

Unit 7: Human Population and the Environment

POPULATION GROWTH

The origin of modern humans (*Homo sapiens sapiens*) is still shrouded in controversy. It seems that modern humans appeared around 1,50,000 years BP (before present) and established in several parts of the world around 50,000 BP. Initially, the human population was small. Therefore, human interference with the nature was minimal. In 10 AD, human population was around 0.6 billion. Human population reached the first billion mark around 1850. It increased to 2 billion by 1930, and reached 6.1 billion by 2000. This dramatic increase in population size over a relatively short period is called **population explosion**. In the 150 years from 1700 AD, human population doubled from 0.6 billion to 1.2 billion. In contrast, it increased five-fold during the next 150 years. The United Nations projection for world population by 2050 ranges from a low of 7.7 billion to as high as 11.2 billion, depending upon total fertility rate.

There is a limit to the maximum population size (number of individuals) that can be supported with a given space and resource base. The maximum population size that can be supported by the environment is called the **maximum carrying capacity**. For the purpose of this chapter, it is useful to consider environment as having the following three major components. (a) The first component consists of productive systems, such as croplands, orchards, etc. and provides food and fibre. (b) The second component comprises protective systems, such as climax forests, oceans, etc.; it buffers air and water cycles, moderates extremes in temperature, etc. (c) The final component has waste assimilative systems, such as water ways, wetlands, etc. that assimilates the wastes produced by human activities. The first two of these components constitute the **life-supportive capacity**, and the third makes up the **waste-assimilative capacity** of the environment. The maximum carrying capacity of the environment depends on the above two capacities. It is understandable that the population size should not exceed the maximum carrying capacity, and the utilization of resources should be such that lasting damage to the environment does not occur.

Human Population Growth

Population growth is the change in population size between two dates. A simple measure of population growth rate is the **average annual growth rate**, which is computed as follows:

$$\text{Average annual growth rate (in per cent)} = [(P_2 - P_1)/(P_1 \times N)] \times 100$$

where, P_1 is population size in the previous census, P_2 is the population size in the current census, and N is the number of years between the two census. This measure of population growth is the crudest, but it is also the simplest to estimate. It also allows a comparison among growth rates of different regions. The time required for a population to double itself is called the **doubling time**. Annual average growth rate and doubling time are the two important indicators of the pace of population growth. The current growth rate of approximately 1.6% per year for India is smaller than the peak of about 2.1% per year during 1965-1970.

Population growth may be positive or negative depending on the increase or decrease in population size with time. The rate and direction of change in a human population depends primarily on the following factors: (a) fertility, (b) mortality, and (c) migration.

The carrying capacity of the human environment has been increased many times by clever applications of science and technology, particularly to the productive systems of the environment. As a result, human population has been able to maintain exponential growth during the past 100 years. When the population increase is nearly a fixed proportion of its own size during any period of time, the growth is said to be **exponential** (J-shaped growth curve). When population grows exponentially, utilization of resources and generation of wastes also grow exponentially. However, the exponential growth in resource use and waste generation cannot continue indefinitely.

Environment and Population Pressure

The increased levels of environmental degradation experienced today arise from the following. *Firstly*, the world population has increased dramatically, and *secondly*, population densities within different parts of the world are markedly different. About half of the 6.1 billion people live in poverty, and at least one fifth are severely undernourished or malnourished. It is estimated that it takes 15-20 times as much resource to raise a child in the U.S. as in a developing nation. An important related fact is that 15% of the world's population controls about

85% of the resources. This imbalance is connected to the demographic transition in developed countries. This process has led to aggressive natural resource acquisition and colonization.

Population growth affects all people through its impact on national economies, the environment, safety and health. The impact depends not just on the rate of growth but on the size and age structure of the existing population, the resources such as water and cropped land and the adaptability of the societies in which population growth is occurring. A high population growth rate causes poverty, low standard of living, malnutrition, ill health, environmental degradation and a wide range of other social problems. The ever-growing human population is overexploiting natural ecosystems to satisfy the variety of needs, which reflect the increasingly energy-intensive lifestyle. This overexploitation is disturbing the natural balance.

In most countries, the death rate has dropped almost continuously since the industrial revolution, mainly due to improved personal hygiene, sanitation, and modern medicine. A decrease in death rate would result in increased population growth rate. Economic development, on the other hand, is associated with a decline in total fertility rate. This, in turn, causes a decline in population growth rate. These changes in the population growth pattern constitute **demographic transition**. Demographic transition is a model that seeks to explain the change of human populations from the initial phase that shows high birth and high death rates to the final phase characterized by low birth and low death rates; this occurs in four well-defined stages. It is argued that this change is related to shifts in economic development. In the final stage, the population growth is zero or near zero. This stage may occur in all countries as they become more and more developed, but it may take many decades. The world's human population increases by 220 thousand each day. At this rate, world population will double by the year 2040 to become 12 billion. Of this increase, over 90 percent of net addition will be in today's developing countries. The present global growth rate is 1.4 per cent while it is 1.7 per cent in the developing countries. The growth rate in most of the developed countries is negative.

Population Explosion

The world human population increases by 220,000 each day. At this rate, the world population will double by the year 2040 to become 12 billion. Of this increase, over 90 percent of net addition will be in today's developing countries. The present global population growth rate is 1.4 per cent. The average rate of population growth in the third world countries is about 2 per cent, whereas the developed countries have an annual growth rate of only 0.4 per cent to 0.7 per

cent. The growth rate in most of the developed countries is negative. The density of population is the greatest in Asia with more than 108 persons per square km.; the density is 23 persons in Latin America, 24 persons in Africa and 14 persons in North America.

Better medical care has lowered the death rate so that more people now live longer. In the more developed regions, the proportion of the population above 65 years has increased from 7.9 per cent in 1950 to 13.5 per cent today, and is expected to reach 24.7 per cent by the year 2050. In some countries, the number of persons above the age of 85 years will more than double by the same period. Currently about 77% of the increase in older population is taking place in the developing region. Over the first decade of the next century, there will thus be a gradual demographic shift towards an older population in all the countries.

Population sizes for the ten largest countries in 1995 and in 2050 are presented in Table 2. In 1995, China (1.22 billion) and India (0.93 billion) were by far the largest countries, together accounting for about half the South's total. The top ten included six Asian countries and only one country each in Latin America and Africa. By 2050, the ranking is expected to have shifted substantially: India's population will exceed China's, and Ethiopia and Zaire will have risen into the top ten, replacing Japan and the Russian Federation.

Table 1. Ten largest countries by population size in 1995 (estimate) and 2050 (medium projection)

Rank	Country	1995 Population size (in million)	Country	2050 Projected population size (in million)
1	China	1220	India	1533
2	India	929	China	1517
3	United States	267	Pakistan	357
4	Indonesia	197	United States	348
5	Brazil	159	Nigeria	339
6	Russian Federation	148	Indonesia	318
7	Japan	125	Brazil	243
8	Pakistan	136	Bangladesh	218
9	Bangladesh	118	Ethiopia	213
10	Nigeria	112	Zaire	165

Population growth cannot continue indefinitely on a finite planet. Policy initiatives that result in lower birth rates bring societies closer to the day when population growth no longer acts as a

complicating force in human life. Slowing population growth brings societies closer to population stability, a prerequisite for true natural resource sustainability for the economic and social well-being.

Family Welfare Programme

Within the overall objectives of sustainable development the goals of population policy should aim to achieve a population that allows a better quality of life without jeopardizing the environment and the resources base of future generations. Population policy goals should also take cognizance of basic human rights as well as responsibilities of individuals, couples and families. India is the second most populated country in the world; it is the home of 16% of world's population. As of mid 1997 the population of the country was estimated to be 970 million based on projection from 1991 census figure. Indian population grew at 2.21 per cent per annum during 1981-91; during the next 20 years it is expected to grow at 1.5% per annum. It is projected that India's population in the year 2025 will be around 1385 million and the doubling time at current rate of growth will be 36 years.

Organized efforts for family planning began during the second five-year plan. India was the first country in the world to have an official family planning programme; it began in 1951-52 with the objectives of reducing the birth rate to stabilize the population at a level consistent with the requirement of national economy. India had a model population policy, which aims to provide family planning services within a broader context of maternal and child health care, emphasizing voluntarism and informed choice among contraceptive methods and community participation.

For over 44 years, the family planning programmes in India popularised the small family norm. People have not responded enthusiastically to this because they were not sure if children born to them would survive and be healthy. Government launched several successful initiatives that reduced child mortality such as universal immunisation programme, child survival and safe motherhood programme, and the reproductive and child health programme. The Reproductive and Child Health Programme was undertaken in 1997. Under this programme, a comprehensive package of services for family planning, maternal and child health and management of reproductive tract infection, including sexually transmitted diseases (STD) were implemented.

By 1976, it was concluded that the success of Family Welfare Programme is dependent on the following: (i) adequate availability of resources, (ii) effective public support by opinion leaders and citizens, (iii) effectiveness of the health system and efficient services for delivery, (iv) effective collateral programmes for educating women, and (v) empowerment of women for their economic improvement. Thus the programme that started mainly for controlling population growth, has evolved into the present comprehensive family welfare programme.

National Family Welfare Programme has been successful in generating universal awareness of family planning. A vast infrastructure comprising of health workers and health facilities has been established to provide family planning information and services to couples. As a result of family planning measures about 210 million births have been averted up to 1997. There has been a decline in the total fertility rate or the average number of children born to a woman. The total fertility rate has dropped from 6 at the time of independence to about 3 in 1994 (for the urban population it was 2.8).

National Population Policy 2000

The immediate objective of the National Population Policy 2000 is to address the unmet needs for contraception, health care infrastructure, and health personnel, and to provide integrated service delivery for basic reproductive and child health care. The *medium term objective* is to bring the total fertility rate (TFR) to replacement levels by 2010, through vigorous implementation of inter-sectoral operational strategies. The *long-term objective* is to achieve a stable population by 2045, at a level consistent with the requirements of sustainable economic growth, social developmental protection.

In pursuance of these objectives, the following National Socio-Demographic Goals to be achieved in each case by 2010 are formulated:

1. Address the unmet needs for basic reproductive and child health services, supplies and infrastructure.
2. Make school education up to age 14 free and compulsory, and reduce dropouts at primary and secondary school levels to below 20 per cent for both boys and girls.
3. Reduce infant mortality rate to below 30 per 1000 live births.
4. Reduce maternal mortality ratio to below 100 per 100,000 live births.
5. Achieve universal immunization of children against all vaccine preventable diseases.

6. Promote delayed marriage for girls, not earlier than age 18 and preferably after 20 years of age.
7. Achieve 80 per cent institutional deliveries and 100 per cent deliveries by trained persons.
8. Achieve universal access to information/counseling, and services for fertility regulation and contraception with a wide basket of choices.
9. Achieve 100 per cent registration of births, deaths, marriage and pregnancy.
10. Contain the spread of Acquired Immuno Deficiency Syndrome (AIDS), and promote greater integration between the management of reproductive tract infections (RTI) and sexually transmitted infections (STI) and the National AIDS Control Organization.
11. Prevent and control communicable diseases.
12. Integrate Indian Systems of Medicine (ISM) in the provision of reproductive and child health services, and in reaching out to households.
13. Promote vigorously the small family norm to achieve replacement levels of TFR.
14. Bring about convergence in implementation of related social sector programmes so that family welfare becomes a people-centred programme.

Environment and Human Health

Health has been defined by the World Health Organization as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The state of health of an individual or population depends upon complex interactions of the physical, biological, political, and social domains. Over the past century, human activities and behavior have played a major role in global environmental change, with increases in atmospheric greenhouse gases, depletion of the stratospheric ozone layer, loss of biodiversity, pollution of water resources, and degradation of soils. In turn, these and other global environmental changes are beginning to affect the health and welfare of human populations. All the constituents of our environment ultimately affect human health. Only recently have scientists begun to explore these influences, and most of the literature currently available focuses on the effects of climate change.

Stratospheric ozone protects the biosphere from potentially damaging doses of ultraviolet-B radiation (UV-B). Recent depletion of stratospheric ozone could lead to significant increases in UV-B reaching the Earth's surface. UV-B radiation is responsible for a wide range of potentially damaging human and animal health effects, primarily related to the skin, eyes, and immune system. Human exposure to UV-B depends upon an individual's location (latitude and

altitude), the duration and timing of outdoor activities (time of day, season of the year), and precautionary behavior (use of sunscreen, sunglasses, or protective clothing). An individual's skin color and age can influence the occurrence and severity of some of the health effects from exposure to UV-B.

Domestic sewage contains pathogens like virus, bacteria, parasitic protozoa and worms. Contaminated water, therefore, can carry the germs of water borne diseases like jaundice, cholera, typhoid, amoebiasis, etc. Such contamination may make the water unfit for drinking, bathing, and swimming, and even for irrigation.

Heavy metal contamination of water can cause serious health problems. Mercury poisoning (**Minamata disease**) due to consumption of fish captured from Hg-contaminated Minamata Bay in Japan, was detected in 1952. Mercury compounds in wastewater are converted by bacterial action into extremely toxic methyl mercury, which can cause numbness of limbs, lips and tongue, deafness, blurring of vision, mental derangement. Cadmium pollution can cause **itai-itai** disease (ouch-ouch disease, painful disease of bones and joints) and cancer of liver and lung.

In India, at many places the groundwater is threatened with contamination due to seepage from industrial and municipal wastes and effluents, sewerage channels and agricultural runoff. For example, excess nitrate in drinking water is dangerous for human health and may be fatal for infants. It reacts with haemoglobin and forms non-functional **methaemoglobin** that impairs oxygen transport. This is called **methaemoglobinemia** or **blue-baby syndrome**. Excess fluoride in drinking water causes teeth deformity, hardened bones and stiff and painful joints (**skeletal fluorosis**). At many places in India, groundwater is contaminated with arsenic, mainly from naturally occurring arsenic in bedrocks. Overexploitation of groundwater may possibly initiate leaching of arsenic from soil and rock sources and contaminate groundwater. Chronic exposure to arsenic causes **black-foot disease**. Arsenic causes diarrhoea, peripheral neuritis, and hyperkeratosis, and also lung and skin cancers.

A vector-borne disease is one in which the pathogenic microorganism is transmitted from an infected individual to another individual by an arthropod or other agent, sometimes with other animals serving as intermediary hosts. The transmission depends upon the attributes and requirements of at least three different living organisms: the pathologic agent, either a virus, protozoa, bacteria, or helminth (worm); the vector, which are commonly arthropods such as ticks or mosquitoes; and the human host. In addition, intermediary hosts such as domesticated and/or wild animals often serve as a reservoir for the pathogen until susceptible human populations are exposed.

Nearly half of the world's population is infected by vector-borne diseases, resulting in high morbidity and mortality. The distribution of the incidence of vector-borne diseases is grossly disproportionate, with the overwhelming impact in developing countries located in tropical and subtropical areas. Weather affects vector population dynamics and disease transmission, with temperature and humidity considered key variables. Only recently have researchers attempted to predict how climate change might affect the distribution of vector-borne diseases. A comprehensive model should consider both the direct impacts (such as changes in temperature or rainfall) and indirect impacts (such as changes in hydrology or agriculture) of global warming on the agent, vector, intermediary host, and the human host. The response of each element of the disease process to climate change may have ramifications for the others.

Diesel exhaust is classified as a probable human carcinogen by many governmental authorities, including the International Agency for Research on Cancer (WHO). It contains over 40 harmful air pollutants, and is possibly associated with the asthma in school children. Diesel exhaust exacerbates asthma and causes inflammation of the airways.

Acquired Immunodeficiency Syndrome (AIDS)

AIDS is a particularly unpleasant, fatal disease, which has reached endemic proportions and has thereby caused widespread alarm amongst the public. In India and Africa, where incidence is frightfully high, transmission is largely by heterosexual contact. Sex workers constitute a pivotal major initial reservoir of infection. On the other hand, in countries like USA, Australia, Japan, New Zealand the occurrence of AIDS has remained relatively lower, and the majority of cases have occurred in male homosexuals. The other group at risk includes intravenous drug abusers, patients receiving transfusion of blood or blood products and infants of sexually promiscuous or drug addicted mothers. However, AIDS is not transmitted through air, handshake, eating together, shared toilets etc.

Persons suffering from AIDS show an AIDS-related complex, which is characterized by fever, weight loss, swelling of lymph nodes etc. Death in AIDS is due to lung infection, but serious complications involving the nervous system are appearing in about 30% of the cases. In AIDS, there occurs a sudden onset of a decline of the defense system of the body, known as the immune system. This state of the immunodeficiency results in infections, most commonly by bacteria; the common infections are bacterial pneumonia, fungal infections, infections by some protozoans, etc. Ordinarily, these infections would not have occurred if the immune system were

working normally. In some cases, incidence of a cancer known as Kaposi's Sarcoma has also been reported.

AIDS is caused by a virus known as human immunodeficiency virus (HIV). Viruses are the most primitive organisms: they have only few proteins (it forms their coat) and the genetic material (DNA or RNA). Viruses need cells of their hosts for their growth. Some of the viruses are responsible for fatal human diseases like AIDS, hepatitis, influenza and polio, etc. The transmission of AIDS is usually through infection with blood, blood products or semen containing HIV. Two strains of this virus are known to cause AIDS namely HIV-1 and HIV-2. But the most common one is HIV-1.

The HIV structure consists of an outer envelop which has two important proteins called gp120 and gp41; the virus utilizes these proteins as anchors to bind to the host cell during infection. The genetic material of this virus is RNA molecule; this RNA is copied into DNA by a special enzyme present inside the virus.

During the process of infection the envelop glycoprotein gp120 of HIV binds with high affinity to protein CD-4 present on the surface of special cells, called lymphocytes, present in human body. Lymphocytes are one of the cells of our immune system that provide us protection against infections. The binding of gp120 of HIV with CD4 on lymphocytes enables gp41 to initiate fusion of the virus with the lymphocytes. Once inside the lymphocytes the HIV RNA is copied into DNA (several copies); the DNA copies become integrated into human chromosomes. This allows the production of a large number of copies of HIV RNA, which then makes which viral proteins and HIV particles. The new HIV particles are released and the infect more and new lymphocyte cells.

Diagnosis of AIDS

If a person suddenly suffers from infections as described above, shows a drastic increase in total lymphocyte count, a decrease in CD4 expressing lymphocytes in peripheral blood, raised levels of antibodies, etc., the person may well have AIDS. To definitively diagnose HIV infection blood is drawn from the suspected person and tested for the presence of antibodies against the virus by special test called ELISA (Enzyme linked immunosorbent assay). The infection can be further confirmed by another test called as western blotting.

Control of AIDS

As there is no successful therapy against HIV infection till date, the best way to control AIDS is to prevent infection by HIV. HIV infection can be prevented by a proper screening of blood and blood products, use of sterile syringes etc., and by avoiding unsafe sex. The strategies for the development of vaccines against HIV have not been successful so far.

Human Rights and Child

Our commitment to the cause of children lies in shastraic texts. In our culture, it is believed that as child is the gift of God, it must be nurtured with care and affection within the family and by the society. The institution of joint family played an important role in rearing the child satisfactorily. In recent times, however, due to socio-economic and cultural changes the child care has been replaced by neglect, abuse, cruelty and exploitation. The examples of infanticide, child sacrifices, devdasi, prostitution and child etc. are rampant. The child is no more advantaged rather he is in dis-advantaged group. As the child is immature, both physically and mentally, there is a need to protect and safeguard its interest, declared the General Assembly of the United Nations in 1959. Children should have the first claim on us, because they represent the India of tomorrow. The National Policy for children recognized the supreme importance of children by declaring them as “National Assets”.

The UN has made significant contributions in safeguarding the rights of child. In 1959 United Nations made Declarations of the Rights of the child wherein various rights of child were incorporated under ten principles. Again, the United Nation adopted a convention on the Rights of the child, 1989 and India ratified the convention as the Rights of child on November 12, 1992. The purpose of the convention is to supplement and to supplant the 1959 Declaration.

The responsibilities of the state towards children have been provided under the Constitution of India, and special provisions for the care, protection and prevention of exploitation of children have been made. But only a few legislations like the Child Marriage Restraint Act, 1929, the Contract Act, 1872, Vaccination Act, 1880, Guardians & Wards Act, 1890, the Children (pledging of labour) Act, 1933, the Employ of Children Act, 1948 were passed. The post-independence era, however, witnessed a plethora of legislations made with a view to improve the conditions of children in India, for example, the Plantation Act, 1951, the Mines Act, 1952, The Bonded Labour System (Abolition) Act, 1976, The Merchant-Shipping Act, 1958, Motor Transport Workers Act, 1961, the Apprentice Act, 1961, Juvenila Justice (care and protection of children) Act, 2000 were enacted during last 55 years. The children are entitled

to maintenance either in their personal law or under the criminal procedure code. The children below seven years are absolutely immuned from criminal liability. However, qualified immunity is given to a child who is above 7 years of age but is below 12 years are entitled to special treatment. The state is to provide free and compulsory education for all children until they complete the age of 14 years. The agreement with child is wholly void and it can be enforced against him. However, the contracts which are beneficial to the interest of child are enforceable. The engagement of children below 14 years in hazardous enterprises is prohibited.

United Nation's Children's Emergency Fund (UNICEF)

With a view to provide urgent relief to children in Europe who survived in the II World War, the UN General Assembly decided to establish UNICEF and it was created on December 11, 1946. Initially, the resources of UNICEF were devoted to meet the emergency needs of children in post-war Europe and China for food, medicine and clothing. The objective of UNICEF is to protect children every where on this planet from adversity to prepare them for life. Its owes, its origin to the Preamble of the UN charter “ to save succeeding generation form sweep of war and to provide social progress and better standards of life in larger freedom”. In 1950 the mandate of organization was extended to cover the problem of children in the developing world. However, in 1953 its name was changed to “United Nations Children Fund”.

National Children's Board

To meet the needs of children the National Policy for Children expressed its desire to contribute a National Children's Board which was accordingly inaugurated on September 15, 1975. The constitution of the Board is as follows :

- 1 Prime Minister – President
- 2 Minister of Education & Social Welfare – Works Chairman
- 3 Minister of Health & Family Welfare – Member
- 4 Seven social workers with experience in child welfare services – Member
- 5 Ten persons nominate by the State Governments from amongst those who are concerned with child welfare services – Member
- 6 Three persons to be nominated by the Union Territories Administrations from among those who are concerned with child welfare services – Member

- 7 Two members of Lok Sabha to be nominated by the Speaker.
- 8 One member of Rajya Sabha to be nominated by the Chairman – Member
- 9 Chairman, Central Social Welfare Board – Member
- 10 Director, Central Institute of Research & Training in Public Operation – Member
- 11 Secretary to the Govt. of India, Department of Social Welfare – Member Secretary

The important functions to be carried out by the Board shall be :

- 1 To create and sustain public awareness of the news of children in general.
- 2 To coordinate and interpret the efforts made by different government and private agencies engaged in implementing progress for the welfare of children.
- 3 To review periodically the progress made in different programmes.
- 4 To locate gaps and loopholes in existing services to suggest measures to eliminate such gaps.
- 5 To suggest from time to time needed priorities according to different programmes.

In 1978, National Children's Board proposed to create a National Children Fund to be utilized for extending various child welfare services including rehabilitations of destitute children. The Bill on National Commission on Children is an anvil and it will strengthen various child welfare schemes. The basic right to life and dignity is inherent in every human being and child can not be deprived of this inalienable right.

Human Rights

Human laws must be reformulated to keep human activities in harmony with the unchanging and universal laws of nature. There is an urgent need :

- to recognize and respect the reciprocal rights and responsibilities of individuals and states regarding sustainable development.
- to establish and apply new norms for state and interstate behaviour to achieve sustainable development.
- to strengthen and extend the application of existing laws and international agreements in support of sustainable development, and
- to reinforce existing methods and develop new procedures for avoiding and resolving environmental disputes.

The Universal Declaration of Human Rights (1948) by United Nations : (Adopted and proclaimed by General Assembly resolution 217A(III) of 10 December, 1948)

Article 25 : (1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services, and the right to security in the even of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. (2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

Article 29 : (1) Everyone has duties to the community in which alone the free and full development of his personality is possible. (2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due to recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society. (3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.

Recognizing Rights and Responsibilities

Principle 1 of the 1972 Stockholm Declaration said that ‘ Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being’. It further proclaimed the solemn responsibility of governments to protect and improve the environment for both present and future generations. After the Stockholm Conference, several states recognized in their Constitutions or laws the right to an adequate environment and the obligation of the state to protect the environment.

Recognition by states of their responsibility ensure an adequate environment for present as well as future generations is an important step towards sustainable development. However, progress will also be facilitated by recognition of, for example, the right of individuals to know and have access to current information on the state of the environment and natural resources, the right to be consulted and to participate in decision making on activities likely to have a significant effect on the environment, and the right to legal remedies and redress for those whose health or environment has been or may be seriously affected.

The enjoyment of any right requires respect for the similar rights of others, and recognition of reciprocal and even joint responsibilities. States have a responsibility towards their own citizens and other states :

- to maintain ecosystems and related ecological progress essential for the functioning of the biosphere;
- to maintain biological diversity by ensuring the survival and promoting the conservation in their natural habitats of all species of flora and fauna;
- to observe the principle of optimum sustainable yield in the exploitation of living natural resources and ecosystems;
- to prevent or abate significant environmental pollution or harm;
- to establish adequate environmental protection standards;
- to undertake or require prior assessments to ensure that major new policies, projects, and technologies contribute to sustainable development; and
- to make all relevant information public without delay in all cases of harmful or potentially harmful releases of pollutants, especially radioactive releases.

Human Rights and Traditional Communities

Growing interaction with the larger world is increasing the vulnerability of traditional communities since they are often left out of the processes of economic development. Social discrimination, cultural barriers, and the exclusion of these people from national political processes makes these groups vulnerable and subject to exploitation. Many groups become dispossessed and marginalized, and their traditional practices disappear. They become the victims of what could be described as cultural extinction.

These communities are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins. Their disappearance is a loss for the larger society, which could learn a great deal from their traditional skills in sustainably managing very complex ecological systems. It is a terrible irony that as formal development reaches more deeply into rain forest, deserts, and other isolated environments, it tends to destroy the only cultures that have proved able to thrive in these environments.

The starting point for a just and humane policy for such groups is the recognition and protection of their traditional rights to land and the other resources that sustain their way of life – rights they may define in terms that do not fit into standard legal systems. These groups' own institutions to regulate rights and obligations are crucial for maintaining the harmony with nature and the environmental awareness characteristic of the traditional way of life. Hence the recognition of traditional rights must go hand in

hand with measures to protect the local institutions that enforce responsibility in resources use. And this recognition must also give local communities a decisive voice in the decisions about resource use in their area.

Protection of traditional rights should be accompanied by positive measures to enhance the well-being of the community in ways appropriate to the group's life-style. For example, earnings from traditional activities can be increased through the introduction of marketing arrangements that ensure a fair price for produce, but also through steps to conserve and enhance the resource base and increase resource productivity.

Human Rights in India

Human rights in India have been guaranteed through the 'Fundamental Rights' of the constitution of India and the 'Directive Principles of State Policy'. **Fundamental Rights** of the Indian Constitution include rights of equality; such as equality before law and equal protection of the laws, prohibition of discrimination, equality of opportunity in respect of public appointment, abolition of untouchabilities, abolition of titles etc. **Rights of freedom include,**

- right to freedom of speech and expression;
- right to assemble peacefully and without arms;
- right to form association or union;
- right to move freely throughout the Indian territory;
- right to reside and settle throughout the Indian territory;
- right to acquire, hold and dispose of property;
- right to practice any profession or to carry-on any occupation, trade or business;
- right for protection against illegal and inhuman punishment;
- right to life and personal and liberty;
- preventive detention act, to ensure rights in face of arrest and imprisonment;
- right against exploitation;
- right to religion;
- cultural and educational right;
- right to constitutional remedies.

Besides, Fundamental rights, the Directive Principles of State Policy is frequently cited by judges as complementary to the fundamental rights. *As mentioned earlier that the constitution (Forty-Second Amendment) Act of 1976, Article 48A has been incorporated to the Directive Principles of State Policy, which provides environmental resources; a constitutional protection, National Human Rights Commission has been set up in India to keep close watch on human rights issues in the states.*

Human Rights And Ecological Balance

Human beings are supposed to have right for a clean and healthy environment from their ancestors. Then any act of creating pollution, any act of depleting natural resources, any act leading to the destruction of ozone layer should be considered as human rights violation. If this notion is correct then the entire human being has been knowingly or unknowingly violating human rights since the bygone days of origin of civilization. In fact, violation of human rights for a clean environment is intoned with the **violation of animal rights** for a liveable habitat. Emission of green house gases, deforestation, ejecting toxic chemicals into the nature, poaching of wildlife, creating threat to biodiversity, causing ecosystems degradation etc. are all human and animal rights violation. In the present day scenario **industrialism, commercialism, consumerism** without sustainable approach are serious violations of human rights. Such violations give excuse of adequacy of natural resources, structure of the social system that 'permits' such violations, because the product they are producing is of high demand, absence of proper information, 'because everybody does them', people have always done it before' etc.

Education and Environment

Education and communication are vitally important in order to impress each individual of his or her responsibility regarding the healthy future of the Earth. The best way for students to recognize that their action can make a difference is to have projects organized by the school or community on which the students can work. Once convinced that they can help, people tend to change both their attitude and their behaviour. New attitudes towards the environment will be reflected in decisions at home and in corporate boardrooms around the world.

Sustainable development requires changes in values and attitudes towards environment and development – indeed, towards society and work at home, on farms, and in factories. The world's religions could help provide direction and motivation in forming new values that would stress individual and joint responsibility towards the environment and towards nurturing harmony between humanity and environment.

Education should also be geared towards making people more capable of dealing with problems of overcrowding and excessive population densities, and better able to improve what could be called 'social carrying capacities'. This is essential to prevent ruptures in the social fabric, and schooling should enhance the levels of tolerance and empathy required for living a crowded world. Improved health, lower fertility, and better nutrition will depend on greater literacy and social civic responsibility. Education can induce all these, and can enhance society's ability to overcome poverty, increase incomes, improve health and nutrition, and reduce family size.

The investment in education and the growth in school enrolment during the past few decades are signs of progress. Access to education is increasing and will continue to do so. Today almost all the world's boys are getting some form of primary education. In Asia and Africa, however, enrolment rates for girls are much lower than for boys at all levels. A large gap also exists between developed and developing countries in enrolment rates beyond primary schools.

According to UN projections, despite the growth in primary education, illiteracy will continue to rise in terms of sheer numbers; there will be more than 900 million people unable to read and write at the end of the century. By then, girls' enrolment rates are still expected to be below the current rates for boys in Asia. As for secondary education, developing countries are not expected to attain even the 1960 industrial country levels by the year 2000.