

UNIT-V

HUMAN POPULATION AND THE ENVIRONMENT

5.1 POPULATION

Population is defined as a group of individuals belonging to the same species, which live in a given area at a given time.

5.2 POPULATION DENSITY

It is expressed as the number of individuals of the population per unit area or per unit volume. This varies in response to changes in the environment and introduction with other living organism.

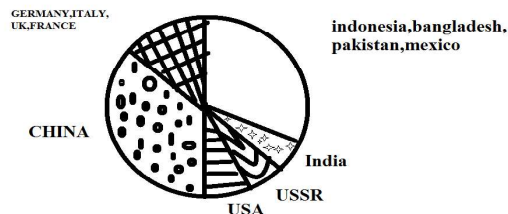
Parameters affecting population size:

Changes in population size are governed by 4 main parameters. They are

1. Birth rate or natality: It is the number of live birth per 1,000 people in a population in a given year.
2. Death rate or Mortality: It is the number of deaths per 1,000 people in a population in a given year.
3. Immigration: It denotes the arrival of individuals from neighbouring population.
4. Emigration: It denotes the dispersal of individuals from the original population to new areas.

5.3 POPULATION GROWTH

The rapid growth of the global's population for the past 100 years results from the difference between the rate of birth and death. The general trend in the population growth is explained graphically as shown in the following graph.



In 1980, the global population was about 1 billion people. It took about 130 years (in 1930) to reach 2 billion. But the population reached to 4 billion within 45 years (in 1975). Now we have already crossed 6 billion and may have to reach about 10 billion by 2050 as per the World Bank calculations.

Causes of rapid population growth

1. The rapid population growth is due to decrease in death rate and increase in birth rate.
2. The availability of antibiotics, immunization, increased food production, clean water and air decreases the famine – related deaths and infant mortality.
3. In agricultural based countries, childrens are required to help parents in the fields that is why population increases in the developing countries.

Characteristics of population growth

1. Exponential growth: Now population growth occurs exponentially like 10, 10, 10, 10 etc., which shows the dramatic increase in global population in the past 160 years.
2. Doubling time: It is the time required for a population to double it's size at a constant annual rate. It is calculated as follows
$$T_d (\text{Doubling time}) = 70/r$$

Where, r = annual growth rate.

If a nation has 2% annual growth, its population will double in next 35 years.
3. Infant mortality rate: It is the percentage of infants died out of those born in one year. Eventhough this rate has decreased in the last 50 years, the pattern differs widely in developing and developed countries.
4. Total fertility rates (TFR): It is the average number of children delivered by a women in her life time. The TFR value varies from 2 in developed countries to 4.7 in developing countries.
5. Replacement level: Two parents bearing two children will be replaced by their off spring. Due to infant mortality this replacement level is changed. But, due to high infant mortality the replacement level is generally high in developing countries.
6. Male- Female ratio: The ratio of girls and boys should be fairly balanced in a society to flourish. But the ratio has been upset in many countries including China and India. In Chinaa the ratio of girls and boys 100 : 140.

7. Demographic transition: Population growth is generally related to economic development. The death rates and birth rates fall due to improved living conditions. This results in low population growth. This phenomenon is referred to as demographic transition.

Problems (environmental issues) of population growth

1. Increasing demands for food and natural resources.
2. Inadequate housing and health services.
3. Loss of agricultural lands.
4. Unemployment and socio-political unrest.
5. Environment population.

5.4 VARIATION OF POPULATION AMONG NATIONS

Different regions of the world find themselves at different stages of demographic transition from high to low mortality and fertility. Their growth path also differ considerably, resulting in significant shifts in the geographical distribution of world population.

At present the world's population has crossed 6 billions. This existing population is also not evenly distributed, less developed countries have 80% population while the developed countries have only 20%.

Less developed countries (Africa, Asia, South America) have 80% of the total world population and occupy less than 20% of the total land area.

In the most developed countries like U.S.A, Canada, Australia, the population increases at the rate than 1% per year. But in less developed countries like South America, Africa and Asia, the population increases at the rate greater than 1% per year.

China and India's population was above 1000 million in 2000 year. Its share is about one-third of the world's population.

Europe and North America accounts for 14% of world's population.

Variation of population based on Age structure

Age structure of population can be classified into three classes

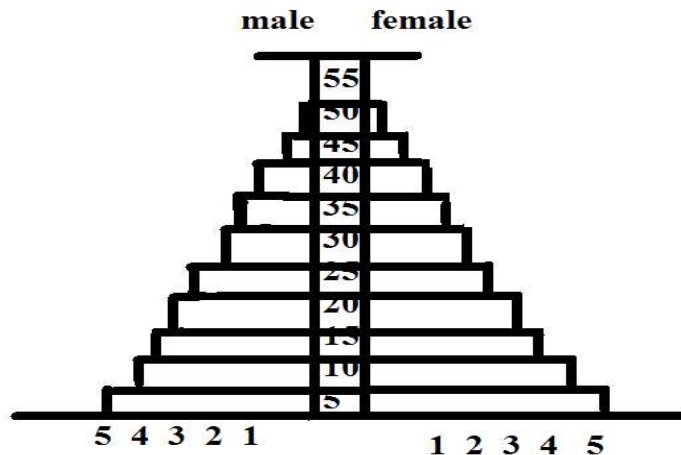
1. Pre-productive population (0-14 years).
2. Reproductive population (15-44 years).
3. Post reproductive population (above 45 years)

Variation of population is now explained based on the above three classes.

1. Pyramid shaped variation of population: (increase)

Example India, Bangladesh, Ethiopia, Nigeria, etc,

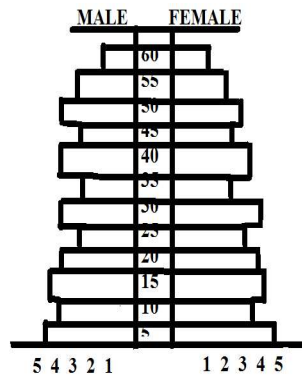
The figure 7.2 shows that the pre-productive age group population (0-14 years) is more, indicated at the base of pyramid, and post reproductive age group population (above 45 years) is less, indicated at the top of pyramid. The large number of young age people will soon enter into reproductive age group population (15-44 years), which increases the population growth. But the less number of old age people indicates less loss of population due to death.



2. Bell shaped variation of population (stable)

Example France, USA, UK, Canada, etc.,

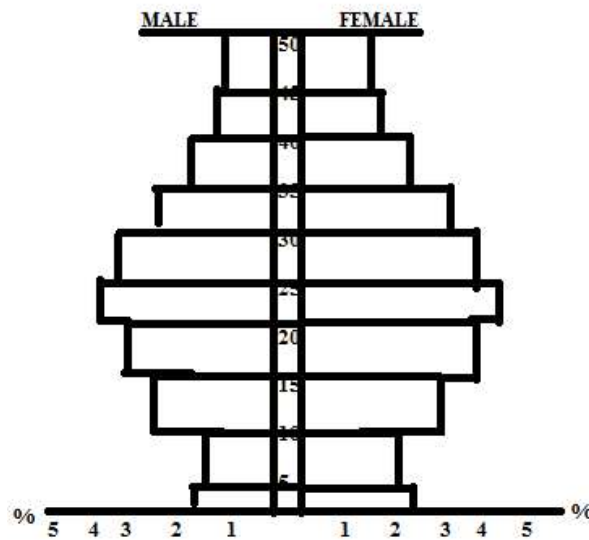
The figure 7.3 shows that, the pre-productive age group population (0-14 years) and reproductive age group population (15-44 years) are more or less equal. So the people entering into the reproductive age group will not change the population, and thus the population growth is stable.



3. Urn shaped variation of population (decrease)

Example Germany, Italy, Sweden, Japan, etc.,

The figure 7.4 shows that, the pre-productive age group population (0-14 years) is smaller than the reproductive age group population (15-44 years). In the next 10 years, the number of people in the reproductive age group is less than the before, resulting in a decrease of population growth.



5.5 POPULATION EXPLOSION

Definition

The enormous increase in population, due to low death rate (mortality) and high birth rate (Natality) is termed as population explosion. The human population is not increasing at a uniform rate in all parts of the world.

Doubling Time

Population explosion can be better understood by considering the doubling time. i.e, the number of years needed for a population to double in size. The table shows the doubling times of population growth.

Table 7.1 Doubling times of population growth

Less developed Country		Developed Country	
Country	Doubling Time	Country	Doubling Time
India	28 yrs	United State	87 yrs
Turkey	28 yrs	U K	231 yrs
Nigeria	27 yrs	Italy	99 yrs
Saudi Arabia	25 yrs	France	117 yrs
Pakistan	21 yrs	Japan	58 yrs

The human population is not increasing at a uniform rate in all parts of the world. In many non- industrial, poor developed called less developed countries like Asia, Africa and South America shows higher growth rate. In contrast the population of industrialized developed countries like USA, UK, France, Italy, Soviet Union the growth rate is low.

Causes (or) reasons of population explosion

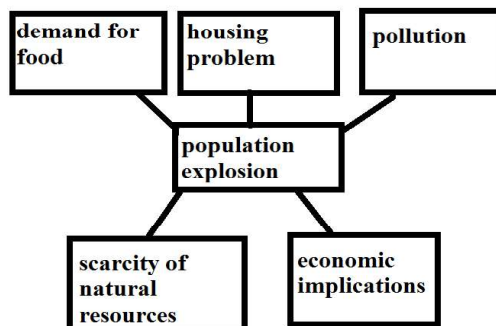
1. Invention of modern medical facilities reduces the death rate (mortality) and increases the birth rate (Natality), which leads to population explosion.

2. Increase of life expectancy is another important reason for the population explosion.

Example In 1950 the average life expectancy of the human being was 40 years, but now it is 61 years.

3. Illiteracy is one of the reasons for the population explosion.

Effect of population Explosion (or) Environmental and social impacts of growing population



1. Poverty

Infant mortality is one of the most tragic indicators of poverty. There are still 34 developing countries where more than 1 in 10 children die before he or she reaches the age of five. In developing countries few mothers opt for smaller families in the face of such high infant mortality rates. Efforts to keep children alive and healthy are one of the keys reduce population growth rates.

2. Population explosion leads to environmental degradation.

3. Population explosion causes over exploitation of natural resources. Therefore there will be a shortage of resources for the future generation.

4. Many of the renewable resources like forests, grass lands, are also under threat.

5. The increase in population will increase disease, economic inequity and communal war.

6. Over crowding of cities leads to development of slums.

7. Lack of basic amenities like water supply and sanitation, education, health, etc.

8. Unemployment and low living standard of people.

5.6 FAMILY WELFARE PROGRAMME

Family Welfare Programme was implemented by the Government of India as a voluntary programme. It is an integral part of overall national policy of growth covering human health, maternity, family welfare, child care and women's right.

Objectives of family welfare programme

1. Slowing down the population explosion by reducing the fertility.
2. Pressure on the environment, due to over exploitation of natural resources, is reduced.

Population stabilization ratio

The ratio is derived by dividing crude birth rate by crude death rate.

Developed countries: The stabilization ratio of the developed countries is 1, which is more or less stabilized, indicating zero population growth.

Developing countries: The stabilization ratio of the developing countries is nearing 3, which is expected to lower down by 2025.

Stabilization in developing countries is possible only through various family welfare programmes.

5.7 FAMILY PLANNING PROGRAMME

Family planning provides educational and clinical services that help couples to choose how many children to have? And when to have them? Such programs vary from culture to culture, but it provide information on birth spacing birth control and health care for pregnant women and infant. It also has reduced the number of legal and illegal abortions per year and decreased the risk of death from pregnancy.

Objectives of Family Planing Programmes(Or)Factors influencing family size

1. Reduce infant mortality rate to below 30 per 1000 infants.
2. Achieve 100% registration of births, deaths, marriage and pregnancy.
3. Encourage late marriages and later child-bearing
4. Enables to improve women's health, education, employment.
5. Encouraging breast feeding.

6. Making family planning available to all women, who wanted to choose the number of children and the spacing of births.
 7. Constrain the spread of AIDS/HIV.
 8. Prevent and control of communicable diseases
 9. Promote vigorously the small family norms
 10. Making school education upto age 14 free and compulsory.

Fertility control methods (or) methods of family planning (sterilization)

1. Traditional method

It includes some traditions like, taboos and folk medicine.

2. Modern method

1. Permanent method : Permanent method (or) sterilization is done by a mirror surgery.

(a) Tubectomy: It is female sterilization done by tying the tubes that carry the ovum to the uterus.

(b) Vasectomy: It is male sterilization done by tying the tubes that carry the sperm.

Both are very simple procedures, done under local anesthesia which are painless and patients have no post operative problems.

2. Temporary method

(a) Condoms: Condoms are used by males to prevent sperms.

(b) Copper Ts: Copper Ts are small objects and can be placed by a doctor in the uterus so that the ovum cannot be implanted, even if fertilized. They do not disturb any functions in the women's life.

(c) Oral contraceptive pills and injectable drugs are available that prevent sperms from fertilizing the ovum.

Family Planning Programme in India

1. In 1952, India started the family planning programme.
2. In 1970's India Government forced family planning campaign all over the country.
3. In 1978, the government legally raised the minimum age of marriage for men from 18 to 21 years and for women 15 to 18 years.
4. In 1981, census report showed that there was no drop in population. Since then funding for family planning programmes has been increased further.

5.8 ENVIRONMENT AND HUMAN HEALTH

Human health and environment are two inseparable entities. If one gets disturbed other will be automatically disturbed. Generally a physically fit person, not suffering from any disease, is called health person. But, the factors like nutritional, biological, chemical or psychological, which cause harmful changes in the body's conditions are called disease.

Factors influencing human health

Human health is influenced by

1. nutritional factors
2. biological factors
3. chemical factors
4. psychological factors

Environmental degradation due to population explosion

Environmental degradation is caused by dramatic increase in the world population and population densities in different parts of the world. 15% of the world's population controls 85% of the natural resources. This leads to more exploitation of natural resources. People living in urban areas produce little food but consume more natural resources and generate more wastes, polluting the environment.

Earth surface and the surrounding environment is very important to human health. The environment is polluted due to man made activities. Millions of people die every year due to illness caused by environment pollution.

Important Hazards and their Health effects(or)Deterioration of environment and Health effect

1. Physical hazards and their health effects

Sl.no	Physical Hazards	Health Effect
1.	Radioactive radiations	a) Affects the cells in the body and the function of glands and organs. b) Suffer from cancer

2.	UV radiations	Skin cancer
3.	Global warming	Temperature increases cause famine, mortality

Sl. no	Physical Hazards	Health Effect
4.	Chloro fluorocarbon	Damage O ₃ layer, allows more UV rays cause skin cancer
5,	Noise	Painful and irreparable damage to human ear

2. Chemical hazards and their health effects

A large number of chemicals are introduced in the environment by anthropogenic activities.

Sl.No	Chemical Hazards	Health effects
1.	Combustion of fossil fuels: Liberates SO ₂ , NO ₂ , CO ₂ and particulate matters	Asthma, bronchitics and other lung diseases
2.	Industrial effluents (toxic)	Kill cells and cause cancer, and deaths
3.	Pesticides like DDT and Chlorinated pesticides	Affect the food chain
4.	Heavy metals like Hg, Cd, Pd fluoride and nitrate	Contaminate water, cause ill effects

3. Biological hazards and their health effect

Biological hazards	Health effect
Bacteria viruses and parasites	Diarrhoea, malaria, parasitic worms, anaemia, respiratory disease, cholera

Preventive measures

1. Always wash your hands before sitting for food.
2. Cut short and clean your nails systematically.
3. Maintaining the skin, teeth, hair of our body.
4. Drinking chemically treated and filtered water.
5. Eat food always while it is in hot condition.
6. Before cooking wash the raw vegetables and fruits with clean water.
7. Try to avoid plastic containers and aluminium vessels.
8. Do physical exercise to have proper blood circulation in the body.

NIMBY syndrome

NIMBY means not in My Back Yard, which describes the opposition of residents to the nearby location of something they consider undesirable, even if it is clearly a benefit for many.

Example An incinerator, an ethanol plant, a nuclear power plant, a prison.

An airport is a typical example of a NIMBY complex. It benefits a city economically, but no-one wants it near them because of the noise pollution and traffic it generates.

5.9 HUMAN RIGHTS

Human rights are the fundamental rights, which are possessed by all human beings irrespective of their caste, nationality, sex and language.

These rights cannot be taken away by any legislature or any government act. As natural rights they are seen as belonging to men and women by their very nature.

India is a democratic country. The aim of our government is to ensure happiness to all the citizens with equal rights, opportunities and comforts. Every citizen must enjoy certain rights and also has certain duties towards the country.

Universal Declaration of Human Rights

Universal Declaration of Human Rights (UNDHR) by the UN was established in 1948. Some of the main declarations of Human Rights, which are globally accepted are as follows.

1. Human right to freedom.
2. Human right to property.
3. Human right to freedom of religion.
4. Human right to culture and education.
5. Human right to constitutional remedies.
6. Human right to equality.
7. Human right to against exploitation.
8. Human right to food and environment.
9. Human right to good health.

1. Human right to freedom

1. Every citizen has the freedom to express his views freely.
2. Citizens can assemble at any place to express their views.
3. They have freedom to form unions or associations.
4. They have freedom to build their houses wherever they like.
5. They have full right to start any profession.

2. Human right to property

Every human being has the right to earn property.

3. Human right to freedom of religion

Every citizen has the freedom to choose their religion according to his wishes. All religions are equal before the law.

4. Human right to culture and education

All the citizens have equal rights both in culture and education. The minority communities like Christians, Muslims have own rights to conserve the culture, language, and to establish educational institution of their own choice.

5. Human right to Constitutional remedies

If a citizen is denied any of these fundamental rights, he or she can go to the court for protection. The court has the power to protect the basic rights of the citizens.

6. Human right to equality

All citizens are equal before the law. There is no any discrimination on grounds of religion, caste, sex (or) place of birth. All are given equal opportunity for employment.

7. Human right against exploitation

Children should not be employed as labours.
Every citizen has the right to fight against exploitation.

8. Human right to food and environment

All human being have the right to get sufficient healthy food, safe drinking water and healthy environment.

9. Human right to good health

All human beings have the right to have good physical and mental health.

Indian Constitution

Indian constitution provides for civil, social, cultural, educational and political rights including the right to judicial enforceability.

1. Article 14: It provides for equality before law.
2. Article 15: It prohibits discrimination on the grounds of race, religion, caste, sex, or place of birth.
3. Article 16: It provides for equal opportunity for all citizens in matters related to employment.
4. Article 19: It provides for freedom of speech and expression, forming associations and unions and so on.
5. Article 20: It provides for protection from conviction except in accordance with the law of the land.
6. Article 22: It lays down the rights of a person in custody.
7. Article 23: It prohibits traffic in human beings and all other forms of forced labour.
8. Article 24: It prohibits the exploitation of labour children.
9. Article 25: It guarantees freedom to profess, practice and propagate a religion of one's choice.

10. Article 26: It authorize the right to establish and maintain charitable and religious institutions.

11. Article 27: It prohibits compulsion to pay any tax meant for promotion of any religious institutions.

12 Article 28: It guarantees the secular character of instruction in educational institutions etc.

13. Article 29: It guarantees to the minoritie the right to conserve their language etc.,

16. Article 30: It guarantees the right of linguistic minority and religions to establish and administer educational institutions etc.,

17. Article 32: It provides for right to constitutional remedies for the enforcement of fundamental rights by appropriate proceeding in the supreme court of India.

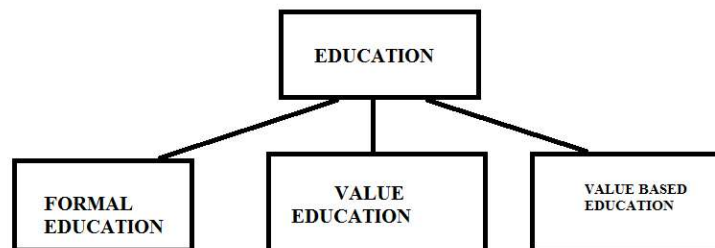
Consistent with these provisions , the Central and State governments have framed a number of laws to preserve and safeguard basic human rights. Government of India has set up national institutions such as National Commission for scheduled castes and scheduled tribes, National Commission for women, Minority Commission etc., for the promotion and protection of the interests of most vulnerable sections of society.

5.10 VALUE EDUCATION

Education

Education is nothing but learning, through which knowledge about the particular thing can be acquired. With the help of our knowledge and experience, we can identify our values to understand ourselves and our relationship with others and their environment.

Types of Education



1. Formal education :

All learning process in formal education are self related. All people will read, write, will get good jobs and tackle any problems only with the help of formal education

2. Value education

Value education is an instrument used to analyse our behavior and provide proper direction to our youths. It teaches them the distinction between right and wrong, to be compassionate, helpful, loving, generous and tolerant. So that a youth can move towards the sustainable future.

Example

If a person is highly qualified, well employed and rich living style, sometimes he does not know how to behave properly with his environment,. But, value education does this.

3. Value-based environmental education: Environmental education provide knowledge about the principles of ecology, fundamentals of environment and biodiversity. It creates a sense of duty to care for the natural resources and to manage them in a sustainable way.

When environment gets degraded it affects our health, well-being and our future. So it is important to know all about the environment and also have a right to safe clean environment.

Objectives (or) Need (or) importance of value education

1. To improve the integral growth of human being.
2. To create attitudes and improvement towards sustainable lifestyle.
3. To increase awareness about our national history, our cultural heritage, constitutional rights, national integration, community development and environment.
4. To creat and develop awareness about the values and their significance and role.
5. To understand about our natural environment in which how land, air and water are interlinked.
6. To know about various living and non-living organisms and their interaction with environment.

Concept of value education

The following are the concepts of values in environmental education.

1. Why and how can we use less resources and energy?

2. Why do we need to keep our surroundings clean?
3. Why should we use less fertilizers and pesticides in farms.
4. Why it is important for us to save water and keep our water sources clean.
5. Separate our garbage into degradable and non-degradable types before disposal.

All these issues are linked to the quality of human life and go beyond simple economic growth. They deal with a love and respect for nature.

Methods (Elements) of imparting value education.

The following approaches are some methods and strategies of imparting value education.

1. Telling : It is a process of developing values to enable a pupil to have a clear picture of a value-laden situation by means of his own narration of the situation.
2. Modeling : It is a method in which a certain individual perceived as ideal values is presented to the learners as a model.
3. Role playing : Acting out the true feelings of the actor/actors by taking the role of another person but without the risk of reprisals.
4. Problem solving: It is a method wherein a dilemma is presented to the learners asking them what decisions they are going to take.
5. Studying biographies of great man : This method makes use of the lives of the great man as the subject matter for trying to elicit their good deeds and thoughts worthy for emulation.

Types of values

1. Universal values (or) Social values : Universal values tell us about the importance of the human conditions. These values are reflected in life, joy, love, compassion, tolerance, service, truth, etc.,
2. Cultural values: Cultural values varies with respect to time and place. These value are concerned with right and being, It is reflected in language, aesthetics, education, law, economics, philosophy, etc.,
3. Individual values: Individual values are our personal principles and the result of individual personality and experience. Parents and teachers are the main key to shape our individual values. It is reflected in individual goals, relationships, commitments, etc.,

4. Global values: Global value stress the concept, that the human civilization is a part of the planet and similarly nature and natural phenomena over the earth are interconnected and inter-linked with special bonds of harmony. If this harmony is disturbed anywhere there will be an ecological imbalance leading to catastrophic results.

5. Spiritual values: Spiritual values promote conservationism and transform our consumeristic approach. It is reflected in self-restraint, self-discipline, contentment reduction of wants, etc.,

5.11 HIV / AIDS

AIDS is the abbreviated form for Acquired Immuno Deficiency Syndrome caused by a virus called HIV (Human Immune deficiency Virus). Many myths have been spread about AIDS and it is very important for every one to know the facts about HIV and AIDS.

Origin of HIV / AIDS

AIDS was discovered in 1983. Through sufficient knowledge has been gained about the disease, yet a definite source of this virus could not be identified. But the following theories have been suggested.

1. Through African Monkey

1. Most of the evidences have suggested that the AIDS has spread from Africa. It has been believed that the HIV has transferred to humans from African monkey or Chimpanzees.

2. Through Vaccine Programmes

1. HIV has spread in Africa through HIV contaminated polio vaccine, prepared from monkey's kidney.

2. It had spread through hepatitis-B viral vaccine Los Angels and New Yark

3. It had also spread through small pox vaccine programme of Africa.

World Scenario

Nearly 90% of the people who are infected with AIDS live in developing countries. 13% of world's population live in Africa, almost all states of African countries were affected by HIV. About 3 million people so far died due to HIV/AIDS in 2003. AIDS is rapidly spreading in eastern Europe AND Asia.

India ranks IInd in the world with 5.1 million HIV/AIDS affected people. The percentage is lower than Thailand, Myanmar and South Africa.

Scenario in India:

The largest number of infected cases have been found in Maharashtra and Tamil Nadu, followed by Delhi, UP, Karnataka and Goa. In Tamil Nadu alone, till September 2003 a total of 24,667 cases of AIDS have been found out.

Factors influencing modes of Transmission of HIV

HIV is spreading due to the following activities

1. HIV from infected person can pass to a normal person through blood contact, generally during unprotected sex with infected person.
2. Using needle or syringes, contaminated with small quantities of blood from HIV positive person, also transmit HIV to others.
3. HIV can also pass from infected mothers to their babies during pregnancy, delivery or breast feeding.
4. Blood transfusion from the infected person, at the time of accidents or pregnancy also in HIV/AIDS.
5. Women are more vulnerable to HIV. Biologically the male to female transmission of HIV is 2 to 4 time more efficient than female to male transmission.
6. Women around 18-20 years are at more risk, since their cervical tissue is more vulnerable to invading HIV.
7. Since the majority of HIV infections occur in women of child-bearing age, transmission of HIV to their new born babies happen easily.

Factors Non influencing transmission of HIV

HIV is not spreading by the following activities

Tears, food and air, cough, handshake, mosquito, flies, insect bites, urine, saliva during normal kissing, sharing of utensils, clothes, toilet, bathroom etc.,

Function of HIV in human body

AIDS itself does not kill human. The death occur due to the attack by diseases because of the weakening of immune system.

White Blood Cell (WBC), responsible in the formation of antibodies, are called T-helper cells are the key infection fighters in the immune system. The HIV enter into the human body and destroys the T-cells as a result of which various types of infection diseases occur. Even cancer can easily develop in the HIV infection persons.

Symptoms (or) Diagnosis of HIV/AIDS

Many people have no symptoms, when they are first infected with HIV. But some people get fever, headache, fatigue. During this time, HIV is present in large amounts in semen and vaginal fluids and it is very easy to pass the infection to another person.

HIV is very active inside a person's body. The virus multiplies and kills more T-cells of the immune system.

Consumption of alcohol increase the susceptibility to infection and progress of AIDS.

Minor symptoms

1. Persistent cough for more than one month.
2. General skin disease.
3. Viral infection.
4. Fungus infection in mouth and throat.
5. Frequent fever, headache, fatigue.

Major symptoms

1. Fever for more than one month.
2. Diarrhea for than one month.
3. Cough & TB for more than 6 months.
4. Fall of hairs from the head.
5. 10% of body weight get reduced within a short period.

Control And Preventive Measures of AIDS

Once a person is infected with HIV the person remain infected for life. There is neither a cure nor a vaccine but can be prevented. "Prevention is better than cure" is a slogan for all of us.

The basic approaches to control AIDS are

1. Education /; Health education enables people to avoid indiscriminate sex and encourages the use of condoms. One should avoid the use of sharing razors, needles and syringes.
2. Prevention of blood borne HIV Transmission: People in high risk groups should not donate blood. Blood should be screened for HIV before transmission and strict sterilisation practices should be followed in hospitals.

3. Primary Health Care: AIDS awareness programmes should be encouraged Voluntary health agencies should participate in large. Training programmes to doctors and paramedical workers should be conducted.

4. Counselling Services: Counselling service should be provided either in person or through telephone.

5. Drug Treatment: Testing HIV positive does not mean the end. They can still stay healthy leading productive lives for many years. Seeking early medical care and staying active are very vital in managing HIV. The immune system has to be kept boosted by taking nutritious diet and maintaining a stress-free mind.

Effects of HIV/AIDS

1. Large number of death occurs, which affect environment and natural resources.
2. Due to large number of deaths there is loss of labour and level of production decreases.
3. More water is required for maintaining hygiene in AIDS affected locality.
4. The people affected by HI, cannot perform work well due to lack of energy and frequent fever and sweating.

5.12 WOMEN AND CHILD WELFARE

Women and child are usually soft, who suffer in a number of ways mainly because they are weak, helpless and economically dependent.

5.12.1 WOMEN WELFARE

The main aim of women welfare s to improve the status of the women by providing opportunities in education employment and economic independence.

Need of Women Welfare

Generally women faces the following problems in the society. So there is an urgent need for policy reforms and more stringent legislation, education and legal awareness among women for checking injustice towards her.

1. Generally women suffer gender discrimination and devaluation at home, at workplace, in matrimony, in public life and power.
2. High number of cases of dowry deaths, rape, domestic violence, criminal offences and mental torture to women.

3. The human rights of women are violated, in the male dominated society.
4. Generally in policy making and decision making process, women are neglected.

Objectives of Women Welfare (or) Necessity of formation of women self help group

To overcome the vabove problems, a sound national strategy is needed with the following objectives.

1. To provide education
2. To impart vocational training.
3. To generate awareness about the environment.
4. To improve the employment opportunities.
5. To aware problem of population
6. To restore the dignity, status, equality and respect for women.

Objectives of A National Commission For Women

A National Commission for Women has been created by Government of India its main objectives are

1. To examine constitutional and legal rights for women
2. To review existing legislations.
3. To sensitize the enforcement and administrative machinery to women's causes.

Environmental Degradation And Women Welfare

The development work not only affects the natural environment but also affects the traditional, social, cultural and family life of women.

Example-1

After losing the forest cover and getting rehabilitated from their native places, men usually migrate to towns for some job while the women are left behind to look after their family with little resources.

Example-2

Mining projects play havoc with the life of rural women. Men can still work in the mines or migrate to towrrs for same job after getting compensation from the government. The displaced omen are the worth affected as they do not get any compensation and depend on the men for wages.

Thus the issues related to their dignity and honour have not yet received any attention.

Measures (or) Various schemes of Various Organisations Towards Women Welfare

1. The national Network for Women And Mining (NNWM) : It is fighting for a 'gender audit' of India's mining companies.
2. United Nations Decade for Women : It witnessed including of several women welfare related issues on international agenda.
3. International Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) : It has created an international standard for the protection and promotion of women's human and socio-economic upliftment.
4. Non –Government Organization as Mahila Mandals: It creates awareness among women of remote villages to empower them, train them, educate them and help them to become economically self-dependent.
5. Ministry for Women And Child Development: It aims to work for the upliftment of women by family planning, health care, education and awareness.

5.12.2 CHILD WELFARE

Children occupy nearly 40% of total population. They are considered to be the assets of a society. Of 21 million children born every year in India. 20 million children in our country are estimated to be working as child labours in various hazardous industries like match industry, fire work industry pottery industry.

Reason for Child Labours

1. Poverty : Poverty is the main reason to force these children to work in unhealthy conditions.
2. Want of Money : Parents required money for their family, so they are in a position to send their children for work.

Measure (or) Various schemes of Various Organizations towards Child Welfare

1. UN Conventions on Rights of Child (or) International Law : It formulated a set of international standards and measure to promote and protect the well being of children in our society.
Rights of the child : The international law defines right of the child to survival, participation, development and protection.
 - a. The right to survival : It emphasizes on good standards of living, good nutrition and health.

- b. The right to participation : It means freedom of thought and appropriate information to the child.
 - c. The right to development : It ensures access to education, childhood care and support, social security and recreation.
 - d. The right to protection : It means freedom from exploitation, inhuman treatment and neglect.
2. World summit on children : It had focused agenda for the well being of the children targeted to be achieved in the beginning of the new millennium.
3. Ministry of Human Resource Development (MHRD) : It concentrates on child's health, education, nutrition, clean and safe drinking water, sanitation and environment.

Environmental degradation and child welfare : Children are most affected due to environment pollution.

Water borne diseases are the biggest threat to children. Around 6 million children are affected by these disease in India. Even the child growing in the mother's womb, gets affected by environmental toxins.

Center for Science and Environment (CSE) : Its scientific report says, "children consume more water, food and air than adults and hence more susceptible to any environmental contamination".

So, it is essential to keep the cleaner environment to our children for the better and healthy life.

5.13 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

EIA is defined as a formal process of predicting the environmental consequences of any development projects. It is used to identify the environmental, social and economic impacts of the project prior to decision making.

Objectives of EIA

- 1. To identify the main issues and problem of the parties.
- 2. To identify who is the party.
- 3. To identify what are the problems of the parties.
- 4. To identify why are the problems arise.

Benefits of EIA

- 1. Cost and time of the project is reduced.
- 2. Performance of the project is improved

3. Waste treatment and cleaning expenses are minimized.
4. Usages of resources are decreased.
5. Biodiversity is maintained.
6. Human health is improved.

Process of EIA (or) Key Elements of EIA

The key elements used in the process of EIA are

1. Scoping
2. Screening
3. Identifying and evaluating alternatives
4. Mitigating measures dealing with uncertainty
5. Issuing environmental statements

1. Scoping

It is used to identify the key issues of the concern in the planning process at an stage. It is also used to aid site selection and identify any possible alternatives.

2. Screening

It is used to decide whether an EIA is required or not based on the information collected.

3. Identifying and evaluating alternatives

It involves knowing alternative sites and alternative techniques and their impacts.

4. Mitigating measures dealing with uncertainty

It reviews the action taken to prevent (or) minimize the adverse effects of a project.

5. Environmental statements

This is the final stage of the EIA process. It reports the findings of the EIA.

5.14 ROLE OF INFORMATION TECHNOLOGY IN ENVIRONMENT PROTECTION

Information technology plays a vital role in the field of environmental education. Information technology means collection, processing storage and dissemination of information. A number of softwares have been developed to study about the environment.

The internet facilities, information through satellites, world wide web, and Geographical Information systems, provide us up-to-date information on various aspects of environment and weather.

Softwares for environment education

Many softwares are developed to improve our environment and health. They are as follows.

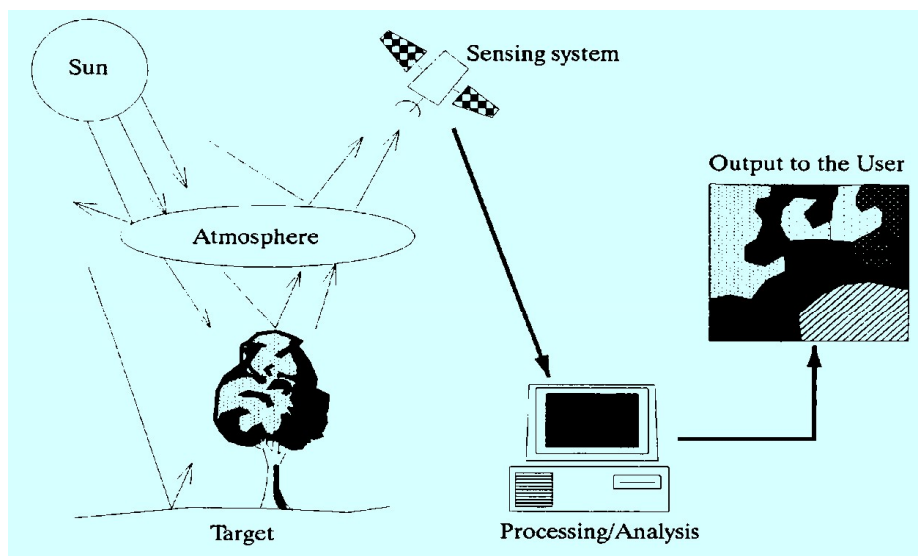
1. Remote Sensing

Remote sensing refers to any method, which can be used together information about an object without actually coming in contact with it. Any force field like acoustic, gravity, magnetic, electromagnetic, etc., could be used for remote sensing, covering various disciplines extending from laboratory testing to astronomy. At present the term 'remote sensing' is used more commonly to denote identification of earth feature by detecting the characteristics electromagnetic radiation that is reflected /emitted by the earth.

Remote Sensing System for Resource Management

Remote sensing data (image) have been used to derive thematic information on various natural resources and environment. The type and level of information extracted depends on the expertise of the analyst and what he is looking in the data.

Components of a Remote Sensing System



Example

The remote sensing image of land can be used to derive information of vegetative cover, water bodies, land use, pattern, geological features soil etc.,

Applications of remote sensing

1. In agriculture : In India, the agriculture sector sustains the livelihood of around 70% of the population and contributes to about 35% of the net national product. We require judicious and optimal management of both land and water resources along with the use of high yielding variety seeds, optimal fertilizer input, postcentral etc., Remote sensing can provide valuable information for land and water management.
2. In forestry : Sustainable forest management requires reliable information on the type, density and extent forest cover, wood volume and biomass, forest fire, pest and disease induced losses, encroachment etc., Remote sensing provides all such information clearly.
3. In land cover : Spatial information on land use is required at different scales depending upon use. Remote sensing data is converted to map, the spatial resolution plays a role on the scale of mapping.
4. Water resources : Remote sensing data has been used in many applications related to water resources such as surface water body mapping, ground water targeting, wetland, inventory, flood monitoring, reservoir sedimentation, water quality monitoring, run-off modeling, snowcover monitoring, irrigation water management and many more. One of the most simple application is inventorying surface water bodies.

2. Database

Database is the collection of inter-related data on various subjects. In the computer the information of data base is arranged in a systematic manner that is easily manageable and can be very quickly retrieved.

Applications of database

a. The Ministry of Environment and Forest

1. They are compiling a database on various biotic communities.
2. Database is also available for diseases like HIV/AIDS, Malaria, Fluorosis, etc.,

b. NATIONAL Management Information System (NMIS)

They compiled a database on R & D projects along with information about research scientists and personnel involved.

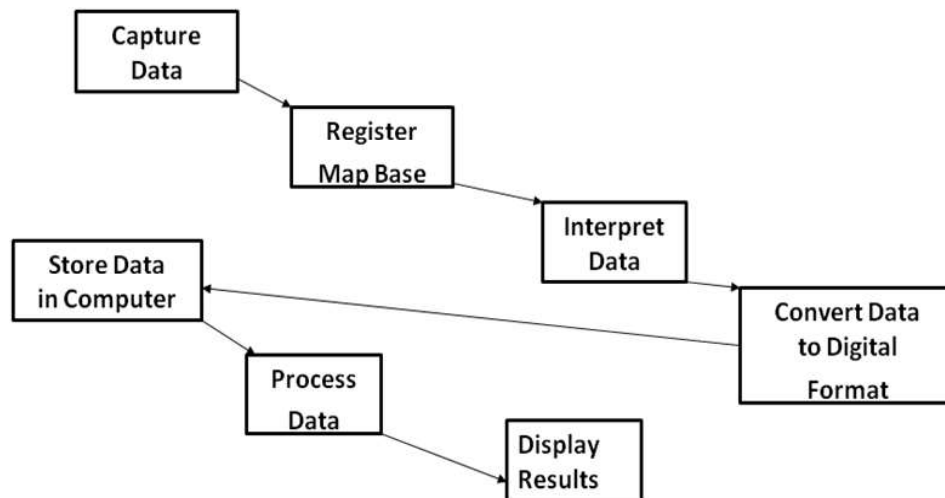
c. Environmental Information System (ENVIS)

It function in 25 centres all over country. They generate a network of database in areas like pollution control, clean technologies, remote sensing, biodiversity, environmental management, desertification etc.,

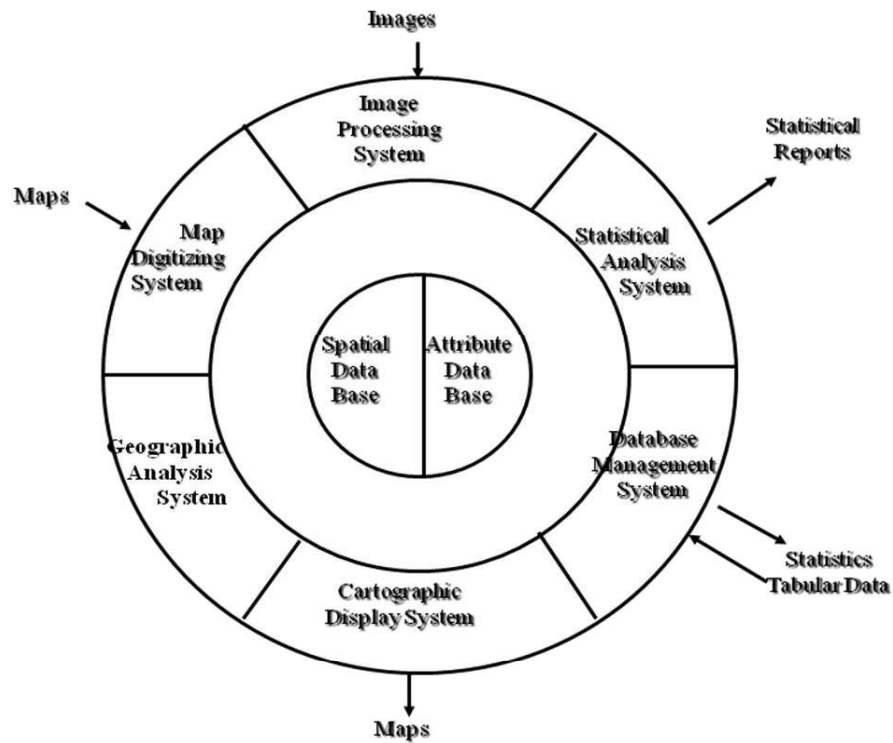
3. Geographical Information System (GIS)

“GIS is a technique of superimposing various thematic maps using digital data on a large number of inter-related aspects”.

GIS PROCESS



GIS System



Applications of GIS

1. Different thematic maps containing digital information on various aspects like water resources, soil type, forest land, cropland, grassland are superimposed on a layered from in computer using softwares.

2. Interpretations of polluted zones, degraded lands can be made based on GIS.

3. GIS can be used to check unplanned growth and related environment problems.

4. Satellite date

1. Satellite data helps in providing correct and reliable information about forest-cover

2. It also provide information of atmosphere phenomena like monsoon, ozone layer depletion, smog, etc.,

3. From the satellite data many new reserves of oil, minerals can be discovered.

5.15 WORLD WIDE WEB

More current data is available on world wide web.

Important on-line learning Center

1. w.w.w.mhhe.com /environmental science.
2. Multimedia Digital Content Manager (DCM) in the form of CD-ROM

Application

1. These on-line learning centre provides the current and relevant information on, principles, problems, queries, application of environmental science.
2. It has digital files of photos, power-print lecture presentations, animations, web-exercises and quiz. These are useful to both students and teachers of environmental studies.

5.16 CASE STUDIES ON ROLE OF IT IN ENVIRONMENTA PROTECTION

Study on pollution back waters of kerala

A part of the back waters present in the Anchutengu - Kodianam Kulam, Kerala has been polluted due to the soaking of coconut – husks for the production of coir fibre. This polluted water has affected the fishery resources to a large extent.

The environment of the coastal areas covering the polluted and non polluted zones studied by India Remote Sensing (IRS) satellite. The IRS data were compared with water quality parameters such as turbidity, dissolved oxygen, production of H₂S and the primary productivity mechanism. Proper analysis of these IRS have been carried out and the necessary steps were undertaken for the proper development of aquatic system.

Ocean Colour Monitor (OCM) to study phytoplanktons

IRS-P4 is the first India Satellite used to get the required datas of oceanographic community. The space application center which is the part of India Space Research Organisation (ISRO) has developed many applications of ISR-P4.

The IRS-P4 (OCM) data has been found to be of great use for the estimation of phytoplankton in oceanic waters asd well as the detection and monitoring of phytoplankton blooms. It is also helpful in the identification of fishery zones.

GIS for forest management

The forest areas of Bichua Range along Pench River in Madhya Pradesh was surveyed using GIS and remote sensing. The multi data image obtained by the satellite revealed that the forest is largely covered by Deacon Basalt and altered gneissic rocks. The various forest covers and denuded areas of the forest were also analysed. The deforestation and other ecological imbalances in the forest areas were detected. A work plan is being prepared on these data for the effective forest management.

National Emission Data System (NEDS)

NEDS is developed by the Environmental Protection Agency of USA. This NEDS works for coding, storage retrieval and analysis of nation wide air emission data.

Environmental Information System (ENVIS)

ENVIS has been developed by the Ministry of Environment and Forest by the Government of India. It has its head quarters in Delhi and functions in 25 different centres all over the country. ENVIS works for generating a network of database in areas like pollution control, clean technologies, remote sensing, coastal ecology, biodiversity, environmental management, renewable energy, wildlife etc.,

5.17 ROLE OF INFORMATION TECHNOLOGY IN HUMAN HEALTH PROTECTION

Information Technology plays a key role in human health. It has changed the human life style completely. Many health organization are turning to package solution of IT for streamlining service oriented work in an effective manner.

The health service technology mainly involves three systems. They are

1. Finance and accounting
2. Pathology
3. Patient Administration : Clinical system

Application of IT in health services

1. With the help of IT packages, the data regarding birth and death rates, immunization and sanitation programme are maintained more accurately.
2. It helps the doctor to monitor the health of the people effectively.

3. The information regarding the out break of epidemic diseases can be conveyed easily.
4. On-line help of expert doctors can be consulted to provide better treatment and services to the patient.
5. With a central control system the hospital can run effectively.
6. Drugs and its replacement can be administered efficiently.

5.18 CASE STUDIES ON ROLE IT IN HUMAN HEALTH PROTECTION

Health Service of New South Wales

The health services of New South Wales are dominated by the state-administered public health service providing integrated hospitals and community services to the population of 3 million people. The health services has a geographically divisionalised structure. A new IT package was introduced in these health centres to streamline the various operations of the hospitals and help in providing better services to the people.

The IT packages purchased from U.S company was found successful in the finance and accounting and pathology systems. But there were difficulties in implementing patient administrative system (PAS) or clinical system which involves the registration, admission and transfer of patients as well as medical records, sundry handling, clinical order entry, results operating and the clinic scheduling systems.

The implementation of IT packages of the PAS went off successfully with rural hospitals as well as medium-sized hospitals without much complications, whereas the PAS system was met with constant difficulties in implementation in larger hospitals and with networks.

National Institute of Occupational Health

The National Institute of Occupational Health, developed by the India government, provides computerized information on occupational health i.e., the health aspects of people working in various hazardous and non-hazardous industries safety measures, etc.