**Natural Resources Conservation and Development**

**Level – III**

**Based on March 2018, Version3 Occupational standards (OS).**

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**Module Title: Participating in Environmental and Social Impact Assessment**

**LG Code: AGR NRC3 M 19 LO (1-5) LG (34-38)**

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**Adama ,Ethiopia**

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| **LG #34** | Lo # 1- Develop understanding the major activities of project and their effect |

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| Instruction sheet |
| This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:   * Acquiring the project proposal * Identifying and listing the activities * Identifying the positive and negative interaction   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:   * Acquire the project proposal * Identify and list the activities * Identify the positive and negative interaction |
| **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 you earned a satisfactory evaluation proceed to “Operation sheets 7. Perform “the Learning activity performance test” which is placed following “Operation sheets” , 8. If your performance is satisfactory proceed to the next learning guide, 9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”. |

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| Information Sheet 1- Acquiring the project proposal |

**1.1. Introduction**

**1.1.1. Definition of key terms**

* **Development proposal-** Consist of a wide range of human activities which provide:- favorable conditions for an increase in the transformation of the neutral biophysical environment to provide the goods and services available to society and actions which directly produce the goods and services.
* **Environment**- There is no generally agreed definition of environment in EIA. Increasingly, it means the complex web of inter-relationships between abiotic and biotic components which sustain all life on earth, including the social/health aspects of human group existence.
* **Environmental impact assessment**-The systematic, reproducible and interdisciplinary identification, prediction and evaluation, mitigation and management of impacts from a proposed development and its reasonable alternatives.  Sometimes known as environmental assessment.
* **Environmental impact report/statement**- Document in which the results of an EIA are presented to decision-makers and, usually, the public.
* **Initial environmental evaluation/examination-** A report containing brief, preliminary evaluation of the types of impacts that would result from an action. Often used as a screening process to assess whether or not proposals should undergo full scale EIA.
* **Environmental and social impact assessment** consists of a multidisciplinary approach, which combines the evaluation of the economic aspects of a project - based on cost-benefit ratios - with the environmental consequences of undertaking the project.

**1.2.** **History of Environmental impact assessment (EIA)-** EIA was first introduced in the USA under the Environmental Policy Act (1969). Since then it has evolved and a variety of offshoot assessment techniques have emerged (focusing, for example on social, biodiversity, environmental health and cumulative effects and risk) acting as a broader impact assessment toolkit. Most countries have now introduced formal EIA systems, usually under dedicated environmental legislation, and have introduced EIA regulations (and often regulatory bodies) specifying when and for which developments an EIA is required, institutional responsibilities and procedures, and specific steps and processes to be followed. EIA has a recent history in Ethiopia; the most important step in setting up the legal framework for the environment in Ethiopia has been the establishment of the Environmental Protection Authority (EPA) by proclamation No. 9/1995. The first comprehensive statement of Environmental Policy for the Federal Democratic Republic of Ethiopia was approved by the Council of Ministers in April, 1997.Environmental Impact Assessment (EIA) Proclamation:-Proclamation No.299/2002, enacted in 2002, empowered the EPA to prepare procedure, regulations, guidelines and standards to effectively implement and enforce EIA proclamation. Environmental guidelines are among the tools for facilitating the inclusion of environmental issues and principles of sustainable development into development proposals. To guide mainstreaming of the principles of sustainability into sectorial projects, sectoral environmental impact assessment guidelines such as gridlines on agriculture, transport, industry, tannery and settlements have been prepared.

**1.3. Environmental impact assessment objectives and principles**

The primary purpose of conducting an EIA is to ensure that the environmental effects of proposed activities are adequately and appropriately considered before decisions are taken. This should serve as a key aid in the decision making process for relevant authorities by providing comprehensive information on the environmental consequences of development. Evaluated information and supporting arguments enable decision makers to evaluate the overall impacts of a proposal and alternatives to that proposal.

There are a number of principles which underlie this objective, these include:

• Early application - the EIA process should be applied as early as possible in the proposed planning of investment as is practical. This should ensure that environmental issues are considered pro-actively before irrevocable decisions are taken. Practicality generally dictates that the EIA process is applied during project conceptualization.

• Participation - this requires that all interested and affected parties have the opportunity to participate meaningfully in the EIA process.

• Issues based - EIA should focus on the resolution of issues which are considered to be important to those participating in the process.

• Alternatives - EIA should consider all feasible alternatives which may include different methods of undertaking a development, alternative sites, and alternative sources of raw materials.

Accountability - project proponents are accountable for the potential impacts of activities being undertaken as well as managing impacts. Consultants are accountable for providing sufficient information to enable decision-makers to take sound decisions. The Competent Agency is accountable for the decisions that are taken.

The two key objectives of the Ethiopian EIA process are the:

• Integration of environmental considerations in development planning processes in order to make use of natural resources in a responsible manner; and

• Protection and enhancement of the quality of all life forms.

**1.4. Limitations of Environmental impact assessment**

EIA is also a way of ensuring that environmental factors are considered in decision-making process along with the traditional economic and technical factors. Importantly EIA requires the scientific (technical) and value issues to be dealt with in a single assessment process. This helps in the proper consideration of all advantages and disadvantages of a proposal. Environmental considerations may, therefore, be set aside in favor of what are felt to be more important considerations. Alternatively, predicted adverse effects on the environment might lead to strict conditions being imposed to avoid these effects or remedy any adverse effects, or perhaps lead to the complete abandonment of a proposal. However, it is most important to recognize that EIA cannot be regarded as a means of introducing an environmental into administrative decision-making processes. Decisions that are unsatisfactory from an environmental point of view can still be made, but with full knowledge of the environmental consequences. The final decision about a proposal depends upon the likely severity of the adverse effects, balanced against other expected benefits.

**1.5. Structure of project proposal**

The Project Proposal is the initial document used to define an internal or external project. The proposal includes sections such as title, start and end dates, objectives and goals, requirements, and a descriptor of the proposed solution. The project proposal functions as the working document between the agency and the client before a potential initiation of the project. Thus, the project proposal is used to define the objectives and requirements of a project for the external party. For the internal party, it is a method to analyze the feasibility and profitability of the project. The main objective of the project proposal is to get the client to buy into your services. Thus, project proposals are a great way to secure funding, win new clients, or convince executives to allocate resources to projects. Writing a successful project proposal requires being on the same page with the clients and wearing their shoes for a moment.

The structure (Format) of a generic Environmental impact assessment is as follows:

1. **Executive summary**

In a few pages it allows anyone (specialist or not) to understand the different repercussions of the project (on the environment, human well-being and safety) and to be informed of the alternatives chosen and the mitigating measures that have to be implemented.

1. **Project description, and legal and administrative framework**

A brief description of the project is necessary with all off-site extensions and their interaction with natural and social components. All the regulations implemented within the EIA must be detailed here.

1. **Scoping and screening**

It is important that people in charge of the protection of the environment (ministries, borrowers, donors, NGOs, associations, inhabitants ) can outline to the investor the limits of the EIA, in time, space and the type of impact to be addressed (as well as the way of evaluating them), and identify the alternatives.

1. **Description of the existing environment**

Precise data relevant to the site is required, describing: intended uses, quality, physical, biological, social, and economic conditions. This description must include other existing or proposed developments. The use of maps, graphs, drawings is very important for a better understanding of the situation. Key data gaps and uncertainties must be identified here.

1. **Analysis of alternatives and basis for the selection of the alternative proposed**

The project description is completed by a precise description of the different choices concerning processes, site and all alternatives that the investor has examined for a better protection of the environment and populations concerned. A comparison of these different alternatives, in term of their potential impact and cost/benefit analysis, is required. The basis on which each alternative is chosen must be stated.

1. **Environmental issues of the project**

Once the project is defined and all alternatives thoroughly studied, this section presents the environmental issues around the final project. Each area of positive or negative impact must be defined in terms of its magnitude, reversibility, period of occurrence and nature (primary, secondary). At this stage it is important to outline in detail the different phases of the project and to address all the environmental repercussions linked with each phase. All the drastically negative repercussions that cannot be eliminated must be identified and mitigating measures must be proposed.

1. **Mitigating measures**

For all remaining negative repercussions, mitigating measures have to be proposed (and must be undertaken as soon as the project starts). These measures must be realistic both technically and economically. The efficiency of each measure in reducing significant negative effects to an acceptable level must be assessed. An estimation of the required investment is necessary at this stage to verify the feasibility of the proposed measures.

1. **Environmental management and training and environmental monitoring plan**

In order to try and prevent environmental accidents, it is necessary to prepare a document to define the role of each person or group in the environmental management team of the future company and the monitoring and training procedures undertaken to enhance the capabilities of the staff and workers.

1. **Appendices(appendex)**

All documents needed for understanding the chosen methodology, the references, the meetings with ministries, scientists, managers, affected groups, the names and qualifications of the authors of the study, need to appear under this heading.

**1.6. Process of Environmental impact assessment**

1. **Screening**

The screening process would form the same purpose as a preliminary environmental impact assessment. Therefore, the proponent should submit to the Competent Agency a screening report that contains the following items:

* The title of the proposed activity;
* The name of the proponent and the consultant (s).
* The address of the proponent and the consultant(s).

**2**. **Scoping**-Scoping is the process of identifying and narrowing down the potential environmental impacts associated with the development. The level of an impact assessment will depend on:-

* the nature and scale of the development proposal and its complexity
* the sensitivity of the environment
* issues identified during the scoping process

The scoping report should be a concise presentation of the major issues identified and the public participation process.

**3. Environmental Impact Assessment Study-**It may be useful to present results of the assessment in the form of a matrix summary, whereby the different activities and associated impacts on the environment are weighted with a scoring system. Impacts must be described according to the following criteria.

* **Nature of the impact**-describing the effects that a proposed activity will have on the environment.
* **Extent**-showing the impacts realized regionally, nationally or even internationally.
* **Duration**-reviewing the span of the impact as being short term (0-5 years), medium term (5-15 years), long term and permanent.
* **Intensity**-here it should be established whether the impact is destructive or innocuous and should be described as low, medium or high.

**4. Identification of mitigating measures**

Mitigation measures aim to minimize or eliminate negative impactsand enhance the benefits wherever possible. The mitigation measures should be prepared as an operational management plan and could include a combination of the following mitigation options:

**5. Reporting**- Once impacts have been interpreted and mitigative measures have been set, it is essential that the information be presented in a form that enables non-experts to comprehend.

**6. Reviewing-** In completion, the EIS or the EIA report should be submitted to the Competent Agency, the IAPs and a specialist for review. Impacts identified in the document should be reviewed in terms of the EIS, via Socio-economic context and potential benefits, effect on public health or risk to life.

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| Self-check 1 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Define the words (Environment, Environmental impact assessment (EIA),Initial environmental evaluation/examination). (5 pts)

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2. Explain purpose of EIA.( 5pts)

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3. Write the short history of environmental impact assessment.(3 pts

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4. Write proses and structure of EIA (3)?

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 2- Identifying and listing the activities |

**2.1. Project activity**

Project activity in environmental impact assessmentdefines the project with enough specificity toaccurately determine the zone of possible impactsand to include activities that are closely connectedwith the proposal so that the entire scope ofenvironmental impacts is evaluated. The activities of the projects are:-

**1. Screening** The screening process determines whether a particular project warrants preparation of an EIA. The threshold requirements for an EIA vary from country to country. Some laws provide a list of the types of activities or projects that will require an EIA, others require an EIA for any project that may have a significant impact on the Environment or for projects that exceed a certain monetary value. In some cases, particularly if the possible impacts of a project are not known, a preliminary environmental assessment will be prepared to determine whether the project warrants an EIA.

**2. Scoping-**Scoping is a stage, usually involving the public and other interested parties that identify the key environmental issues that should be addressed in an EIA. This step provides one of the first opportunities for members of the public or NGOs to learn about a proposed project and to voice their opinions. Scoping may also reveal similar or connected activities that may be occurring in the vicinity of a project, or identify problems that need to be mitigated or that may cause the project to be canceled.

**3. Preparing Terms of Reference-** the Terms of Reference serve as a roadmap for EIA preparation and should ideally encompass the issues and impacts that have been identified during the scoping process. A draft Terms of Reference may be made available for public review and comment. Public review at this early stage of the process provides a key opportunity to ensure that the EIA is properly framed and will address issues of community concern.

* **Terms of Reference will include the following:-**
  + A description of the project
  + A list of the agencies or ministries responsible for overseeing the EIA process and making decisions
  + The geographic area to be studied (also called the ‘impact zone’)
  + EIA requirements in applicable laws or regulations
  + Impacts and issues to be studied
  + Mitigation and/or monitoring systems to be designed
  + Provisions for public involvement
  + Key stakeholders
  + Timeframe for completing the EIA process
  + Expected work product and deliverables
  + Budget for the EIA

**4. Preparing Draft EIA-** A draft EIA is prepared in accordance with the Terms of Reference and/ or the range of issues identified during the scoping process. The draft EIA must also meet the content requirements of the overarching EIA law or regulations. This step will ideally engage a wide range of technical specialists to evaluate baseline conditions, predict the likely impacts of the project, and design mitigation measures.

**5. Public Participation-** Best EIA practice involves and engages the public at numerous points throughout the process with a two-way exchange of information and views. Public participation may consist of informational meetings, public hearings, and opportunities to provide written comments about a proposed project. However, there are no consistent rules for public participation among current EIA systems. Even within a particular country, there can be variations in the quality and extent of public involvement in the EIA process, depending on the type of project being considered, the communities that may be affected, or government agencies that are overseeing the project.

**6. Preparing Final EIA-** This step produces a final impact assessment report that addresses the viewpoints and comments of the parties that reviewed the draft EIA. These comments may prompt revisions or additions to the text of the draft EIA. In some cases, the final EIA will contain an appendix summarizing all of the comments received from the public and other interested parties and provide responses to those comments.

**7. Decision-** A decision to approve or reject a mining project is generally based on the final EIA, but in some instances, an environmental clearance may be just one step in the mine permitting process. The decision may be accompanied by certain conditions that must be fulfilled, such as posting a reclamation bond or filing an Environmental Management Plan.

**8. Administrative or Judicial Review-** Depending on the jurisdiction, there may be opportunities for a party to seek administrative and/or judicial review of the final decision and the EIA process. An appeal may address procedural flaws in the EIA process, such as a failure to hold any required public hearings, or may point to substantive issues that the decision-maker failed to consider.

**9. Project Implementation-** Provided all regulatory requirements are met and permits are obtained, mine development will proceed following the project decision and once opportunities for administrative and/or judicial review are exhausted.

**10. Monitoring-** Monitoring is an important part of project implementation. Monitoring serves three purposes:

* Ensuring that required mitigation measures are being implemented.
* Evaluating whether mitigation measures are working effectively and
* Validating the accuracy of models or projections that were used during the impact assessment process.

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| Self-check 2 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** **Short Answer Questions**.

**Test I: Description**

1. What are the activities in a project? (3pts)

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2. Define the term of reference. (3pts)

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3. Write the purpose of monitoring in project activity? (4pts

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 3- Identifying the positive and negative interaction |

**3.1. Introduction**

Interdisciplinary team A group of people, from a range of disciplinary backgrounds, working together to ensure the integrated use of natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man’s environment**.** Impact assessments are based upon measured, estimated or reasonably expected changes in some attributes of a selected receptor. Work activity is guided both by issues identified during the course of impact assessment and in response to terms of reference approved for the project. For each identified receptor, an assessment of the potential impact is made using the attributes of direction, geographic extent, magnitude, duration, reversibility and confidence in the relationships between cause and effect. An overall impact assessment rating for each receptor is derived based upon the individual attributes. Thus, the quantification and description of a residual project impact, by definition, includes consideration of available mitigation procedures and opportunities. The direction of impact may be described as positive (beneficial), negative (detrimental).

**3.1.1. Positive impact-** Measured or estimated impact represents a real or potential increase in abundance, quality or other attribute of the receptor.

* Enhance environmentally sustainable project design,
* Better compliance with environmental standards,
* Saving in capital and operating costs,
* Avoids later plan adaptations,
* Reduces health costs,
* Increases project acceptance.
* Employment opportunity to local people
* Increase in income and living standard from socio-economic benefits .
* increase in agricultural products due to assured year round irrigation facility
* increase on agro-based local economy
* enhance on landless farmers and small landholders
* Appreciation of land value
* Enhancement of technical skill
* Maintenance of biodiversity. advertisements:
* A healthier local environment, improved human health.
* Cost-saving modifications in project design.
* amelioration of microclimate and other environmental protection uses
* Conservation of catchment area

**3.1.2. Negative impact-** Measured or estimated impact represents a real or potential decrease in abundance, quality or other attribute of the receptor. Three levels of magnitude of the impact have been selected:

Negative/ adverse impacts are:

* Possible impact on law and order
* Possible impact on social, cultural and religious practices
* Impact on social/cultural norms, values and rituals
* Impact on gender
* Possible impact on existing facility and resources
* Possible displacement of households due to intake
* Loss or degradation of private properties
* Land acquisition and resettlement due to project implementation
* Impacts on occupational health, safety and sanitation
* Disturbance and change in landscape, land-use, drainage etc.
* Landslide/Slope failure due to change in natural slope due to construction
* Possibility of air and noise quality degradation due to construction activities
* Impact on groundwater
* Pollution of river due to construction work
* Change in water quality and soil quality due to use of oil, chemicals etc.
* Permanent loss of forest area to be cleared for construction

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| Self-check 3 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Write the difference between positive and negative impact of EIA? (5pts)?

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2. List down positive and negative impact of EIA on environment (5)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Operation Sheet 1 | **structure of project proposal** |

* Format of project proposal on Environmental impact assessment:-

1. Executive summary

2. Describe Project, and legal and administrative framework

3. Scope and screen

4. Describe of the existing environment

5. Analyze and select basis of the alternative proposal

6. Issue of Environmental project

7. Mitigate measures

8. Train and monitor Environmental management plan

9. Appendices (appendex)

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| 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 5 days. The project is expected from each student to do it.

**Task-1** Within your group/team makes sure that you are able to write structure of EIA.

**Task-2** Collect, identify and check tools and equipment used for preparing EIA structure.

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

Answer Sheet

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **LG #35** | LO# 2- Analyse the impact of the activities on the environment |

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| Instruction sheet |
| This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:   * Developing Initial Environmental Examination or Evaluation (IEE) document * Identifying environmental issues * Estimating identified scope of environmental impacts * Identifying interest groups and establishing good communication * Identifying and documenting the major impacts   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:   * Develop Initial Environmental Examination or Evaluation (IEE) document * Identify environmental issues * Estimate identified scope of environmental impacts * Identify interest groups and establish good communication * Identify and document the major impacts |
| **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 you earned a satisfactory evaluation proceed to “Operation sheets  7.Perform “the Learning activity performance test” which is placed following “Operation sheets” ,  8.If your performance is satisfactory proceed to the next learning guide,  9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”. |

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| Information Sheet 1- Developing Initial Environmental Examination or Evaluation (IEE) document |

**1.1. Initial environmental evaluation/examination**

Initial environmental evaluation/examination is a report containing brief, preliminary evaluation of the types of impacts that would result from an action. It often used as a screening process to assess whether or not proposals should undergo full scale of EIA. The general objectives of IEE study should at least cover the following:-

* + - * To provide information about the general environmental settings of the project area as baseline data;
      * To provide information on potential impacts of the project and the characteristic of the impacts, magnitude, distribution, who will be the affected group, and their duration;
      * To provide information on potential mitigation measures to minimize the impact including mitigation costs;
      * To assess the best alternative project at most benefits and least costs in terms of financial, social, and environment. It is not always necessary to change management; and
      * To provide basic information for formulating management and monitoring plan

**1**.**2. Environmental Regulations**

The National Environment Action Plan 1 (NEAP) was adopted in the National Assembly in 1994. The Forest Act and the Environmental Protection Law (EPL) have been enforced since 1996 and 1999 respectively. The EPL is a fundamental law in the environmental field and presents a new framework of environmental safeguards in the market economy. The EPL consolidates previous laws which were established and enforced inconsistently. The principal authority for the environment is the Science Technology Environment Agency (STEA). The STEA was established in a reorganization of the STENO, the first authority established in 1993 to control the environment. The environment bureau of the STEA is the unifying authority of the environmental administration.

The principal roles of the environment regulation are:-

* drafting environment bills
* drafting environment ordinances
* supporting the provincial governments to enforce the environmental laws
* making adjustments between the concerned authorities
* putting international treaties into effect
* making adjustments and carrying out joint operation

**1.3. Environment Assessment System**

In 2000, the STEA issued a ministerial ordinance for a general rule for Environment Assessment (EA), based on the Environmental Protection Law enforced in 1999. The EA is required for the designated project, regardless if the project is at the planning stage, or is an on-going project. The detailed regulations of the EA for designated projects such as road and dam construction projects are in preparation, but no specific regulation has been issued for water supply projects. In accordance with the guidelines, the Initial Environmental Examination (IEE) is required in the initial stage of preparation of the Master Plan to examine possible effects caused by the project. The guideline requires that it is a fundamental principal to conduct an IEE in a short time with inexpensive cost. The guideline provides the detailed criteria for the screening and scooping as well as the reference formats.

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| Self-check 1 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What is Initial Environmental Examination (IEE)? (5 point)

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2. Write the general objective of initial environmental examination? (3 point)

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3. Write the principal roles of the environment regulation (2)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 2- Identifying environmental issues |

**2.1. Environmental issues**

Environmental issues are defined as problems with the planet’s systems (air, water, soil, etc.) that have developed as a result of human interference or mistreatment of the planet. Numerous reports on the state of the world indicate the environmental problems facing society. The Global Environmental Outlook (GEO) prepared by UNEP provides an authoritative statement of the major issues and their regional variations. Other environmental problems are concentrated regionally and thus affect only certain countries or are more serious for some than others. Impact identification is a critical step in an EIA. The key environmental issues and terms to be addressed in the EIA are:

**Climate change-** The planet's climate has constantly been changing over geological time, with significant fluctuations of global average temperatures. However, this current period of warming is occurring more rapidly than any past events. It has become clear that humanity has caused most of the last century’s warming by releasing heat-trapping gases commonly referred to as greenhouse gases to power our modern lives. We are doing this through burning fossil fuels, agriculture and land-use and other activities that drive climate change. Greenhouse gases are at the highest levels they have ever been over the last 800,000 years. This rapid rise is a problem because it’s changing our climate at a rate that is too fast for living things to adapt to. Climate change involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife populations and habitats, and a range of other impacts.

**Soil degradation-** Soil degradation is the decline in soil condition caused by its improper use or poor management, usually for agricultural, industrial or urban purposes. It is a serious environmental problem. Soils are a fundamental natural resource, and are the basis for all terrestrial life. Avoiding soil degradation is crucial to our well-being. Soil degradation is the physical, chemical and biological decline in soil quality.

Soil degradation can involve:

* water erosion (includes sheet, rill and gully erosion)
* wind erosion
* salinity (includes dryland, irrigation and urban salinity)
* loss of organic matter
* fertility decline
* soil acidity or alkalinity
* structure decline (includes soil compaction and surface sealing)
* mass movement
* Soil contamination (including effects of toxic chemicals and pollutants).

**Biodiversity loss-** Biodiversity loss refers to the decline or disappearance of biological diversity, understood as the variety of living things that inhabit the planet, its different levels of biological organisation and their respective genetic variability, as well as the natural patterns present in ecosystems.

**Deforestation-** Deforestation refers to the decrease in forest areas across the world that are lost for other uses such as agricultural croplands, urbanization, or mining activities. Greatly accelerated by human activities since 1960, deforestation has been negatively affecting natural ecosystems, biodiversity, and the climate. The UN’s Food and Agriculture Organization estimates the annual rate of deforestation to be around 1.3 million km2 per decade.

**Noise & Vibration-** The construction methodology should be examined for the likely types and numbers of powered plants which would be used in the vicinity of noise sensitive receivers such as hospitals, schools, etc. Comparison of the predicted noise levels and vibration with the appropriate noise and vibration standards will indicate whether any mitigation measures are required.

**Pollution-** There are 7 key types of pollution – air, water, soil, noise, radioactive, light and thermal and these are primary causes that affect our environment in many ways. All these types of pollution are interlinked and influence each other. Therefore we need to tackle all of them together.Pollution of air, water and soil requires millions of years to recoup. [Industry and motor vehicle exhaust](https://www.conserve-energy-future.com/causes-effects-of-industrial-pollution.php) are the number one pollutants. Heavy metals, nitrates and [plastic are toxins responsible for pollution](https://www.conserve-energy-future.com/causes-effects-solutions-of-plastic-pollution.php). While water pollution is caused by [oil spill](https://www.conserve-energy-future.com/various-causes-of-oil-spill.php), acid rain, urban runoff, air pollution is caused by various gases and toxins released by industries and factories and combustion of fossil fuels; soil pollution is majorly caused by industrial waste that deprives soil from essential nutrients.

**Over population-** The population of the planet is reaching unsustainable levels as it faces a shortage of resources like water, fuel and food. Population explosion in less developed and developing countries is straining the already scarce resources. Intensive agriculture practiced to produce food damages the environment through the use of chemical fertilizer, pesticides and insecticides. [Overpopulation](https://www.conserve-energy-future.com/causes-effects-solutions-of-overpopulation.php) is also one of the crucial current environmental problems**.**

**Waste Disposal-** The overconsumption of resources and the creation of plastics are creating a global crisis of waste disposal. Developed countries are notorious for producing an excessive amount of waste or garbage and dumping their waste in the oceans and less developed countries. Nuclear [waste disposal has tremendous health hazards](https://www.conserve-energy-future.com/hazardous-waste-disposal-and-companies.php) associated with it. Plastic, fast food, packaging and cheap electronic [wastes threaten the well being of humans](https://www.conserve-energy-future.com/top-ways-put-human-waste-use-environmentally-friendly-way.php). Waste disposal is, therefore, one of the urgent current environmental problems**.**



Figure1: Waste disposal

|  |  |
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| Self-check 2 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

3. Write at least five environmental issues? (2)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Write the difference between climate change and biodiversity loose?? (5 point)

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5. What is soil degradation and how it involves (3)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 3- Estimating identified scope of environmental impacts |

**3.1. Environmental impact**

The purpose of this Environmental Impact Assessment (EIA) is to identify, evaluate and report the environmental and socio-economic effects of the proposed Expansion Project. This process includes identification of mitigate measures that will be used to reduce or eliminate potential adverse effects, where appropriate. The production of goods and services to meet global population demands has occasioned a number of activities which have depleted the globe's natural resources and in several instances contributed to environmental degradation through pollution. These activities done in the pursuit of economic development have also caused the loss of several species of plants and animals and now threaten the existence of man himself, if left uncontrolled.

**Scoping**- an early and open activity to identify the impacts that are most likely to be significant and require investigation during the EIA work.  Can, also, be used to:

* identify alternative project designs/sites to be assessed;
* obtain local knowledge of site and surroundings; and
* Prepare a plan for public involvement.

The results of scoping are frequently used to prepare a Terms of Reference for the EIA for:

1. Provide information on the environmental resources and resource uses that could be affected by the construction, operation and reclamation of the project.

2. Quantify and assess impact significance where possible, taking into consideration spatial, temporal and cumulative aspects.

3. Describe the stakeholder consultation process (including, but not limited to, the public, Aboriginal people, industry and regulatory representatives).

4. for each environmental parameter:

* Describe baseline conditions (includes existing and approved facilities and activities).
* Describe the nature and significance of the environmental effects and impacts associated with the development activities.
* Present plans to minimize, mitigate or eliminate negative effects and impacts and discuss the key elements of such plans,
* Identify residual impacts and comment on their significance.

**Screening**: Preliminary activity undertaken to classify proposals according to the level of assessment that should occur.

**Public involvement**: A range of techniques that can be used to inform, consult or interact with stakeholders affected by a proposal.

**Spatial Boundaries** include;

* Project Area
* Local Study Area
* Regional Study Area

**Temporal boundaries** include:

* Construction
* Operations
* Reclamation
* Public Consultation and Issue Identification

The following sections describe issues for EIA in specific development sectors. The EIA process, as described in must be followed in each of these proses, however, the details provided here aim at identifying the possible impacts as well as mitigation measures that should be considered in EIA that may be conducted. The information provided is by no means comprehensive and would need to be embellished during the EIA process. The purpose of this section is to simply highlight potential environmental concerns related to these development activities. It must be noted however that each project is unique and only some of the more generalized impacts are presented. The guidelines can also serve as an aid to authorities when reviewing the EIA process. The issues for environmental assessment in each of the development sectors has been prepared as a Table below..

**Example- Irrigation project**

Background

Irrigation projects are closely tied in with agricultural and hydropower generation. By virtue of these two facts, it is expected that many irrigation projects will be developed in Ethiopia.

Table 3: Issues for environmental assessment

|  |  |  |
| --- | --- | --- |
| **ISSUES FOR ENVIRONMENTAL ASSESSMENT OF IRRIGATION PROJECTS** | | |
| **ISSUE** | **SOURCES/CAUSES** | **IMPACT** |
| Impact on downstream users  Impact on groundwater users  Lowering/ rise of the ground water  table | patterns  Water extraction for  irrigation  Poor water distribution  systems | Changes in low flow which negatively impact on  downstream users  Uncontrolled flooding causing damage downstream  Lowering of the ground water table Impact of lowered  ground water on water consumption by humans,  animals and plant life in the area  Effect of lowered ground water on springs  Potential rise of the water table through low irrigation  efficiency |
| Decreased water quality  Pollution concentration  Ground water salinization Change in river morphology | Water diversion for  irrigation  Agrochemical use  Pesticide use Fertilizer use | Increase in pollution concentration because of  decreased low flow  Accumulation of toxic substances from increased  pesticide use  High levels of nitrates in the water from agrochemicals  Creation of anaerobic conditions through the decay of  organic substances  Saline ground water caused by water logged  conditions  Poor saline drainage in areas of flat topography  Saline intrusions into fresh water systems  Impact of irrigation canals on river morphology |
| Soil salinisation | Fertilizers  Artificial methods of  watering to crops | Potential for soil salinisation to occur through :  introduction of salts in irrigated water  contribution of artificial fertilizers  rise in saline ground water  creation of a .humidity/salinity bridge. by a change  from rainfed to irrigation crops  change in soil properties such as damage to soil  structure  Soil structural collapse in specific soil types due to  accumulation of salts  Lowering of pH and accumulation of dangerous metals  by leached metals, released through a change from  rainfed to irrigation crops |
| Erosion  Sedimentation | Abstraction of water | Impact of sediment transport on reservoir and  abstraction points downstream eg. blockage of canals  Change in river morphology from increases/decreases  in the sediment load  Soil susceptibility to runoff and erosion increased by wetting of the land |
| Social conflict  Change in the socio-economic  state of the people | Induced development | Change in the income and amenity of people  Increased human migration and settlement in the area  Changes in marketing and physical infrastructure  generated by the irrigation scheme |

**Recommendations for environmental management-** The siting of an irrigation scheme must be decided so to avoid disturbance or destruction of:

* Sensitive or biologically rich ecosystems
* Sites of cultural/historical significance
* Settlements of religious or scientific value
* Areas with flat topography or with high water tables that are at risk from salinization
* Adequate health care facilities must be provided
* On-going user involvement in the development of the project must be encouraged

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| Self-check 3 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What is scoping? (5 point)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Write the difference between scoping and screening? (3 point)

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 4- Identifying interest groups and establishing good communication |

**4.1. Stakeholders**

Stakeholders those who may be potentially affected by a proposal (e.g. local people, the proponent, government agencies, NGOs, donors, Decision makers (the person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal) and others. It is important for all stakeholders to have a realistic understanding of the role that EIA is intended to play in development approvals. Also, in order to ensure continued support for the EIA process, its benefits need to be explicitly recognized and acknowledged, and if necessary, action taken to add value. The consultants shall carry out consultations with experts, NGOs, Forest Department (if applicable) and other selected Government Agencies and other stakeholders to (a) collect baseline information, (b) obtain a better understanding of the potential impacts (c) appreciate the perspectives/concerns of the stakeholders, and (d) secure their active involvement during subsequent stages of the project as appropriate.

Consultations shall be preceded by a systematic stakeholder analysis, which would (a) identify the individual or stakeholder groups relevant to the project and to environmental issues, (b) include expert opinion and inputs, (c) determine the nature and scope of consultation with each type of stakeholders, and (d) determine the tools to be used in contacting and consulting each type of stakeholders. A systematic consultation plan with attendant schedules will be prepared for subsequent stages of project preparation as well as implementation and operation, as required. Where community consensus is required in respect of proposed mitigation measures for impacts on community assets including water bodies, places of worships etc., specific plan for modification/relocation etc have to be disclosed and consensus obtained. There are three principle stakeholder groups involved in any project undergoing EIA:

* The proponent
* The regulators and
* The community.

**To establish good communication-** Here are the most Tips for Improving Your

Communication Skills:-

* Simplify and stay on message.
* Engage your listeners or readers.
* Take time to respond.
* Make sure you are understood.
* Develop your listening skills.
* Body language is important.
* Maintain eye contact.
* Respect your audience.

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| Self-check 4 | Written test |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What are stakeholders? (5 point)

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2. How to establish good communication skill? (5 point)

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3. Write three principle stakeholder groups involved in any project undergoing EIA?(5 point)

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4. Who are responsible bodies in EIA?(5 point)

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 5- Identifying and documenting the major impacts |

**5.1. Introduction**

Numerous reports on the state of the world indicate the environmental problems facing society. The Global Environmental Outlook (GEO) prepared by UNEP provides an authoritative statement of the major issues and their regional variations. Other environmental problems are concentrated regionally and thus affect only certain countries or are more serious for some than others. Impact identification is a critical step in an EIA. The process usually consists of two stages. First an exhaustive list of all impacts including minor, short term, moderate, direct and indirect, is drawn up. Then the manageable, significant impacts are selected, based on magnitude, significance, extent and special sensitivity, for further study.

Major impacts of projects on environment are: (refer, **Lo3**, page **44**)

* Impact on the cultural environment
* Impact on the economic environment
* Impact on the biological environment

Another way of subdividing environmental issues is to group them under green and brown agendas. The green agenda focuses on natural resource management and environmental protection issues, such as rural land and water use, forestry and fisheries and habitat and species conservation. The brown agenda is concerned with issues of industrial pollution, waste management and urban development. When undertaking EIA, a comprehensive view should be taken of the linkages and interactions among the issues under review. Also, the EIA should identify both the benefits and costs of development. In practice, EIA often focuses on the adverse environmental impacts of proposed actions. This is done by reference to certain key characteristics, which establish the potentially significant effects (see the table below).

The impacts of a development proposal examined in EIA can be direct, such as the effect of toxic discharge on air and water quality, or indirect, such as the effect on human health from exposure to particulates or contaminants, which have built up in food chains. Other environmental and social impacts are induced, for example by a new road opening up an undeveloped area to subsequent settlement or by involuntary resettlement of people displaced by the construction of a large reservoir. Certain adverse impacts may appear relatively insignificant when considered in the context of an individual action or proposal but have a cumulative effect on the environment when added to all other actions and proposals; for example, deforestation resulting from plot by plot clearance for subsistence agriculture.

Table 1: Typology of environmental impact

|  |  |
| --- | --- |
| **Typology of environmental impacts** | |
| **Category of Impacts** | **Types of Impacts** |
|  | |
| type | biophysical, social, health or economic |
| nature | direct or indirect, cumulative, etc. |
| magnitude or severity | high, moderate, low |
| extent | local, regional, transboundary or global |
| timing | immediate/long term |
| duration | temporary/permanent |
| uncertainty | low likelihood/high probability |
| reversibility | reversible/irreversible |
| significance\* | unimportant/important |

Impact significance is not necessarily related to the impact magnitude. Sometimes very small impacts, such as the disturbance of the nest of a pair of endangered birds, may be significant. When determining the significance of the potential impacts of a proposal, all of the above factors should be taken into consideration. In many early examples of EIA practice, only the biophysical impacts of proposals were considered (such as effects on air and water quality, flora and fauna, noise levels, climate and hydrological systems). Increasingly EIA processes are used to analyze a range of impact types within a single framework. These include social, health, and economic aspects. However this trend toward integrated assessment for decision-making is by no means universal or uniform. Even in EIA systems where this trend is well established, the degree and extent of integration varies with legal requirements and accepted practice. In some countries, social impacts are not assessed or are given only limited consideration. In other countries, EIAs are supplemented by related, but separate studies of social and health impacts. Despite a lack of internationally consistent practice, integrated impact assessment, linking biophysical and socio-economic effects, is identified as an important priority in Agenda 21. As a widely adopted process that already covers other impacts, EIA is recognized as one of the best available mechanisms for implementing an integrated approach. In practice, achieving this approach will require greater attention to be given to the identification of social, health and other impacts in the EIA process.

**Human impact on the environment** **includes**-

* Over consumption
* Agricultural land loss
* Habitat Loss
* Environmental degradation
* Habitat Fragmentation
* Invasive species
* Global warming
* Acid Deposition
* Ozone depletion
* Mining industry
* Roads

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| Self-check 4 | Written test |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Write major impacts of projects on environment? (5 point)

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2. Write impact categorization? (5 point)

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**Test II: True or false**

3. Impact significance is not necessarily related to the impact magnitude (1 point)

4. Human also affects our environment (1 point)

***Note:* Satisfactory rating - 6 points Unsatisfactory - below 6 points**

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| LG #36 | LO # 3- Develop the support measures and cost benefit analysis |

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| Instruction sheet |
| This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:   * Identifying and determining the adverse impacts and enhance positive impacts * Establishing formal and informal communications * Identifying mitigating measures * Identifying , documenting and communicating mitigating measures * Carrying out cost benefit analysis   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:   * Identify and determine the adverse impacts and enhance positive impacts * Establish formal and informal communications * Identify mitigating measures * Identify , document and communicate mitigating measures * Carry out cost benefit analysis |
| **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 you earned a satisfactory evaluation proceed to “Operation sheets  7.Perform “the Learning activity performance test” which is placed following “Operation sheets” ,  8.If your performance is satisfactory proceed to the next learning guide,  9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”. |

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| Information Sheet 1- Identifying and determining the adverse impacts and enhance positive impacts |

**1.1. Introduction**

It may be useful to present results of the assessment in the form of a matrix summary, whereby the different activities and associated impacts on the environment are weighted with a scoring system. Impacts must be described according to the following criteria.

**Nature of the impact-** Describing the effects that a proposed activity will have on the environment.

**Extent-** Showing the impacts realized regionally, nationally or even internationally.

**Duration;-** Reviewing the span of the impact as being short term (0-5 years), medium term (5-15 years), long term and permanent.

**Intensity-** Here it should be established whether the impact is destructive or innocuous and should be described as low, medium or high. Environmental Impact is the change in an environmental parameter, over a specified period and within a defined area resulting from a particular activity compared with the situation, which would have occurred, had the activity not been initiated.

* Environmental impacts (negative or positive) resulted from different interventions, can vary in their nature being direct, indirect, etc.
* Impacts can range from insignificant to highly significant. Their extent could be local, regional or global.
* Some impacts may be felt immediately or may not be evident for some time.
* The others may have short term or long term; temporary or permanent impacts. Some impacts can be random or predictable; they may be reversible or irreversible upon the decommissioning of a project.
* The impacts can be on biophysical (soil, water, air, flora and fauna), social, economic, cultural, or health.

**Mitigative** measures can be taken before or afterthe occurrence of the impacts to rehabilitate or compensate the negative impact already occurred.

Table 1: Possible environmental impacts and their mitigation measures

|  |  |
| --- | --- |
| **Possible impact** | **Some mitigation measure** |
| Soil erosion as a result of different activities | Replanting right species of trees, shrubs and grasses in a right time on disturbed areas;  Careful design/plan of projects can avoid soil erosion;  Carry out soil conservation and agro-forestry measures. |
| Loss of nutrients because of different activities | Reducing harvest removal.  Improving the soil structure through different means.  Planting deep-rooted crops, which pump nutrients |
| Use of mechanization, pesticides and machineries may result in soil compaction. | Using appropriately machineries/mechanization (when necessary) in appropriate time.  Improve soil structure by planting species that improve soil structure or by adding organic matter. |
| Water logging results from mismanagement of water resources. | Digging of canals to lower the water table.  Use improved farming system.  Planting high water consuming species. |
| Occurrence of salinization because of different activities | Careful management of irrigation water reduces the rate of saline.  Making underground water drainage systems reduces the saline.  Planting salt tolerant species |
| Soil Acidity | reduce the addition of artificial/organic chemical./fertilizer/  Adding alkaline substance like lime.  Appropriate use/disposal of chemicals. |
| Alkilinization of arable land | Avoiding the use of alkaline water for irrigation purposes.  Adding organic matter (compost). |
| Imbalance of biological activities as a result of contamination of soil with toxic chemicals and loss of organic nutrients. | appropriate use of wastes/toxic chemicals.  adding organic matter (green manuring, compost).  promote cleaner production (preventing/minimizing waste). |
| Productive topsoil covered by proposed activities or removal of productive top soil for temporary or permanent purposes | Decrease the amount/size of the area that will be used for the proposed project.  Collect and reuse the excavated top soil to form a superficial layer |
| Flooding, channel modification, river canal siltation. | Leaving sufficient enough buffer zones of undisturbed vegetation between the site of the project and water bodies  Use water flow speed reduction measures e.g. soil conservation measures |
| Reduction/lowering of surface or ground water table. | Sitting projects far away from susceptible areas  Use alternative technologies/techniques/process to minimize the consumption of water |
| Excess increment of nutrients in water bodies (eutrophication). | sitting projects far away from susceptible areas to erosion in order to reduce chemical pollution of water bodies  Carry out soil conservation measures. |

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| Self-check 1 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Write possible impact of project on environment? (5 point)

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2. Write mitigation measure required for environmental impact? (5)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 2- Establishing formal and informal communications |

**2.1. Introduction**

There are various sources of information which may be available and useful to an organization in determining the significant environmental impacts, such as:

* Information contained in waste transfer notes
* Conditions for process authorizations under the Environmental Protection Act 1990
* Effluent consent conditions
* Information gathered during applications for legal consents and authorization
* Information compiled for the purposes of the Control of Substances Hazardous to Health Regulations (COSHH) 2002, eg safety data sheets
* Information gathered during environmental assessments for new projects, where relevant
* Industry Codes of Practice

**Communications-** EMAS requires organisations to establish mechanisms to control communications with interested parties. Similarly, ISO 14001 also outlines certain requirements for communicating, both internally and externally, an organisation’s environmental aspects and its EMS. Guidelines on how this can be achieved are contained in the recently updated ISO 14004 EMS guidance standard. It is important for an organisation to be aware of the concerns and requirements of interested parties and to ensure that communications are dealt with in the most appropriate and efficient way possible. Depending on the nature of the communication, this may need to be passed on to the appropriate person within the organisation who is able to deal with it. In all cases, there should be records which detail the correspondence which occurs.

**2.2. Types of communication**

**2.2.1. Formal Communication-** The communication in which the flow of information is already defined is termed as formal communication. The communication follows a hierarchical chain of command which is established by the organization itself. In general, this type of communication is used exclusively in the workplace, and the employees are bound to follow it while performing their duties.

**Example-** Requests, commands, orders, reports etc.

The formal communication is of four types:

* Upward or Bottom-up-The communication in which the flow of information goes from subordinate to superior authority.
* Downward or top-down- The communication in which the flow of information goes from superior to subordinate.
* Horizontal or Lateral- The communication between two employees of different departments working at the same level.
* Crosswise or Diagonal- The communication between the employees of two different departments working at different levels.

2.2.2. Informal communication-The communication which does not follow any pre-defined channel for the transmission of information is known as informal communication. This type of communication moves freely in all directions, and thus, it is very quick and rapid. In any organization, this type of communication is very natural as people interact with each other about their professional life, personal life, and other matter.

**Example-** Sharing of feelings, casual discussion, etc.

The informal communication is of four types:

* Single Strand Chain- The communication in which one person tells something to another, who again says something to some other person and the process goes on.



* **Cluster Chain-** The communication in which one person tells something to some of its most trusted people, and then they tells them to their trustworthy friends and the communication continues.
* Gossip Chain- Group conversation where everyone is talking to each other informally.
* Probability Chain- Each individual randomly tells another individual the same message.

Formal vs Informal Communication

The following points are substantial, so far as the difference between formal and informal communication is concerned.

* Formal communication is also known by the name of official communication. Informal Communication is also known by the name of grapevine.
* In formal communication, the information must follow a chain of command. Conversely, the informal communication can move freely in any direction.
* In formal communication, full secrecy is maintained, but in the case of informal communication maintenance of secrecy is a very tough task.
* Formal communication is written, whereas Informal communication is oral.
* Formal communication is time-consuming as opposed to Informal communication, which is rapid and quick.
* Formal communication is more reliable than Informal communication.
* Formal communication is designed by the organization but Informal communication starts itself due to the urge of ‘human to talk’.
* In formal communication, the documentary evidence is always available. On the other hand, in the case of informal communication, the supporting documents are not available.

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| Self-check 2 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What is communication (5 point?)

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2. Write the types of formal and informal communication? (3 point)

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3. Write the difference between informal and formal communication?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 3- Identifying mitigating measures |

**3.1. Mitigation**

Mitigation means reducing risk of loss from the occurrence of any undesirable event. This is an important element for any insurance business so as to avoid unnecessary losses. Mitigation is both a creative and practical phase of the EIA process. It seeks to find the best ways and means of avoiding, minimizing and remedying impacts.  Mitigation measures must be translated into action in the correct way and at the right time if they are to be successful. This process is referred to as impact management and takes place during project implementation. Identification of mitigating Measures aim to minimize or eliminate negative impactsand enhance the benefits wherever possible. Based on preliminary environmental effects results, further mitigation measures were incorporated into the design of the Project to ensure the protection of the physical, biological and human environments. The mitigation measures should be prepared as an operational management plan and could include a combination of the following mitigation options:

* Alternative ways of meeting the needs
* Changes in planning and design.
* Improving monitoring and management.
* Compensation in different forms (e.g. monetary).
* Replacing, relocating, rehabilitating, etc.

Once impacts have been interpreted and mitigative measures have been set, it is essential that the information be presented in a form that enables non-experts to comprehend.

**Mitigation Measures include-**

* Construction and operation of engineered water management systems to collect runoff and seepage;
* Engine Maintenance program
* Dust collection systems
* Develop a testing schedule to minimize air quality effects
* Best Management Practices (BMPs) and engineering design to limit soil erosion and mobilization/transport of sediments from disturbed areas.
* Treatment of process water; construction and operation of engineered water management systems to collect surface drainage (runoff)
* Monitoring and, if determined to be required, water collection and treatment.
* The use of erosion control measures and timing of construction to avoid spawning
* Time construction of watercourse realignments to allow for vegetation growth
* Develop a compact Project site to reduce overall habitat loss and to limit the potential adverse effects related to interference with wildlife movement.
* No hunting or fishing by Project personnel will be permitted while working or residing on-site.
* Engage and support local and regional communities and stakeholders in planning decisions relating to future use of the Project site.

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| **Self-check 1** | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

3. What is mitigation? (8 point)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4. Write some mitigation measure? (8)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 4- Identifying, documenting and communicating mitigating measures |

**4.1. Introduction**

Identify and document risk mitigation measures is where risk mitigation(s) is identified, and the expected risk reductions of the alternatives shall be estimated and documented in the Hazard Tracking System (HTS). The goal should always be to eliminate the hazard if possible. When a hazard cannot be eliminated, the associated risk should be reduced to the lowest acceptable level within the constraints of cost, schedule, and performance by applying the system safety design order of precedence.

Eliminate hazards through design selection- Ideally, the hazard should be eliminated by selecting a design or material alternative that removes the hazard altogether.

Reduce risk through design alteration- If adopting an alternative design change or material to eliminate the hazard is not feasible; consider design changes that reduce the severity and/or the probability of the mishap potential caused by the hazard(s).

Incorporate engineered features or devices- If mitigation of the risk through design alteration is not feasible; reduce the severity or the probability of the mishap potential caused by the hazard(s) using engineered features or devices.

Provide warning devices- If engineered features and devices are not feasible or do not adequately lower the severity or probability of the mishap potential caused by the hazard, include detection and warning systems to alert personnel to the presence of a hazardous condition or occurrence of a hazardous event. Incorporate signage, procedures, training, and PPE. Where design alternatives, design changes, and engineered features and devices are not feasible and warning devices cannot adequately mitigate the severity or probability of the mishap potential caused by the hazard, incorporate signage, procedures, training, and PPE. Signage includes placards, labels, signs and other visual graphics. Procedures and training should include appropriate warnings and cautions.

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| --- | --- |
| **Self-check 1** | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Write the goal of Identify and document risk mitigation measures (5 point)

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2. Write the measure taken to reduce risk (5)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 5- Carrying out cost benefit analysis |

**5.1. Benefit-Cost-Analysis**

A method of comparing alternative actions according to the relative costs incurred (technical, environmental and economic) and the relative benefits gained.  The analysis can incorporate discounting calculations to take into account the time of value and money. Cost–benefit analysis is a systematic approach to estimate the short and long term consequences. Environmental impacts of projects/policies are often externalities, both negative and sometimes positive. The socio-economic characteristics of the existing location should be identified. The impacts of the proposed project on the socio-economic environment should then be analyzed. The analysis should include the use of land, the main economic activities e.g. tourism, agriculture, the social level within nearby communities, employment levels and the existence of archaeological or historical sites. Impacts should be categorized in terms of positive and negative. Examples of negative impacts are conflicts between existing businesses and new project workers, potential pollutants discharged that have an adverse effect on a water body of economic importance, and creation of increase in fees to be charged for services which used to be free. Positive impacts include creation of jobs, decrease public health risks, upgrading of physical infrastructure, and training of workers.

**5.1.1. Environmental cost benefits**

Environmental cost-benefit analysis is the application of cost benefit analysis to projects or policies that have the deliberate aim of environmental improvement or actions that somehow affect the natural environment as an indirect consequence. Although the principles of cost-benefit analysis remain largely the same, the practice of carrying out appraisals has undergone a transformation over the past two or so decades. Nowhere is this more the case than for environmental applications: that is, cost-benefit appraisals of policies and projects that have the deliberate aim of improving the provision of environmental services or actions that affect (sometimes adversely) the environment as an indirect consequence. Current best practice in environmental cost-benefit analysis reflects, in its turn, an array of conceptual and empirical developments primarily in environmental economics (but also in other fields of economic inquiry such as health economics). It is the objective of this article to review the most important of these recent developments. It is essential that financial institutions not only weigh up the immediate tangible economic returns derived from projects, but also make a fuller assessment of the longer-term ecological impact. Cost-benefit analysis overcomes market shortfalls by attributing monetary values to naturally occurring goods which are directly related to the use value society bestow upon them. The relevant criteria when looking at a decision-making process become the cost of a project, the benefits of a project, and the total economic value that is lost by the development. On a very simplistic level, the following rulings can be applied:

1) Banks proceed with investment if (Bd - Cd - Bp) > 0

2) Banks do not proceed with investment if (Bd - Cd - Bp) < 0

**Where:**

**Bd** refers to the benefits of the development

**Cd** refers to the costs of the development

**Bp** refers to the benefits of preserving the environment by not developing the area or by not intensifying agricultural production.

This form of accounting can quite simply be taken a stage further by taking into consideration the factor of time, so that project appraisals can be carried out with regard to future, as well as present scenarios.

**Bt - Ct - Et (1 + r) - t > 0 or < 0**

**where:**

**Bt** is the benefit in time t  
**Ct** is the cost in time t  
**Et** is the environmental damage done by the project (if there is an environmental improvement, the -E is replaced by +E)  
**r** is the discount rate

This simplified model is more heuristic than operational. It is presented here as a means to permit the reader to think in a systematic manner about the environmental costs and benefits of loan decisions in the context or "real world" banking and its daily pressures.

A simple definition of a cost benefits analysis-

The regular choose the project with largest positive extended net present value

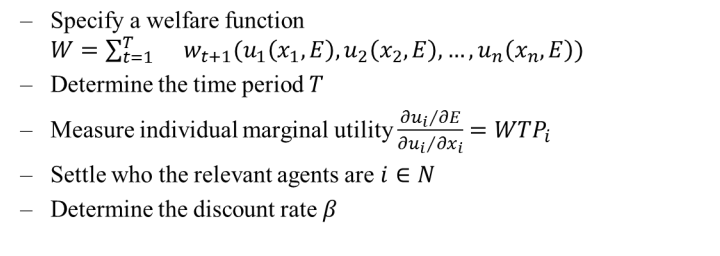
Net benefit at time t

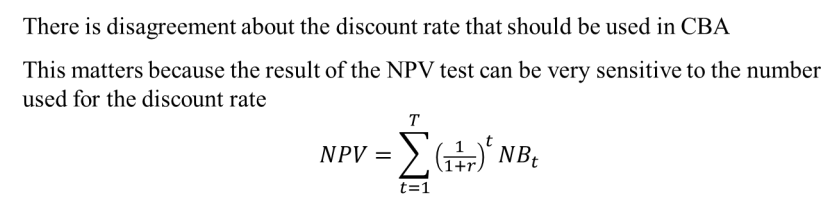
The sum of what all relevant wants to pay

Net present value. The sum of all discounting net benefit over time horizontal.

Finding efficient allocation of project using cost benefit analysis we need to

Specify welfare function

**Choice of discount rate**



Objective of environmental cost-benefit analysis:

• Cost benefit analysis is based in welfare economics which is consequentialist and subjectivist; essentially it accepts that the natural environment should be subject to consumer sovereignty

•Consumer sovereignty can be rejected as a proper guide on the grounds of-

* + inadequate information about consequences
  + insufficiently deliberative
  + lacking self-knowledge
  + preference shaping

There are lots of **environmental costs** associated with waste. For **example**,

* The costs of unused raw materials and disposal;
* Taxes for landfill;
* Fines for compliance failures such as pollution.
* Internal costs- Internal costs refer to the direct monetised costs (planning, construction, management, maintenance, and disposal) for a person or organisation undertaking an activity.
* External costs -External costs (also known as externalities) refer to the economic concept of uncompensated social or environmental effects. For example, when people buy fuel for a car, they pay for the production of that fuel (an internal cost), but not for the costs of burning that fuel, such as air pollution. The aim of the “polluter pays” principle and environmental taxes is that these externalities are internalised (e.g. by putting an eco-tax on fuels).
* [Air pollution](https://en.wikipedia.org/wiki/Air_pollution) from burning fossil fuels.
* [Anthropogenic climate change](https://en.wikipedia.org/wiki/Anthropogenic_climate_change) as a consequence of [greenhouse gas emissions](https://en.wikipedia.org/wiki/Greenhouse_gas_emissions)
* [Water pollution](https://en.wikipedia.org/wiki/Water_pollution) by industries that adds effluent, which harms plants, animals, and humans.
* [Noise pollution](https://en.wikipedia.org/wiki/Noise_pollution) during the production process, which may be mentally and psychologically disruptive.

**Environmental benefit**

The benefits to local communities from taking part in environmental assessments include:

* A healthier local environment (forests, water sources, agricultural potential, recreational potential, aesthetic values, and clean living in urban areas).
* Improved human health.
* Maintenance of biodiversity.
* Decreased resource use.

**5.1.2. Social and economic cost benefits**

The term social costs refers to all those harmful consequences and damages which the community on the whole sustains as a result of productive processes and for which private entrepreneurs are not held responsible. The social cost and benefit analysis is a method to support the decision-making of the national, provincial and municipal governments. Cost-benefit analyses are used for infrastructural projects, and also apply to, for example, area development projects, sustainable energy development and water and nature issues. The social cost-benefit analysis is a tool for evaluating the value of money, particularly of public investments in many economies. It aids in making decisions with respect to the various aspects of a project and the design programs of closely interrelated projects. Cost benefit analysis has become important among economists and consultants in recent years.

The essence of the theory of social cost-benefit analysis is that it does not accept that the actual receipts of a project adequately measure social benefits and actual expenditures measure social costs. The reason is that actual prices may be an inadequate indicator of economic benefits and costs. For example, in developing countries like India, the prices of necessities are set low, despite their economic importance, while the prices of less essential goods are set high (through a system of taxes and duties). In Social-Cost Benefit Analysis the focus is on social costs and benefits of a project. These often tend to differ from the costs incurred in monetary terms and benefits earned in monetary terms by the project.

The principal reasons for discrepancy are:

* Market imperfections:
* Externalities:
* Taxes and subsidies:
* Concern for savings:
* Concern for redistribution

**Objective of social cost benefit analysis**

* To secure and achieve the value of money in economic life by simply evaluating the costs and benefits of alternative economic choices and
* Selecting an alternative which offers the largest net benefit.

**Steps social cost benefit analysis**

* Estimates of costs and benefits which will accrue to the project implementing body.
* Estimates of costs and benefits which will accrue to individual members of society as consumers or as suppliers of factor input.
* Estimates of costs and benefits which will accrue to the community.
* Estimates of costs and benefits which will accrue to the National Exchequer.
* Discounting the costs and benefits which accrue over a period of time to determine the feasibility of the project.

Results social cost benefit analysis: In general, an social cost benefit analysis leads to the following results:

* Integral overview of all social effects of a project (or programme). In the social cost benefit analysis, all relevant advantages and disadvantages of an (investment) project are identified and quantified. These effects are also ‘appreciated’ so that they can easily be compared with each other. Effects that cannot be expressed in monetary terms are always stated separately and clearly described in an social cost benefit analysis.
* The analysis focuses on the distribution of the social costs and benefits of a project. In other words, which parties benefit from it; but also who may be inconvenienced by it. As in the case of infrastructure projects, for example; these can lead to inconvenience for local residents, while the benefits of such projects accrue to other parties involved, such as road users. In addition, it is important whether the effects are regional or, in particular, national.
* Comparison of different alternatives of the project in question. The cost-benefit analysis is eminently suitable for clearly comparing different project alternatives so that a trade-off between different project alternatives is also possible.
* Identifying any uncertainties and risks. The social cost benefit analysis takes into account possible economic uncertainties and risks

The Project will have some negative impacts on the economy of the Project area, including:

* Temporary disruption to house and businesses access exacerbated by possible construction delays;
* Dust generated during construction impacting upon commercial areas and households;
* Impacts to commercial properties, road vendors and markets;
* Impacts to agricultural areas;
* Impacts to housing;
* Limited space available for roadside commercial activities during constructions;
* Inadequate replacement land;
* Utilities and supply interruptions;
* Possible issues with land titles changes;
* Income impacts due to construction and possible delays; and
* Possible safety issues during construction, workers management

**5.2.3. Recommending environmental, social and economic measures**

To support the formulation of environmental goals and air transportation policies, government and industry should invest in comprehensive interdisciplinary studies that quantify the marginal costs of environmental protection policies, the full economic benefits of providing transportation services while reducing the costs (in terms of noise, emissions, and congestion), and the potential of financial incentives to encourage the development and use of equipment that goes beyond regulatory standards.

More specifically, the revised Recommendation recommends environmental assessment as part of the planning, development and decision-making process for projects, plans and programmes and emphasizes. The need for consideration of reasonable alternatives, stakeholder’s engagement and public participation, as well as follow-up on measures derived from the assessment. Lastly, it recommends environmental assessment in a transboundary context. The Recommendation is based on the principles of prevention and participation. One of the mechanisms of implementing the prevention principle is analysis of alternatives. The principle of participation reflects the fact that environmental assessment cannot be reduced to purely scientific analysis, but also involves finding socially acceptable solutions.

**Some recommendation measures were-**

1. Use environmental assessment as part of the planning, development and decision-making process for projects, plans and programmes having potentially significant impact on the environment.

2. Establish clear scope and procedures for assessment of the environmental impacts and for determination of relevant mitigation measures as inputs to the planning and decision-making process in order to restore and enhance environmental quality.

3. Incorporate analysis of reasonable alternatives in the assessment of environmental impacts of projects, plans and programmes with a view to arriving at an informed decision that includes best environmental considerations.

4. Implement, where appropriate, practical measures for informing the public and for participation by those who may be affected at suitable stages of decision-making on projects, plans and programmes.

5. Ensure that there are means of putting into effect measures derived from the environmental assessment of projects, plans and programmes.

6. Implement appropriate practical measures for monitoring the effects on the environment of projects, plans and programmes that have been subject to environmental assessment.

7. Institute, as appropriate, environmental assessment procedures for projects, plans and programmes that might have significant transboundary impacts.

Table 3.Guiding principle of EIA good practise

|  |  |
| --- | --- |
| **Guiding principles of EIA good practice** | |
| **Principles** | **Practical application** |
| *Source: Sadler, 1996; IAIA and IEMA, 1999.* | |
| Purposive | EIA should meet its aims of informing decision making and ensuring an appropriate level of environmental protection and human health. |
| Focused | EIA should concentrate on significant environmental effects, taking into account the issues that matter. |
| Adaptive | EIA should be adjusted to the realities, issues and circumstances of the proposals under review. |
| Participative | EIA should provide appropriate opportunities to inform and involve the interested and affected publics, and their inputs and concerns should be addressed explicitly. |
| Transparent | EIA should be a clear, easily understood and open process, with early notification procedure, access to documentation, and a public record of decisions taken and reasons for them. |
| Practical | EIA should identify measures for impact mitigation that work and can be implemented. |
| Efficient | EIA should impose the minimum cost burden on proponents consistent with meeting process requirements and objectives. |

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| **Self-check 1** | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

.1 Define environmental cost benefit analysis? (5 point)

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2. What is social and economic cost analysis? (5 point)

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3. Write recommendation required environmental cost benefit analysis? (10 point)

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **LG #37** | LO# 4- Establish system of checking the compliance |

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| Instruction sheet |
| This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:   * Developing environmental action plan * Establishing a monitoring program * Carrying out environmental auditing   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:   * Develop environmental action plan * Establish a monitoring program * Carry out environmental auditing |
| **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 you earned a satisfactory evaluation proceed to “Operation sheets  7.Perform “the Learning activity performance test” which is placed following “Operation sheets” ,  8.If your performance is satisfactory proceed to the next learning guide,  9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”. |

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| Information Sheet 1- Developing environmental action plan |

**1.1. Environmental action plan Program**

The activities of the EAP have been grouped into nine priority programs. These programs summarize the guidelines recommended to government institutions and outline the short and medium term needs for technical cooperation, financial arrangements and institutional strengthening. The priority activities are presented in the form of project outlines that can serve as general terms of reference for subsequent pre-investment or investment studies.

**Program 1: Strengthening national environmental management capability**

This program will provide the institutional setting and support required to implement the EAP. The program will generate regulations, incentives, and specific instruments to help channel government and private efforts towards sustainable development and improve current and future quality of life. Its immediate objectives are:-

* Establish the National Environmental Council which will help to introduce environmental concerns into national development policy.
* Strengthen Programming and Projects Unit, to coordinate programming and project execution and, to monitor the EAP.
* Support public institutions and provide incentives to the executing agencies to design and implement environmental management activities.
* Strengthen the capacity of to control and regulate environmental quality.
* Undertake the studies and activities required to execute the programs and projects of the EAP.
* Strengthen the capacity to regulate waste recycling and control dissemination of non-biodegradable materials.
* Introduce the environmental dimension in economic and budgeting policies of the nation.
* Strengthen international level activities concerning environmental management.

**Program 2: Conservation and sustainable use of biodiversity and genetic reserves**

This program is to analyze the information contained in the national physical and biological database, and propose how the information should be incorporated in the formulation of development policies. It also supports the establishment and management of conservation areas. These areas constitute scientific, technological, scenic, and cultural reserves which can support medium- and long-term development.

* Creation of a national system of protected areas
* Ecotourism development
* Conservation
* Production of native fauna

**Program 3: Coastal zone management and reclamation**

This program will provide incentives and other instruments to regulate management of the country's coastal areas. It includes reclamation and conservation of those beaches and landscapes under greatest pressure from tourism and other uses. Reclamation efforts are to include beach conservation and renewal; beach cleanups; user education; development of alternatives for recreation; and, gearing legislation to coordinate objectives of national and departmental authorities. Other areas, such as those that are being overtaken by uncontrolled tourist settlements, also require specific actions and solutions.

* Coastal zone management
* Conservation and restoration
* Coastal zone and legislation for coastal conservation
* Zoning of tourist settlements

**Program 4: Management of critical watersheds**

This program's intent is to restore the productive capacities of watersheds, decrease the level of controversy over their use, and strengthen local and national capabilities to guide sustainable development. Because each watershed suffers specific problems, separate actions that tit within the overall national framework of the project as well as within the policies of regional integration are justified.

**Program 5: Environmental sanitation**

This program will generate and support solutions to eliminate current soil and water contamination problems caused by deficient or insufficient handling of urban effluent and solid wastes. It may also help to generate air quality information on a national basis. Some of the more important projects of this program are:

* Development of treatment plants for urban liquid wastes
* The introduction of a system of control standards for air contamination
* Sanitation project for the Interior of the country
* Sanitation of area
* Development of appropriate technologies for the disposal
* Management of the solid wastes
* Environmental sanitation

**Program 6: Reclamation and sustainable use of natural resources and ecosystems**

This program will demonstrate the economic value of good management by redirecting the use of natural systems and resources so that their conservation and continued use are assured. There are four components.

* Afforestation
* Valuation of the natural services provided by forests
* Sustained livestock production on natural pastures
* Land-use zoning

**Program 7**:**Energy for sustainable development**

The program seeks to support use of environmentally benign energy resources (i.e. wind), and greater energy saving through new technologies for home heating including low-cost housing projects.

* Wind-power farm
* Household energy conservation

**Program 8: Environmental education**

The proposed program is based on two complementary projects geared to: i) inspire mature, responsible attitudes regarding sustainable development and the carrying capacity of ecosystems and natural resources; and, ii) provide incentives for responsible, ethical, and impartial behavior. The projects will address the formal education sector and the development of non-formal mechanisms of education and organized social participation.

* Environmental education projects of the National Administration of Public Education (NAPE)
* Informal environmental education
* Environmental Sciences Institute

**Program 9: Support of economic policy and environmental management**

This program will generate a System of Environmental Accounts that will supplement the current system of National Accounts and the Natural Resources Accounting System.

* Establishment of a national system of environmental accounts
* System of natural resource accounts

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| Self-check 1 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test III: Short Answer Questions**

1. Write the activities of the EAP programs?(5 points)

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2. Write the objective strengthening national environmental management capability program? (5 points)

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 2- Establishing a monitoring program |

**2.1. Monitoring**

A monitoring and evaluation (M&E) plan is a document that helps to track and assess the results of the interventions throughout the life of a program. It is a living document that should be referred to and updated on a regular basis. While the specifics of each program’s M&E plan will look different, they should all follow the same basic structure and include the same key elements. An M&E plan will include some documents that may have been created during the program planning process, and some that will need to be created new. For example, elements such as the [logic model](https://www.thecompassforsbc.org/how-to-guides/how-develop-logic-model-0)/logical framework, theory of change, and [monitoring indicators](https://www.thecompassforsbc.org/how-to-guides/how-develop-monitoring-indicators) may have already been developed with input from [key stakeholders](https://www.thecompassforsbc.org/how-to-guides/how-conduct-stakeholder-workshop%20) and/or the program donor. The M&E plan takes those documents and develops a further plan for their implementation. It is important to develop an M&E plan before beginning any monitoring activities so that there is a clear plan for what questions about the program need to be answered. It will help program staff decide how they are going to collect data to track [indicators](https://www.thecompassforsbc.org/how-to-guides/how-develop-monitoring-indicators), how monitoring data will be analyzed, and how the results of data collection will be disseminated both to the donor and internally among staff members for program improvement. Remember, M&E data alone is not useful until someone puts it to use! An M&E plan will help make sure data is being used efficiently to make programs as effective as possible and to be able to report on results at the end of the program.

**Step 1: Identify Program Goals and Objectives**

The first step to creating an M&E plan is to identify the program goals and objectives. If the program already has a [logic model](https://www.thecompassforsbc.org/how-to-guides/how-develop-logic-model-0) or theory of change, then the program goals are most likely already defined. However, if not, the M&E plan is a great place to start. Identify the program goals and objectives. Defining program goals starts with answering three questions:

1. What problem is the program trying to solve?
2. What steps are being taken to solve that problem?
3. How will program staff know when the program has been successful in solving the problem?

**Step 2: Define Indicators**

Once the program’s goals and objectives are defined, it is time to define indicators for tracking progress towards achieving those goals. Program indicators should be a mix of those that measure process, or what is being done in the program, and those that measure outcomes.

**Step 3: Define Data Collection Methods and Time-line**

* After creating monitoring indicators, it is time to decide on *methods* for gathering data and *how often* various data will be recorded to track indicators.
* The source of monitoring data depends largely on what each indicator is trying to measure. The program will likely need multiple data sources to answer all of the programming questions.

**Step 4: Identify M&E Roles and Responsibilities**

The next element of the M&E plan is a section on roles and responsibilities. It is important to decide from the early planning stages who is responsible for collecting the data for each indicator. This will probably be a mix of M&E staff, research staff, and program staff. Everyone will need to work together to get data collected accurately and in a timely fashion. Data management roles should be decided with input from all team members so everyone is on the same page and knows which indicators they are assigned. This way when it is time for reporting there are no surprises.

**Step 5: Create an Analysis Plan and Reporting Templates**

Once all of the data have been collected, someone will need to compile and analyze it to fill in a results table for internal review and external reporting. This is likely to be an in-house M&E manager or research assistant for the program. The M&E plan should include a section with details about what data will be analyzed and how the results will be presented.

**Step 6: Plan for Dissemination and Donor Reporting**

The last element of the M&E plan describes how and to whom data will be disseminated. Data for data’s sake should not be the ultimate goal of M&E efforts.  Data should always be collected for particular purposes.

Consider the following:

* How will M&E data be used to inform staff and stakeholders about the success and progress of the program?
* How will it be used to help staff make modifications and course corrections, as necessary?
* How will the data be used to move the field forward and make program practices more effective?

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| Self-check 2 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What is monitoring and evaluation (M&E) plan program? (5 point)

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2. Write the steps required for monitoring and evaluation program?(3 point)

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 3- Carrying out environmental auditing |

**3.1. Auditing**

The environmental audit is a management tool consisting of a systematic, documented, periodic and objective evaluation of environmental performance, management systems and equipment with the aim of firstly, facilitating management control of environmental practices and secondly, assessing compliance with an operation’s or activity's environmental policies, including meeting regulatory requirements. Examples include:

* Internal auditing of systems and procedures for measuring, recording and reporting performance data;
* Independent validation of systems and procedures for measuring, recording, and reporting performance data;
* Independent evaluations and commentaries by external experts regarding an organisation’s economic, environmental, and social performance and/or management processes.

There is increasing need for companies to demonstrate good environmental management practice to a wide range of interested parties. ISO 14001 require that organisations have their environmental performance measured and verified. Environmental auditing is a proactive management tool that is used to consciously identify environmental problems before they occur in order to take preventative measures. Environmental auditing is an internal management tool for use by an organization or activity in carrying out its environmental management responsibilities. Auditing is a long-established tool commonly used to evaluate and monitor financial and production performance. Auditing all or part of that system can measure the performance of a company’s environmental management system. The results of such audits can assist companies in demonstrating their commitment to continuously improving their environmental performance. Full commitment from senior company management is essential if the audit process is to be a success. This commitment requires an involvement and interest in the whole audit process. It is important to establish the purpose of the audit; this will help in deciding when to audit and what approach to use. An environmental audit can provide valuable information to help a company to meet the agreed standards of environmental performance (which should be defined in company policy) and stay ahead of the requirements placed on them by law.

The possible functions and benefits of an environmental audit are:

* Management
* Improving an organisation's environmental performance.
* Development of environmental management policies or efforts to improve existing plans
* Identify environmental risks, impacts and review of management controls
* Surroundings and implementation of recommendations.
* Review process and plant operating procedures or activity's
* Increasing actions undertaken or needing to be undertaken by an organization
* Prevention of financial losses through remediation

Three broad types of audit can be identified-

1. Self-Audit / Self-assessment: Team members are selected from the staff of the business, operating unit or department to be audited

2. Internal Audit- Team members are selected from employees of the organisation, but not from the business, operating unit or department to be audited.

3. External Audit- Team members are drawn from outside the organisation . The need to conduct an audit, and the timing and frequency of such an audit, should be determined by considering the following factors:

* Hazard and risk ranking.
* History of past incidents.
* Past performance against standards (results of previous audits, incidents on site)
* Environmental associated costs (e.g. energy, insurance, waste disposal).
* Legal requirements.
* Availability of resources.
* Review before acquisition or sale of sites.
* Changes in process, organisation or activity.
* 3 rd Party certification requirements.

Contents of an environmental auditing-There are many kinds of audit which can be conducted alone or not. The audit can be concentrated on organization, emission, compliance with standards and regulation, maintenance, security, material balance, training, outside contractors. The International Chamber of Commerce presents the different steps of an EA as follows:

1. Pre-audit activities: which include
   * Selection and scheduling of facility to audit,
   * Selection of audit team,
   * Contact with facility and planning of the audit.
2. Site activities: which are divided into 5 steps
   * First understanding of internal controls
   * Assessment of internal controls
   * Gathering of audit evidence
   * Evaluation of audit findings
   * Report of findings to facility.
3. Post audit activities: which include-
   * Production of a draft report,
   * Production of a final report,
   * Preparation and implementation of an action plan
   * Monitoring of action plan.

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| Self-Check – 3 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What environmental audit (5)?

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2. Write the function of environmental audit (10)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Write the broad type of of environmental audit (5)?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **LG #38** | LO# 5- Finalize work and document |

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| Instruction sheet |
| This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:   * Recording and documenting environmental & social impact * Reporting problems or difficulties in completing work * Predicting expected environmental, social & economic damages   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:   * Record and document environmental & social impact * Report problems or difficulties in completing work * Predict expected environmental, social & economic damages |
| **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 you earned a satisfactory evaluation proceed to “Operation sheets  7.Perform “the Learning activity performance test” which is placed following “Operation sheets” ,  8.If your performance is satisfactory proceed to the next learning guide,  9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”. |

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| Information Sheet 1- Recording and documenting environmental & social impact |

**1.1. Introduction**

We will get the information that will be carried out during the project implementation from the EIS. An Environmental Impact Statement (EIS**)** is a comprehensive document that reports the findings of the EIA and now often required by law before a new project can proceed. A typical EIS, usually prepared by the project on behalf of the proponent (usually by consultants), focuses on the issues most relevant to decision-making. It can be broken down into three parts with different levels of detail:

* Volume 1 - a comprehensive and concise document drawing together all relevant information regarding the development project;
* Non-Technical Summary (NTS) - a brief report of volume 1 in non-technical language that can easily be understood by the public;
* Volume 2 - a volume that contains a detailed assessment of the significant environmental effects. (Not necessary when there are no significant effects either before or after mitigation).

An EIS is a document that describes the impacts on the environment as a result of a proposed action. An Environmental Impact Statement is a document prepared to describe the effects for proposed activities on the environment. Environment, in this case, is defined as the natural and physical environment and the relationship of people with that environment. This means that the environment considered in an EIS includes land, water, air, structures, living organisms, environmental values at the site, and the social, cultural, and economic aspects. An impact is a change in consequence that results from an activity. Impacts can be positive or negative or both. An EIS describes impacts, as well as ways to mitigate impacts. To mitigate means to lessen or remove negative impacts. Therefore, an Environmental Impact Statement, or EIS, is a document that describes the impacts on the environment as a result of a proposed action. It also describes impacts of alternatives as well as plans to mitigate the impacts.

Steps to finalize a requirements document

Steps 1 – Create an initial draft.

Step 2 – Obtain input and answer questions.

Step 3 – Send a deliverable for final review.

Step 4 – Finalize deliverable.

Table 4: recording and documenting of environmental and social impact

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| **Environmental and social impact** | **Mitigation measure** |
| Destruction of resources in downstream areas by activities undertaken in upstream areas. | Sitting the project far from human settlement area to reduce disruption of social and cultural way of life;; |
| Lifestyles, travel patterns and social as well as economic activities etc. are affected by the intervention of projects. | Implementation of appropriate technology that reduce disruption |
| Health and social problems like disease, alcohol abuse and unemployment are often brought with new settlers | Employing the local people to reduce the number of immigrants |
| Loss of traditional sense of self-identity can occur because of new settlers | Locate as much as possible Projects in areas where encroachment up on the productive resources, sacred sites, and burial grounds is less; |
| Inundation of farmlands like loss of agricultural, forest or grazing lands by huge amount of waste generated from the project, for example from mine tailings. | Wastes generated from the project have to be properly disposed.  Minimize the amount of wastes released to the area by using alternative technologies, processes etc. |
| Destruction of resources by fire, which can be generated from an activity | Giving due attention to blasting and combustible raw materials that generate fire preventive measures have to be in place.  Provide fire protective instruments.  Fire brigade has to be in place  Precaution measures as fire proofing instruments have to be used. |
| land use and tenure conflict may occur when the area is occupied | Use integrated and intensive utilization of land.  Give employment opportunity |
| Physical conflict may breakout between settler and the indigenous people as the latter try to reclaim their heritage. | Provide short-term support and/or skills or an alternative livelihood to minimize the effect.  Aware the project so that it can keep the norms/bylaws of indigenous people. |

|  |  |
| --- | --- |
| Self-check 1 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. Write the steps to finalize a requirements document (5 point?)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Write Purpose of an EIS? (5)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***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: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 2- Reporting problems or difficulties in completing work |

**2.1. Final report (Environmental impact assessment)**

A report is a document that presents information in an organized format for a specific audience and purpose. Although summaries of reports may be delivered orally, complete reports are almost always in the form of written documents. The final report of an EIA is often referred to as an Environmental Impact Statement (EIS). In addition to summarizing the impacts of the alternatives under study this report must include a section on follow up action required to enable implementation of proposals and to monitor long-term impacts. The purpose of an EIA is not to reach a decision but to present the consequences of different choices of actions and to make recommendations to a decision maker. Recommendations are a crucial part of the Environmental Impact Statement. The format of the report should preferably follow a standard as recommended by the appropriate institution or required by legislation. The executive summary of the EIS should only be 2 to 5 pages long and the main report, excluding appendices should be preferably about 50 pages long and no more than 100. An exceptionally complex study might require 150 pages.

Experts preparing an EIA must appreciate that the final report will be read by a wide range of people and the subject matter may be technically complex. Senior administrators and planners may not understand the importance of technical arguments unless they are presented carefully and clearly. The quality of the executive summary is particularly important as some decision-makers may only read this part of the report. The executive summary must include the most important impacts (particularly those that are unavoidable and irreversible), the key mitigating measures, proposed monitoring and supervision requirements, and the recommendations of the report. The main text should maximize the use of visual aids such as maps, drawings, photographs, tables and diagrams. Matrices, network diagrams, overlays and graphical comparisons should all be included.

The main text should cover the following points (adapted from EBRD (1992) and World Bank (1991)):

• A description of the programme, plan or project including the physical, social and ecological context as well as the time-scale of the proposals under study. Any major revisions made as a result of the scoping process should be identified here.

• A summary of the EIA methodology, including the limits of the study and the reasons for them.

• The policy, legal and administrative framework within which the project is situated.

• A summary of the baseline data providing an overall picture of present conditions and physical, biological and ecological trends.

• A description of the governmental and non-governmental participation during the EI.

Model format for preparation of compliance report (for Management of Environmental and social issues)

Table 4: The sub-project compliance report shall have an exclusive section on Environmental and Social / issues of the projects and provide the following information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  | | --- | | **Project Name :** | |  | loan no | |
| **Environmental and Social Issues Encountered** | |  | | --- | | **Mitigation Measures** |  |  | | --- | |  | | **Residual Issues any** | |
| |  |  | | --- | --- | | |  | | --- | | A. Environmental Issues | | |  | |  | | --- | | Description | | |  | | --- | | Responsibility | |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| B. Social issues |  |  |  |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |

|  |  |
| --- | --- |
| Self-check 2 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: Short Answer Questions**

1. What is reporting? (5 point)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The final report of an EIA is often referred to (3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Write the problems in environmental impact assessment?

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Information Sheet 3- Predicting expected environmental, social & economic damages |

**3.1. Prediction and mitigation**

Once the scoping exercise is complete and the major impacts to be studied have been identified, prediction work can start. This stage forms the central part of an EIA. Several major options are likely to have been proposed either at the scoping stage or before and each option may require separate prediction studies. Realistic and affordable mitigating measures cannot be proposed without first estimating the scope of the impacts, which should be in monetary terms wherever possible. It then becomes important to quantify the impact of the suggested improvements by further prediction work. Clearly, options need to be discarded as soon as their unsuitability can be proved or alternatives shown to be superior in environmental or economic terms, or both. It is also important to test the without project scenario. An important outcome of this stage will be recommendations for mitigating measures. This would be contained in the Environmental Impact Statement. Clearly the aim will be to introduce measures which minimize any identified adverse impacts and enhance positive impacts.

Formal and informal communication links need to be established with teams carrying out feasibility studies so that their work can take proposals into account. Similarly, feasibility studies may indicate that some options are technically or economically unacceptable and thus environmental prediction work for these options will not be required. Many mitigating measures do not define physical changes but require management or institutional changes or additional investment, such as for health services. Mitigating measures may also be procedural changes, for example, the introduction of, or increase in, irrigation service fees to promote efficiency and water conservation. By the time prediction and mitigation are undertaken, the project preparation will be advanced and a decision will most likely have been made to proceed with the project. Considerable expenditure may have already been made and budgets allocated for the implementation of the project. Major changes could be disruptive to project processing and only accepted if prediction shows that impacts will be considerably worse than originally identified at the scoping stage. For example, an acceptable measure might be to alter the mode of operation of a reservoir to protect downstream fisheries, but a measure proposing an alternative to dam construction could be highly contentious at this stage. To avoid conflict it is important that the EIA process commences early in the project cycle. This phase of an EIA will require good management of a wide range of technical specialists with particular emphasis on:

• Prediction methods;  
• interpretation of predictions, with and without mitigating measures;  
• assessment of comparisons.

It is important to assess the required level of accuracy of predictions:-

Mathematical modelling is a valuable technique, but care must be taken to choose models that suit the available data. Because of the level of available knowledge and the complexity of the systems, physical systems are modelled more successfully than ecological systems which in turn are more successfully modelled than social systems. Social studies (including institutional capacity studies) will probably produce output in non-numerical terms.  Expert advice, particularly from experts familiar with the locality, can provide quantification of impacts that cannot be modelled. Various techniques are available to remove the bias of individual opinion. Checklists, matrices, networks diagrams, graphical comparisons and overlays, are all techniques developed to help carry out an EIA and present the results of an EIA in a format useful for comparing options. The main quantifiable methods of comparing options are by applying weightings, to environmental impacts or using economic cost-benefit analysis or a combination of the two.

|  |  |
| --- | --- |
| Self-Check – 3 | **Written test** |

Name…………………………………………… ID………………………… Date…….

**Directions:** Answer all the questions listed below.

**Test I: true or false**

1. Once the scoping exercise is complete and the major impacts to be studied have been identified, prediction work can start. (4)?
2. Major changes could be disruptive to project processing and only accepted if prediction shows that impacts will be considerably worse (4)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Test II: Short answer question**

3. EIA will require good management of a wide range of technical specialists with particular emphasis on (10):-

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Note:* Satisfactory rating - 9 points Unsatisfactory - below 9 points**

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

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

**Answer Sheet**

Score = \_\_\_\_\_\_\_\_\_\_\_

Rating: \_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Reference Materials |

**Book:**

1. *Caves, R. W. (2004). Encyclopedia of the City. Routledge. p. 227.*
2. Ceballos, Gerardo; [Ehrlich, Paul R.](https://en.wikipedia.org/wiki/Paul_Ehrlich); [Barnosky, Anthony D.](https://en.wikipedia.org/wiki/Anthony_David_Barnosky" \o "Anthony David Barnosky); Garcia, Andrés; Pringle, Robert M.; Palmer, Todd M. (2015). ["Accelerated modern human–induced species losses: Entering the sixth mass extinction"](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4640606). [Science Advances](https://en.wikipedia.org/wiki/Science_Advances). **1** (5): e1400253. [Bibcode](https://en.wikipedia.org/wiki/Bibcode_(identifier)):[2015SciA....1E0253C](https://ui.adsabs.harvard.edu/abs/2015SciA....1E0253C). [doi](https://en.wikipedia.org/wiki/Doi_(identifier)):[10.1126/sciadv.1400253](https://doi.org/10.1126%2Fsciadv.1400253). [PMC](https://en.wikipedia.org/wiki/PMC_(identifier)) [4640606](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4640606). [PMID](https://en.wikipedia.org/wiki/PMID_(identifier)) [26601195](https://pubmed.ncbi.nlm.nih.gov/26601195).
3. Eccleston, Charles H. (2011). [Environmental Impact Assessment: A Guide to Best Professional Practices](https://www.amazon.com/Environmental-Impact-Assessment-Professional-Practices/dp/1439828733/ref=sr_1_2?ie=UTF8&qid=1486945778&sr=8-2&keywords=charles+eccleston). Chapter 5. [ISBN](https://en.wikipedia.org/wiki/ISBN_(identifier)) [978-1439828731](https://en.wikipedia.org/wiki/Special:BookSources/978-1439828731)
4. Holder, J., (2004), Environmental Assessment: The Regulation of Decision Making, Oxford University Press, New York; For a comparative discussion of the elements of various domestic EIA systems, see Christopher Wood Environmental Impact Assessment: A Comparative Review (2 ed, Prentice Hall, Harlow, 2002). *See,* for example,  [https://www.thecompassforsbc.org/how-to-guides/how develop-monitoring-and-evaluation-plan](https://www.thecompassforsbc.org/how-to-guides/how%20develop-monitoring-and-evaluation-plan)
5. <https://www.iaia.org/pdf/IAIAMemberDocuments/Publications/Guidelines_Principles/Principles%20of%20IA.PDF> |title=Principle of Environmental Impact Assessment Best Practice |publisher=[International Association for Impact Assessment](https://en.wikipedia.org/wiki/International_Association_for_Impact_Assessment) |date=1999|urlstatus=|archiveurl=[https://web.archive.org/web/20120507084339/http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA\_web.pdf](https://web.archive.org/web/20120507084339/http:/www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA_web.pdf) |archivedate=May 5, 2012|access-date=September 15, 2020}}
6. Leakey, Richard and Roger Lewin, 1996, The Sixth Extinction : Patterns of Life and the Future of Humankind, Anchor, [ISBN](https://en.wikipedia.org/wiki/ISBN_(identifier)) [0-385-46809-1](https://en.wikipedia.org/wiki/Special:BookSources/0-385-46809-1)
7. MacKinnon, A. J., Duinker, P. N., Walker, T. R. (2018). The Application of Science in Environmental Impact Assessment. Routledge.

**WEB ADDRESSES**

1. <https://www.mavenlink.com/resources/project-proposal>
2. <https://www.fool.com/the-blueprint/project-proposal/>
3. <http://www.fao.org/3/V8350E/v8350e06.htm>
4. <https://app.croneri.co.uk/topics/environmental-aspects-and-impacts/indepth>
5. <https://www.sciencedirect.com/topics/social-sciences/human-activities-effects>
6. <https://www.conserve-energy-future.com/15-current-environmental-problems.php>

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This Teaching, Training and Learning Materials (TTLM) was developed on June, 2021 at Adama, Pan- Africa Hotel.

**The trainers who developed the learning guide**

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