

TOPIC: MAN AND HIS NATURAL RESOURCES

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By

MISS M. O. ELEMBA
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Objectives

After studying this chapter it is expected that the students should be able to:

- Define and classify natural resources.
- Describe the types of food man needs.
- Assess the various conservation methods
- Discuss sources of food for man

Natural Resources

What is a resource?

- ❖ Any material which is part of earth and satisfies human need and adds value is called resource.
- ❖ Materials occurring in the environment thus are nothing more than 'neutral matter'
- ❖ until people recognize their presence, attach great importance to them, and develop means to capitalize on them, then the natural materials fulfil a function.
- ❖ **Natural resources** are all that exists without the actions of humankind.
- ❖ They are materials provided naturally by the Earth, that humans can use to make more complex (human-made) products

- Human is a resource because developing his skill, he can develop other resource by adding value to the physical material.
- Man's existence is sustained through the utilization of these natural resources found in his natural environment; for instance:
 - The sun supplies him solar energy and light
 - The plants provide him oxygen and energy through foods of various kinds.
 - From the foods, he derives energy which enables him function physically and biologically to reproduce the cells and all the basic organs of the body.

- From natural resources, he gets energy and other economic resources including the things he needs for technological construction — shelter, road, bridges, electrical installations, communication and all types of industrial plants, equipment, spare parts, transportation equipment, etc.
- It is important to know that the process of interaction and the necessity of survival has forced man to learn to manipulate natural factors and forces to his benefit.
- Man has thus learnt the science and practice of agriculture and industry, and created massive cultural, social economic, military and political structures and institutions. He has, thus, created the modern complex society. In addition, he now reaches to other distant planets and maintains nonvisible communication across continents, lands, oceans and space.

Table 1: Examples of natural resources and the products and services derived from them by man

Natural resources	Products or services
Air	Wind energy, tires
Animals	Foods(milk, cheese, steak, bacon) and clothing (wool sweaters, silk shirts, leather belts)
Coal	Electricity
Minerals	Coins, wire, steel, aluminum cans, jewelry
Natural gas	Electricity, heating(cooking)
Oil	Electricity, fuel for cars and airplanes, plastic
Plants	Wood, paper, cotton clothing, fruits, vegetables
Sunlight	Solar power, photosynthesis
Water	Hydroelectric energy, drinking, cleaning.

Classification of man's needs for natural resources

Primary needs

- Man's primary needs are those needs man requires for existence.
- For example:
 - Internal energy in the form of food
 - External energy in the form of adequate clothing, heat for cooking
 - Shelter
 - Water for drinking and cooking
 - Air with the required degree of oxygen

BASIC NEEDS OF HUMANS

Human have
basic needs



Water



Shelter



Food



Air

Secondary needs

- Secondary needs of man are those needs that have arisen due to man's desires to subdue nature to his satisfaction as well as aesthetically and emotionally enjoy it.
- These needs include the higher energy forms required for an urban civilization,
- the materials required to maintain the modern industrial society, as well as the parks, open spaces, experiences and materials needed for recreation, etc.

Classification of natural resources

- Natural resources can be categorized on the basis of: **Renewability, Origin, Stage of development and Availability**

A. **Renewability (Renewable and non- Renewable)**

Renewable

- These resources are substances of economic value that can be replaced, replenished or reproduced relatively quickly in the same amount or less time as it takes to draw the supply down.
- Resources are also classified as renewable when they are maintained, rejuvenated or improved upon by a naturally occurring process.
- Examples include some resources like soil, sunlight, air, and wind etc.

Non-renewable resources

- These resources are resources of economic value that are formed over very long geological periods that cannot be readily replaced by natural means on a level equal to its consumption.
- Since their rate of formation is extremely slow, once they are depleted they cannot be replenished.
- Included in this category are the Earth minerals and metal ores, fossil fuels (coal, petroleum, natural gas).

- Non-renewable resources are less likely to participate in the circular flows of the ecosystem, and exploitation of one resource typically does not affect the availability of the other resources.
- This type of resources can be considered as a stock that cannot regenerate over a relatively long period of time.

B. Classification on the basis of their Origin

- Biotic – Biotic resources are obtained from the biosphere
- such as forests and their products, animals, birds and their products, fish and other marine organisms, coal and petroleum.
- Abiotic – Abiotic resources include non-living things such as land, water, air and ores such as gold, iron, copper, silver

C. Stage of development

- Potential Resources – Potential resources are those that exist in a region and may be used in the future.
- For example, petroleum may exist in many parts of Nigeria, having sedimentary rocks but until the time it is actually drilled out and put into use.
- Actual Resources – are those that have been surveyed, their quantity and quality determined and are being used in present times.
- The development of an actual resource, such as wood processing depends upon the technology available and the cost involved.

D. Availability: how available or abundant is the natural resource

(a). Inexhaustible natural resources – Those resources which are present in unlimited quantity in nature and are not likely to be exhausted easily by human activity.

(b). Exhaustible natural resources- The amount of these resources are limited

Conservation of Natural Resources

- A resource is non-renewable if the rate of its consumption or utilization surpasses its cycling capacity.
- When an easily renewable resource is consumed at a rate that would render it non-renewable, such a resource is said to be 'mined'.
- Therefore there is need for these resources to be conserved.
- Conservation is all about maintaining the biosphere. It means taking action to avoid decline, extinction and permanent detrimental change to the environment and natural resources.
- It is the management of human use of the biosphere so that it may yield the greatest sustainable benefit while maintaining its potential to meet the needs and aspirations of future generations.

Reasons for conservation

1. Utilitarian reason

- The major reason for conservation and management of natural resources is to make resources available on a long-term basis for utility.
- All the things we use and consume are obtained from natural resources.
- Due to increase in population, industrialization and urbanization the demand for natural resources is increasing and their availability is limited.
- So there is a need for proper management of natural resources

2. Ecological reason

- Conservation of natural resources like forest and trees helps lessen impacts of global warming, reduces erosion and siltation of rivers and coasts.

3. Economic reason

- Conservation of animals and wildlife can lead to promotion of tourism to such biodiversity places and this brings money into the countries or state economy.

4. Ethical reason

- cultural tradition, religious beliefs, political persuasion and other similar concept have shaped man's attitudes to nature.
- Some people argue that nature and natural resources does not exist simply for humans to transform and modify as they please for their own purpose.
- They assert that all living species and other living have a right to coexist with man on earth, and man have no right to cause extinction and to diminish the quality of nature.
- In other words it is wrong to deprive future generations of the biodiversity that exists now.

5. Aesthetic reason

- Composers, artists & writers are inspired by nature therefore, the beauty of these resources provide us great enjoyment.
- This is because man derives pleasure from natural environment and our appreciation to nature permeates arts, design, literature and music and influences our recreational pursuit.
- It also provides camping sites as well as recreational facilities.
- An example is the Yankari game reserve in Bauchi state.

6. Scientific reason

- Conservation activities serve science because through conservation, species of life and biological communities are preserved for scientific study.
- The disappearance of such species of life and biological communities when they have not been adequately studied or studied at all is a great loss to science and scientific understanding of the biosphere.

Conservation of non-living resources

The ways and objectives of managing and conserving non-living resources are different from those concerning the management of living resources

Non-living resources are managed by:

1. The three R's principles
2. Substitution
3. Beneficiation
4. Maximization and Allocation

Conservation of living resources

Living resources are managed by:

- Afforestation (planting of more trees)
- Preventing or reducing deforestation
- Preventing over grazing
- Setting up of wildlife sanctuaries, national parks, biosphere reserves etc, this help in the protection and restoration of endangered species
- Banning poaching of animals
- Substitution of species: this is the use of readily cultivatable species in place of species with long periods of cycling. For instance, the use of the Kenaf trees for pulp in place of certain kinds of timber.

Man and His Food

What is food?

- ❖ **Food** is any substance consumed to provide nutritional support for the body.
- ❖ It is usually of plant or animal origin,
- ❖ contains essential nutrients, such as fats, proteins, vitamins, or minerals.
- ❖ The substance is ingested and assimilated by man to provide energy, maintain life, or stimulate growth

Historically, man secured his food through two methods:

- ❖ Hunting and gathering
 - ❖ Agriculture.
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- ❖ Today, as a result of increase in technology the majority of the food energy required by the ever increasing population of the world is supplied by the food industry

Food sources

- Most food eaten by man has its origin in plants and animals. Some food is obtained directly from plants; but even animals that are used as food sources are raised by feeding them food derived from plants

A. Plants

Many plants and plant parts are eaten as food and around 2,000 plant species are cultivated for food. Many of these plant species have several distinct cultivars

- a. Seeds of plants are a good source of food for humans,, including animals because they contain the nutrients necessary for the plant's initial growth
- ❖ Seeds are typically high in **unsaturated fats** (including many healthful fats, such as Omega fats) and, in moderation, are considered a **health food**,

- ❖ although not all seeds are edible. Large seeds, such as those from a **lemon**, pose a choking hazard, while seeds from **cherries** and **apples** contain **cyanide** which could be poisonous only if consumed in large volumes.
- ❖ Edible seeds include cereals (corn, wheat, rice, etc.), legumes (beans, peas, lentils, etc.), and nuts. Oilseeds are often pressed to produce rich oils - sunflower, flaxseed, rapeseed (including canola oil), sesame, etc.
- ❖ In fact, the majority of food consumed by human beings are seed-based foods

b. Fruits are the ripened ovaries of plants, including the seeds within.

- ❖ Examples: apples, bananas, grapes, lemons, oranges, and strawberries
- ❖ Fruits, therefore, make up a significant part of the diets of man.
- ❖ Some botanical fruits, such as tomatoes, and eggplants are eaten as vegetables.

- c. Vegetables are a second type of plant matter that is commonly eaten as food.
- These include root vegetables (potatoes and carrots), bulbs (onion family),
- leaf vegetables (spinach and lettuce),
- stem vegetables (bamboo shoots and asparagus),
- and inflorescence vegetables (globe artichokes and broccoli and
- other vegetables such as cabbage or cauliflower).

B. Animals

Animals are used as food either directly or indirectly by the products they produce.

- a. **Meat** is an example of a direct product taken from an animal, which comes from muscle systems or from organs.

- b. **Milk** is a Food products produced by animals and its produced by mammary glands, which in many cultures is drunk or processed into dairy products (cheese, butter, etc.).

- c. In addition, birds and other animals lay **eggs**, which are often eaten as food

- d. Bees produce **honey**, a reduced nectar from flowers, which is a popular sweetener in many cultures.

- e. Some cultures consume blood, sometimes in the form of blood sausage, as a thickener for sauces, or in a cured, salted form for times of food scarcity, and others use **blood** in stews such as jugged hare.

C. Edible fungi and fermented sources of food

- Some foods not from animal or plant sources include various edible fungi, especially mushrooms.
- Fungi and ambient bacteria are used in the preparation of fermented and pickled foods like leavened bread, alcoholic drinks, cheese, pickles, kombucha, and yogurt.

Constituents of food

- The basic type of food man eats is classified into six type base on their needs and they are:

(a). Carbohydrates: Include sugar, starch, glycogen (animal starch) and cellulose (from plants).

- ❖ They contain mainly oxygen, carbon and hydrogen and are grouped as:
- ❖ simple sugars (monosachride) e. g grape and fruit sugars,
- ❖ complex sugar (disaccharide) e.g. cane or malt sugar,
- ❖ very complex sugars (polysaccharide) e. g starch, glycogen and cellulose.
- ❖ Examples of carbohydrate include rice, maize, millet, potatoes yam, cocoyam, and banana.

Function: They provide energy to man

(b). **Proteins:** proteins are complex food substances containing carbon, hydrogen, oxygen, nitrogen and sulphur.

- ❖ They contain little units called amino acid.
- ❖ Main sources of protein food include: Animal proteins e. g milk fish, meat, termites, etc.
- ❖ Plant proteins e.g. groundnuts, wheat, beans, sugar, cashew-nuts etc.

Function: Protein foods help to repair the body, build cells of the body and supply heat and energy;

- ❖ as building blocks for bones, muscles, cartilage, skin, and blood.
- ❖ They are also building blocks for enzymes, hormones, and vitamins.

(c). Fats and Oil like Carbohydrate contains carbon, hydrogen and oxygen. Fats and Oil are insoluble in water but soluble in some other liquids such as alcohol.

- ❖ Sources include cashew nuts, groundnuts, oil palm, coconut, milk, butter, margarine, meat cheese.

Function: important in the development of cell membranes, the retina and brain tissue

- ❖ They are backup source of energy to fuel your workout when carbohydrates are not available.
- ❖ It provides energy, absorbs certain nutrients and maintains your core **body** temperature.

(d).Vitamins are not basically any kind of food but are contained in small quantities in various kinds of food.

- ❖ The important vitamins in nature are vitamin A, B complex, C, D, E and also K.
- ❖ The sources of food including eggs, liver and vegetable.
- ❖ B vitamins found in green vegetable sources of food including palm wine, liver, egg, milk.
- ❖ Vitamin C are found in fruits of all kinds especially citrus fruits.
- ❖ Vitamin D is found in the oil sources of food including milk and sunshine acting on the body.
- ❖ Vitamins E are found in the oil, and vegetable sources of food including liver.

Function: Vitamins are essential to the enzyme system of all organisms, which enhance chemical reactions necessary for converting food into energy.

- B vitamins help the body release energy, play a vital role in the function of the nervous system, aid in the formation of red blood cells, and help build tissues.
- Vitamin E is an anti-oxidant that helps protect the body from cell oxidation

(e). Mineral Salts Are inorganic food that are important constituents to human bones, teeth and body cells needed for the formation of blood, liver, muscles, etc.

- Three types of mineral are iron, calcium and phosphorous.
- Calcium is derived from cheese and milk,
- phosphorous from cheese and liver,
- Iron from liver, bread, peas and cabbage and unripe plantain.

Function: Magnesium is used in building bones and in releasing energy from muscles.

Zinc is necessary for biochemical reactions and helps the immune system function properly.

The main **function of phosphorus** is in the formation of bones and teeth.

It plays an important **role** in how the **body** uses carbohydrates and fats.

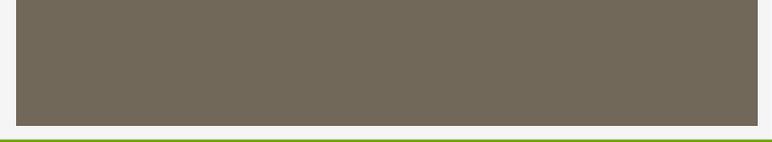
It is also needed for the **body** to make protein for the growth, maintenance, and repair of cells and tissues.

(f). Water Main Sources of water in our country are as follows: Rain water, Surface water, Lakes, Streams, Rivers, Ponds, springs and Taps.

Function: Water forms the main part of fluids (such as blood) which transport food substances, dissolved gasses and hormones around the body of man.

It also helps to replaces loss through sweat and urination thereby preventing dehydration

Man needs an adequate and balanced proportion of all these types of food for his normal growth. Hence, he needs what is called a balanced diet.



KEEP YOUR ENVIRONMENT CLEAN

CONSERVE RESOURCES AROUND YOU

CHOP TODAY AND CHOP TOMORROW

EAT GOOD FRESH FOOD AND BALANCE DIET.

REMEMBER JESUS LOVES YOU