

# **Population And Environment In Bangladesh**

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**By**

**Dr. Saleemul Huq**

**Dr. A Atiq Rahman**

**Dwijen Mallick**

**Bangladesh Centre for Advanced Studies  
(BCAS)**

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# **Population and Environment in Bangladesh**

## **1. Introduction**

Population and environmental problems had been two areas of concern in the past. But in the recent years, particularly after the UNCED in Brazil in 1992 and the Population Conference in Cairo (1995), there have been many attempts to explore the interlinkages between population and environment both at conceptual and organizational levels. This paper tries to integrate population and environmental concerns of Bangladesh to formulate policy-response for achieving sustainable development for the country.

In most cases, the population is seen as an aggregate of consuming units, putting stress increasingly on the natural resources leading to environmental degradation. But in reality the inter-relationship between population and environment is more complex and multi-dimensional. Human beings are not always consumers they are also producers and some time they are conservators of nature and environment. The quality and quantity of the population of a country have inevitable interaction with its natural resources and environment. On the other hand, environmental changes due to both anthropogenic and natural causes have vital effects on population structure and on social systems.

All the population projections show that there will be an increase of global population in the next few decades and the bulk of the contribution would come from the developing countries. Though there is a declining trend of population growth in Bangladesh, nevertheless the total population is increasing at a fast rate, and by the turn of the century, it will be about 140 million. Any increase of population increases demands for consumption of material goods and services that enhance over-exploitation of natural resources including land, water, fisheries, forest etc., leading to degradation of resource base and depleting both ecosystems and environment of the country.

Population control through effective family planning, educating women; creative employment generation for the poor is some of the primary measures for improving population and environment relation. Further, involving people in resource management and regeneration of environment, changes in institutional setting and mechanism, increase of knowledge about natural system and environment and use of indigenous knowledge for resources management etc. could reverse the downward-spiral of population-environment relationship.

## **2. Population Dynamics**

Bangladesh is one of the most densely populated countries in the world having a population of about 129 million at present within a total surface area of 147,570 sq. km. The density of population is 850 per sq. km, which is one of the highest in the world. The annual growth rate of population is 1.7 percent, which has gradually declined in the recent years. The fertility rate, which is above 4 per woman, is high but is gradually declining. The sex ratio is 106: 100 male/female. About 43 percent people are below the age of 15, and as a result the dependency ratio among the people is also very high. The population structure is pyramidal where the under-aged groups (below 15 years) occupy about 43% of the total population, and the economically active population is only about 35% (45 million) of the total population. The average literacy rate is 37 percent, which is again lower in rural areas (BBS, 1996).

## 2.1 Growth of Population in Bangladesh

The following table-1 and the figure -1 show that the growth of population in Bangladesh was slow in the first half of the century, but after 1951 it grew very rapidly. Before 1951, the average annual growth rate remained below 1% except in 1931-1941. Further, during 1941-51, the total population of the country declined from 41.9 million to 41.2 million. This has happened, because of out-migration. But after 1951, the population of the country grew at a faster rate when average annual growth rate went up over 2%. In the seventies, the country experienced the highest growth of population, which was 2.5% annually. In the eighties and particularly in the nineties, the country experienced declining trends of population growth (2.35% and 2.17% respectively). And only in the recent years, the annual growth rate has come down below 2%. A study of the World Bank and BCAS on “Bangladesh 2020- A Long-term Perspective” reported that though the growth rate has declined slightly, but the country will have a population of about 170 million by the year 2020, even in the context of projected medium level decline of fertility.

**Table-1**  
**Total Population, Density and Growth Rates of Population in the last ten Decades**

Census Year	Population (in Million)	Density of Population per sq. km	Average Annual Growth of Population (%)
1901, March	28.9	196	0.90
1911, March	31.6	214	0.94
1921, March	33.3	225	0.60
1931, February	35.6	241	0.74
1941, March	41.9	285	1.70
1951, March	41.2	284	0.50
1961, February	55.2	345	2.26
1974, March	76.3	484	2.48
1981, March	89.9	590	2.35
1991, March	111.5	720	2.17
1998, September	128.5	850	1.7

Source: BBS, Population Census, 1991 and UNFPA, 1998

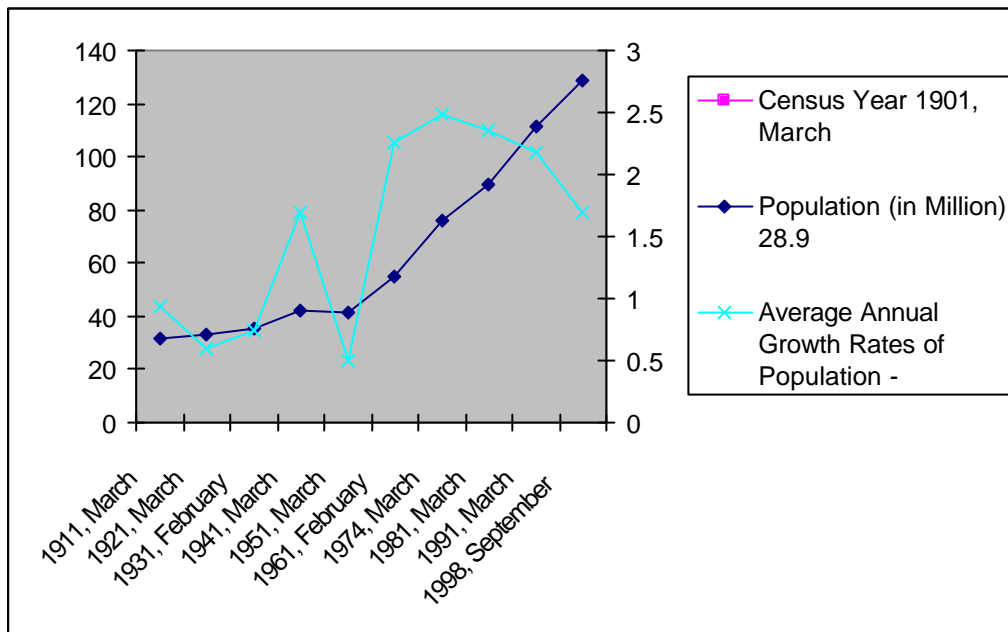
The average land- man ratio is very high and the growing population is putting serious pressure on the natural resources base. Particularly, poor are trying to eke out their livelihood from the already degraded natural resources such as forest, fisheries, etc. leading to environmental degradation.

## 2.2 Rapid Growth of Urban Population

Bangladesh has been experiencing a rapid growth in urbanization since 1961. The proportion of urban population increased gradually from 5.2 % in 1961 to 20% in 1991 with an average growth of about 7 % per year. Inability of rural economy and agriculture to absorb the growing population, a drastic fall in the availability of arable and cropped land, landlessness, fall of real income etc., pushed the rural poor to migrate to the cities. Unfortunately, majority of the recently migrated people could not be provided

with good job in the formal sectors and accommodation in the cities, and most them are living in urban slums. The urban areas expanded in an unplanned way without adequate infrastructure and public amenities and facilities (including housing, water and power supply, sanitation, waste disposal) that increases air and water pollution in the city areas.

Figure-1  
Growth of Total Population and the Rate of Annual Growth by Decades



A report released recently by the United Nations Population Fund (UNFPA) said that Bangladesh achieved some sorts of progress in population control attaining an annual growth rate of 1.7 per cent now from 3 percent in 1973. But the growth will continue till mid of the next century (2050) and only then the population of the country will be stable, but it would be about 250 million at that time. The report also cautioned that the potential for future growth in population would be absolutely tremendous as 43 per cent of the total population is below 15 years.

In the context of growing population, effective measures to be taken to control the growth of population through comprehensive family planning, educating the women and creative employment for the poor. The family planning programmes call for multi-sectoral efforts under broad framework of poverty alleviation and human resources development. It should include and improve the situation of maternal and reproductive healthcare, reduce infant and child mortality, empower women, up-grade nutritional status of the people, improve sanitation, support education and environmental awareness among the people.

### 3. Major Environmental Issues

Bangladesh faces a number environmental problems due to its geographical location and setting, high density of population, poor socio-economic development and inefficient resources management and

institutional framework. The National Environment Management Action Plan (NEMAP), formulated by the Ministry of Environment and Forest (MOEF) through a nation wide public consultation, identified the major environmental problems facing the country and categorized them into four broad groups which included: sectoral issues, locational and eco-specific issues, long-term issues and institutional issues.

**The sectoral problems** include natural disaster, water and FCDI, industrial pollution, deforestation, energy crisis, agro-chemicals and land degradation, decline of fisheries resources, loss of bio-diversity, health and sanitation, air pollution, urban waste generation, inadequate and poor housing, faulty transport system and lack of environment education and awareness.

**The locational and ecospecific problems** include degradation of wetland, hill cutting, salinity and shrimp cultivation, degradation of coastal and marine resources, charland problem, degradation of upland resources (Barind and Madhupur tract etc.).

**The long-terms issues** include climate change and sea level rise, urbanization, regional water sharing and lack of research and development on the issues.

**The institutional issue** include poor institutional setting, lack of inter sectoral coordination, top-down approach, inadequate local level institution and lack of peoples participation. There has been a lack of institutional mechanism to deal with inter-sectoral issues at national level. The capabilities of the Ministry of Environment and Forest and its line agency including Department of Environment and Department of Forest are still weak and insufficient in the context of huge environmental problems they had to deal with at different levels.

The country report of UNDP (1995) in Bangladesh focuses on the recent environmental problems of the country. It reported that in the past, the development strategies and programmes in Bangladesh have pursued the economic growth without acknowledging the cost to the environment and the poor people. The result have been undermining of the environment and already fragile natural resources base, up on which a majority of the country's population directly depend for their livelihood and well-being. The growing population of the country puts serious pressure on land, water, forest and other natural resources. The report listed the major environment problems facing the country which include: degradation of land and forest, erosion of soil (riverbank erosion and hill cutting) and decline of soil fertility, air pollution, creeping salinity intrusion, extraction and depletion of ground water, water pollution and water logging, drought, flood and cyclone. Many of the problems have effects/implications on the rural environment and on eco-system, few are urban-environment related.

#### **4. Population and Environment Interrelationship**

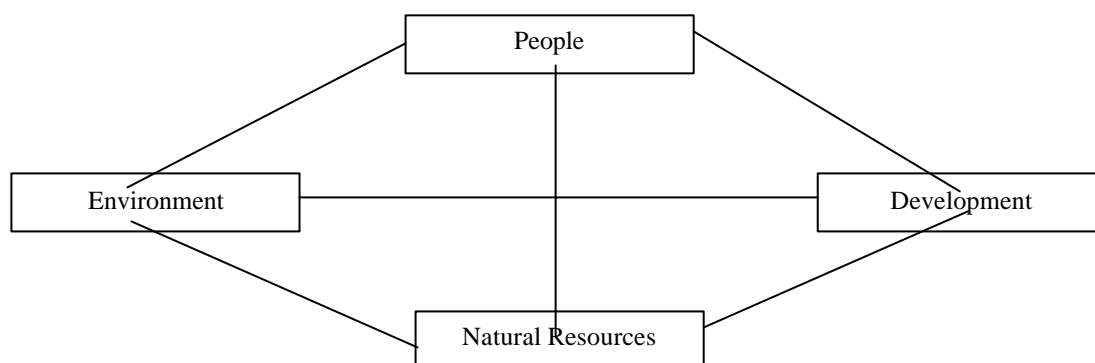
Population of a country at a period of time, has a number of quantitative (size, growth and spatial distribution) and qualitative characteristics including age-structure, health, education, skill, income and consumption patterns which have both negative and positive impacts on natural resources, production systems and on environment.

The physical environment surrounding the population, which provides substance to the population

comprising of land, water, flora, fauna, air and sun also have quantitative and qualitative dimensions, which sometime shape the structure of a population of a country and influence their behavior and activities for achieving their livelihood. Further, people develop specific social systems, institutions and technologies to interact with their natural system sand the environment.

It is viewed that as population enlarges, there is smaller amount of per person natural resources such as water, arable land and forest. More people means more exploitation of natural resources leading to degradation of environment. Under a changing situation, a growing population means smaller allocation of resources resulting low productivity of food and goods, less drinking water, less sweet water for agriculture and industrial activities, and hygiene may become less and less healthy due to increasing contamination by human uses and waste generation. This population environment downward spiral destroys the development potential of a country and makes it unsustainable. The actions and interactions of people, natural resources, environment and development could be understood in the following figure-2.

**Figure - 2**  
**Primary Linkages of Population-Environment and Development**



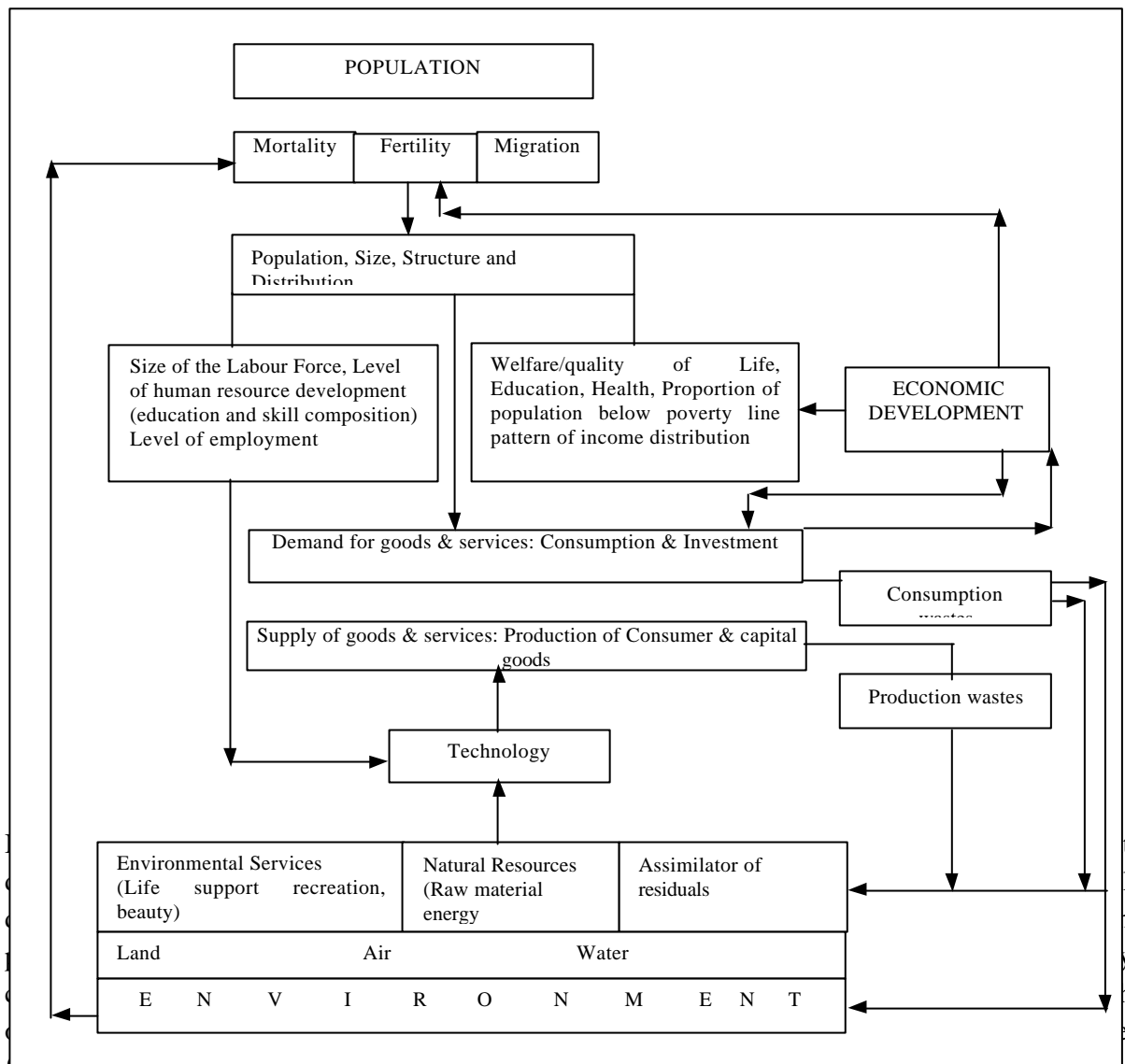
A very simple interaction between population and environment is that high growth of population may lead to over consumption of natural resources and degradation of ecosystem and environmental potentials but this relationship could be further aggravated by a number of other social factors which include the following:

- The economic systems based on high rates of resources consumption, environmentally damaging trade practices and lack of environmental accounting;
- Widespread poverty and unsustainable development efforts;
- Women's inequity and the large unmet need for quality reproductive healthcare and family planning;

- Lack of educational, employment and income opportunity;
- Under-utilization of environmentally sound and locally appropriate technology; and
- Lack of people's participation in resources management and inadequate understanding of people about the natural systems (WWF, 1986).

The quantity and quality of a population essentially its size, income, education and consumption determine the demands for goods and services in terms of their basic needs including food, water, air, cloth, education, healthcare, housing, transportation, fuel and other non-basic needs. A population therefore develops their institutions and technologies which are applied on the resources bases to produce and make available the supply of goods and services in a given market situation. The multi-dimensional inter-relationship of population and environment is demonstrated in the following figure-3.

**Figure-3**  
**Population - Environment Interactions**



Source: BCAS

#### **4.1 Impact of Population on Environment**

Consumption needs of a growing population exert pressure on environment in a number of ways. For meeting the additional requirement of food, either extensive or intensive cultivation or both are taken recourse to. In the former case, marginal land is brought under cultivation, which leads to erosion and loss of soil fertility. Often, people make new cropland by encroaching and clearing forests leading to degradation of forest. Deforestation in turns causes soil erosion, siltation and flooding in river basins, changes in microclimate and loss of habitat. When cultivation extends to low-lying areas, the traditional habitat of fish is encroached upon. Shrinkage of pastureland adversely affects both quantity and quality of livestock resources. In the latter case, when intensive cultivation is practiced on the same of shrinking agricultural land (due to increased demand generated for housing and construction of social and physical infrastructural facilities by the additional population, the following problems are normally encountered: increased run off and ecological hazards from chemical Fertilizers and pesticides, reduced genetic diversity in the plant population, water logging and salinity from irrigation.

In order to absorb the growing labour force in productive employment, there hardly exists any option other than industrialization. Rapid urbanization putting unbearable pressure on an already overburdened system, particularly, water supply and sewerage, however, usually accompany this. Incidence of air pollution is also more due to an increasing number of buses, trucks and cars.

Increased industrial production for meeting consumption and investment demands of a growing population uses up an increasing amount of raw materials including minerals and energy. In the process, this not only depletes the country's natural resource base, but also adds to industrial pollution and thereby degrades the environment of the country.

Environmental impacts of a growing population are much sharper in a developing country as the pursuit of development, an improvement in the standard of living and quality of life of the people, exerts greater pressure on environmental resources. Growth presupposes investment. Higher investment, therefore, obviously implies a speedier depletion of environmental resources. Development projects implemented without proper environmental impact assessment often cause major environmental hazards.

When a country experiences inequitable growth i. e. when the fruits of growth are not shared equally and skewness of income distribution accentuates resource depletion, environmental degradation proceeds at a quicker pace. On the one hand, production and consumption patterns get distorted in favor of high energy intensive products demanded by the rich; on the other hand, the poor and the unemployed are forced to eke out their living from open access natural resources, such as open water fishery, resulting in depletion of stock through over-exploitation of such resources.

#### **4.2 Impact of Environmental Change on Population**

Environmental degradation may have feedback effects on population by contributing to poorer physical and mental health and by interfering with man's productive capacity. It may also lead to migration as people often try to escape from areas experiencing environmental degradation. Natural disasters often cause considerable loss of life.

Demographic variables are influenced by environment in a number of ways. Pollution of air and water directly influence morbidity, thereby mortality and through it, fertility. Substances such as sulfur dioxide, nitrogen oxide, carbon monoxide, hydrocarbons etc. are harmful to health. Polluted water causes a number of diseases. Organic solid wastes stimulate the growth of flies, mosquitoes and other insects, which spread a number of diseases. Environmental problems often lead to inter-group conflicts and sometimes war between countries.

The most important linkage between environment and population, however, seems to be that the reduction of material resources per capita which impairs the human productive capacity and thereby the volume of consumption as a result of environmental degradation, usually causes psychic stress influencing morbidity and mortality. Deteriorating living space and material standard of living may result in fertility reduction. Higher mortality rate, particularly, of infants due to environmental degradation, on the other hand, may lead to increase in the fertility rate as an insurance against possible future loss of children.

### **4.3 Population-Environment Interactions in Bangladesh**

Bangladesh, the most densely populated country in the world, which is also experiencing a rapid rate of population growth, provide a unique setting for examining population-environment linkages. The population-environment linkages must be considered in the context of the people and available natural resources, which have been demonstrated in the figure-1 above. In the first case, it is evident that the extremely high population density of a country such as Bangladesh has contributed to the intense use of forests, fisheries and to a certain extent even soil and water resources. A majority of households are already without sufficient areas of land to raise enough food to meet their needs. Fuel wood stocks have been depleted and diminished to the point where over 84 per cent of the total domestic energy requirements must be met by crop residues and dung with only 16 per cent being met by fuel wood. Particularly, when one considers the projected population levels of the year 2000 and beyond, it does appear that population density has clearly outstripped the potential for sustained yield production of fuel wood for domestic energy consumption from existing sources of supply.

High growth rate of an already vast population has thus saddled Bangladesh with considerable environmental problems. Even for meeting the consumption demands of a growing population at the current pitiable low standard of living (per capita income in Bangladesh was US \$ 220 in 1997) one of the lowest in the world. Most of the environmental resources were put to severe strain of growing population. It would, however, be erroneous to put the entire blame of environmental degradation in Bangladesh to population growth alone, because much of it resulted from market and policy failures.

Public policies in the form of under-priced forest products sold to industries led to their inefficient use and thus directly contributed to deforestation in Bangladesh. Similarly, implementation of FCDI projects without proper environmental impact assessment led to degradation of fisheries resources. Again, failure to generate adequate employment opportunities has forced the poor and the unemployed, in their bid to meet their survival needs to resort to over-exploitation of common property resources such as open water fishery.

Poverty is regarded as one of the greatest threats to environment, and the poor are the worst victims of environmental degradation in the country. The widespread poverty in Bangladesh can best be

addressed by creating adequate employment opportunities. Employment not only contributes to production but also gives the employed an access to the same. Agriculture, however, has limited absorptive capacity. It can provide productive employment at best to one third of the increase in labour force. The remaining two-thirds, therefore, will have to find employment in the non-agricultural sector, particularly in industries. As industrialization and urbanization usually go hand in hand, it is not difficult to foresee an increase in industrial pollution and further deterioration in the environment of the urban and surrounding rural areas, unless an appropriate policy framework is developed and adopted. The major environmental problems that are currently faced with in the country and their effects on population and society at large are discussed in the following sections.

## **5. Population and Rural Environment**

Bangladesh is mostly a delta formed by sediments brought from the Himalayan drainage ecosystem and deposited along riverbanks and in the floodplains. The location of Bangladesh makes the country vulnerable to many natural calamities like flood cyclone and drought. Besides, there are environmental problems in relation to degradation of land, water and forest in rural Bangladesh, which have been intensified by the increase of population, overexploitation and mismanagement of resources. The major rural environmental problems are discussed below.

### **5.1 Land Degradation**

The land is the most important resource in Bangladesh and it is under intense use threatening its carrying capacity. The pressure of population on land is a crucial factor in the management of land resources in the country. Availability of land is a major constraint in Bangladesh as virtually all available land is utilized for crop production, homestead, commercial establishment, road network, urban development, forestry, fishing etc. The country lacks a comprehensive land use policy emphasizing the most appropriate and productive use of land. Degradation of soil fertility due to indiscriminate and inefficient use of chemical fertilizer and pesticides and river erosion are posing threats for both sustainability of agricultural and human habitation in Bangladesh.

There are a number of ways in which population increase impinges on land quality. Firstly, by increasing use of chemical inputs like fertilizers and pesticides, the productivity of once fertile land has been affected in many areas. Secondly, by increasingly converting marginal lands (e.g. chars, deforested lands, converted wetlands, etc.) to crop cultivation they affect both the natural ecosystems as well as the productivity of such marginal lands. Thirdly, pressure is increased on non-crop ecosystems such as forests and wetlands to convert them to croplands. Thus for example large parts of the floodplains have been converted from natural wetlands to relatively dry-lands for crop (usually rice) cultivation by building embankments.

### **5.2 Water: Problems of Scarcity and Abundance**

Bangladesh has two problems with water i.e., scarcity of water for agriculture, industrial and domestic uses in the dry season and sometime, abundance of water in monsoon causes flood and natural hazards. But people treat normal flood as boon rather than bane. It is viewed that the country would face serious scarcity of fresh water for agriculture, industry, fisheries and other livelihood activities in near future. Three things happen; flow of up-stream water is decreasing and ground water level is going down particularly in the dry season and at the same time, saline water is intruding in the inland

area. The water development and flood control projects have serious negative impacts on wetlands, fisheries and on the ecosystems of some parts of the country. Major environmental concerns in water sector include; degradation of wetlands, floodplain and water bodies, declining of ground water, non-availability of water for irrigation, water pollution, water logging, river bank erosion and flood damages.

Water is essential for domestic, agricultural and industrial needs as well as others such as for fishing, navigation, etc. In rural Bangladesh a major thrust has been made in terms of providing clean drinking water, primarily from ground water through sinking of tubewells in all parts of the country. While this has achieved a significant success in reaching clean drinking water to most households it has recently come up with the problem of arsenic in tubewell water in many parts of the country. The relationship with population is that where arsenic is found in high concentrations in the groundwater it is often difficult for the local population to find alternatives for clean drinking water.

Another problem related to water and population pressure is the spacing of tubewells including hand tubewells, shallow tubewells and deep tubewells while people are beginning to interfere with each other due to their close proximity in many parts of the country.

### **5.3 Depletion of Openwater Fisheries**

One of the important resources of the country while has been badly depleted in the last few decades is the open water fishery. This has been due to several reasons. Firstly, there has been a net loss of open water fishing areas due to embankments of floodplains in many parts of the country. Secondly, the number of fishermen has increased putting greater pressure on the already shrinking open water fishing area. Thus the fish catch and the important species has declined drastically in most open water fisheries in Bangladesh. Fortunately, there are attempts to protect the open water fishing ecosystems while improving the fish catch which are beginning to show sign of success.

### **5.4 Forest and Bio-diversity**

Population pressure is often cited as a primary reason for encroachment of forest areas and conversion to crop lands. While this is no doubt true, there are many instances of people (especially tribal) living in harmony with forests while protecting and consuming them. Unfortunately, such traditional practices have been lost and a more commercial approach to forest exploitation has led to large-scale deforestation in Bangladesh over the last several decades. Fortunately there are also some success stories in re-afforestation specially in the coastal belt and also social forestry where people grow and look after trees not only in and around forests but also in villages, road sides, etc. This has been a very successful initiative involving government, NGOs and many other partners.

### **5.5 Energy Crisis**

The rural population of Bangladesh is still heavily dependent on biomass for fuel for cooking. This has led to depletion of biomass and indeed to the loss of organic matter in the soil as animal and crop waste is need more and more for fuel. Efforts to grow more biomass are being promoted but have not yet had any major impacts. Other sources of renewable energy also need to be explored.

### **5.6 Health and Sanitation**

In addition to clean drinking water safe disposal of waste has been an area of emphasis, particularly in combating diarrheal diseases. While there has been some success in promoting pit latrines by government as well as NGOs there is still a long way to go before it takes a critical turn. Contamination of water still remains the major source of disease and morbidity in the country. High population density compounds the health hazards from lack of adequate sanitation.

## **5.7 Natural Hazards**

Natural hazards such as floods, cyclones, droughts etc. have some of the worst impacts on people, specially the poor who tend both to live in the more hazard prone zones as well as have less capability to withstand such hazards. This is perhaps the issue on which population growth leads to greater vulnerability to natural hazards of different kinds. Despite efforts at improving working capabilities and protection still too many people remain prone to such impacts.

## **6. Population and Urban Environment**

### **6.1 Pollution of Air and Water**

The population in urban centres is going several times faster than rural population and the proportion of poor in the urban centre is also very high. They, thus become prey to specific problems of the urban environment, which the rural poor do not have to face. One such problem is air pollution from vehicular emission, which produce not only particulate but also leads, which can effect babies and children. Other hazards include water pollution and social waste generation, which the urban population has to face every day.

### **6.2 Problem of Waste Disposal**

The disposal and management of solid waste in the cities of the country, particularly in Dhaka have become a huge problem and it degrade the city environment posing serious health threat to the millions of city dwellers. Under the present system, solid waste generated in household or premise is deposited by the citizens in the roadside bins maintained by the City Corporation and then their staffs collect and transport the waste to the disposal areas. But the service of the City Corporation is very poor. An associate problem with solid waste disposal is that as the garbage is dumped at the road side, the city urchins and garbage collectors spread the piles of garbage and scatter it around the bins and pick up some necessary items which they sell to the market for recycling them. The danger is the pickers bear serious health threat. There are also harmful industrial effluents and most of the industrial establishments, in the country, do not have proper waste treatment plant. Tannery waste has become one of the deadliest problems for the dweller in Hagaribag and Rayerbazar areas in Dhaka.

### **6.3 Growing Slums**

The growth of slums appears to be the direct outcome of the growth of urban population because of rural to urban migration pushed by the rural poverty and unemployment. About 30% of the city dwellers are living in over 1200 slums in Dhaka City. The situation is more or less same for the other cities. The slums houses are made of poor construction materials such old CI sheets, wood, bamboo, straw, sack and polythene. The slum dwellers don not have adequate income to good food, cloths,

health and education for their children. They are not provided necessary civic amenities such as water, gas, electricity, and sanitation facilities and health service. They live in very poor environment and equally, they degrade the city environment.

## **7. Impacts of Climate Change**

Global Climate is changing in the recent decades at a faster rate and the climatic change is likely to threaten the delicate balance among the ecological, social and economic systems and their environment. The change of climate is caused mainly due to by anthropogenic emissions. Although the magnitude of the change can not be predicted with high degree of accuracy, the process is likely to be irreversible and the potential effects can not be ignored.

Though Bangladesh is a highly populated country, but at present the country contributes very little amount of GHG compared to other developing countries, because of low resources availability and per capita low consumption. Different projections suggest that the country will emit more GHG, because of its growing economic activities, urbanization and modernization in 21<sup>st</sup> century. Although, the country's share of total global GHG emission is very insignificant, the country is very vulnerable (in terms loss of land, population dislocation, loss of economy, and other climatic events like flood, drought, cyclone, salt water intrusion etc) to any climate change and sea level rise.

## **8. Policy Responses and Suggestions for Future Programme**

The big question is, given the complex interplay of population, environment and development - are there ways to improve the quality of human life while maintaining the ecosystem and environment? The simple answers is - though there is no single solution applicable to all the concerns, there are experiences and lessons from within the country and outside world to bring about solutions to many of the problems in an integrated and comprehensive strategy. Barton T (1997) in his *Our People, Our Resources*, reported some of the good option how people could take care of their environment.

- First, people take care of their environment when their demographic profile is not stressed beyond the capacity of the natural resources to cope with the changing situation;
- People could take care of their environment when conditions are in place for them to meet their present needs by doing so and to feel secure to meet their needs in future;
- People can take care of their environment when they agree on what their problems and opportunities are and how to organize to meet them together;
- People can take care of their environment when they can manage to obtain the support they need i.e., information, credit, technology etc. from various partners including government, NGO, business, private sectors and research community.

Further, the population-environment and development linkage will be best served with a better understanding of the people-natural resource linkages. There is a serious need to build the capacity of the people to react to the new thinking of sustainable development and re-orient themselves to be more responsive and pro-active. Capacity to address these linkages must be developed in political process, in government and non-government agencies, in private and academic institutions and community or social groups. In the population-poverty-environment nexus, a response strategy must incorporate the

twin and interrelated objectives of (a) reduction of population and poverty and (b) environmental regeneration. If strategies are taken in isolation they may have some value, as poverty reduction is a desired end in itself. So is population stabilization or reduction of growth rate. But a population growth in poor communities continues to increase the number of the poor with all its socio-economic and environmental consequences. Hence, a dual and simultaneous approach offers the best chance of success of contributing to sustainable development. A set of response strategies in a certain direction is suggested below which is likely to reinforce the independent and mutual reduction of the twin problems of population growth and environmental degradation.

### **8.1 Population Control through Effective Family Planning**

In the context of growing population, effective measures to be taken to control the growth of population through comprehensive family planning, educating the women and creative employment for the poor. The family planning programmes call for multi-sectoral efforts under broad framework of poverty alleviation and human resources development. It should include and improve the situation of maternal and reproductive healthcare, reduce infant and child mortality, empower women, up-grade nutritional status of the people, improve sanitation, support education and environmental awareness.

### **8.2 Social Mobilization**

For both for the objectives of reducing poverty and reducing population growth rate, the poor must be empowered and given the opportunity to feel confident to undertake population-reducing decisions themselves. One methodology of such empowerment is social mobilization where people will have to be mobilized into groups of beneficiaries where they have some say in decision making. Through this process, the people would be empowered with additional service support, credit or skill development or resource support. There are many successful examples of social mobilization in Asia, Africa and Latin America. This is essentially a process of transforming social capital into financial capital. Social mobilization, further, makes the poor, economically more efficient. An essential pre-requisite of the poverty eradication strategy is human development, which guarantees the right of the poor to participate in decision making that affect their lives, the rights to have access to food as a basic human right, the right to work and the right to all information services. Literacy, primary education, health, shelter and protection of children have also been included in this list of priorities. Defining and promoting the role and status of women in society and ensuring the full participation of all strata and groups in development decision-making is necessary to make human development holistic. The ultimate objective of economic growth is to bring a higher level of human development within the reach of the poor and thus to expand the range of their choices. In this way development itself is made more participatory and equitable, where growth and human development need not be trade off.

### **8.3 Enhancing Resource Availability**

The poor remain poor, because they have little access to resources. For example, increasing population, land distribution and fragmentation have caused half the rural population of Bangladesh to become landless. Further attacks of natural disasters such as cyclones, floods, droughts, pest attack, river bank erosion affect the poor most and deprive them of their various scanty resources for survival. The essence of development is the enhancement of the availability of resources and services.

Thus, all efforts must be made to enhance the potential for resources availability by the poor. In terms of basic needs, this could be achieved by planting more trees, which would increase the availability of fuel-wood for meeting poor's energy needs and supply organic matter to soil. Sinking of hand pumps within the reach of poor to ensure supply of pure drinking water and similarly, sanitation services add to the health and welfare to the poor. Medical services and sensitive family planning supports services would contribute significantly to reduction in population growth. Meeting the basic needs of the poor is probably the best investment that public action can make to achieve the twin goals of poverty reduction and reduce of population growth.

#### **8.4 Education, Human Development and People's Participation**

Human resource development through education and awareness offers most cost-effective and long-term solutions to the problems of poverty and population growth. Analysis of the human development indicators have shown that investment in social sectors such as education has far reaching impact on health, nutrition, decline of fertility and child mortality. The focus on education for women, or girl-child must be given the highest priority. An educated mother with some resources is best insurance for the future of society in any culture. Successful examples of Sri Lanka, and Kerala in India are established illustrations in conventional development literature for this.

For achieving the most cost-effective ways of protecting eco-system, it is imperative that the stakeholders are involved in the decision making process. This not only makes any intervention more legitimate, but also ensures ownership of any follow-up actions. This trend of people's participation is getting increasing recognition, but it needs methodological clarity and knowledge about decision making processes and the roles of different actors. The local poor, who mostly live in a survival mode and operate in a livelihood systems, have considerable knowledge about their surroundings. People's participation strengthens the acceptability and adaptability of concept projects and programmes. Further it helps in making the interventions cost effective and culturally appropriate. Recent example in Bangladesh is National Environment Management Action Plan (NEMAP) undertaken by the government of Bangladesh in close collaboration with NGOs was a massive exercise in peoples participation and incorporation the participation of the grassroots people actors the country. This has given rise to identification, conceptualization and which helped the governments both at national and local levels to develop better projects. What is even more interesting and significant is that the stakeholders have already started implementing activities, with their own scanty resources, i.e. the projects that they are committed to during the participatory planning. The essence of peoples participation in that process is also an effective way of raising awareness, empowering the people and is considered a good stepping stones for good governance. Both in eradicating poverty and reducing population growth, people's participation remains an essential ingredient.

#### **8.5 Ensuring Access of the Poor to Common Property Resources and supporting them with Micro-Credit**

One of the criteria of being poor is the lack of access to dedicated resources for themselves. Hence, the absence of adequate productive land, water for use and other natural resources required for production systems such as agriculture, forestry, fishery and livestock forces the poor to continue in

the poverty trap and make their livelihood unsustainable. Common property or sometimes state owned property offers the only or a major resource base for the poor from which they can extract resources for survival or economic development. Access to resources and services by the poor are the single most important objective of development. The probability of increasing their access can be achieved in two ways. Firstly, by making available the resources to the poor directly and secondly by increasing capacity to access resources those exist but are not available to them. Examples of the former are creating of poverty supporting jobs or planting trees in the locality. In the second case, example is the empowerment of poor by group formation as practiced by NGOs worldwide or enhancing education and skill development for the poor. Extracting resources from common property sources have been a widely practiced coping strategy for the poor who often own very little private property.

The absence of capital and consequently hindrance to the incorporation of the poor in the formal economy makes the poor doubly vulnerable to loan sharks as well as other degrading social forces. Simultaneously, the absence of a small capital to even attend to their illnesses make them economically less efficient. The traditional banks are usually anti-poor, as the poor cannot offer collateral. Over the last two decades, many organizations including Grameen Bank activities worldwide has shown that support of micro credit, through focused social mobilization, particularly women, is one of the very few tools that development practitioners have to encounter poverty in a cost-effective way. Many claims that micro-credit should be declared as basic human right for the poor. Micro-credit should be administered by dedicated people's banks, NGOs. Motivated and well-trained government agencies also can have significant role in reduction of poverty and consequently population growth.

#### **8.6 Developing a Better Understanding and Incorporation of Indigenous Knowledge and Practices**

The poor have survived in specific ecosystem for many decades and centuries and during the long process, they have developed their indigenous knowledge, technologies, institutions and support systems. There are lessons to be learnt from these which can of value in developing new intervention strategies or capacity building initiatives. The primary issue in capacity building is capacity utilization first. The technology and knowledge developed in one eco-system can be adapted and sometimes contribute to strategies for other ecosystems also. Hence, this adaptation process needs to be understood, analyzed, adapted and transferred, used and appropriated in other ecosystems, or sectors of planning or intervention.

#### **8.7 Involving the Poor in Eco-specific Intervention**

Very similar to the above one, eco-specific intervention is an approach where poor can be effectively involved in developing local level strategies and the implementation of an eco-system, or a part of it. These are cost-effective ways of developing sustainable local level plans as the poor become not only agents of change and enhance productivity but also are contributors to these initiatives. These are probably the most cost-effective ways of capacity building and developing participatory eco-specific plans, which can often be managed by poor communities themselves with some assistance.

#### **8.8 Information Technology as an Aid to Awareness Raising and Population Reduction**

The advancement of inter-active information technology offers a great opportunity to be used in the

areas of population's impacts on the lives of the poor. In many developing countries bulk of these poor are non-literate. Non literacy need not be a hindrance to the use of modern technology. In fact, technology can be used most effectively for human resource development and empowerment. Using of modern information technology with inter-active graphics, involving the poor in defining their specific micro-world and demonstrating the projected impact of their own probable population growth help them to realize the problems of population and its impact on their own poverty situation. Local groups could be mobilized to develop such tools and work with the poor to achieve the twin goals of poverty reduction and population stabilization in a given ecosystem.

## **9. Conclusion**

As one of the most densely populated countries which is also undergoing environmental stresses of different kinds Bangladesh presents a unique place to study and understand the many complex interactions between population and environment. At the same time there is a sizeable body of research and government as well as NGO intervention experience in both their fields over many years. It is therefore advisable to, as a first step, harness this experience with a view to achieving greater understanding of the inter-relationships between population and environment through the formation of a Population – Environment Network. This would consist of professionals with a background in either population or environment from the research as well as practical aspects who would share experiences and insights and formulate further work to seek to clarify further areas of intervention to simultaneously solve problems of both population and also environment.

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