

**KATHIR COLLEGE OF ENGINEERING
UNIT – 5**

HUMAN POPULATION AND ENVIRONMENT

Objective:

- To get a knowledge on human population and human rights
- To educate the students on value education
- To equip students towards modern technology with respect to environment and human health.

Population density:

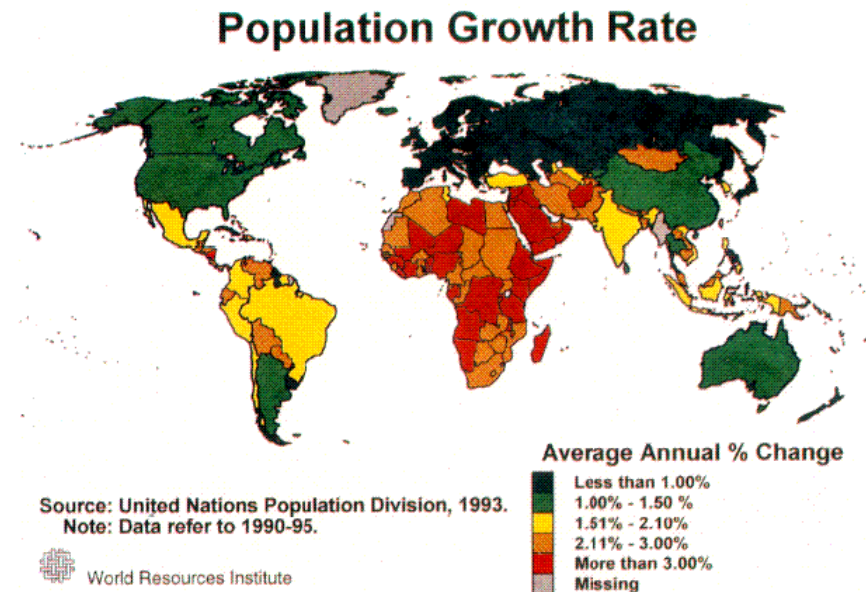
Number of individuals per unit area or per unit volume is known as population density.

Parameters affecting population size:

1. **Birth rate or Natality:** The birth rate is the total number of births per 1,000 of a population each year.
2. **Death rate or Mortality:** The death rate is the total number of deaths per 1,000 of a population each year.
3. **Immigration:** Immigration is the movement of people into another country or region to which they are not native in order to settle there.
4. **Emigration:** Emigration is the act of leaving one's country or region with the intent to settle permanently in another.

Population Growth

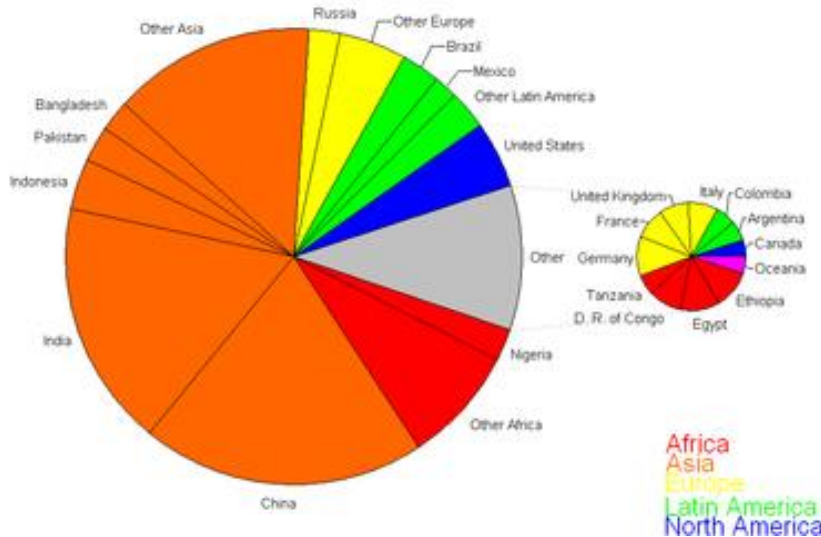
The rapid growth of the global's population for the past 100 years from the difference between the rate of birth and death.



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Causes of rapid population growth:

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



Characteristics of population growth:

1. **Exponential growth** : Population increases exponentially like $10, 10^2, 10^3$ etc.,
2. **Doubling time**: The doubling time is the period of time required for a population to double its size at a constant annual rate. It is calculated as follows,
Td (Doubling time) = 70/r ; where r = annual growth rate.
3. **Infant mortality rate**: Infant mortality rate (IMR) is the number of deaths of children less than one year of age per 1000 live births.
4. **Total fertility rate**: The average number of children that would be born to a woman over her lifetime.
5. **Replacement level**: Two parents bearing two children will be replaced their off spring.
6. **Male/female ratio**: The ratio between girls and boys in a particular region.
7. **Demographic transition**: Population growth related to economic development. Decrease in birth rate and death rate improves living conditions.

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Effects:

1. Unemployment
2. Poverty.
3. Environmental degradation
4. Over –exploitation of natural resources.
5. Communal war.
6. Pollution.
7. Demand for food and other resources increases.

Remedy:

1. Through birth control program's.

Variation of population based on age structure

Age structure of population can be classified into three classes.

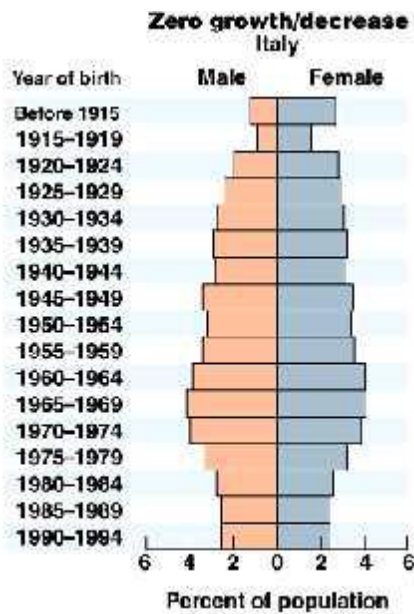
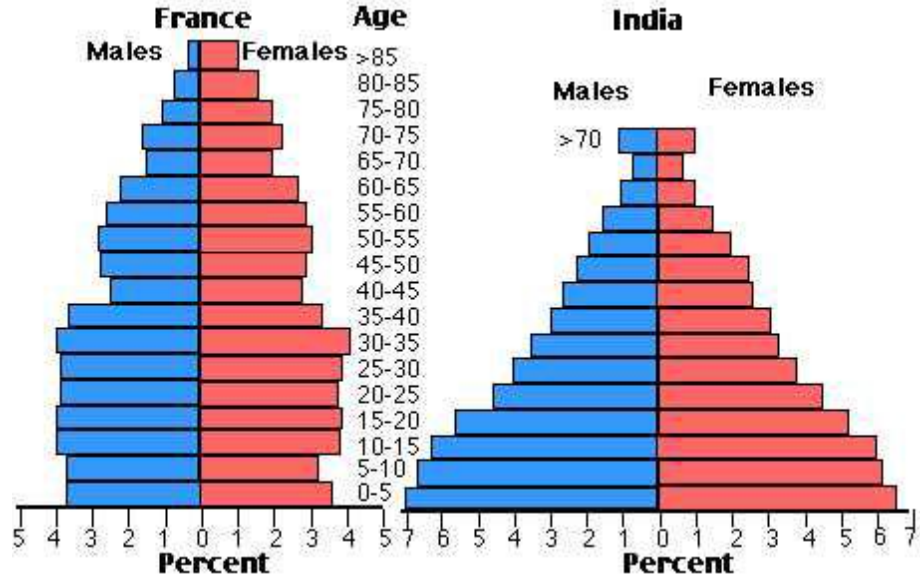
1. Pre-productive population (0-14 yrs)
2. Reproductive population (15-44 yrs)
3. Post-productive population (45 yrs and above)

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

1. Pyramid shaped (India , Bangladesh, Ethiopia)
From the figure it clearly shows that the population of pre-productive population is higher than the reproductive population. Therefore the population growth will increase.
2. Bell shaped (France, USA, UK)
From the figure it clearly shows that the population of pre-productive population is equal to the reproductive population. Therefore the population growth will be stable.
3. Urn shaped (Germany, Italy, and Japan)
From the figure it clearly shows that the population of pre-productive population is less than the reproductive population. Therefore the population growth will decrease.

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Population Explosion

The enormous increase in population is due to low death rate and high birth rate.

Causes for population Explosion:

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Women & Child Welfare.

OBJECTIVE OF WOMEN WELFARE

The main aims of women welfare

1. To improve the status of the women by providing opportunities in education, employment and economic independence.

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2. To get awareness about environment and population
3. To restore the dignity, status, equality and respect for women.

Women welfare organization

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 inclusion 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 Organizations (NGO's)

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.

OBJECTIVE OF CHILD WELFARE

The main aims of child welfare are to provide education, childhood care, nutrition, sanitation, healthy environment, recreation etc.

Reason for child welfare

- a. poverty
- b. need of money

Child welfare organization

1. UN conventions on rights of child

It formulated a set of international standards and measures to promote and protect the well being of children in our society. The international law defines the child to survival participation, development and protection.

2. World Summit on child

It 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.

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Family welfare program:

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

Objectives:

1. Slowing down the population explosion
2. Over exploitation of natural resources

Population stabilization ratio:

It is a ratio derived by dividing crude birth rate by crude death rate.

Developed countries: Population stabilization ratio is 1.

Developing countries: Population stabilization ratio is 3.

Family planning program:

Objectives:

1. Reduce infant mortality rate.
2. Encourage late marriages.
3. Improve women's health.
4. Control of communal disease.
5. Encourage breast feeding.
6. Constraint the spread of AIDS/ HIV.
7. Prevent and control communal disease.

Fertility control methods:

1. Traditional methods: Folk medicines
2. Modern methods :
 - a. Permanent method: Tubectomy and vasectomy.
 - b. Temporary method: Condoms, Copper T and Pills.

Family planning programs in India:

1. Started in 1952.
2. Government forced national campaign in 1970.
3. Government rose the legal marriage age for men 21 and for women 18 in 1978.

Environment and human health:

Environment is defined as man along with his surroundings, which consists of biotic, abiotic and sociological components. Therefore, when we cause danger to these components, which surrounds us, they in turn affect our health.

Factors influencing human health:

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1. Nutritional Factor.
2. Biological Factor.
3. Chemical Factor.
4. Psychological Factor.

The environmental dangers created by man are many:

1. Population explosion.
2. Unregulated urbanization.
3. Creating water, air and landscape pollution.
4. Deforestation.
5. Desertification.
6. Use of pesticides in agriculture etc.

Every one of these has implications for the health of the individual as well as society as a whole. None can be ignored because the scale of potential calamity is increasing day by day.

Health hazards may be arising from:

1. Water contamination or pollution.
2. Air pollution.
3. Use of pesticides enters through food chain.
4. Radiation effect of nuclear waste.
5. Diseases caused from improper disposal of solid wastes.
6. Noise pollution.

Hazards also includes,

1. Physical Hazards – Radioactive and UV radiations, Global warming, Chlorofluro carbons, Noise etc.
2. Chemical Hazards – Combustion of Fossil fuels, industrial effluence, pesticides, heavy metals,
3. Biological Hazards- Bacteria, Viruses, Parasites

Preventive Measures:

1. Always wash your hands before food.
2. Cut and clean your nail regularly.
3. Drink purified water.
4. Eat food in hot condition.
5. Wash vegetables before cooking.
6. Avoid plastics and aluminum.
7. Do physical exercise regularly.

Human rights:

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Human rights are based on the principle of respect for the individual. It was adopted by the United Nations on December 10, 1948.

1. Human right to freedom

Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.

2. Human right to property

Everyone has the right to own property alone as well as in association with others.

3. Human right to freedom of religion

Everyone has the right to follow any religion.

4. Human right to culture and education

Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages.

5. Human right to constitutional remedies

All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination.

Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.

6. Human right to equality

All human beings are born free and equal in dignity and rights.

7. Human right against exploitation

No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.

No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

8. Human right to food and environment

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, and housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

9. Human right to good health.

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family.

Value education:

Education

It is nothing but learning about the particular thing through knowledge. We can identify our values and ourselves with the help of knowledge and experience.

Types

1. Formal education-Self related learning process.

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2. Value education – Analyze based on instruments.
3. Value-based environment education- Based on environment.

Objectives

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 create and develop awareness about the values and their significance and role
5. To know about various living and non- living organisms and their interaction with environment.

Types of values

1. Universal values-Importance of the human conditions.
2. Cultural values-Right, wrong, good and bad.
3. Individual values-Individual personality and experiences.
4. Global values-Human civilization.
5. Spiritual values-Self-restraint, discipline

Role of information technology in Environment

It plays a vital role in the field of environmental education.- They are

1. Remote sensing
2. Database
3. Geographical information system (GIS)
4. Satellite data
5. World wide web

1. Remote sensing

Remote sensing used to gather information about an object without coming in contact with it. Remote sensing is used to denote identification of earth feature by detecting the characteristics electromagnetic radiation that is reflected or emitted by the earth.

Application

- a. It is used to find resources like vegetative cover, water bodies, land use, soil, geological features, etc.
- b. It is used give the information about agriculture, forestry, land cover, water resources, etc.

2. Database

Database is the collection of inter-related data on various subjects.

Application

- a. The ministry of environment and forest
- b. National management information system
- c. Environmental information system

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3. Geographical information system (GIS)

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

Application

- a. Different thematic maps like water resources, soil type, forest land, grass land are superimposed on a layered form in computer using softwares.
- b. Interpretations of polluted zones, degraded lands can be done.
- c. It is used to check unplanned growth and environmental related problems.

4. Satellite data

- a. It provides information of monsoon, cyclone, ozone layer depletion, smog, etc.
- b. It give data like oil reservoir, mineral reservoir etc

5. World web wide

- a) This provides current data, relevant information, principles, problems, queries, application of environmental science.
- b) It has digital files of photos, power-point lecture presentations, animations, etc

Role of information technology in Human health

It plays a key role in human health. This involves system like

1. Finance and Accounting.
2. Pathology
3. Clinical system.

Application

- a. The IT provide the data like birth and death rates, immunization and sanitation programmed are maintained accurately,
- b. It helps the doctor to monitor the health of the people effectively.
- c. Epidemic diseases can be conveyed easily.
- d. On-line help of expert doctors can be consulted to provide better treatment and services to the patient.
- e. Drugs and its replacement can be administered efficiently.

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