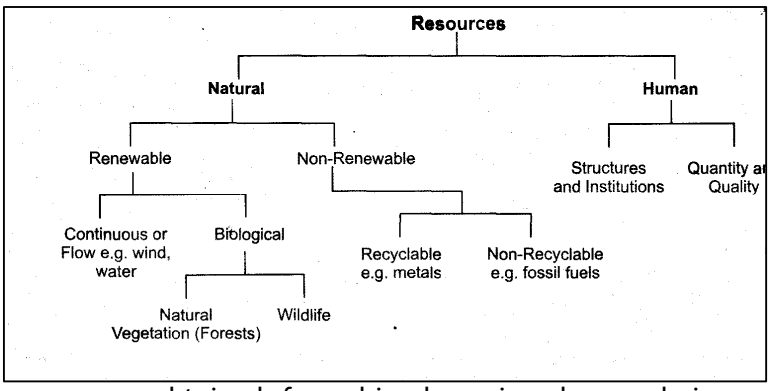
Resources: Everything in our environment that can be used to satisfy our needs which is technologically accessible, economically feasible and culturally acceptable can be termed as Resource.

Human beings themselves are essential components of resources. With technology and institutions (structures), they transform materials available nature into economically viable resources.

Types of Resources: Resources are a function of human activities. They broadly classified as natural, human and human-made resources.

Human -made resources: Resources which are made by human by modifying natural resources e.g. buildings, steel etc.



Natural Resources can be classified according to its origin, availability in nature, its purpose of use and state of development etc.

On the basis of origin

1. Biotic resources: These resources are obtained from biosphere i.e. human beings, livestock, flora and fauna etc. Coal and petroleum may be considered as biotic resources as they are formed by decaying of life forms.
2. Abiotic resources: These resources are composed of non-living things e.g., soil, rocks, metals, winds etc.

On the basis of Exhaustibility Or limitation of Use

1. Renewable resources: The resources which can be renewed or reproduced by physical, chemical or mechanical processes are known as renewable or replenishable resources e.g. solar energy, wind energy, forest, water, wildlife, etc. It can be further sub-divided into two forms:

a) Flow or continuous resource: it is a resource that can be used and replenished at the same time. It does not remain in one location and moves about because of natural actions in the physical environment. E.g. running water, solar radiation, wind and tides.

b) Biological Resource: It is a resource that is required by an organism for normal growth maintenance and reproduction. it is further divided into two types:

- Natural vegetation (forest cover and flora)
- Wildlife(fauna)

2. Non-renewable resources: The resources which were formed through long geological time period and cannot be renewed are known as non-renewable resources. E.g. minerals, metals and fossil fuels like coal, etc. These resources may further be divided into recyclable and non-recyclable. Metals can be recycled by technological application, but fossil fuels cannot be recycled and get exhausted.

On the Basis of Ownership

1. Individual resources: The resources which are owned privately by individuals are called individual resources. e.g., plantation, pasture land, farmland, water in well, pond, etc.
2. Community owned resources: The resources which are accessible to all the members of the community are known as community resources. E.g. grazing grounds, burial ground, ponds in village, public parks, etc.
3. National resources: The resources which are under the control of nation/country are known as national resources. E.g. canal, coal mines , territorial sea, (upto 12 nautical miles from the coast) railway, etc. The country's government has legal powers to acquire even private property for public welfare.

4. International resources: The resources which are owned and regulated by international institutions are called international resources e.g., open sea used for peaceful navigation, open sky for flight movement, etc. The oceanic resources beyond 200 nautical miles of Exclusive Economic Zone belong to open sea.

Exclusive Economic Zone (EEZ) is the sea zone prescribed by the United Nations Convention on the Law of Seas over which a state has special rights over the exploration and use of marine resources, including energy production. It stretches upto 200 nautical miles from the coastline.

Note India has got the right to mine manganese nodules from the bed of the Indian Ocean from that area, which lies beyond the exclusive economic zone.

On the Basis of the Status of development

1. Potential resources: The resources are found in a region in abundance, but have not been developed properly are called potential resource e.g., solar and wind energy in Gujarat and Rajasthan, vast tidal waves in the coasts of India.
2. Developed resources: The resources which are surveyed and quantified for utilisation through available technology are called developed resources e.g. coal, petroleum, etc. Availability of technology and level of accessibility decides the quality of developed resources.
3. Stock: These resources have the potential to satisfy human need, but human beings do not have the required technical knowledge to use them e.g. hydrogen and oxygen in the water can be a rich resource of energy. But technical know-how for this purpose is not available.
4. Reserves: These are specific stocks for which appropriate technological know-how is available, but exploration is not started yet. E.g. river water for hydel energy or forest is reserves but still has limited exploration.

Development of Resources

Resources are vital for human survival as well as for maintaining the quality of life. It was believed that resources are free gifts of nature, but over utilisation of resources has led to many problems like:

- Resource depletion for satisfying the greed of few individuals.
- Unequal resource distribution which created accumulation of resources in few hands. Due to which society is divided into rich and poor.
- Global ecological crisis e.g. global warming, ozone layer depletion, environmental pollution and land degradation because of indiscriminate use of resources.

A fair distribution of resources has become absolutely essential for a sustained quality of life and global peace. This can be achieved through proper planning.

Sustainable Development

Sustainable development means development should take place without damaging the environment and development in the present should not compromise with the needs of the future generation.

Resource planning is essential for sustainable existence of all life forms. Sustainable existence is a component of sustainable development.

Rio de Janeiro Earth Summit 1992

The first United Nations conference on Environment and Development (UNCED) was held in Rio de Janeiro, Brazil, in June, 1992 to formulate an agenda to promote sustainable development. More than 100 heads of states participated in it. Declaration on Global Climatic Change and Biological Diversity were signed during the summit. This summit supported the Global Forest Principles and adopted Agenda 21 for achieving Sustainable Development in the 21st century.

It is a declaration that gave guidelines to combat environmental damage, poverty and disease through global co-operation on common interests, mutual needs and shared

responsibilities.

Resource Planning in India

Resource planning involves identification and quantification available resources and planning of resource development would be consistent with overall national development plans. In a country like India, which has enormous diversity in available resources, there are some regions which are considered self-sufficient in terms of resources and there are others which have acute shortage of some vital resources. It is stated in the points below as resources are unevenly distributed.

- States like Jharkhand, Chhattisgarh and Madhya Pradesh are rich in coal and minerals, but lack technological and institutional support also suffer from land degradation they are economically backward.
- Arunachal Pradesh has abundant water resources, but lacks in infrastructure development.
- Rajasthan is well endowed with wind and solar energy, but lacks water resources.
- Some states like Punjab, Haryana have a poor resource base, but they are economically developed.
- The cold desert of Ladakh lacks natural resources although it has rich cultural heritage.

So, the various limitations and differences in resource distribution demands balanced resource planning from national to local level ensuring equitable and healthy development.

The Process of Resource Planning

The process of resource planning involves following:

1. Identification and inventory of resources across the region country. This involves surveying, mapping, qualitative and quantitative estimation and measurement of the resource.
2. Planning for resource development using appropriate technology and institutional set up.
3. Matching the resource development plans with overall development plans.

- India followed the policy of resource planning from the very first **Five Year Plan** rightly after the Independence. The availability of resources alone cannot begin the process of development, necessary technology and institutional set up are also required.

Resources and Colonisation

Rich natural resources of colonies were the main attraction for foreign invaders. India has learned from her past experience that development in general and resource development in particular does not only involve the availability of resources, but also the technology of human resources and historical experiences of the people.

Conservation of Resources

Irrational consumption and over-utilization of resources may lead to Socio-economic and environmental problems. Gandhiji voiced his concern about resource conservation when he said, "There is enough for everybody's need and not for anybody's greed". He blamed greedy and selfish individuals and the exploitative nature of modern technology as the root cause of resource depletion at the global level. He was against mass production and wanted to replace it with the masses.

Land resources: Land is a very important natural resource as it supports natural vegetation, wildlife, human life, various economic activities, transport and communication systems, etc. So, it needs to be used with care and concern as it is finite in extent. India's geographical area comprises

- 43 per cent plain land area for agriculture and industry.
- 27 per cent plateaus which is source of minerals, fossil fuels and forests.
- 30 per cent mountains which ensures perennial flow of some rivers and provides sites for tourism and ecological aspects.

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Land utilisation: In India, land resources are used for the following purpose

1. Forests
2. Land not available for cultivation
   - Barren and waste land
   - Land put to non-agricultural uses, e.g. buildings, roads, factories, etc.
3. Other uncultivated land (excluding fallow land)
   - Permanent pastures and grazing land
   - Land under miscellaneous tree crops and groves (not included in net sown area)
   - Culturable waste land (left uncultivated for more than 5 agricultural years)
4. Fallow lands
   - Current fallow (left without cultivation for one or less than one agricultural years)
   - Other than current fallow (left uncultivated for the past 1 to 5 agricultural years)
5. Net Sown Area (Area sown more than once in an - agricultural year). It is also included in gross cropped area alongwith area sown more than once in an agricultural year.

Land Use Pattern in India

The use of land is determined by the following factors

1. Physical factors: These include climate, soil type, topography, etc.
2. Human factors: These include population density, cultural, traditions, technological capability, etc.

Source Directorate of Economics and Statistics, Ministry of Agriculture, 2008-09.

Total geographical area of India is 3.28 million sq km. In India, land use data is available for only 93 per cent of total area because land use reporting of North-Eastern states except Assam and some part of Jammu and Kashmir has not been surveyed.

Between 1960-61 and 2008-09, major changes took place in Land user pattern

1. Area under forests is far less than 33 per cent, which is necessary for maintenance of the ecological balance as per the National Forest Policy of 1952.
2. The land under permanent pastures is very low and still decreasing. We will not be able to properly feed our huge cattle population in future due to this problem.
3. Most of the other than current fallows are of poor quality or cost of such cultivation is very high. These lands are cultivated once or twice in about two to three years and if these are included in the net sown area, the NSA will become 54 per cent.

Net Sown Area in Different States

The pattern of Net Sown Area varies widely between different states. It is over 80 per cent in Punjab and Haryana due to intensive agricultural facilities. It is less than 10 per cent in Arunachal Pradesh, Manipur, Mizoram and Andaman and Nicobar Islands. Continuous use of land without appropriate conservation measures had created the problem of land degradation. It has serious effect on society and environment.