**Resource and Development**

* Everything available in our environment which can be used to satisfy our needs, provided, it is technologically accessible, economically feasible and culturally acceptable can be termed as ‘Resource’
* On the basis of **exhaustibility** – **renewable** and **non-renewable**
* On the basis of ownership, the resources are classified into: **individual**, **community, national and international**
* On the basis of origin – **biotic and abiotic**
* On the basis of status of development **–potential, developed stock and reserves**
* **Biotic Resources***:* These are obtained from biosphere and have life.
* Examples for biotic resources are **human beings, flora and fauna, fisheries, livestock**
* **Abiotic Resources***:* All those things which are composed of non-living things are called abiotic resources.
* Example for **abiotic** resources are **rocks and metals**
* The resources which can be renewed or r**eproduced by physical, chemical or mechanical processes** are known as **renewable** or **replenishable** resources.
* Examples for **renewable** or **replenishable** resources: **solar and wind energy, water, forests** and **wildlife**
* Renewable resource may further be divided into **continuous or flow**
* Non-Renewable resource occur over a very long geological time.
* **Minerals, metals and fossil fuels** such as **petroleum** are examples of Non-Renewable resource.
* **Non-Renewable resources** take millions of years in their formation.
* Non-Renewable resources like **metals** are recyclable
* Non-Renewable resources like **fossil** **fuels** cannot be recycled and get exhausted with their use.
* Individual Resources:These are also owned privately by individuals.
* Examples for Individual Resources: Urban people own **plots**, **houses** and other property. **Plantation**, **pasture lands, ponds, water in wells** etc. are some of the examples of resources ownership by individuals
* Community Owned Resources*:* There are resources which are accessible to all the members of the community.
* Examples for Community Owned Resources*:* **Village commons** (**grazing grounds, burial grounds village, ponds**, etc.) **public parks, picnic spots, playgrounds** in urban areas
* National Resources*:* All the resources in a nation belong to the nation. The country has legal powers to acquire even private property for public good. **Roads, canals, railways**. All the **minerals, water resources, forests, wildlife, land** within the political boundaries and **oceanic area up to 12 nautical miles (22.2 km)** from the coast termed as territorial water and resources therein belong to the nation.
* **12 nautical miles** are equal to **22.2 km**
* There are international institutions which regulate some resources. The oceanic resources beyond **200 nautical miles** of the **Exclusive Economic Zone**belong to open ocean and no individual country can utilise these without the concurrence of international institutions.
* 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**
* **Potential Resources***:* Resources which are found in a region, but have not been utilised. For example, the western parts of India particularly **Rajasthan** and **Gujarat** have enormous potential for the development of **wind** and **solar** energy
* **Developed Resources***:* Resources which are surveyed and their quality and quantity have been determined for utilisation
* **Stock***:* Materials in the environment which have the potential to satisfy human needs but human beings do not have the appropriate technology to access these
* **Example** for **Stock Resource**: Water is a compound of two gases; hydrogen and oxygen. **Hydrogen** can be used as a rich source of energy. But we do not have advanced technical ‘know-how’ to use it for this purpose. Hence, it can be considered as stock
* **Reserves** are the subset of the **stock**, which can be put into use with the help of existing technical ‘know-how’ but their use has not been started.
* **River water** can be used for generating hydroelectric power but presently, it is being utilised only to a limited extent. Thus, the **water in the dams, forests** etc. is a **reserve** which can be used in the future.
* **Indiscriminate use of resources by human beings** led to the following major problems.

1. **Depletion of resources** for satisfying the greed of a few individuals.
2. **Accumulation of resources in few hands**, which, in turn, divided the society into two segments i.e. haves and have nots or rich and poor.

* Examples of the problems/ consequences of Indiscriminate exploitation of resources: global ecological crises such as, global warming, ozone layer depletion, environmental pollution and land degradation.
* An equitable distribution of resources has become essential for a sustained quality of life and global peace
* **Resource planning** is essential for **sustainable existence** of all forms of life.
* **Sustainable existence** is a component of **sustainable development**.
* **Sustainable economic development** means ‘development should take place without damaging the environment, and development in the present should not compromise with the needs of the future generations
* **First International Earth Summit** in June **1992**, in **Rio de Janeiro in Brazil**
* International Earth Summit was convened for addressing **urgent problems of environmental protection and socioeconomic development** at the global level
* International Earth Summit the world leaders signed the **Declaration on Global Climatic Change and Biological Diversity.**
* The Rio Convention endorsed the global Forest Principles and adopted **Agenda 21** for achieving Sustainable Development in the 21st century
* Agenda 21 is the declaration signed by world leaders in 1992 **at the United Nations Conference on Environment and Development (UNCED),** which took place at Rio de Janeiro, Brazil
* International Earth Summit is also known as **United Nations Conference on Environment and Development (UNCED)**
* **Agenda 21** aims at achieving global sustainable development. It is an agenda to combat environmental damage, poverty, disease through global co-operation on common interests, mutual needs and shared responsibilities.
* One major objective of the Agenda 21 is that every local government should draw its own **local Agenda 21**
* **Planning** is the widely accepted strategy for judicious use of resources
* Resource Planning has importance in a country like India, which has enormous diversity in the availability of resources
* The states of **Jharkhand, Chhattisgarh and Madhya Pradesh** are rich in **minerals** and **coal deposits**
* **Arunachal Pradesh** has abundance of **water resources** but lacks in infrastructural development
* The state of **Rajasthan** is very well endowed with **solar** and **wind energy** but lacks in water resources
* The cold desert of **Ladakh** is relatively **isolated** from the rest of the country
* **Ladakh** is located in **Jammu & Kashmir**
* Resource planning involves: (i) identification and inventory of resources across the regions of the country. This involves surveying, mapping and qualitative and quantitative estimation and measurement of the resources. (ii) Evolving a planning structure endowed with appropriate technology, skill and institutional set up for implementing resource development plans. (iii) Matching the resource development plans with overall national development plans.
* India has made concerted efforts for achieving the goals of resource planning right from the **First Five Year Plan**
* Resources can contribute to development only when they are accompanied by appropriate **technological development** and **institutional changes**
* **Resource conservation** at various levels is important for avoiding irrational consumption and over-utilisation of resources
* “There is enough for **everybody’s need** and not for **anybody’s greed**” **Gandhiji** about Resource conservation
* According to **Gandhiji**, Greedy and **selfish individuals** and **exploitative nature of modern technology** as the root cause for resource depletion at the global level.
* Gandhiji was against **mass production** and wanted to replace it with the production by the masses
* **Club of Rome** advocated resource conservation for the first time in a more systematic way in **1968**.
* **Small is Beautiful** is a book written by **Schumacher** in **1974**
* **In his book Small is Beautiful, published in 1974,** Schumacher presented the **Gandhian** philosophy of Resource Conservation
* **Brundtland Commission Report** was published in **1987**
* **Brundtland Commission Report, 1987** was related to **resource conservation at the global level**
* **Brundtland Commission Report, 1987** introduced the concept of ‘**Sustainable Development**’ advocated it as a means for resource conservation
* **Brundtland Commission Report**, 1987 was subsequently published in a book entitled **Our Common Future**
* About **43** per cent of the land area in India is **plain**, which provides facilities for **agriculture** and **industry**.
* **Mountains** account for **30** per cent of the total surface area of the country and ensure perennial flow of some rivers, provide facilities for tourism and ecological aspects.
* About **27** per cent of the area of the country is the **plateau region**. It possesses rich reserves of minerals, fossil fuels and forests.
* **Fallow lands** are the lands left without cultivation for a specific period
* **Current fallow lands** are left without cultivation for **one or less than one agricultural year**
* **Other than current fallow**-is the land left uncultivated for the past **1 to 5 agricultural years**
* Area sown **more than once in an agricultural year plus net sown area** is

known as **gross cropped area**.

* Physical factors that determine the use of land are: **topography, climate, soil types**
* Human factors that determine the use of land are : **population density, technological capability and culture and traditions**
* Total **geographical** area of India is **3.28 million sq km**
* **Land use data** of the country is available only for **93 per cent** of the total geographical area
* Reasons for availability of only 93% of land use data are: (1) Reporting for most of the north-east states except Assam has not been done fully (2) Some areas of Jammu and Kashmir occupied by Pakistan and China have also not been surveyed
* NSA stands for **Net Sown Area**
* The states with **highest Net Sown Area** in the country are: **Punjab** and **Haryana** (80%)
* The states with more than **80%** Net Sown Area in the country are: Punjab and Haryana
* The states with **lowest Net Sown Area** in the country are: **Arunachal Pradesh, Mizoram, Manipur** and **Andaman Nicobar Islands** (10%)
* The states with less than **10%** Net Sown Area in the country are : Arunachal Pradesh, Mizoram, Manipur and Andaman Nicobar Islands
* As per the **National Forest Policy, 1952** the **desired forest area** in the country is **33%** of geographical area,
* **National Forest Policy** of India was announced in **1952**
* Human activities that have contributed significantly in land degradation are **deforestation, over grazing, mining** and **quarrying**
* In states like **Jharkhand, Chhattisgarh, Madhya Pradesh and Odisha** **deforestation** due to mining have caused severe **land degradation**
* In states like **Gujarat, Rajasthan, Madhya Pradesh** and **Maharashtra** **overgrazing** is one of the main reasons for **land degradation**.
* In the states of **Punjab, Haryana, Western Uttar Pradesh**, **over irrigation** is responsible for **land degradation** due to water logging leading to increase in salinity and alkalinity in the soil.
* Planting of **shelter belts** of plants, control on **over grazing**, stabilisation of sand dunes by growing **thorny bushes** are some of the methods to check **land** **degradation** in **arid areas**.
* Proper management of **waste lands, control of mining activities, proper discharge** and **disposal of industrial effluents** and **wastes after treatment** can reduce land and wate degradation in industrial and suburban areas
* **Soil** is the **most important renewable natural resource**
* Relief, parent rock or bed rock, climate, vegetation and other forms of life and time are important factors in the formation of soil.
* Various forces of nature such as change in temperature, actions of running water, wind and glaciers, activities of decomposers etc. contribute to the formation of soil
* The **most widely** spread and important soil in India is **Alluvial Soil**
* The entire **northern plains** are made of A**lluvial soil**
* The alluvial soil in the northern plains is deposited by three important **Himalayan river systems**– the **Indus**, the **Ganga** and the **Brahmaputra**.
* Alluvial soil in the eastern coastal plains are found in the deltas of the **Mahanadi, the Godavari, the Krishna and the Kaveri rivers**.
* Mahanadi, the Godavari, the Krishna and the Kaveri rivers are responsible for the Alluvial Soil formation in the eastern coastal plains
* Indus, the Ganga and the Brahmaputra rivers are responsible for the Alluvial Soil formation in the northern coastal plains
* Examples for piedmont plains are: **Duars, Chos and Terai**. (**foothills of the eastern Himalayas )**
* According to their age, the alluvial soils can be classified as **old alluvial** and **new alluvial**
* The **old alluvial** soil is also known as **Bangar**
* The **new alluvial** soil is also known as **Khadar**
* The **bangar** soil has higher concentration of ***kanker***nodules than the Khadar
* **Khadar** soil has more fine particles and is more fertile than the bangar
* Alluvial soils as a whole are very fertile.
* **Alluvial soils** contain adequate proportion of potash, phosphoric acid and lime which are ideal for the growth of **sugarcane, paddy, wheat and other cereal and pulse crops**.
* Due to its high fertility, regions of alluvial soils are intensively cultivated and densely populated
* **Black soil** is also known as ***regur* soils** *or* ***black cotton soil***
* **Black soil** is ideal for growing **cotton**
* The important factors for the formation of black soil are: climatic condition along with the parent rock material
* Black soil is found in **Deccan trap** (*Basalt*) region spread over **northwest Deccan plateau**
* Black soil is made up of **lava flows**
* Black soil cover the plateaus of **Maharashtra, Saurashtra, Malwa, Madhya Pradesh and Chhattisgarh** and extend in the south east direction along the **Godavari and the Krishna valleys**.
* The black soils are made up of extremely fine i.e. **clayey material**.
* **Black soils** are well-known for their capacity to **hold moisture**
* Black soils are rich in soil nutrients, such as **calcium carbonate, magnesium, potash and lime**.
* Black soils are generally **poor** in **phosphoric** contents
* Black soils develop deep cracks during hot weather, which helps in the proper **aeration of the soil**.
* Black soils are **sticky** when wet and difficult to work on unless tilled immediately after the first shower or during the pre-monsoon period.
* Red soil develops on crystalline igneous rocks in areas of low rainfall in the eastern and southern parts of the Deccan plateau.
* **Red soils and Yellow** are also found in parts of **Odisha, Chhattisgarh, southern parts of the middle Ganga plain** and along the piedmont zone of the Western Ghats.
* Red and Yellow soils develop a **reddish colour** due to **diffusion of iron** in crystalline and metamorphic rocks It looks yellow when it occurs in a hydrated form.
* **Laterite** has been derived from the Latin word ‘later’ which means **brick**
* The laterite soil develops under tropical and subtropical climate with alternate wet and dry season
* **Laterite soil** is the result of **intense leaching** due to heavy rain
* Lateritic soils are mostly deep to very deep, acidic (pH<6.0)
* **Laterite soil** are generally **deficient in plant nutrients**
* **Laterite soil** occur mostly in **Southern states, Western Ghats region of Maharashtra, Odisha, some parts of West Bengal** and **North-east regions**
* **Laterite soil** is very useful for growing **tea and coffee**
* **Red laterite soils** in Tamil Nadu, Andhra Pradesh and Kerala are more suitable for crops like **cashew nut**
* **Arid soils** range from **red to brown in colour**.
* Arid soils are generally sandy in texture and saline in nature
* In some areas the salt content of Arid soils is very high and common salt is obtained by evaporating the water
* **Arid soils** are found in **western Rajasthan**
* The denudation of the soil cover and subsequent washing down is described as **soil erosion**.
* The running water cuts through the clayey soils and makes deep channels as **gullies**. The land becomes unfit for cultivation and is known as **bad land**. In the **Chambal basin** such lands are called **ravines** Sometimes water flows as a sheet over large areas down a slope. In such cases the **top soil** is washed away. This is known as **sheet erosion.** Wind blows loose soil off flat or sloping land known as **wind erosion.** Soil erosion is also caused due to defective methods of farming.
* Ploughing along the contour lines can decelerate the flow of water down the slopes.This is called **contour ploughing**.
* Western and central Himalayas have well developed **terrace farming**.
* Large fields can be divided into **strips**. Strips of grass are left to grow between the crops. This breaks up the force of the wind. This method is known as **strip cropping**.
* Planting lines of trees to create shelter also works in a similar way. Rows of such trees are called **shelter belts**. shelter belts have contributed significantly to the stabilisation of sand dunes and in stabilising the desert in western India