DIPLOMA IN SOCIAL WORK AND COMMUNITY DEVELOPMENT

RESOURCE MANAGEMENT

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CHAPTER ONE

INTRODUCTION TO RESOURCE MANAGEMENT

Specific Objective

By the end of this topic, the trainee should be able to;

a) Explain the meaning of resources
b) Discuss the categories of resources
c) Discuss the importance of managing resources

INTRODUCTION

Meaning of Resource Management

In organizational studies, resource management is the efficient and effective deployment for an organization's resources when they are needed. Such resources may include financial resources, inventory, human skills, production resources, or information technology (IT). In the realm of project management, processes, techniques and philosophies as to the best approach for allocating resources have been developed. These include discussions on functional vs. cross-functional resource allocation as well as processes espoused by organizations like the Project Management Institute through their Project Management Body of Knowledge methodology to project management. Resource management is a key element to activity resource estimating and project human resource management. Both are essential components of a comprehensive project management plan to execute and monitor a project successfully. As is the case with the larger discipline of project management, there are resource

management software tools available that automate and assist the process of resource allocation to projects and portfolio resource visibility including supply and demand of resources.

HR (Human Resource) Management

This is the science of allocating human resources among various projects or business units, maximizing the utilization of available personnel resources to achieve business goals; and performing the activities that are necessary in the maintenance of that workforce through identification of staffing requirements, planning and oversight of payroll and benefits, education and professional development, and administering their work-life needs. The efficient and effective deployment of an organization's personnel resources where and when they are needed, and in possession of the tools, training and skills required by the work.

CATEGORIES OF RESOURCES

Natural resource

Natural resources (economically referred to as land or raw materials) occur naturally within environments that exist relatively undisturbed by mankind, in a natural form. A natural resource is often characterized by amounts of biodiversity existent in various ecosystems. Natural resources are derived from the environment. This is currently restricted to the environment of Earth yet the theoretical possibility remains of extracting them from outside the planet, such as the asteroid belt. Many of them are essential for our survival while others are used for satisfying our wants. Natural resources may be further classified in different ways.

Classification

On the basis of origin, resources may be divided into:

- Biotic - Biotic resources are obtained from the biosphere, such as forests and their products, animals, birds and their products, fish and other marine organisms. Mineral fuels such as coal and petroleum are also included in this category because they are formed from decayed organic matter.
- Abiotic - Abiotic resources include non-living things. Examples include land, water, air and ores such as gold, iron, copper, silver etc.

Considering their stage of development, natural resources may be referred to in the following ways:

- 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 India, having sedimentary rocks but until the time it is actually drilled out and put into use, it remains a potential resource.
- 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. That part of the actual resource that can be developed profitably with available technology is called a reserve.

On the basis of status of development, they can be classified into potential resources, developed resources, stock and reserves.

With respect to renewability, natural resources can be categorized as follows:

- Renewable resources are ones that can be replenished or reproduced easily. Some of them, like sunlight, air, wind, etc., are continuously available and their quantity is not affected by human consumption. Many renewable resources can be depleted by human use, but may also be replenished, thus maintaining a flow. Some of these, like agricultural crops, take a short time for renewal; others, like water, take a comparatively longer time, while still others, like forests, take even longer.
- Non-renewable resources are formed over very long geological periods. Minerals and fossil fuels are included in this category. Since their rate of formation is extremely slow, they cannot be replenished once they get depleted. Of these, the metallic minerals can be re-used by recycling them. But coal and petroleum cannot be recycled.

On the basis of availability, natural resources can be categorized as follows:

- Inexhaustible natural resources- Those resources which are present in unlimited quantity in nature and are not likely to be exhausted easily by human activity are inexhaustible natural resources (sunlight, air etc.)
- Exhaustible natural resources- The amount of these resources are limited. They can be exhausted by human activity in the long run (coal, petroleum, natural gas, etc.)

Examples

Some examples of natural resources include the following:

- Air, wind and atmosphere

- Animals
- Coal, fossil fuels, rock and mineral resources
- Forestry
- Range and pasture
- Soils
- Water, oceans, lakes, groundwater and rivers [4]
- Solar power

Management

Natural resource management is a discipline in the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations. Natural resource management is interrelated with the concept of sustainable development, a principle that forms a basis for land management and environmental governance throughout the world.

In contrast to the policy emphases of urban planning and the broader concept of environmental management, Natural resource management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources.

Depletion

In recent years, the depletion of natural resources and attempts to move to sustainable development has been a major focus of development agencies. This is a particular concern in rainforest regions, which hold most of the Earth's natural biodiversity - irreplaceable genetic natural capital. Conservation of natural resources is the major focus of natural capitalism, environmentalism, the ecology movement, and green politics. Some view this depletion as a major source of social unrest and conflicts in developing nations.

Mining, petroleum extraction, fishing, hunting, and forestry are generally considered natural-resource industries. Agriculture is considered a man-made resource. Theodore Roosevelt, a well-known conservationist and former United States president, was opposed to unregulated natural resource extraction. The term is defined by the United States Geological Survey as "The Nation's natural resources include its minerals, energy, land, water, and biota."

Protection

Conservation biology is the scientific study of the nature and status of Earth's biodiversity with the aim of protecting species, their habitats, and ecosystems from excessive rates of extinction. It is an interdisciplinary subject drawing on sciences, economics, and the practice of natural resource management.

Habitat conservation is a land management practice that seeks to conserve, protect and restore, habitat areas for wild plants and animals, especially conservation reliant species, and prevent their extinction, fragmentation or reduction in range.

Man-made Resources

There are several ways in which it is possible for man to convert water to his own use. As Cyprus is a small island, it is obvious that one is never far from an almost infinite supply of water, the sea. The problem is to treat the sea water in such a way that it becomes potable. This is never easy and always costly.

Desalination

Sea water contains about 35,000 milligrams of dissolved solids per liter of water. These solids are mostly ionic salts, the main one being sodium chloride or common salt. It is generally considered that the maximum salt content for water to be potable is 800 milligrams per liter. Even this may be considered too high for persons suffering from certain chronic medical conditions. A value of 500 milligrams per liter would be better as a target figure. The question remains as to how to do this in a reasonable and economical manner. The two main contenders for this are reverse osmosis and multi-stage flash distillation. Each is capable of producing potable water from sea water at a cost which is not too prohibitive. However, it must be thoroughly realized that desalinated sea water will never be as cheap as water from natural resources.

Reverse Osmosis

Reverse osmosis consists basically of pumping sea water up to a very high pressure and allowing it to percolate through semi-permeable membranes. This would seem to be similar to filtration but, in fact, it is not the case. Without going into the technical details, reverse osmosis depends on the use of a totally different physical principle, differential surface tension. The advantage of reverse osmosis is that it does not require an enormous space to implement and that it can be applied for purifying volumes from about 1 tonne per day up to hundreds of thousands of tonnes per day, depending on

local requirements. The astonishing fact about reverse osmosis is that the cost does not vary very much from throughputs of a few hundred tons per day right up to the largest installations. The process is very energy-intensive, particularly if a very high purity water is required. The cost of installation is high, as well as the running costs. It always requires automatic monitoring to ensure that the water quality is sufficient.

Large-scale

Large scale reverse osmosis is already well-known on the island, from the installation at Dhekelia and the proposed installations south of Larnaka airport and elsewhere. Such installations are very expensive to implement and to run but can produce a continuous supply of potable quality water at a cost of between $1 and $1.50 per tonne. The Dhekelia plant has a throughput of about 40,000 tonnes per day. Of course, there is almost no theoretical limit to the amount of water that can be treated if enough large-scale desalination plants are installed, but the consumption of electricity would become prohibitive for the island's generating resources. To circumvent this, they frequently have internal generators, running off fuel oil, but this electricity is much more costly than that produced from the power stations, due to a lower overall efficiency. Internal generators may be either gas turbine or diesel, the latter being more common. Either is a severe source of air pollution unless the exhaust gases are carefully treated: even so, additional carbon dioxide, the main "greenhouse gas", is emitted. The motor-generators are also noisy and this causes considerable resistance to the installation of such plants by local residents. It is recommended that any new plants of this nature be installed only in industrial zones, away from any habitation. Combined with the high cost of production, the practical limit would not be greater than about 100,000 tonnes per day on a full time basis. If, in combination with restored natural resources, the total output from such desalination plants exceeded the demand at any time in the future, the excess water produced could be pumped into existing reservoirs. More especially, they could be operated at night when there is an excess supply of electricity available. When calculating the capacity of such large plants, the down time for repairs and maintenance should be considered at between 5 and 10 per cent because of membrane failures. There is no evidence that the return of high-concentration salt water to the sea will cause any severe environmental damage except within a radius of a few tens of meters from the outlet pipe, which is totally negligible. Notwithstanding, it is recommended that this be placed at least 1 kilometer offshore in deep water to minimize any potential risk.

Small-scale

A wide choice of commercially available reverse osmosis units exists, with throughputs of 1 tonne per day up to a few thousand tonnes. The very small ones are not economically viable, costing typically $5 to run a 1 tonne per day unit. From about 250 - 500 tonnes per day, the cost is typically between $1 and $1.50 per tonne, similar to large-scale units. An installation of this size could be installed in a basement room of about 20 m^2 floor space, in a lorry or in a small external prefabricated building. This scale of unit can also be equipped to run off diesel fuel, with low-noise engines, rather than from a mains electricity supply, at a slight increase in overall costs. It would therefore be viable at places without an adequate high-power electricity supply available and, above all, as portable units which could be trucked to any place on the littoral where there is an emergency supply required. The small units are capable of supplying potable water of the required purity, including bacterial count, to meet any standards, depending on equipment specifications.

Multi-stage Solar Flash Distillation

Multi-stage solar flash distillation is a very economical process for large-scale desalination, both in terms of capital investment and, above all, running costs. The main disadvantage is that it requires very large tracts of land with unsightly panels, close to the sea. This is really incompatible with most of the littoral in Cyprus. The principle of operation is very simple: sea water is heated in solar panels to a temperature of about 60°C and then sprayed into a chamber at a reduced pressure. It boils off

instantaneously and the vapours are condensed. The process is repeated, typically three times, until the quality of the water is sufficiently good. Because most of the energy required to operate the system comes from the sun, the consumption of electricity is usually less than one-fifth of that required for reverse osmosis for an equal production. It is therefore less polluting and less likely to over-burden existing electricity supplies.

Air Conditioning

Air conditioning can also supply large quantities of high-quality distilled water. This is the condensate from the coolers within the individual rooms, whether the system be a central one or with separate compressors for each room. Obviously, this source of water is seasonal but, in summer, one liter of water per person in a room is lost through perspiration and respiration every four hours. This can be collected at virtually no cost and added to other water for any use. In reality, this water would be too pure for use by itself, except possibly for washing purposes. The taste would be unpleasant due to a lack of mineralization, although it should be safe to drink. If used consistently for watering plants, it would require some additives to ensure the good health of the plants, because there is no nutritive value in the water.

The major obstacle to collecting this valuable water is in the small quantity produced per room. Nevertheless, it is foreseeable that aggregate quantities in the order of hundreds of tonnes could be collected every day over the hottest six months of the year, particularly from large buildings.

Human resources

Management is defined as the act of organizing and planning based on organizational policies with the intention of achieving certain objectives. Examples are the way how people are deployed and the way organizational activities are carried out.

Management also refers to the executive branch of employees in an organization. They are tasked with ensuring the success of the organization.

Management must manage all resources one of which is the human resource.

Often we read or hear that 'to manage is to achieve a certain objective through others.'

Human resource management is defined as the way employees are recruited, organized, developed, appraised, motivated, and retained.

Through proper planning and effective management of their people, organizations can achieve their goals.

There are still many organizations that get mixed up with human resource management and personnel management.

In the latter, most of the tasks carried out are administrative in nature although related to employee matters.

When we talk about human resource management, we are defining employees as resources that we need to manage effectively to get some form of returns.

Strategic Human Resource

A strategy is a step-by-step plan of action prepared by an organization and by which it aims to achieve its plan or plans, thus, ensuring its success and survival. Strategic human resource defines employees as a resource, an asset, that provides competitive advantage to an organization, and on whom organizational success is leveraged.

This is the new way adopted by many organizations in the treatment of their employees, making them the prime drivers or one of the prime movers of corporate success.

People, not machines, not systems, not other assets, are in the special position in helping the organization attain its objectives. These other things, however, are also important. But people are needed to make use of them in productive ways.

Some companies are now convinced that their people are the most important asset. And that without them, they cannot achieve much. In this way, they are implementing a strategic human resource management approach.

Human Resource Strategy
This is the step-by-step plan of action by which an organization employs, utilizes or manages, develops, and deploys its human resources in order to attain its defined corporate mission and objectives.

A human resource strategy is devised in respect of recruitment, employee deployment, motivation and engagement, and employee retention.

By doing this, an organization puts itself in the position of being able to achieve its mission and objectives through its human resources.

This follows from the way how strategic human resource is strategically defined.

Strategic Human Resource Management
This is the effective way of organizing the workforce by the adoption of a specific strategy, where employees' performance can help to achieve the planned organizational targets, such as increasing revenue or improving the profit margin.

Strategic human resource management is "human resource management" carried out in a strategic way. The human resource activities are linked to the achievement of the organization's overall objectives.

This is the new way of managing human resources as compared to personnel management.

Strategic Approach
This refers to a particular predetermined way of doing something or carrying out an activity in order to attain a target or a certain purpose.

A strategic plan is required to do this. Human resources with all the competencies and potential are required to attain the HR objectives. These objectives are aligned to the organizational objectives by way of a strategic plan.

By achieving the human resource objectives, HR helps to achieve the business plan.

Strategic Plan
A strategic plan is a step-by-step plan of action devised and aligned to the corporate plan in order to attain organizational objectives.

This inter-relation and alignment with the organizational objectives makes it strategic since this makes it more probable that the organization will achieve its objectives.

This is in contrast to a haphazard way of doing things, hoping that nothing unfavorable will happen.

Strategic HR Plan
Strategic human resource plan refers to the strategic plan whereby employees' energy, time, capabilities, competencies and knowledge are incorporated in a step-by-step plan of action so that their contribution can be monitored and measured over time.

By doing this, human resource can become the prime drivers of corporate success. The human resource plan is aligned to the corporate plan.

The primary goal of strategic human resource plan is to improve employee productivity thus helping to generate higher revenue for the organization.

Related Words and Phrases
It is important to understand other words and phrases having a bearing on the strategic human resource definition, and strategic HR management.

Strategic Planning
This refers to the act of preparing a plan in an organized and systematic way with the purpose of achieving a defined target.

Personnel Management
This refers to the traditional way of managing the workforce where the responsibilities carried out are mostly administrative in nature.

Some of the administrative responsibilities involved are salary administration, leave administration, medical benefits, and insurance coverage.

It does not put emphasis on aligning human resources to achievement of organizational objectives.

A lot of the work involved is related to records keeping. Thus, less emphasis on the use of strategy.

Human Resource Metrics
Human resource is a capital. HR Performance metrics is used to measure the return on employees' contribution.

This is a measurement of effectiveness of the contribution of human resource in achieving the organizational objectives.

It has been stated that 'the relationship between an effective people strategy and business success is hard to quantify in financial terms'.

But this is not an excuse for not taking steps to adopt and implement strategic plans in human resources management.

Human Capital
This terminology is used by some companies to define their human resource, to indicate their importance as compared to other assets.

As a capital, people are utilized to get optimum returns. Risks of not attaining the HR objectives are assessed. Performance is measured.

This way of treating employees is fairly recent, influenced by the theories put forward by management experts in the field of human resource management.

The meaning is similar to that of strategic human resource management. Both treat people as an important asset.

But some believe that the use of the word "capital" connotes manipulation.

Workforce
Workforce is defined as having the same meaning as employees or workers. It refers to the entire spectrum of your people.

Knowledge Can Facilitate Strategic Planning
The understanding on the extent and scope of the strategic human resource definition, the definition of strategic HR management, and related terms, is a tool you can employ to improve and enhance management of people through strategic human resource planning.

Different people have their own version of strategic human resource definition due to differing work experience and organizational situation.

It is important that we have an adequate "working" knowledge of "strategic human resource" definition and related words and terminologies.

Definition is not an end in itself. Use the knowledge on strategic human resource definition to facilitate preparation of your strategic human resource plan with the aim of aligning HR to your organizational objectives.

IMPORTANCE OF MANAGING HUMAN RESOURCE

The term Management has different meaning in different perspective. The meaning varies with the person to whom it is referred to. In general we can say that management is a process that involves planning, managing resources to accomplish the set objectives, and measuring the results got. When we say resources we mean to say not only the human resources but also the other resources (financial resources, materials required, machineries involved etc.) that are needed to accomplish a task or an objective.

There is a common perception that management involves only the managers and the people involved with the management of the company. It is definitely not so. Each an every person in an organization has some tasks that involves managing some resource and reporting about that resource to the higher authority.

Decision making is an important part in management and it often reflects the experience of the person making the decision. Decision making is centered on the three basic questions that lead to making a decision. What change has to be done to achieve a particular goal? To what extent the change has to be made? And how to make that change happen? These questions are dealt with the theories of management. It seems that management theories appeared around 1920. With the development of technology and other development, the management is subdivided into many categories that involve a particular process.

Now-a-days each and every process has its own management methods and personnel for managing that process. The basic principle remains the same as planning, organizing, staffing, directing, and controlling to achieve the goal by using the human, financial and material resources.

we trace back the history of business environment, in the early years, trading patterns and markets were stable, technology was static, customers were passive, speed in getting to market was secondary, competition was limited to sectors and regions, and hierarchies were generally accepted in all walks of life. No more, since 1960's, America and much of the rest of the world has been almost continually buffeted by change. Customers demand that businesses do it better, faster, cheaper; employees want to control more than the "Stop" button on the assembly line. The twentieth century saw nations around the world become part of the global village, with trade barriers between them reduced or removed completely. Globalization of trade and economy are taking deep roots in India. The holistic paradigm shift to a single global company has opened up new economic opportunities. Events of the last five years of the previous century have focused our attention on knowledge industries. Quality human resources have therefore become an important base with which to respond to the emerging environment. The knowledge workforce in particular has a vital role to play in the emergence of the digital economy.

A look at the trends in managing people in this dynamic industry reflects that Attracting, Managing, Nurturing talent and Retaining people has emerged to be the single most critical issue in lieu of the enormous opportunities spun off by the market. The new avatar of talent is the knowledge professional who is innovative, business savvy, quick on the uptake, has an instinctive ability to network, and possessing unbridled ambition. They are propelled by an urge to experiment, scan new avenues that can spur their creativity. The knowledge professional will gravitate to an organization that is flexible, has strong values, a robust performance ethic and provides challenging work on latest technology. This has led to companies proactively taking measures on three fronts. First, companies create an organizational ambience where talent can bloom. Second, they put in place systems that help unleash their potential and third, they build a reward and recognition mechanism that provides value for people.

Profound systemic changes have been seen in the way companies are structured. The concepts of leadership and managing people gave undergone a radical rethink. Cubicles, hierarchies and rigid organization structures of the past, have now given way to open work environment, flat structure with informality being a general rule and empowerment of individuals. Today work itself is centered around projects, which have virtual teams working on them. This work structure has led to a culture of flexi time, round the clock accessibility to the workplace. Also catching up fast is the trend of workstations at home, remote access, video-conferencing and reporting by exception. To stay one step ahead of the aspirations of their people, companies are continuously striving to provide an intellectually stimulating environment. Few examples being, in-house libraries, continuous up gradation of knowledge and skills, knowledge sharing, building relationships with academia thus enabling knowledge workers to pursue multiple careers within a single company. Coming times will see sabbaticals forming part of the organization culture, corporate universities dotting the new horizon, competing companies bunching together to setup knowledge networks.

Companies today are constantly striving towards enhancing the quality of work life and also the personal life of its employees and this does not stop with the employee buts gets extended to his /

her family as well. In-house health clubs, yoga and meditation centers to relieve stress, sports and cultural activities, employee get-togethers with invitations to come over with families, day care centers and many of the like are being provided by companies.

With the increasing size of the companies, the top down communication model of yesteryears has been replaced by bottom up, cross level communication thereby encouraging people to voice their opinions and feelings. Open house sessions, mentoring, online chats on the intranet have emerged to be the communication enablers.

The new economy has given rise to a culture of working in teams. Today no job in the knowledge industry can be performed in isolation. Since working in teams is not a passing fad, companies are now designing compensation structures, which reward team performance in addition to individual performance.

To conclude, change is here to stay, and we need to understand that all the practices that are working today may not necessarily work tomorrow. Customers' expectations, market changes and strategic decisions will derive the tools to managing the human assets.

REVISION QUESTIONS

1. Explain the meaning of resources
2. Discuss three categories of resources
3. Discuss the importance of managing resources

CHAPTER TWO

NATURAL RESOURCES

Specific Objectives

By the end of this topic, the trainee should be able to;

a) Discuss the meaning of natural resources
b) Explain the different types of natural resources
c) Discuss the characteristics of natural resources
d) Discuss the various ways of managing the various types of man made resources
e) Discuss the impact of managing natural resources

INTRODUCTION

Meaning of Natural Resource

Natural resources (economically referred to as land or raw materials) occur naturally within environments that exist relatively undisturbed by mankind, in a natural form. A natural resource is often characterized by amounts of biodiversity existent in various ecosystems. Natural resources are derived from the environment. This is currently restricted to the environment of Earth yet the

theoretical possibility remains of extracting them from outside the planet, such as the asteroid belt. Many of them are essential for our survival while others are used for satisfying our wants. Natural resources may be further classified in different ways.

Different Types of Natural Resources

Natural resources are simply the resources that human beings use for their protection, shelter, comfort, etc. Earth is abundant in natural resources, but they should be used judiciously.

Natural resources are naturally occurring resources in the environment that have not been disturbed by mankind. By resource is meant any physical entity, which has limited availability. These resources occur in their natural form. Few examples of natural resources are:

- Air, wind and atmosphere
- Plants (Flora)
- Animals (Fauna)
- Agronomy (the science of using plants for food, fuel, feed and fiber)
- Wildlife
- Forestry and Agroforestry
- Coal and fossil fuels
- Range and pasture
- Soils
- Water, oceans, lakes and rivers

Something that people generally aren't aware of, is that everything we use in everyday life are derived from natural resources, for example, milk which comes from cows - animals are a natural resource. We use water, food and vegetables that come from plants, salt which is a mineral are some of the other natural resources. Wood that we get from tree is a natural resource. It can be used to build a house, make paper, burn in fireplaces and in stoves for cooking, etc.

Man utilizes these resources in various ways. These resources are processed further so as to be made suitable for our needs. The table below is an example that shows in what way the resources have been utilized;

Natural Resources	Man-made Products
River	Hydroelectric power
Petroleum	Gasoline
Clams	Clam chowder
Farmland	Potato chips
Plants	Medicines

Here are few natural resources and their uses.

Soil

- Used for growing crops (only 10% of the Earth's surface).
- Soil can be used for shelter. Many tribal people all around the world make shelter with the help of soil.

Water

- Used for drinking (only 0.0007% of Earth's water is suitable for drinking. The rest is salt water, water trapped in glaciers or polluted water.
- Fresh water is used for irrigation of crops.
- Water bodies such as oceans, lakes and rivers of the world can be used for transportation.
- Fishing is a valuable source of food that is provided by water.
- Water in rivers is be used to generate hydro-electricity.

Minerals

Minerals can be defined as naturally occurring substances obtained from the ground. They are coal, petroleum, natural gas, iron, copper, gold, etc. They are also absorbed up by plants from the Earth's surface and transferred to humans through food.

- They (coal, natural gas and fossil fuels) are a source of energy.
- Used as ingredients to make other materials like iron ore, is used to make steel and petroleum is used to make a variety of products like gasoline, plastics, etc.
- Can be used as they are in natural form like salt.

Vegetation

- Land is used for farming from which vegetables and fruits are grown.
- Wood from trees is cut and processed to make furniture and home
- Wood is used for cooking and also as fuel to produce heat for warmth.
- Clothing - clothes are made from cotton.
- Plants are used as an ingredient in medicines.

Animals

- Animals are used as a food, and their waste is used as fertilizers for crops.
- We get fur and hides from animals which are used for making clothes.
- Used for transportation.

Natural resources can further be defined as renewable and nonrenewable. Renewable resources are those that can be produced again, for example, plants and animals whereas, nonrenewable resources are those which cannot be produced again, for example, fossil fuels.

We need to make serious attempts to use natural resources in an efficient manner because in recent years, natural resources have depleted as a result of their careless use. The seriousness of the problem can be understood from the words of former American president Theodore Roosevelt, "The conservation of natural resources is the fundamental problem. Unless we solve that problem, it will avail us little to solve all others."

Management

Natural resource management is a discipline in the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations. Natural resource management is interrelated with the concept of sustainable development, a principle that forms a basis for land management and environmental governance throughout the world.

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REVISION QUESTION

1. Discuss the meaning of natural resources
2. Explain the different types of natural resources
3. Discuss the characteristics of natural resources
4. Discuss the various ways of managing the various types of man made resources
5. Discuss the impact of managing natural resources

CHAPTER THREE

MAN MADE RESOURCES

Specific Objectives
By the end of this topic, the trainee should be able to;

a) Explain the meaning of man-made resources
b) Discuss various types of man-made resources
c) Explain ways of managing man-made resources
d) Discuss the impact of managing man-made resources