

The material which is available on the earth and man has been using for his progress is called 'Resource'. It includes biotic and abiotic elements.

Development of resources

Man has been observing the elements around him since ancient times. He used to think as to how far these elements were safe for him and for his well being. In Stone age, man used stone as per his requirement. The seeds of the fruits again regulate into sprouted form and give fruit. It took years for the man to understand this. This led to the beginning of agriculture. Thus the man started using various material around him for his well being. Thus the resources developed gradually. With the development of transportation man started using resources of different regions comfortably.

With the development in the scientific inventions and technology, the material on the surface of the earth is now used in different fields.

Classification of resources

Ownership	Renewable	Distribution	Use
<ul style="list-style-type: none"> ● Family resource (personal) ● National resources ● Global 	<ul style="list-style-type: none"> ● Renewable resource ● Non-renewable resource ● Rare resource ● Unique resource 	<ul style="list-style-type: none"> ● Permanent resource ● Generally available resource ● Possible resource ● Unknown resource 	<ul style="list-style-type: none"> ● Unused resources ● Unusable resources

(1) **According to ownership :** There can be individual or family owned resources, national resources and global resources, e.g. ownership of a farm by farmer, national ownership on mining centres and global ownership on oceanic water bodies - Antarctica etc.

(2) **According to renewability :**

- The resource which is used once but can be regained in short times is called 'renewable' resource, e.g. natural manure, forests where trees can be grown through tree plantation etc.
- Non-renewable resources are those which once used cannot be recreated in near future, such as mineral coal, mineral oil, natural gas etc.
- Solar energy, oceans and environment are permanent natural resources. These resources never exhaust in spite of its repeated use.
- Some rare resources are those which are available at few places only, such as coal, mineral oil, copper, tin, gold, uranium, thorium etc.
- The resource which is available only at one or two places in the world is known as unique resource. Crayolite is available only in Greenland.

(3) According to distribution :

- In the atmosphere gases like nitrogen, oxygen etc. are always available, hence these are permanent resources.
- land, water, pastureland are easily available resources.
- Those resources which are likely to be used in near future are called probable resources, e.g. there is a great possibility for generation of hydroelectricity in the mountainous regions of Uttarakhand, Himachal Pradesh in North India.
- The matter of which the use is not known can be called as unknown resources. The inhabitants of the delta region of river Amazon knew about the rubber tree but did not know its use. So rubber can be said to be an unknown resource for them at that time. Today, the same rubber is used to manufacture the tyres for the means of transportation.

(4) According to use :

● **Unused resources** : Till the European people were not spread up to North and South American continents, the resources on these continents were 'unused resources'. Even today, in the absence of capital investment, technology and skill, some countries do have natural resources but they have not been able to utilise them.

● **Resources in unusable conditions** : If some resources cannot be used according to present technology, these are known as resources in unusable conditions; e.g. those resources which now cannot be mined either because of its location or less quantity.

Now we shall study major resources.

Water Resources : Water is very important requirement of human being. There are three sources to obtain water : (1) Rain water (2) Surface water and (3) Ground water.

Rain water : The earth receives water through rain and snowfall. Guyana in Hawaii Islands and Meghalaya in India receive maximum rain, while Chile, Libya, Sudan and some parts of Namibia get scanty rainfall. In the North-East and in coastal area of Western Ghats there is more rainfall than the normal. There are many regions in the world which depend on rain water for their normal agriculture.

Surface water : The rain water flows on the surface in the form of streams and rivers. Rain water is stored in ponds and lakes. The water which is stored on the surface of the earth is called 'Surface water'. The volume of surface water is more in those area where the rainfall is also more. Surface water plays an important role in maintaining economy and ecosystem.

Maximum volume of surface water is contained in the Great lakes along the border of U.S.A. and Canada. These great lakes include Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario. The longest river in the world River Nile flows through Egypt and other countries. This river is a lifeline for these arid regions.

Ganga, Satluj, Brahmaputra, Narmada, Godavari, Krishna, Mahanadi etc. are large rivers of India. These major river and their tributaries are very important. The surface water in Tehri dam

on Ganga river, Bhakhra-Nangal dam on Satluj river, Hirakud dam on Mahanadi, Sardar Sarovar Yojana on Narmada river and in Nagarjun Sagar dam on Krishna river hold much importance in the economic and cultural development of India.

Ground water : Some portion of surface water from river, lakes, seas etc. gradually accumulates over the non-porous strata of rocks, penetrates down the surface through joints, holes, creacks, fissures, and is accumulated. It is known as 'Ground water'. Wherever such available surface water is insufficient wells and tubewells are prepared to use ground water. Most of the irrigation in Gujarat is done through tube wells.

Now we shall know about problems associated with water resources.

Problems related to water resources and remedy

Water Pollution



9.1 Discharge of polluted water in a water body



9.2 Litter accumulated at the sea shore

The pollution of surface water and ground water is a global problem. Use of Insecticides is very widespread for getting more agricultural production. These insecticides merge with the surface water of rainfall and pollutes the water of rivers and lakes. This way the surface water gets polluted. Due to some religious beliefs, dead bodies are flowed in rivers. By offering flower and other things the river water is polluted. This is one of the reasons for the pollution in Ganga river. Due to the tradition to leave thousands of lighted lamps offered at the time of arti on the river bank at Haridwar, the river water is polluted. Most of the cities grow along the river bank. The domestic polluted water and industrial affluent released in the river, also pollutes the water bodies. With excessive use of ground water, its level has gone down too much. It has resulted in the increase in the salt content within them. Due to the use of such saline water diseases have increased. The soil becomes more saline and non-fertile due to the excessive use of such saline water. At some places, the polluted chemical water is added to the bore water which results in to polluted ground water pollution. The use of such polluted ground water may prove to be very harmful.

Remedy

Serious results have been noted about the problems related to water resources. The following remedies can be suggested : (1) Encourage organic farming and discontinue the use of insecticides gradually. Non-injurious matter and insects available in the nature should be used in place of harmful chemicals used as insecticides. (2) In India, the rivers are considered to be the mother; such an understanding should be developed and a new tradition should be started to maintain the river free of

pollution. (3) The urban polluted water and the industrial effluents should be treated properly before releasing and it should be made least harmful. (4) The rainwater should be stored and should be used in agriculture to reduce the use of ground water; and agriculture may be practiced with modern technology to reduce the use of water. (5) Release of polluted water in the bore should be treated as criminal offence.

Land resource :

Since ancient times man has been utilising land in various ways. Its maximum use was in the field of agriculture. The land which is used for agriculture is called 'soil' and when it is used for other purpose it is called 'land'. Man uses land for making homes, transport routes, industries, gardens, reservoirs etc. Man treats the wasteland and uncultivable land and transforms it into cultivable land. Thus, man uses land in many ways.

Agriculture : Man has been using land for agriculture since ancient times. With the beginning of agriculture, the settled life of man began. The progress in agriculture is an important factor in the economic and social change of man. Agriculture was practised over the fertile regions in Egypt and India since centuries. There are references which convey that systematic cultivation was carried out in India during Vedic period.

With the passing of time and the progress in civilization, a method of permanent agriculture developed in the area where the soil was fertile and had favourable climate. It spread in the world faster. This resulted in the development of rural settlements.

Industrial revolution began in Europe in the eighteenth century. It affected the countries of Asia, America and Africa. There occurred a revolution in the field of agriculture in European colonies. It led to specialisation wherein wheat, paddy, sugarcane, cotton, tea, coffee, rubber etc. became major crops. With increase in the demand for these crops, commercial and plantation agriculture developed. Different crops were exchanged globally. Maize was brought from Central America to many countries of the world. Potatoes went to European countries from Andes. Portuguese people brought tobacco to India.

There has been an overall change in the agriculture in the present day of modern technology. In modern day, agriculture is practiced through drip irrigation, sprinklers, micro irrigation organic farming etc. Generally the agriculture follows the seasons, but sometimes green houses are created and favourable conditions are formed to take crops.

Problems related to land resources

Decrease in the cultivable land

There has been a sharp decrease in the cultivable land due to urbanization, industrialization, roads, railways etc.

Salinity due to over irrigation

The means of irrigation have increases so crops are taken during all the three seasons. This results in more irrigation so the saline contents which are in the lower strata come up towards the surface as its density is reduced. This has increased the salinity of the soil.

Soil erosion : The upper layer of the soil has become saline and so has reduced its water bearing capacity. As a result, heavy rain causes more erosion. The forest cover in the upper valley region has reduced so the water flow in the basin area becomes faster causing flood like situation in the lower valley region. This also causes soil erosion.

Deforestation : The forest covers are decreasing due to urbanization, industrialization, roads and railways, airports in forest area, encouragement to agriculture, pollution etc.

Jhoom cultivation : Today, agricultural land is obtained by deforestation in some areas. Such cultivation is practiced in north-eastern regions of India. It is called 'Jhoom' cultivation. When the land loses its fertility, trees over another area are cut off and cultivation is done.

Intensive cultivation : Crops of all the three seasons are taken where there are facilities of irrigation for cultivation, capital investment and modern mechanization. This also reduces the fertility of the soil.

Use of artificial fertilizers and insecticides

Artificial fertilizers like urea, ammonium phosphate, DAP etc. are used to increase the yield. In the long run soil fertility decreases. Land becomes polluted with the mixing of pesticides in it.

Remedy :

- Land may be reclaimed to stop the decrease in cultivable land, the wasteland may be reformed and be used.
- Irrigation is being modernised today. Drip irrigation, sprinklers and micro-irrigation systems have been implemented. The salinity of the soil can be reduced by using the water for irrigation through these methods.
- Main reason for the soil erosion is the forceful flow of the water. Forestation and check dam systems are the best remedy for reducing the force of the water.
- Forest areas are decreasing, so proper steps should be taken to curb the Jhoom cultivation. Plantation cultivation should be encouraged in place of Jhoom cultivation.
- Use of artificial fertilizers and pesticides degrades the soil. So cow's urine, bio-pesticides, natural waste and animal dung should be used as manure.

Mineral resources : Under extreme heat and pressure, biotic and abiotic matter is transformed and attains a specific chemical composition. Such a matter is called mineral.

Classification of minerals

Minerals can be classified into three categories as metallic, non-metallic and energy resources.

1. **Metallic minerals :** Those minerals which are conductive of heat and electricity are called 'metallic' minerals, such as iron ore, copper, gold, lead, zinc, tin, mercury, platinum etc.
2. **Non-metallic minerals :** Those minerals which are non-conductive of heat and electricity are called non-metallic minerals, such as diamond, gemstones, sulphur, mica, pyrites, phosphates, potash, fluorspar, dolomite, lime stone, graphite, kaolin, rock phosphate etc.
3. **Energy resources :** Those minerals which can provide tremendous energy are called energy resources. Coal, natural gas, mineral oil, uranium, thorium, radium etc. are energy resources.

Minerals are not available in pure form in the interior of the earth. There are impurities within them. That is why these are known as ores, e.g. iron ore. Minerals are obtained from the rocks in compound form. After refining the ores, minerals can be obtained in pure form.

Problems related to mineral resources and their remedy

The formation of minerals is a result of the process of crores of years. Minerals procured from

the mines are usable after performing various processes. These minerals do not attain their original form after their use. After mining in the mining areas, large valleys and pits are formed and the ecosystem of the area also changes.

We cannot revive the minerals in its original form, but by recycling them, the minerals can be used again and again to reduce the mining activity in the mines. Large valleys are formed in the mining area. Here, the land should be levelled as much as possible through effective implementation of laws. Mining should be so adjusted that the drainage pattern is less affected, moreover, forestation should be made compulsory.

Problems related to the use of mineral oil and natural gas and their remedy

Use of mineral oil and natural gas is extensive. So while using them various gases like carbon dioxide, sulphur dioxide, nitrogen dioxide, carbon monoxide etc. pollute the atmosphere. Due to oil leakage in oceans during its transportation and cleaning the large oil tankers in the ocean, a thick layer of oil is formed on the sea surface so the marine vegetation (planktons) are destroyed. The aquatic animals which come to the surface to breathe either die or there is a serious effect on their health. In continental shelf area, the sunrays cannot penetrate deep due to the thick layer of mineral oil near the surface. So the living organisms are affected very heavily. Natural gas comes out suddenly and when it catches fire there is heavy damage to the surrounding living organisms.

Mineral oil and natural gas are conventional sources of energy. The requirement for energy increases day by day. The sources of mineral oil and natural gas are limited. Under the conditions, the dependence on this energy source can be reduced by using unconventional energy resources more extensively.

Mineral coal is used extensively in thermal power stations and in the blast furnaces. During the use of coal, a large proportion of carbon dioxide, carbon monoxide are generated which pollute the atmosphere. These gases are harmful to living organisms hence its use should be curbed, and such a technique should be developed that the harmful gases are destroyed after their use. Solar energy and other non-conventional energy resources should be used in place of coal.

Oceanic resources

Ocean holds an important place in human life directly or indirectly. Today, there is more prosperity in oceans than on the earth. The deficit of resources on land can be balanced by the oceans.

The biotic and abiotic resources associated with the ocean water and their floor is called oceanic resources. It includes the sea water, aquatic animals, vegetation, ocean deposits, other biotic and abiotic matter and tidal energy.

Classification of ocean resources

(1) Oceanic biotic resources : Prosperity and the total number of aquatic animals depend on the availability of sunshine and active stage of life cycle. These biotic resources include planktons, diatom, sea grass, sea flower, various fishes, jinga (prawns/lobsters), snail, star fish, crabs, corals and various shells.

(2) Oceanic mineral resources : Various metallic and non-metallic minerals are obtained from the sea water. There is a large reserve of valuable chemicals and minerals at the ocean floor and in the water. The minerals dissolved in the sea water include salt, bromine, magnesium, gold, zinc, uranium, thorium etc. Other minerals at the bottom of the sea which are available in a mixed form are magnetite, monazite, sulphur, diamonds etc.

(3) Energy resources :

(1) Conventional sources of energy :

There are many possible fields at the ocean floor from where mineral oil and natural gas may be available. Mineral oil and natural gas are obtained from the Gulf of Mexico, North Sea, North Alaska, Mexico, Australia, Taiwan and from the oil fields of coastal Japan. Mineral oil and natural gas are procured by drilling the ocean floor from Bombay High field near Mumbai in India in Arabian Sea.



9.3 Tidal Energy -Generator

(2) Non-conventional resources of energy : Tidal energy can be obtained by using the huge tidal waves along the sea coast. Tidal waves of about 15 metres high are caused in the Gulf of Fundy in Nova Scotia of Canada. Electricity is produced using this energy, putting generators and installing fans in the shallow sea using the flow of ocean water.

Problems of oceanic resources and remedy

There are innumerable resources in the ocean. Man has been using these resources. Because of uncontrolled fishery using technology, this resource is vanishing very fast. It has also affected badly the other oceanic resources. Due to excessive fishery, the proportion of fish has decreased considerably in the vast fishing centre along the Newfoundland coast of Canada.

Due to the release of polluted urban waters and industrial effluents from the cities along the continental shelf of seas, the aquatic life is getting extinct fast. With the release of the polluted water from the mineral oil refinery located near the sea coast into the sea water the corals are being destroyed.

Ocean resources are very important. To save these resources, the industrial effluent should be properly treated before it is released into the oceans. To save the bio-diversity of the oceans, such area should be declared as Marine National Parks.

Animal resources : Animal rearing is practiced mostly for getting milk, meat, wool etc. besides, animals are used in agriculture and as a mean of transportation.

Dairy industry : Milk and milk preparations are used maximum in the meals. As regards dairy industry cow is the main animal and is reared in Europe, erstwhile Soviet Union, North America, New Zealand, Argentina, eastern Australia etc. The animal husbandry has been encouraged by the Amul Dairy of Anand.

The dairy industry is more developed commercially in U.S.A., erstwhile soviet Union, Canada, France, Netherland, Denmark, Belgium, Argentina etc.

Meat industry : The meat industry is more developed in the countries of frigid zone. There is more demand for meat in European countries, erstwhile Soviet Union, U.S.A., China, Canada, Brazil, Argentina etc., as a result this industry has developed in these countries. For the production of meat, animals like cow, boar (wild pig), sheep and goats are reared. This industry has developed scientifically in U.S.A., South America and in Australia.

Production of wool

Maximum number of sheep are found in Australia and erstwhile Soviet Union. Australia leads the world in the production of wool. The wool of Marino sheep is of best type. In India, the woollen industry producing pullovers, blankets, shawl, etc. is located at Amritsar, Ludhiana, Srinagar, Varanasi, Agra etc.

Problems

The areas and the quality of pastureland necessary for animal husbandry are decreasing day by day due to industrialization and urbanization. In animal rearing activity, the value of the animals, fodder and veterinary services have become very costly while the animal products bring low income. Modernization is not developed upto a required level. Animal rearers are not in a position to invest more commercially and earn more.

Remedy

- Government should provide encouragement to animal rearers.
- Special areas should be announced for animal grazing.
- Financial help should be provided for the construction of stables and mangers for purchasing and rearing animals.
- The industries based on animal resources should be given special concession in taxes or subsidised loans should be given.

Human resources

Man is at the centre in Resource Geography, because any matter in the universe cannot become a resource till it is utilised by man for fulfilling his requirements. In the universe, only man utilises the physical and cultural environment to fulfil his requirements. Man only makes the use of land, water, soil, mineral, agriculture, animal husbandry, industry, trade, transportation etc. possible, and develops the social organization, political management and cultural progress. For all these, the use of human power, intellectual power and technology are very important.

In the study of human resources, distribution of population, physical and cultural factors affecting the distribution of population, population density, sex ratio, age groups, occupational groups, language groups, religious groups etc. are studied.

There are many problems of human resources wherein the more or lesser density of population is a problem. Resources are in short supply or there is a shortage of them in the regions of over population. Contrary to that, the resources are not used sufficiently because the working population is less in the regions of less population.

The human resources cannot be distributed as per the natural resources. So poverty, starvation, pollution etc. have become acute problems.

The biggest problem of human resources is the population explosion. Natural resources are used more and more. Efforts should be made to control the population. A global remedy can be achieved when an understanding is developed.

Exercise

1. Answer the following questions in details :

- (1) Explain 'water pollution' and suggest the remedy.
- (2) State the problems pertaining to the oceanic resources and suggest remedy.
- (3) Explain in detail the land resources.
- (4) Discuss in detail the human resources.

2. Give to the point answers for the following :

- (1) Mention the types of resources from distribution point of view.
- (2) Write a short note on Oceanic mineral resources.
- (3) Classify the minerals.

3. Answer the following questions in brief :

- (1) What is meant by a resource ?
- (2) Which type of mineral is graphite ?
- (3) What do you mean by ground water ?
- (4) Which project is planned on river Narmada?

4. Answer the following in one-two sentences :

- (1) Define "rare mineral".
- (2) What type of mineral is graphite ?
- (3) What is meant by ground water ?
- (4) Which project is planned over Narmada river ?

5. Select the correct option from the options given for the questions and write the answer :

- (1) With whom rests the ownership of Antarctica ?
(a) Family (b) National (c) Global (d) Private
- (2) Which type of resource is coal ?
(a) Conventional (b) Non-conventional (c) Renewable (d) Rare
- (3) Who is at the centre of Resource Geography ?
(a) Natural resource (b) Technology (c) Man (d) Animals
- (4) In which city is Amul Dairy located ?
(a) Mahesana (b) Palanpur (c) Anand (d) Himatnagar

Activity

- Collect specimens of minerals
- Make a list of minerals of daily use.
- Arrange a discussion on 'if there were no minerals'.
- Take a visit to a fishery cold storage during annual tour of the school.
- With the help of your guardian or the teacher, find out more about the topics covered in this lesson through the following website.

www.gmdcltd.com