



NATURAL VEGETATION & WILDLIFE



SL-05 (G)

India is one of the twelve mega bio-diversity countries of the world. With about 47,000 plant species India occupies tenth place in the world and fourth in Asia in plant diversity. There are about 15,000 flowering plants in India which account for 6 per cent in the world's total number of flowering plants. The country has many non-flowering plants such as ferns, algae and fungi. India also has 89,000 species of animals as well as rich variety of fish in its fresh and marine waters.

Natural vegetation: Refers to a plant community which has grown naturally without human aid and has been left undisturbed by human for a long time. This is termed a virgin vegetation. Thus, cultivated crops and fruits, orchards are a part of vegetation but not natural vegetation. India's natural vegetation has undergone many changes due to several factors such as the growing demand for cultivated land, development of industries and mining, Urbanisation and over-grazing of pastures. The vegetation cover of India in large parts is on more natural in the real sense. Except in some inaccessible region like the Himalayas, the hilly region of central India and the marshy areas, the vegetation of most of the areas has been modified at some places, or replaced or degraded by human occupancy.

Flora: The term flora is used to denote plants of a particular region or period.

Fauna: The species of animals are referred to as fauna.

FACTORS WHICH AFFECT DIVERSITY OF FLORA AND FAUNA

Land: Land affects the natural vegetation directly and indirectly. The nature of land influences the type of vegetation. The fertile level is generally devoted to agriculture. The undulating and rough terrains are areas where grassland and woodlands develop and give shelter to a variety of wild life.

Soil: Different types of soil provide basis for different types of vegetation. The sandy soils of the desert support cactus and thorny bushes while wet, marshy, deltaic soil support mangroves and deltaic vegetation. The hill slopes with some depth of soil have conical trees.

Temperature: the character and extent of vegetation are mainly determined by temperature along with humidity in the air, precipitation and soil. On the slopes of the Himalayas and the hills of the Peninsula above the height of 915 meters, low temperature affects the types of vegetation and its growth. Temperature changes it from tropical, temperate and alpine.

Table : Temperature Characteristics of Vegetation Zones			
Vegetation zone	Mean Average Temperature (in °C) (July)	Mean Average Temperature (in °C) (Jan)	Remarks
Tropical	Above 24°C	Above 18°	No frost
Sub-tropical	17 °C to 24 °C	10 °C to 18 °C	Frost is rare
Temperate	7 °C to 17 °C	-1 °C to (-10) °C	Frost, sometime snow
Alpine	Below 7° C	Below 7° C	Snow

Sun Light: The variation in Sunlight received at different places is due to difference in latitude, altitude, season and duration of the day. Adequate sunlight in summer causes trees to grow faster.

Precipitation: Precipitation determines the density of vegetation. Areas of heavy rainfall have more dense vegetation as compared to other areas of less rainfall.

Importance of forests for Human life

Forests are renewable resources and play a major role in enhancing the quality of environment. they modify local climate, control soil erosion, regulate stream flow, support a variety of industries, provide livelihood for many communities and offer panoramic or scenic view for recreation. it controls wind force and temperature and causes rainfall. It provides humus to the soil and shelter to the wildlife.

COSYSTEM AND BIOME

Ecosystem: It is an integrated unit consisting of the community of living organisms and the physical environment in a particular area. Plants occur in distinct groups of communities in areas having similar climatic conditions. The nature of the plants in an area, to a large extent, determines the animal life in that area.

Biome: A very large ecosystems on land having distinct types of vegetation and animals life is called a biome. Biomes include both flora and fauna but it is mainly the plant formations which are used as the basis of their grouping. On the basis of the order of availability of soil, water and heat the world is divided into five principle biomes:

- (i) Forest (ii) Savanna (iii) Grassland (iv) Desert (v) Tundra

TYPES OF VEGETATION

(a) Tropical Evergreen:

- (i) They are at their best in areas having more than 200 cm of rainfall with a short dry season.
- (ii) In these forest trees grow up to 60 m & above.
- (iii) These forest yield hard wood trees.
- (iv) These forest are found in rainy parts of Western Ghats, Assam, West Bengal, Lakshadweep and Andaman & Nicobar Islands.
- (v) Ebony, Mahogany, Rosewood, Rubber and Cinchona are some of the important trees.
- (vi) In these forest large number of plant species are found at one place. it creates difficulty in their commercial exploitation.
- (vii) Elephants, Monkey, Lemur and Deer are some common animals found in these forest.

(b) Tropical Deciduous forests:

These are the most widespread forests of India. they are also called the monsoon forests and spread over the region receiving rainfall between 200 cm and 70 cm. trees of this forest-type shed their leaves for a bout six to eight weeks in dry summer. on the basis of the availability of water, these forests are further divided into :-

Moist deciduous:

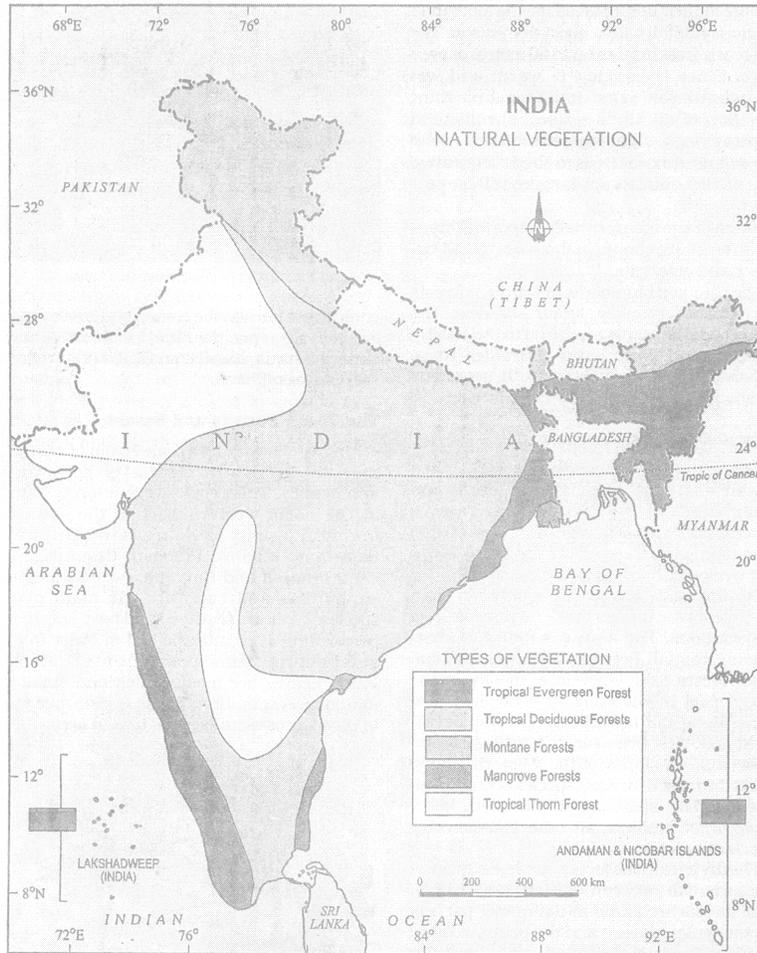
- (i) These forests are found in the areas of 100 cm to 200 cm of rainfall.
- (ii) Due to a longer dry season, the trees shed their leaves during the dry season.
- (iii) Shisham, Bamboos, Sandalwood, Khair, Kusum, Arjun, Mulberry and Sal are the common trees found in these forests.
- (iv) These forests cover a vast area of the country. Northeastern states, along the foot hills of the Himalayas, Jharkhand, West Orissa and Chhattisgarh and on the Eastern slopes of the Western Ghats.

Dry deciduous:

- (i) These are found in areas having rainfall between 70 cm to 100 cm.
- (ii) These are found in the rainier part of the peninsular plateau and the plains of Bihar and U.P.
- (iii) These are open stretches in which Teak, Sal, Peepal, Neem grow.
- (iv) Most of these forests have been cleared for cultivation.
- (v) In these forests, the common animals found are lion, tiger, pig, deer and elephant. a huge variety of birds, lizards, snakes, and tortoises are also found here.

(c) The Thorn forests and Shrubs:

Tropical thorn forests occur in the areas which receive rainfall less than 70 cm. these consist of a variety of grasses and shrubs. In includes semi-arid areas of south west Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh and Uttar Pradesh. In these forests, plants remain leafless for most part of the year and give an expression of shrub vegetation. Important species found are babul, kher and wild Date palm, Kikar, Neem, Khejri, Palas, etc.



Natural Vegetation

(d) Montain Forests:

In mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation.

- (i) The wet temperate type of forests are between a height of 1000 and 2000 meters. evergreen broad-leaf tress such as oaks and chestnuts predominate.
- (ii) Between 1500 and 3000 meters, temperate forests containing coniferous trees like pine, deodar, silver fir, spruce and cedar, are found. These forests cover mostly the southern slopes of the Himalayas, places having high altitude in southern and north-east India. at higher elevations, temperate grasslands are common.

- (iii) At high altitudes, generally more than 3600 meters above sea-level, temperate forests and grasslands give way to the Alpine vegetation. Silver fir, junipers, pines and birches are the common trees of these forests.
- (iv) Above Alpine vegetation Alpine grasslands are found. These are used extensively for grazing by nomadic tribes like the Gujjars and the Bakarwals. At higher altitudes, mosses and lichens form part of tundra vegetation.
- (v) the common animals found in these frosts are Kashmir stag, spotted deer, wild sheep, jack rabbit, Tibetan antelope, yak, snow leopard, squirrels, shaggy horn wild ibex, deer and rare red panda, sheep and goats with thick hair.

(e) Mangrove forests:

These are found in the areas which are under the influence of tides having accumulated mud and silt. Dense mangrove are the common varieties with roots of plants submerged under water. These forests are found in the deltas of Ganga, Mahanadi, Godavari and Kaveri. The most important tree is the Sundari tree after which the Sunderbans are named. The tree provides hard, durable and strong wood which is used for building boats and boxes. Royal Bengal Tiger is the famous animal in these forests. Turtles, crocodiles, gharials and snakes are also found in these forests.

FOREST CONSERVATION

Forests have an intricate interrelationship with life and environment. These provide numerous direct and indirect advantages to our economy and society. Hence, conservation of forests is of vital importance to the survival and prosperity of humankind. Accordingly, the Government of India proposed to have a nationwide forest conservation policy, and adopted a forest policy in 1952, which was further modified in 1988. According to the new forest policy, the Government would emphasize sustainable forest management in order to conserve and expand forest reserve on the one hand, and to meet the needs of local people on the other.

The forest policy aimed at:

- (i) Bringing 33 per cent of the geographical areas under forest cover.
- (ii) Maintaining environmental stability and to restore forests where ecological balance was disturbed.
- (iii) Conserving the natural heritage of the country, its biological diversity and genetic pool.
- (iv) Checks soil erosion, extension of the desert lands and reduction of floods and droughts.
- (v) Increasing the forest cover through social forestry and afforestation on degraded land.
- (vi) Increasing the productivity of forests to make timber, fuel, fodder and food available to rural population dependant on forests, and encourage the substitution of wood.
- (vii) Creating of a massive people's movement involving women to encourage planting of trees, stop falling of trees and thus, reduce pressure on the existing forest.

WILDLIFE

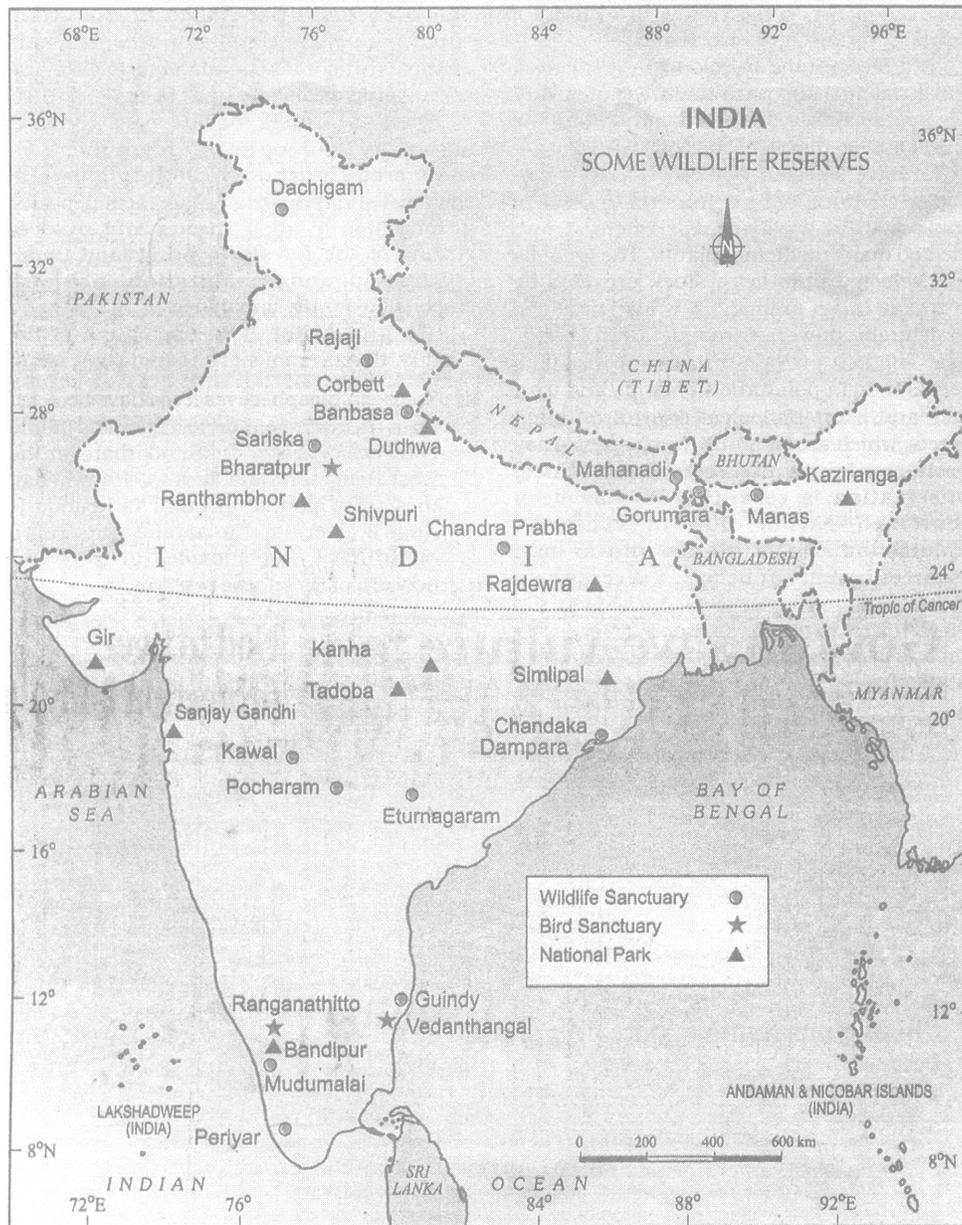
Wildlife of India is a great natural heritage. It is estimated that about 4-5 per cent of all known plant and animal species on the earth are found in India. The main reason for this remarkable diversity of life forms is the great diversity of the ecosystem which this country has preserved and supported through the ages. India has more than 1200 species of birds, 2500 species of fish and between 5 to 8 percent of the world's amphibians, reptiles and mammals. India is the only country in the world that has both tigers and lions. The Himalayas have a large range of animals that survive the bitter cold. Every species of animal has a role to play in the ecosystem; hence conservation is essential. Hunting and pollution is causing threat to animal species. To protect the flora and fauna of the country, the government has taken many steps. Fourteen biosphere reserves have been set up in the country to protect flora and fauna. 89 national Parks, 49 Wildlife Sanctuaries and Zoological Gardens are set up to take care of natural heritage.

Over the years, their habitat has been disturbed by human activities and as a result, their numbers have dwindled significantly. There are certain species that are at the brink of extinction.

Some of the important reasons for the declining wildlife are as follows:

- (i) Industrial and technological advancement brought about a rapid increase in the exploitation of forest resources.

- (ii) More and more lands were cleared for agriculture, human settlement, roads, mining, reservoirs, etc.
- (iii) Pressure on forests mounted due to lopping for fodder and fuel wood and removal of small timber by the local people.
- (vi) Grazing by domestic cattle caused an adverse effect on wildlife and its habitat.
- (v) Hunting was taken up as a sport by the elite and hundreds of wild animals were killed in a single hunt. now commercial poaching is rampant.
- (vi) Incidence of forest fire.



Wildlife Reserves

(a) wildlife conservation in India.

- (i) fourteen biosphere reserves have been set up in the country to protect flora and fauna. four out of these, the Sunderbans in the West Bengal, Nanda Devi in Uttaranchal, the Gulf of Mannar in Tamil Nadu and the Nilgiris (Kerala, Karnataka and Tamil Nadu) have been included in the world network of Biosphere reserves.
- (ii) financial and technical assistance is provided to many Botanical Gardens by the governmental projects have been introduced.
- (iv) 89 National Parks, 492 Wildlife sanctuaries and Zoological gardens are set up to take care of Natural heritage.

BIOSPHERE RESERVES

A Biosphere Reserve is a unique and representative ecosystem of terrestrial and coastal areas which are internationally recognised within the framework of UNESCO’s Man and Biosphere (MAB) Programme. The Biosphere Reserve aims at achieving the three objectives as depicted in Figure.

There are 14 Biosphere Reserves in India (Table, Figure). four Biosphere Reserves, namely (i) Nilgiri ; (ii) Nanda Devi; (iii) Sunderbans; and (iv) Gulf of Mannar have been recognised by the UNESCO on World Network of Biosphere Reserves.

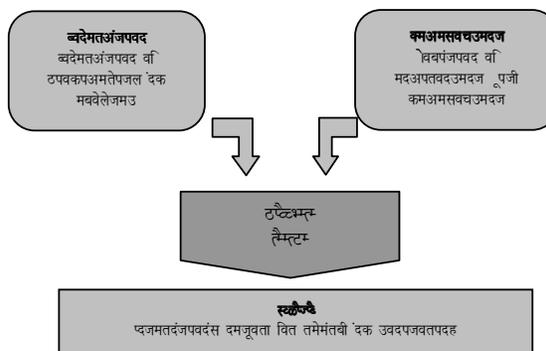


Figure : Objectives of a Biosphere Reserve

Table: List of Biosphere Reserves

S.No.	Name of the Biosphere Reserve	Total Geographical Area (km ²)	Location (states)
1	Nilgiri	5,520	Part of wynad, Nagarhole, Bandipur and Mudumalai, Nilambur, Silent Valley and Siruvani Hills (Tamil Nadu, Kerala and Karnataka)
2	Nanda Devi	2,236.74	Part of Chamoil, Pithoragart and Almora districts (Uttar Prades) and part of Garo Hills (Meghalaya)
3	Nokre	820	Part of Garo Hills (Meghalaya)
4	Manas	2,837	Part of Kokrajhar, Bongaigaon, Barrette, Nalbari, Kamru And Darrang distirtcts (Assam)
5	Sunderbans	9,630	Part of delta of Ganges and Brahmaputra river ystem (West Bengal)
6	Gulf of Mannar	10,500	Indian part of Gulf of Mannar between India and sri Lanka(Tamil Nadu)
7	Great Nicobar	885	Southernmost islands of the Andaman and Nicobar (A & N islands)
8	Similiparl	4,374	Part of Mayurbhanj district (Orissa)
9	Dibru-Saikhowa	765	Part of Dibrugarh and Tinsukia districts (Assam)
10	Dihang Dibang	5,111.50	Part of siang and Debang valley in Arunachal Pradesh
11	Kanchenjunga	2,619.92	Part of North and West Sikkim
12	Pachmari	4,926.28	Part of Betul, Hoshangabad and Chindwara districts of Madhya Pradesh
13	Agasthyamalai	1,701	Agasthyamalai Hills in Kerala
14	Achanakmar-Amarkar	3,835.51	Parts of Anupur and Dindori district of MP and parts of Bilaspur district of Chhattisgarh

EXERCISE

OBJECTIVE DPP - 5.1

- To which one of the following types of vegetation does rubber belong to:
(A) Tundra (B) Tidal (C) Himalayan (D) Tropical Evergreen
- Cinchona trees are found in the areas of rainfall more than:
(A) 100 cm (B) 50 cm (C) 70 cm (D) Less than 50 cm
- In which of the following state is the Simlipal Bio Reserve located:
(A) Punjab (B) Delhi (C) Orissa (D) West Bengal
- Which of the following bio-reserves of Indian is not included in the world network of bio-reserves?
(A) Manas (B) Nilgiri (C) Gulf of Mannar (D) Nanda Devi
- The distribution of plants and animals on the earth is determined primarily by :
(A) Climate (B) Drainage (C) Soil (D) All the above
- Plant species are called:
(A) Flora (B) Biome (C) Fauna (D) None of the above
- Name the habitat of Indian tigers:
(A) Gir (B) Sunderban (C) Kamataka (D) Kerala
- What is the habitat of the horned Rhinoceros?
(A) Gujarat (B) Assam (C) West Bengal (D) Both B and C
- Which of the following factors does not affect the distribution of plants and animals ?
(A) Soil (B) Relief (C) Ecosystem (D) Drainage
- Which of the following tree is used for treatment of blood pressure?
(A) Teak (B) Chestnut (C) Sarpagandha (D) Rosewood
- Which of these is not a bio-reserve?
(A) Nokrek (B) Nanda devi (C) Nilgiri (D) Rantham bhore
- Who launched the Chipko movement?
(A) Rallan (B) Ram Lal Bahuguna
(C) Sunder Lal Bahuguna (D) Hemwati Nandan Bahuguna
- Bamboos, Sal, Sandal wood, Teak are the commercially important species of which type of forest ?
(A) Alpine Tundra Vegetation (B) Tropical rain forests
(C) Tropical Deciduous forests (D) Temperate forests
- Where are the Sunderbans located?
(A) West Bengal (B) Rajasthan (C) Orissa (D) Kerala
- Where is Nokrek Bio-reserve located?
(A) Uttar Pradesh (B) Meghalaya (C) Andaman & Nicobar (D) Kerala

SUBJECTIVE DPP - 5.2

Very short answer type question:

- What is virgin vegetation?
- What is an eco-system?
- What is India's rank in the world and in Asia in plant diversity?
- Where are evergreen forests found in India?
- Which natural vegetation is most predominant in India?

6. Name useful trees of thorn forests.
7. How many species of birds and fish are found in India?
8. How many national parks and wildlife sanctuaries have been established in India?
9. Name major vegetation regions which the date palm and mahogany trees belong. Name two projects which were established to protect endangered species of wild life.
10. Name two sub-types of tropical deciduous forests. Name one area where wild asses are found. Name the national animal of India.

Short answer type question:

11. What is meant by vegetation? How much natural is the 'natural vegetation' of the India today?
12. Which factors are responsible for the distribution of plants and animals of India?
13. Explain the significance of flora and fauna in an ecosystem. How are they interrelated?
14. Why there is a need to conserve bio-diversity?
15. Why are the evergreen forests found on western slopes of the Western Ghats?
16. Describe the climatic conditions in which Thorn forests and Scrubs are found. Name the plant species found over here.
17. "The Himalayas harbour a hardy range of animals". Explain
18. Mention the main causes of threat to nature.
19. Distinguish between: Dry deciduous and moist deciduous forests

Long answer type question:

20. Why are tropical evergreen forests not commercially exploited? Give climatic conditions and distribution of these forests.
21. Name the different types of vegetation found in India and describe the vegetation of high altitudes.
22. Quite a few species of plants and animals are endangered in India. Why?
23. Why has India a rich heritage of flora and fauna?

A N S W E R K E Y

(Objective DPP 5.1)

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans	D	A	C	B	A	A	A	B	C	C	D	C	C	A	B



POPULATION



SL -06(G)

The people are important to develop the economy and society. The people make and use resources and are themselves resources with varying quality. Coal was only a piece of rock, until people were able to invent technology to obtain it and make it a 'resource'. Hence, population is the pivotal element in social studies. It is the point of reference from which all other elements are observed and from which they derive significance and meaning. Their numbers, distribution, growth and characteristics or qualities provide the basic background for understanding and appreciating all aspects of the environment. Human beings are producers and consumers of earth's resources. Therefore, it is important to know how many people are there in a country, where do they live, how and why their numbers are increasing and what are their characteristics.

Three major aspects of population are of primary concern

- (i) Population size and distribution
How many people are there and where are they located?
- (ii) Population growth and processes of population change
How has the population grown and changed through time?
- (iii) Characteristics or qualities of the population
What are their age, sex-composition literacy levels, occupational structure and health conditions?

Census : A census is an official enumeration of population done periodically? In India the first census was held in the year 1872. The first complete census however was taken in the year 1991. Since then censuses have been held regularly every tenth year. The Indian census is the most comprehensive source of demographic, social and economic data.

POPULATION SIZE AND DISTRIBUTION

(a) Indian's Population size and Distribution by Numbers:

- (i) Indian's population as on March 2001 stood at 1028 million, which account for 16.7 per cent of the world's population. These 1.02 billion people are unevenly distributed over our country's vast area of 3.28 million square km, which accounts 2.4 percent of the world's area.
- (ii) The 2001 Census data reveals that Uttar Pradesh with a population size of 166 million people is the most populous state of India. Uttar Pradesh accounts for about 16 percent of the country's population. On the other hand, the Himalayan state Sikkim has a population of just about 0.5 million and Lakshadweep has only 60 thousand people.
- (iii) Almost half of Indian's population lives in just five states. These are Uttar Pradesh, Maharashtra, Bihar, West Bengal, and Andhra Pradesh. Rajasthan, the biggest state in terms of area, has only 6.5 percent of the total population of India.

(b) "A Large population has both Economic Advantages and Disadvantages.":

A large population makes positive contribution to economic growth.

- (i) It ensures adequate supply of labor force.
- (ii) Large number of people can be trained in all kinds of skills at all levels.
- (iii) It provides a ready domestic market for all types of goods. This encourages the producers to produce on large scale.

A large population also work as a serious constraint on economic growth.

- (i) National income gets distributed among larger number of people, therefore, per capita income remains low.
- (ii) A large part of the national income gets spent on consumption. This reduces the size of savings. Thus, less capital remains available for investment.
- (iii) Rising population results in a rise in pressure on land. This adversely affects productivity in agriculture.
- (iv) Rising population makes increasing demands on infrastructure, both social and economic.

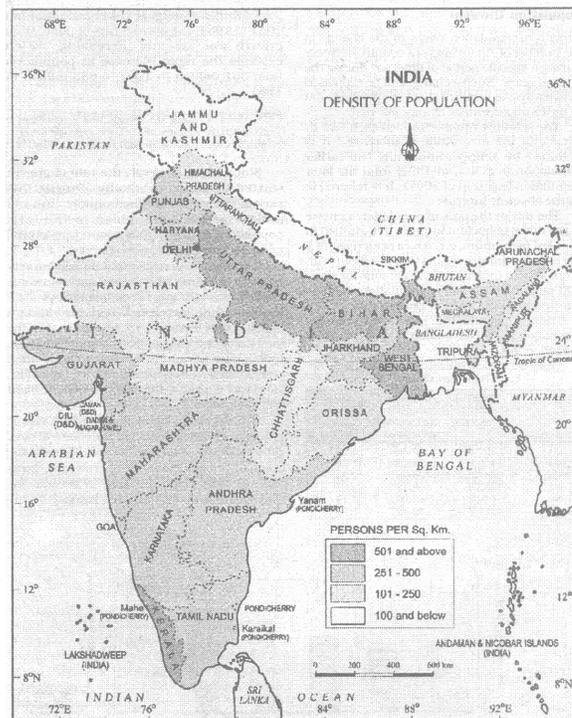
In short, a large part of the national effort goes to maintain the present standards of living. these do not result in any economic improvement. therefore, poverty and unemployment perpetuate.

(c) Indian's Population Distribution by Density

Population density is calculated as the number of persons per unit area. India is one of the most densely populated countries of the world. the population density of India in the year 2001 was 324 persons per sq. km. densities vary from 904 persons per sq. km in West Bengal to only 13 persons per sq km in Arunachal Pradesh.

$$\text{Density of population} = \frac{\text{Total population of the country}}{\text{Total land area of the country (in sq. km.)}}$$

- (i) **Low Density:** The states of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Arunachal Pradesh, Nagaland, Manipur, Tripura, Meghalaya, Rajasthan And Madhya Pradesh Have Very Low Population Density. Rugged terrain and unfavorable climatic conditions are mainly responsible for the sparse population in these areas.
- (ii) **Moderate Density:** The bulk of the peninsula blocks and Assam have moderate density of population. Distribution of population is influenced here by the rocky mature of the terrain, low to moderate rain, and shallow and less fertile soil.
- (iii) **High density :** They Northern Plains, Tamil Nadu and Kerala have high to very high density of population because of the plain terrain, rice and fertile soil, abundant rainfall and moderate climate.



Densely of Population in India