projects not of the non-industrial projects.
- As per Rule 7 of the Bangladesh Environment Conservation Rules (BECR), 1997, the industries belonging to highly polluting Red categories must obtain 'No Objection Certificate (NOC)' of the local government authority. But the Conservation Act or Rules does not provide any procedures to be followed by the local government authority in issuing such a 'No Objection Certificate (NOC)'.
- Rule 13 mentions about the determination of the standards for discharge and emission of waste. Regarding management of toxic and hazardous substances, the Rules have broadly defined guidelines for disposal of waste from different categories of industries. But unlike the Environment Protection Rules (EPR) of Bangladesh, the BECR, 1997 have not specified the permissible extent of emissions or the obligations of corrective actions.

The bad thing about the BECA, 1995 and the BECR, 1997 is that they are back dated. They are not exhaustive and the both are incompatible with the demands of time. It

leaves out a couple of important concerns of current time such as radiation and radioactive waste, sound pollution, sight pollution, light pollution, GMOs etc.

- In this age of digitalization, radiation from mobile phones or towers may cause a bigger health hazard for citizens.
- Noise is a major environmental factor. Noise emitted from vehicles, machineries on highways, roads, footways etc. may grimly affect the environment.
- Sight pollution is a common problem in Bangladesh. Sight pollution means any unwanted sight that mentally or physically affects the community or creates any health hazard. For example, at midday, you are riding a motorcycle to your home hungry for your lunch. While approaching your home, you see an ugly scene of huge mountains of waste on the roadside, including wasted food, used banana leaves, putrefying fruits, etc. After seeing that, can you enjoy your lunch at home? Also, Excessive advertisements, sign boards or billboards etc. in public places are the common forms of sight pollution. In our modern life, especially in cities, the hazards of sight pollution are many.
- In our modern life, light pollution has now become a dangerous problem. The inappropriate or excessive use of artificial light is known as light pollution. All the stars in the big cities are already gone. It can also have serious environmental consequences for humans, wildlife, and our climate.
- Genetically Modified Organism (GMO) is an important environmental issue. The term “Genetically modified organisms (GMOs)” can be defined as the organisms (i.e. plants, animals or microorganisms) whose genetic characteristics have been altered by the insertion of a modified gene or a gene from another organism using the techniques of genetic engineering. If done wrong it can be hazardous to public health. Unfortunately, the BECA, 1995 and the BECR, 1997 is totally silent about the things mentioned above. To not have a say in these things portray as bad decisions of the rules.

Propositions

However, these in capabilities can easily be overcome by adopting a few modifications to the rules. A few new rules can be added concerning radiation and radioactive waste, sound pollution, sight pollution, light pollution and GMOs. The loopholes and shortcomings can be demolished by evaluating the policies and standards of the rules, especially the Environment Clearance Certificate. All the ambiguities and lacunas in the both should be removed. People’s participation in environmental decision making should be ensured and protected by law.

Although it is high time for a new set of rules the Bangladesh Environment Conservation Rules, 1997 has been doing so far so good. We can also look forward to a new act as well.

CONCLUSION

The primary causes of environmental degradation in Bangladesh are attributed to the rapid growth of population in combination with economic development and overuse of natural resources. Major environmental calamities in Bangladesh include land degradation, deforestation, soil erosion, habitat destruction and loss of biodiversity. Economic growth and changing consumption patterns have led to a rising demand for energy and increasing transport activities. Air, water and noise pollution together with water scarcity dominate the environmental issues in Bangladesh.

Environmental degradation is one of most urgent of environmental issues. Depending upon the damage, some environments may never recover. The plants and animals that inhabited these places will be lost forever. In order to reduce any future impacts, city planners, industry, and resource managers must consider the long-term effects of development on the environment. With sound planning, public awareness and community participation, future environmental degradation can be prevented.