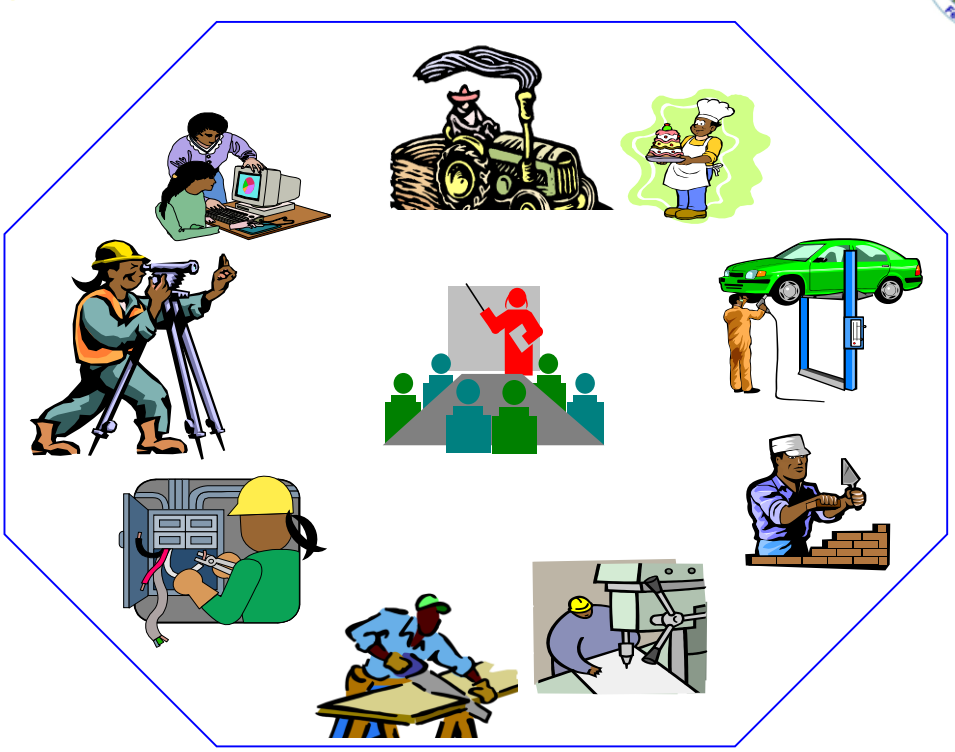

Natural Resources Conservation and Development Level IV
Based on March 2018, Version 3 Occupational standards

Module Title: Participating in Designing Sustainable Natural Resources Utilization
LG Code: AGR NRC4 M06 LO (1-5) LG (29-33)
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THE WORLD BANK
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East Africa Skills for Transformation and Regional Integration Project (EASTRIP)

Table of Contents

LG #29	LO #1- Plan community based natural resources utilization

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing long and short term community based strategic plan
- Identifying and incorporating local community benefits
- Identifying and promoting cultural taboos and traditional practices
- Outlining mechanisms for sustainable utilization of natural resources
- Designing monitoring and evaluation mechanisms with clients

Identifying appropriate mechanisms for infrastructures development
This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Prepare long and short term community based strategic plan
- Identify and incorporate local community benefits
- Identify and promote cultural taboos and traditional practices
- Outline mechanisms for sustainable utilization of natural resources
- Design monitoring and evaluation mechanisms with clients

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If your performance is satisfactory proceed to the next learning guide,
7. If you earned a satisfactory evaluation proceed to “Operation sheets
8. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
9. If your performance is satisfactory proceed to the next learning guide,
10. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information Sheet 1- Preparing long and short term community based strategic plan

1.1 Introduction

Strategies are made as a **blueprint** and action plan is the step by step process of how to go about that blueprint. Strategy is the mental part of reaching a goal, action plan is the physical part of reaching a goal.

An effective strategy **brings together vision and execution**. Strategies are much more specific than an organization's vision, mission, and objectives. Strategies should map long-term plans to objectives and actionable steps, foster innovative thinking, as well as anticipate and mitigate potential pitfalls.

In a perfect world **the strategy always comes before a plan** and shapes the details of the plan. A strategy is the overarching wisdom that coordinates all of the plans in order to effectively reach the goals. Remember, having a plan is essential, but developing a strategy should always come first.

Strategic planning is a framework providing a systematic approach to planning for future development and allocating needed resources for anticipated changes. Ordinary planning and goal setting usually looks at the past and bases the future on historic trends. Strategic planning considers possible future events and trends, and then bases planning and resource allocation on anticipated changes. Simple planning often falls short of implementation because the plan fails to be linked with resources and action

1.2. A strategic action plan

By extension, a strategic action plan explains how you're going to make your strategy a reality. It takes the purpose and goals you've outlined and adds the details needed to turn thought into action.

Short-term planning looks at the characteristics of the company in the present and develops strategies for improving them. Examples are the skills of the employees and their attitudes. The conditions of production equipment or product quality problems are also short-term concerns.

1.3. Strategic Planning Process

The 5 Steps of the Strategic Planning Process

- Determine your strategic position.
- Prioritize your objectives.
- Develop a strategic plan.
- Execute and manage your plan.
- Review and revise the plan.

Benefits of Strategic Planning

Many positive things can come from the strategic planning process:

- Provides an outline of steps to follow
- Promotes efficient use of scarce resources
- Improves coordination
- Builds community consensus
- Increases public awareness
- Strengthens the community's competitive position
- Encourages forward thinking
- Focuses community efforts on key issues

Three activities are critical to a successful strategic planning process. First is to sell the concept of strategic planning as a procedure to improve the quality of life in the community. This means that someone has to champion the idea of putting this technique to work locally. The second activity is to work through the strategic planning process. And last is to implement the plan that comes out of the process. "Selling" the plan will be more successful if everyone who wanted to be involved was involved, and the public at large was kept informed during every step. The only people with a large stake in the current and future quality of life in a community are the citizens who live there. An outside facilitator can help guide this group through a successful program.

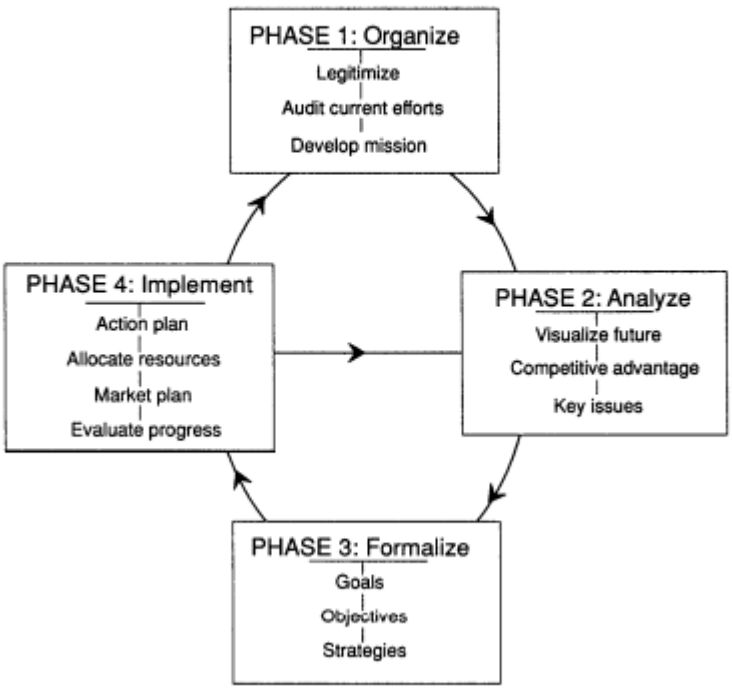

Figure 1.1 Planning process

Glossary

Mission: The overriding purpose of an organization, stated in the broadest and most inclusive terms.

Vision Statement: A written statement that describes the community as it could be at some future point.

Issue: A matter of wide public concern growing out of complex human problems.

Goal: A broad, general statement that describes a desired outcome that will be a relative improvement over some current situation.

Objective: A statement of the measurable results to be achieved, not the activities or methods to be used.

Strategy: A statement of direction that implies a cohesive set of activities designed to achieve a common result.

Action Plan: A group of specific interrelated tasks designed to meet an objective, often designating who has primary responsibility for what actions,

with whom they should coordinate, and when each action should be completed.

Tasks: The specific actions assigned to each part of the organization which, when combined, make up an action plan for meeting an objective. Criteria Standards by which judgments and decisions can be made. **Trend:** A general direction of change—usually gradual and long-term—in the forces shaping the future of an organization, region, nation, or society. **Event**: An occurrence which significantly affects a trend by reversing or intensifying the general direction of change.

Strategy worksheet

Goal_____

_____

_____

Objectives_____

_____

Strategic action_____

_____

Primary Agency, Contact Person:_____

Task (list of chronological order)	Time Period	Manpower Requirements	Outside Resources	Estimated Budget	Source of funds

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (2 point)

1. Strategic planning is
   A. A framework providing a systematic approach to planning for future development
   B. Allocating needed resources for anticipated changes
   C. A statement of direction that implies a cohesive set of activities designed to achieve a common result D. All
2. A statement of the measurable results to be achieved, not the activities or methods to be used is
   A. Goal B. Objective C. Strategy D. action plan

Test II: Short Answer Questions

1. What is the benefit of strategic planning (2 point)
   _____
   _____
2. _____ is the specific actions assigned to each part of the organization which, when combined, make up an action plan for meeting an objective (2point)

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 4 points** **Unsatisfactory - below 4 points**

Operation Sheet 1— Prepare a detail plan

Objective: To acquire detail plan for sustainable natural resource utilization

Procedures

- Secure cooperation of the host farmer
- Secure necessary budget
- Consider what evidence is needed to convince the community
- Identify who will be responsible for doing what at what time
- Decide on the number and roles of demonstrators needed
- Prepare a written plan covering the entire demonstration step by step.

2.1. Environmental benefit

The environment also involves the relationships of the human environment, such as the social, cultural and economic environment, with the biophysical environment. The essential aspects of environmental resource management are ethical, economical, social, and technological.

Environmental benefits: Reduction or elimination of polluting emissions at the point of use. Reduction or elimination of carbon dioxide and other greenhouse gas emissions along the length of the fuel chain. Elimination of some resource extraction and its negative consequences. Forest and non-timber forest products are now big business, and numerous efforts are currently under way to promote the exploitation of these well-publicized and highly desirable tropical resources. Great attention has been focused on the selling process, e.g., on developing markets for different products, on implementing local processing and value-added strategies, and on ensuring an equitable distribution of the income that has been generated. Securing land tenure or usufruct rights for local collector groups has also been an important component of the development of these resources. Clearly, there are good reasons for emphasizing these socio-economic factors.

Cutting down trees and littering have a negative effect on animals and plants. Protecting endangered species and cleaning lakes and seas has a positive effect on the environment. At home you can help the planet by recycling waste and growing plants or vegetables. Sustainable natural resources conservation is a process of rational use and skilful management and preservation of the natural environment with all its resources. This would improve, maintain and protect the natural environment and its resources for the benefit of all mankind.

2.2. Economic benefit of natural resources conservation

It is increasingly recognized that the economic value of forests is not merely the production of timber. They are also **vitally important in preventing soil erosion and**

controlling water supplies, as well as providing non-timber forest products and supporting the livelihoods of many local people.

Economic benefits are usually measured in monetary terms and may include: income from employment in the sector; the value of the production of goods and services from forests; and the contribution of the sector to the national economy, energy supplies and international trade. In addition, the economic viability or sustainability of the sector can be assessed by measures such as the profitability of forest enterprises or the level of investment.

Natural resources encompass **ecosystems, wildlife and habitat preservation, environmental protection, biodiversity and conservation of forests, water and energy resources**. Renewable energy and energy efficiency promote savings and health benefits and provide opportunities for economic growth and sustainable development.

The benefits provided by forest ecosystems include:

- goods such as timber, food, fuel and bioproducts.
- ecological functions such as carbon storage, nutrient cycling, water and air purification, and maintenance of wildlife habitat.
- social and cultural benefits such as recreation, traditional resource uses and spirituality.

The benefits of Sustainable Economic Development impact more than just those in poverty. For example, **reducing energy use and expanding public transit options leads** to less air pollution, which can improve asthma and heart conditions. Efficient homes and businesses will be more comfortable and safer.

Various advantages of insisting sustainable resources are:

- It protects the ecosystem.
- It helps in maintaining biodiversity.
- It helps in proper utilization of resources.
- It helps in controlling over usage of resources.

2.3. Social benefit of natural resources conservation

The social functions of resources are often more difficult to measure and can vary considerably among countries, depending on their level of development and traditions. For example, in developed, post-industrial societies, the benefits of forests for recreation and amenity values or the maintenance of a rural way of life may be most important, while in developing countries, the area of forests available for subsistence activities or the

number of people employed in the sector may be a better indication of their social value. Given the difficulties of measuring the social benefits of forests, social functions are often measured in terms of inputs rather than outputs (e.g. the area or proportion of forests used to provide various social functions).

They contribute towards fiscal revenue, income, and poverty reduction. Sectors related to natural resources use provide jobs and are often the basis of livelihoods in poorer communities. Owing to this fundamental importance of natural resources, they must be managed sustainably.

Benefits to households:

- Improved surface water retention and moisture availability for crops;
- Improved water availability and quality in streams and storage sites;
- Improved soil quality and fertility retention levels for crop production and diversification;
- better soil structure and drainage;
- Increased access to biomass for multipurpose use (fodder, firewood, fruits, construction, and others) and higher profits;
- Increased resilience to climate change shocks and improved livelihoods;
- Increased opportunities for participation in income generation activities.

Benefits to the society at large:

- Better **conservation of natural resources and biodiversity**;
- Less danger from **floods** to downstream farmlands;
- Reduced **sedimentation** of costly infrastructure
  (e.g. roads, dams, natural lakes);
- Increased **water supply and improved health;**
- Reduced occurrence of **drought, flood** and increased stability of production systems;
- Increase to **resilience** to climate change factors – drought, intense rainfall, floods etc.

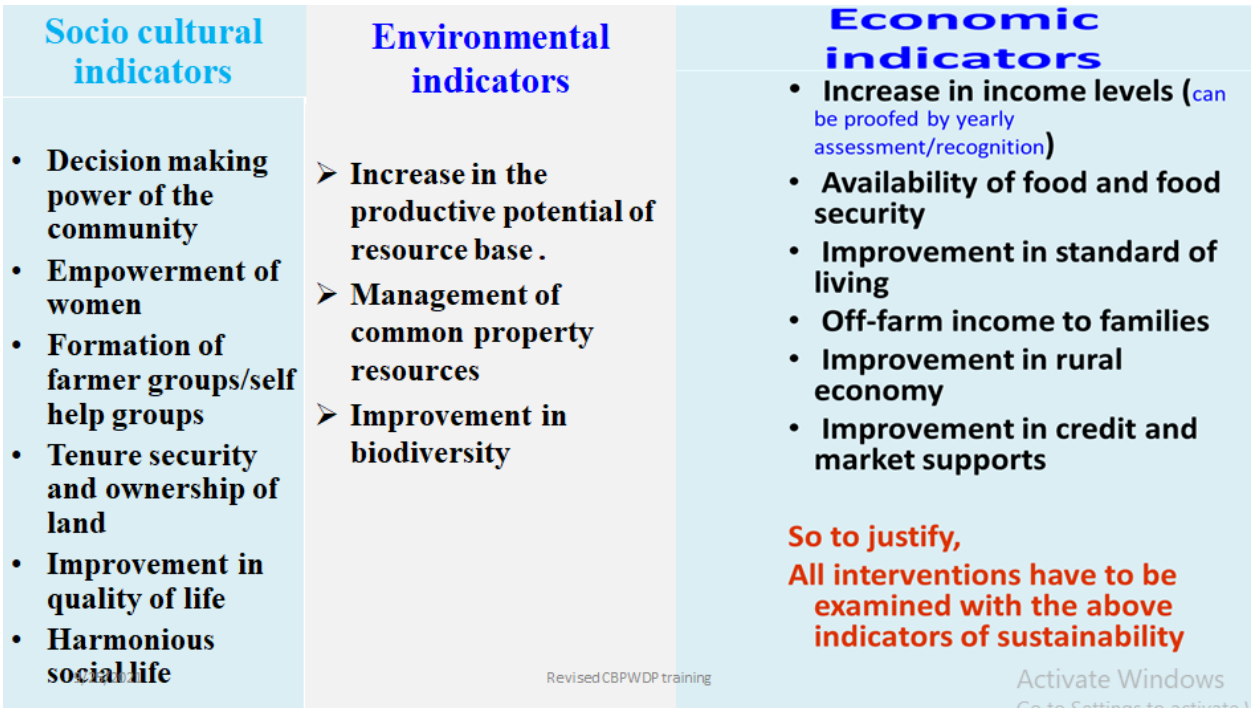

Figure 2.1 Enhancing biodiversity and water resource through community planning

Self-check 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (2 point)

1. The essential aspects of environmental resource management is/are

A. Ethical B. Economical C. Social and technological D. All

2. At home you can help the planet by recycling waste and growing plants or vegetables. A. True B. False

3. Various advantages of insisting sustainable resources are:

A. It protects the ecosystem.
B. It helps in maintaining biodiversity.
C. It helps in proper utilization of resources D. All

Test II: Short Answer Questions

4. Discuss Social benefit of natural resources conservation (10point)

_____
_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 8 points** **Unsatisfactory - below 8 points**

3.1. Introduction

Traditional cultural practices reflect values and beliefs held by members of a community for periods often spanning generations.

Some example of cultural practices

- Religious and spiritual practices.
- Medical treatment practices.
- Forms of artistic expression.
- Dietary preferences and culinary practices.
- Cultural institutions (see also Cultural Institutions Studies)
- Natural resource management.
- Housing and construction.
- Childcare practices.

Harmful traditional practices should be defined as widely as possible and include early and forced marriage, crimes committed in the name of honour, dowry-related violence, and son preference.

Traditional practice is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures and traditions , whether explicable or not, used in the maintenance of soil health and raising crops over a long period of time.

A taboo is an implicit prohibition on something based on a cultural sense that it is excessively repulsive or, perhaps, too sacred for ordinary people.

Taboo, alternatively called tabu, tapu or Tongan. It is a prohibition of social actions based on false beliefs that performing such actions is either too scared, or too dangerous for the human race. Disregarding taboo is generally considered a deviant act by the society. Taboo is putting a person or a thing under temporary or permanent prohibition, especially as a social custom.

There are different theories of approaches to this concept. The religious approach focuses on taboo derived from belief in spirit and inspired by the awe of supernatural. The cultural taboo demands prohibition of various cultural laws which are forbidden in different cultures. The food and drink taboo demands prohibition of various food and drinks by the society. The power of it lies primarily in the emotional forces they exude. Even the thought of violating a taboo triggers a punishment.

Religious, social, cultural taboo is practiced in every part of the world. For example, The practice of sati was a taboo.

Types of taboo

a. Religious taboo: It is something in a particular religion which the religion considers forbidden.
b. Cultural Taboo:

There is a number of cultural taboos prevailing in and around the world. A list of them is given below,

- In Thailand and Arab countries never point your shoes to another person. The shoe or your foot is unclean part of your body.
- In many African countries when talking to a tribal chief, make sure that your head is not above his.
- If you are a male don't try to shake hands with an orthodox Muslim woman
- Don't cut your grass on Sunday in Switzerland
- It is considered bad luck for a building to have a 13th floor in the united states or a 4th floor in China
- Don't touch a Mongolians head, hat or horse
- Cambodians believe that you should not take a photo of three people
- Don't bring wine as a gift in France
- In Japan, don't point with your chopsticks
- Never wear red to a funeral in China or write a person's name in red in Korea.

c. Food and Drink Taboo

Food and drink taboo is a restriction on consumption of various kinds of food and drink.

Prohibited foods that may not be consumed in any form include all animals—and the products of animals—that do not chew the cud and do not have **cloven hoofs** (e.g., pigs and horses); fish without fins and scales; the blood of any animal; shellfish (e.g., clams, oysters, shrimp, crabs) and all other living creatures.

Some taboos in Ethiopia

Indeed while Ethiopians have unique practices and norms, they are at the same time selective about what to eat. In most parts of Ethiopia only the following kind of meat are considered as edible:

- Different kinds of fish;
- Goat, sheep, oxen, chicken

All sorts of meat outside these categories are not edible, especially among Orthodox Christians and Muslims communities. It is not that they are not only eaten: they are often considered as taboo.

Religious issues

For someone who comes from a civilization where people openly debate the existence of God, this might make the Ethiopian society a bit conservative. Unless you are talking to a somewhat acculturated Ethiopian, it is not acceptable that someone makes what are considered insulting or degrading remarks towards religious values. More so in rural areas where ancient values are kept intact.

Homosexuality

One remembers the days where gay people used to be exposed to physical abuse by their communities in the western hemisphere. While at present the rights of gay people is being respected in different parts of the globe, it won't happen anytime soon in Ethiopia. The good news is people are not attacked for being gay anymore. But it is not a matter to discuss and most importantly show in public. Such acts in public places will create havoc.

Open sexual discussions

This has been and still remains an area that several NGOs in Ethiopia are trying hard to change. In most parts of Ethiopia sex remains something that people indulge in and not something to discuss about. Due to the failure of parents to have open discussions

with their adolescent children is considered by many as one of the reasons for the widespread of HIV in the last decade or so. It is not just with children: many Ethiopians do not discuss their marital sexual life even with friends. It even goes down to the level where a majority of couples do not even talk about their sexual preferences.

Dressing in a way that catches attention while visiting a church or monastery

The imposition on women to cover their body and hair with long dresses and shawls is finally fading away, even in rural parts of Ethiopia. Women have now the freedom to pick whatever cloth they want. However in places with religious importance it is not acceptable to wear something that attracts the attention of the opposite sex. A man or woman who does not do so will not be condemned in any way but doing so, internally at least, is considered as taboo.

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answer

1. List and discuss three types of taboo (3 point)

   _____

   _____

   _____

2. List Some taboos in your community (5 point)

   _____

   _____

   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 4 points** **Unsatisfactory - below 4 points**

Information sheet 4: Outlining mechanisms for sustainable utilization of natural resources

4.1. Introduction

Sustainable management of natural resources is defined in the Environment Act as: "using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide. use renewable resources, like wind and solar energy, instead of non-renewable resources, like fossil fuels. use those resources which cause less harm to the environment. cut back on the amount of natural resources, and in particular non-renewable resources we use, by reducing, reusing and recycling.

4.2. Utilization of natural resources

Sustainable utilization of natural resources is the proper management of natural resources for the benefit of the entire human community. The main aim of sustainable development is to provide resources for present generations without compromising the needs of future generations.

Natural Resource Management (NRM) refers to the sustainable utilization of major natural resources, such as land, water, air, minerals, forests, fisheries, and wild flora and fauna. Ecological processes maintain soil productivity, nutrient recycling, the cleansing of air and water, and climatic cycles.

Proper utilization of resources is important for maintaining productivity, because it prevents staff from underperforming or being overburdened by workloads and burning out. Projects can be managed with better visibility, reducing the risk of oversights.

Optimum Utilization of Resources Management utilizes all the physical & human resources productively. This leads to efficacy in management. Management provides maximum utilization of scarce resources by selecting its best possible alternate use in industry from out of various uses.

4.3. Traditional norms/rules/values for planning and management of natural resources

The key rules/norms/values that were determined to traditionally govern the planning and management of key natural resources are presented in Box 1. Some of the rules listed applied in the past, while others are still used today, albeit with modifications to fit modern realities. In particular, the role of elders as the sole determinants of punishment for breaking these rules/norms/values, and of young men as enforcers, has changed. For example, in modern society, the police, chiefs and other district and provincial administrators play an increasingly important role in enforcement. As society has modernized, the application of many of these rules on land, water, environment, wildlife as well as their enforcement has weakened considerably, particularly as a result of the transformation from a communal to a more individual approach to the planning and use of natural resources. Individual ownership of land is becoming widespread, especially in urban, peri-urban and riverine farming areas.

As communal use of land for grazing remains the major land use system in the rural areas, however, one would expect that customary rules with regard to this would not only remain in existence but also that they would be largely enforced. The study discovered, however, that enforcement is lacking or inadequate mainly because of the rapidly diminishing influence of the role of elders as a result of modernization of governance systems. In traditional African societies, the role of elders was was often key, not only for the management of natural resources, but also or political and social organisation of the societies; indeed, the two were intertwined. In addition, although it was almost entirely elderly men who formally provided leadership, women also played a significant role in the decisions that the elders made, even if only indirectly through their influence as wives. These findings underscores the connection between natural resources and the entire fabric of traditional African society

Box 1: Traditional rules/norms/values

Land

1. Land belongs first to God, and then to the clan or sub-clan and its access and use is controlled by elders
2. Individuals have the right to land for settlement and production to support their livelihoods

Water resources

3. Elders in charge of water resources management, oversee the digging of wells, big ponds and pans, and control access and use thereof;
4. Order and periods of accessing water points for humans and animals regulated as follows: a. Women have first access to water points, then youth b. When there is overcrowding of livestock at a watering point, cattle, donkeys, sheep and goats access water during the day, camels at night c. Those with few livestock have first access, then those with large herds follow d. One time visitors (especially during the dry season) can access water points with the permission of elders and at no charge.
5. Access to individually owned well only by consent and authority of the owner
6. Generally there is free access to springs and small ponds
7. Elders in charge of management of dams, oversee fencing and control access
8. Animals not allowed close to community/individually managed wells, ponds and pans. They are watered at a distance from the water.

Environment – trees, pastures, etc.

9. Everyone under obligation to care for the environment, water and pastures
10. No cutting of living trees and vegetation except for purposes of constructing a house and carving of containers and camel bells
11. Only dead wood, dry trees, weeds, palms and wild sisal for mats to be collected from forests
12. Burning of pastures prohibited except under the guidance of elders and after a survey
13. Cutting of acacia and other high value trees prohibited
14. No settlement allowed along rivers
15. No grazing of livestock on crop fields
16. Farmers not allowed to cultivate along Malkas (access routes to water points – water corridors)
17. Wet and dry season grazing are differentiated and access to them controlled accordingly.

Wildlife

18. Killing or eating of wildlife prohibited

Sanctions/Punishment

19. Different forms of punishment available according to the seriousness of damage or breach in question
20. Punishment includes: banishment from many atta/community, temporary isolation, fines, hanging upside down on a tree for a period
21. Fines paid in the form of goats, cows or camels – number and nature depending on seriousness of damage/breach

22. Young men responsible for ensuring enforcement of punishment meted out by elders.

Self-check 4	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What is sustainable utilization of natural resources (10point)

_____
_____
_____
_____

2. Mention traditional norms/rules/values for planning and management of natural resources in your community (10point).

_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 10 points** **Unsatisfactory - below 10 points**

5.1. Introduction

Monitoring is a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds

Evaluation is the systematic and objective assessment of an ongoing or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact, and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision making process of both recipients and donors.

5.2. The Technical Side of M&E Building Institutional Capacity

Designing and building a reporting system that can produce trustworthy, timely, and relevant information on the performance of government projects, programs, and policies requires experience, skill, and real institutional capacity. This capacity for a results-based reporting system has to include, at a minimum, the ability to successfully construct indicators; the means to collect, aggregate, analyze, and report on the performance data in relation to the indicators and their baselines; and managers with the skill and understanding to know what to do with the information once it arrives. Building such capacity in governments for these systems is a longterm effort. Some developing countries currently lack the basic capacity to successfully measure inputs, activities, and outputs. But all countries will eventually need to be able to technically monitor and track at each level of the results-based M&E system—at the input, activity, output (implementation), outcome, and impact (goal) levels

Although experts vary on the specific sequence of steps in building a results-based M&E system, all agree on the overall intent. For example, different experts propose four- or seven-step models.

Regardless of the number of steps, the essential actions involved in building an M&E system are to:

- Formulate outcomes and goals
- Select outcome indicators to monitor
- Gather baseline information on the current condition
- Set specific targets to reach and dates for reaching them
- Regularly collect data to assess whether the targets are being met
- Analyze and report the results.

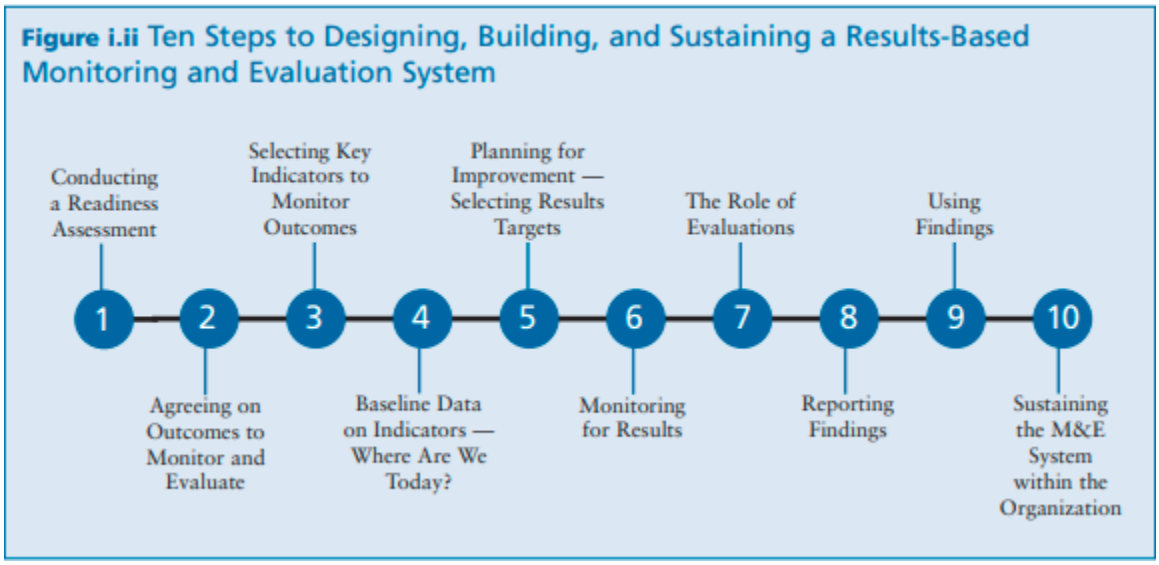

Figure1. Ten steps to Design, Building, Sustaining of Monitoring & Evaluation

Self-check 5	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. List ten steps to Design, Building, Sustaining of Monitoring & Evaluation(10point)

_____
_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Information sheet 6: Identifying appropriate mechanisms for infrastructures development

6.1. Infrastructures development

The infrastructure of development are communication, education, health, power, market, commerce, irrigation and leisure facilities. The most important aspects that can be addressed by improving infrastructure include solving issues regarding the transportation of vital resources, like water, as well as easing transportation concerns by building safe bridges, highways, and railways.

The infrastructure is important for faster economic growth and alleviation of poverty in the country. The adequate infrastructure in the form of road and railway transport system, ports, power, airports and their efficient working is also needed for integration of the Indian economy with other economies of the world.

6.2. Mechanisms of infrastructures development

Infrastructure development is the construction of basic foundational services in order to stimulate economic growth and quality of life improvement. Most advanced economies have gone through periods of intensive infrastructure building that have improved the efficiency and competitiveness of regions.

Physical aspect: Roads, bridges, canals, drains, sewerage, buildings, electricity, communication, etc. are physical infrastructures. The development of these aspects helps to run more development works.

Social aspects: It is absolutely necessary to develop social aspect like other infrastructures of development.

Explanation: the means and resources needed for development are land, labour ,capital, human resources, fixed place and area, raw materials ,facilities of good communication and employment.

The improvement of infrastructure services has proven to be a powerful tool in poverty alleviation initiatives. Providing people with access to basic and reliable infrastructure services are tools for improving their standard of living and rising their productivity-thus endowing them with the opportunity for growth. This work aims to document the existing

traditional and non-traditional mechanisms used by Ethiopia to reach the poor in infrastructure access and affordability, and to provide factual anecdotal case studies that represent this situation at a country, community, and utility specific/sensitive level. The specific objectives are:

a) to identify traditional and alternate mechanisms for targeting the poor or those designed by the poor in order to gain access to and maintain infrastructure services; and

b) to design a framework of analysis in order to understand and analyze the various components that account for the traditional and non-traditional tools used to reach the poor (including social tariffs, alternative technology, community driven and managed activities, etc). Overall, the goal of this report is to provide a comprehensive description of pro-poor infrastructure practices at the regional level and to present various case studies that account for the heterogeneity of pro-poor mechanisms in Ethiopia whether traditional or alternate/innovative.

Self-check 6	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

7. What is the specific objective of infrastructure development(4point)

_____
_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 2 points** **Unsatisfactory - below 2 points**

LAP TEST	Performance Test

Name……. ID……..
Date…….

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1** hour for task. The project is expected from each student to do it.

Task 1- Prepare a detail plan

LG #30	LO #2- Establish means of promotion and advertisement

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Establishing experience sharing mechanisms
- Identifying source of information
- Identifying and advertised natural resources potential areas

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, **you will be able to**:

- Establish experience sharing mechanisms among communities, farmers etc to promote sustainable natural resources utilization based on relevant information sources
- Identify source of information
- Identify and advertise natural resources potential areas through appropriate media, such as; meeting notice board and other means of communicating with community

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If your performance is satisfactory proceed to the next learning guide,
7. If you earned a satisfactory evaluation proceed to “Operation sheets
8. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
9. If your performance is satisfactory proceed to the next learning guide,
10. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

1.1. Introduction

A shared experience is any experience that causes individuals to identify with each other. The shared experiences of groups are the basis for the formation of culture at the level of a nation, city, profession, organization, team, super culture or subculture.

A powerful social learning strategy that creates an environment of learning is through sharing experiences. Experiences are personal – but there is a lot of learning that can be derived from them as well. There are various ways to encourage social sharing and derive learning from it. Sharing is through Discussions. Shared experiences create moments, no matter how small, of belonging, as well as offering opportunities to take our relationships to even greater levels of trust and intimacy.

1.2. Natural resource management

Natural resource management refers to 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 (stewardship).

Natural resource management deals with managing the way in which people and natural landscapes interact. It brings together land use planning, water management, biodiversity conservation, and the future sustainability of industries like agriculture, mining, tourism, fisheries and forestry. It recognizes that people and their livelihoods rely on the health and productivity of our landscapes, and their actions as stewards of the land play a critical role in maintaining this health and productivity.

Natural resource management is also congruent with the concept of sustainable development, a scientific principle that forms a basis for sustainable global land management and environmental governance to conserve and preserve natural resources.

Natural resource management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources. Environmental management is also similar to natural resource management. In academic contexts, the sociology of natural resources is closely related to, but distinct from, natural resource management.

Therefore it is dependent upon the circumstances of the stakeholders involved with natural resource as to which definition and subsequent theory is utilized.

The aims of stakeholder analysis in natural resource management:

- Identify and categorize the stakeholders that may have influence
- Develop an understanding of why changes occur
- Establish who can make changes happen
- How to best manage natural resources

This gives transparency and clarity to policy making allowing stakeholders to recognise conflicts of interest and facilitate resolutions.

1.3. Stages in Stakeholder analysis

It begins by defining the 3 i's (interest, influence, impact) and then uses these three key concepts to categorize stakeholders using a Stakeholder Typology chart. Whatever approach is used, there are three essential steps in stakeholder analysis: 1) Identifying the key stakeholders and their interests (positive or negative) in the project; 2) Assessing the influence of, importance of, and level of impact upon each stakeholder; and 3) Identifying how best to engage stakeholders.

Stages in Stakeholder analysis are:

1. Clarify objectives of the analysis
2. Place issues in a systems context
3. Identify decision-makers and stakeholders
4. Investigate stakeholder interests and agendas
5. Investigate patterns of inter-action and dependence (e.g. conflicts and compatibilities, trade-offs and synergies)

1.4. Stakeholders identification and analysis

Stakeholder mapping involves identifying key stakeholders who are willing and able to support the community's vision and mission. You will need to find stakeholders who share the community's vision and whose goals are aligned to the community's. In order to identify the correct people that will support the community's efforts, you will need to assess and analyze the environment of your community finds itself in so that you know who you need to engage with in order to meet the community's needs.

At the start of a stakeholder mapping session, the facilitators should clearly explain:

- Who the actors represented on the map are;
- What type of linkages should be represented;
- What level of detail is needed

The following steps are suggested:

- Represent individuals and their names on the map, as well as their affiliation to an organization.
- Clearly indicate the actors who are physically present at the workshop;
- Focus initially on relationships among participants and between participants and third party actors who are not taking part in the workshop
- Draw connecting lines between any two actors who are in contact with one other. Add small arrows to the lines to show the direction of information flows and collaboration;

List all session outcomes Stakeholder mapping: Identifying all stakeholders and which have the most influence in the community. You can use a stakeholder mapping tool, to make a decision about which stakeholders meet your community's needs. Ideally you will look for stakeholders who have a high interest in supporting your cause and enough influence to be able to provide that support. When you have identified potential stakeholders, you will need to see who has the most influence and power to drive the change a community needs. Figure 1 Example of a stakeholder mapping tool What is stakeholder power analysis? Stakeholder power analysis is particularly useful for assisting in decision-making situations where various stakeholders have competing interests, resources are limited, and stakeholder needs must be

appropriately balanced. As well as evaluating existing policies and institutions, it can be used to appraise possible scenarios.

It is about asking questions like:

- Whose problem?
- Who benefits?
- Who loses out?
- What are the power differences and relationships between stakeholders?
- What relative influence do they have? Who are the stakeholders?

Stakeholders are those who have rights or interests in a system. If you are concerned with the future of a system – the stakeholders are those you should worry about. For an organization, for example, stakeholders are any group or individual who can affect, or is affected by the achievement of the organization's purpose Building on the previous gender-awareness exercises and the gender-aware stakeholders' identification and analysis, this section will bring a more thorough understanding on how to consider the different needs associated with specific interest and roles of the identified primary stakeholders. Focus will be on the gender-defriended client needs, in the context of demand-driven advisory service provision. The following presentation is based on FAO training of trainers manual (2017). Needs identifications Needs are about gaps between the current reality and the preferred or desired situation, but also between what resources are currently available and what clients and / or providers have determined should be available. When service needs are not being met, this means that either the service is not available at all (it does not exist in that area or country), or that service provision is in place but is not adequately reaching certain sections of the target population.

Watershed management

- Gap in M&E and Verification methods + Impact evaluation
- Lack Clear **watershed linkage** across Woreda or Regions,
  - ✓ how to consider upstream vs. downstream effects of watersheds – conflict resolution

- The planning process too long.
- Conflict resolution mechanisms poorly outlined,

Integration of indigenous knowledge with introduced technological knowledge

Maintaining of indigenous tree spps (perennial vegetation and forestry) on farmlands, homesteads, boundaries and waterways is a good practice and need to be continued. In view of the growing density of eucalyptus plantation (mono-tree-culture) integration and intensification of indigenous tree/bush species is important and will be pursued further. Peculiarly in Zefie village, there is a practice of keeping and feeding livestock around homestead under the basement house. This practice should be extended to the remaining villages of Embis, Antera and Weyraye.

The existing indigenous knowledge to mention as identified during the situation assessment is the bending of young plants for hand tools. For example it was possible to know that some farmers bend few branches of tree lucern so that it can later on serve as wooden stuff for fixing to the working tools such as cultivating hoe and axe.

i. Private land

Over 90% of the land within the community watershed is owned privately. Private lands are situated in all of the Land Management Clusters. Natural resource development activities that are to be carried out on private lands are:

- Physical SWC measures such as soil/stone bunds on cultivated field
- Smaller gully plugging using brushwood, stone and gabion on individual plots
- Biological/bund stabilization on the physical measures
- Development of hand-dug wells and backyard irrigation
- Homestead development
- Compost making
- Tree/fruit planting

Purchased inputs such as gabion, cement for the capping of the dug-wells and highland fruits/tree seedlings are required including technical assistance. All the other physical and biological SWC measures are carried out by the farmers themselves. The various SWC measures and applications of compost are anticipated to contribute to the amelioration of

soil acidity problem. In terms of PH level and its on-going treatment no information has been yet gathered.

ii. Common land

There are 6 patches of communal grazing fields and parts of the steep slope land which is classified as 4th Cluster. On top of this the bigger gullies and waterways are also seen as common lands. On the grazing lands biomass improvement technique that includes improving its productivity (may be through over sowing) would be applied. Once the species for over sowing are identified acquiring or purchase of seeds for such purpose may be required. The steep slope in the 4th Cluster is also to be closed, hillside/eyebrow terraced, planted and rehabilitated through common efforts. The financial input required here is provision of the right mix of tree and shrub species. The bigger gullies, deteriorated watercourses, foot paths, cattle trafficking lines and wooden bridges are to be treated using common efforts. The total length of gully to be treated is estimated as 3.5Km. This need to be further estimated in length of checkdams. Artificial waterways and cutoff drains are also taken as measures on common lands because they are located along the boundaries of two and more farmers. About 3Km of artificial waterway and 4km of cutoff drain is required (see Development Map). The construction of 1148 meters of artificial waterways and 1712 meters of cutoff drains has been indicated on the development map primarily within the 1st, 2nd and 3rd Land Development Clusters. Others are to be inserted as required (Debre tebor 2010).

iii. Water resource

The water resource development consists of:

- Development of 25 individual hand dug wells for homestead and backyard irrigation
- Development of 4 to 6 community springs for water supply and vegetable production from the overflow. All of the springs are to be equipped with takeoff pipes/stands for domestic use and cattle troughs. Detail study, design and construction requirement would be worked out during subsequent implementation years.
- Installation of 2 or 3 hand pumps for community water supply
- Since the commencement of this model watershed plan RWSEP has started construction (digging) of one community hand pump in Weyraye village. For the

community hand pump or community spring development, the detail survey, design, construction procedure and cost including cost for training of water technicians need to be worked out during implementation. Generally according to information from Rural Water Supply and Environmental Project (RWSEP) in the region the present cost of constructing either a community hand pump or community spring is 32,000 Birr.

iv. Forestry

- Introduction of multipurpose species such as agro-forestry and forage – some of these species are to be propagated by cutting and the rest to be raised in the new nursery under establishment - Chibha, tree lucern, and bamboo planting around homestead and rehabilitated waterways and gully lines. Chibha is an indigenous and to be used for forage. The eucalyptus planting shall continue by individual farmers.
- Introduction of grafted apple and plum around homesteads by individual households. During the project period about 1800 seedlings of apple/plum are required for the whole community watershed. The seed of tree lucern and planting materials such as Imbis can be made locally available.

There are ample opportunities for natural resources management of indigenous and formal knowledge in development. It is this characteristic that drew the attention of development practitioners to the use of indigenous knowledge in development. Lack of this focus in the past has led to the failure of numerous projects in Ethiopia. During the last two decades, particularly in the 1990s, the role of indigenous knowledge is recognized in the International Agricultural Research Centers and multilateral agencies such as the World Bank and the United Nations Agencies.

If we see the, Konso people in the SNNP, Ethiopia, we can appreciate that how much the indigenous knowledge keeps the natural resources. The amazing terracing, bunds and small scale water harvesting structures were constructed by them without any scientifically approved specification before a century by indigenous knowledge. But it is impossible to give them any suggestions and comments on the specification of the structures, because they have enough reason for doing that.

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choice the correct answers (2pts each)

1. The shared experiences of groups are the basis for the formation of culture at___
   A. the level of a nation, C. the level of a nation city,
   B. the level of a nation profession, organization, team, D. All
2. Natural resource management deals with
   A. land use planning B. water management C. biodiversity conservation D. all
3. The aims of stakeholder analysis in natural resource management:
   A. Identify and categorize the stakeholders that may have influence
   B. Develop an understanding of why changes occur
   C. Establish who can make changes happen
   D. All

Test II: Short Answer Questions

- A powerful social learning strategy that creates an environment of learning is _____(4point)
- Write Stages in Stakeholder analysis (5point).

_____

_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating – 7.5 points** **Unsatisfactory – below 7.5 points**

Operation Sheet 1— carry out stakeholder analysis

Objective: To Carry out stakeholders analysis

Procedures

Step 1. Develop purpose and procedures of analysis and initial understanding of the system

Step 2. Identify key stakeholders

Step 3. Investigate stakeholders' interests, characteristics and circumstances

Step 4. Identify patterns and contexts of interaction between stakeholders

Step 5. Assess stakeholder power and potential

Step 6. Assess options and use the findings to make progress

Information sheet 2. Identifying source of information

2.1. Introduction

An Information Source is a source of information for somebody, i.e. anything that might informs a person about something on provide knowledge to somebody. Information sources may be observations, people speeches, documents, pictures, organizations etc.

2.2. **Primary Information Sources**

- Diaries.
- Experiments.
- Poems.
- Personal correspondences.
- Speeches.
- Paintings.
- Interviews.
- Annual reports of an organization or agency.

2.3. Secondary Information Sources

Secondary sources provide second-hand information and commentary from other researchers. Examples include journal articles, reviews, and academic books. A secondary source describes, interprets, or synthesizes primary sources.

Once information is acquired, it must be communicated to stakeholders—those charged with decision making and implementation responsibilities and those whose interests might be affected by an impending decision. In traditional agency planning processes, the information communication process is often restricted to the former group (i.e., decision makers and implementers).

The efficient flow of information to relevant parties, both internal and external, is impacted by information complexity. Environmental problems, and potential solutions to them, require qualified, technical expertise. This problem is confounded by the inability of many research scientists to communicate results and potential implications clearly. Resource managers, faced with heavy workloads, different priorities, and limited staff and time, often are not eager to wade through research papers and reports, particularly given that

doing so might require them to change their behavior (Michael 1973). For advertising we use group discussion, newspaper, radio, Tv, meeting, and different media.

Self-Check – 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What are the two source of information (4pts)?
   _____ and _____
3. List some example of primary source of information (6pts).
   _____
   _____
   _____

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

3.1. Natural resources potential areas

Natural resources are naturally occurring substances that are valuable in their relatively unmodified (natural) form. A Natural resource's value rests in the amount of the material available and the demand for it. The later is determined by its usefulness to production. A commodity is generally considered a natural resources when the primary activities associated with it are extraction and purification, as opposed to creation. Natural resources are (capital) assets and are not provided by human activity, but their quality and capacity to yield goods and services, and therefore their value as productive inputs, are affected by human activity. Natural resources include soil, timber, wild, animals, water, minerals, and other goods taken more or less from the earth. We may be able to define what composed of Natural resources and also present the scientific designation for each component. It is, however, nearly impossible to appreciate the extent of their significance in governing individual relations in isolation from intuitions, which are composed of complex sets of socio/cultural, economic and political factors.

Many aspects of natural resource and environmental management cut across regions: increasing beneficiary and community participation, developing and sharing environmentally friendly technologies, fostering environmental policies, and promoting rural finance to encourage off-farm income-generating activities and microenterprise to help take the pressure off natural resources. Other crosscutting issues include gender and indigenous knowledge. Nevertheless, the causes and effects of environmental degradation vary considerably across regions, countries and agro-ecological zones, creating a great diversity of NRM issues. Thus one of the key challenges is to tailor solutions to the needs of each particular area.

A major concern is land and water degradation, caused largely by the spread of desertification and the growing scarcity of arable land surface, groundwater and rangeland. As the growing population turns to wooded lands for its cooking fuel, timber and expanding agriculture, the resulting depletion of forests is compounding the problem. In response, IFAD is emphasizing sustainable approaches to agricultural intensification,

as well as promoting appropriate technologies, community empowerment, informed decision-making and policies that support NRM

Degradation of natural resources is a serious problem in Ethiopia: the region suffers from deforestation, loss of soil fertility, soil compaction, water scarcity and overgrazing.

The major areas of concern are arresting and reversing deforestation, controlling erosion and managing soil, managing soil moisture and water, halting the degradation of pastures, recovering and conserving marine resources and conserving biodiversity.

objectives, *inter alia,* by*:*

- *reducing the pressure on the natural resource base* by creating alternative livelihoods (especially to agriculture where more than 80% of the rural population are employed and on wood resources on which more than 94% of the population depends for energy);
- *promoting approaches and techniques* that encourage sustainable use or exploitation of natural resources through scientific and technological applications, balancing resource supply and demand and raising public awareness on environment;
- *establishing a governance framework that* ensures more equitable, regulated use of natural resources in order to preserve and bequeath to future generations the basic wealth necessary for sustainable development.

3.2. Advertising means

Advertising is a means of communication with the users of a product or service. Advertising has three primary objectives: to inform, to persuade, and to remind. Informative Advertising creates awareness of brands, products, services, and ideas. It announces new products and programs and can educate people about the attributes and benefits of new or established products.

Means of promote natural resources

- Reduce, reuse, and recycle. Cut down on what you throw away
- Volunteer. Volunteer for cleanups in your community
- Educate

- Conserve water
- Choose sustainable
- Shop wisely
- Use long-lasting light bulbs
- Plant a tree

Advertising media is used for communicating a promotional message. Examples include online banners, radio spots, billboards, television advertisements or in print media, ads in newspapers. There is always a close connection to the advertising medium.

4 types of Advertising

- Display Advertising
- Video Advertising
- Mobile Advertising
- Native Advertising

Self-Check – 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. List some potential resources exist in your area(5pts)
   _____
   _____
2. How do you promote natural resources (5pts)?
   _____
   _____

Note: **Satisfactory rating -5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

LAP TEST	Performance Test

Name……. ID……..
Date…….

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1** hour for task. The project is expected from each student to do it.

Task 1- Carry out stakeholder analysis

LG #31	LO #3- Undertake a site analysis

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- visiting and inspecting the site by using tools and equipment
- Quantifying and mapping physical element and features of the site
- Recording Soil and topography aspects and climatic factor
- Assessing and documenting legal requirements and constraints
- Assessing the potential for natural resources conservation
- Identifying and recording the limiting factors
- Determining and recording options for passive and active interventions
- Assessing and recording other relevant information

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, **upon completion of this learning guide, you will be able to**:

- Visit and inspect the site at the first stage of the design work by using appropriate tools and equipment.
- Quantify and map Physical element and features of the site, its physical and biological condition and the presence of threats onto the base plan.
- Record soil and topography aspects, habitat resources, existing fauna and flora and climatic factors on the base plan and in the site report
- Assess and document legal requirements and constraints for natural resources utilization
- Assess, identify and the potential for natural resources conservation
- Identify and record the limiting factors
- Determine and record options for passive and active interventions
- Assess and record other relevant information

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed.
4. Ask your trainer for assistance if you have hard time understanding them.
5. Accomplish the “Self-checks” which are placed following all information sheets.
6. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
7. If you earned a satisfactory evaluation proceed to “Operation sheets
8. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
9. If your performance is satisfactory proceed to the next learning guide,
10. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information sheet 1- Visiting and inspecting the site by using tools and equipment

1.1. Physical elements and features of the site

Geographical features are the components of the Earth. There are two types of geographical features, namely natural geographical features and artificial geographical features. Natural geographical features include but are not limited to landforms and ecosystems. For example, terrain types, bodies of water, natural units (consisting of all plants, animals and micro-organisms in an area functioning together with all of the non-living physical factors of the environment) are natural geographical features. Meanwhile, human settlements, engineered constructs, etc. are types of artificial geographical features.

Any unit that includes all of the organisms (ie: the "community") in a given area the physical environment so that a flow of energy leads to clearly defined trophic structure, biotic diversity, and material cycles (i.e.: exchange of materials between living and nonliving parts) within the system is an ecosystem." Living organisms are continually engaged in a set of relationships with every other element constituting the environment in which they exist, and "ecosystem" describes any situation where there is relationship between organisms and their environment. What makes them geographical features is that they are located

A biome is a geographically defined area of ecologically similar communities of plants, animals, and soil organisms, often referred to as ecosystems. Biomes are defined based on factors such as plant structures (such as trees, shrubs, and grasses), leaf types (such as broadleaf and needle leaf), plant spacing (forest, woodland, savanna), and climate. Unlike ecozones, biomes are not defined by genetic, taxonomic, or historical similarities. Biomes are often identified with particular patterns of ecological succession and climax vegetation. An ecosystem is also where animals live in biomes (Ocean, Deserts, Grasslands and so on).

1.2. Landforms

A landform comprises a geomorphological unit, and is largely defined by its surface form and location in the landscape, as part of the terrain, and as such, is typically an element of topography. Landforms are categorized by features such as elevation, slope, orientation, stratification, rock exposure, and soil type. They include berms, mounds, hills, cliffs, valleys, rivers and numerous other elements. Oceans and continents are the highest-order landforms.

A **body of water** is any significant accumulation of water, usually covering the Earth. The term *body of water* most often refers to large accumulations of water, such as oceans, seas, and lakes, but it may also include smaller pools of water such as ponds, puddles or wetlands. Rivers, streams, canals, and other geographical features where water moves from one place to another are not always considered "bodies" of water, but are included here as geographical formations featuring water.

1.3. Artificial geographical features.

Settlements

A settlement is a permanent or temporary community in which people live. A settlement can range in size from a small number of dwellings grouped together to the largest of cities with surrounding urbanized areas. The medieval settlement research group includes as part of a settlement, associated features such as roads, enclosures, field systems, boundary banks and ditches, ponds, parks and woods, mills, manor houses, moats and churches.

Engineered constructs: Engineered geographic features such as **highways, bridges, airports, railroads, buildings, dams, and reservoirs**, which are part of the anthroposphere because they are man-made, are artificial geographic features.

List of inspection tools and equipment

- Backhoe or excavator.
- Shovel, spade, auger, and/or probe.
- Water bucket and bottle.
- Knife or trowel.
- Measuring device (i.e., yardstick or tape measure)

- Soil charts, maps, and Munsell soil color book.
- Logs and forms.
- GPS
- Top map
- camera

Physical element and features include:

- Site boundaries, fences, roadways, tracks, footpaths
- Buildings and other structures, built structures
- Water features
- Recreational facilities, public access
- Adjacent land uses
- Easements and rights of way
- Overhead/underground services and utilities
- Existing vegetation and
- Sites of cultural interest.

Self-Check – 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Match column A with column B (2pts each)

A	B
1. Landforms	A. any significant accumulation of water
2. Body of water	B. permanent or temporary community in which people live
3. Settlements	C. typically an element of topography

Test II. Give short answer

1. List and discuss the physical element and features (5pts)

_____

_____

_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 4 points** **Unsatisfactory - below 4 points**

2.1. Physical and biological condition

The area where an organism lives is called its habitat. A habitat includes both biotic and abiotic factors. A niche is the full range of physical and biological conditions in which an organism lives and the way in which the organism uses those conditions.

Biological condition is measured in a variety of ways depending on the objectives of the assessment. Multimetric indices, for example, measure the ecological complexity of biological assemblages and usually include representative metrics such as species richness, complexity and tolerance as well as trophic measures.

The physical environment includes all non- living things. - For example= land, water and air. - It provides raw material. - The biological environment includes all living things. Physical environment derives most of its energy from the Sun. The biological environment, on the other hand, consists of all the living beings, such as humans, animals and micro-organisms. Elements of biological environment derive their energy from the physical environment.

The physical environment includes land, air, water, plants and animals, buildings and other infrastructure, and all of the natural resources that provide our basic needs and opportunities for social and economic development. A clean, healthy environment is important for people's physical and emotional wellbeing.

2.2. Presence of threats

Threats refer to factors that have the potential to harm an organization. For example, a **drought is a threat to** a wheat-producing company, as it may destroy or reduce the crop yield. Other common threats include things like rising costs for materials, increasing competition, tight labor supply.

Threats are anything (e.g., object, substance, human, etc.) that are capable of acting against an asset in a manner that can result in harm. A tornado is a threat, as is a flood, as is a hacker. A threat is a potential for harm. The presence of a threat does not mean that it will necessarily cause actual harm.

Map Elements are **parts that make up the design and layout** of a map are visual elements, which allow the transfer of information. The cartographer arranges the visual elements into a functional composition to facilitate communication.

A physical map usually includes labels for features such as mountain ranges and bodies of water. Maps present information about the world in a simple, visual way.

A map should include the following components namely, the title, scale, direction, grid system, projection, legend, conventional signs and symbols. A map should include the following components namely, the title, scale, direction, grid system, projection, legend, conventional signs and symbols.

Some threats may include:

Weeds: Weeds threaten our environment, primary production industries, community and shared spaces. They can damage our natural landscapes, agricultural lands, waterways and coastal areas by displacing native species, contributing to land degradation and reducing farm and forest productivity. Weeds can perform vital ecosystem services such as protecting and restoring exposed or degraded soils. In addition, some weeds provide habitat for beneficial organisms, and thereby contribute significantly to natural and biological control of some insect pests.

Feral animals: Feral animals impact on native species by predation, competition for food and shelter, destroying habitat, and by spreading diseases. The impacts of feral animals on the Wet Tropics environment may include predation on native species, competition for food and habitat, degradation of habitat, soil erosion, disease and weed transmission, and changes in fire regimes.

Erosion and exposure of ground surfaces: The effects of soil erosion go beyond the loss of fertile land. It has led to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in fish and other species. And degraded lands are also often less able to hold onto water, which can worsen flooding.

Compaction of soils: A decrease in water conductivity as a result of soil compaction may induce surface runoff of water. This, in turn, may carry pollutants and nutrients directly to surface waters. Compaction may also reduce soil biodiversity and rooting depth, having a strong effect on water and nutrient use efficiency. Soil compaction increases soil density, reduces porosity (especially macroporosity), and leads to increased penetration resistance and a degradation of soil structure. This degradation is enforced when tillage is used to break up compacted soils.

Debris or foreign matter: Visual inspections of areas is an effective method for checking for larger types of Foreign object Debris (FOD) in work areas, on runways, and so on. A newer type of FOD detection is the use of cameras, radar, and infrared technologies to scan for the presence of FOD. These systems can help detect larger pieces of FOD, as well as wildlife.

It is estimated that **damages and delays caused by Foreign Object Debris** (FOD) totals billions of pounds annually. FOD is typically detected with manual visual inspections that involve personnel driving at high speeds down the runway. ... This method is often costly, time consuming and disruptive.

Self-check 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Part I: write true if statement is correct and false if statement is incorrect (2pts each)

1. A niche is the full range of physical and biological conditions in which an organism lives and the way in which the organism uses those conditions.
2. Elements of biological environment derive their energy from the physical environment.
3. The presence of a threat does not mean that it will necessarily cause actual

Part II: Short Answer Questions

1. List and discuss some threats on environment (10pts)

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 8 points** **Unsatisfactory – below 8 points**

Operation Sheet 1— conduct biophysical survey

Objective: To identify biophysical features of the site by village mapping

Procedures

- Choose appropriate site where the Community Water shade could see most of their area
- Decide what sort of map should be drawn (social, natural resources, rangelands, etc.),
- Ask the Community to sketch on the ground (DAs have to report and copy it on paper) or on a flip chart the map of the community watershed units, recording the main features related to land use and their value in terms of productivity, and basic community assets based on their perception.
- The simplest way for Community is to draw a map to the very bare soil by using sharp sticks and other simple materials such as stones, pebbles, straws, etc..
- Select a volunteer who knows the area and the topic of the mapping exercise, and willing to share his/her knowledge
- Choose a suitable place (ground, floor, paper) and medium (sticks, stones, seeds, pens, pencils, chalks) for the maps
- Encourage discussion and debate
- Help the people get started but let them draw the map by themselves. Be patient and don't interrupt them. It is their map!. Sit back and watch but facilitate the process
- Keep a permanent record on paper or photo including mapper's names to give them credit.
- Allow the men and women to do their own map, even if they belong to the same planning team.
- After the map is finished stand around and discuss about it
- make sure you appreciate the work and trigger discussion around resources, assets, access, degradation level, institutions, etc..

3.1. Soil and topography aspects

Topography directly or indirectly controls the spatial distribution of physical, chemical, and biological soil properties. Topography influences soil properties through two main "tools": the gravity-driven lateral migration and accumulation of water and spatial differentiation of the temperature regime of slopes.

Topography has a strong influence on soil development. Soils on the side of hills tend to be shallow, due to erosional losses. Soils on the tops of hills tend to be deep, but lighter in color, due to downward leaching losses. Soils in the valleys tend to be deeper, darker, and contain more horizons.

Topographical Features: Examples include mountains, hills, valleys, lakes, oceans, rivers, cities, dams, and roads. Elevation - The elevation, or height, of mountains and other objects is recorded as part of topography. It is usually recorded in reference to sea level (the surface of the ocean).

Topographic factors such as elevation, slope angle, slope aspect, general curvature, plan curvature, and profile curvature are considered as the main causes of landslides. They are longitude curvature, tangential curvature, cross section curvature, surface area, diagonal line length, surface roughness, and rugosity.

Topography Types

- Karst Topography. Karst topography describes the distinct landscape that is made when underlying rocks dissolve or change shape.
- Mountain Topography. Topographical maps show landforms such as hills and mountains.
- Vegetation, Elevation and Glaciers.

3.1. Habitat resources

A habitat is **a place where an organism makes its home**. A habitat meets all the environmental conditions an organism needs to survive. The main components of a

habitat are **shelter, water, food, and space**. A habitat is said to have a suitable arrangement when it has the correct amount of all of these.

The two main types of habitats are **terrestrial, or land habitats and aquatic, or water, habitats**. Forests, deserts, grasslands, tundra, and mountains are just a few examples of terrestrial habitats. Five essential elements must be present to provide a viable habitat: **food, water, cover, space, and arrangement**.

3.2. Existing fauna and flora

Fauna is all of the animal life present in a particular region or time. The corresponding term for plants is flora. Flora, fauna are collectively referred to as biota. A number of species of both flora and fauna have gone extinct over the past centuries. Apart from the human population rainy day is also beneficial to flora and fauna of a place.

Three measures to conserve Flora and fauna

1. You can donate to wildlife charities. Rest assured your money will be put to good use.
2. Plant more native plants around your area.
3. As much as possible, avoid using pesticides or fertilisers that contain chemicals.

The reasons for conservation of flora and fauna is:

- **To maintain biodiversity** - this ensures that the variety of plants and animals are maintained in the environment such that no species are lost.
- To maintain ecological balance - ecological balance is very important because life is supported by this balance.

The importance of flora and fauna is linked with the very air we breathe and the food we eat. The **flora produces important the medicines**, and the water absolutely necessary for life to exist, would not be if flora and fauna all things in an ecosystem are interdependent.

3.3. Climatic factors

Climate factors are terrestrial factors influencing the weather and weather condition. Climates on Earth are classified according to various parameters (humidity, temperature, sunshine, wind speed). These parameters vary with geography so the altitude, latitude, oceans around. The climatic factors are non-living factors which are responsible for

determining the climatic conditions of an area. The climatic factors include light, temperature, humidity, precipitation, wind, fire, atmosphere etc.

The two most important factors in the climate of an area are temperature and precipitation. The yearly average temperature of the area is obviously important, but the yearly range in temperature is also important.

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What is the difference between flora and fauna (5pts)?

   _____

   _____

   _____

2. Why do you conserve flora and fauna (5pts)?

   _____

   _____

3. List at least six (6) climatic factors (6pts).

   _____

   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 8 points** **Unsatisfactory – below 8 points**

Information sheet 4- Assessing and documenting legal requirements and constraints

4.1 Assessing constraints

The resource constraint definition refers to the limitations of inputs available to complete a particular job: primarily people time, equipment and supplies. In this situation, if you accept no more work than you can handle per week, your time constraints and resource constraints will always remain in balance.

When we talk about resource constraints, the usual ones come to mind: food, oil and water. However we should also consider metals, phosphorous, gas and land. All are under pressure – some more extreme than others.

Adaptation to climate change is already taking place, but on a limited basis (very high confidence). Societies have a long record of adapting to the impacts of weather and climate through a range of practices that include crop diversification, irrigation, water management, disaster risk management, and insurance. But climate change poses novel risks often outside the range of experience, such as impacts related to drought, heat waves, accelerated glacier retreat and hurricane intensity

There are individuals and groups within all societies that have insufficient capacity to adapt to climate change. For example, women in subsistence farming communities are disproportionately burdened with the costs of recovery and coping with drought in southern Africa.

Integrated coastal zone management is as "a continuous process with the general aim of implementing sustainable development in coastal zones and maintaining their diversity. To this end it aims, by more effective management, to establish and maintain (sustainable) levels of use, development and activity in coastal zones and eventually to improve the state of the coastal environment."Gubbay (1990) identified any coastal zone management program as requiring a national perspective, a long-term view, an integrated approach; communication, collaboration and coordination, public involvement, a flexible approach, and a specific agency to take the lead.

The Local Government Planning and Development Acts and the regulations made there under every local authority to "make a plan indicating the development objectives for their own area." These plans are known as development plans. A development plan must consist of a written statement and a plan, which is essentially a map, indicating the development objectives for the area in question. There is no exhaustive definition of the term "development objectives" but the term includes objectives for physical, economic, spatial, and social development. This plan must be reviewed at least once every five years and documented for future.

Once the draft development plan and its amended version have been put on public display to allow objections and representations, it is the function of the elected representatives of the Council to adopt the plan by resolution. Once this has been done, the plan becomes a legally binding document, therefore binding the local authority to the implementation of its objectives.

In this module, adaptation practices refer to actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed

or expected changes in climate. Thus, investment in coastal protection infrastructure to reduce vulnerability to storm surges and anticipated sea-level rise is an example of actual adjustments.

4.2 Legal requirements

Documentation process standards define the process used to produce documents (example here). This means that you set out the procedures involved in document development and the software tools used for document production. Document process quality standards must be flexible and able to cope with all types of documents.

Documentation can be paper-based, electronic or a mix of both. It can also take a number of forms, including the care plan, handover notes, checklists, pathology results, operation reports and discharge summaries. For this criterion, organisations are required to have in place systems to ensure that essential information about a person's care is documented

in the healthcare record. For documentation to support the delivery of safe, high-quality care, it should:

- Be clear, legible, concise, contemporaneous, progressive and accurate
- Include information about assessments, action taken, outcomes, reassessment processes (if necessary), risks, complications and changes
- Meet all necessary medico-legal requirements for documentation.

Regardless of who records information in the healthcare record, organisations need to ensure that their systems and processes for documentation meet the requirements of this standard. This involves supporting the workforce to document information correctly, and could include policies or training that clearly describe:

- The workforce's roles, responsibilities and expectations regarding documentation
- When documentation is required
- How to gain access to the healthcare record and templates, checklists or other tools and resources that support best-practice documentation.

Programming should include options for capacity-building and the introduction of small-scale contractors and local consultants. The process of change should be as participatory, consultative and transparent as possible, with incentives and compensation to encourage change and ease transitions such as redundancy.

An institutional set-up that ensures good governance usually has the following features: Participation, Rule of Law, Transparency, Responsiveness, Consensus Orientation, Equity, Effectiveness and Efficiency and Accountability.

Costanza et al. (2000: 153) identified several principles of governance around which a reconstituted organization capable of responding to complex environmental challenges might be built. These include:

1. R**esponsibility**—Access to environmental resources carries attendant responsibilities.
2. **Scale-matching**—Institutions match the scale of the environmental problem.

3. **Precaution**—In the face of uncertainty about irreversible environmental impacts, humans should err on the side of caution.

4. **Adaptive management**—Decision makers acknowledge uncertainty and continuously gather and integrate information, with the goal of adaptive improvement.

5. **Full-cost allocation**-All internal and external costs and benefits of resource use are identified and appropriately allocated.

6. **Participation**—All affected stakeholders are engaged in the formulation and implementation of decisions concerning environmental resources.

These principles are consistent with attributes for effective environmental administration suggested by Paehlke and Torgerson (1990):

1. **Non-compartmentalized**—Organizations should resist the "bureaucratic tendency toward compartmentalization and develop the capacity to embrace diverse disciplines as well as affected authorities.

2. Open—Institutional decision making is open and transparent. Given citizen access through legal processes as well as access to information through electronic means, the ability of organizations to bound debate and discussion within bureaucratic walls is unlikely.

3. **Decentralized**—Environmental management focuses on local, idiosyncratic issues. It must be sensitive to, and aware of, local knowledge and initiative, but also acknowledge external factors and large-scale processes. The resulting "paradox of scale" (Lee and Stankey 1992: 35) places responsibility for ecological regulation in small-scale institutions, while locating coordinating responsibilities in collaborative structures at the ecological scale of the regulated system.

4. **Anti-technocratic**—Although scientific understanding is necessary for environmental administration, it is insufficient for handling environmental problems. Organizational processes must be conducted in a manner that educates both citizens and experts.

5. **Flexible**—The emergent quality of many environmental problems necessitates development of an adaptive capacity and an ability to operate under uncertainty and ambiguity.

The competent minister shall establish and announce the basic policy in order to comprehensively promote the effective use of resource by utilizing recyclable resources and reusable parts.

“Recyclable resources”: Articles that are useful and exist among used goods or by-products, and usable as raw material “Reusable parts”: Articles that are usable among used goods and are usable as parts or a part of the product should be documented.

Different request would be coming in to you through various means. Those requests may have also different purposes. Therefore, documenting the request accordingly would help you to properly react to request with referring to it. This would further avoid complication and promote keeping evidence for future use. Moreover, identification of request is important to process information and document those information for physical planning, land development and environmental control in the planning area. Some of the requested/ required information may be obtained from documented report, maps and aerial photographs if available. However, much of the information will have to be collected from field reconnaissance. Thus, documenting information would help in obtaining information with saving time and resources with limited core disciplines.

- **Principles of Good Record Keeping**
  - ✓ Be factual, consistent and accurate;
  - ✓ Be updated as soon as possible after any recordable event;
  - ✓ Provide current information on the care and condition of the patient;
  - ✓ Be documented clearly in such a way that the text cannot be erased;

Self-check 4	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What are constraints (2pts)?

   _____

   _____

   _____

2. Define documentation (2pts)?

   _____

   _____

3. Write Principles of Good Record Keeping (6pts).

   _____

   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 5 points** **Unsatisfactory – below 5 points**

5.1. Potential resources

These are resources that exist in a region and may be used in the future. For example, if a country has petroleum in sedimentary rocks, it is a potential resource until it is actually drilled out of the rock and put to use. Potential resources are those which are available in the region but are not fully used. But these resources could be used in future. For example, uranium, Oil, Gold present in Ethiopia is a potential resource which could be used in the future.

Those resources where we know the total availability of quantity and quality, are called the Actual Resources. Those resources which exist in a particular region and can be used in the future are called Potential Resources.

Potential resources: Potential resources are those that can be used in the future. Example – petroleum in sedimentary rocks until drilled out and put to use, remains a potential resource.

Actual resources: Resources that have been surveyed, quantified and qualified and are currently in use. Examples – wood processing, which depends on technology and cost.

Reserve resources: Forming part of an actual resource that can be developed in the future.

Stock resources: Resources that have been surveyed, but due to lack of technology, cannot be put to use. Example – hydrogen.

Using alternate resources is one thing that will help; creating better resource management plans is what will also help to preserve these resources for the future.

5.2. Water

Although many countries are working to build water treatment plants, the fact is that due to changes in the climate, the amount of rain and ice melts from winter have dropped off and lowered the reserve supplies of freshwater to be treated. There are initiatives to

educate and regulate the use of water in the world, as well as exploration into the technology of water farming in arid countries too.

- **Methods of conserving water**
  - ✓ Avoiding indiscriminate dumping of sewage/refuse inside water bodies to prevent pollution.
  - ✓ Checking water pipes and taps regularly and repairing them in case of damage to reduce water wastage.
  - ✓ By treating used water in water treatment plant to ensure their availability at all times.

5.3. Air

Clean air is necessary for the existence of life on this planet. It is essential for the existence of plants, animals and wildlife. It is important to reduce air pollution as polluted air degrades the environment and can enter our body, causing health-related problems.

5.4. Coal

Coal is estimated to be able to last less than 200 more years. One of the major issues is that as countries such as China increase their demands on the coal supply, it will dwindle faster. Coal is also the primary source of air pollutants in the world, so there is much discussion about regulating its usage. The problem is it is one of the cheapest sources of fuel for industrial applications.

5.5. Natural gas

Natural gas reserves are doing only slightly better than oil; it is estimated that there is enough to last for 60 years. Gas is a much cleaner fuel source than oil, which has led to an increased level of consumption of it as an alternative fuel, but it still stands to run out quickly.

5.6. Soil

Another important natural resource is soil. Soil is composed of many different particles, and nutrients in the soil help plants grow. Apart from this, soil can also be used to provide shelter. A pile of garbage, along with some soil when placed in a worm compost bin, creates nutrient-rich soil that helps in the growth of plants and makes them healthy.

5.7. Forests and Timber

As the world gets more modern and the population grows, there is more demand for housing and construction projects. This reduces open green spaces. Forests are necessary to preserve the ecology of the world that supports all of the natural resources and life.

Self-check 5	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Match Column B with Column A

A	B
1. Potential resources	A. Potential resources are those that can be used in the future.
2. Actual resources	B. Resources that have been surveyed, quantified and qualified and are currently in use.
3. Reserve resources	C. Forming part of an actual resource that can be developed in the future.
4. Stock resources	D. Resources that have been surveyed, but due to lack of technology, cannot be put to use.

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2 points** **Unsatisfactory – below 2 points**

Information sheet 6- Identifying and recording the limiting factors

6.1. Limiting factors

In the natural world, limiting factors like the availability of food, water, shelter and space can change animal and plant populations. Other limiting factors, like competition for resources, predation and disease can also impact populations. Limiting factors fall into two broad categories: density-dependent factors and density-independent factors.

Limiting factors are the factor that limits the reaction rate in any physiological process governed by many variables. Limiting factors are the environmental factor that is of predominant importance in restricting the size of a population lack of winter browse is a limiting factor for many deer herds.

Limiting factors are resources or other factors in the environment that can lower the population growth rate. Limiting factors include a low food supply and lack of space. Limiting factors can lower birth rates, increase death rates, or lead to emigration.

6.2. Recording Limiting factors

Each limiting factor section discusses how to assess or record the factor and how to mitigate for it. Well kept records support you as a therapist in delivering a high standard of care to your clients. They maintain a reliable history of important information relating to your clients' health, treatments and relevant events, rather than relying on memory.

Examples include documents, books, paper, electronic records, photographs, videos, sound recordings, databases, and other data compilations that are used for multiple purposes, or other material, regardless of physical form or characteristics.

Self-check 6	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What is limiting factors? (2 pts)

   _____
   _____
   _____

2. List some form of recording. (2pts)

   _____
   _____
   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2 points** **Unsatisfactory – below 2 points**

7.1. Passive interventions

Passive interventions include changing management regimes. Passive interventions are cost-effective and continually available within an environment or setting, allowing individuals to interact, engage and learn about topics. Passive prevention strategies are those that do not require action by an individual for protection to occur; individuals are automatically protected, and even sometimes without their awareness.

Some of these prevention techniques can be active involving **individual participation** and others are passive. Primary prevention generally has a focus on specific risk factors for certain diseases. Secondary prevention involves the detection and treatment of pre-clinical changes.

7.2. Active interventions

Active interventions may include: habitat development, releasing regeneration niches, applying regeneration triggers such as tillage, fire or smoke products, wetting and drying cycles, installing biological foci, and mycorrhizal inoculation. Some of these prevention techniques can be active involving **individual participation** and others are passive. Primary prevention generally has a focus on specific risk factors for certain diseases. Secondary prevention involves the detection and treatment of pre-clinical changes.

Habitat development

In ecology, the term habitat summarizes the array of resources, physical and biotic factors that are present in an area, such as to support the survival and reproduction of a particular species. A species habitat can be seen as the physical manifestation of its ecological niche. Habitats may change over time.

Releasing regeneration niches

The specific niche that must exist in order for a plant to become re-established in an area it formerly occupied. A plant that can tolerate a wide range of environmental conditions when mature may nevertheless require very specific conditions for the germination and

establishment of its seeds. For example, the Californian redwoods require burned soil and many grassland plants need disturbed, bare microsites for their germination.

All living organisms have some ability to regenerate as part of natural processes to maintain tissues and organs. Some animals have extensive regenerative abilities. For example, the tiny freshwater animal called Hydra can form two whole bodies after being cut in half.

Applying regeneration triggers

Applying regeneration triggers such as tillage, fire or smoke products, wetting and drying cycles, installing biological foci, and mycorrhizal inoculation

Regeneration is the natural process of replacing or restoring damaged or missing cells, tissues, organs. First and foremost, there must be **a wound**, although the original appendage need not have been lost in the process. Second, there must be a source of blastema cells derived from remnants of the original structure or an associated one. Finally, regeneration must be stimulated by some external force.

Self-check 7	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What is the difference between passive and active intervention? (5 pts)

   _____
   _____
   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2 points** **Unsatisfactory – below 2 points**

8.1. Assessment

Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what community know, understand, and can do with their knowledge as a result of their educational experiences; the process culminates when assessment results are used to improve.

There are a number of things that need to be recorded, including:

- Resource utilization.
- purpose of assessment.
- assessment records, data and information management.
- arrangements for utilization, recognition of current resources, recognition of prior learning.
- expert needs and qualifications.

It is necessary to keep Records of Assessments to give a checkable record of a beneficiary progress from sustainable managements or programme. The assessments act as a back-up if a community loses their work to show what was assessed and what was achieved.

Self-check 8	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What is assessment? (5 pts)

_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2 points** **Unsatisfactory – below 2 points**

LAP TEST	Performance Test

Name……. ID……..
Date…….

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1** hour for task. The project is expected from each student to do it.

Task 1- conduct biophysical survey

LG #32	LO #4- Develop a concept design

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Preparing concept design
- Undertaking consultation with the stake holders
- Using a professional graphic format

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, **upon completion of this learning guide, you will be able to**:

- Concept design is prepared to illustrate location and layout of the proposed natural resources area according to the design brief.
- Consultation with the stake holders is undertaken to establish agreement on options and approaches for development in accordance with the proposed ecological aims and goals.
- A professional graphic format is used to present the concept design with supporting written information and justification or reasons for the proposed actions.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed.
4. Ask your trainer for assistance if you have hard time understanding them.
5. Accomplish the “Self-checks” which are placed following all information sheets.
6. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).

1.1. Introduction

Concept design is the initial big picture or macro design. It shows us what problems the product will solve, how it will solve them, and what it will feel like as it is solving them. A design concept is the core idea driving the design of a product, explained via a collection of sketches, images, and a written statement. Concept Design is about forming, modeling, shaping a new idea, approach, abstraction of an implementation.

1.2. Basic concept of design

The principles of design are the rules a designer must follow to create an effective and attractive composition. The fundamental principles of design are Emphasis, Balance and Alignment, Contrast, Repetition, Proportion, Movement and White Space. Conceptual designs help to create a clear user interface which is easy to understand and interpret. It helps to describe the roles of different users and their requirements in detail so that the project is better understood from the offset.

Sustainable utilization of natural resources is the proper management of natural resources for the benefit of the entire human community. The main aim of sustainable development is to provide resources for present generations without compromising the needs of future generations.

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What is a fundamental principle of design? (5 pts)

   _____
   _____
   _____

2. What is Concept Design? (3 pts)

   _____
   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 4points** **Unsatisfactory – below 4 points**

2.2. Consultation

The Management of Natural Resources in Ethiopia Project used farmer-to-farmer training to bring about technological change and increase the capacity of farming communities to undertake their own development activities. Innovative means were used to disseminate knowledge and skills, but they were soundly based on the traditional values of the community. Farmers needed support during this process, so well-respected local craftsmen and women were trained to provide advice on cultivation practices, run on-farm trials and disseminate information. 'Short-chain' market linkages were also established to connect rural production to urban demand for produce. The local mining community also proved to be a good market. Many of these features may be common place in projects in other developing countries.

Stakeholder consultation involves the development of constructive, productive relationships over the long term and can provide many mutual benefits.

For stakeholders, a company's consultation process is an opportunity to get information, as well as to educate company staff about the local context in which a project will take place, to raise issues and concerns, ask questions, and potentially help shape the project by making suggestions for the company.

- **What Is Stakeholder Consultation?**
  - ✓ Identify and track needs and expectations.
  - ✓ Identify and track perceptions and attitudes.
  - ✓ Provide feedback on specific planned developments.
  - ✓ Evaluate implementations and actions.
  - ✓ Establish the brand values and positioning of the corporation as seen by others.
- **Steps of Stakeholder Consultation**
  - ✓ Identify priority issues and conduct a stakeholder analysis. ...

- ✓ Prepare a consultation plan. ...
- ✓ Ensure prior information dissemination. ...
- ✓ Incorporate feedback and share results. ...
- ✓ Maintain continuous stakeholder engagement and easy access to a grievance mechanism.

Consultation is a two-way process between you and your workers where you: talk to each other about health and safety matters. Listen to their concerns and raise your concerns. Seek and share views and information.

	Written test
Self-check 2	

Name…… ID…… Date…….
Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What Is Stakeholder Consultation?(5 pts)

_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2.5 points** **Unsatisfactory – below 2.5 points**

3.1. Graphic design

Graphic design is a craft where professionals create visual content to communicate Graphic designers attract viewers using images, color and typography.

The purpose of the detailed survey is to establish all the details of the chosen alignment such as the exact location, width and levels of the road and drainage arrangements. On this basis, the precise quantities of works are estimated and used as the basis for further planning and preparation of works.

Using the established center line for the road, this setting out exercise will result in details relating to:

- The exact location and amount of excavation works,
- Detailed measurements of fills and embankments,
- All road levels including shape of road camber,
- Location and shapes of the drainage system, including side and miter drains, cut-off drains, drifts and culverts, and
- Exact location and dimensions of any other structures.

The four common types of files are document, worksheet, database and presentation files. Connectivity is the capability of microcomputer to share information with other computers. Wireless communication using mobile devices is the beginning of wireless revolution.Adobe Illustrator is one of the most widely used programs to create graphic designs. AI is a vector image-based format but they can also include linked raster images. This type of file format is the best to create vector images which are the most easily manipulated image files.

Actionable tips for making professional looking designs.

- Keep it consistent. With so many incredible fonts on offer, it can be tempting to mix and match with every new creation
- Pay attention to alignment
- Quality is key
- Don't forget about good writing
- Ensure your text is readable

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What Is graphic design?(2 pts)

_____
_____
_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 1points** **Unsatisfactory – below1 points**

LG #33	LO #5- Produce a final plan

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Preparing and drafting A detailed plan
- Communicating information on the plan clearly
- Including plan, notes and specifications on plan
- Organizing and preparing further landscape design documentation

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, **upon completion of this learning guide, you will be able to**:

- Prepare and draft a detailed plan according to the design brief, concept design and organizations' guidelines
- Communicate Information on the plan clearly with the work in a sequential manner
- Include plan, notes and specifications on the plan to give an interpretation of the plan, to establish the quality and standard of the works, and the responsibilities of the community during implementation.
- Organize and/or prepare further landscape design documentation according to the plan brief and organization guidelines.

Learning Instructions:

2. Read the specific objectives of this Learning Guide.
3. Follow the instructions described below.
4. Read the information written in the "Information Sheets". Try to understand what are being discussed.
5. Ask your trainer for assistance if you have hard time understanding them.
6. Accomplish the "Self-checks" which are placed following all information sheets.

1.1. Drafting a detailed plan

A process of managing natural resources in a systematic way, which includes multiple aspects of natural resource use (biophysical, socio-political, and economic) meet production goals of producers and other direct users (e.g., food security, profitability, risk aversion) as well as goals of the wider community (e.g., poverty alleviation, welfare of future generations, environmental conservation). It focuses on sustainability and at the same time tries to incorporate all possible stakeholders from the planning level itself, reducing possible future conflicts. The conceptual basis of Natural Resources Management (NRM) has evolved in recent years through the convergence of research in diverse areas such as sustainable land use, participatory planning, integrated watershed management, and adaptive management. NRM is being used extensively and been successful in regional and community based natural management.

The primary methodological approach adopted by catchment management authorities (CMAs) for regional natural resource management in Ethiopia is adaptive management.

This approach includes recognition that adaption occurs through a process of 'plan-do-review-act'. It also recognizes seven key components that should be considered for quality natural resource management practice:

- Determination of scale
- Collection and use of knowledge
- Information management
- Monitoring and evaluation
- Risk management
- Community engagement
- Opportunities for collaboration.

1.2. Integrated Plan

It is a road map of the community for managing the Water Shade resources. Wise use of the resource

Integrated water shade management planning have long list of economic, administrative, and ecological and social benefits, including:

- Identification of the felt needs of the people
- The empowerment of local disadvantaged groups
- Giving community members an active voice in protecting and restoring watershed resources
- Targeting activities and programs to areas that need greater protection, or where limited resources will be more effective
- Setting a baseline for measuring the success
- Basic and/or general information on watershed
- Detailed Mapping Exercises (present land use and development maps)
- Detail description on the characteristics of different land use types in CWS
    - ✓ Potentials and
    - ✓ Constraints of each land use type
- Description of proposed interventions for each land use type
    - ✓ recommendations
- Detail activity plan
    - ✓ corresponding budget for input, labor, other costs, community contribution

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What Is Integrated Plan?(2 pts)

_____

_____

_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 1points** **Unsatisfactory – below1 points**

2.1. Communication plan

A communication plan is a policy-driven approach to providing stakeholders with information. The plan formally defines who should be given specific information, when that information should be delivered and what communication channels will be used to deliver the information. Clear communication exists when the message received is the same as the message which the sender intended to send.

2.2. Effective Communication

Effective communication is a process of exchanging ideas, thoughts, knowledge and information such that the purpose or intention is fulfilled in the best possible manner. In simple words, it is nothing but the presentation of views by the sender in a way best understood by the receiver.

- Establish and maintain eye contact. Eye contact plays a crucial role in communication.
- Try to send a clear message. There is a huge difference between just saying something, and saying something with intention. ...
- Be receptive to what others say.
- Wait for the other person to finish.

We use communication to share information, comment, ask questions, express wants and needs, develop social relationships, social etiquette, etc.

How to Speak More Clearly to NaturallySpeaking

- Avoid skipping words
- Speak long phrases or full sentences
- Make sure you pronounce even small words like “a” and “the.” If, like most people, you normally pronounce the word “a” as “uh,” keep doing so
- Avoid running words together.

Self-check 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. What Is Communication plan? (2 pts)

   _____

   _____

   _____

2. Define Effective communication (2 pts)

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2 points** **Unsatisfactory – below 2 points**

3.1. Plan and specification

Plan and specification is a method of commercial construction project delivery where design drawings (or plans) are created along with written specifications (or specs) to further describe the equipment and parts shown in the drawings. They include: the drawings, specification and other documents from which the plan is to be constructed, altered, demolished or removed. The proposed procedure for inspection during construction is the definition of the intended building use.

General Notes and/or Specifications, written on the plans or submitted on separate standard size sheets shall show: Nature of electrical service, including number of phases, number of wires, voltage and frequency; Type of wiring; Service entrance.

Specifications describe the products, materials, and work required by a construction contract. They do not include cost, quantity, or drawn information, and so need to be read alongside other information such as quantities, schedules, and drawings.

a. Types of "Specifications"

There are four types of specifications

- Product Specification: This describes a manufacturer's product and its performance without consideration for a particular building
- Project Specification: This describes an architect's design and performance requirements for a particular building
- Master Specification
- Guide Specification

Preparing Specifications

- Leave out brochure language that cannot be objectively evaluated
- Begin the description with a common name for the goods or services; avoid brand names
- Include enough detail for the bidders to understand your requirements.

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. Write four types of specifications (4 pts)

_____

_____

_____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 2points** **Unsatisfactory – below 2 points**

3.3. Landscape design documentation

The principles are the fundamental concepts of composition—proportion, order, repetition, and unity—that serve as guidelines to arrange or organize the features to create an aesthetically pleasing or beautiful landscape.

3.4. **Principles of landscape design**

Landscape Architecture Documentation Standards: Principles, Guidelines, and Best Practices.

- Balance: Balance is having the right amount — not too much or too little — of any quality, which leads to harmony or evenness.
- **Focalization**. May be defined as a selection or restriction of narrative information in relation to the experience and knowledge of the narrator, the characters or other, more hypothetical entities in the story world.
- **Simplicity**. The state of being simple, uncomplicated, or uncompounded.
- **Rhythm and Line.** Linear rhythm refers to the characteristic flow of the individual line. Accomplished artists have a recognizable manner of putting down the lines of their drawings that is a direct result of the characteristic gesture used to make those lines, which, if observed, can be seen to have a rhythm of its own.
- **Proportion.** Proportion is a mathematical comparison between two numbers. According to proportion, if two sets of given numbers are increasing or decreasing in the same ratio, then the ratios are said to be directly proportional to each other.
- **Unity**. Unity is harmony within and among individuals in the group. Unity is built from a shared vision, hope, an altruistic aim or a cause for the common good. Unity makes big tasks seem easy. The stability of unity comes from the spirit of equality and oneness.

The six steps of developing a landscape plan are summarized as follows:

- Develop a base plan.
- Conduct a site inventory and analysis.
- Assess your family's needs.
- Locate the use areas.

- Develop the use areas.
- Develop the planting plan.

Key Landscape Design Elements

- Line. Line is used to carry the eye through a landscape and to create physical flow and connectivity. Vertical lines carry the eye skyward and are useful in expanding small spaces.
- Mass. In design, mass is a measure of visual size.
- Form. Form refers to the shapes of objects in a landscape

Documentation is any communicable material that is used to describe, explain or instruct regarding some attributes of an object, system or procedure, such as its parts, assembly, installation, maintenance and use. Documentation can be provided on paper, online, or on digital or analog media, such as audio tape or CDs.

The purpose of documentation is to: Describe the use, operation, maintenance, or design of software or hardware through the use of manuals, listings, diagrams, and other hard- or soft-copy written and graphic materials. Landscape Design of the area should document and stored for the future utilization.

Self-check 4	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Give short answers

1. List and discuss Key Landscape Design Elements (4 pts)

   _____
   _____
   _____

2. Write the six steps of developing a landscape plan (6pts)

   _____
   _____
   _____
   _____

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating 5 points** **Unsatisfactory – below 5 points**

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WEB ADDRESSES

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