



# **ENVIRONMENTAL IMPACT ASSESSMENT TRAINING MANUAL IN TANZANIA**

Revised Version 4

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# FOREWORD

## IMPACT ASSESSMENT TRAINING MANUAL

In the past three decades there has been remarkable progress in instituting the use of Environmental Impact Assessment (EIA) as a planning, decision making and management tool for development projects in the world. The role of EIA was recognised at the United Nations Conference on Environment and Development (UNCED) in 1992. Principle 17 of RIO declaration re-affirms that “EIA as a national instrument shall be undertaken for proposed activities that are likely to have a significant impact on the environment; and shall be subjected to a decision by a competent authority”. In addition to impacts on the environment, impacts in human health are also considered. Impacts on human aspects are more critical and need to be integrated in the EIA process. At the national level, Tanzania has established a full directorate of EIA within the National Environment Management Council since 1997. Ministries and government departments are establishing environmental sections or co-ordinating desks. At the District, Town and Municipality levels, economic affairs committee as one of the standing committees of the full council has been given the responsibility of handling environmental issues. At the village level, environmental issues are being tackled through special committees to see to it that they are adequately taken on board when considering development activities.

The Government of Tanzania has also enacted a framework Environmental Management Act 2004 to provide legal backing for the execution of environmental impact assessment. Impact assessment procedures have also been integrated in the planning and decision-making arrangements in many Ministries, Local Government development activities and Private sector initiatives through policies, legislations, guidelines and other provisions.

This is a considerable achievement, particularly given the level of economic development that the country is experiencing. However, notwithstanding the above achievements, the speed with which the actual implementation is taking place is appreciably slow. This is in part due to inadequate knowledge, awareness and technical capabilities of those likely to be engaged in the Environmental and Social Impact Assessment (E&SIA) process at the District level as well as Ministerial sectors.

So although the potential benefits of using EIA are inevitable, the extent to which the benefits from using E&SIA are considerable may not be achieved due to insufficient experience and expertise. It is in this context that this manual is being prepared.

The ultimate goal of the training manual is to provide technical information and guidance required in trainings focusing on key principles and skills for execution of E&SIA to planners, service providers and managers in the public and private sectors, both at the national and local levels. The aim is to recruit sufficient, appropriately trained and experienced personnel in the day-to-day operation of the E&SIA process.

This manual presents training materials to facilitate the basic understanding of E&SIA as a planning, designing and environmental management tool for integrating environment protection and economic development in the decision making process.

The main objective of the manual is to enable EIA trainers to develop and produce site and situation specific training courses for different target groups as well as enabling trainees to have an understanding of the basic elements of the EIA process and improve their capacity to adequately screen and review various environmental impact statements for decision making at national and local levels.

The manual emphasizes among others on the need to:-

- Integrate E&SIA into the development planning process for sustainable development as opposed to being viewed as a separate and isolated entity;
- Use E&SIA not just to assess negative impacts but also to enhance the positive impacts of projects;
- Develop E&SIA as a practical and cost effective tool for integrating environment and development in decision making at the policy, programme and project level;
- Include not only physical and environmental/ecological aspects but also social, cultural and economic aspects of projects;
- Include monitoring and follow-up activities within the EIA process.

It is anticipated that information provided in this manual will be useful to facilitate the basic understanding of the concept and practice of EIA for those involved as well as those that would be engaged in the administration of EIA process at various levels.

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To all these organisations, NEMC appreciates the continued technical and financial support that facilitates the necessary improvements.

NEMC also recognises the contribution of various experts who participated in the drafting, reviewing and testing this manual for their valuable suggestions to improve this manual.

## ACRONYMS

BOD	Biological Oxygen Demand
CBOs	Community Based Organizations
CO <sub>2</sub>	Carbondioxide
DC	District Commissioner
DDT	Dicholor-diphenyl-trichloroethane
DED	District Executive Director
DEnO	District Environmental Officer
DEO	Division of Environment
DG	Director General
DMT	District Management Team
DNRO	District Natural Resources Officer
DPLO	District Planning Officer
DTRC	District Technical Review Committee
EA	Environmental Assessment
EARO	East African Regional Office
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
E&SIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMT	Environmental Management Tools
ER	Environmental Report
ERC	Environmental Resources Consultancy
ESA	Environmental Sensitive Area
GIS	Geographical Information Systems
IA	Impact Assessment
IIED	International Institute for Environment and Development
IPM	Integrated Pest Management
IRA	Institute of Resource Assessment
IUCN	International Union for Conservation of Nature
LKEMP	Lower Kihansi Environmental Management Project
NEMC	National Environment Management Council
NEP	National Environmental Policy
NGO	Non – Governmental Organization
NO <sub>2</sub>	Nitrogen dioxide
NSSD	National Strategy for Sustainable Development
PEA	Preliminary Environmental Assessment
PER	Preliminary Environmental Report
SIA	Social Impact Assessment
Sida	Swedish International Development Agency
SD	Sustainable Development
SO <sub>2</sub> –	Sulphur dioxide
TANAPA	Tanzania National Park Authority
TIC	Tanzania Investment Centre
ToR	Terms of Reference

TRC	Technical Review Committee
UCLAS	University College of Land and Architectural Studies
UDSM	University of Dar es Salaam
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme

# **BACKGROUND**

## **THE NEED FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT CAPACITY BUILDING IN TANZANIA**

Tanzania's current political, social and economic policies have opened up doors to small scale and large scale investments through trade liberalization. These policies are likely to have positive impacts of improving the national economy and/or create dangers on the quality of the environment that may be compromised in the pursuit of profit. All investment opportunities are located in the Districts and Municipal boundaries. It is therefore pertinent that both central and local governments be vigilant and improves environmental governance in order to cope up with these new demands.

EIA has been recognized as one of the most valuable and widely used tools for achieving the goals and objectives of sustainable development. It improves the way in which trade-offs between economic development and environmental conservation are made and strives to bring and promote win-win scenarios that attempts to work out a "reasonable compromise". The purpose of environmental and social assessments is therefore to enable decisions to be made in a way, which optimises beneficial use of resources in a sustainable manner, and NOT necessarily stop the project.

Through this recognition of the values of EIA as a planning tool; as a management tool and as a decision making tool; concerted efforts are being devoted to promotion of its adoption by the government, international development bodies and bilateral organisations.

In order to supervise and oversee the implementation of EIA process in Tanzania, the National Environment Management Council in consultation and involvement of key stakeholders (sectors, local authorities, local communities and private sectors) has coordinated the development of framework EIA procedures and guidelines to be followed when conducting EIA in Tanzania. These guidelines are intended to be used by different user groups, including:-

- Local communities
- Developers,
- EIA practitioners (Consultants),
- Ministerial Sectors and District authorities,
- Donor Agencies

Capacity building for environmental impact assessment in Tanzania is still very low in terms of information sharing, experience and expertise in administering the EIA process among key stakeholders, including decision makers, politicians, local authorities, developers and local communities. Currently the institutional capacity and skills to effectively fulfil these responsibilities is inadequate. The procedure set out in the guidelines requires that all projects are to be screened on an individual basis to determine whether EIA is required or not; proper determination of key issues of concern for detailed impact identification; prediction and analysis through scoping and preparation of terms of references and how to prepare impact statement reports. Furthermore the guidelines also provide guidance on review of Environmental Impact Statements, monitoring and auditing of projects.

A quick glance of the needs assessment report for EIA capacity in the country indicates that, there is:-

- Lack of adequate human, technical, financial resources and inefficient institutional set-up.
- Inadequate expertise and resources for effective capacity building in EIA training institutions.
- Limited public participation and involvement of civil society in EIA process, as a key component.
- Inadequate understanding of methodology & practical tools and equipments for analysis by EIA practitioners.
- Limited data/information, unreliable and capability for production of quality impact statements for decision making

**Other challenges of concerns include:-**

- Lack of integration of environmental issues into development planning process at various levels horizontally and vertically through EIA and SIA.
- Creation of EIA and SIA review and evaluation capacity within lead agencies and District offices. Assessing the adequacy of EIA and SIA reports, taking into account views of stakeholders and accessing the acceptability of development proposals in terms of existing plans, policies and standards.
- Availability of supporting information to assist decision-making process on whether or not the impact statement and/or a proposal can proceed and under what conditions.
- Establishment of framework for effective monitoring and managing impacts associated with implementation of development projects. In addition to environmental institutions, relevant sectoral departments, agencies and authorities, and communities should have the capacity to monitor and ensure compliance and implementation of mitigation measures suggested in EIS.
- Assessment of strategies and social impacts of government policies, and planning initiatives at both national and district levels.
- Mainstreaming EIA in the evolving government reforms at both national and local level administrative structures. This could provide an opportunity to influence economic development planning which takes into consideration environmental matters.
- Understanding the value of EIA and the components of the process by concerned stakeholders to facilitate its application in decision-making process, development planning and designing and project management.

The obvious consequences of lack of capacity in EIA have resulted into the following;

- Many projects are implemented without being subjected to EIA or SIA
- Inadequate analysis of environmental and social impacts on several projects
- Inadequate quality control for rational decision making
- Inadequate identification of appropriate mitigation measures
- Inadequate enforcement and monitoring for compliance of approved projects
- Reliance on external (foreign) consultants for impact assessment
- Inevitable damage of environment and natural resource base for sustainable development

- Insecure human and public health and susceptibility to environmental risks.

To be able to address the above challenges, a high level policy and political commitment from Ministerial sectors and local authorities is inevitable. Moreover, it is pertinent to streamline conflicting lines of communication, reporting and command within the districts, between districts and sectors and between districts and NEMC.

# ABOUT THE RESOURCE AND TRAINING MANUAL

The National Environment Management Council has designed this training manual to support the building of capacity in Environmental Impact Assessment through training and the encourage networking among environmental professionals. It is intended to provide an understanding of and basic principles in the application of EIA and SIA. The emphasis is to increase necessary skills for planners, decision makers, investment officers, and other development agents at national and District level regarding:

- How to commission EIAs and select suitable firm for conducting the studies
- How to screen projects and write terms of reference for EIA
- How to review EIA reports
- How to undertake monitoring and auditing etc.

The manual can be adopted for the same purpose at national level.

Past training courses and programmes have focused on training people how to conduct environment assessments, but experience has shown that most of the graduates of such courses could hardly conduct any EIA.

The manual is designed to assist trainers to design and implement training courses of various content and length for five broad target groups, namely trainers, planners, managers, decision makers and the general public.

- Trainers,-who need to develop situation-specific courses in EIA awareness, developing EIA procedures, conducting EIAs or administering, monitoring and assessing EIAs.
- Practitioners, who intend to undertake EIAs and who need to develop their skills to carryout the process for example private sector consultants, university staff, officials in resource management agencies, officials in districts or regional authorities, or local donor/lending agencies;
- Managers with little or no previous exposure to EIA, whose responsibility may include screening, review and quality control for EIA process, managing and monitoring EIA process; evaluating the results and planning and monitoring implementation recommendations from the EIA. These managers may come from private sector, government departments at central and local level donors or investors responsible for implementing proposed project.
- Decision and policy makers with little or no previous exposure to EIA who need to develop an appreciation of the need for the process, key objectives, features and concepts of the process itself.
- Members of the public, NGOs and other relevant organizations who need to be exposed to the concept and to develop an appreciation for the need for EIA process as it relates to their organization and what to do with the outcome of EIAs.

The manual is divided into twelve modules that complement each other in their application.

- Introduction Module - An introduction to EIA and its role in sustainable development in Tanzania.
- Screening Module - Classification/determination of whether a project requires an EIA or not.
- Scoping Module - Determination of important issues and concerns to be addressed in a full EIA
- Public Participation Module – Provide narrative information on the need to involving the community, its advantages and methodologies
- Impact Assessment Module - Overview of how Developer/Consultants undertake a full EIA study
- Social Impact Assessment – Provides information on a critical analysis of impacts on human
- Mitigation and Impact Management– An overview of how impacts should be mitigated and the general management of environmental issues in the project
- EIA Reports Module - Reporting of the EIA investigation.
- Review Module - Reviewing EIA reports
- Monitoring Module - Monitoring during project implementation
- Auditing Module - Periodic checks on project performance

Each of these module notes is accompanied by overhead slides for teaching and some case studies and exercise for practical training.

## **WHO SHOULD BE A TRAINER?**

Trainers should be those who have enough background experience and understanding of EIA or SIA preferably EIA administrators and managers at national environmental bodies and institutions; EIA practitioners, researchers and trainers with sufficient field experience.

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# 1.0 INTRODUCTION MODULE

## 1.1 Outline

- Introduction
- Basic concepts
- Importance and roles of EIA
- Values and principles of EIA
- Cost and benefit of EIA
- Approaches and methods
- EIA in the project cycle
- EIA in Tanzania
- Exercise

## 1.2 Introduction

The introduction module provides an overview of Environmental Impact Assessment (EIA). It is important for the decision-makers and other players who are key in the EIA process to understand the purpose of EIA and its role in the sustainable development of Tanzania. The purpose of this module is to

- To introduce the concepts of Environment, Environmental Management and EIA within the framework of sustainable development.
- To outline the need for EIA, the values and principles that should guide the process as well as costs and benefits of EIA.
- To illustrate EIA in the project cycle.
- To outline the EIA procedure in Tanzania.

## 1.3 Basic Concepts

The environment is the backbone of the economy, the resource of livelihood as well as source of national wealth. The security of these livelihoods is dependent on the sustainable management and development of a country's resource base. As the pressure for industrialisation, urbanisation and use of the resource base increases, the need for resources to be managed in a prudent manner become inevitable. One of the tools for doing this is environmental impact assessment (EIA).

- ***The Environment***  
Environment is a whole set of natural (bio-physical) and man-made (socio-cultural) systems in which man and other organisms live, work and interact.
- ***Sustainable Development***  
Sustainable development is defined as development that meets the needs of today's generation without compromising those of the future generations.
- ***Environmental Management Tools (EMT)***  
Tools for effective management of the environment for sustainable socio-economic development include Environmental Policies, Environmental Legislation, Environmental Standards, Environmental Auditing, Cleaner Technologies, Environmental Monitoring, Environmental Economics and Environmental Impact Assessment.

- ***Environmental Impact Assessment (EIA)***

This is a process for orderly and systematic valuation of a proposal including its alternatives and objectives and its effects on the environment including the mitigation and management of those effects. The process extends from the initial concept of the proposal through implementation to completion and, where appropriate, decommissioning. Environmental impact assessment in the wider context also includes social assessment, risk assessment and health assessments. The highest level of environmental assessment is known as Strategic Impact Assessment. This addresses plans/programs, policies or legislation.

#### **1.4 Importance and Roles of EIA**

The role of EIA was recognised at the United Nations Conference on Environment and Development (UNCED) in 1992 for which Principle 17 of the Rio Declaration states:

***“EIA as a national instrument shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.”***

The purpose of EIA is to ensure that development proposal, activities and programmes are environmentally sound and sustainable. EIA can be used to minimise or prevent adverse effects and at the same time help countries to capture the real potential of the resource, and maximising the benefits of proposed developments.

Environmental Impact Assessment improves long-term viability of projects. It helps to avoid mistakes that can be expensive and damaging in environmental, social and economic terms. EIA is used for early warning planning of a wide range of resource use, development and conservation initiatives in order to make the most out of the options for achieving sustainability. The impacts of human activities on the biosphere are reaching critical thresholds with the consequent threat of ecological breakdown and social conflict. Thus, the use of EIA to choose the best project alternatives or options can help in the achievement of sustainable development. Box 1 highlights the role and importance of EIA.

**Box 1.1: The Role of EIA**

<b>Benefit</b>	<b>Description</b>
i) Improving project design and reducing costs.	Identification of unforeseen issues at an early stage of their development tend to be more cost-effective and avoiding unnecessary environmental damage and social disruption.
ii) Integrating short-term and long-term goals.	Identify and reduce risks and problems as a result of a short term needs and interests.
iii) Improving institutional co-ordination, inter-agency co-operation and technical capability.	EIA provides a formal mechanism for inter-agency co-ordination and negotiation between stakeholder groups.
iv) Avoiding conflicts	Dialogue and participation between stakeholders may reduce/avoid potential impacts and conflicts.
v) Addressing transboundary issues.	EIA can identify and find solutions to transboundary environmental issues and help resolve conflicts. The Ewasongiro multipurpose project and L. Natron soda ash project are good examples.
vi) Considering alternative projects and designs.	Appraisal techniques examine alternatives in terms of minimising financial costs and optimising financial returns. EIA broadens the scope of the project appraisal so that considerations can be made of alternative <u>approaches</u> (e.g. IPM rather than agrochemical applications), and <u>design</u> (e.g. Re-routing of Makuyuni-Musoma road to avoid passing through Ngorongoro & Serengenti protected areas.
Vii) Facilitating project acceptability and enhancing social & economic opportunities.	EIA facilitates public participation, provides a forum for information exchange and a building of consensus between groups. In so doing, it helps to provide a mechanism for new economic and social opportunities.
viii) Improving accountability and transparency in planning and decision-making.	EIA contributes to planning and designing of environmental mitigation measures in an open and transparent process and through evaluation and analysis of scientific information, it instils the element of accountability by decision-makers.

Source: Modified from IRA/IIED, 1995

## 1.5. Values and Principles

A number of core values and guiding principles for the practice of EIA have been identified:

### 1.5.1 EIA Core Values

- *Sustainability* – EIA process result in environmental safeguards as it is anticipatory and preventive rather than curative (aids precautionary and preventive principle).
- *Integrity* – the process will conform to agreed standards and be performed by multidisciplinary teams.
- *Utility* – the process provides balanced, credible information for decision-making.

### 1.5.2 Key Guiding Principles for EIA

- *Continuity* - as an integral part of planning, designing and implementation cycle of any development initiative, EIA should run continuously and throughout project cycle.
- *Participatory* - EIA provides a framework for stakeholders and all interested parties to participate in decision-making.
- *Transparency* – EIA facilitates dialogue, predictions and responses in a forum where proponents, decision-makers, experts and the public interact in an open and accessible way in considering the potential impacts of a project on local community, natural resources and environmental quality. All assessment decisions and their basis, should be open and accessible.
- *Credibility* – assessments are undertaken with professionalism and objectivity, using multidisciplinary skills.
- *Certainty* – the process and timing of assessment must be agreed in advance and followed by all participants.
- *Cost-effectiveness* – the assessment process and its outcomes will ensure environmental protection at the least cost to society. It ensures fair and equitable distribution of project costs and benefit. As a minimum, local people in a project area must not be worse-off than they were before a project was implemented.
- *Flexibility* – the assessment should be able to adapt to deal efficiently and effectively with any proposal or decision- making situation.
- *Practicality* – the information and outputs are readily usable for planning, designing and in decision-making.
- *Accountability* – decision-makers are responsible to all parties for decision and actions under the assessment process.

## **1.6 Costs and Benefits of Using EIA**

While there are initial costs linked to EIA, experience has shown that potential savings over the life of a project can repay the investment many times over. Experience also show that the earlier EIA processes are introduced in the project cycle, the greater the potential gain.

### **1.6.1 Benefits**

There are both direct and indirect benefits of EIA. Such benefits include the following.

- More environmentally sustainable design or improvements in the design and siting of a project/plant, following critical analysis of project alternatives.
- Better compliance with environmental standards reduce damage and distribution to the environmental quality and minimise risks to public health diseases and associated costs of treatment, compensation and likelihood of fines and penalties.
- Savings in capital and operating cost. Early identification of environmental problems avoids adoption of expensive mitigation measures during operation caused by later plant adaptations.
- Reduces time and cost of approvals of development application. Timely completion of adequate and comprehensive EIA studies and review process reduces delays in approval processes.
- Resolves conflict, solves problems and thus increase project acceptability by the public through active involvement and participation throughout the process.
- Improves institutional co-ordination and inter-agency co-operation and technical credibility through the use of multi-disciplinary experts in review of impact statements.
- Improves accountability and transparency in planning and decision-making process.
- For business and governments – EIA is an important planning and management tool in the pursuit of sustainable development by integrating environmental factors, public concerns and community values early in the decision-making process.
- Environmental assessments, large or small, formal or informal empower decision-makers to make practical, responsible and informed choices.
- Good environmental assessment is good management and good management is good business.
- Good business:
  - serves time and money in the long run;
  - facilitates investment;
  - keeps business and government in touch and improves community relations;
  - reduces environmental threats to humans and ecosystems;

Leads to responsible decisions to sustain and enhance the value of environment for present and future generations.

### 1.6.2 Costs

- The requirements for EIA which may be set out in law, guidelines or other procedures indicates that the proponent is usually (but not always) responsible for carrying out an environmental impact assessment and incurring associated costs.
- Too late introduction or start of EIA in the project cycle; poor drafting of terms of references; inadequate management of EIA according to schedule; inadequacy of EIA reports and requirement for additional technical data and upgrading, result in prolonged time duration for the administration of EIA process and hence more financial resources.
- However, determination of exact costs of preparing EIA is often difficult. Experience shows that rarely costs of preparing EIA exceed one percent of the total project cost (Table 1), and it includes amelioration costs.

**Table 1.2. Examples of EIA costs as proportions of total investment costs.**

Type of project	Total project cost in US (´000)	EIA cost in US \$ (´000)	Percentage of total project costs (%)
Forest Management, Tanzania	400,000	250	0.06
Waste water treatment plant by TBL – Tanzania	2,500	13	0.52
Small holder irrigation projects PADEP - Tanzania	77,000	100	0.04
Sumbawanga Agriculture and Animal Feed Industries Project – Tanzania (SAAFI)	1,300	35	0.02
Dodoma Abattoir - Tanzania	1,000	85	0.08
Community Water Supply and Sanitation Project RBP SIIP	25,000	195	0.07

**Source - ERC**

### 1.7 Approaches and methodology

There are various methods and methods applied in various stages of EIA process. These methods range from simple participatory approaches to complex mathematical models. Every impact assessment stage seeks for application of specific method that deemed appropriate at a particular time, nature of the project and locality. For example, participatory methods, simple and weighted matrices, GIS based map overlays, networks, cost-benefit analysis and mathematical models.

## **1.8. EIA in the Project Cycle**

### **1.8.1 Project Cycle**

EIA should be undertaken throughout the project (see fig. 1.1) and initiated as early as possible in the project cycle and should include a provision to cover the monitoring of project implementation and operation, and eventually an audit of the project.

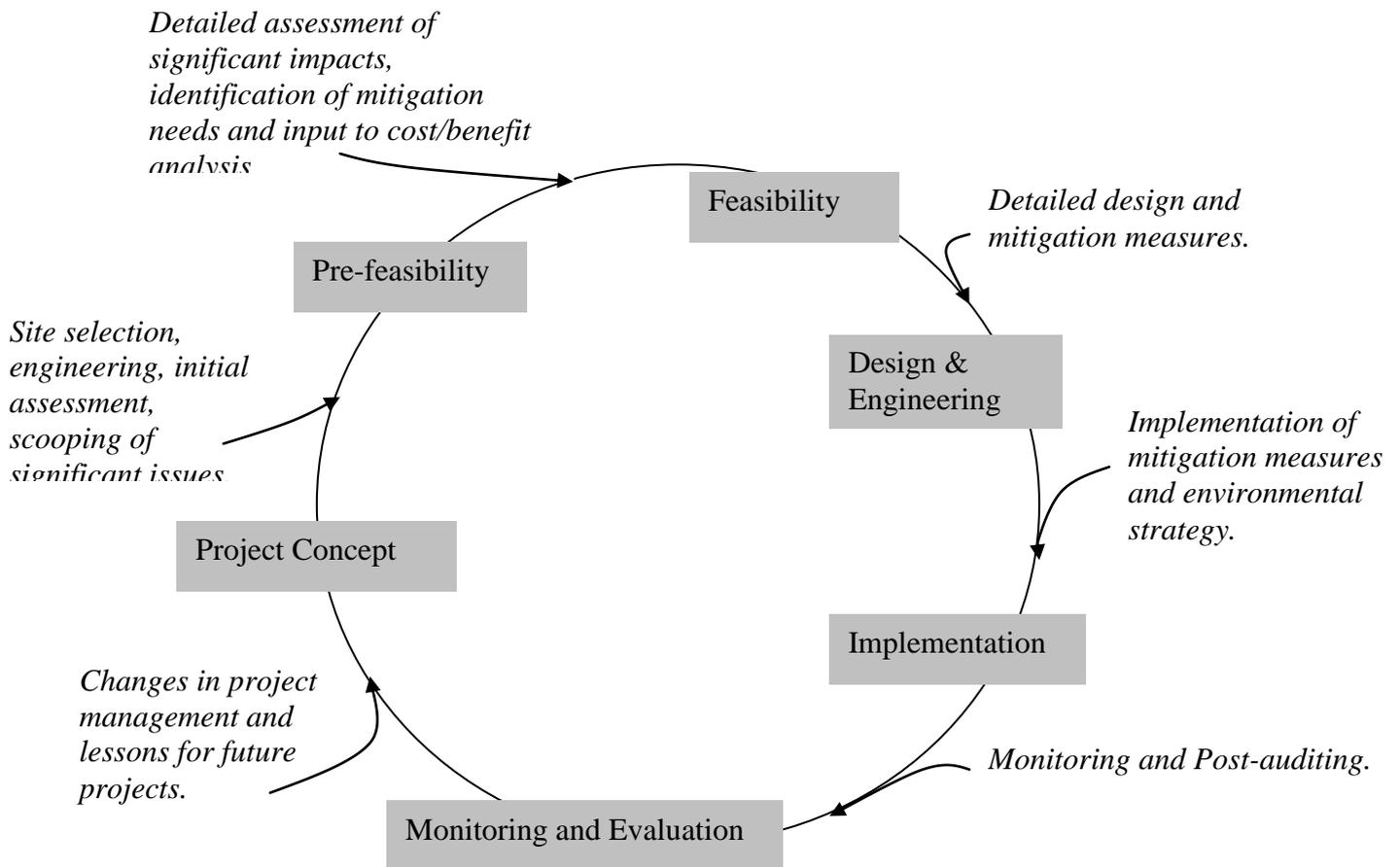
### **1.8.2 Actors**

The actors involved in the EIA process can be grouped into 5 main groups.

These are:

- ***Project Proponents***  
These are developers who initiate project ideas/proposals. They can be private individuals or public institutions, government departments etc. They are responsible for commissioning and/or conducting environmental impact assessment with or without assistance of consultants and incurring all costs related to EIA.
- ***Service Providers***  
These are experts or consultants who are responsible for carrying out detailed Holistic and interdisciplinary studies, exploiting their multidisciplinary skills Professions. Service providers can be research institutions, academia, national, public organisations and non-government organisations etc.
- ***Stakeholders or the Public***  
These are affected and interested groups that are either directly affected or influenced by the project undertaking. They can be local people in the project area, government departments or agencies, non-government organisations, research & academia, donors, general public, etc.
- ***Reviewers***  
These are impartial and independent group, authority/agency responsible for quality control, determining level of environmental assessment required, approve terms of references for impact studies and evaluating the strength and weakness of impact statements and their adequacy for decision-making, based on scientific and objective judgement.
- ***Decision-makers***  
These are the ultimate decision-makers, responsible for issuing an operating license or permit based on the recommendations of the review agency. Examples include: the President Executive Agencies, Parastatal Organisation, Sectoral Ministries, and Local Authorities (District Councils)

**Fig. 1.1. EIA in the project cycle**



### 1.9 Activities subject to EIA

- All development project activities likely to cause potential significant adverse impacts or actual or potential foreseeable cumulative effects.
- It would be time consuming and a waste of resources for all proposals to undergo EIA. Different EIA systems use different methods of choosing or screening projects to be either subjected to full, partial or no EIA. Such methods may include; using threshold lists; or initial evaluations to determine environment significance based on nature and type of project; size; location/sensitivity of the site; land use compatibility; degree of public concern and significance of impacts etc.
- EIA should address biophysical impacts and all related and relevant factors including social, economic, political, cultural, and health risks and impacts in the broadest sense.
- Further, it should address cumulative and long-term, on-site and off-site, large/ small-scale effects; negative as well as positive aspects.
- Consider all applicable alternatives i.e. design location, phasing, technological etc. to the proposal being assessed.
- Consider sustainability issues, including resource productivity, assimilative capacity and biological diversity.

## **1.10 Environmental Impact Assessment in Tanzania**

### **1.10.1 History**

The first major EIA to be undertaken in Tanzania was in 1980 for the Stiegeler's Gorge Power and Flood Control Project. Ever since a number of EIA studies have been undertaken in country during the past 20 years guided mainly by Donor agencies. Awareness on the importance of EIA in Tanzania is increasing significantly.

### **1.10.2 Policies and Legal Framework for EIA in Tanzania**

The National Environmental Policy (NEP) of 1997, the National Conservation Strategy for Sustainable Development (NSSD) and the National Environmental Action Plan (NEAP), have recognised and reiterated the role of EIA for promoting sustainable socio-economic development.

The overall objectives of the National Environmental Policy Of 1997 are:

- to ensure sustainable, secure and equitable use of natural resources to meet the needs of present and future generations
- to prevent and control degradation of land, water, vegetation and air which constitute our life support system
- to conserve and enhance natural resources, including biological diversity and their ecosystems
- to raise public awareness and understanding on close (linkages between environment and development and promote their participation in environmental action.
- to promote regional and international co-operation on environmental matters.

One of the policy instruments to achieve the above goal and objectives is through the use of Environmental Impact Assessment (EIA). Currently Environmental Management Act 2004 to provide legal back up has been accented by the President.

Various sectoral policies such as Lands, Energy, Minerals, Water, Fisheries, Tourism, Forestry, Bee-Keeping, Wildlife, Roads, and Industries advocate the use of EIA in project planning prior to issuance of investment license. With an exception of Road sector, these policies lack detailed sector specific EIA guidelines.

Some of the national institutions that have adopted EIA in their laws include TANAPA and Marine Parks and Reserves. Tanzania National Parks (TANAPA) has developed EIA guidelines to guide development activities within and adjacent areas to national park boundaries. Marine Parks and Reserves is in the processes of formulating guidelines for investments in Marine parks and Reserves in the Tanzania.

## **1.11 The Proposed National EIA Procedure and Guidelines**

The overall objectives of EIA in addition to maintaining long-term ability of natural resources and their ecosystem; to support humans, plant and animal life; and to conserve the social, historic and cultural values of people is to encourage environmentally responsible investments and development in the country.

Administratively, the Minister responsible for environment in the Vice-President's Office administers the National EIA framework. The Director General of the National

Environment Management Council (NEMC) has the responsibility for overseeing its implementation and provides technical arbitration in EIA.

Both public and private sector development activities are subjected to EIA. The proposed guidelines have provided a list of projects that require mandatory EIA; those that may or may not require EIA and a list of environmental sensitive areas.

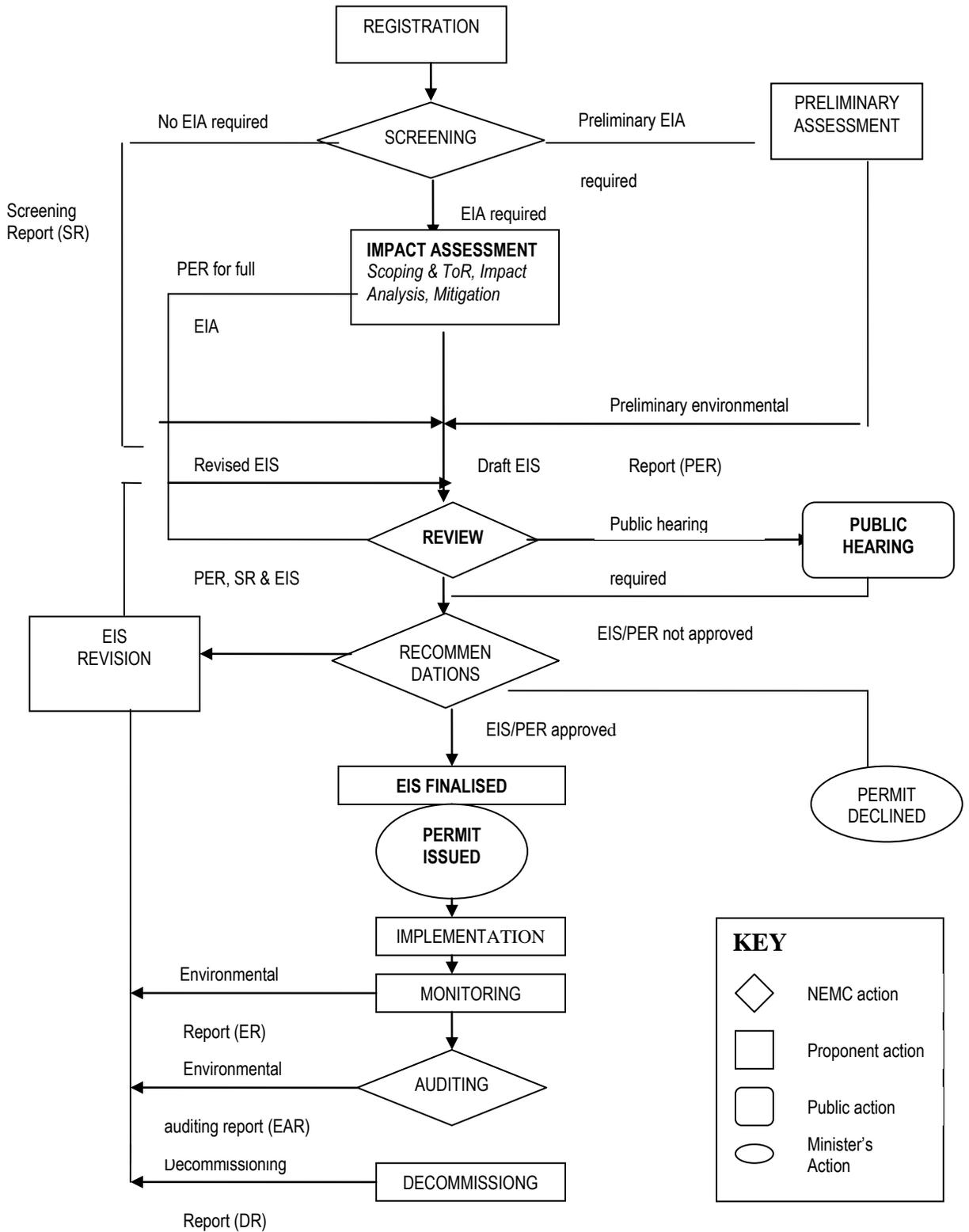
An environmental permit is granted by the Minister responsible for environment when NEMC with assistance of the cross-sectoral Technical Review Committee (TRC) has been satisfied that the EIA report has adequately identified the impacts and provided appropriate mitigation and management plan. Environmental certificate is granted when the environmental monitoring report indicates that the investor has implemented the mitigation measures and comply with the proposed management plan.

The proponent/developer is responsible for the preparation of EIA reports according to the terms of references (ToR) approved by NEMC and bears costs related to EIA. Guidelines on report writing and technical advice to proponents on how best to comply with EIA requirements have been provided by NEMC.

#### **1.11.1 Main Step in the EIA Process**

The EIA process typically consists of a sequence of steps as outlined in the generalized flow chart below.

**Fig. 1.2 Main steps in the EIA process at national level**



Main steps as proposed in the national EIA procedure and reflected in figure 1.2 include:

- *Registration* - the proponent is required to register his activity by submitting fully filled in special application form together with a proposal concept to the NEMC to assess whether or not EIA is required.
- *Screening* – this is the classification stage to determine the level at which EIA will be carried out. In making the decision whether full, preliminary or no EIA is required, consideration of the following factors is taken: Sensitivity of the environment, location of a project, technology used concern of the public, land use consideration, magnitude/scale of environmental impacts and any other relevant factors. NEMC then submits a screening report to the proponent.
- *Scoping* – if the classification indicates that a full EIA is required, then identification of main issues of concern through scoping will be done by consulting all the relevant concerned parties. Draft terms of references will then be prepared to guide the impact assessment study. A public consultation programme ought to be submitted for verification of issues raised by concerned parties.
- *Impact Assessment* - The preparation of EIA study follows after approval of ToR, to identify likely impacts, assess and evaluate their severity and magnitude and proposed mitigation measures to minimise potential negative impacts and enhance positive benefits.

An EIA report includes an environmental management plan as well as a monitoring plan that outlines monitoring and management of anticipated impacts, especially those, which affect local communities. Public consultation is mandatory when conducting an EIA and at a minimum the proponent must meet key stakeholders to solicit their views.

- *Review* – Once the proponent has submitted an EIA report (or EIS), the Technical Review Committee (TRC) will undertake a review process. The TRC is composed of members from sectors responsible for environment and resource management, those that are currently the focus for investment and relevant research institutions. Prior to TRC meeting a site visit is conducted to verify information provided in the EIS report. TRC is crucial in enhancing required technical credibility, institutional and interagency co-ordination, accountability and transparency in deciding the fate of a project.

Depending on the complexity and scope of the project, an independent review panel may be formed for a specific project. The public is notified of the EIS to present their views and comments and these are collated by NEMC for the TRC consideration.

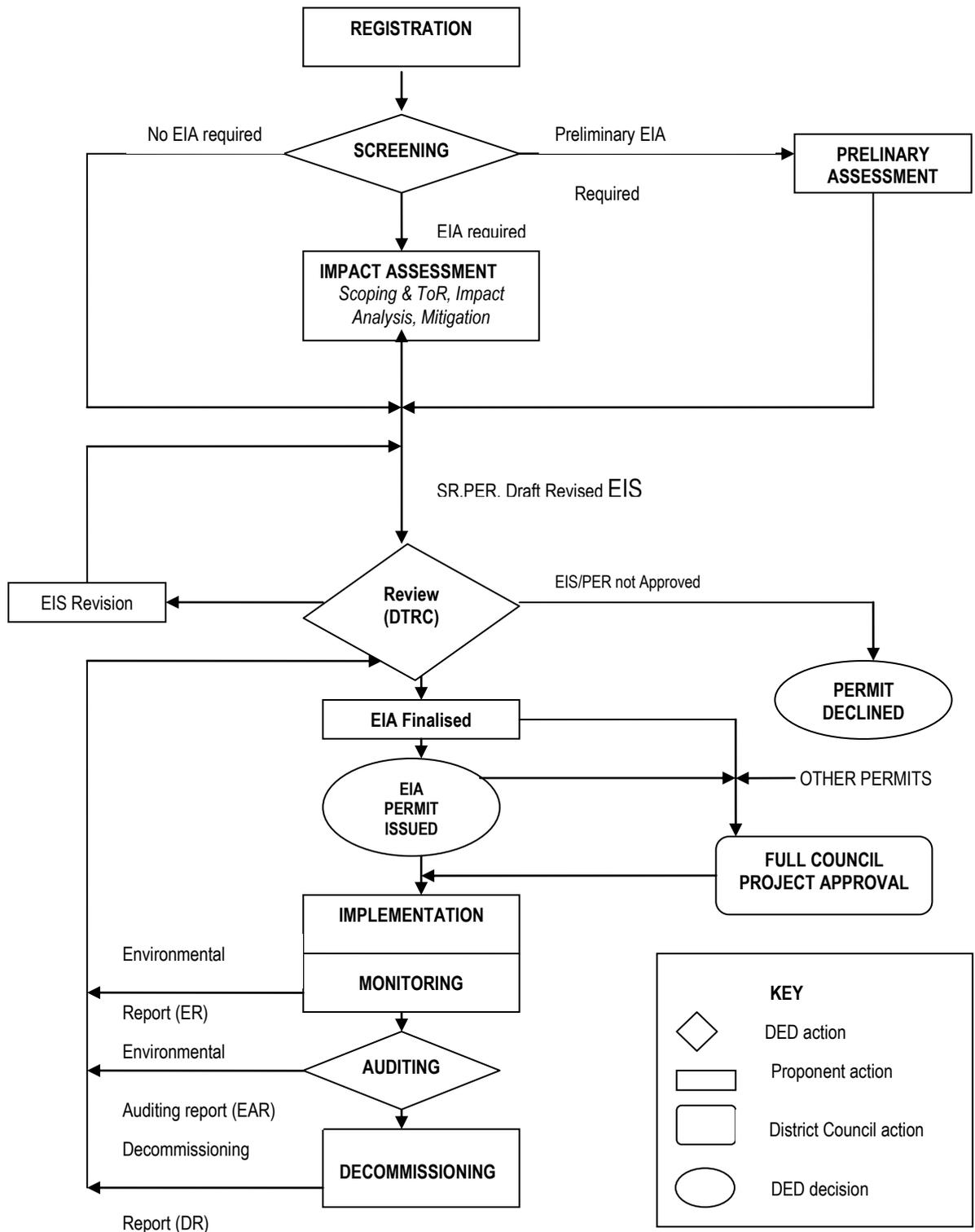
If more information is required the proponent/his consultant will be informed of the need for a more detailed analysis of certain impacts proposal or any other information to adequately assess the proposal. Additional public consultation may be required as well. Once the additional information has been submitted, a further review may be necessary.

- **Public hearing** - as part of the review process may be necessary whenever a strong public concern over the undertaking has been raised and impact are far reaching. Other critical factors that may necessitate public hearing are sensitivity of the site location, type and scale of project, technology used, multiple land use considerations, project impacts and any other factors related to a particular project.
- **Environmental decision-making** - The outcome of the review could be “EIS acceptance” and the proponent will be served with a provisional environmental permit (PEP) together with terms and conditions of approval or could be “EIS rejection”. Recommendations for informed decision are submitted by NEMC to the Minister responsible for Environment for EIS approval.
- **Appeals** – both the proponent and the affected or interested parties have the right to appeal. If there is dissatisfaction of the decision reached, he/she has the right to appeal to the environmental tribunal or court of law.
- **Project implementation** – this is to be conducted according to the terms and conditions of approval guided by the environmental management plans.
- **Monitoring and auditing** – both the proponent and the government have the responsibility to undertake monitoring. Monitoring include the verification of impacts, adherence to approve plans, mitigation measures and general compliance of terms and conditions. Environmental audits should be undertaken to provide feedback on the EIA process and effectiveness of the management plan.
- **Decommissioning** – this is end of the project life. The decommissioning report shall be prepared by the proponent that indicates his commitment into rehabilitating the site and submitted to NEMC.

### **1.11.2 The Proposed EIA Procedure at District level**

At the District level, it is proposed that the procedure follow similar main steps as the national framework procedure but with different actors as reflected in figure 1.3 below

**Fig. 1.3 The proposed EIA procedure at District level**



- *Registration* - the proponent is required to register his activity by submitting the application form together with a proposal concept to the District Executive Director (DED).

- *Screening* – DED in consultation with the District Management Team (DMT) classify the activity/project proposal and submits a screening report to the proponent.
- *Impact assessment* – This is the responsibility of the proponent
- *The District cross-sectoral technical review committee (DTRC) will review EIA reports*–. An independent review panel may be formed for a specific project. The public is notified of the EIS to present their views and comments and these are collated by DED for the DTRC consideration.
- *Public hearing* - as part of the review process may be necessary whenever a strong public concern over the undertaking has been raised and impacts are far reaching.
- *Environmental decision-making*: The District Executive Director (DED) signs the provisional environmental permit (PEP) or an “EIS rejection”.
- *Appeals* – both the proponent and the affected or interested parties have the right to appeal to the District Commissioner (DC). The DC shall appoint an appeal panel of not more than 5 people [3 experts, one member from public and a District Magistrate] and the results shall be communicated to the DED for necessary action.
- *Project implementation* – this is the responsibility of the proponent conducted according to the terms and conditions of approval and guided by the environmental management plan.
- *Monitoring and auditing* – both the proponent and the District authority have the responsibility to undertake monitoring and environmental audits.
- *Decommissioning* – The decommissioning report shall be prepared by the proponent and submitted to the DED.

## **1.12 Constraints**

Despite the appreciable efforts in institutionalising EIA, there are some problems that constrain its development in the country. These include:

- Inappropriate institutional set-up to support EIA process at District level
- Inadequate awareness of EIA amongst the public planners, investors and politicians
- Inadequate technical, human and financial resources at all levels
- Inadequate stakeholder involvement in the EIA process
- Timing of EIA studies in project planning and designing
- Limited environmental standards
- Unavailability of reliable data and/or information

### 1.13 Making EIA effective in Tanzania

In order to make EIA process effective, the following have been proposed as important ingredients

- Establish institutional linkage between national and District levels
- Continue to raise public awareness on the usefulness of EIA to eliminate the existing misconceptions about EIA and strengthen political commitment
- Enhance capacity at all levels to manage the EIA process as well as provision of adequate resources in both human as well as financial
- Motivate stakeholder involvement in EIA process mandatory and adopt participatory and adaptive approaches
- Develop nationally recognised environmental standards and guidelines
- Encourage data and information generation & dissemination
- Establish a register of EIA consultants and field of competence
- Make EIA reports available for public reference
- Publish screening reports and final decisions and the applicable conditions

### *SELF TESTING EXERCISE*

The following are examples of points for discussion during or after the introduction session.

1. Facilitator outline examples of environmental problems facing Tanzania (NEP, NCSSD) and let participants give examples of environmental problems in their respective Region/District. Discuss whether the environmental problems resulting from development activities can be solved by EIA?
2. Facilitators give examples of benefits gained by any local project proposal in Tanzania that have undergone EIA and the cost/problems faced by proposals that did not undergo EIA or there were inadequacies in the process.
3. What are the local policies and legal framework e.g. By-laws that can support EIA in the District.
4. Could the existing project review and approval procedure at the District level allow public hearing as part of the EIA review process?

## **2: REGISTRATION AND SCREENING MODULE**

### **2.1. Outline**

- Introduction
- Definitions
- Relevance of project screening
- Objectives of project screening
- Screening Methodologies
- Screening criteria
- Screening Report
- Exercise
- Appendices

### **2.2. Introduction**

Screening is the first main step in the EIA process, where upon receipt of registration forms for the development proposal, the environmental regulatory authority determines whether an EIA is required or not. The purpose of this module is to impart knowledge and skills on:

- what is screening, objectives of screening and importance of screening and
- Different methods of identifying activities that should be subjected to EIA.

### **2.3 Purpose of the module**

To impart knowledge and skills on the importance of screening and introduce methods used during identifying activities that should be subjected to EIA.

### **2.4 Definitions**

#### **2.4.1 Project Registration**

Registration is a simple administrative procedure, which requires project proponents to officially declare the intention to engage in a particular project. It is the first step in the EIA process. During registration the proponent or consultant fills in specially prepared forms available at NEMC. These forms have guiding questions to direct the proponent or consultant to provide the necessary information to help decision making during screening (attachment 1).

In general the proponent will be required to provide a brief description of basic information about the project including the following aspects:

- (i) Type of project, objectives, size of the project and Labour force, area to be covered, planned activities, type and amount of inputs including raw materials, types and amount of expected outputs, size and types of required infrastructure and services.
- (ii) Description of the Location of the project
- (iii) Planned future extension of the project activities
- (iv) Description of the project's socio-economic and biophysical environment.

- (v) Outline of the project development at different phases (i.e. construction, operation and decommissioning).

A project brief (summary of project proposal) will be submitted with registration forms as required by part VI section 86 (1) of Environmental Management Act of 2004.

#### **2.4.2 Project screening**

Screening is the process of determining whether the proposed project has potential adverse impacts on environment or community. It determines whether the project is required to undertake full EIA or requires undertaking of Preliminary Impact Assessment (Initial Environmental Examination) or does not require EIA or should be rejected.

It starts immediately upon receipt of registration forms and brief description of the proposed project. The determination of the likelihood that the proposed project would cause significant adverse social and environmental impacts is performed by the regulatory authority (NEMC). After acquiring the necessary skills, the Local Authorities will be authorised to conduct screening process, for certain types of projects as will be directed in the guidelines.

#### **2.5. Relevance of Project Screening**

It is important to note that screening of projects is not an option or a requirement of NEMC; it is a critical process to be applied to all development projects regardless its size or nature. Since screening process occurs as early as possible in the planning phase (before project design is finalised) it has a great influence on the design of the projects and its subsequent project development stages along the project cycle.

Screening also helps to focus resources on those project activities most likely to have significant impacts, those where the impacts are uncertain and those where environmental management inputs are likely to be required. Screening helps to ensure that the proponent understands the EIA procedures that need to be followed after registration,

#### **2.6. Objectives of Screening**

The objectives of screening are:

- To ensure that all projects with potential significant impacts are subjected to EIA
- To avoid unnecessary expenses of conducting full EIA for projects that have no potential for significant adverse impacts

#### **2.7. Responsibilities during Registration and Screening**

The Regulatory Authorities (NEMC, the District, Municipal or Town authorities) that is charged with the mandate of overseeing the implementation and execution of EIA will be responsible for:

- Issuing registration forms for the proposed project
- Availing technical advice on procedural requirements, policies and regulations.

- Screening all proposed projects (public or privately owned)
- Preparing and issuing screening reports to the developer

The project proponent will be responsible for:

- Securing and filling in the Registration forms by answering all guiding questions.
- Availing all relevant information about the proposed project as requested by the regulatory authority according to section 87 (3 &4) of EMA 2004.
- Paying all fees associated with EIA process

## **2.8. Screening Methodologies**

Screening makes use of information provided in the registration forms and/or the project brief. Basically projects are screened using a combination of the following methods:

### **2.8.1. Checklists**

This is a list of projects/activities that must be subjected to different levels of environmental assessment (attachments 2 and 3). Checklists tend to be the most widely used and effective screening method. Screening will determine whether the proposed project belongs to a category for which EIA is mandatory or not. All projects listed in schedule 1 will be required to undertake full EIA whereas those listed in schedule 2 may or may not require full EIA.

### **2.8.2. Sensitive area criteria**

These are areas that are known from experience to be environmentally fragile or vulnerable and can easily be degraded by the effects of the project or its activities (attachment 4). These areas include wetlands, protected areas, game reserves, or areas of particular cultural sensitivity. Screening process will determine whether the proposed project would have influence on any of the environmentally sensitive habitats. Projects that have potential adverse impacts on environmentally sensitive areas will be subjected to full EIA.

### **2.8.3. Environmental and social characteristics**

The environmental and social criteria that need to be considered while screening projects to ascertain the extent of impacts include characteristics of receiving environment, resilience of natural human environment to cope with changes, confidence of predicted impacts, sustainability criteria, degree of public interest, presence of planning and policy framework and other decision making tools. Details on these criteria are shown in attachment 5.

### **2.8.4. Main project characteristics**

Include project type, size, location and setting, required resources and technology and production methods, waste production and management, labour requirements, the expected effluents/emissions, infrastructure and service requirements, etc. The potential environmental consequences of the proposed type of project will be assessed. The characteristics of a project will determine the level of EIA to be undertaken.

### **2.8.5. Characteristics of the site and surrounding areas**

These include the ecological importance including presence of endangered and endemic species, people, land use, wind direction, landscape and terrain, geological features, hydrology, values and norms, fragility and dynamics of the development. The potential effects of the proposed project activities on the characteristics of the site and surrounding areas and vice versa will be assessed in order to determine the nature of interaction between the proposed project and the existing conditions and the associated effects. Projects that may seriously affect the existing conditions will be required to undertake full EIA.

### **2.8.6. Significance of impacts**

Scale of impacts include such issues like area of influence; duration of disturbance, effluent/emission quality, resettlement requirements, cumulative effects, reversibility, infringement of any laws, regulations or directives etc. Seriousness of impacts can be appraised after establishment of scale of impacts. All projects that are associated with serious impacts will be required to undertake full EIA.

### **2.8.7. Public concerns, views and issues**

This include presence of controversial issues which would raise public concerns as a result of type and scale of the undertaking, sensitivity of the site, location, proposed technology, conflict of interest in land uses and any other social factor related to a particular project. All projects that are associated with these issues will be required to undertake detailed scrutiny and assessment through EIA process.

## **2.9. Outcome of Screening Process**

The outcome of screening could be one of the following:

- The proposed project has no potential impacts thus **“No EIA is required”** the screening report is submitted to approving authority for issuance of environmental permit.
- The provided information is not enough to enable decision making thus a **“Preliminary Impact Assessment** is required” and be submitted for review to determine whether Environmental permit should be issued or a detailed EIA should be accomplished. This is usually a low-cost environmental evaluation that makes use of existing information. Provides more information to assist decision making on next step and may lead to issuance of Environmental Permit or call for full EIA or rejection of the proposal

In some incidences the screening process fails to ascertain the extent of impacts of the proposed project on the environment and the community. Such projects have limited impacts which are not included in the project design thus has inadequate information and the need for EIA is unclear. In such cases the investor would be required to undertake Preliminary Impact Assessment that is usually a low-cost environmental evaluation that makes use of existing information only. The preliminary impact assessment is expected to bring more information to assist decision-making. This is normal for projects that do not appear in schedule 1.

- The proposed project has potential adverse impacts on environment and or social aspects thus **“Full EIA is required”** the investor should undertake detailed studies following appropriate and approved guidelines.
- The proposed project contradicts with our law or international agreements or the adverse impacts can not be managed thus **“the project is rejected”**.

**Table 2.1 Differences between Preliminary Impact Assessment and Full EIA**

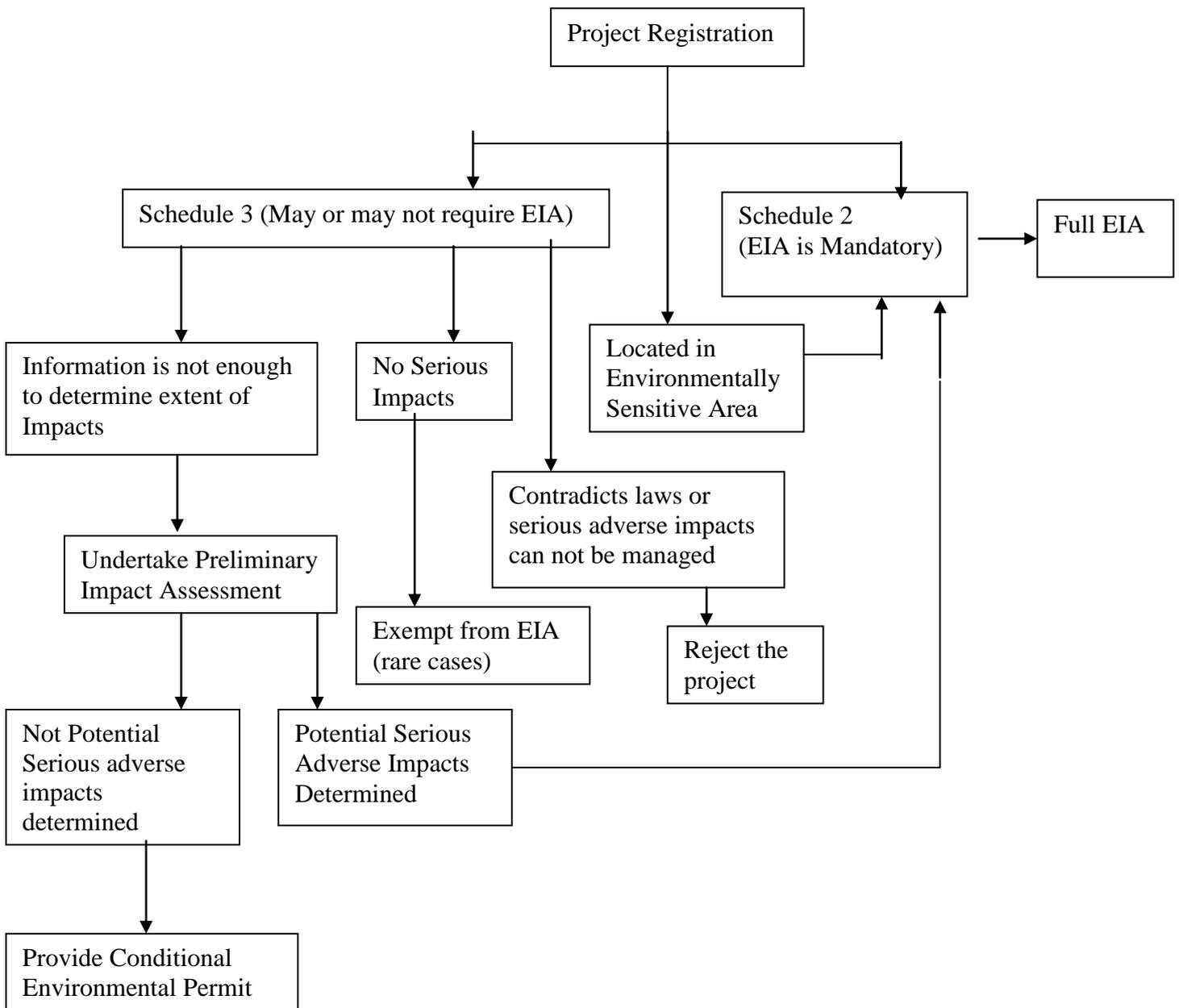
	<b>Preliminary Impact Assessment</b>	<b>Full Impact Assessment</b>
1	Applied to projects with impacts that have low and medium significance levels	Applied to project with impacts that have high significance levels projects/activities
2	A rapid, simplified EIA study that use simple analysis tools	May take a relatively longer time and use both simple and complex impact analysis tools
3	Less comprehensive study with few details	A comprehensive study that may involve research
4	Low cost exercise	Relatively expensive exercise
5	Assists decision making for issuance of environmental permit or requirement of full EIA	Assists decision making for issuance of environment permit

### **2.10. Screening Report**

After screening authority will prepare a brief screening report and submit to the proponent, the contents should include;

- Project background (as shown in the registration form or project brief)
- Description of the screening process that was undertaken
- Screening decision made with reasons
- Recommendations on further actions.

**Fig. 2.1 Schematic presentation of screening process**



## ***PRACTICAL EXERCISE***

Use an imaginary or real project proposal if available, and subject it to project screening exercise according to instructions

### **Instructions:**

- Select group leader and the secretary,
  - Read the provide project proposal
  - Provide information requested in No. 1 – 3 under exercise 1 below
  - Prepare 5 minutes presentation in a flip chart.
1. Please use the provided screening criteria (Attachments 2-5) to determine the level of impact assessment applicable to this project.
  2. Write a screening report to indicate the decision of the screening process and recommendations for future actions

## 3. SCOPING MODULE

### 3.1. Outline

This module will address the following aspects of scoping:

- Introduction
- Definition
- Objectives of scoping
- Relevancy of scoping
- Methodology
- Responsibilities for scoping
- Scoping report and the Terms of Reference for a full EIA
- Case study and exercises

### 3.2. Introduction

Scoping is a process that ensures relevant and focused EIA by defining the main concerns, alternatives, and likely impacts and data requirements. Scoping determines important issues and concerns to be addressed in the EIA study. If the screening results show that the proposed project will result in significant environmental impacts, the proponent will be required to undertake scoping exercise and submit a Terms of Reference.

The purpose of this module is to impart knowledge of scoping to enable determination of all-important issues and ensure that they are extensively and appropriately covered in the terms of reference for the EIA study. It is also aiming at explaining the objectives, relevancy, responsibilities for scoping, show used methodology in doing scoping, contents of the scoping report and its use in the preparation of the terms of reference for a full EIA.

### 3.3. Objectives of Scoping

- The overall objective of scoping is to ascertain key issues that are likely to be important during the EIA.
- To provide an early opportunity to identify and involve all stakeholders in the EIA process by expressing their views and concerns in relation to the proposal before the EIA study is undertaken.
- Scoping also enables the identification of project alternatives, EIA study boundaries, identification of information requirements, development of effective methods of approaching the EIA.
- To establish draft Terms of Reference for Impact Assessment

### 3.4. Relevance of Scoping

Proper scoping is critical for the EIA process because it can help avoid the collection of unnecessary data, incur unnecessary costs and produce unhelpful reports. Experiences show that in the absence of appropriate scoping:

- EIA report become too bulky, with unnecessary detailed data.
- Most crucial stakeholders and their concerns are not identified during the EIA.

- Too often, project alternatives are not considered.

Appropriate scoping helps to avoid these shortcomings and contribute to making EIA effective in decision-making and reduce costs for the project.

### **3.5. Methodology**

Several activities take place during scoping focusing on issues and concerns that are important in the EIA study as listed below:

#### **3.5.1. Stakeholder Involvement**

This involves developing a communication plan which among other things:

- Identify all stakeholders;
- Ensuring adequate, transparent and participatory public consultations are done in order to obtain opinions from concerned stakeholders.
- Find out what issues stakeholders are concerned about.

#### **3.5.2. Information Requirement**

This involves developing a strategy for information requirements

- Undertaking review of literature (reports, policies, plans, legislation, guidelines etc)
- Collecting all relevant information (social, cultural, economic, biological and physical issues) through both primary and secondary data.

Scoping also identifies methods to be used in the impact assessment. These include:

- Checklists
- Past experiences
- Cause and effect diagrams
- Mathematical Models
- Matrixes
- Networks etc

#### **3.5.3 Consideration of Project Alternatives**

The consideration of alternatives to a proposal is a requirement of many EIA systems. During the scoping process, alternatives to a proposal can be generated or refined, either directly or by reference to the key issues identified. A comparison of alternatives will help to determine the best method of achieving project objectives while minimising environmental impacts or, more creatively, indicate the most environmentally friendly option.

Scoping should consider a range of alternatives including where to locate the project, alternative materials or inputs, alternative scheduling in project implementation. Other alternatives that can be considered include:

*Demand Alternatives* (e.g. using more energy efficiently rather than building more generating capacity)

*Input or supply alternatives* (e.g. where a mix of energy sources permits)

*Activity alternatives* (e.g. providing public transport rather than increasing road capacity)

*Location alternatives either for the entire proposal or for components* (e.g. the location of a dam and/or irrigation channels);

*Process alternatives* (e.g. use of waste-minimising or energy – efficient technology) and;

*Scheduling alternatives* (e.g. for airport and transport operations, reservoir drawdown)

The range of alternatives selected for analysis routinely includes the ‘no action’ alternative. The relative impact of each alternative is compared against the baseline environment (with or without the project) to select a preferred alternative, including taking no action (which may not correspond exactly to maintaining baseline conditions because changes result from other actions).

In this one, scoping /EIA team consider impacts arising from maintaining the “status quo” as opposed to having the project implemented. All environmental, social and economic aspects of each alternative must be considered. The selected options must be cost effective, environmentally and socially acceptable

#### **3.5.4 Consideration of Project boundaries**

Determining the boundaries within which the EIA will be undertaken as important component of scoping. Determining the boundaries is important in identification of stakeholders and to focusing the EIA study to key issues. EIA boundaries include:

##### *Spatial boundaries:*

Refers to impact area coverage. Some impacts have local (village, district) or regional or international implications. Irrigation projects can have local, regional or international implication by increasing amount of agricultural goods in the local, regional (e.g. East Africa, SADC or Africa) or international markets. Similarly, if water is drawn from a river that flows across the national boundaries, those downstream may be affected by upstream activities. In such situations, it is important to look at the entire drainage instead of the area where the irrigation project is taking place.

##### *Temporal boundaries:*

Refers to project life span and the reversibility of impacts. For example, the impact of small-scale mining on the forest near the mining site may be short-lived if measures to restore the forest and the land are taken after mining. However, the resettlement of the community from the mining site may have long lasting stretching far into the future in terms of loss of income, land and disruption in cultural life of the people.

##### *Institutional boundaries*

These refer to those administrative and institutional boundaries in which the project lies or interacts. These can be determined from the legislations, ministries/departmental mandates. For example the EIA for a road construction may

involve more than one institution (Ministry of Works or the District Council alone). Identification of institutional boundaries will reduce institutional conflicts and enhance collaboration among sectors.

### **3.6. Responsibilities during scoping**

The developer has the overall responsibility for the scoping exercise. The developer may hire a consultant to undertake scoping. The cost for doing scoping including the cost for review of the scoping report will be borne by the developer. Others that are also responsible for scoping are the Environmental agency and DED.

Key stakeholders and their responsibilities:

- *Developer (Proponent)*
  - Provide required information about the proposal (expected undertaking)
  - Influences site selection, alternatives and other decision-making
  - Responsible for undertaking and meeting the costs of scoping.
  - Select and hire consultant for the scoping and EIA (where relevant)
  - Determines timeframe for the EIA. Ensure that enough time is allocated for the EIA
- *District Executive Director/ Municipal Director*
  - Has the statutory /procedural requirement for scoping
  - Issues directions on conduct of EIA
  - Coordinate District Technical Review Committee – (DTRC) to solicit views and suggestions on the scoping report and draft ToR.
  - Through DTRC reviews the scoping report, approves Terms of Reference and provide recommendations to the District Council on the next step in the project implementation.
  - Key in ensuring that proposed projects have incorporated environmental concerns.
- *District Planning Officer (DPLO)*
  - Is the District entry/focal point for District plans
  - Provides guidance on planning requirements
  - Compiles all plans and submits them to District Management Team – DMT.
- *EIA Practitioners (consultants doing scoping or EIA study)*
  - Undertakes scoping and EIA
  - Assist in providing scientific and technical knowledge for decision making
  - Establish draft Terms of Reference
  - Prepare scoping report
- *Affected people*
  - They need assistance/help in understanding the proposal, its alternatives, likely effects and in articulating their concerns
  - They have local knowledge which can improve project designs and increase benefits to their environment

- Their concerns need to be taken into account in order to enhance project acceptability, reduction of project cost and increase benefits.
- *Interested Groups/Parties e.g. donors, media*
  - Are sources of very useful information
  - Can contribute their concerns for inclusion in the EIA study
- *Civil society (e.g. NGOs, CBOs, Religious groups)*
  - Contribute knowledge on specific issues within their jurisdiction (i.e. laws, regulations, policy frameworks, standards, data.)
- *Other Sectoral units (District Forestry, Fisheries, Land, Water, Trade Offices, and, Magistrate, and others)*
  - Contribute knowledge on specific issues within their jurisdiction (i.e. laws, regulations, policy frameworks, standards, data.)
  - Have statutory mandates on specific resources
  - Issues permits on use of resources
  - Responsible for management of resources under their sectors
  - Responsible for dispensation of justice and arbitration

### **3.7. Results of Scoping**

#### **3.7.1 Scoping Report**

As a result of scoping exercise, a formal document (scoping report) must be prepared by the scoping team or the consultant hired to carry out scoping. The content of the report include:

- Outline of how scoping exercise was undertaken
- Stakeholder analysis
- Identification and description of key issues and problems
- A summary of potential positive and negative impacts
- Identification of project alternatives considered and those earmarked for further examination during impact assessment
- Recommended experts to form the particular EIA study team (by discipline)
- Draft Terms of Reference (ToR) for the EIA study

The scoping report must be submitted to the District Regulatory Authority for review and approval taking into account the adequacy of the report in items outlines under section 6.1 above. The report will serve as a guide for the impact investigation, as well as an important record for use during EIS review session.

#### **3.7.2. Draft Terms of Reference**

The scoping team will prepare the Terms of Reference (ToR) on the basis of the issues that have been identified during the scoping exercise. ToR are very important for guiding the EIA study therefore, they have to be comprehensive, detailed and specific to each project. The Terms of Reference should be able to provide clear

guidance to the EIA team on the issues that must be addressed in the EIA report, when and how the EIA report should be submitted.

The Draft Terms of Reference should provide formal and clear guidance for the EIA team on issues that must be addressed in the Environmental Impact Statement (EIS). Some of the issues that should be addressed in the ToR include the following:

- Introduction: description/profile of the developer, project proposal, need and purpose of the undertaking the study.
- Project information: description of projects and alternatives to the project itself and project areas.
- Stakeholder involvement and analysis: indicate who are they, where are they, why they are important in this project, which issues are critical to them and how they will be involved in the EIA study
- Description of the present environment that would be directly or/and indirectly affected by the proposed development.
- Analysis of both positive and negative impacts on natural resources, humans and their ecosystems. Impact analysis should clearly address cumulative impacts, transboundary impacts and reversibility of adverse impacts, based on their significance.
- Specify mitigation measures, monitoring and environmental management plans and decommissioning requirement
- *Time*: the duration and schedule for undertaking and reporting on the EIA process
- Specific requirement for EIA team (specialization)
- Specific reporting requirements
- Tentative format and main heading for the final EIA report
- Conclusions and Recommendation.

Both the scoping report and the Terms of Reference should be submitted to the DED for approval. The DED should send copies of the scoping report and the ToR to NEMC for information sharing.

## 4.0. PUBLIC PARTICIPATION AND INVOLVEMENT

### 4.1. Outline

- Introduction
- Definitions
- Purpose and Objectives
- Relevance
- Stakeholders
- Methods, tools and techniques
- Advantages of public participation and involvement
- Public participation at different stages in the EIA process
- Public participation in practice
- Tanzania experiences: case studies
- Report Format

### 4.2. Introduction

This module explains a broader meaning of public or stakeholder participation and involvement in the impact assessment process. The importance of involving stakeholders (interested or affected by the project) has been recognised by environmental planners and managers as an essential and integral part of the study for the successful development and implementation of projects.

This module also looks at the advantage of public and stakeholder participation and involvement in the EIA process, the different ways of achieving it and when it should occur. The module also explains the role of stakeholder analysis and how the results of involvement can improve local relations, bring greater social and environmental benefits, and improve the quality of project design. Some examples of good and bad practices of public involvement in the EIA process experienced in Tanzania.

### 4.3. Definitions

The “public or stakeholder involvement and participation” are terms commonly used in the project planning and other development activities.

*Public* refers to a majority of people in a community, generally considered as a whole in terms of opinion, view, perception, giving/receiving in regard to whatever touches their welfare/life (Webster Encyclopedia).

#### *Stakeholder*

Refers to individuals, groups of people and or institutions who has interests in, or is affected by, an issue or activity or transaction, and therefore has a natural right to participate in decisions relating to it. (FAO, 1999)

Stakeholder participation involves processes whereby all those with a stake in the outcome of a project actively participate in decisions of planning and management.

They share information and knowledge, and may contribute to the project so as to enhance the success of the project and ultimately their own interests.

One of the key features of stakeholding is being ‘inclusive’ rather than ‘exclusive’. It gives an opportunity for all stakeholders to discuss negotiate and cooperate in decision making.

#### *Public Participation*

Within a decision-making process, the involvement of individuals and groups would include NGOs, community organizations, women groups, traditional and village institutions that are both positively or negatively affected by a planned intervention (e.g. a project, a program, a plan, a policy) or are interested in it.<sup>1</sup>

Public participation is a fundamental right and in our country this is clearly stipulated in the URT constitution of 1977 and Environmental Management Act of 2004. In reality it facilitates and contributes to the success of the undertaking considered.

#### *Public Involvement*

Public involvement refers to the inclusion of ‘public’ stakeholders in the preparation and implementation of project/activities whereas public participation simply means actively inviting the public to decision making, educating the public about the project, seeking their input to foster justice, equity and collaboration during project preparation and implementation.

The timely and appropriately planned and implemented public involvement plans will contribute to most successful EIA studies and designs, implementation, operation and management of proposals. Specifically public involvement is a valuable source of information on key impacts, potential mitigation measures and the identification and selection of alternatives. It also ensures that the EIA process is open, transparent and robust, characterized by defensible analysis.

### **4.4 Objectives of Public Participation and Involvement**

- i. To understand the roles, objectives, relevance and contribution of public involvement in the EIA and decision-making processes.
- ii. To recognize the options by which the public can be involved at different stages of the EIA process.
- iii. To understand who are the key stakeholders
- iv. To identify the methods, and the tools and techniques that can be used for this purpose
- v. To identify the principles and requirements for meaningful consultation with stakeholders for this purpose.
- vi. To improve public disclosure of development activities to all stakeholders

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<sup>1</sup> “Arnstein (1969) was the first to identify the ‘ladder of citizen participation’, which ranged from persuasion at the one end of the spectrum to self-determination at the other end. This is the strongest form of public participation where the process is directly undertaken by the public with the proponent accepting the outcome.” (Roberts, 2003: 259-260). For the purpose of this document, we have drawn on the text from Pretty (1993) and André et al. (2004). We believe that persuasion as well as self-determination are not relevant to PP in EA, the higher level of participation being in rare cases co-decision or shared decisionmaking. Note that consultation is one form of participation.

#### **4.5. Purposes of Public Participation**

Public participation is essential for good governance. Public Participation in Environmental Impact Assessment is *multi-purposive* aiming specifically to :

- i. Invite affected and interested people into the decision-making process to foster justice, equity and collaboration;
- ii. Inform and educate the public on the planned intervention and its consequences;
- iii. Gather data and information from the public about their human (including cultural, social, economic and political dimensions) and biophysical environment, as well as about the relations (including those related to traditional and local knowledge) they have with their environment;
- iv. Seek input and opinions from the public on the planned intervention, including its scale, timing and ways to reduce its negative impacts and to increase its positive benefits;
- v. Contribute to better analysis and more creative development, and consequently to a better public acceptance and support.
- vi. Contribute to mutual learning of all parties and to improvement of the Public Participation and Environmental impact assessment practice.

#### **4.6. Public Involvement aims at:**

- i. Informing the public about the proposal and its likely effects
- ii. Obtaining local and traditional knowledge that may be useful for decision-making
- iii. Soliciting their views and concerns
- iv. Facilitating consideration of alternatives, mitigation measures and trade-offs
- v. Ensuring that important impacts are not overlooked and benefits are maximized;
- vi. Reducing conflict through the early identification of contentious issues;
- vii. Providing an opportunity for the public to influence project design in a positive manner (thereby creating a sense of ownership of the proposal)
- viii. Improving transparency and accountability of decision-making; and
- ix. Increasing public confidence in the EIA process

#### **4.7. Relevance**

Public participation and involvement are fundamental principles of EIA. They establish and strengthen communication channels among stakeholders. The inclusion of the views of the affected and interested public helps to ensure that the decisions are equitable, fair and leads to more informed choices and better environmental outcomes.

Experience indicates that public involvement in the EIA process can and does meet these aims and objectives. Many benefits are concrete whereas other benefits are intangible and incidental. For example, as stakeholders see their ideas are helping to improve proposals, they gain confidence and self-esteem by exchanging ideas and information with others who have different values and views.

Nearly all EIA systems make provision for some type of public involvement. However, as a minimum requirement, public involvement must provide an

opportunity for those directly affected by a proposal to express their views regarding the proposal and its environmental and social impacts.

#### **4.7.1. Levels of public involvement and participation**

The basic types of public involvement are organized as a 'ladder' of steps of increasing intensity and interaction. Levels of participation in EA varies from passive (unidirectional form of participation), to active through and interactive participation. public hearings and village meetings are active forms of public participation as they involve consultation while workshops demonstrate interactive participation.

There are different requirements with regard to planning and designing a public involvement program as explained below:

*Information and notification*, strictly speaking, are preconditions of meaningful public involvement. On its own, *information disclosure* is not sufficient.

*Consultation* denotes an *exchange of information* designed to canvass the views of stakeholders on a proposal and its impacts.

*Participation* is a more interactive process of engaging the target audience in addressing the issues, establishing areas of agreement and disagreement and trying to reach common positions.

*Negotiation*, among stakeholders is an *Alternative Dispute Resolution* mechanism, which is based on joint fact-finding, consensus building a mutual accommodation of different interests.

In practice, public involvement in EIA largely corresponds to consultation. However, participation will be appropriate in many circumstances, for example, where a local population is displaced or relocated as a result of a project. A few countries also make provision for mediation or negotiation facilitated by a neutral and third party. In principle, these approaches to public involvement in EIA are distinctive and relatively separate. However, they may be in combination; for example, consultation and participation can be appropriate at different stages of the same EIA process.

#### **4.8. Key stakeholder's identification in the EIA process**

Determining who should participate in EIA requires careful analysis because potential stakeholders will often represent different social groupings, religious affiliations, gender, academic and research institutions, private sectors and constituencies. Each can contribute in different ways and may advocate different priorities based on individual needs, motivations and interests. Powerful, influential and wealthy groups tend to have better access to decision-making processes, and thus care is required to ensure that their views do not prevail to the detriment of the views, concerns and needs of poor, affected or marginalised groups. Recognising such issues, and balancing the needs of heterogeneous groups is crucial in EIA. Some of the key stakeholders includes government institutions, development agencies, private and commercial sector. It is important that these groups are involved, and that stakeholder involvement does not just focus on public groups.

### *The community*

Individuals or groups in the affected community would like to know the proposed project, the likely impacts; and the way their concerns will be understood and taken into account. They would like to get an assurance that their views will be carefully listened to and considered on their merits. They would like the proponents to address their concerns. They also have knowledge of the local environment and community that can be tapped and incorporated into baseline data.

### *Proponents*

Understandably, proponents will wish to shape the proposal to give it the best chance of success. Often, this involves trying to create public understanding and acceptance of the proposal through the provision of basic information. More creatively, project design can be improved through using public inputs on alternatives and mitigation and understanding local knowledge and values.

### *Government institutions*

The government agencies involved in the EIA process would like to have their policy and regulatory responsibilities addressed in impact analysis and mitigation consideration. For the component authority, an affective public involvement program can mean the proposal may be less likely to become controversial in the later stages of the process. For the responsible EIA agency, the concern will be whether or not the public involvement process conforms to requirements and procedures. The advice and knowledge of government agencies, most directly concerned with the proposal should always be sought. However, in many cases, substantive information about the environmental setting and effects will come from other sources.

### *Civil society organisations and interested groups*

Comments from NGOs and CBOs can provide a useful policy perspective on a proposal; for example, the relationship of the proposal to sustainability objectives and strategy. Their views may also be helpful when there are difficulties with involving local people. However, this surrogate approach should be considered as exceptional; it cannot substitute for or replace views that should be solicited directly.

Other interested groups include those experts in particular fields and who can make a significant contribution to the EIA study.

## **4.9. Advantages of public participation and involvement**

There are a number of advantages gained by allowing effective public participation. Each of the key groups may perceive the advantages gained from public involvement in the EIA process through their own experience and interests. Some of the advantages gained by selected key groups are shown in table 1 below:

<b>Table 1: Advantages of effective participation to selected different groups</b>		
<b>The Proponent</b>	<b>The Decision-maker</b>	<b>Affected communities</b>
Raises the proponent's awareness of the potential impacts of a proposal on the environment and the affected community.	Achieves more informed and accountable decision-making	Provides an opportunity to raise concerns and influence the decision-making process.
Legitimizes proposals and ensures greater acceptability and support	Provides increased assurance that all issues of legitimate concern have been addressed	Provides an opportunity to gain a better understanding and knowledge about the environmental impacts and risks that may arise.
Improves public trust and confidence	Demonstrates fairness and transparency, avoiding accusations of decisions being made 'behind closed doors'	Increase awareness of how decision-making processes work, that makes decisions and on what basis.
Assists by obtaining local information/data	Promotes good relations with the proponent and third parties	Empower people, providing knowledge that they can influence decision-making and create a greater sense of social responsibility.

Every effort should be made to seek a fair and balanced representation of views. Often, an inclusive approach to public involvement is taken. A common rule of thumb is to include any person or group who expresses an interest in the proposal. However, particular attention should be given to those 'at risk' from the impact of a proposal.

Most EIA processes provide for public involvement. The legal and procedural requirements for this purpose vary. In Tanzania, the national EIA procedures require a chapter on public involvement. The Environment Management Act (EMA) of 2004, Part VI Section 89 (1) provides for public participation. Also several other sectoral legislation and policies do provide for requirement of public participation in the EIA process.

There are national and international legal obligations that provide for public participation. Examples are shown in Box 1.

**Box 4.1: Some Relevant national and international legal framework for public involvement**

- URT Constitution of 1977
- Local Government Act of 1982
- Environmental Management Act of 2004
- Land Act of 1999
- The *UN Convention on Climate Change* (1992), which requires Parties to promote and facilitate public participation in addressing climate change and its effects and developing adequate responses (article 6 (a) (iii);
- *Principle 10 of the Rio Declaration on Environment and Development* (1992) which states that each individual shall have the opportunity to participate in decision-making processes, facilitated by the widespread availability of information.
- *UNECE Convention on Environmental Impact Assessment in a Transboundary Context* (Espoo, 1991) which provides for the participation of the public in the areas likely to be affected by a proposal (article 2, paras 2 and 6, and article 4, para 2);
- *UNECE Convention on Access to Information, Public Participation in Decision Making and Access to Justice in International Environmental Matters (Aarhus)* (1998) is the most comprehensive legal instrument relating to public involvement. It describes how public participation should work in cases of decision-making. The main text indicates that public participation should be effective, adequate, formal, and provide for information, notification, dialogue, consideration and response.

**4.9.1 Principles of Public Participation:**

Key principles for public involvement, which are widely agreed, are outlined in Box 4.2.

**Box 4.2: Principles of public participation**

The process should be:

- Inclusive, open and transparent to cover all stakeholders
- Relevant-focused on the issues that matter
- Fair-conducted impartially and without bias toward any stakeholder
- Responsive-to stakeholder requirements and inputs
- Credible-builds confidence and trust
- Recognize right to information and heterogeneity of society
- Recognize the right of disadvantaged groups and employ effective communication
- Promote cooperation and contribute to mutual respect and understanding
- Improve the proposal and provide feedback mechanism

**4.10. Public Participation at different stages of EIA processes**

Public participation is mainstreamed in during different stages of EIA:

### *Screening*

The public provides information that facilitates scrutiny of the proposal. In addition, the early identification of affected parties and their concern provides information that can be incorporated into the scoping stage of EIA.

### *Scoping*

Public participation is commonly undertaken at the scoping stage. Stakeholder analysis is a process that allows EIA experts to widen the involvement of the people and institutions in project planning and design. It is an important means of identifying which stakeholders should be included within the EIA process, and determining how the project might impact upon different groups. To be effective, stakeholder analysis should be undertaken during the scoping stage of EIA by identifying their interests in relation to project objectives and activities.

It is critical to ensure that all the significant local information about the project area is gathered and alternative ways of achieving the project objectives are considered so that the public can be conversant with all issues regarding the undertaking.

An example of the involvement of public involvement at scoping stage EIA of the proposed Mtwara Energy Project on the Tanzanian daily newspaper the Guardian of October 26, 2004 is given in box 3

The Guardian, Tuesday  
October 26, 2004



**MTWARA ENERGY PROJECT**  
**Public Consultations**  
**14-20 November 2004**

Artumas Group Inc. of Canada is intending to develop the Mtwara Energy Project. The project will involve the construction, operation and maintenance of:

- natural gas production wells and a Gas Field Facility on the Msimbati Peninsula;
- a natural gas turbine power plant at Mtwara;
- a natural gas pipeline system between the Gas Field Facility and the Power Plant; and,
- a 132 kV electrical transmission line to deliver power from the Mtwara Power Plant to the Mtwara and Lindi Regions.

Artumas Group Inc. is in the process of concluding an Environmental Impact Assessment. Interested parties are hereby invited to attend one of the public information meetings that will take place at the locations and times specified below. Information on the findings of the Environmental Impact Assessment will be available for review and comment by members of the public. Representatives from Artumas will be present to answer questions.

For more information contact:

Peter Gathercole, Development Manager  
ADA Estate  
Madai Street, Plt 172,  
Kinondoni District  
P.O. Box 203  
Dar Es Salaam, Tanzania  
Email: [peter.gathercole@raha.com](mailto:peter.gathercole@raha.com)  
Tel/Fax : +255 (0) 22 2666667  
Cell: +255 (0) 744 785 340

Public Meetings Schedule			
Date	Community	Meeting Place	Time
Nov 14	Msimbati	VEO	2:00 pm to 5:00 pm
Nov 15	Mtwara	Town Hall	2:00 pm to 5:00 pm
Nov 16	Lindi	Town Hall	2:00 pm to 5:00 pm
Nov 17	Mnazi Mmoja (Mingoyo)	VEO	2:00 pm to 5:00 pm
Nov 18	Nyangao	VEO	2:00 pm to 5:00 pm
Nov 19	Ndanda	VEO	2:00 pm to 5:00 pm
Nov 20	Masasi	Town Hall	1:00 pm to 4:00 pm

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### *Impact analysis and mitigation*

During impact identification, determination of impact magnitude and significance and development of mitigation options/measures public involvement is highly required. In many cases, planning for public involvement in the mitigation plan will be a vital ingredient for success. Not only does it imply that the public needs to be involved in contributing to the formulation of the management plan, but also, the plan needs to be accessible to the public. This is likely to enhance environmental and social management because initially it is the people who will suffer or benefit.

The further involvement of the public in these phases of EIA preparation can help to:

- Avoid bias and inaccuracies in analysis;
- Identify local values and preferences;
- Assist in the consideration of mitigation measures; and
- Select a best practicable alternative.

#### *Review of EIS*

A major opportunity for public involvement occurs when EIA reports are exhibited for comment (public disclosure). However, making written comments is daunting to all but the educated and literate. Other means of achieving responses should be provided where proposals are controversial. Public hearings or meetings may be held as part of EIA review. They can be formal or informal but should be especially structured in a way that best allows those affected to air their concerns. Some people or groups are not comfortable in speaking in public, and in such cases other or additional mechanisms may be used.

#### *Monitoring and auditing*

The environmental impacts of major projects will be monitored during construction and operational start up, with corrective action taken where necessary. Local representatives should scrutinize and participate in monitoring process. This arrangement can assist proponents and approval agencies to respond to problems as they arise. It can also help to promote good relations with local communities that are affected by a development.

Note: More extended forms of public involvement occur when:

- Proposals are formally referred to public review, hearings or inquiries;
- Proposals seek to apply a 'best practice' process to their proposal;
- Proposals depend upon gaining the consent or support of local stakeholders; and
- Proposals have major social impacts and consequences, such as the relocation of displaced people.

### **4.11. Timing of Public Involvement**

Planning by the proponent for a public involvement program needs to begin early before other EIA activities. Following scoping, the terms of reference for an EIA study should include specifications for the proposed program, including its scope, timing, techniques and resources. If there are none, a separate document should be prepared by the EIA team with advice to community and participation techniques.

The plan should describe the means of notifying and informing the public about the proposals and the EIA process, beginning at an early stage and continuing with updates on the progress of the EIA study and feedback on community concerns. Specific reference should be made to the ways in which the public will be engaged, how their inputs (knowledge, values and concerns) will be taken into account and what resources (people and money) are available to assist their involvement. Wherever possible, meetings and inquiries should be held within the local community, especially if there are basic constraints on its involvement (see next section).

A systematic approach to planning for public involvement program typically involves addressing the following key issues:

- *Who should be involved?* Identify the interested and affected public (stakeholders), noting any major constraints on their involvement.
- *What type and scope of public involvement is appropriate?* –Ensure this is commensurate with the issues and objectives of EIA
- *When and where should opportunities for public involvement be provided?* –establish a plan and schedule in relation to the EIA process and the number, type and distribution of stakeholders.
- *How will the results of public involvement be used in the EIA and decision-making processes?*–describe the mechanisms for analyzing and taking account of public inputs and providing feeding back to stakeholders
- *What resources are necessary or available to implement the public involvement program?* –Relate the above considerations to budgetary, time staff requirements.

The consultation process with the affected groups will be as follows:

*Stakeholder identification:* There should be an explicitly designed consultation strategy based on EIA guidelines. Key stakeholders should be defined. The means for identifying and weighing the relative participation in the consultations of “affected communities”, “beneficiaries” and other “stakeholders” should be considered. These should include representatives of government agencies, NGOs, CBOs, religious groups, and village and community leaders. Gender and ethnicity should be considered in stakeholder identification and consultation process.

*Information dissemination:* A range of means for information dissemination is available. Posters, radio, reports, public and village committee meetings as well as hearings. Key stakeholders should be targeted for information campaigns prior to meetings or hearings. Information materials for communities affected by subprojects should be translated into Kiswahili language. In special and critical situations local languages may be used if practical.

*Consultation mechanism:* The types of consultation mechanisms to be used during consultation should include public and targeted group meetings, persons or groups, workshops and seminars. A systematic survey to solicit opinions of persons affected directly by the subprojects could be considered. There are a wide variety of other effective techniques, which could be used for consultation. These include public hearings, citizen advisory groups, focus groups, community opinion survey and expert panels discussions.

According to the national EIA guidelines, public consultations are paramount during the EIA process especially at the stage of scoping, ToR preparation and impact identification. To ensure satisfactory public (affected and/or interested people) involvement, the project proponent should initiate a public information program of the area likely to be affected by the proposed project. Any concern raised by the public should be recorded and addressed in the course of project implementation.

Public notice of the scoping process for the projects should be issued by relevant government authority (agency, local government authority).

#### 4.12. Some approaches that are commonly used for communicating with the public

The approaches for public involvement should be tailored to suit the social environment and specific target groups. For instance, although people want to be consulted, they may not have the time, resources or ability to locate EIA information and report their views to the relevant authorities. Traditional local decision-making institutions and the use of the mass and traditional media (such as television, radio, village announcers and papers) may be far more appropriate than placing reports in municipalities or council halls, village and ward executive offices, university libraries. Some of the commonly used tools and techniques used for communicating and involving the public are portrayed in table 2 below:

When selecting public involvement approaches the following points should be considered:

- Provide sufficient, relevant information in a form that is easily understood by non-experts (without being simplistic or insulting);
- Allow enough time for stakeholders to review, consider and respond to the information and its implications;
- Provide appropriate means and opportunities for them to express their views;
- Select venues and time events to encourage maximum attendance and a free exchange of views by all stakeholders (including those that may feel less confident about expressing their views); and
- Respond to all questions, issues raised or comments made by stakeholders. This fosters public confidence and trust in the EIA process.

**Table 2: Tools and techniques for public involvement and communication**

Technique	Description and use	Advantages	Disadvantages
<b>Level 1. Education &amp; information provision</b>			
Leaflets/Brochures	Used to convey information Care should be taken in distribution	Can reach a wide audience, or be targeted	Information may not be understood or be misinterpreted
Local radio and television	Used to convey information	Has a multiply effect and can timely reach a target group in a local area	It may not be easily felt at national level
Newsletters	May involve a series of publications. Care should be taken in distribution	Ongoing contact, flexible format, can address changing needs and audiences.	Not everyone will read a newsletter
Un-staffed Exhibits/Displays	Set up in public areas to convey information	Can be viewed at a convenient time and at leisure. Graphics can help visualize proposals	Information may not be understood or be misinterpreted
Local Newspaper Article	Conveys information about a proposed	Potentially cheap form of publicity.	Circulation may be limited

	activity.	A means of reaching a local audience	
National Newspaper Article	Convey information about a proposed activity	Potential to reach a very large audience	Unless an activity has gained a national profile, it will be of limited interest
Site visits	Provides first hand experience of an activity and related issues	Issues brought to life through real examples	Difficult to identify a site that replicates all issues.
Press release	Provides information to key public informants	Popular and translated versions are available to the target audience	Misinterpretation
Village announcers(mbiu)	Convey information about the proposed activity or a public hearing or meeting	Easy to reach target audience within a local area e.g. village	Sometimes not taken seriously
<b>Level 2. information feedback</b>			
Local radio and television	Used to convey information	Has a multiply effect and can timely reach a target group in a local area	It may not be easily felt at national level
Staff attended Exhibits/Displays	Set up in public areas to convey information. Staff available	Can be viewed at a convenient time and at leisure. Graphics can help visualize proposals. Groups can be targeted.	Requires a major commitment of staff time.
Staff attended Telephone lines	Can phone to obtain information, ask questions or make comments about proposal or issues	Easy for people to participate and provide comments. Promotes a feeling of accessibility	May not be as good as face-to-face discussions. Staff may not have knowledge to respond to all questions.
Electronic communication (e.g. Internet, emails etc)	Used to provide information or invite feedback. On-line forums and discussion groups can be set up.	Potential global audience. Convenient method for those with internet access.	Not all parties will have access to the Internet.
Public and political	Used to exchange	Can meet with	Can be complex,

Meetings	information and views	other stakeholders Demonstrates proponents willing to meet with other interested parties	unpredictable and intimidating. May be hijacked by interest groups
Surveys, Interviews Questionnaires and suggestion boxes	Used for obtaining information and opinions. May be self-administered, conducted face-to-face, by post or telephone.	Confidential surveys may result in more candid responses. Can identify existing knowledge and concerns	Response rate can be poor. Response may not be representative and opinions change.
<b>Level 3. Involvement &amp; Consultation</b>			
Workshops	Used to provide background information, discuss issues in detail and solve problems	Provides an open exchange of ideas. Can deal with complex issues and consider issues in –depth. Can be targeted	Only a small number of individuals can participate. Full range of interests not represented.
Public place displays (library, information centres, exhibition centres etc)	Location provided, e.g. at a site or operational building, for people to visit, learn about a proposal and provide feedback.	Can be visited at a convenient time and at leisure.	Preparation for and staffing of the public place may require considerable time and money.
<b>Level 4. Extended involvement</b>			
Community Advisory/Liaison Groups including professional experts (e.g. doctors, teachers, schools)	People representing particular interests or areas of expertise, e.g. community leaders, meet to discuss issues.	Can consider issues in detail and highlight the decision-making process and the complexities involved	Not all interests may be represented. Requires on-going commitment from participants.
Ward tribunals	Group of citizens brought together to consider an issue. Evidence received from expert witness. Report produced, setting out the views of the jury.	Can consider issues in detail and in a relatively short period of time	Not all interests may be represented. Limited time may be available for participants to fully consider information received.

#### **4.13. Some of the barriers to smooth effective public participation and involvement are:**

*Remote and rural settings*-increased or dispersed settlements make communication and hence participation more difficult and expensive.

*Illiteracy*-limits involvement especially when print media is used.

*Local values/culture*-behavioural norms or cultural traditions can hinder public involvement or exclude those who do not want to disagree publicly with dominant groups.

*Poverty*: people are engaged in income generating activities rather than participating in meetings. To them involvement and participation means more time spent away from income-producing activities

*Languages*-in some countries a number of different languages or dialects may hinder communication.

*Legal systems*-may be in conflict with traditional systems and cause confusion about rights and responsibilities over resource use and access.

*Interest groups*-bring conflicting and divergent views and vested interests

*Confidentiality*-may be important for the proponent, and may weigh against early involvement and consideration of alternatives.

*Lack of interest*: some people or groups might have no interest in attending for which they think have no benefit with such activity or are tired of too much such consultations.

#### **4.14. Resolving conflicts and attaining consensus**

Principles which will help to minimize conflict, particularly if applied consistently from the earliest stages of the planning of the proposal, include:

- Involving all those likely to be affected, or with a stake in the matter
- Communicating the need for and objectives of the proposal, and how to achieve them;
- Treating people honestly and fairly, establishing trust through a consistency of behaviour;
- Being flexible in the way alternatives are considered, and amending the proposal wherever possible to better suit the interests of other parties;
- When other' interests cannot be accommodated, mitigating impacts to the greatest extent possible and looking for ways to compensate for loss and damage;
- Establishing and maintaining open two-way channels of communication throughout the planning and implementation phase; and
- Acknowledging the concerns and suggestions of others, and providing feedback on the way these matters have been addressed.

When conflict arises, try to defuse it at the earliest possible time. The use of an independent, mutually acceptable third party as the convener of discussions between disputants can improve the chances of a satisfactory outcome. It is desirable for that third party to be trained in the principles of negotiation or mediation, and to be able to assist the parties in dealing with the feelings, facts and process issues associated with the dispute.

Public involvement can be a time-consuming and costly exercise however if properly planned and implemented can benefit and speed up the process. This issue can be best addressed by sound planning. A proposal may be subject to delay and added expense if public consultation is non-existent or inadequate.

#### **4.15. Tanzania experience: Case studies**

From a decision-makers perspective, soliciting input from as many stakeholder groups as possible may help avoid unforeseen impacts or conflicts with local communities. In some cases, failure to involve other stakeholder groups has resulted in extremely costly mistakes being made. In northern Tanzania for example, a commercial mining operation that failed to involve local, artisanal miners in design and benefit sharing, was faced with years of often-violent conflict with neighbouring miners, and high recurrent costs for security accountability, clarify positions and provides an opportunity to influence the decision-making process. The EIA for the Makuyuni to Ngorongoro Access Road Project is a good example of one with a high degree of public involvement (Box 4) and bad example of public involvement in mining activities (Box 5)

#### **Box 4.3: Local involvement in an EIA for road upgrading in Northern Tanzania**

An EIA study assessed the potential impacts of upgrading a road in northern Tanzania. The principle purpose was to improve tourist access to Lake Manyara National Park, the Ngorongoro Conservation Area, and Serengeti National Park. The road traverses areas considered extremely important for wildlife and tourism, but is also extremely important for agricultural and pastoral livelihoods. The study followed World Bank Guidelines (as defined by the Bank's Operational Directives) for environmental assessment practice.

Involving different stakeholders became a strong focus of the EIA, and this required the adoption of a range of different tools and approaches. The environmental assessment included a programme of village-level public meetings in the impact area. The executive summary of the draft EIS was translated into Kiswahili and circulated widely before a series of additional public meetings was convened to focus on potential impacts and mitigation strategies. Pro – active attempts were also made to seek contributions from other stakeholders, using interviews, questionnaires and direct appeals for submissions. These succeeded in involving several stakeholder groups:

- Government officials at national, regional and district levels;
- Heads of government institutions in the study area
- Tour operators; and
- NGOs and other public groups

*Source: Mwalyosi and Hughes (1998)*

**Box 4.4: The case of the Graphite Mine at Merelani** *Source: Mwalyosi and Hughes (1998)*

Commercial mining operations for graphite started at Merelani, near Arusha, in 1994. An EIA was (belatedly) undertaken for the proposed mine, but this failed adequately to explore local views about the mine, especially those of the large numbers of artisanal miners operating small mining claims adjacent to the proposed site of the commercial mining operation.

Severe conflicts soon emerged between the artisanal mine operators in adjacent concessions, and the commercial operators. These conflicts involved periodic incursions and invasions of the commercial concessions by aggrieved artisanal miners seeking to establish mining claims in commercially leased concessions.

Physical clashes between security staff and artisanal miners have occurred on a number of occasions. These resulted in injuries and, in extreme cases, in the shooting and killing of artisanal mine operators by security staff employed by the commercial mine operator. The commercial mine operator argued that these conflicts emerged because small-scale operators illegally entered, threatened and intimidated its staff. The operator also argued that these conflicts were exacerbated by the lack of support from the police. This placed the mine operator in the uncomfortable situation of having to rely heavily on its own security management in order to secure control of its mining claim.

The conflict has resulted in the loss of human life and high recurrent costs required for security. Perhaps not surprisingly, there is little constructive dialogue between the commercial and artisanal mine operators. All these problems might have been averted or addressed in project planning had the original EIA sought to discuss the plans for the mine with local stakeholders.

No public involvement plan will be effective unless the proponent is serious in engaging with the community in a two-way dialogue and is open minded to what it can contribute to the proposal. Key prerequisites are a willingness to listen to the information, values and concerns of the community, to amend the proposal so as to minimize community concerns, and to acknowledge the value of community input.

#### **4.16. Report format**

Public participation is part of scoping process and therefore its reporting will be embedded in the scoping report.

- The report will describe
  - How public participation and involvement was undertaken
  - The stakeholder analysis (who, what, when and how)
  - The key issues and concerns i.e. biophysical, social, health, economic, cultural
  - The overall assessment of alternatives
  - The proposed mitigation measures
  - Compensation for loss and damage
  - The communication and feedback channel
  - List of people consulted (Appendix)
  - NEMC for review and approval

## A: Techniques for communicating with the public<sup>2</sup>

Communication Characteristics			Public Information and Participation Objectives						
Level of Public Contact Achieved	Ability to Handle Specific Interest	Degree of 2-way Communication	Public Participation/Communication Techniques	Inform/Educate	Identify Problems/Values	Get Ideas/Solve Problems	Feed back	Evaluate	Resolve Conflict/Consensus
2	1	1	Public Hearings		X		X		
2	1	2	Public Meetings	X	X		X		
1	2	3	Informal Small Group Meetings	X	X	X	X	X	X
2	1	2	General Public Information Meetings	X					
1	2	2	Presentations to Community Organization	X	X		X		
1	3	3	Information Coordination Seminars	X			X		
1	2	1	Operating Field Offices		X	X	X	X	
1	3	3	Local Planning Visits		X		X	X	
2	2	1	Information Brochures and Pamphlets	X					
1	3	3	Field Trips and Site Visits	X	X				
3	1	2	Public Displays	X		X	X		
2	1	2	Model Demonstration Projects	X					
3	1	1	Material for Mass Media	X					
1	3	2	Response to Public Inquiries	X					
3	1	1	Press Release Inviting Comments	X			X		
1	3	1	Letter Requests for Comments			X	X		
1	3	3	Workshops		X	X	X	X	
1	3	3	Advisory Committees		X	X	X	X	
1	3	3	Task Forces		X	X			X
1	3	3	Employment of Community Residents		X	X			X
1	3	3	Community Interest Advocates			X		X	X
1	3	3	Ombudsman or Representative		X	X	X	X	X
2	3	1	Public Review of Initial Assessment Decision Document	X	X	X	X	X	X

Level of participation: 1=low, 2= medium, 3=high

For example, various methods of public involvement can be related in terms of the level of interaction promoted. However, it should not be inferred that methods with a high level of involvement are the preferred approach-a mix of methods is usually necessary as part of a systematic process of public involvement.

<sup>2</sup> UNEP/ETU 2002. *Environmental Impact Assessment Training Resource Manual*, 2nd ed., United Nations Environment Programme - Environment and Trade Unit, Nairobi, Kenya, 573 p.

## **B: Fundamental principles of public participation: Foundation Principles<sup>3</sup>**

Contemporary public participation practice in EA should:

- Recognize that the public has the right to be informed and proactively involved in a meaningful way in proposals which may affect their lives or livelihoods;
- Recognize the public is heterogeneous according to their demographics, knowledge, power, values and interests;
- Respect the historical, cultural, environmental, political and social backgrounds of the communities which are affected by a proposal;
- Ensure the participation or the defence of the interests of all parties including indigenous peoples, women, children and poor people, as well as challenging future generations and absent people;
- Follow the rules of effective communication among people, in the respect of all individuals and parties;
- Promote cooperation rather than confrontation, enlighten divergences and conflicting values as well as try to reach a win-win decision that promotes and supports sustainable development;
- Contribute to a mutual respect and understanding of actors' (including the public, the proponent, the decision-maker and the regulator) values, interests, rights and obligations;
- Improve the proposal under study, taking into account the results of the PP process;
- Report to the actors the results of the PP process, particularly on the way their inputs have contributed to the decision making.

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<sup>3</sup> IAIA: Public Participation Best Practice Principles, April, 12, 2004. 2nd Draft for consultation to IAIA'04 Author: Pierre André with the collaboration of Bert Enserink, Des Connor and Peter Croal.

## 5.0. SOCIAL IMPACT ASSESSMENT MODULE

### 5.1. Outline

- Introduction
- Definitions
- Objectives
- Relevance
- Main types of social impacts
- Main causes (variables) of social impacts
- Steps and Principles of SIA
- SIA benefits
- Sources of SIA information
- Methods, tools and techniques
- Good practice in the conduct of SIA study

### 5.2. Introduction

This module introduces participants to Social Impact Assessment (SIA) and describes the concepts, approaches and methods that are used. It provides basic guidance on why and how SIA is carried out as an integral part of the EIA process. Reference is made also to the more comprehensive forms of SIA. Full coverage of SIA would require a training manual of its own.

There is no widely agreed definition of SIA. Put simply, it focuses on the impact of development proposals on people. EIA legislation and procedures provide a framework for this purpose; for example, the term environment is defined broadly to include 'social' 'cultural', and other human dimensions. In this context, the aim of SIA is to identify the human consequences of a proposed action, giving particular attention to the mitigation of adverse or unintended aspects. This approach is almost in line with the steps of the EIA process.

Under EIA mandates, the scope of SIA differs from country to country, depending on the institutional arrangements that are in place. The consideration of social impacts is triggered by and, in some cases limited to, environmentally related changes. These can be particularly important in developing countries where large numbers of people are dependent on the resource base for their subsistence and livelihood. In other cases, once an EIA is required for a proposal, major effects on the human environment can be considered in their own right. These can include potential changes to population, lifestyle, cultural traditions, community dynamics, and quality of life and well being.

A more comprehensive SIA may be carried out separately from the EIA process. For example, this division is institutionalized at the World Bank, where broadly based SIA, equivalent to understanding and management of social change processes, is promoted in support of the sustainable development agenda. This framework covers the full scope of social considerations, including poverty alleviation, gender balance, governance and institutions, and equity, rights and justice issues. Many SIA practitioners endorse such an overarching approach, beyond what is possible in the context of EIA. However, there is not yet a common understanding of its scope, boundaries and content (also called social appraisal or human impact assessment).

### 5.3. Definitions

**Social impacts** can be defined “*as the consequences to people of any proposed action that changes the way they live, work, relate to one another, organize themselves and function as individuals and members of society*”. This definition includes socio-psychological changes, for example people’s values, attitudes and perceptions of themselves and their community and environment. Indeed, some SIA practitioners consider social impacts to be only ‘as experienced’ (e.g. stress, disruption, hunger) and differentiate these from the causal processes (e.g. over-crowding, infrastructure pressure, poverty).

**Social Impact Assessment** *can be defined as the process of estimating and studying in-advance the potential socio-economic effects of the proposed policies, programmes or development activities on individual, social groups and the community at large (Brudge, Rabel J. (1994)*

### 5.4. Objectives of SIA are:

- i. To analyze how proposals may affect people
- ii. To undertake detailed investigations on issues, concerns, alternatives and mitigations.
- iii. To enhance socio-economic benefits
- iv. To help manage social change
- v. To create awareness on the proposed project to the public
- vi. To promote self-initiatives spirits and sustainability aspects

### 5.5. Relevance

For certain projects, impacts on people can be by far the most important consideration. Adverse social impacts can reduce the intended benefits of a proposal, and can threaten its viability. In such cases, a Social Impact Assessment (SIA) is carried out as part of the EIA process, or sometimes as a parallel or separate review. This approach is used to analyze the impact of a proposal on individuals and communities, and to mitigate the adverse effects and enhance the positive effects. It also provides a framework to manage social change.

EIA combined with SIA is an entry point to integrated impact assessment in support of sustainability aims of maintaining natural capital and building human capital. Social and biophysical impacts are interconnected and should be assessed together. SIA is understood to be concerned with the human consequences of development proposals, identifying all significant social impacts that arise in this context; and

However, these should be carefully reviewed for their relevance in a given situation or country, for example to development goals or the basic *needs* for food, water and shelter. Not all SIA practitioners would agree with the classification of impacts, and not all of the impacts listed are necessarily considered as part of EIA practice. A composite list of social impacts is contained in Box 6.1. In addition, many of the impacts listed are not easily measurable, and require analysis of a number of variables. For this reason, basic dimensions of social change are used instead as a reference point, for defining impacts and means of mitigating them.

## 5.6. Main causes (variables) of social impacts

The key characteristics and variables that are often correlated with adverse social impacts of development proposals include:

- i. *Demographic change*, e.g. size and composition of resident population, influx of temporary work force or new recreational users (disrupts the cohesion of a small, stable community);
- ii. *Economic change*, e.g. new patterns of employment/income, real estate speculation (marginalizes long term, older residents);
- iii. *Environmental change*, e.g. alterations to land use, natural habitat and hydrological regime (loss of subsistence or livelihood in resource-dependent community); and
- iv. *Institutional change*, e.g. in the structure of local government or traditional leadership, zoning by-laws or land tenure (reduce access or loss of control leads to disempowerment or impoverishment of the established population).

## 5.7. Main types of Social Impacts

The main types of social impacts that occur as a result of these project-related changes can be grouped into five overlapping categories:

- i. *Lifestyle impacts*-on the way people behave and relate to family, friends and cohorts on a day-to-day basis;
- ii. *Cultural impacts*-on shared customs, obligations, values, language, religious belief and other elements which make a social or ethnic group distinct;
- iii. *Community impacts*-on infrastructure, services, voluntary organizations, activity networks and cohesion;
- iv. *Amenity/quality of life impacts*-on sense of place, aesthetics and heritage, perception of belonging, security and liveability, and aspirations for the future; and
- v. *Health impacts*-on mental, physical and social well being, although these aspects are also the subjects of health impact assessment

Social impacts are recognized as significant aspects of many types of projects, not only proposals for large scale development, such as a dam or highway, but also in the closing down of existing facilities, such as a military base or hydropower. Like environmental impacts, the reference of project-induced social change includes severity, duration, probability, importance etc. They also vary with the setting and the characteristics of the community affected. For example, mining or energy developments adjacent to a small, remote community or in an area occupied or used by indigenous people are almost always associated with major social impacts.

Often, in EIA, most attention is focused on such high profile issues, notably for projects that displace people and affect vulnerable ethnic minorities (as emphasized in the policy of the World Bank {*Involuntary Resettlement Operation Policy (4.12)*}):

*“The resettlement policy is triggered when people are affected by loss of land, loss of property and/or loss of access to resources. It is therefore irrelevant whether or not the impact will entail physically relocation of the affected people, the policy is*

*triggered in all such cases. This means that the impact may be of such kind that only compensation in cash or kind is necessary.*

These are unquestionably important internationally, not infrequently raising issues of human rights and social justice. In particular, involuntary resettlement has extreme social impacts, which in many cases warrant separate and specific study. However, these issues are relatively small sub-sets of the overall social impact associated with development projects.

Examples of projects with important and ‘everyday’ social impacts include

- i. *Landfill and hazardous waste disposal sites* (perceived health risks, loss of amenity)
- ii. *Power and industrial plants* (community stress from influx of workforce, pressure on infrastructure).
- iii. *Dams and reservoirs* (life style disruption resulting from relocation, land use alteration or long lead time to full impoundment); and
- iv. *Roads and linear developments* (dislocation of activity networks and relationships).

It is also important to consider how social impacts may vary in accordance with difference stages of the project life cycle:

- i. *Planning or policy development*-This phase, beginning with project notification (or rumour) can have its own social impacts, even though nothing has actually happened. For example, the following can occur:
  - ii. Changed expectations or fears about the community and its future;
  - iii. Increased or fall in property prices depending on the nature of the proposal;
  - iv. Real estate speculation, which lock up or freezes land; and
  - v. Concerns about the environmental, social or health impacts, which may lead to activism, resulting in community polarization.
- vi. *Construction/implementation*-This phase usually will have greatest social impact. Construction work is socially disruptive. It frequently involves clearing land, building physical plant and putting in access roads and utilities. The resulting traffic congestion, dust, noise and other hazards typically undermine the quality of the resident population. Depending on project type and scale, there may be a large influx of temporary workers, whose demands and behaviour may be at odds with those of local people. In small communities, this phase often creates a strain on community infrastructure and may be marked by a boom and bust cycle. These changes, *inter alia*, may fuel resettlement, affect community cohesion or undermine cultural values or traditional institutions.
- vii. *Operation and maintenance*-This phase of a project normally continue over many years. In many cases, it will be relatively stable period compared to the social changes that occurred during construction. For one thing, operation

requires fewer workers, and newcomers often become gradually assimilated into the community. Longer-term economic opportunities and social benefits from the development will be realized during this stage. On the other hand, the operation of power, industrial and waste treatment facilities can bring another set of social impacts and health hazards from pollution emissions. However, the community also may be different from that which existed before the project was constructed, possibly adjusting to an industrial operation if it is carefully managed.

- viii. *Decommissioning or abandonment*-This phase can have a significant social impact, especially where a facility is the mainstay of the local economic base or the only employer as in a single purpose mining community. Depending on condition and location, it may be possible to convert a site to its former or an alternative use, such as restoring an open pit mine for agriculture or recycling a port facility to recreational or commercial use. In other case, however, industrial lands may be contaminated and require costly remediation treatment to rehabilitate or secure them to ensure the health and safety of nearby residents.

#### **Box 5.1: A case study of Singida-Shelui Road -Tanzania**

Singida- Shelui Road Section is part of the Central Trunk Corridor, which connects Dar es Salaam with north-western part of Tanzania mainland and the landlocked countries of Rwanda, Burundi and eastern Congo. The road project section extended for a total design length of 107 km. The road project aimed at upgrading Singida - Shelui road to bitumen standard with a 20year design life for the new sections, 10years for the rehabilitation works. The design route overlaps with the existing one for 86km out of 110km. The major improvements include: Road geometry: widening to 10 meters from present 7 to 10, Road reserve corridor: 45m in the rural areas, from present 25 to 45 m.

After completing the construction work, the road will reduce the rate of accidents especially in the rugged Sekenke sub-section (Km 78 to 90). The rehabilitated road will improve national and international communication through Central Tanzania and subsequently improve tourism sector and socio-economic development.

#### **The Social Impact Assessment**

The immediate influence area of the Road Section largely coincides with its feeder road basin, covering some 5000km<sup>2</sup> with 250,000 people, of which 150,000 live in Singida Urban District and 100,000 in two rural Districts. The population density in the area of impact influence is 60 inhabitants per km<sup>2</sup> (16 in the rural countryside).

The Social Impact study involved participatory approach with public consultation through focus-group with stakeholders affected by resettlement and project undertakings; and the detailed field inventories of affected environmental resources and economic properties. The consulted people were grateful with the proposed development and were convinced that road rehabilitation would improve their lives and livelihoods. This conviction enabled a detailed inventory of each building, business activity and farm holding to be displaced by the project to be carried out.

A total of 178 buildings and farms were displaced. The Resettlement Plan of the project was built on Category B of the World Bank's resettlement processes.

The value of the plots was not compensated in cash because all land in Tanzania belongs to the State. The Government did simply provide the resettled owner with alternative land plots of the same size in the nearest suitable location for both residential and business purposes. Free plots were available within short distances from the buildings and farms that were removed to give way for road reserve. The District Planning officers, in collaboration with ward and village authorities, assisted the resettlement of the displaced owners.

The Ministry of Works did identify the holders of dislocated properties. The Ministry of Lands and Human Settlement Development estimated the value of the rights, in collaboration with town planning and agricultural authorities. The Ministry of Lands, together with District Planning Authorities provided plots to accommodate the displaced owners. The owners of the houses, businesses and farms pre-empted for road construction purposes were identified by the present study in collaboration with professionals fine-tuned the assessment to allow fair and prompt compensation. A total of 36 businesses were displaced by the project. The total farming area to be displaced by the project amounted to 36.2 ha, of which 25 actual cultivated and 11.2 under fallow. Pre-empted rangelands were not considered to be under occupancy rights according to the existing legislation, but a moderate compensation were paid, through village authorities, to the stock-raising communities used to exploit them

The Ministry of Finance liquidated the compensation sums, using project funds. Compensation involved all farmlands along Singida -Shelui road route belonging to the state and is managed by village authorities under the supervision of the Local Government.

The proportion of resettlement and expropriation costs was estimated at 0.1% of construction costs: almost US\$50,500 divided as follows: compensation up to 93 compounds being in the design right of way: US\$150 per compound, total cost US\$13,900; compensation of expropriated croplands, follow areas and grazing sites along Iguguno by-pass and elsewhere. Quantity: 36.2ha, unit rate: 390US\$ha, total cost 14,000 US\$.

The people to be resettled received timely notice to harvest the fields and salvage the frames, iron sheets or glasses from the buildings and were paid the full amounts related to the value of the buildings and other physical developments, including the graves; transport allowances for persons and goods to the resettlement sites; the value of the lost business income for the period required to re-start it; and the value of the crops and the cost of re-establishing the lost farm area nearby.

## 5.8. SIA Benefits

The benefits of undertaking a systematic SIA include:

- i. *Reduced impact* on communities or individuals-identification of mitigation measures is an integral element of SIA;
- ii. *Enhanced benefits* to those affected-SIA preparation also helps identify measures such as job training packages;
- iii. *Avoiding delays and obstruction*-a well prepared SIA demonstrates that social impacts are taken seriously and helps to gain development approval;
- iv. *Lowered costs*-addressing social impacts and mitigation measures at an early stage helps to avoid costly errors and remedial actions imposed at a later stage by regulatory agencies;
- v. *Better community and stakeholder relationships*-experience has shown that SIA can help to allay fear and concern and build a basis of trust and cooperation necessary for the proponent to successfully introduce and operate the project; and
- vi. *Improved proposals*-an SIA provides information that adds value to existing projects and helps to design future ones.

In many cases, the above benefits of SIA are not anticipated or expected by the different parties involved in the process. For example:

- i. **Developers** may focus only on the short term costs of the SIA, see it as a process that may be ‘hijacked’ by proponents, or consider the risk of early disclosure outweighs any potential benefit of conducting the study;
- ii. **Governments or decision makers** may not support transparency of the decision making process; and
- iii. **Communities** may not consider the SIA process as impartial or may see it as a mechanism to deflect their objections to a project.

## 5.9. Steps and Principles of SIA

Typically, the SIA process follows the iterative steps taken in the EIA process, although with a different emphasis to take account of the impacts on people (as shown in Box 6.2 below). Most obvious is the particular type of information gathered for SIA, which can include basic characteristics of the affected population, current issues, political and civic institutions, social structures, cultural traditions and attitudes and social-psychological attributes. A participatory approach is also strongly represented in the SIA process, beginning at the earliest stage and continuing throughout. Other elements of the SIA process that the distinctive include prediction of impacts in terms of how affected people will respond in attitude and behaviour.

### **Box 5. 2: Steps in the SIA process**

1. *Public involvement*- develop and implement an effective public involvement plan to involve all interest and affected stakeholders.
2. *Identification of alternatives*-describe the proposed action and reasonable alternatives to it, including the no action alternative
3. *Profile of baseline condition*-document the relevant human environment/area of influence of the proposal and the existing social conditions and trends (using the characteristics and variables described previously)
4. *Scoping*-identify and priorities the range of likely social impacts through a variety of means, including discussion or interviews with numbers of all potentially affected
5. *Projection of estimated effects*-analyze and predicts the probable impacts of the proposal and the alternatives against baseline conditions (with or without action.)
6. *Prediction and evaluation of responses to impacts*-determine the significance of the identified social impacts to those who will be affected.
7. *Estimate indirect and cumulative impacts*-identify the subsequent, flow-on effects of the proposal, including the second/third order impacts and their incremental impacts when added to other past, present and foreseeable current activities
8. *Changes to alternatives*-recommend new or changed alternatives and estimate or project their consequences for affected and interested stakeholders
9. *Mitigation*-develop and implement a mitigation plan, in order of preference to firstly avoid, secondly minimize and thirdly compensate for adverse impacts
10. *Monitoring*-develop and implement a monitoring program to identify deviations from the proposed action and any important unanticipated impacts.

As in EIA, SIA practitioners place considerable importance on mitigation, monitoring and impact management. In addition, post-project analysis is recognized as critical to gaining a better understanding of social impacts and how to manage them. However, in practice implementation and follow up are not always undertaken systematically and often SIA continues to be isolated from projects. This process constrains SIA practice, undermines its potential contribution to decision-making and inhibits its acceptance by others; for individualized and exaggerated impacts and comparable empirical information is wanting.

In this context, considerable guidance is now available on SIA good practice, both generally and with specific reference to EIA procedures established by countries or international agencies such as the World Bank. The principles and guidelines outlined in Box 3 were prepared by leading SIA practitioners from the US. Most importantly, perhaps, the principles and main steps of the SIA process indicate how common issues of SIA practice, such as data limitations, can be addressed.

Other SIA practitioners have refined this framework to meet their particular purposes. Currently, an International Association for Impact Assessment (IAIA) project has developed International Guidelines and Principles for Social Impact Assessment (see [www.iaia.org](http://www.iaia.org)) of biophysical and social impacts which:

- Recognize that all environmental impacts are experienced in human terms;
- Extrapolate all biophysical changes to their implications for people; and
- Take account of the implications of seasonality for people and their activities

At a minimum, the information on social and environmental impacts should be synthesized into a coherent impact statement. When SIA is conducted as a separate study or is a major component in its own right, it should be conducted with reference to the EIA process (and *vice-versa*) and key findings should be cross referenced.

**Box 5. 3: Principles of SIA good practice**

- *Involve the diverse public*- identify and involve all potentially affected groups and individuals
- *Analyze impact equity*- identify who will win and who will lose, and emphasize vulnerability of under-represented groups
- *Focus the assessment*- deal with the issues and public concerns that really count not those that are just ‘easy to count’
- *Identify methods and assumptions and define significance*- describe how the SIA is conducted, what assumptions are used and how significance is determined
- *Provide feedback on social impacts to project planners*- identify problems that could be solved with changes to the proposed action or alternatives
- *Use SIA practitioners*- trained social scientists employing social science methods will provide the best result
- *Establish monitoring and mitigation program*- manage uncertainty by monitoring and mitigating adverse impacts
- *Identify data source*- use published social scientific literature, secondary data and primary data from the affected area
- *Plan gaps in data*- make clear any incorporate or unavailable information and the reasons why this could not be obtained

**5.10. Sources of SIA information**

Both rational and scientific schools of SIA draw on the following sources of information

- i. Data about the proposal;
- ii. Experience with similar actions, e.g. as evidenced in another SIA reports;
- iii. Census and vital statistics on the area/population affected;
- iv. Secondary materials, which document baseline conditions and trends; and
- v. Survey and field research, including interviews, meetings and other contact means.

**5.11. Methods, tools and techniques**

A number of tools and techniques are used to assess the human impact of development proposals. Some of the methods that are commonly applied for this purpose are outlined below and in Box 4:

There are sharp differences among SIA experts on the methodological frameworks that should be applied to assess social impacts. A number of orientations can be identified. Notably, there is a polarization between the rational-scientific approach, which emphasizes prediction of change (with the project versus without the project), and the socio-political approach, where SIA is oriented toward community development and empowerment. In practice, however, these differences may not be so apparent, moderated by EIA procedure and Terms of Reference and by a common emphasis on the management of social impacts.

#### **Box 5.4: Techniques commonly used for predicting social impacts**

*Trend extrapolations* - projecting current trends, such as population change or employment, into the future (with or without modifying the rate of change)

*Population multipliers* - extrapolated increases in population size are coefficients for the change in other variables, such as employment and demand for housing, infrastructure or services

*Consulting experts* - use of expert knowledge such as researchers, professional consultants, local authorities, or knowledgeable citizens.

*Scenarios-exercises* - to develop the likely, alternative or preferred future of a community or society. Scenarios can be used to compare different outcomes (best versus worst case)

*Comparative studies* - examining how an affected community has responded to change in the past, or the impact on other communities that have undergone a similar action.

The World Bank has identified a larger kit of social assessment tools and methods. It classifies methods into five types of overlapping approach: analytical, community-based, observation and interview, participatory, and workshop-based as summarized below:

##### *Analytical tools and Methods*

*Stakeholder Analysis* is an entry point to SIA and participatory work. It addresses strategic questions, e.g. who are the key stakeholders?, What are their interests in the project or policy?, What are the power differentials between them?. What relative influence do they have on the operation?. This information helps to identify institutions and relations that, if ignored can have negative influence on proposals or if considered can be built upon to strengthen them.

*Gender Analysis* focuses on understanding and documenting the differences in gender roles, activities, needs and opportunities in a given context. It highlights the different roles and behaviour of men and women. These attributes vary across cultures, class ethnicity, income, education, and time; and so gender analysis does not treat women as a homogeneous group.

*Secondary Data Review* of information from previously conducted work is an inexpensive, easy way to narrow the focus of a social assessment, to identify experts and institutions that are familiar with the development context, and to establish a relevant framework and key social variables in advance.

#### **5.11.1 Community-based methods**

*Participatory Rural Appraisal* (PRA) covers a family of participatory approaches and methods, which emphasizes local knowledge and action. It uses group animation and exercises to facilitate stakeholders to share information and make their own appraisals and plans. Originally developed for use in rural areas, PRA has been employed

successfully in a variety of settings to enable local people to work together to plan community-appropriate developments.

SARAR is an acronym of 5 attributes: Self esteem, Associative strength, Resourcefulness, Action planning and Responsibility for follow through-that are important for achieving a participatory approach to development. SARAR is a philosophy of adult education and empowerment, which seeks to optimize people's ability to self-organize, take initiatives, and shoulder responsibilities. It is best classed as an experiential methodology, which involves setting aside hierarchical differences, team building through training, and learning from local experience rather than from external experts.

### **5.11.2 Consultation methods**

*Beneficiary Assessment (BA)* is a systematic investigation of the perceptions of a sample of beneficiaries and other stakeholders to ensure that their concerns are heard and incorporated into project and policy formulation. The purposes are:

- a) Undertake systematic listening, which "gives voice" to poor and other hard-to-reach beneficiaries, highlighting constraints to beneficiary participation,
- b) Obtain feedback on interventions.

### **5.11.3 Observation and interview tools**

Participation observation is a field technique used by anthropologists and sociologists to collect qualitative data and to develop in depth understanding of people's motivations and attitudes. It is based on looking; listening, asking questions and keeping detailed field notes. Observation and analysis are supplemented by desk reviews of secondary sources, and hypotheses about local reality are checked with key local informants.

*Semi-structured Interviews* are a low-cost, rapid method for gathering information from individuals or small groups. Interviews are partially structured by a written guide to ensure that they are focused on the issue at hand, but stay conversational enough to allow participants to introduce and discuss aspects that they consider to be relevant.

*Focus Group Meetings* are a rapid way to collect comparative data from a variety of stakeholders. They are brief meetings-usually one to two hours-with many potential uses, e.g. to address a particular concern; to build community consensus about implementation plans; to cross-check information with a large number of people; or to obtain reactions to hypothetical or intended actions.

*Village Meetings* allow local people to describe problems and outline their priorities and aspirations. They can be used to initiate collaborative planning, and to periodically share and verify information gathered from small groups or individuals by other means.

### **5.11.4 Participatory methods**

*Role playing* helps people to be creative, open their perspectives, understand the choices that another person might face, and make choices free from their usual responsibilities. This exercise can stimulate discussion, improve communication, and promote collaboration of both community and agency levels.

*Wealth Ranking* (also known as a well-being ranking or vulnerability analysis) is a visual technique to engage local people in the rapid data collection and analysis of social stratification in a community (regardless of language and literacy barriers). It focuses on the factors which constitute wealth, such as ownership of or right to use productive assets, their relationship to locally powerful people, labour and indebtedness, and so on.

*Access to Resources* is a tool to collect information and raise awareness of how access to resources varies according to gender, age, marital status, parentage, and so on. This information can make all the difference to the success or failure of a proposal; for example, if health clinics require users to pay cash fees, and women are primarily responsible for accompanying sick or pregnant family members to the clinic, then women must have access to cash.

*Analysis of Task* clarifies the distribution of domestic and community activities by gender and the degree of role flexibility that is associated with each task. This is central to understanding the human resources that are necessary for running a community.

*Mapping* is an inexpensive tool for gathering both descriptive and diagnostic information. Mapping exercises are useful for collecting baseline data on a number of indicators as part of beneficiary assessment, rapid appraisals, and can lay the foundation for community ownership of development planning by including different groups.

*Needs Assessment* draws out information about people's needs assessments in their daily lives. It raises participants' awareness of development issues and provides a framework for prioritizing actions and interventions. All sectors can benefit from participating in a need assessment, as can trainers, project staff and field workers.

*Pocket Charts* are investigative tools, which use pictures as stimulus to encourage people to assess and analyze a given situation. Made of cloth, paper or cardboard, pockets are arranged into rows and columns, which are captioned by drawings. A "voting" process is used to engage participants in the technical aspects of development issues, such as water and sanitation projects.

*Tree diagrams* are multi-purpose, visual tools for narrowing and prioritizing problems, objectives or decisions. Information is organized into a tree-like diagram. The main issue is represented by the trunk, and the relevant factors, influences and outcomes are shown as roots and branches of the tree.

#### **5.11.5 Workshop-based methods**

*Objectives-Oriented Project Planning* is a method that encourages participatory planning and analysis throughout the project life cycle. A series of stakeholder workshops are held to set priorities, and integrate them into planning, implementation and monitoring. Building commitment and capacity is an integral part of this process.

*Team-Up* was developed to expand the benefits of Objectives-Oriented Project Planning (OOPP) and to make it more accessible for institution-wide use. PC/Team up is a software package, which automates the basic step-by-step methodology and

guides stakeholders through research, project design, planning, implementation, and evaluation.

Depending on its scope, Social Impact Assessment may use a number of tools and techniques. This can help to address the problem of incomplete data, as well as compare and highlight any variations in information derived from different sources. Generally, an integrated approach, which combines a number of methods, will provide the most composite and reliable prediction of impacts and identification of suitable measures to mitigate and manage them. In practice, however, this is not always possible, and often no more than two or three SIA tools will be used in an EIA-based process.

At a minimum, the prediction of social impacts should be based on:

- Understanding of the affected population-how is people likely to respond to and be affected by a given proposal?
- Comparison with similar cases-what is the experience with the effects of proposed actions on similar communities elsewhere?
- Appropriate expertise and knowledge base-has the analysis been undertaken by an experienced SIA practitioner using suitable methods and tools?

Much of the analytical work in SIA centres on prediction of potential changes in key social variables. See appendix 6.1

#### **5.12. Good practice and basic factors in the conduct of SIA**

When conducting SIA, the following factors and considerations can assist in implementing and amplifying the principles set out in the previous Box 6.3.

- *Identifying trends*- when gathering baseline data on an affected community, it is important to situate the profile or 'snap shot' in a dynamic context by identifying the changes that are occurring already from non-project sources;
- *Taking account of initial response to project announcement*-support or opposition may be an impact itself or an indicators of the likely degree of community cohesion or conflict over social issues;
- *Qualifying data sufficiency and reliability*-where SIA is hampered by a lack of adequate data, err on the conservative side in reporting any potentially significant impacts (e.g. stating that it cannot be ruled out with confidence rather than concluding it is not proven);
- *Predicting key issues*-it is better to be roughly correct on the matters that count, rather than qualifying the impacts that can be counted; and
- *Team building*-experienced social scientists need to be an integral part of the EIA team to predict these key issues and establish linkages to biophysical impacts. Often, team building must address cultural style as well as disciplinary differences, for example when relating an SIA to the EIA and project planning timetable on the one hand and the norms and traditions of an affected community on the other.

Analyzing impact equity, who gains and who loses from a proposal, is central to the SIA process. Good practice principles are set out below:

- Predict adverse impacts
- Specify for each group
- Explain reason for variations
- Highlight impacts on vulnerable groups
- Guard against representational bias

Normally, emphasis will be given to identifying and mitigating adverse impacts. These impacts should be specified and reported for each group likely to be differently affected and appropriate mitigation measures taken to ensure their brunt is not borne disproportionately. In this regard, particular attention is given to highlighting adverse impacts on people who are sensitive or vulnerable, for example by reason of age, gender, ethnicity, caste, poverty or other factors. Examples include:

- Communities and groups who depend on land and resources for their subsistence and livelihood, typically, are significantly affected by a proposal that reduces or degrades the resource base or alters their access, use or management regime;
- Indigenous peoples and ethnic minorities are a particular risk in this regard, since their culture, lifestyle and values are inseparably attached to their environment;
- Long-term residents or the elderly may suffer greater health and psychological impacts than other groups as a result of community disruption; and
- The poor, landless, illiterate and disadvantaged often struggle to express or press their concerns because they lack political power and influence over events.

Impact equity can be effectively assessed only if an attempt is made to minimize any bias and take full account of the consequences for disadvantaged and marginalized groups. SIA practitioners guard against the following factors:

- *Spatial bias*-information gathering focuses on accessible locations and overlooks remote or nomadic tribes;
- *Seasonal bias*-an SIA may be carried out a time when it is difficult to gain representative information on a affected community, for example during harvest time or hunting season;
- *Personal bias*-consultation and interviews may be dictated by cultural traditions or power structures, for example limited to political leaders, elders or men; and
- *Professional bias*-lack of interaction between disciplinary specialists may result in important links between the environment and society being omitted.

The practical emphasis in SIA is on mitigation of the adverse impacts of a proposal and, more broadly, the management of social change. Principles that are specific to impact management and minimization are summarized in Box 6.5. These elaborate the guiding principles introduced earlier (Box 6.3) and recognize the need for a proactive approach to this phase of SIA. In particular, the concern is to move away from a narrow focus on the role of prediction, seeing it as a necessary step to design customized measures for avoiding, reducing and managing social impacts, for example of an influx of construction workers into a small settlement.

### **Box 5.5: Good practice in impact mitigation and management**

- Identify mitigation measures for each impact
- Customize them to the different groups affected
- Give priority to avoiding social impacts
- Then minimize them as far as practicable
- Use compensation as a last resort
- Ensure impacts are not borne disproportionately by one group
- No one should be worse off than before
- Treat relocation/resettlement as a special case
- Livelihoods of those displaced should be improved
- Enhance benefits for local people through job training and development packages

Mitigation for social impacts should follow the same hierarchy that is used for other types of impact. This gives priority first to impact avoidance, second to reduction or minimization of impacts, and lastly to offset or compensation. Social impacts can be avoided by ‘at source’ changes, for example, site selection of a dam or airport project so people do not have to be relocated or their lives disrupted. Impacts can be reduced by various measures, such as sound proofing houses within the noise footprint of an airport, scheduling construction traffic, use of dust suppression techniques, etc. Compensation should be used for residual impacts only where no other options are available to ensure people are not worse off than before.

Where compensation is unavoidable, it is often in appropriate to provide this only in monetary form. This is invariably the case for indigenous peoples and other vulnerable communities, which cannot replicate their lifestyle elsewhere or mediate the impacts experienced. In other cases, monetary compensation places the onus of solving the problem on the individual or community, rather than on those who are responsible for causing the impact. Equally, however, there are circumstances where a compensation package can be used in positive and innovative ways to support social development that otherwise may not be possible.

Monitoring and other follow up activities are critical to strengthening mitigation practice and to improving the effectiveness of SIA, in general. As in EIA, the main purpose of monitoring is to identify differences between predicted and actual social impacts in order to determine whether and what type of adjustments and interventions are necessary. In developing countries, where experience with SIA may be limited, institutional and capacity building may be required to effectively carry out impact management. SIA training needs and priorities for a given country may differ from those identified for EIA in general.

### **5.13. Other Socio-economic impacts**

#### **5.13.1 Social Impacts**

Social impacts include changes that affect individuals, groups, communities and populations as well as the interactions between them. They are alterations in the way people live, work, play, relate to each other and organize their communities and institutions to meet their characteristic values, beliefs, norms, traditions and perceptions of quality of life and well-being.

Often, local people are not the beneficiaries of proposed development. Rather they bare the brunt of the adverse impacts. These effects are especially acute in developing countries when projects displace people whose security and subsistence depends on the land and resources that will be affected. World Bank environmental and social assessment procedures give particular attention to the impact on indigenous peoples and other vulnerable ethnic and cultural groups whose lifestyle; value and tenure systems may be disrupted or lost.

A comprehensive social impact assessment (SIA) will be required in such cases. In other circumstances, adding a relevant specialist to the EIA team may suffice to address social impacts. However, it should be emphasized that there is little consensus on the social impacts that should be included as part of an EIA process. Other than agreeing that the scope is too limited, SIA practitioners themselves differ on the aspects to be study and the framework within which it should be analyzed.

### **5.13.2 Health impacts**

Health impacts can be a significant aspect of certain types of development. These impacts can be beneficial as well as adverse, for example water infrastructure projects eradicate or drastically reduce the occurrence of cholera, diarrhoea and other gastro-intestinal diseases that are endemic in less developed countries. However, adverse health impacts can also occur as a result of development projects, either directly from changes to the biophysical environment (such as exposure to pollutants) or indirectly as a secondary result of other changes, for example HIV/AIDS and the creation of habitat conditions favourable to the spread or intensification of disease vectors, such as mosquitoes (malaria) or water snails (schistosomiasis)

To date, insufficient attention has been given to health impacts in comparison to coverage given to biophysical or even other social impacts. In many cases, health impact assessment is carried out separately and independently; for example in the chemical, nuclear and hazardous industries. The World Health Organization (WHO), World Bank and other international agencies recommend that, where necessary and appropriate, HIA should be integrated in the EIA process. Use similar information, approach and methods; for example, when identifying the health and environmental impacts of exposure to air particulate emissions from a proposed power plant. Table 3 below illustrates some of the health hazards and impacts associated with development proposals from different sectors.

**Table 5.1: examples of health impacts by sector**

	Communicable disease	Non communicable disease	Nutrition	Injury	Psychosocial disorder and loss of well-being
Mining	Tuberculosis	Dust induced lung disease		Crushing	Labour migration
Agriculture	Parasitic infections	Pesticide poisoning	Loss of subsistence		
Industry		Poisoning by pollutants		Occupational injury	Disempowerment
Forestry			Loss of food production	Occupational injury	
Dams and irrigation schemes	Water borne diseases	Poisoning by pollutants	Increased food production	Drowning	Involuntary displacement
Transportation	HIV/Aids	Heart disease		Traffic injury	Noise and induced stress
Energy		Indoor air pollution		Electromagnetic radiation	Community displacement

*Source: Birley draft materials prepared for World Health Organization (2000)*

Certain proposals can also increase the risk of accidental death and injury to the workforce and the public. Examples of occupational and public health and safety issues include exposure to increased traffic levels introduced by road building or to dangerous and hazardous industries, such as those involving the processing, storage and/ or transportation of flammable materials or toxic gases. In these situations, a risk assessment should be undertaken as part of an EIA to determine the probability of an accident or malfunction occurring and the likely consequences.

### **5.13.3 Economic and fiscal impacts**

Invariably, the economic feasibility of a major proposal will be subject to cost-benefit analysis (CBA). In addition, specific economic and fiscal impacts of a development proposal may need to be considered as part of the EIA process, for example where they have a direct bearing on social and health impacts.

Typically, economic impact assessment is carried out to predict project-related changes in employment (e.g. new job requirements in relation to the local labor market), per capita income (e.g. locally retained versus exported remittances) and levels of business activity (e.g. positive and negative effects of the project on local enterprises). Often, economic impacts cause social impacts, for example, if there is a large influx of temporary workers into a local community during the project construction phase of project development. Such ‘boomtown’ conditions may threaten community cohesion and health and strain services and access to them by local residents.

Fiscal impacts accrue from changes in the costs and revenues of the various government sectors. These changes typically occur as the result of a proposal causing relatively large increases in population and the requirement for additional capital expenditures on local infrastructure and facilities provided by the government (e.g. health services, roads, sewerage etc.). A common issue is that of ‘front-end-financing’-that is whether or not expenditures will increase quicker than revenues in the early phase of project implementation.

If that happens it creates deficit and cash flow difficulties, often with resulting shortfalls or bottlenecks in the provision of basic services. This leads, in turn to the overloading of infrastructure, such as water supply and sewerage, and consequent environmental and social impacts. Resolving these problems can be especially difficult if the revenues from a project are received in one jurisdiction and the costs are borne in another.

The factors that typically affect economic and fiscal impacts are identified in the box below. A number of methods can be used to predict these impacts. For economic impacts, these include input-output and export base models which incorporate an income and employment multiplier to estimate the extra money that is injected and spent in the local economy, adjusting for any ‘leakages’. The methods that can be employed for fiscal impact assessment differ substantially in the scope of costs and revenues addressed.

<b>Box 5.6 Factors affecting economic and fiscal impacts</b>	
<b>Factors affecting economic impacts:</b>	
<ul style="list-style-type: none"> <li>• Duration of construction and operation phases</li> <li>• Workforce requirements for each period and phase of construction</li> <li>• Skills requirements (local availability)</li> <li>• Numbers employed and earnings</li> <li>• Raw materials and other input purchases</li> <li>• Capital investment</li> <li>• Outputs</li> <li>• The characteristics of the local economy</li> </ul>	
<b>Factors affecting fiscal impacts:</b>	
<ul style="list-style-type: none"> <li>• Size of investment and workforce requirements</li> <li>• Capacity of existing service delivery and infrastructure systems</li> <li>• Local/regional tax or other revenue raising processes</li> <li>• Likely demographic changes arising from project requirements (these need to be estimated during the assessment of social impacts)</li> </ul>	

## **Reference**

Brudge, Rabel J. (1994): A community Guide to Socio Impact Assessment, Middleton, Social Ecology Press, 210 pages

Birley draft materials prepared for World Health Organization (2000)

**CHECKLIST OF SOCIAL VARIABLES**

**A: *Individual and household level***

1. Death, death of family member
2. Arrest, imprisonment, detention, torture, intimidation or other abuse of human rights inflicted on individual
3. Reduce availability of food and adequate nutrition
4. Reduced control over fertility (availability of contraception, and empowerment)
5. Reduced level of health and fertility (ability to conceive)
6. Reduced mental health increased stress, anxiety, alienation, apathy, depression
7. Uncertainty about impacts, development possibilities, and social change
8. Actual personal safety, hazard exposure
9. Experience of stigmatization and deviance labelling
10. Reduction in perceived quality of life
11. Reduction in standard of living, level of affluence
12. Worsening of economic situation, level of income property values
13. Decreased autonomy, independence, security of livelihood
14. Change in status or type of employment, or becoming unemployed
15. Decrease in occupational opportunities potential diversity flexibility in employment
16. Moral outrage, blasphemy, religious affront, violation of sacred sites
17. Upset (objection/opposition to the project), NIMBY (not in my back yard)
18. Dissatisfaction due to failure of a project to achieve heightened expectations
19. Annoyance (dust, noise, strangers, more people)
20. Disruption to daily living, way of life (having to do things differently)
21. Reduction in environmental amenity value
22. Perception of community, community cohesion, integration
23. Community identification and connection to place (do I belong here?)
24. Changed attitude towards local community, level of satisfaction with the neighbourhood
25. Disruption to social networks
26. Alteration in family structure and stability (divorce)
27. Family violence
28. Gender relations with the household
29. Changed cultural values
30. Changed perceptions about personal health and safety, risk, fear of crime
31. Changed leisure opportunities
32. Quality of housing
33. Homeliness
34. Density and crowding
35. Aesthetic quality, outlook, visual impacts
36. Workload, amount of work needed to be undertaken to survive/live reasonably

**B: *Community and institutional level***

1. Death of people in the community
2. Violation of human rights, freedom of speech
3. Adequacy of physical infrastructure (water supply, sewerage, services, and utilities)

4. Adequacy of community social infrastructure, health, welfare, education, libraries etc
5. Adequacy of housing in the community
6. Workload of institutions, local government, regulatory bodies
7. Cultural integrity (continuation of local culture, tradition, rites)
8. Right over, and access to, resources
9. Influences on heritage and other sites of archaeological, cultural or historical significance
10. Loss of local language or dialect
11. Debasement of culture
12. Equity (economic, social, cultural)
13. Equity/social justice issues in relation to minority or indigenous groups
14. Gender relations in the community
15. Economic prosperity
16. Dependency/autonomy/diversity/viability of the community
17. Unemployment level in the community
18. Opportunity costs (loss of other options)
19. Actual crime
20. Actual violence
21. Social tensions, conflict or serious divisions within the community
22. Corruption, credibility and integrity of government
23. Level of community participation in decision making
24. Social values about heritage and biodiversity

## 6.0 IMPACT ASSESSMENT MODULE

### 6.1 Outline

- Introduction
- Definition of terms
- Objectives of the module
- Relevance of the module
- Impact prediction and analysis methods and tools
- Guiding principles for determining impact significance

### 6.2 Introduction

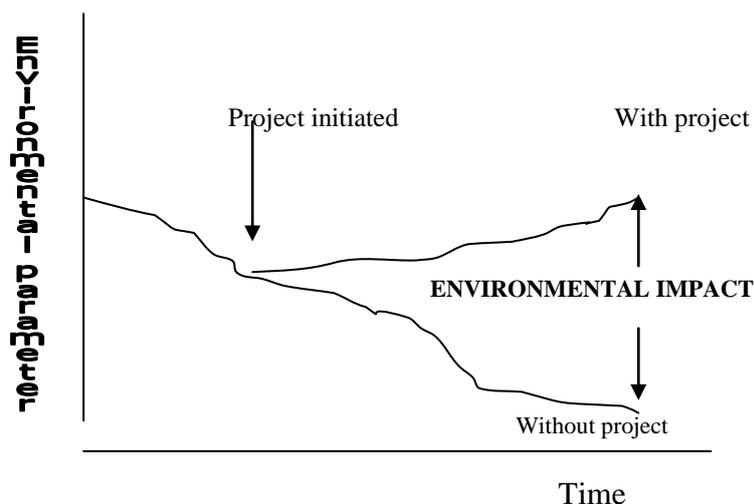
Impact assessment refers to the identification and evaluation of environmental changes occurring as a result of implementing a project. It is a systematic and integrative process of drawing together an analysis of the likely environmental effects of a particular project. It is a critical process that makes use of baseline information that describes biophysical and social aspects of the project area and determines the most significant adverse impacts.

### 6.3 Definition

#### 6.3.1 What is impact?

The impact of a project is a change in parameters over a specified period within a defined area resulting from a particular activity compared with the situation which would have occurred had the activity not been implemented. It displays the difference between the state of parameter with the project compared to that without the project (as presented in the figure 5.1 below).

Figure 5.1 illustrates environmental impact parameters



(Source: Wethern, 1988)

In many EIA systems, a broad definition of 'environmental impact' is adopted. This can include effects on:

- Human health and safety;
- Flora, fauna, ecosystems and biological diversity;

- Soil, water, air, climate and landscape
- Use of land, natural resources and raw materials
- Protected areas and designated sites of scientific, historical and cultural significance;
- Heritage, recreation and amenity assets; and
- Livelihood, lifestyle and well being of those affected by a proposal

Depending on the EIA system, some or all of these impacts may require analysis and evaluation. Often, however, health, social and other non-biophysical impacts are either not considered or are inadequately addressed. An alternative approach is to undertake separate, but parallel, assessments of social, health and other impacts when they are considered to be particularly important for decision-making and not adequately addressed by EIA or other similar process (such as risk assessment).

### **6.3.2 What is impact assessment?**

Impact assessment and impact analysis can be used interchangeably. Impact Assessment is a study which predicts impacts that are likely to occur as a result of the project and their likely significance level. The study identifies measures to mitigate or avoid these impacts, or optimise the benefits of the project

## **6.4 Levels of Environmental Impact Assessments**

There are two levels of impact assessment as explained in sections 5.41 and 5.4.2 below

### **6.4.1 Preliminary Environmental Assessment**

This is a systematic identification, description or initial examination of environmental and socio-economic impacts that are undertaken to obtain just enough information to determine whether or not there will be significant adverse environmental impacts as a result of the proposed project.

#### *Objectives of Preliminary Impact Assessment:*

- To reconsider the classification of the proposal,
- To reconsider project design,
- To show the need for external checks during project planning and implementation.

#### *Relevance of Preliminary Impact Assessment*

- Those projects in which the need for an EIA is unclear are subjected to a preliminary assessment. This can serve as a precautionary measure for projects that may have serious environmental problems which are not clear, but can also help to avoid carrying out costly EIA on projects that have no or have limited adverse environmental effects.
- Preliminary assessment is also important for projects with limited environmental impacts that are not included in the project objectives, outputs and activities. The assessment ensures that appropriate mitigation measures are included in the project design.
- A preliminary assessment narrows the discussion within possible sites.

### *Methodology*

Preliminary assessment may be based on existing information and/or may require extra information to be gathered from the field.

A preliminary assessment should proceed along the following steps:

- Description of the project characteristics and the affected environment
- Identification of impacts on the local environment;
- Assessment/evaluation of the significance of the impacts (in terms of energy flow, transformation of matter, effects on sensitive ecosystems) relative to the baseline state and socio-economic impacts.

*Information needed for a preliminary assessment include:*

#### *Social- cultural characteristics*

- Physical and process characteristics
  - Changes in renewable resource use
  - Exploitation of water resources
  - Infrastructure
  - Industrial activities
  - Extractive industries
  - Waste management
- The size of the project
- Environmental characteristics for the potential project area.

At this level of assessment, it is decided if the project will be submitted to further investigations of an EIA or if the project can be accomplished depending on specific mitigated regulations.

### **6.4.2 Full Environmental Impact Assessment**

This level of impact assessment is structured to reflect the three phases of impact analysis that are undertaken as part of the EIA process:

- Identifying more specifically the impacts to be investigated in detail,
- Predicting the characteristics of the main impacts;
- Evaluating the significance of the residual impacts that cannot be mitigated

#### *Objectives of Full Impact Assessment*

Impact assessment involves the actual investigation and reporting of the results of the assessment. The objectives of the impact assessment include;

- Identification of both positive and negative impacts of the project
- Identification of tools and techniques for impact analysis
- Propose measures to mitigate adverse impacts
- Development of plans for management and monitoring of the impacts

#### *Relevance of Full Impact Assessment*

Impact Assessment ensures that environmental and social criteria are considered in the early stages of project planning alongside economic viability.

- It provides alternative options (location, technology, processes etc) to the project proponent
- It safeguards the project proponents against mitigation measures through retrofitting.

The final outcome of EIA is an Environmental Impact Assessment Report also known as Environmental Impact Statement (EIS).

Impact assessment is guided by the Terms of Reference and information contained in the scoping report. Specialists carry much of the work at this stage of the EIA process.

### **6.3 Important parameters for impact assessment**

Typical parameters to be taken into account in impact prediction and decision-making are nature of the impacts, magnitude, extent/location, timing, significance, reversibility/irreversibility and likelihood (probability, uncertainty or confidence in the prediction) as elaborated below

#### **6.3.1 Nature (positive, negative, direct, indirect, cumulative)**

The most obvious impacts are those that are directly related to the proposal, and can be connected (in space and time) to the action that caused them. Typical examples of direct impacts are: loss of wetlands caused by agricultural drainage, destruction of habitat caused by forest clearance; relocation of households caused by operation of a new power station etc.

Indirect or secondary impacts are changes that are usually less obvious, occurring later in time or further away from the impact source. Examples of these types of impacts are: the spread of malaria as a result of drainage schemes that increase standing water and thereby create vector habitat; stress and community disruption associated with increased traffic volumes and noise caused by road development.

Cumulative effects (see box 1) typically result from the incremental impact of an action when combined with impacts from projects and actions that have been undertaken recently or will be carried out in the near or foreseeable future.

#### **Box 6.1: Cumulative Impacts**

These are impacts that result from incremental changes caused by other past, present or reasonable foreseeable actions together with the project. For example:

- Incremental noise from a number of separate developments;
- Combined effect of individual impacts, e.g. noise, dust and visual, from one development on a particular receptor;
- Several developments with insignificant impacts individually but which together have a cumulative effect, e.g. development of small scale irrigation farms may have an insignificant impact, but when considered with several nearby small farms there could be a significant cumulative impact on local ecology and landscape.

#### **6.3.2 Magnitude (severe, moderate, low)**

Estimating the magnitude of the impact is of primary importance. It can be qualitatively expressed in terms of relative severity, such as major, moderate or low. Severity, as opposed to size, also takes an account of other aspects of impact magnitude, notably whether or not an impact is reversible and the likely rate of recovery.

Magnitude can also be quantitatively expressed in terms of measurable units (linear measurements, biometrics and counts).

### **6.3.3 Spatial Extent / location (area, volume coverage, distribution)**

The spatial extent or zone of impact influence can be predicted for site specific versus regional occurrences. Depending on the type of impact, the variation in magnitude will need to be estimated; for example alterations to range or pattern of species or dispersion of air and water pollution plumes.

### **6.3.4 Timing (during construction, operation, decommissioning)**

Impacts arising from all of the stages of the life cycle of the project should be considered (i.e. during construction, operation and decommissioning). Some impacts will occur immediately, while others may be delayed, sometimes by many years. These impacts need to be noted in the EIS report.

### **6.3.5 Duration (short term, long term, intermittent, continuous)**

Some impacts may be short term such as noise arising from the operation of equipment during construction. Others may be lasting for long periods such as inundation of land after building a reservoir. Certain impacts such as blasting may be intermittent whereas others may be continuous such as electromagnetic fields caused by power lines. Impact magnitude and duration can be cross-referenced for example major but short-term (less than one year) low but persistent (more than 20 years).

### **6.3.6 Significance (local, regional, global)**

The evaluation of significance at this stage of EIA will depend on the characteristics of the predicted impact and its potential importance for decision-making. Significance is usually attributed in terms of an existing standard or criteria of permissible change, for example as a specified in a standard, policy objectives or plan.

## **6.4 Steps in impacts assessment**

The process of assessment of impacts can be broken down into three overlapping steps namely: impact identification, impact prediction and impact evaluation.

However, before implementing these steps the EIA team has to be mobilized. This involves the following:

- Assembling a team with EIA expertise,
- Setting adequate time for and proper timing of initiation of the study;
- Identifying stakeholders for consultations and deciding upon the techniques for the involvement of stakeholders;
- Ensuring that financial resources for the work are available and adequate.
- Obtaining relevant environmental standards and guidelines;
- Acquiring adequate knowledge of relevant policies, laws and institutional arrangements;
- Getting acquainted with environmental and socio-economic setting of the project area prior to construction; and
- Understanding the project designs.

### **6.4.1 Impact Identification**

The next stage is when a detailed assessment is undertaken to forecast the characteristics of the main potential impacts. A logical and systematic approach needs

to be taken to impact identification. The aim is to take to account of all the important environmental/project impacts and interactions, making sure that indirect and cumulative effects, which may be potentially significant are not inadvertently omitted.

Impact identification and prediction are undertaken against environmental baseline information often delineated by selected indices and indicators (e.g. air, water, noise, ecological sensitivity, social cultural, biodiversity). The collection of baseline information and relevant biophysical and socio economic conditions begins during screening and continues in scoping. Often additional baseline data will need to be collected to establish reference points for impact identification and prediction. Impact identification aims to ensure that all potential environmental impacts are identified and listed and that their boundaries and characteristics are clearly understood. Cumulative impacts should also be considered.

#### **6.4.2 Impact Prediction**

Once the range of impacts has been identified, their potential size and nature of each one must be predicted. Impact prediction or forecasting is a technical exercise. Analysis and prediction of impacts draws on the baseline data on physical, biological, socio-economic, anthropogenic data and techniques; environmental standards; value judgement and professional experience. A range of methods and techniques may be used as shown below.

The impacts may be negative or positive; direct or indirect; short term or long term; temporal or permanent. Typical examples of direct negative impacts are loss of wetlands, destruction of ecosystems, relocation of households, increased air emissions etc. Other impacts are indirect pesticides like Dichloro-diphenyl-trichloroethane (DDT) in fish as a result of use of agricultural pesticides. Impact can be cumulatively (see box 1) added from other sources, they could interact to create new impacts while others can be beneficial.

Impact prediction should be carried out by specialists in the disciplines involved or in the application of models and techniques. The sophistication of prediction methods used should be in proportion to the scope of the EIA and relevant to the importance of the particular impact. Where possible, impacts should be predicted quantitatively. This makes comparison among alternatives and with baseline conditions easier and facilitates impact monitoring and auditing later in the project life. Rating techniques for example can be used to assist impact estimation (as well as assign values) where there is insufficient data, a high level of uncertainty and/or limited time and money (all common in many EIAs). The results of qualitative analysis should be communicated clearly, for example in the form of a range of graded 'dot sizes' presented in a table.

Impact predictions are made against a baseline established by the existing environment (or by its future state). Known as baseline studies, the collection of data on current and expected trends of relevant biophysical, social, cultural, political and economic aspects, effects of proposals already being implemented and effects of other foreseeable proposals. This provides a reference point against which the characteristics and parameters of impact-related changes are analysed and evaluated. In many cases, it is likely that the current baseline conditions will still exist when a project is implemented.

In practice, assembling baseline information can be time consuming and expensive. There can be difficulties in collecting appropriate and sufficient information. For example there may be unforeseen circumstances in which the collection of data cannot be completed as required by the Terms of Reference. In such cases, the consultants may have to revise the study strategy and/or use their judgement to make predictions. When this occurs it should be indicated in the EIS report with a short explanation of the reasons.

Professional judgement is usually required to oversee and where necessary, set limits on the collection of data required for impact analysis and monitoring. Proponents also need to ensure that time and effort is not spent on unnecessary data collection or that excessive space in the EIS report is not occupied by a description of baseline conditions.

### **6.5 Evaluation of Impact Significance**

Once the impacts have been analysed, it is important to determine their significance, i.e. whether they are acceptable, require mitigation measures or are un-acceptable to the community. The interpretation of significance at this stage of EIA, therefore, depends on the importance of the impacts for decision-making. In many cases this will be an assessment of the acceptability of the impact in terms of some existing criteria such as the permitted level of a substance or degree of change as specified in a standard, policy or plan. Following impact identification and prediction, impact evaluation is the formal stage at which a ‘test of significance’ is made.

A systematic process should be followed in evaluating significance, distinguishing between ‘as predicted’ and ‘residual’ impacts.

*Step one* involves evaluating the significance of ‘as predicted’ impacts to define the requirements for mitigation measure and other remedial actions.

*Step two* involves evaluating the significance of the ‘residual’ impact i.e. after mitigation measures are taken into account.

This test is the critical measure of whether or not a proposal is likely to cause significant impacts. It is determined by the joint consideration of its characteristics (magnitude, extent, duration etc) and the importance (or value) that is attached to the resource losses, environmental deterioration or alternative uses which are foregone.

Evaluation of significance should take place against a framework of criteria and measures established for the purpose. These may be defined in EIA guidelines and Procedure and legislation for example by definition of what constitutes an environmental impact and guidance on how to determine significance.

Often specified criteria are listed to aid such evaluation, for example environmental standards and thresholds, protected and sensitive areas, valued ecological functions and components and resource and land use capabilities. Where this EIA guidance is not available, it can be developed separately by adapting criteria and measures that are relevant to local circumstances and type of proposals reviewed.

EIA guidelines related to significance fall into two main categories:

- Emissions based, comprising standards for air and water quality, noise etc
- Environmental quality based, comprising significance criteria for valued ecosystems components or similar attributes.

Emissions based standards will be jurisdiction specific (although certain standards may be internationally recognised) and provide an objective, technical means of determining significance; for example the anticipated residual impacts either do or do not exceed the relevant standards. However, reliance on standards suffers from certain deficiencies and limitations. The relevant technical standard may be the subject of disagreement or public concern (e.g. blood lead levels, traffic noise levels etc). In many cases, an appropriate technical standard will not be available for the evaluation of significance (eg. ecological, social and visual impacts).

Environmental quality based criteria or thresholds are qualitative, broadly drawn and require interpretation. In this context, impact evaluation is a subjective exercise, linking scientific criteria to social preferences (as discovered through public involvement or SIA methods) and relating them to the environment and community affected. Some of the impact identification techniques discussed earlier have built in scales or weighting (and hence values) based on prior experience. When applying them, the criteria should be modified to take account of local value systems and traditional practices.

Additionally, some countries and international agencies have established environmental sustainability criteria and environmental acceptability rules against which evaluation can be conducted. For example, the World Bank input and output guidelines are meant to ensure that each project does not exceed the regenerative and assimilative capacities of the receiving environment. In practice, as the Bank acknowledges, there is considerable difficulty in applying these guidelines and it has augmented them with other environmental and social safeguards. The significance levels can also be expressed as high, low, medium/direct, indirect /long term or short term/ temporary or permanent etc.

## **6.6 Guiding Principles and Aids for determining significance include:**

- Established procedure and guidelines
- Adapt relevant criteria or comparable cases
- Level of public concern (particularly over health and safety)
- Assign significance rationally and be consistent in the comparison of alternatives
- Scientific and professional evidence concerning:
  - Loss/disruption of valued resource /ecological change
  - Negative impacts on social values, quality of life and livelihood
  - Foreclosure of land and resource use opportunities
- Document the reasons for judgments made.

## **6.7 Significance evaluation criteria**

A test of significance can be applied by asking three questions:

- are there residual environmental impacts?
- If yes are these likely to be significant or not?

*Criteria to evaluate whether or not adverse impacts are significant include:*

- environmental loss and deterioration
- social impacts resulting from directly or indirectly from environmental change
- non-conformity with environmental standards, objectives and guidelines
- probability and acceptability of risk

*Criteria to evaluate adverse impacts on natural resources, ecological functions or designated areas include:*

- reduction in species diversity
- depletion or fragmentation on plant and animal habitat
- loss of threatened, rare and endangered species
- Impairment of ecological integrity, resilience or health e.g..
  - disruption of food chains;
  - decline in species population;
  - alterations in predator-prey relationships

*Criteria to evaluate the significance of adverse social impacts that result from biophysical changes include:*

- Threats to human health and safety e.g. from release of persistent and/or toxic chemicals,
- Decline in commercially valuable or locally important species or resources e.g. fish, forests and farmlands
- Loss of areas or environmental components that have cultural, recreational or aesthetic value;
- Displacement of people e.g. by dams and reservoir
- Disruption of communities by influx of a workforce e.g. during project construction and
- Pressures on services, transportation and infrastructure

*Environmental standards, objectives and targets to evaluate significance include:*

- Prescribed limits on waste/emission discharges and / or concentrations
- Ambient air and water quality standards established by law or regulations
- Environmental objectives and targets contained in policy and strategy and
- Approved or statutory plans that protect areas or allocate, zone or regulate the use of land and natural resources

## **6.8 Probability and acceptability of risk**

Risk-based principles may be used to establish 'rules of thumb' for the acceptability of effects. For example a statistical threshold of significance may be established to define an acceptable incidence of disease per million people exposed to a specified hazard. This approach is often controversial. It is important to document why and how the level of risk has been determined.

A risk-based approach can be useful to address the significance of cumulative effects and ecosystem level changes. Typically, a quantitative risk assessment will not be

possible because of lack of knowledge of the variability of natural systems. However, qualitative ‘rule of thumb’ may be set for cumulative loss or change; for example limiting drainage of wetlands to no more than 25 per cent of the area or some other proportion considered to be significant for maintaining their essential functions of flow regulation, aquatic and bird habitat etc.

The approach taken to evaluate significance should reflect the uncertainty and controversy that characterises a specific proposal, for example:

- Apply technical criteria when the likely changes associated with a proposal can be predicted with reasonable accuracy e.g. standards, environmental quality criteria and risk assessment of certain health impacts; and
- Use a negotiation process when factual information is limited and there is a high degree of uncertainty and/or controversy regarding potential impacts (involving experts or affected or interested parties)

In practice, impacts are likely to be significant if they:

- are extensive over space or time
- are intensive in concentration or in relation to assimilative capacity
- exceed environmental standards or thresholds
- do not comply with environmental policies/ land use plans
- affect ecological sensitive areas and heritage resources
- affect community lifestyle, traditional land uses and values

## **6.9 Preparation of EIS**

The findings of the EIA process need to be communicated in a way that is accessible to a wide range of stakeholders – from ‘lay people’ to decision-makers. Conventionally, this is achieved through the submission of the environmental impact statement (EIS).

Summaries should be prepared in Kiswahili where appropriate and made public.

## **6.10 Impacts assessment tools and techniques**

This process begins during screening and continues through scoping, which identifies the key issues and classifies them into impact categories. The likely impacts are analyzed in greater detail in accordance with terms of reference specifically obtained for this purpose.

Over time a number of EIA tools and techniques have been developed for use in impact identification. In practice, relatively simple methodologies and tools are applied to impact identification (as compared to more complex, data demanding methods which may be used in impact prediction). Experience indicates these simple methods are of proven value for undertaking a systematic approach to impact identification.

The most common tools and techniques used for impact identification are:

- Checklists
- Matrices
- Networks
- Overlays and Geographic Information Systems (GIS)
- Computer expert systems

- Profession experience
- Mathematical and mechanistic models
- Analogue models

### **6.10.1 Checklists**

Checklists are often used to identify direct impacts as well as cumulative impacts. Successful use of this tool however, relies on the experience of the practitioner in identifying the activities and key sensitive resources. Checklists are often used as a tool for identifying impacts at the scoping stage of a project, providing a structured approach for the practitioner to follow. However, use of a checklist does not mean that other activities, such as consultations, are not required during Scoping. The exact form of the checklist can vary according to the type and detail of information required (see example below). For example they can be developed to:

- enable comparison of alternative options
- take into consideration past, present and future actions
- consider impacts on environmental parameters or components (e.g. air quality, ecology, landscape);
- consider impacts on sensitive receptors or geographical areas (e.g. a residential area).

All types of checklist i.e. simple, descriptive, use a tabular format to present information which considers the potential impact of activities of a project on the different components of the environment.

Fig. 6.2 : Example of checklist

Aspects of EIA	Checklist Questions Will the project:	Yes	No	Additional Data needs
Sources of Impacts	1. Require the acquisition or conversion of significant areas of land for reservoir/treatment works etc. (e.g. > 50 ha rural, > 5 ha urban)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2. Result in significant quantities of eroded material, effluent or solid wastes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3. Require significant accommodation or service amenities to support the workforce during construction (eg > 100 manual workers)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receptors of Impacts	4. Flood or otherwise affect areas which support conservation worthy terrestrial or aquatic ecosystems, flora or fauna (eg protected areas, wilderness areas, forest reserves, critical habitats, endangered species); or that contain sites of historical or cultural importance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5. Flood or otherwise affect areas which will affect the livelihoods of local people (eg require population resettlement; affect local industry, agriculture, livestock or fish stocks; reduce the availability of natural resource goods and services)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6. Involve siting sanitation treatment facilities close to human settlements (particularly where locations are susceptible to flooding)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7. Affect sources of water extraction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Impacts	8. Cause a noticeable permanent or seasonal reduction in the volume of ground or surface water supply?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9. Present a significant pollution risk through liquid or solid wastes to humans, sources of water extraction, conservation worthy aquatic ecosystems and species, or commercial fish stocks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10. Change the local hydrology of surface water-bodies (eg streams, rivers, lakes) such that conservation-worthy or commercially significant fish stocks are affected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	11. Increase the risk of diseases in areas of high population density (eg onchocerciasis, filariasis, malaria, hepatitis, gastrointestinal diseases)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12. Induce secondary development, eg along access roads, or in the form of entrepreneurial services for construction and operational activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mitigation Measures	13. Be likely to require mitigation measures that may result in the project being financially or socially unacceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments		<input type="checkbox"/>		
I recommend that the programme be assigned to Category				
Signature: Delegation.....Desk.....				

### 6.12.2 Matrices

A matrix is a grid – like table that can be used to identify the interaction between project activities, which are displayed along one axis, and environmental characteristics that are displayed along the axis. Using the table environmental-activity interactions can be noted in the appropriate cells or intersecting points in the grid. ‘Entries’ are made in the cells to highlight impact severity or other features related to the nature of the impact, for instance:

- Symbols can identify impact type (such as direct, indirect, cumulative) pictorially;
- Numbers or a range of dot sizes can indicate scale; or
- Descriptive comments can be made.

Fig.6.3: Example of matrix

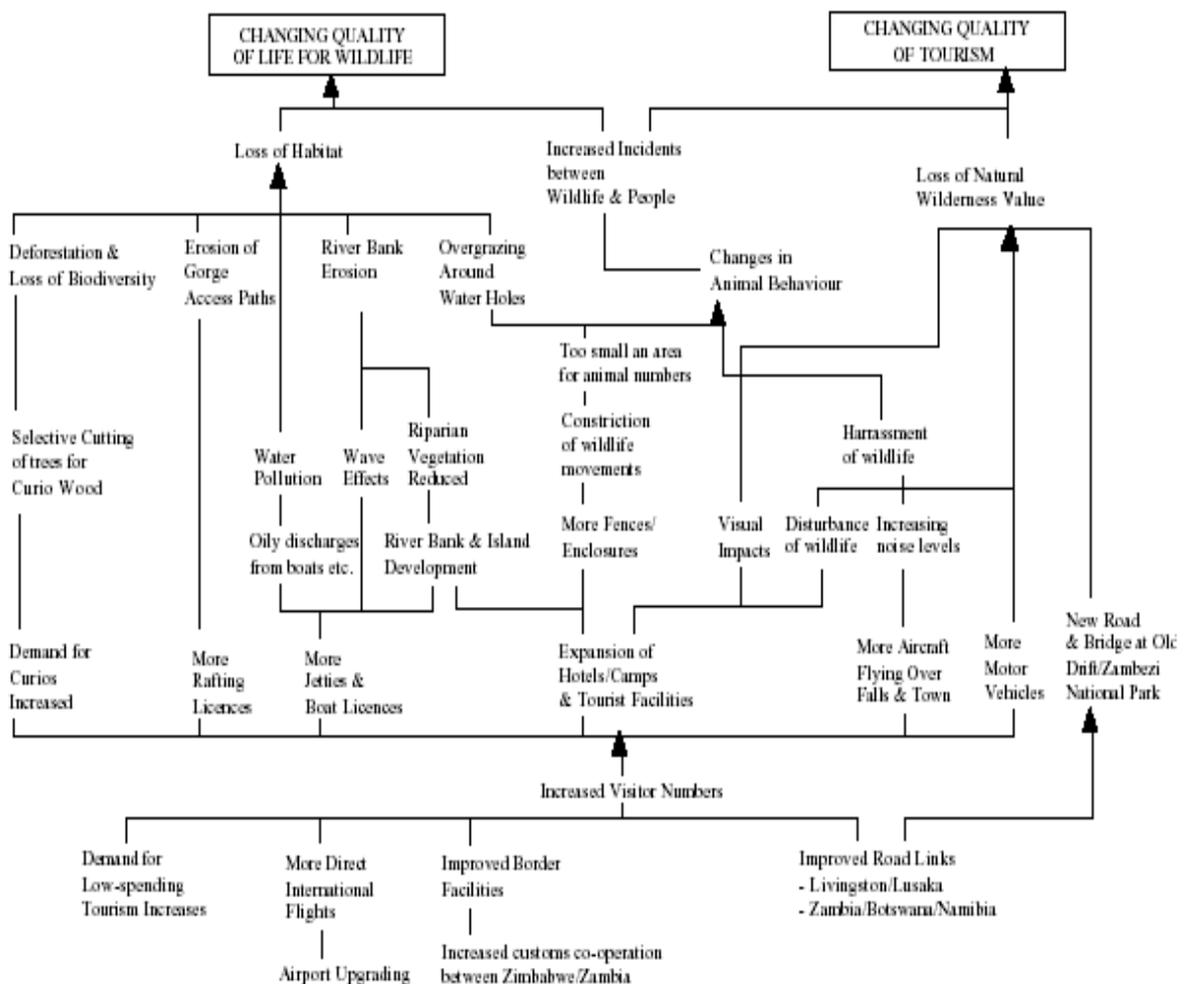
Modified Leopold Matrix		SOCIAL ENVIRONMENT											
		Public participation	Employment	Settlement	Land value	Existing land uses	Risks and anxieties	Personal and social values	Historical/cultural	Landscape/visual	Recreation		
Development	Environmental Effects												
	Treatment	Comminution											
Sedimentation													
Milliscreening													
Oxidation ponds													
Activated sludge													
Trickling filter													
Nutrient removal													
Chlorination													
Further treatment offsite													
Disposal - Land	Rapid infiltration												
	Surface flooding												
	Spray irrigation												
Disposal - Inland Water	River												
	Lake												
Disposal - Marine Water	Estuary												
	Inshore marine												
	Offshore marine												
Deep well injection													

Checklists and matrices are similar in that they both use a tabular format for presenting information. However, the checklist is more simplistic and provides a way of systematically ensuring that all likely impacts are considered. For ease of definition this manual, is based on the assumption that checklists are used for identifying impacts and therefore do not attempt to weight or attach significance to impacts as matrices can do. They are best described as a tool that acts as a ‘prompt’ for the practitioner.

### 6.10.3 Networks

Networks illustrate the cause-effect relationship (Fig. 6.4) of projects and activities and environmental characteristics. They are therefore, useful in identifying and depicting secondary and other subsequent impacts (indirect, cumulative etc) as well. Simplified networks used in conjunction with other methods help to ensure that important second-order impacts are not omitted from investigation. More detailed networks are visually complicated, time-consuming and difficult to produce unless a computer programme is used for the task. However, they can be a useful aid for establishing impact hypotheses and other structured science based approaches to EIA.

**Fig 6.4: Example of Network**



#### **6.10.4 Map Overlays and Geographical Information Systems (GIS)**

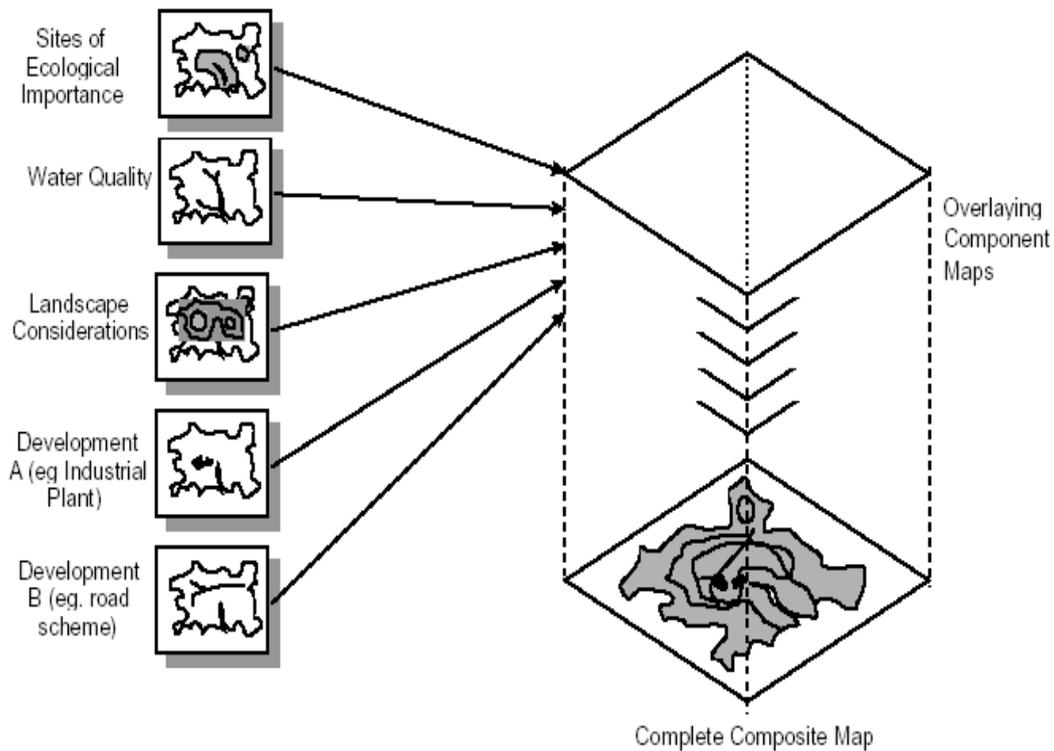
Map overlays and GIS are methods for identifying the spatial distribution of impacts, and can assist in identifying where cumulative impacts and impact interactions may occur as a result of project activities. Both map overlays and GIS methods involve the preparation of maps or layers of information which are then superimposed on one another. This is to provide a composite picture of the baseline environment, identifying the sensitive areas or resources; to show the influences of past, present and future activities on a project or receiving environment; and to identify where several impacts can cumulatively affect one particular receptor or where impact interactions may take place. The methods can be used to produce maps of the cumulative impact on a specific receptor from one project, or can map the impacts from a number of projects on receptors. They can also be used to show previous impacts, and to predict future impacts.

The baseline environmental data for the assessment should be collected, together with information on other actions in the area which may affect the impacts of the project. For the identification of cumulative impacts arising from one project on a particular receptor the steps set out here should be followed:

- map the extent of the receptor, for example residential areas, within a chosen study area;
- establish the spatial distribution of the direct impacts and map these on individual maps;
- overlay the impact maps onto the receptor map. Where the extent of the different impacts can be seen to overlap on a residential area those living there will experience a cumulative impact from the project.

When considering the cumulative impacts from different projects the baseline conditions should be mapped as before. Information on other projects, such as their location and distribution of impacts if known, which may affect the resources should also be mapped. The maps showing the areas of influence of the other actions should be overlain on the map of the project and particular resource, for example a river. From this the areas where the project, together with other developments will potentially cumulatively affect the resource can be established. The diagram below illustrates how this works:

**Fig. 6.5: Example of overlays**



### 6.10.5 Computerized expert systems

Expert or knowledge-based systems are used to assist diagnosis, problem solving and decision-making. A number of such computerized systems have been developed for use in EIA primarily at the early stages of the process. For example, screening and scoping procedures have been automated using a number of rules and a data system that encodes expert knowledge and judgment. The user has to answer a series of questions that have been systematically developed to identify impacts and determine the potential for mitigating them and their significance. Based on the answer given to each question, the expert system moves to the next appropriate question.

Like GIS systems, expert systems are an information-intensive, high-investment method of analysis. As such, they are limited in their current use and application, especially by many developing countries. However, they also have the potential to be a powerful aid to systematic EIA in the future, because they can provide an efficient means of impact identification. Expert systems also can be updated by building in experience gained over time.

### 6.10.6 'Best estimate' or expert/professional judgment

Although not strictly a formal method, professional judgement or expert opinion is wisely used in EIA. All methods of analysis involve professional judgement and the use of advanced tools and models will require expert knowledge. Knowledge and experience gained in EIA work can be used to systematically develop data banks, technical manuals and expert systems, thereby assisting in future projects. The successful application of the formal methods of impact identification described above rests upon professional experience and judgement.

No single impact identification method is suited to use on all occasions, nor is necessary to use only one method at a time (see table 1 below). Combining the useful aspects of two different techniques may be the best approach take. As noted above EIA checklists, matrices and networks can have added value when applied by experts in an interactive process such as science workshops, to identify impacts, model cause-effect relationships and establish impact hypothesis.

The sole reliance on ‘best estimate’ professional judgement may be unavoidable when there is a lack of data to support more rigorous analysis or there is a lack of predictive methodology. Where professional judgement is used without also employing other methods, the judgement and values of the specialist concerned may be open to challenge.

#### **6.10.7 Case studies or Analogue Models**

Analogue models make predictions based on analogous situations. They include comparing the impacts of a proposed development with a similar existing development; comparing the environmental conditions at one site with those at similar sites elsewhere; comparing an unknown environmental impact with a known environmental impact (Therivel, *et .al* 2002)

#### **6.10.8 Quantitative mathematical models**

Mathematical and mechanistic express cause-effect relationships in the form of flow charts or mathematical functions, derived from deterministic or probabilistic relationships. The latter can range from simple direct input-output relationships to more complex dynamic mathematical models with a wide array of interrelationships. Mathematical models can be spatially aggregated, predicting net changes in detailed locations throughout the study area (Therivel *et. al*, 2002). Most of them are used to predict air, water, soil and habitat. More complex computer-based simulations are data demanding and often their use in EIA requires certain simplifying assumptions to be made. Attention also needs to be given to consistency, reliability and adaptability of models.

Examples of quantitative models include:

- Air dispersion models to predict emissions and pollution concentration at various locations resulting from the operation of a coal-fired power plant
- Hydrological models to predict changes in the flow regime of rivers resulting from the construction of a reservoir and
- Ecological models to predict changes in aquatic biota (e.g. benthos, fish) resulting from discharge of toxic substances

Although traditionally this type of analysis has been carried out for physical impacts, there is increasing use of mathematical models to analyse biological, social/demographic and economic impacts

*Uncertainty is a pervasive issue at all stages of the EIA process but it is especially important for impact prediction. Uncertainty is a state of relative knowledge or ignorance. Where cause-effect relationships are ‘known’ and understood however imperfectly, impacts can be forecast (or at least described). Certain impacts are unknown until they occur for example ozone depletion caused by release of CFCs.*

Sources of uncertainty in impact prediction include:

- *Scientific uncertainty*-limited understanding of an ecosystem (or community) and the processes that govern change;
- *Data uncertainty*- restrictions introduced by incomplete or non comparable information, or by insufficient measurement techniques; and
- *Policy uncertainty*- unclear or disputed objectives, standards or guidelines for managing potential hazards and effects

There are a number of approaches that can be used to address uncertainty in impact prediction, including:

- ‘Best’ and ‘worst’ case prediction to illustrate the spread of uncertainty;
- Attaching confidence limits to impact predictions; and
- Sensitivity analysis to determine the effect of small changes in impact magnitude

The relationship between impact, size and severity may not be linear. Small changes in impact magnitude may cause larger than expected increases or decreases in the severity of environmental change. Where necessary an assessment should be made of the effect that small changes in the magnitude of the impact (e.g.<10%) have on the environment, particularly if significant or valued resources are potentially affected.

**Fig. 6.6: Comparison of impact analysis tools**

	<b>ADVANTAGES</b>	<b>DISADVANTAGES</b>
<b>Checklists</b> -simple -ranking and weighting	<ul style="list-style-type: none"> <li>o simple to understand and use</li> <li>o good for site selection and priority setting</li> </ul>	<ul style="list-style-type: none"> <li>o do not distinguish between direct and indirect impacts</li> <li>o do not link action and impact</li> <li>o the process of incorporating values can be controversial</li> </ul>
<b>Matrices</b>	<ul style="list-style-type: none"> <li>o link action to impact</li> <li>o good method for displaying EIA results</li> </ul>	<ul style="list-style-type: none"> <li>o difficult to distinguish direct and indirect impacts</li> <li>o significant potential for double-counting of impacts</li> </ul>
<b>Networks</b>	<ul style="list-style-type: none"> <li>o link action to impact</li> <li>o useful in simplified form for checking for second order impacts</li> <li>o handles direct and indirect impacts</li> </ul>	<ul style="list-style-type: none"> <li>o can become very complex if used beyond simplified version</li> </ul>
<b>Overlays</b>	<ul style="list-style-type: none"> <li>o easy to understand</li> <li>o good display method</li> <li>o good siting tool</li> </ul>	<ul style="list-style-type: none"> <li>o address only direct impacts</li> <li>o do not address impact duration or probability</li> </ul>
<b>GIS and computer expert</b>	<ul style="list-style-type: none"> <li>o excellent for impact identification and analysis</li> <li>o good for 'experimenting'</li> </ul>	<ul style="list-style-type: none"> <li>o heavy reliance on knowledge and data</li> <li>o often complex and expensive</li> </ul>

**NB: Factors affecting choice of methods**

The choice of methods and tools can depend on a number of factors including:

- Type and size of the proposal
- Type of alternatives being considered
- Nature of the likely impacts
- Availability of impact identification methods
- Experience of the EIA team with their use and Resources available, information, time, personnel.

For small-scale projects, checklist and matrices will be sufficient while for the complex multi-dimensional projects; sophisticated tools e.g. mathematical model could be applied.

## 6.11 Responsibilities during EIA Processes

### *Project Proponent*

- The project proponent is fully responsible for carrying out EIA study and the preparation of EIS.
- He/She may wish to use the service of EIA consultancy providers.
- Meets all costs of Preliminary Impact Assessment
- Submits to the regulatory authority for review
- Participates in the Review

### *EIA Team*

This is a group of experts, with different professional backgrounds constituted to carry out the EIA study. The size and composition of the team will vary from one project to another.

### *Regulatory Authority*

- The regulatory authority will avail necessary guidance and relevant information on environmental standards, policies and laws.
- May also provide facilitation and guidance (e.g. by providing information on experts, obtaining permits and access to relevant offices) to the EIA team to ensure that the EIA study is carried out smoothly.
- Receives the EIA reports for review by Multi-sectoral Technical Review Committee

### *Stakeholders*

These are individuals, public and private organisations, and civil society groups (NGOs and CBOs) that are affected or may affect the project in one way or the other. These may raise issues of concern about the project, avail information on the local environment and participate in discussion.

## **EXERCISE**

### **Description of the exercise**

Participants break up into groups (size of each group decided by the facilitator) to discuss on the following:

1. a) Based on the knowledge you have acquired identify and predict which impacts will occur as a result of implementing the provided case study and determine the most significant impacts.  
b) Present your results for discussion in the class

## 7.0 IMPACT MITIGATION AND MANAGEMENT MODULE

### 7.1. Outline

- Introduction
- Definitions
- Relevance
- Purpose of mitigation measures
- Objectives of mitigation measures and impact management
- Proponent's responsibility
- Elements of mitigation and principles for their application
- Approaches to impact mitigation
- Environmental management plans
- Decommissioning plan

### 7.2. Introduction

The objective of this module is to make participants understand the role of mitigation in the EIA process, its importance for impact management, its relevance and principles, measures and approaches used.

It is a critical component of the EIA process which aims at avoiding, preventing, minimizing or remedying adverse impacts from happening and keeps those that do occur within acceptable levels. Opportunities for impact mitigation will occur throughout the project cycle.

### 7.3 Definitions

#### *Mitigation measures*

Measures envisaged at avoiding, reducing, preventing and remedying significant adverse effects of development activities while enhancing the environmental and social benefits of a proposal.

### 7.4 Impact management

It is the process of translating mitigation measures into appropriate action plans during project implementation. It involves establishing systems and procedures for ensuring effective monitoring of mitigation measures and taking any other necessary actions when unforeseen impacts occur.

### 7.5 Relevance

Mitigation and impact management ensure that proponents internalize the full environmental costs of their development actions to reduce cost burden to society and thus cost saving to his/her part. Both elements ensure that the EIA process leads to well-planned practical actions to offset the adverse environmental impacts of proposed developments as well as enhancing positive aspects of project proposals. It is a means to guarantee cost-effective environmental safeguard.

## **7.6 Purpose**

The purpose of mitigation is to identify measures that safeguard the environment and the community affected by the proposal. Mitigation is both a creative and practical phase of the EIA process. It seeks to find the best ways and means of avoiding, preventing, minimizing and remedying negative impacts and enhancing positive aspects.

Mitigation measures can either be structural or non structural. Structural measures are such as design or location changes, engineering modification for example in dams, roads, oil and gas exploitation and development or landscape or site treatment. Non-structural measures involves the non engineering or soft measures such as economic instruments, legal, institutional and policy instrument, provision of community services, training and capacity building.

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. A written plan should be prepared for this purpose, and includes a schedule of agreed actions.

## **7.7 Objectives of mitigation measures:**

- i. To find better alternatives and ways of doing things to avoid negative effects
- ii. To enhance the environmental and social benefits of a proposal
- iii. To avoid, minimize or remedy adverse impacts; and
- iv. To ensure that residual adverse impacts are kept within acceptable levels.

Early links should be established between the EIA and project design teams to identify mitigation opportunities and incorporate them into consideration of alternatives and design options. In practice, mitigation is emphasized in the EIA process once the extent of the potential impact of a proposal is reasonably well understood. This typically takes place following impact identification and prediction, and recommended measures for mitigation as an important part of the EIA report. Usually, these measures will be incorporated into the terms and conditions of project approval and implemented during the impact management stage of the EIA process.

## **7.8 Objectives of impact management:**

- i. To ensure that mitigation measures are implemented
- ii. To establish systems and procedures for this purpose
- iii. To monitor the effectiveness of mitigation measures; and
- iv. To take any necessary action when unforeseen impacts occur.

The adverse impacts and consequences of a proposal can occur far beyond the site boundaries of a project. In the past, the real costs of managing impacts of a development projects (particularly in the operational and decommissioning phases of the project cycle) were not accounted for in the economic analyses of project feasibility. As a result, these costs were borne by the affected community or the public at large rather than the proponent.

## 7.9 Proponents' responsibility for mitigation and impact management:

- i. To mitigate impacts through good project design and environmental management
- ii. To maintain and enhance social benefits to the affected communities
- iii. To prepare plans for managing impacts so these are kept within acceptable level
- iv. To avoid or remedy any residual environmental damage

Many proponents have found that good design and impact management can result in significant savings. This outcome is similar to that found in industries applying the principles of cleaner production to improve their environmental performance.

The capital outlay of mitigation measures are less costly if processed during the project design and more expensive if processed after the project design, but have been found to be cost effective over the long run.

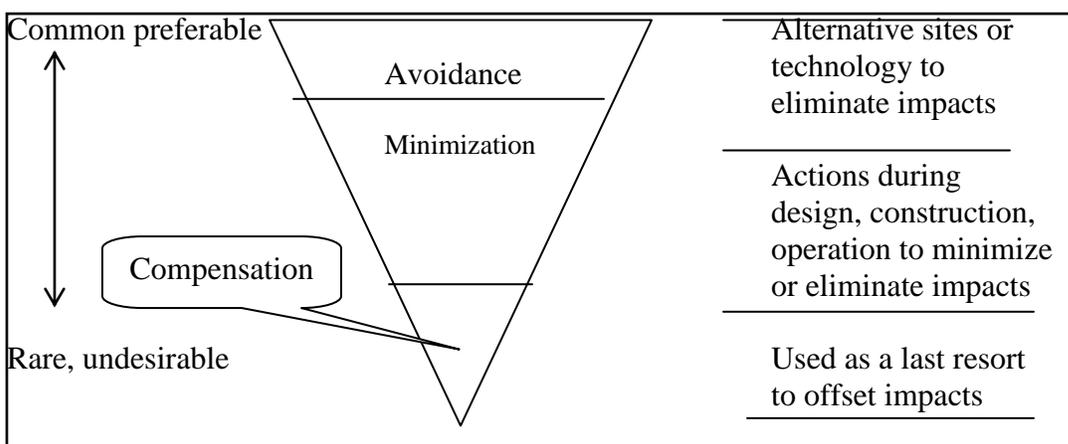
The sustainable agenda is placing new demands on proponents with regard to mitigation and impact management. For example, increasing attention is being given to the principle of 'no net loss of natural and social capital'. In this case, mitigation would include in-kind compensation measure, comprising equivalent, comparable or suitable offsets for all residual environmental impacts of a proposal.

## 7.10 Elements of mitigation and principles for their application:

Main elements of mitigation are organized into hierarchy of actions

- i. First - **avoid** adverse impacts as far as possible by use of preventative measures;
- ii. Second- **minimize or reduce** adverse impacts to 'as low as practicable' levels; and
- iii. Third - **remedy or compensate** for adverse residual impacts, which are unavoidable and cannot be reduced further

**Figure 7.1 Elements of mitigation**



### 7.10.1 Steps of mitigation process:

A three-step process of mitigation can be applied to relate the hierarchy of elements as illustrated in the Figure 7.1 above to the stages of the EIA process when they are

typically applied. Generally, as project design becomes more detailed, the opportunities for impact avoidance narrow and the concern are to minimize and compensate for unavoidable impacts. However, these distinctions are not rigid and opportunities for creative mitigation should be sought at all stages of EIA and project planning.

*Step One: Impact avoidance.* This step is most effective when applied at an early stage of project planning. It can be achieved by:

- i. Not undertaking certain projects or project activities that could result in adverse impacts;
- ii. Avoiding areas that are environmentally sensitive; and
- iii. Putting in place preventative measures to stop adverse impacts from occurring, for example, release of water from a reservoir to maintain a fisheries regime

*Step Two: Impact minimization.* This step is usually taken during impact identification and prediction to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by:

- i. Scaling down or relocating the proposal;
- ii. Redesigning elements of the project; and
- iii. Taking supplementary measures to manage the impacts.

*Step Three: Impact compensation.* This step is usually applied to remedy unavoidable residual adverse impacts. It can be achieved by:

- i. Rehabilitation of the affected site or environment, for example, by habitat enhancement and restocking fish;
- ii. Restoration of the affected site or environment to its previous state or better, as typically required for mine sites, forestry roads and seismic lines; and
- iii. Replacement of the same resource values at another location, for example, by wetland engineering to provide an equivalent area to that lost to drainage or rainfall.

### **7.10.2 Principles for their application**

Key principles for the application of mitigation consistent with the mitigation hierarchy include the following:

- i. preference to avoid and prevent impacts
- ii. consider feasible alternatives to the proposal and identify the best practicable environmental option
- iii. identify customized measures to minimize each of the main impacts predicted
- iv. ensure that the mitigation measures are appropriate, environmentally sound and cost-effective; and
- v. use compensation or remedial options as a last resort

## **7.11 Approaches for impact mitigation**

Depending on the timing of the project cycle and the nature of impacts, a number of approaches can be taken to achieve the objectives of mitigation. These include:

- i. Developing environmentally better alternatives to the proposal;
- ii. Making changes to project planning and design;
- iii. Carrying out impact monitoring and management; and
- iv. Compensating for impacts by
  - Monetary payment
  - In-kind measures
  - Site remediation bonds
  - A resettlement plan.

### **7.11.1 Developing better alternatives**

The development of alternatives to a proposed project is part of a comprehensive approach to mitigation. A broad range of alternatives can be generated at the earliest stages of project planning and design, when the process is still flexible. At the later stages of project design, it is more realistic to identify feasible alternatives to the proposal. For example, impacts may be avoided or reduced by a reconsideration of the site or design alternatives and identifying the best practicable environmental option.

### **7.11.2 Making changes to project planning and design**

Early consideration of environmental factors and impacts in project planning and design facilitates impact avoidance and minimization. This requires coordination of the engineering, planning and EIA teams to:

- Address the likely impact throughout the life cycle of the project, including decommissioning; and
- Identify the best practicable ways and means of mitigating them.

In practice, the elements of mitigation and the measures identified on a proposal will be tailored to the major impacts and the environment and community affected. For example, almost all development proposals involve disturbance of the land surface. This is usually extensive for major linear projects (roads, pipelines), dams and reservoirs, and large-scale agriculture, forestry and housing schemes. Environmental impacts of particular concern can include drainage of wetlands, conversion of natural areas, or expansion into areas that are vulnerable to natural hazards.

An example of general considerations to be taken into account when mitigating the environmental impacts of housing schemes is described in Box 7.1 .

### **Box 7.1 Mitigation of large scale housing projects**

<b>Major adverse impacts</b>	<b>Mitigating measure</b>
Displacement of existing land uses	Ensure that due consideration is given to the proper trade-offs between land values for housing and those of other uses, such as prime farmland, forests or natural habitats of value to society as a whole. Review existing planning and design standards to ensure that they are suited to local conditions and not unnecessarily wasteful of land. Make any necessary changes, for example by drafting new regulations.
Destruction of environmentally critical areas	Ensure that regionally critical environmental sites, such as forested areas, major bodies and wetlands, habitats containing rare and endangered species, etc., are identified and not threatened by project location. Identify mitigation measures to avoid, reduce or compensate for environmental impacts and to enhance the environmental and community benefits of the proposal.

*Source: adapted from the World Bank, 1991*

#### **7.11.3 Carrying out impact management and monitoring**

Mitigation measures are implemented as part of impact management plan. This process is accompanied by monitoring to check that impacts are 'as predicted'. When unforeseen impacts or problems occur, they can require corrective actions to keep them within acceptable levels, thereby changing the mitigation measures recommended in an EIA and/or design new or more mitigation measures through organizing environmental audit. Detailed discussion on environmental monitoring and audit is given their respective modules.

In some cases, it may be necessary to establish or strengthen impact management systems to facilitate the implementation of mitigation measures during project construction and operation. These supporting actions should be identified as part of the Environmental and Social Management Plan. They can include the establishment of an environmental management system (EMS) based upon ISO 14000 guidelines for strengthening particular arrangements for impact management. Any other supporting actions to implement these measures, such as training and capacity building, should also be specified.

The management of social impacts associated with the influx of a temporary workforce and additional population will require specific mitigation measures. These include the provision of:

- improved transport, water and sewage infrastructure;
- expanded social and health care services, including measures to target specific impacts;

- better support and counselling services to cope with socio-economic changes; and
- Additional recreational areas and facilities, including full replacement of any areas lost to development.

#### **7.11.4 Compensating for impacts**

There are many ways of offsetting the impact of project on the environment and community as explained below.

##### *Monetary compensation*

Traditionally, compensation has meant payment for loss of land or amenity affected by the project. This approach can be appropriate in certain circumstances; for example, when private property must be expropriated to make way for a project, landowners are paid rent or lump sum compensation for access to or use of their property. In addition, compensation packages, containing a range of offsets, may be negotiated with affected communities. These may include a direct monetary payment or a capital investment by the proponent.

##### *Site remediation bonds*

Recently, attention has also focused on problems of contaminated land and the requirements for site remediation. Where this is potential issue, mitigation measures should be directed at both prevention of contamination and provision for clean up during decommissioning. Because of the time period, project ownership may change or the proponent may be unable to complete the mitigation plan for other reasons. As insurance, a bond system can be used to ensure that sufficient funds will be available for the required mitigation.

##### *Resettlement plans*

Special considerations apply to mitigation of proposals that displace or disrupt the society. Certain types of projects, such as reservoirs and irrigation schemes and public works, are known to cause involuntary resettlement. This is a contentious issue because it involves far more than a mere relocated and re-housing people; in addition, income sources and access to common property resources are likely to be lost.

Almost certainly, a resettlement plan will be required to ensure that no one is worse off than before, which may not be possible for indigenous people whose culture and lifestyle is tied to a locality. This plan must include the means for those displaced to reconstruct their economies and communities and should include an EIA of the receiving areas. Particular attention should be given to indigenous, minority and vulnerable groups who are most at risk from resettlement.

##### *In-kind compensation*

When significant or net residual loss or damage to the environment is likely, in kind compensation is appropriate. As noted earlier, environmental rehabilitation, restoration or replacement have become standard practices for many proponents. Now, increasing emphasis is given to a broader range of compensation measures to offset impacts and

assure the sustainability of development projects. These include impact compensation “trading”, such as offsetting CO<sub>2</sub> emissions by planting trees to sequester carbon.

### **7.12 Environmental and Social Management Plan (ESMP)**

An Environmental and Social Management Plan (ESMP), also referred to as an impact management plan, is usually prepared as part of EIA reporting. It translates recommended mitigation and monitoring measures into specific actions that will be carried out by the proponent. Depending upon particular requirements, the plan may be included in, or appended to the EIA report or may be a separate document. The ESMP will need to be adjusted to the terms and conditions specified in any project approval. It will then form the basis for impact management during project construction and operation. See appendix 7.1 an example of a E&SMP for SongoSongo Gas Project to Electricity.

The main components of an ESMP are described shown below; these components reflect practices at the World Bank and Tanzania in particular. Although there is no standard format, the ESMP should contain the following:

- i. summary of potential impacts of the proposal
- ii. description of recommended mitigation measures
- iii. statement of their compliance with relevant standards
- iv. allocation of resources and responsibilities for plan implementation
- v. schedule of the actions to be taken
- vi. programme for surveillance, monitoring and auditing,
- vii. contingency plan when impacts are greater than expected and
- viii. Decommissioning plan

### **Box 7.2 Components of an environmental and social management plan (ESMP)**

The following aspects should typically be addressed within an ESMP:

**Summary of the potential impacts of the proposed project:** The predicted adverse environmental and social impacts for which mitigation is required should be identified and briefly summarized. Cross-referencing to the EIA report or other documentation is recommended.

**Description of the recommended mitigation measures:** Each mitigation measure should be briefly described with reference to the impact to which it relates and the conditions under which it is required (for example, continuously or in the event of contingencies). These should be accompanied by, or referenced to, project design and operating procedures that elaborate on the technical aspects of implementing the various measures.

**Description of monitoring and auditing program:** The monitoring and auditing programs should clearly indicate the linkages between impacts identified in the EIA report, measurement indicators, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions.

**Institutional arrangements:** Responsibilities for mitigation and monitoring should be clearly defined, including arrangements for co-ordination between the various actors responsible for mitigation.

#### **Capacity Building and Training Programmes**

To support timely and effective implementation of the project components and mitigation measures, an assessment and evaluation of the capability of environmental units and other institutions responsible for environmental management is necessary.

**Implementation schedule and reporting procedures:** The timing, frequency and duration of mitigation measure should be specified in an implementation schedule, showing links with overall project implementation. Procedures to provide information on the progress and results of mitigation and monitoring measures should also be clearly specified.

**Cost estimates and sources of funds and allocation of responsibilities:** These should be specified for both the initial investment and recurring expenses for implementing all measures contained in the ESMP, integrated into the total project costs, and factored into loan negotiations.

*Source: World Bank, 1999; NEMC 2001*

The ESMP should contain commitments that are binding on the proponent. It can be translated into project documentation and provide the basis for a legal contract that sets out the responsibilities of the proponent. In turn, the proponent can use the ESMP to establish environmental performance standards and requirements for those carrying out the works or providing supplies. An ESMP can also be used to prepare an environmental management system for the operational phase of the project.

**Table 7.1: An example of impact management matrix**

IMPACT	MITIGATION	RESPONSIBLE INSTITUTION	TIME FRAME	ESTIMATED COST (US \$)
<b>Pre- Construction Phase</b>				
<p><b>Existing unsafe facilities:</b></p> <p>These include the wooden wharf and the concrete jetty. The wooden wharf needs to be demolished and the concrete jetty to be repaired.</p>	<p>The wooden wharf shall be demolished since it is in poor condition. The concrete jetty shall be repaired to ensure that it is safe for construction and future use.</p>	Songas	To start during clearance of vegetation.	5,000.00
<b>Construction Phase: Songo Songo Island</b>				
<p><b>Community health</b></p> <p>Contact between workers and villagers may increase cases of communicable sexually transmitted diseases including HIV/AIDS as well as malaria and cholera.</p>	<ul style="list-style-type: none"> <li>• Accommodate all the project and contractor staff at the project facilities on the project site;</li> <li>• Restrict movement or interaction of the contractor staff with the villagers;</li> <li>• Use video displays to show the impact of HIV/AIDS to the islanders</li> </ul>	Songas in collaboration with District Authority and Village Government	Throughout clearance of vegetation and construction period.	30,000.00
<b>Construction Phase: Marine Pipeline</b>				
<p><b>Impact of pipeline construction on fishing activities:</b></p> <p>Marine pipeline construction activities may</p>	<p>Whenever, possible Islanders should be allowed to use all project areas except where there is a risk to project facilities. Buoy markers will be put along the pipeline to identify</p>	Songas	Throughout project life	3,000.00

interfere with fishing activities especially during pipeline construction when the villagers will have no access to the area allocated for the marine pipeline corridor.	marine pipeline and will not affect the livelihood of the fishermen or their source of income.			
<b>Construction Phase: Land Pipeline</b>				
<b>New Claims</b>  During the construction phase new compensation claims for crops and land acquisitions may surface. These should be handled with care as they could affect people's lives and cause loss of income.	Songas shall establish system to handle such claims on a fair and adequate basis. A full ongoing and up to date list of all claims or complaints will be maintained by Songas and responses rendered.	Songas in collaboration with TPDC, District and Local Authorities.	Throughout construction period.	<b>4.0 New Claims</b> During the construction phase new compensation claims for crops and land acquisitions may surface. These should be handled with care as they could affect people's lives and cause loss of income.
<b>Construction Phase: Ubungo Power Plant</b>				
<b>Health of workers</b>  Workers may experience problems of airborne dust, fires and accidents from the contractor works if they occur may affect the workers.	In order to safeguard the workers' health from exposure to PCBs during excavation near the 33 kV switch yard, workers will be provided with proper protective gear as recommended by IFC General Health	Songas	Throughout construction period.	70,000.00

Construction work may also endanger safety of TANESCO staff due to accidents and fires.	and Safety Guidelines.			
<b>Operational Phase: Songo Songo Island</b>				
<b>1.0. Risk assessment</b> There is a need to undertake a Risk Assessment study on the project facilities so as to come up with an Emergency Response Plan from the same.	Carry out hazard identification (HAZID) and hazard operability (HAZOP) studies for the gas processing plant, marine pipeline, land pipeline and Ubungo Plant	Songas in collaboration with GoT.	To be operational throughout the project life, to begin 6 months before first Gas.	150,000.00

**Source: Modified from Songas ESMP**

### 7.13 Decommissioning Plan

This is a plan to detail the safe closure of the project. The decommissioning plan shall be prepared by the proponent and submitted to the regulatory authority for review and record. The proponent shall have to rehabilitate the project area according to the activities highlighted in the decommissioning plan. The decommissioning plan outlines activities that are to be undertaken to ensure that the project site is returned to a state that it can be useful for other activities after the end of the project. The decommissioning plan should also contain means to mitigate the decommissioning impacts. Furthermore, the plan should clarify monitoring requirements to be undertaken by the regulatory authority, specify future use and ownership of the site/facilities.

The following are the steps necessary to design a proper decommissioning plan:

- i. Identify the items, facilities and aspects such as loss of jobs and other social amenities that have to be reinstated and concluded
- ii. Identify parameters and key indicators such as air quality, water quality, aesthetics that require to be mitigated and monitored

**Further reading:** *Volumes 2 and 3 of the World Bank Environmental Assessment Sourcebook and its various Updates.*

## **8.0 EIA REPORT FORMAT MODULE**

### **8.1 Outline**

- Introduction
- Definition
  - PER
  - EIS (EIA report, ES and EA)
- Objective
- Relevance
- Format
- Responsibilities

### **8.2 Introduction**

The EIA report or impact statement is a primary document for decision-making. It organises the information obtained and synthesises the results of the studies and consultations undertaken. A full yet concise account should be given of the likely impacts of a proposal, the recommended measures for mitigating and managing them and the significance of any residual effects. The stakeholders for the EIS report includes the authorising and implementing agencies, other interested parties and the affected public. Because of its importance as a communication tool, the EIA report needs to be well organised and clearly written. An effective report will be written in plain language for non-experts but also to appropriate technical standards.

A number of different names are used for the report that is prepared on the findings of the EIA process. Other terms commonly used for the same document include environmental impact assessment (EIA), environmental statement (ES), environmental assessment (EA) and environmental impact statement (EIS). Further variations may be introduced by the terminology used in different countries. Despite the different names, EIA reports have the same basic purpose, approach and structure.

Usually, the proponent is responsible for the preparation of the EIA report. The information contained in the report should meet the terms of reference established at the scoping stage of the EIA process. The terms of reference set out the information that is to be submitted to the responsible environmental agency.

### **8.3 Definition**

A Preliminary Environmental Report (PER) is a document containing the findings of a preliminary environmental assessment of a proposed project.

### **8.4 Objective**

- To ensure that the results of impact assessment are accurately and clearly communicated to all stakeholders

## 8.5 Relevance

The PER is a decision making tool in determining whether a development proposal should be approved, disapproved or require undertaking of full EIA

EIS/EIA report is a tool for decision–making, the findings of the whole EIA process need to be communicated in a way that is easily understood and accessible to a wide range of stakeholders, from “lay people” to decision makers and professionals. Thus the EIS assists:

- The proponent to plan, design and implement the proposal in a way that minimizes or eliminates the negative effects on socio-economic and biophysical environment and, maximizes benefits to all parties in the most cost effective manner.
- Decision makers or responsible authorities to decide whether a proposal should be approved, and if so the terms and conditions that should be adhered to;
- The public to understand the proposal and its likely impacts on the community and environment

## 8.6 Formatting

Typical format of an EIS or PER is as follows:

- Acknowledgement
- Executive Summary
- Acronyms
- Introduction
- Project background, description and alternatives
- Policy, Administrative and Legal Framework
- Baseline or existing Conditions
- Identification and Assessment of Impacts
- Mitigation measures
- Environmental and Social Management Plan
- Environmental and Social Monitoring Plan
- Decommissioning
- References
- Appendices

### 8.6.1 Brief elaborations of the different parts of EIS

#### *The Cover page*

The cover page must display important information prominently and facilitate referencing. It would therefore contain information such as;

- Title of the proposed project
- Location of proposed development
- Developer
- Decision making authority
- Lead consultants

- Contact address and phone
- Report designation
- Date of submission

### *Executive Summary*

This is the first part of the report that most people will read. A two or three page summary of key findings should be written containing the following:

- Title and location of the proposed undertaking
- Name of the proponent and contact
- Name of the consultancy agency
- A brief outline of the proposal
- Results of public consultation
- Alternatives considered
- Major impacts and their Significance
- Mitigation measure/compensation
- The way forward-Environmental and Social Management Plan

To enable dissemination of EIA findings permeate to a large part of the public the Executive Summary of the EIS must be translated into *Kiswahili*. This will be part of the EIS, and follow immediately after the English version.

### *Introduction*

This section gives overview of the projection conception and the necessity of carrying-out an EIA. It discusses:

- Background – how the project was conceived, who the developer is, involved cost, financing of the project and EIA consultant etc.
- Objectives of EIA
- Methodology
- Boundaries of EIA study
- Duration of EIA study

### *Project Background, Description and Alternatives*

This is a more detailed description of the proposal including any reasonable alternatives. A do nothing alternative should also be considered with a view of foregone loss of the expected benefits and future of the environment. Attention should be paid to the major differences between the alternatives.

This section of the report should explain:

- The status of the proposal in the project cycle such as pre-feasibility, feasibility, detailed engineering design etc
- A description of plans/designs and implementation strategies used for impacts forecast and management measures
- The requirements for raw materials e.g. water, energy, equipment etc.
- The planned operational characteristics, its uses, process, products etc.
- Visual aids such as appropriate maps, tables, flow diagrams and photographs

- A comparison of proposal options such as size, sitting, technology layout, energy sources, source of raw materials within existing economic, technical, environmental and social constraints
- A summary of the technical, economic and environmental features of the proposal

#### *Policy, Legal and Institutional Framework*

This section should show how the proposal fits into:

- Relationship to other institutions, plans, policies, strategies and programmes
- Existing policies, legislations and regulation that demand for an EIA study

#### *Baseline Conditions*

This elaborates the existing:

- Spatial, institutional and temporal boundaries
- Baseline conditions: biophysical, social, cultural, economic and land use
- Key trends and anticipated conditions

#### *Public concerns and views*

A concise and complete statement of the nature, scope and results of public consultation is an important section of the report. These particulars are sometimes overlooked or aspects are insufficiently described. Depending on the provision made for public consultation, some or all of the following points can be included:

- Identification of interested and affected stakeholders
- Method(s) used to inform and involve them
- Analysis of views and concerns expressed
- How these were taken into account
- Issues remaining to be resolved

#### *Identification and Assessment of Impacts*

This section details the actual impacts identification, prediction and analysis. It includes description of how beneficial/adverse impacts and direct/indirect are expected to occur. The report should discuss about:-

- Spatial, Institutional and temporal boundaries adopted for the various aspects of the study
- Condition of the biophysical, socio-economic environment as well as trends and the anticipated future environmental conditions
- Environmentally sensitive areas of special or unique values (such as scientific, socio-economic, cultural, visual etc)
- Causes and/or sources of the impacts
- Methods, techniques and standards used to predict or forecast impacts, of how environmental data was gathered
- Uncertainties in predicting impacts
- Significance of the different impacts; and
- Severity of impact (e.g. magnitude, duration, location, direction, reversibility etc.) as well s the likelihood of its occurrence

- Quantitative or qualitative assessment of the costs of different impacts
- Possible measures for avoiding or mitigating the effects of significant impacts
- Clear statement of residual impacts, i.e. those which cannot be avoided or minimized, and recommendation for how these shall be managed.

#### *Mitigation Measures*

This is the action-oriented part of the EIA report. It summarises the measures that have been adopted to ensure that the mitigation measures are implemented and the impacts are in accordance with predictions.

#### *Environmental and Social Management Plan*

This is an action-oriented part of EIA. It is a plan for monitoring and managing the impacts during implementation, operation and decommissioning outlining, what activities the proponent will undertake and which should be the responsibility of government and the public. Environmental and Social Management Plan should:

- Contain a description of the proposed and practical mitigation action plan
- Contain a schedule for implementation
  - Surveillance and monitoring programmes
  - Impact management strategy
  - Contingency and emergency response plans, where necessary
  - Cost Estimates for mitigation measures
  - Reporting, audit and review procedure
  - Any institutional and capacity building requirements
- Assign responsibility for implementation (by name or position of responsibility)
- Briefly present the planned community environmental management project (s) where necessary

#### *Environmental & Social Monitoring and Auditing*

This section outlines the mechanisms for checking environmental performance during the operational life of the project; so it a plan of monitoring the efficacy of mitigation measures as per prediction. Therefore monitoring:

- Present the benchmarks for monitoring program to assess performance
- Provides an opportunity to review the Environmental and Social Management Plan (E&SMP) to take into account emerging issues/impacts
  - Outlines mechanisms for checking the environmental performance of the project
  - Monitoring schedule
  - Involvement of external experts for internal audits
  - Internal capacity building

#### *Decommissioning*

- It explains the environmental restoration activities required at the demise of the project such as future use and ownership of facility

#### *Appendices*

- Glossary and explanation of acronyms
- Listings of individuals and agencies consulted/involved during the EIA

- Sources of data, information and a list of all reference materials used
- EIA study team and other contributors to the report; and
- Terms of Reference for undertaking the EIA study

## **8.7 A successful EIS report will be:**

- Action oriented – by the proponent
- Decision-relevant-to the responsible authority
- User-friendly-for the public

### **8.7.1 Some common shortcoming of EIS reports**

- Objective of proposal, described too narrowly
- Incomplete description of the activity
- Evaluation of alternatives do not adequately cover the environment aspects
- Key impacts not well described
- Sensitive elements in environment overlooked
- Relevant standards and legislation not described

## **8.8 Responsibilities**

### *Developer*

- Prepares the EIS or PER
- Submits EIS or PER to DED for review

### *DED/MT/MD*

- Avail necessary information to developer in preparing the EIS
- Arranges for EIS review by the TRC
- Keeps record of EIS and associated reports
- Submits a copy of EIS report and decision made to NEMC for information
- Disseminates EIS reports to relevant places

### *Other stakeholders*

- Obtain EIS from DED/TD/MD for review

## **8.9 Extra Information**

### Guiding Principles for preparing an Executive Summary for EIS and PER

- Target the audience
- Keep it short
- Avoid jargons
- Make it clear and consistent
- Summarize key findings

## *SELF TEST EXERCISE*

### **Discussion points during session**

The following are examples of points for discussion during or after the EIS report session.

- Distinguish between PER and EIS
- Is EIS a clearance for implementing a development proposal?
- Is it proper for developer to prepare EIS?
- Should we demand EIS in Swahili?

### **Discussion points in small groups**

Participants break up into groups (size of each group decided by the facilitator) to discuss on the following:

- i. Using the provided EIS report, critically evaluate its adequacy
- ii. Where should EIS report be placed for public perusal in the district?
- iii. How best can the general public be informed on the results of EIA study?

Participants record their discussions for presentation to the class

## 9. REVIEW MODULE

### 9.1 Outline

- Introduction
- Definition
- The objectives of review
- The relevance of review
- Quality control in EIA process
- Methodology
- Responsibilities of various actors in the review process
- Format of review report and recommendations
- Submission of the review report
- Exercise

### 9.2 Introduction

This module is about assessing the quality of an EIA report to ensure that information provided by the report complies with the terms of reference and is sufficient for decision making purposes. The module facilitates the understanding of the role and contribution of review of the quality of EIA report and enables trainees to be familiar with methods, criteria, procedure and responsibilities of various actors in the review stage of the EIA process.

### 9.3 Definition

Review is a process that determines whether the impact assessment reports **have** adequately assessed the environmental social and economic effects and are of sufficient relevance and quality for decision-making. In this regard the proponent submits different types of reports to the regulatory authority for review. The reports include: Registration forms, scoping and ToR, Preliminary Environmental Report (PER), Environmental Impact Statement (EIS), Monitoring reports, and Environmental Audit report.

Review collates and collects the range of stakeholders' opinion; ensures that the reviewed document and process complies with the terms of reference. Furthermore it determines whether the proposal complies with existing plans, policies, standards, identifies gaps, inconsistencies and further information or mitigation required.

Review may be undertaken by government, or independent authority; the public in the presence of the proponents and/or consultant.

#### **9.4 Objectives of EIA Review**

There are three broad objectives for reviewing impact assessment reports.

- i) To ensure the quality of reports by;
  - Determining whether the reports provide an adequate assessment of potential environmental and social implications of a proposed project;
  - Ensuring that reports address all key issues, including the consideration of project alternative and designs and
  - Ensuring that the EIS or PER complies with the terms of references (ToR)
- ii) To provide an opportunity for stakeholder and public involvement by;
  - Ensuring that key stakeholders have not only been consulted, but also participated in the EIA process.
  - Allowing stakeholders and public to comment and voice their opinion on reports especially EIS(s).
- iii) To ensure adequacy of the report and sufficiency of information for decision making by;
  - Identifying gaps and further information needed for decision making,
  - Presentation of clear, logical and explicit findings.

#### **9.5. Relevancy of EIA Review**

Review of impact reports is one of the main ‘checks and balances’ to ensure quality control in the EIA process.

The relevancy of the review process can be seen in two ways:

- i) Evaluation of the reports to determine the adequacy of the assessment of environmental effects and proposed mitigation measures as well as the quality of the report for informed decision making by not only to decision makers, to decide whether proposal should be approved and under which terms and conditions, but also to proponents for supporting their obligation to environmental stewardship, cost reduction and facilitating acceptability of sustainable projects and to the public for understanding potential impacts, efforts to minimize them and maximize social benefits.
- ii) Improvement of the report quality and adequacy, when the proponent is aware of the expectations and requirements of the body administering the EIA process.

## 9.6 Quality Control in EIA Process

Review and EIA quality control is usually undertaken at 4 stages in the EIA process, during;

- Screening stage – to decide on the appropriate level of environmental assessment necessary for a specific project (see Screening Module).
- Scoping stage – to define main problems likely impacts and data requirements; to provide opportunities for identification and involvement of stakeholders; to ensure that alternatives are explored and that the above considerations are addressed in the terms of references (see scoping module).
- Review of EIS or PER – to evaluate the adequacy and sufficiency of reports/information for decision making,
- Monitoring and audit stages – to assess level of compliance with project design and implementation and check on the adherence to environmental standards and legislation (see monitoring module).

## 9.7 Methodology

### 9.7.1 Factors to be considered when reviewing EIS and PER

The review process involves/entails asking a number of basic questions before a judgment is made, by considering the following factors *inter alia*:-

- The report has adequately addressed the terms of reference (ToR)
- There is sufficient information on the objectives of the proposal and its environmental setting, consideration of alternatives, impacts, mitigation and monitoring
- The information is correct, scientifically and technically sound.
- The EIA process has been conducted appropriately, and the points of all parties involved have been taken into account.
- Information presented is relevant, concise, logical, understandable to both decision makers and the public
- Commitment to mitigation measures, environmental management and monitoring plans are in place.

### 9.7.2 Tools

The review of adequacy of various reports requires application of the following tools.

- *Guidelines for screening*: This is a guide used for the classification of the development projects requiring or not requiring EIA. The list also alerts the reviewer if particularly sensitive or vulnerable areas are involved.
- *Guidelines for scoping*: These are guiding principles on the procedures to be used in the identification of key issues in the EIA process. These guidelines help reviewers to assess whether an adequate scoping process has been carried out. The scoping process should be documented in the EIS. This provides an important indication for the reviewer of the adequacy of the procedure taken.
- *Guidelines for reporting*: This gives guidance on the format of reports, as well as the aspects to be covered. These guidelines also provide an adequacy check in them and

ensure that the statements are in a form that enables authorities to make well-informed decision.

- **Guidelines for review**  
This gives guidance on how to organize the review process, criteria used in evaluating the reports and evaluation of combined review areas and their rating for overall assessment.
- *Checklist of environmental characteristics*: This is a list of environmental characteristics that may be used by the reviewer to identify environmental factors which may potentially be affected by development actions, or which might place significant constraints on a proposed development. Such a list may not be exhaustive; the reviewer should judge whether to seek the assistance of an expert.
- *Checklist of activities*: This list enumerates development actions which, based on expert judgment and past experience, are likely to result in significant environmental impacts
- *Checklist of compliance with ToR*: This is a list of issues/requirements pointed out for consideration during scoping.
- *Checklist for data management*: The reviewer will have a checklist indicating how data was acquired, analysed, used and stored.
- *Checklist for data/expertise diversions*: sometimes, changes are made in the composition and type of expertise and data collected during the execution of the EIA contrary to the agreement. Such changes may affect the adequacy and quality of the EIS. The reviewer will have to check for such events.
- *Site verification visits*: In addition to the review guidelines, other relevant tools that aid the review process to arrive at a proper decision are site verification visits and discussions with local officials and residents.

### **9.7.3 Steps involved in organizing the review of EIA reports**

Whatever approach is taken to EIA review, the following steps have been identified as common for EIA review. The responsible authority should:-

- *Set the scale and depth of review*: assess time and intensity and availability of resources for review.
- *Inform reviewers*: send the relevant documents (number of copies submitted for review will depend on numbers of members), arrange verification visit and ensure field report is submitted.
- *Make necessary arrangements* to co-opt additional members depending on the nature of the proposal and associated environmental issues and aspects if necessary.

- *Use input from stakeholders:* organising public review and hearings can provide significant stakeholder inputs. While conducting formal reviews, a notification of the existence of environmental assessment report should be made and the public invited to consult these reports at strategic public places and submit their comments to the DTRC secretariat (i.e. District Environmental Coordinator). The result will be collated and summarized for purposes of improving decision-making during the review meeting.
- *Identify review criteria:* different review criteria now exist from which to select. Additional consideration should be given to the requirements of the TOR and scoping guidelines and available documentation of past review of comparable EISs.
- *Organise site visit-* physical verification is conducted by members of TRC and report is prepared for presentation to multi-sectoral review meeting
- *Carry out an internal scrutiny* of the report involving various subject matter specialists (SMS) within the District, Municipality or Town Council before convening a District Technical Review meeting
- *Carry out the review* by using *formal Multi-sectoral Technical Review Committee* to identify the deficiencies and strengths in the EIS, focusing on crucial shortcomings observed in the report. The meeting would have the following in the agenda:
  - The secretariat provides an overview and findings of the EIS,
  - A site visit report is presented,
  - Further elaboration about the proposed development project is provided by the proponent (or a consultant)
  - Members of the review team will be invited to provide comments on strengths and weaknesses (gaps and inconsistencies or shortcoming) of the report.
  - Suggestions on required remedial measures including further studies and conditions.

Note that where there is controversy public hearing will be required

- *Determine the required remedial measures:* when the report fails to meet the required standards, call for either a supplementary EIS attaching conditions for implementation in case of easily rectifiable shortcomings; or need for monitoring during implementation and operation in case of minor shortcomings.
- *Give recommendations:* Provide recommendations on environmental acceptability of a project, including specifications on terms and conditions as well as alternatives and standards.
- *Publish the review report:* A clear statement that no serious shortcomings are noted or an overview of these including recommendations on how they can be remedied.

#### **9.7.4 Criteria for Evaluating Adequacy of EIA Reports**

The review of the adequacy of EIS should be governed by environmental assessment review criteria. Effective review criteria should allow a competent authority to disclose all relevant environmental considerations associated with a project and also provide information needed by decision-makers to assess the acceptability of the environmental consequences. In particular, the competent authority has to:

- Ensure that all relevant information has been analysed and presented,
- Assess the validity, accuracy, gaps and inconsistencies of information contained in the EIS;
- Quickly become familiar with project proposal and consider whether additional information is needed;
- Assess the significance of the project's environmental effects;
- Evaluate the need for mitigation and monitoring of environmental impacts and
- Advice on whether or not a project should be allowed to proceed and under what conditions.

#### **9.7.5 Review Criteria**

***Review Area I: Description of the Development, Local Environment and Baseline Conditions:***

##### *a) Description of the Development*

- The purpose and objectives of the proposed development is clearly stipulated.
- Adequate description of size, scale and design
- Types and quantities of material and inputs needed during pre-construction, construction and operational phases identified.
- The types and quantities of wastes, energy and residual materials and the rate at which these will be produced estimated.
- The description of methods used to make these estimations, and the proposed methods of waste treatments and the identified residual materials.

##### *b) Site Description*

- The location and area of land affected by the development as shown on maps and the current land uses of this area clearly demarcated.
- The broader definition of affected site, enough to include any potential effects occurring away from the construction site (e.g. dispersal of pollutants, traffic, changes in channel capacity of water sources as a result of increased surface run off etc.)

*c) Baseline Conditions*

- A description of the current biophysical, ecological, socio-economic and cultural baseline conditions and, prediction of the future condition if the project did not take place.
- The explanation of methods used to obtain the information.
- Baseline data should be gathered in such a way that the importance of the particular area to be affected can be planned into the context of the region or surrounding area and that the effect of the proposed change be predicted and monitored.

*Review Area II: Identification and Evaluation of Key Impacts*

*a) Identification of Impacts*

- The methodology used to identify and analyse likely impacts (both negative and positive) clearly outlined.
- The consulted guidelines, checklists, matrices, previous best practice examples of Environmental Impact Assessments on similar projects (whichever are appropriate) also included.
- Consider impacts, in terms of positive or negative, short or long terms, permanent or temporary, direct or indirect and reversibility.
- The logic used to identify the key impacts on human beings, flora and fauna, soil, water, air, climate, landscape, cultural heritage, or their interaction, explained.

*b) Residual Impacts*

- Remaining impacts after mitigation are assessed using the appropriate national and international quality standards where available. Where no such standards exist, the assumptions and value systems used to assess significance should be justified.
- A clear statement of the residual impacts and their significance is provided. This is essential for decision-making since it reflects the "cost" of the proposal in social and environmental terms.

*c) Cumulative impacts*

- Consideration for possibility of cumulative impacts where impacts on the environment take place so frequently in time or so densely in space that the environment cannot assimilate the effects. Cumulative impacts may also occur when impacts from one activity combine with those of another to produce a greater impact or a different impact (also referred to as synergistic effects).

*d) Prediction of Impact Magnitude*

- The magnitude of each impact determined as predicted deviation from the baseline conditions, during the pre-construction, construction and operation phase.
- The data used to estimate the magnitude should be clearly described.
- The methods used to predict impact magnitude described.

*e) Assessment of Impact Significance*

- The significance of impacts assessed using the appropriate national and international quality standards where available.
- The assumption and value system used to assess significance justified if no standards exist.

*Review Area III: Alternatives, Mitigation and Commitment*

*a) Alternatives*

- Alternative sites, undertakings, processes, technologies, design, and operating conditions are considered.
- The main environmental advantages and disadvantages discussed and the reasons for the final choice given.

*b) Mitigation*

- Specific mitigation measures are identified on all significant impacts. Mitigation methods considered may include modification of the project, compensation and the provision of alternative facilities as well as pollution control.
- Effectiveness of mitigation methods is ascertained. Where the effectiveness is uncertain justify the acceptance of the suggested interventions/assumptions.
- Effective environmental and social management and monitoring plan is in place.

*c) Commitment to Mitigation*

- The proponent has to commit funding to implement the identified mitigation measures and agreed environmental management and monitoring plan. These commitments shall be seen in the project policy and administrative arrangement.

***Review Area IV: Public Participation and Communication of Results: Pending***

*a) Stakeholders participation*

- Concerned stakeholders (e.g. government agencies, private sector, individuals, groups, NGOs ) are identified, adequately consulted and their concerns, issues and views are accounted for in the development of mitigation measures.

*b) Presentation*

- The presentation of information should be concise logical and understandable.
- Maps, diagrams, tables etc., where appropriate, should complement text. Technical information should be provided in the appendices.

*c) Balance*

- The environmental impact statement should be an independent study of environmental impacts with focused objectives and not a best-case statement for the development.
- Prominence and emphasis given to either negative or positive impacts in a balanced manner.

d) *Non-technical Executive Summary*

- A non-technical executive summary outlining the main conclusions and how they were reached. The summary should be comprehensive, containing at least a brief description of the project and the environment, the identified impacts of the proposed development, an account of the main mitigating measures to be undertaken by the developer, and a description of any remaining or residual impacts.

This non-technical executive summary should also be translated into Kiswahili.

***Overall Assessment of EIS***

At the end of the review process the EIS may be rated or graded as;

- A. (81% – 100 %) Excellent, no task left incomplete
- B. (71% – 80%) Good, only minor omissions and inadequacies
- C. (61% – 70%) Satisfactory despite omissions and inadequacies
- D. (51% – 60%) Parts are well attempted but must as a whole be considered just unsatisfactory because of omissions and/or inadequacies
- E. (41% – 50 %) Poor, significant omissions or inadequacies
- F. (<41%) Very poor, important tasks poorly done or not attempted

If overall performance is below C, then revision should be done.

Normally, a brief summary of the key factors which determine the overall rating is provided, including an assessment of the strengths and weaknesses of the report as well any need for further study, and inputs required for impact monitoring and management by the proponent or the government.

**Table 9.1 Summarized Review Report Form**

Review areas		Review criteria	Performance Against criteria	Weighted Rating	Remarks
1	Description of the Development Local Environment and Baseline conditions	<ul style="list-style-type: none"> <li>• Description of the Development</li> <li>• Local Environment and</li> <li>• Baseline conditions.</li> </ul>		15	
2	Identification and Evaluation of key impacts	<ul style="list-style-type: none"> <li>• Identification and Evaluation of key impacts</li> <li>• Residual Impacts</li> <li>• Cumulative impacts</li> <li>• Prediction of Impact Magnitude</li> <li>• Assessment of Impact Significance</li> </ul>		30	
3	Alternatives, mitigations, ESMP, and commitment	<ul style="list-style-type: none"> <li>• Alternatives</li> <li>• Mitigations</li> <li>• ESMP</li> <li>• Commitment</li> </ul>		40	
4	Stakeholder participation and communication of results	<ul style="list-style-type: none"> <li>• Stakeholder participation</li> <li>• Presentation</li> <li>• Balance</li> <li>• Non-technical summary</li> </ul>		15	
<b>Total</b>				<b>100</b>	

## 9.8 Responsibilities of various actors in the review process

According to section 87 (Part VI of EMA 2004 local government authority (Municipalities, Districts and Towns) will be required to designate an Environmental Coordinator that will coordinate the Technical Review Committee (MTRC in case of Municipal council, DTRC in case of District Council or TTRC in case of Town Council).

The Technical Review Committee has the responsibility of quality control through review and approval of the following documents: Registration forms, Scoping reports and ToR, Preliminary Impact Assessment Reports, Full Environmental Impact Statements and assess their adequacy for decision making.

The Technical Review Committees would be comprised of 11 members including District Environmental Officer and experts working in the respective local authority, 2 or 3 councillors, a representative of District or Regional Secretariat, co-opted members from NGOs and private sector as necessary depending on the nature of the project.

The importance of this Technical Review Committee is essentially to enhance;

- Appropriate technical credibility
- Integration, holistic planning and management and institutional coordination and cooperation
- Accountability and transparency in deciding the fate of a proposal
- Minimise subjectivity, bias and conflict of interests.

*The Environmental Officer on behalf of the MD, DED or TD) will*

- Administer the execution of EIA process
- Issue EIA registration forms and other relevant information to project proponents e.g. policy, legal and administrative requirements
- Screen registration forms, review scoping reports and approve terms of reference for the up coming environmental assessment.
- Act as the link with the national environmental agencies
- Coordinate EIA review process including arranging for physical verification through site visits
- Serve as secretary to the respective TRC
- Prepare technical review reports
- Recommend for issuance of environmental clearance by the Council
- The CD, MD, DED or TD will submit copies of Environmental Clearance to NEMC for record

*National Environment Management Council will*

- Assist TRC of local authorities in reviewing projects which have strong public concern, extensive and far reaching impacts.
- NEMC will also provide any data/information required by local authority to facilitate the review process

#### *Public/Stakeholder Review*

- To provide comments on EIS.

#### *Developer/Proponent*

- Evaluate the adequacy of EIS before submission to formal review.
- Provides financial facilitation
- Participate in the review

### **9.9 Structure of the Review Report and Recommendations**

Following review of the EIS by the cross-sectoral Technical Review Committee (TRC), a technical review report will be compiled by the secretariat for further consideration by the approving agency, which in this case is the District Council.

#### *The contents of the review report*

- Background of the proposed project entailing purpose, location, size, type, processes, resources/inputs and outputs and clarify the environmental planning and other studies conducted.
- A brief of project description and alternatives considered
- Review comments on general and specific issues.

#### *General comments*

- These will include major gaps, deficiencies, or shortcomings observed in the reports
- Will also consider if the report has complied with the prescribed terms of references, policies, laws, regulations and standards and other specific guidelines or sectoral checklists for that particular projects;
- Whether there was adequate public/stakeholder participation in the EIA process,
- Whether there are commitments to mitigation measures, monitoring and management plans,
- Whether the quality of information is clear, credible and accurate for decision-making.

#### *Specific comments*

- The focus of EIS such as:
  - The quality of predicted impacts
  - The quality of mitigation measures
  - Adequate treatment of project alternatives
  - Adequate treatment of monitoring and management plans, their implementation arrangement and feedback
  - Commitment of proponent to monitoring and management plans/programmes
  - The role of public, district and others agencies and institutions.
- Scientific and technical soundness addressing mostly the methodological aspects, i.e. general methodological and approaches which guide the overall EIS preparation and

rationale. The use of sufficient quality data and analytical tools to reach conclusions are important. For instance, use of maps, GIS, cost/benefit analysis etc.

- Clarity of the statement and presentation: for the EIS to be reviewed by the public, it must be well written and understandable. The use of non-technical summary is important and this should also be translated into local language – Kiswahili.

*Recommendations of the review report usually include*

- Environmental clearance/approval with terms and conditions to enable proponent to obtain other necessary licenses/permits,
- Approval subject to ongoing investigation
- Require submission of additional information
- Request for a supplementary EIA report
- In rare cases, the project as formulated may be rejected.

### **9.10 Submission of Review Report**

The TRC review reports and recommendations are finally submitted to the Full Council for approval. In approving the project the Council considers technical and economic feasibility, political factors, environmental issues, macro as well as micro policy priorities and concerns.

## **EXERCISE FOR SELF TEST**

### **Discussion points during session**

The following are examples of points for discussion during or after the review session.

- i) What is the importance of public participation and local involvement in EIA review process?
- ii) Who should be involved in review of EIA reports and what criteria's are to be used
- iii) How might disputes about the approval/rejection of an EIA report be resolved
- iv) What should be the contents of the technical review committee report
- v) Why the review process is also considered a quality control.

### **Discussion points in small groups**

Participants break up into groups (size of each group decided by the facilitator) to discuss on the following:

- i) Critically review the presented case study using review criteria and procedures provided in the review module
- ii) Prepare a review report including recommendations for submission to the Full council for decision making
- iii) Prepare a 10 minutes presentation of your report for discussion in the class

## 10. DECISION MAKING MODULE

### 10.1 Outline

- Introduction
- Definition
- Objectives
- Relevance
- Decision making in EIA process
- Key qualities of decision makers
- Information required for decision-making
- Responsibilities of decision makers
- Expected Outcomes from EIA decision-making
- Means of implementing decisions
- Appeals
- Overall project approval

### 10.2 Introduction

To describe the importance and contribution of EIA in the decision-making process, particularly the final approval of the proposal.

### 10.3 Definition

Decision –making is a process that culminate in a final decision as to whether a proposal should be accepted or not, and determines the applicable conditions. It involves choosing between alternative courses of actions, weighing the benefits and costs and making trade-offs among a range of considerations.

EIA is an information gathering process, which is intended to facilitate environmentally sound decision-making. Often, the views of affected and interested parties are presented directly and decisions are made through an incremental process of negotiation, bargaining and compromise. For major proposals, a number of formal instruments can be used to develop the information necessary for sound decision-making.

### 10.4 Objectives

- To understand the broad trade-offs that must be made among environmental, economic and social factors applicable during decision-making and condition setting.
- To make sound decisions on environmental and social acceptability of the proposed development project.

## **10.5 Relevance**

EIA as an information gathering process, it facilitates informed decision making through consideration of a range of factors including technical, legal, political, social and economic aspects. It is a process that strives to achieve balance and justice among various choices.

*EIA is a key instrument to integrate environmental and social considerations into development decision-making. Its application is strengthened when used with the precautionary principle and other key guidelines for decision-making endorsed at Rio Declaration on Environment and Development and Agenda 21.*

Decision making is the process that culminates in a final decision as to whether a proposal should be accepted or not, and determines the approving conditions. It involves choosing between various courses of actions, weighing the benefits and costs and making trade-offs among a range of considerations. EIA is an integrating process which is intended to facilitate a sound decision, often the views of affected and interested parties are taken into consideration.

## **10.6 Decision making at different stages of EIA process**

The term ‘decision-making’ is used in EIA usually to mean the final approval of a EIS, however, there are a series of ‘intermittent’ decisions made at different stages of EIA process before the final approval as illustrated in Figure 10.1. Depending on the EIA arrangement in place some of the intermittent decisions may be made jointly by the proponent and the regulatory authorities. The main decisions in the EIA process lies with a regulatory authority following consultations and public involvement.

During EIA preparation, the proponent often modifies the proposal to make it more environmentally and socially acceptable. Other decisions made by the proponent include selection of preferred alternatives, and making various choices of project design to avoid or mitigate potential impacts. The regulatory authority decides on the required level of the Impact Assessment and the appropriateness of ToR submitted with scoping report.

The process leading to final approval of EIS for major projects is spearheaded by the National Environment Management Council with the assistance of a Multi-sectoral Technical Review Committee that comprises of 11 members. The National Environment Management Council then recommends for issuance of Environmental permit or disapproval to the Minister responsible for environment.. Typically the decision taken at this stage in the EIA process is a choice between (a) authorization with or without conditions; or (b) refusal

According to the Environmental Management Act of 2004, whether or not the EIS report is approved there will be a record of decision and documentation of how environmental considerations were taken into account and weighed against other considerations.

**Table 10.1: Main decision making points in the EIA process**

<b>ACTION</b>	<b>DECISION-MAKER</b>	<b>OUTCOME (S)</b>
Selection of project design or alternatives to be considered	Proponent	Preferred project alternative or design
Screening of project proposal	EIA regulatory agency	No EIA is require, or preliminary EIA or Full EIA required or Reject the project
Approval of scoping and ToR	Proponent and/or EIA regulatory agency	Approval report and / or TOR
Review and acceptance of EIS	EIA Regulatory agency	Approval or approval with conditions or rejection of EIS
Consideration of EIS, review reports and other planning issues	Planning authority and/or relevant Ministry	Approval of project (with conditions); or rejection of projects

### **10.7 Key qualities and responsibilities of decision makers**

It is important for decision-makers to be aware of their responsibility to implement the EIA process and use its results to better manage the environmental impacts and risks of a proposal. At a minimum, decision-makers need to understand.

- The basic concept and purpose of EIA (and SEA)
- EIA requirements, principles and guidelines that are applicable
- The effectiveness of their implementation and the implications for decision-making
- Limitations that may need to be placed on information and advice contained in an EIA report
- How EIA process and practice measure up to internationally accepted standards and to those in place in comparable countries, and
- The issues associated with public consultation in decision-making including third party and legal challenges to the authorization of proposals subject to EIA

The sustainability agenda places further obligations on decision-makers to have the requisite knowledge and tools to take fuller advantages of EIA as a sustainability instrument

The responsibility of decision makers should include among other things the following:

- Implement the sustainability commitments made at Rio
- Broaden their perspectives of the environment and its values
- Better communicate information and reasons for decisions
- Apply the precautionary principle when addressing the environmental impacts or development proposals
- Look for improved ways of making trade-offs among environmental, economic and social factors

- Use strategic tools to aid decision-making, including SEA for proposed policies and plans and environmental accounting to gain a realistic measure of macro-economic progress.

### **10.8 Information needed for decision making in the EIA process**

The key aspects of EIA reports which decision-makers need to take into account when making final approval and setting conditions for project implementation are summarized in Box 10.1. The list is not exhaustive but generic in order to allow reviews with a view to fine tune the aspects according to locally situation.

#### **Box 10.1: Important information for decision-makers**

##### **Background**

- project background and the most important environmental and social issues involved

##### **Policy context**

- basic development issue or problem being addressed (e.g. flooding, water shortage etc)
- the relationship to environmental policies, legislations, programs and plans

##### **Alternatives**

- alternatives to the proposal (including the best practicable environmental option or equivalent design)

##### **Public involvement**

- key public views
- concerns of affected communities
- areas of agreement and disagreement

##### **Impact analysis**

- costs and benefits
- distribution of gains and losses

##### **Mitigation and monitoring**

- adequacy of proposed mitigation measures and funding
- Appropriateness of environmental and social management plan

##### **Conclusion and recommendations**

- main economic benefits, significant environmental effects and proposed development
- the extent to which the proposal conforms to the principles of sustainable development
- design and operational changes to improve the environmental acceptability of the project

### **10.9 Outcome of decision making**

The responsibility of decision-makers to consider the findings and recommendations of an EIA report varies from one jurisdiction to another. Normally, there are limited qualifications placed on the discretion of the decision-maker to approve or reject a proposal. Depending on the arrangements in place, the decision-maker have to:

- Take account of information in the EIA report
- Provide written reasons for the decision; or
- Act in accordance with recommendations of an EIA review body, unless these are explicitly overturned.

There are a number of different outcomes from decision-making

- The proposal can be approved
- The proposal can be approved with conditions
- The proposal can be placed on hold pending further investigation
- The proposal can be returned for revision and resubmission; and
- The proposal can be rejected outright

### **10.10 Checks and balance for accountability and transparency in the EIA process**

A number of checks and balances are built into EIA process to help ensure accountability and transparency. The procedural controls are important for quality assurance of the information contained in an EIA report. Unless these are in place, the decision-maker may not be in a position to make an informed choice. In addition, leading EIA systems have established conventions and rules or decision-making, which provide a further check on accountability (see Box 3).

#### **Box 10.2: Checks and balances on decision-making**

Some or all of the following rules and conventions for decision-making have been adopted by leading EIA systems:

- no decision will be taken until the EIS report has been received and considered the findings of the EIS report and review are a major determinant of approval and condition setting
- public comment on the EIS report is taken into account in decision-making
- approvals can be refused or withheld, conditions imposed, or modifications demanded at the final decision stage
- the decision is made by a body other than the proponent
- reasons for the decision and the conditions attached to it are published, and
- there is public right of appeal against the decision (where procedures have not been followed or they have been unfairly applied).

### **10.11 Means of implementing decision**

- Establishing performance standards for meeting the conditions preferably as part of a legally binding contract with the proponent
- Requiring the proponent to prepare (or revise) an environmental and social management plan (ESMP) to incorporate these standards and translate the approved conditions into a schedule of actions
- Incorporating environmental management systems (EMS) to ISO 14000 certification for the Environmental Management Plan ; and

- Enforcing compliance with the conditions of approval and performance standards, with penalties for unwarranted breaches.

### **10.12 Appeals**

If the proponent or the public is dissatisfied by the outcome of the decision, a provision for the right to appeal against the decision is provided.

The EMA 2004 directs that appeals shall be processed by an Environmental Tribunal or ordinary Court of Law. This procedure is applicable at the national level, whereas at the local governmental level, a request for further scrutiny will be made to the National Environment Management Council before submitting the appeal to the Environmental Tribunal or Court of law.

### **10.13 Overall project approval**

EIA approval is pre-requisite to obtaining other necessary permits such as business licenses, water use right and certificate of occupancy which are issued by other regulatory authorities.

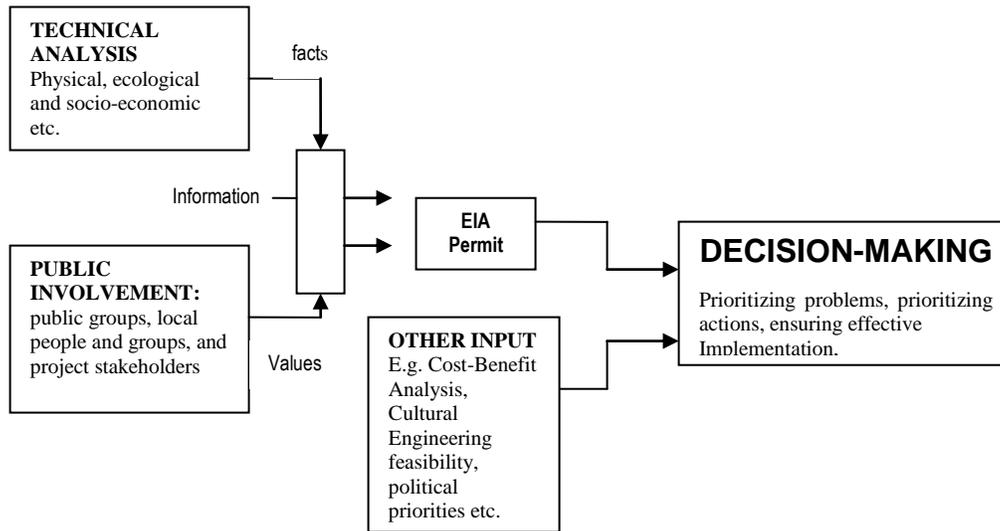
The EIA regulatory authority makes recommendations to the approving body (Lead Ministry) about the implementation of the project and in particular, on any environmental conditions that should be attached to project approval. It also makes recommendations on environmental monitoring and post-audit requirements.

Specifically, the aspects to be covered in the monitoring program includes verification of impact prediction, evaluation of mitigation measures, adherence to approved plans and general compliance with the environmental requirements. This include conditions on the periodic environmental auditing to check on the various aspect of environmental management, and provide feedback on the adequacy of planning or implementation of the development.

The responsibility of ensuring that appropriate monitoring takes place lies with EIA regulatory authority or the approving body, while the proponent is responsible for meeting the accrued costs.

In making final project approval balance must be struck between the benefits and costs, their environmental, economic and social elements must be weighed, and uncertainties and arguments over the significance of risks and impacts.

**Figure10.2 Process leading to decision (adapted from UNEP, 2002)**



The factors that will be important in the final approval of a proposal include:

- Findings of significant impact contained in the EIA report
- Inputs from economic and social appraisals; and
- Other external pressures or political inputs to decision-making

*Taking an account of the EIS report:*

It is a synthesis of 'facts' and 'values'. The manner in which these components are reconciled and documented in the EIS report can have an important bearing on the potential contribution the report makes to decision-making. The usefulness of the EIS report for decision-making also depends on the use of good practice at various stages of the EIA process.

At a minimum, decision makers are expected to take account of information from the EIA process in final approval and condition setting. With an exception of few cases, ideally EIA process does not lead to the rejection of a proposal even when there are findings of potentially significant impacts (although retaining this option is important for process credibility). However, the results of the EIA process usually have a considerable bearing on establishing terms and conditions for project implementation.

When making decisions, those responsible seldom have time to read the EIA report, other than an executive summary. Typically, they rely on technical advice from their experts, whose views are likely to be shaped by policy mandates and responsibilities of decision makers. The general receptivity of decision-makers to the findings of an EIA report will reflect their confidence in the process and its perceived acceptance by other parties. In this regard, public trust in the EIA process, which is built up over time, may carry a particular weight.

### *Relating EIA to other inputs*

As the above figure shows, EIA is undertaken together with economic appraisal, engineering feasibility and other studies. Because of these other inputs, the decision that is made may not be environmental optimal choice. The environmental consequences of the proposal must be balanced against economic, social and other considerations. These trades-offs form the basis for decision-making, and typically environmental considerations carry less weight than economic factors in the approval of development proposals.

In this regard, an important question on whether EIA should be a strictly neutral or an advocacy process that argues the case for the environment varies from case to case. The predominant view is that the role of the EIA practitioner is to:

- Provide a clear, objective statement of the environmental impacts and their mitigation
- Bring the feasible alternatives and the environmentally preferred option to the attention of decision-makers; and more arguably
- Give contestable advice on the environmental acceptability of the proposal.

### *Other inputs*

External inputs to the final decision on a proposal often occur through a wider representation of views and interests. These pressures vary from country to country and project to project. Many large-scale proposals are controversial and encompass a broad range of issues on which opinion can be sharply divided. They can become symbols of needed development or of environmental destruction or social injustice.

# 11 MONITORING MODULE

## 11.1 Outline

- Introduction
- Definition
- Objectives of Monitoring
- Relevance of Monitoring
- Main types of EIA monitoring
- Relevancy of Monitoring
- Methods
- Responsibilities for monitoring
- Format of Monitoring reports
- Submission of reports
- Feedback to the developer

## 11.2. Introduction

Monitoring is a cornerstone of EIA implementation and follow up. Other components are dependent on the scope and type of monitoring information that is provided. The primary aim of monitoring is to provide information that will aid impact management, and to achieve a better understanding of cause-effect relationships and to improve EIA prediction and mitigation methods. Both the short and long-term benefits from undertaking monitoring as part of EIA are widely recognised, although not always realised.

## 11.3. Definition

It is the collection of data through a series of repetitive measurements of environmental parameters (or more generally, to a process of systematic observation) over a long period to provide information on characteristics and functioning of environmental and social variables in space and time.

Monitoring is a planned and systematic collection of environmental data to meet specific objectives and environmental needs.

## 11.4. Objectives of Monitoring

- i. To ensure that the project complies with the existing environmental standards and limits
- ii. To ensure that mitigation measures recommended in the Environmental Impact Statement (EIS) are implemented and maintained throughout the operational life of the project including the post decommissioning era

### **11.5. Relevance of Monitoring**

Without systematic follow-up to decision making, EIA may become a theoretical, preformed process or a paper process to secure development permit rather than a tool to achieve sustainable development. Thus monitoring ensures that the EIS recommendations are practically implemented and maintain a constant feedback of environmental performance of the project throughout its life span.

The data compiled from monitoring programme can be used to:

- i. Document the baseline conditions at the start of the EIA
- ii. Assess performance and monitor compliance with agreed conditions specific in construction permits and operating licences and modify activities or mitigation measures if there are unpredicted harmful effects on the environment
- iii. Review predicted environmental impacts for the effective management of risks and uncertainties
- iv. Identify trends in impacts
- v. Periodically review and alter impact management plans or activities
- vi. Verify the accuracy of past predictions of impacts and the effectiveness of mitigation measures, in order to transfer this experience to future activities of the same type; and
- vii. Review the effectiveness of the environmental management

### **11.6. Methods**

Monitoring requirement should focus on the significant impacts predicted in the EIA report taking account of:

- i. The environmental values to be safeguarded
- ii. The magnitude of each potential impact
- iii. The risk or probability of each impact occurring
- iv. The pathways and boundaries of each impact; and
- v. The confidence in the prediction of each impact

Collection of monitoring data needs to be targeted at information necessary to manage the impacts that are significant or review the aspects of EIA practice that are of particular importance. These aspects should be identified as early as possible in the EIA process to optimise the contribution of monitoring data to the environmental and social management plan

Therefore, monitoring methods involves:

- i. Planning of monitoring programme
- ii. Collection of samples
- iii. Analysis and Interpretation of data
- iv. Reporting of data (documentation and presentation of monitoring findings)
- v. Site visit verification
- vi. Review of compliance reports e.g. environmental and social management plan, audit report

### **11.5.1 Planning of Monitoring Program**

Planning for a monitoring programme requires specific steps that guide a planner or proponent. These steps in designing a monitoring programme vary from one country to another. The general steps are as hereunder:

- i. Defining scope and aspects of coverage (e.g. water, air, terrestrial systems);
- ii. Establishing objectives and data requirements to meet time;
- iii. Setting boundaries and comparison sites for observation and sampling
- iv. Identifying group and institutional responsibilities (including public involvement)
- v. Selecting key indicators to be measured or observed;
- vi. Determine the level of accuracy required in the data;
- vii. Deciding how the data gathered will be analysed interpreted and applied; e.g. with regard to feedback to environmental and social management and to future improvements to EIA process; project planning; and draft monitoring proposals so that all parties are aware of requirements and responsibilities.
- viii. Establish a system for recording, organising and reporting the data;
- ix. Consider how new data can be used to enhance existing management and make sure that it is in a format that will enable it to be used in conjunction with existing data
- x. Specify thresholds of impact acceptability; and
- xi. Set requirements for management action if monitoring indicates these are exceeded

Monitoring programmes need to be constantly reviewed to make sure that relevant information is being supplied, and to identify the time at which they can be stopped.

### **11.5.2 Collection of samples**

Samples are normally collected for measuring specific parameters or indicators, which provide information on the environmental performance of the project. The indicators are carefully chosen, and normally are those, which answer the following simple questions:

- What is about to happen to the state of the environment
- What is happening
- Why is it happening
- What are we doing about it?

Each discipline has established methods for monitoring and data collection. The type, frequency and measurement methods are specified in the Environmental and Social Management Plan. The parameters to be included in the monitoring programme cover all phases of the project cycle i.e. pre-construction, construction, and operation and closure/decommissioning phase. For example, the design of a programme to monitor the impact of a large-scale project involving discharge of toxic waste or effluent into water body may encompass different methods to measure change in water quality, food chains, fish reproduction, reduction in income from fisheries and its effect on the local community. Social, economic and cultural impacts present a specific challenge of measuring changes in collective behaviour and response.

### **11.5.3 Analysis and Interpretation of data**

Monitoring information once gathered is analysed by assembling monitoring data in the form of maps, photographic records, data tables and graphs (histograms, polygons etc).

With the current computer technology, there is available software that can be used to analyse and present data and to check for ongoing compliance (Excel, GIS software, multi criteria evaluation software etc).

Monitoring programmes should provide time series graphs. This can be done by:

- Visual qualitative analysis of the graphs,
- Testing statistical significance of variations
- Determining rates and directions of change; and
- Noting the approach to, or exceeding of critical levels (e.g. Water quality guideline levels).

Some relational changes, such as in chemical constituents in water or soil can be helpful especially when presented graphically. Longitudinal studies based on numerically data or photographic or descriptive records also provide information on changes and trends. Monitoring data needs to be interpreted and reported to a non-scientific audience, including decision makers, the affected community and the general public. This may be the responsibility to a regulatory body, monitoring team or stakeholder group established specifically to bring a broad understanding and a range of views to EIA implementation.

### **11.5.4. Presentation of Monitoring Results**

The reporting of monitoring programme depends on the type and parameters used. A tabular reporting is generally used. Where different types and methods of monitoring have been carried out, the comparability and quality of data sets may need to be addressed and reported. Reports should be in plain language and to appropriate technical standards.

**Table 11.1 An example of a Water Quality Monitoring Programme**

<b>Environmental category:</b>	<b>Water quality</b>
Environmental impact:	Increase in Nitrates, Biocides and Sediments, BOD, COD, Coliforms and presence of heavy metals e.g. lead
Monitoring procedure:	<p>Regular monthly water sample checks (by X-responsible agency) of selected surface water bodies, particularly those used by animals/humans or located near human habitation.</p> <p>Comparison of samples with relevant national/international standards.</p> <p>This monitoring should continue for at least 5 years and be reviewed after the results covering the 5 years period have been assessed.</p> <p><b>After closure</b>, monitoring should continue to a certain period depending on the sensitivity of the project.</p>

### 11.6 Types of monitoring

There are four main types of monitoring,

- (i) *Baseline monitoring*  
The measurement of environmental parameters during pre-project (no project) period in an attempt to determine the nature and ranges of natural variation and where possible to establish the process of change. Baseline monitoring creates a source of data for continuous monitoring of change during project implementation as well as initiating a database of baseline conditions for future incoming development activities.
- (ii) *Impacts/Effects monitoring*  
Involves the measurement of parameters (performance indicators) during project construction and implementation to detect and quantify environmental and social changes, which may have occurred as a result of the project
- (iii) *Compliance monitoring*  
Not directed at environmental parameters, but takes the form of periodic sampling and/or continuous measurements of levels of waste discharge, noise or similar emission or introduction to ensure that specific regulations, conditions and standards are observed and met. Compliance monitoring does not require baseline monitoring to which impacts can be compared or referenced or control site.
- (iv) *Mitigation monitoring*

Aims to determine the suitability and effectiveness of mitigation programmes, designed to diminish or compensate for adverse effects of projects.

A sound baseline is a critical reference point for the conduct of effects monitoring. In turn, effects monitoring establishes the basis for corrective action when actual impacts are unanticipated or worse than predicted. Compliance monitoring carried out through repetitive or periodic measurements, also can be used for this purpose. This may suffice as a safety net for certain projects, for example where the mitigation measures are well tried and known to be effective. However, compliance monitoring will trigger impact management only if regulatory standards or specified conditions are exceeded and on its own may be insufficient for large scale, complex projects.

By themselves, compliance and effect monitoring permit only reactive impact management since they detect violations or adverse changes after the fact. In this manner, it is significant to tie the results of both types of monitoring to pre-determined actions that are triggered on a threshold basis. A more proactive, adaptive approach to impact management can be instituted by combining compliance or effects monitoring with supervision or regular inspection of site clearance, construction and mitigation activities.

Monitoring is undertaken at two levels these are:

- i. *Internal monitoring*, which is routine monitoring undertaken by the proponent and report is being submitted for review to the regulatory agency.
- ii. *External monitoring*, which is the cross-check monitoring undertaken by regulatory agency or environmental managers to ensure the regulatory requirements and standards are being met.

### **11.7 Contents of a monitoring report**

The following items should appear in a monitoring report:

- Development (Project)
- Purpose for monitoring
- Phase of the project
- Parameter/indicator (measurement and units)
- Frequency
- Standard level or norm
- Name and capacity of the person doing/reporting the monitoring
- Costs for monitoring
- Interpretation of the data
- Comment on the data

Monitoring would be more effective when simple observations and reporting particularly from local people are valued and taken into consideration. Verification of such observations by the developer should follow.

## 11.8 Implementation of Environmental Monitoring Plan

The Monitoring Plan is prepared as part of the Environmental Management Plan to mitigate and monitor the impacts of the proposed project.

A budget for the monitoring plan needs to be drawn up and the resources and personnel necessary to carry them out specified. Normally, this will be finalized as part of preparation of the Environmental and Social Management Plan. Alternatively, this can be undertaken as a separate exercise as part of detailed project specifications or incorporated into permitting, licensing or contracting. The latter instruments have an advantage in ensuring enforcement and compliance of monitoring and other requirements.

The cost of EIA related monitoring could vary greatly, depending on the project, the location, the affected environment and potential significance of the impacts. Other things being equal, the greater the level of uncertainty about potentially significant impacts, the higher the cost of monitoring to obtain information that is relevant to impact management and improved understanding. However, the costs can be offset by the benefits which monitoring brings. These may include immediate savings gained by timely action to correct unanticipated impacts.

Depending on the nature and severity of the impact, this might involve one or more of the following measures:

- Stopping or modifying the activity causing excessive impacts,
- Imposing penalties or prosecution where conditions and standards are breached and,
- Scaling up or adding mitigation measures (in situations where there is possible).

Long-term gains can also accrue from baseline and effects monitoring. For example the data can be used to establish a reference basis for managing environmental impacts throughout the life of a project. This information will particularly be helpful to the design of an environmental monitoring system to address the environmental aspects and impacts of the operational phase of the project. Wherever possible, the inputs from monitoring, auditing and other components of EIA implementation should be integrated into the overall Environmental Management Systems (EMS) framework.

Some of the key parameters to be included in a monitoring plan during project development are:-

*a) Pre-Construction Phase (baseline conditions):*

Air quality; noise; hydrometric data; biological parameter; public health, air-borne and water related disease vectors; resettlement, land use, agricultural practices and watershed management, etc.

*b) Construction Phase:*

Air quality; water quality; noise and vibrations; natural terrestrial environment; Aquatic resources/ecosystems; communicable diseases; waste disposal; socio-economic aspects, etc.

*c) Operation Phase:*

Noise and vibration; water quality (water precipitation, oil levels, BOD, metals); hydrometric data (flows, sediment transport, ground water etc); biological parameters; public health, air-borne and water related disease vectors; resettlement/support program; Air quality/emission CO<sub>2</sub>, NO<sub>2</sub>, SO<sub>2</sub>, hydrocarbons; social/community monitoring/public involvement, etc.

*d) Decommissioning phase*

Infrastructure (buildings, machinery); landscape; air quality; noise; loss of jobs; resettlement, land use, safety, loss of goods and services, etc.

Other key aspects that must be considered in designing a monitoring program are:

- Frequency of checks (with initial and final checking items)
- Nature of checks (site visit, sampling and testing survey etc.)
- Duration of monitoring
- Interpretation of monitoring data
- Organization of personnel responsible for monitoring
- Costs involved

**Table 11.2 An example of environmental monitoring plan**

Phase	Parameter	Monitoring Frequency	Sampling Area	Measurement Unit/Method	Target Level /Standard	Responsibility for Monitoring	Annual Costs Estimates (Tsh)
Pre-construction phase							
Construction phase							
Operation Phase							
Decommissioning phase							

## 11.9 Responsibilities

The monitoring is a responsibility of project developer, the regulatory authority and other stakeholders.

i. *Developer*

- Is responsible for carrying out routine monitoring of the project aspects as well as paying for the monitoring activities.
- Prepares monitoring reports and submit to the regulatory authority
- Keep record of the monitoring information.

ii. *The Regulatory Authorities* responsible for receiving monitoring reports as recommended on the EIS and responds to the developer initiate monitoring at its own discretion (at such circumstances it bears the cost)

Keeps record of the monitoring reports.

ii. *Other stakeholders*

- Are responsible to provide information to the regulatory authority and the developer on any particular aspect of the project as may arise. The developer and/or regulatory agency will make further investigation as a follow-up of information or notification received from the stakeholder.

## 11.10 Monitoring Reports

The management of information gained from the overall EIA process lies in the hands of developer and the regulatory authority. Information accrued from the monitoring plan shall be maintained by both developer and regulatory authority.

*Developer*

- Shall collect and manage all the information in proper formats as specified in EIS or normal code of practice
- Shall submit monitoring reports to the regulatory authority bi-annually (i.e. every six (6) months)
- Shall maintain a record of all reported information/complaints from different stakeholders.

*The regulatory authority*

- Shall prepare a written response on the reports.
- To accumulate a database on the environmental performance of the project basing on the monitoring reports.
- To intervene should there arise a controversial or any serious undesired impacts.
- Shall maintain a record of all reported information/complaints from different stakeholders.

### **11.11. Submission of Monitoring Reports and Feedback to the Developer**

Monitoring reports are essential for feedback to both the developer and regulatory Authority. The developer submits monitoring reports to the regulatory authority whilst the authority prepares a written response on reports and submits to the developer for feedback.

## **12. ENVIRONMENTAL AUDIT MODULE**

### **12.1 Outline**

- Introduction
- Definition
- General objectives of environmental audit
- Specific objectives
- Relevance
- Types of Audit
- Methodology
- Responsibilities
- Audit procedures
- Audit reports

### **12.2. Introduction**

Environmental audit is a review/follow-up process similar to that carried out in financial accounting. Both result in a statement of facts, which certifies that practice is (or is not) in accordance with standard procedure. In the case of environmental audit, there is an added level of interpretation, focusing on the factors of performance. The concern is to identify how the aspects, processes or systems under review can be improved. Environmental Audits are less structured than financial accounting and no legal binding.

### **12.3. Definition**

Environmental audit is an independent and objective oriented examination of whether the practice complies with expected standards (Sadler, 1988). Broadly, environmental audit means a check on some aspects of environmental management, and implies some kind of testing and verification.

There are two levels of Environmental Audits, i.e. Environmental Impact Audit and Environmental Management Audit. Environmental Impact Audit involves comparing the impacts predicted in an EIS with those that actually occur after implementation of the project. This definition contrasts with Environmental Management Audit which focuses on public and private corporate structures and programmes for environmental management and the associated risks and liabilities. Glasson and others (2002). Only the Environmental Impact Audit has been discussed in this manual.

### **12.4. General objectives of environmental audit**

The objectives of audit include:

- The organization and interpretation of monitoring data to establish a record of change associated with the implementation of a project or the operation of an organization;

- The process of verification that all or selected parameters measured by an environmental monitoring programs are in compliance with regulatory requirements, internal policies and standards, and established environmental quality performance limits;
- The comparison of project impact predictions with actual impacts for the purpose of assessing the accuracy of predictions
- The assessment of the effectiveness of the environmental management systems, practices and procedures; and
- The determination of the degree and scope of any necessary remedial or control measures in case of non-compliance or in the event that the organization's environmental objectives are not achieved

## **12.5. Specific objectives**

This section discuss differentiates objectives environmental audit for projects that have been subjected to EIA and projects that never been subjected to EIA.

### **12.5.1 Projects subjected to EIA**

Environmental Impact Audit seeks to identify environmental performance of the project in relation to the implementation of the environmental management plan. It evaluates the implementation and effectiveness of the mitigation measures, with an aim of improving predictive accuracy and effectiveness of impact management practices and procedures. It is designed to assess the extent to which the predictions or commitments made/contained in the EIS prior to commencing the implementation of the project are reflected in the monitoring activities during the operational phase of the project.

### **12.5.2. Projects never been subjected to EIA**

Environmental audit seeks to identify environmental problems associated with project activities and improve its environmental performance. The audit examines and assesses current practices and procedures and recommends measures to minimise/mitigate adverse impacts.

## **12.6. Relevance**

In the absence of follow-up, EIA is a linear process without scope for incorporating experience generated by one project into the assessment and management of another. For each new project auditing helps to avoid duplication of research and generation of unnecessary information. The development of an effective feed back mechanism – as a “back end” to the process of EIA- can lead to improvements in the way project impacts are identified and assessed and how assessment and management process operates.

### **12.6.1 Projects subjected to EIA**

Through environmental audit, it is hoped that impact identification methods, predictive techniques and methods and proposed mitigation measures may be improved, and hence making the EIA process more effective and dynamic. Environmental auditing:

- a) Helps to ensure continued attention to environmental protection throughout the operation phase.
- b) Ensures the performance predictions and mitigation measures identified by the EIA are sufficiently effective.
- c) Can accommodate future legislative changes.

### **12.6.2 Projects not subjected to EIA**

Environmental audit for project that may not have been subjected to EIA ensures that all projects, existing and new ones are all brought to the same level of sound environmental performance.

### **12.7. Types of Environmental Audit**

Basically there are three types of environmental audit (modified from Bingham, 1995 adapted from IRA/IIED 2000):

- *Implementation/enforcement audit*: this is undertaken by a regulatory agency to verify that mitigation measures and levels of emission are within limits. This can be done by analyzing their design. Such audits include: activity audit, corporate audits and associate audits.
- *Performance/regulatory audits*: this is a means of identifying compliance status of facilities and is a tool employed by corporate or management agencies i.e. checking whether a particular operation, process, site, company or project comply with relevant legislation (e.g. relocation and compensation)
- *Impact prediction audits*: these have the primary purpose of examining the accuracy and efficacy of impact predictions in the EIS, i.e. testing how accurate the predicting in EIS are by comparing them with actual monitored impacts once the project is underway

### **12.8. Methodologies**

The main methods for conducting an environmental audit are:

- Examination of records and documentation relating to impacts, actions taken to manage them and aspects of performance
- Interviews with management and line staff to corroborate factual information and probe areas of concern; and
- Site inspection to check that environmental measures and controls are operating as described and intended

A distinction can be made between environmental audits conducted as part of EIA and Environmental Management System (EMS) implementation, respectively. EIA related audits, typically, are less structured, project by project in approach and use non-standardized methodology. EMS audits typically are conducted in accordance with ISO

14001 guidance and procedure, and oriented towards continuous improvement in managing the environmental impacts of an organization, site, process, product, supply chain or input-output balances. However, both EIA and EMS audits have objectives, elements of approach and information sources in common.

In summary EIA audits are used to:

- Identify the impacts of project implementation
- Verify whether or not the conditions of approval have been implemented
- Test the accuracy of impact prediction
- Check the effectiveness of mitigation measures
- Improve compliance and performance of EIA practice

Whereas EMS audits include:

- Site audits- to examine all aspects of environmental management of a facility or operation
- Compliance audits – to ensure an organization or development meets pertinent legal, regulatory and voluntary or self imposed standards such as emission limits, discharge permits and operating licenses; and
- Sector or issue-specific audits: to consider key aspects of environmental management and performance, such as waste disposal, energy use, cleaner production, health and safety and supply chains.

### **12.8.1 Projects subjected to EIA**

This type of audit can be defined as an independent reassessment of the project after a given period of time of implementation. In general, it is a specific type of audit carried out on an operation that has been the subject of an EIS. It assesses environmental performance by comparing actual impacts with those predicted in the EIS. Environmental auditing aims at comparing the actual environmental impacts and the impacts predicted in the EIS.

*Environmental auditing involves:*

- a) Review the project EIS, EMP and other related project documents
- b) Review the environmental monitoring reports
- c) Make a physical inspection of project facilities and activities
- d) Conduct interview of the stakeholders.

In performing the above, the following questions have to be considered:

- a) What environmental impacts were predicted for the project concerned
- b) When and where the predictions were stated
- c) What actual impacts have been monitored
- d) Where are the results recorded
- e) How do actual impacts compare with predicted impacts

### 12.8.2 Projects never subjected to EIA

This type of audit can be defined as a specific type of EA carried out to assess the environmental performance of existing projects in relation to existing regulatory and environmental standards.

Environmental audit for project that never been subjected to EIA aims at comparing the environmental performance of the project with the legislative as well as environmental standards. It involves:

- a) *Description of the project*: to include location, site layout, process flow charts, equipment, raw material used, sources of energy, personnel etc.
- b) *Environmental setting*: to include bio-physical, socio-economic and cultural environment
- c) *Stakeholders analysis*: to identify directly and indirectly affected groups
- d) *Impact assessment* (existing and predicted): in assessing the impacts of the project the following questions have to be considered:
  - What are the legislative and environmental standards to be met by the project?
  - What are the impacts of the project?
  - How do actual impacts compare with the environmental standards?
  - Whether monitoring is taking place?
  - Where and how are the results of monitoring being recorded?
- e) The review of the impacts culminates into formulating mitigation measures and monitoring plan of the project.

The responsibilities of carrying out the EA, review of the EA reports and subsequent feedbacks are similar to those detailed in Part A.

### 12.9. Responsibilities of Environmental Auditing

#### *Developer*

Developer has overall responsibility for planning and undertaking environmental audit.

- Project proponents are obliged to prepare auditing protocols
- Appointing auditors based on the audit objectives and scope.
- Carrying out auditing and preparing an audit report
- The developer bears all the cost for the environmental auditing

#### *Regulatory Authority*

- The regulatory authority may undertake regular checks or audits.
- Costs for such audits will be met by the initiator of that audit.

#### *TRC*

- Review audit reports
- TRC may make physical inspection and stakeholders' consultations in order to verify the contents of the audit review.

### *Stakeholders*

- Avail information related to the project.

### **12.10. Audit procedure**

In conducting an environmental audit the following questions have to be considered:

- What environmental impacts were predicted for the project concerned?
- When and where were the predictions stated?
- What actual impacts have been monitored?
- Where are the results recorded?
- How do actual impacts compare with predicted impacts?

These questions need to be addressed for every relevant social and biophysical environmental parameter. In practice, auditing involves several steps as shown in Box 12.1

#### **Box 12.1 Steps to be followed in an audit**

- Identify the projects under consideration, and determine whether any environmental impact assessment was carried out for these projects, whether as a formal EIA or as part of project planning, approval or funding documents
- Determine whether the project(s) were expected to produce major quantifiable impacts on specific components of the physical, biological or human environment. Some projects are not expected to produce any further significant impacts: e.g. building development in an already urbanised area.
- Determine whether the project(s) went ahead substantially as planned: some projects are modified considerably between planning and execution, and impact predictions may no longer apply
- Determine whether routine monitoring has been carried out for these project(s), and whether and where the results are available
- List all impact predictions which are specific enough to be testable. If possible, express those predictions in quantitative form, including a measure of error. This is often difficult: predictions are often vague, and use non-quantified terms such as “likely”, “unlikely”, “significant”, “negligible” etc.
- Determine whether the monitoring programme for the project(s) concerned actually measured the parameters required to test these predictions; and if so, whether the sampling design (e.g. location, frequency and precision of measurements) was statistically adequate to perform such a test.
- Adjust impact predictions, if necessary to take account of any modifications to the design of project(s) made after EIA. Any such adjustments should be made before testing the adjusted predictions against monitoring results.
- Compare impact predictions and monitoring results to determine the accuracy of each prediction.

### **12.11. Environmental Audit Reports**

An audit report must be prepared and submitted to the TRC for review. This should at least have the following suggested contents:

- Executive summary

- Project's current status information
- Audit objectives and scope
- Audit protocol, criteria and methodology used
- Findings and Observations
- Description of key issues including the discovered project strengths and weaknesses
- Recommended actions
- Conclusions
- List of document used/cited as references
- Appendices (photographs, future Plan of Action, consultancy, list of stakeholders consulted, etc.)

### **12.12 Reviews and Verification of Environmental Audit Report**

TRC shall conduct an environmental audit review in relation to accuracy and coverage of key issues. The reviewer shall ensure that in the report

- Comparison between the existing and the predicted impacts in the EIS is made
- Evaluation of the implementation and effectiveness of the mitigation measures recommended in the EMP is done.
- Appropriate recommendations for remedial measures are made

TRC may make physical inspection and stakeholders' consultations in order to verify the contents of the audit review. Further to that during the review the proponent shall be invited for clarification and discussion.

### **12.13 Feedback to the developer**

After the review, it is the responsibility of regulatory authority to provide a feedback to the developer on the environmental performance of the project in relation to the project EMP and measures, the developer should take to address issues raised in the audit report.

## ***SELF TESTING EXERCISE***

### **Description of the exercise**

Participants break up into groups (size of each group decided by the facilitator) to discuss on the following:

1. What are the required resources and capacity to be able to review? and verify contents of the audit report from the project proponent
2. In your views who should carry out environmental audits: the district authority or the developer? What are the pros and cons of your scenario?
3. List existing projects in your district that you think need to be audited. Are there District policies and by-laws that can support this move?
4. Participants record their discussions for presentation to the class.

**NATIONAL ENVIRONMENT MANAGEMENT  
COUNCIL**

**ENVIRONMENTAL ASSESSMENT PRELIMINARY  
REGISTRATION FORM (SAMPLE)**  
*(Complete in Duplicate, Attach project brief)*

Fee .....

Serial No.

**FORM EA1**

**PROPONENT:**

-----

Address for correspondence

-----  
-----  
-----

*Contact person* ----- *Position* -----

*Phone.*----- *Fax No.* -----

**ASSESSMENT NO:**

**FILE NO:**

*National Environment Management Council  
P.O. Box 63154  
DAR ES SALAAM-TANZANIA  
Tel: 2127817  
Fax: 2 150695 or 2134603*

***Note that the requirement for project brief has been specified in Section 86 (1) part VI  
of Environmental Management Act of 2004.***

**1. PROPOSED UNDERTAKING/DEVELOPMENT**

**Title of Proposal (general classification of undertaking)**

.....  
Description of Proposal (nature of undertaking, unit processes [flow diagram], raw materials list of chemicals {source, types and quantities}, storage facilities, wastes/by-products {solid, liquid and gaseous})  
.....

.....  
Scope of Proposal (size of labor force, equipment and machinery, installed/production capacity, product type, area covered facility/proposal, market)  
.....  
.....

**2. PROPOSED SITE**

Location (attach a site plan/map)  
.....

Current zoning  
.....

Distance to nearest residential and/or other facilities.  
.....

Adjacent land uses (existing & proposed)  
.....

Site description  
.....  
.....

**3. INFRASTRUCTURE AND UTILITIES**

Structures (building and other facilities)  
.....

Land required  
.....

Water (source, quantity)  
.....

Road  
.....

Other major utilities (e.g. sewerage, etc.)  
.....  
.....

**4. ENVIRONMENTAL IMPACTS**

Potential environmental effects of proposed undertaking (both constructional and operational phases).  
.....  
.....

**5. OTHER ENVIRONMENTAL ISSUES**

Potential significant risks and hazards associated with the proposal (including occupational health and safety). State briefly relevant environmental studies already done and attach copies as appropriate.

.....  
.....  
.....  
.....  
.....  
.....

**6. MITIGATION OF IMPACT AND ENVIRONMENTAL ENHANCEMENT MEASURES**

.....  
.....  
.....  
.....

**DECLARATION:**

I,.....hereby declare that the information provided on this form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing this application.

-----

-----Signature

Date

## **GUIDE FOR COMPLETING AN ENVIRONMENTAL ASSESSMENT REGISTRATION FORM**

The Environmental Assessment Registration form is designed to provide enough relevant information to enable NEMC to set an appropriate level of assessment for a proposal referred to it. Failure to provide detailed information in a comprehensive manner may delay the assessment process.

It is not expected that this form will be appropriate for all-purpose and, depending on the nature of the proposal, a more lengthy document may be necessary in addition to this form.

### **PROPOSAL**

A simple, brief description of the proposal or proposed undertaking is required as specified in section 86 (1) part VI of the Environmental management Act of 2004 and must include: quantities of raw materials required; input processes, end results, output quantities and timing.

Please include flow diagram if available.

### **LOCATION**

A map/site plan is essential.

It should indicate the geographic co-ordinates of the site elevation and slope, any nearby area of environmental significance (e.g. proposed or declared reserves, water courses, wetlands) and adjacent land uses, including the nearest homes or areas zoned residential.

### **SERVICES**

Details of water supply, storm water drainage, power corridors, access to and impact on roads and transport can all be of significance and should be noted where relevant.

### **ENVIRONMENTAL IMPACT**

Criteria for assessing a project and setting a level of assessment are:

- (1) The character of the receiving environment
- (2) The potential impact of the proposal and confidence of predicting impacts
- (3) Resilience of the environment to cope with change
- (4) The technology to be used
- (5) Plans, policies or procedure which influence land use changes
- (6) Degree of public interest (i.e. concerns of the general public)
- (7) Any other relevant factors to the particular undertaking

The following potential environmental impacts may be relevant;

- Effects on geomorphology, land stability and landscape
- Effects on drainage and water quality (surface and ground)
- Effects on biota
- Effects on access and transport systems

- Effects on existing services including power, water, and telephone
- Effects on existing community facilities
- Effects on existing contingency plans for safety and emergency services
- Effects of emissions (gas, dust, noise and heat)
- Management of solid and liquid wastes and storm water
- Impact on adjacent land uses including any conservation and recreation aspects
- Impact of construction and operational activities
- Visual impact
- Social impact

## *Attachment 2*

### **A LIST OF PROJECTS FOR WHICH EIA IS MANDATORY (MAINLY LARGE SCALE PROJECTS)**

#### **B.1. Agriculture Sector**

- Cultivating on natural and semi-natural land not less than 50ha.
- Water management projects for agriculture (drainage, irrigation)
- Large scale mono-culture (cash and food crops)
- Pest control projects (i.e. tsetse, armyworm, quelea quelea, locusts, rodents, weeds etc).
- Fertiliser and nutrient management
- Agricultural programmes necessitating the resettlement of communities
- Introduction of new breeds of crops

#### **B.2 Livestock and Range management Sector**

- Large Scale livestock movement
- Livestock markets
- Introduction of new breeds of livestock
- Introduction of improved forage species
- Fencing
- Provision of public water supply (watering points, wells)
- Ecto-parasite management (cattle dips, area treatment)
- Intensive livestock rearing units
- Livestock routes

#### **B.3 Forestry Sector**

- Timber logging and processing
- Forest plantation and afforestation and introduction of new species
- Selective removal of single commercial tree species
- Pest management

#### **B.4 Fisheries Sector**

- Medium to large scale capture fisheries
- Artificial fisheries (Aquaculture for fish, algae, crustacean shrimps, lobster or crabs).
- Introduction of new species in water bodies
- Industrial storage facilities
- Fisheries Biotechnology

#### **B.5 Wildlife Sector**

- Introduction of new species
- Wildlife catching and trading
- Hunting
- Wildlife ranching and farming

- Zoo and sanctuaries

### **B.6 Tourism and Recreational Development Sector**

- Construction of resort facilities or hotels along the shorelines of lakes, river, islands and oceans
- Hill top resort or hotel development
- Development of tourism or recreational facilities in protected and adjacent areas (national parks, marine parks, forestry reserves etc) on islands and in surrounding waters
- Hunting and capturing
- Camping activities, walk ways and trails etc
- Sporting and race tracts/sites
- Tour operations

### **B.7 Energy Sector**

- Production and distribution of electricity, gas, steam and hot water
- Storage of natural gas
- Thermal power development (i.e coal, nuclear)
- Hydro-electric power
- Bio-mass power development
- Wind-mills power development
- Solar (i.e. Impact due to pollution during manufacture of solar devices, acidic battery spillage and improper disposal of batteries)
- Nuclear energy.

### **B.8 Petroleum Sector**

- Oil and gas fields exploration and development, including seismic survey
- Construction of offshore and onshore pipelines
- Construction of oil and gas separation, processing, handling and storage facilities
- Construction of oil refineries
- Construction of product depots for the storage of petrol, gas, diesel, tar and other products within commercial, industrial or residential areas
- Transportation of petroleum products

### **B.9 Industry Sector**

#### **a) Food and Beverage industries**

- Manufacture of vegetable, animal oils and fats
- oil refinery and ginneries
- Processing and conserving of meat
- Manufacture of dairy products
- Brewing, distilling and malting
- Fish meal factories
- Fish processing factories
- Slaughter - house
- Soft drinks

- Tobacco processing
  - Canned fruits, and sources
  - Sugar factories
  - Other agro-processing industries
- b) Textile in industry**
- Cotton and synthetic fibres
  - Dye for cloth
  - Ginneries
- c) Leather Industry**
- Tanning
  - Tanneries
  - Dressing factories
  - Other cloth factories
- d) Wood, Pulp and Paper Industries**
- Manufacture veneer and plywood
  - Manufacture of fibre board and of particle - board
  - Manufacture of pulp, paper, sand-board cellulose - mills
- e) Building and Civil Engineering industries**
- Industrial and housing estate
  - Major urban projects (multi-storey building, motor terminals, markets etc)
  - Tourist installation
  - Construction and expansion/upgrading of roads, harbours, ship yards, fishing harbours, air fields and ports, railways and pipelines
  - River drainage and flood control works
  - Hydro-electric and irrigation dams
  - Reservoir
  - Storage of scrap metal
  - Military installations
  - Construction and expansion of fishing harbours
  - Developments on beach fronts
- f) Chemical industries**
- Manufacture, transportation, use and storage of pesticide or other hazardous and or toxic chemicals
  - Production of pharmaceutical products
  - Storage facilities for petroleum, petrochemical and other chemical products (i.e. filling stations)
  - Production of paints, vanishes, etc
- g) Extractive industry**
- Extraction of petroleum

- Extraction and purification of natural gas
- Other deep drilling - bore-holes and wells
- Mining
- Quarrying
- Coal mining
- Sand dredging.

**h) Non-metallic industries (Products)**

- Manufacture of cement, asbestos, glass, glass-fibre, glass-wool
- Processing of rubber
- Plastic industry
- Lime manufacturing, tiles, ceramics
- Plastics
- Petroleum products
- Vehicles
- Used materials
- Wildlife and wildlife products
- Pharmaceuticals
- Food
- Beverage

**i) Metal and Engineering industries**

- Manufacture and assembly of motor-vehicles
- Manufacture of other means of transport (trailers, motor-cycles, motor-vehicle bicycles-cycles)
- Body - building
- Boiler - making and manufacture of reservoirs, tanks and other sheet containers
- Foundry and Forging
- Manufacture of non-ferrous products
- Iron and steel
- Electroplating

**B.10 Waste treatment and disposal sector**

**(a) Toxic and Hazardous waste**

- Construction of incineration plants
- Construction of recovery plant (off-site)
- Construction of waste water treatment plant (off-site)
- Construction of secure land fills facility
- Construction of storage facility (off-site)
- Collection and transportation of waste.

**(b) Municipal Solid Waste**

- Construction of incineration plant
- Construction of composting plant

- Construction of recovery/re-cycling plant
- Construction of Municipal Solid Waste landfill facility
- Construction of waste depots
- Collection and transportation

**(c) Municipal Sewage**

- Construction of waste water treatment plant
- Construction of marine out fall
- Night soil collection transport and treatment.
- Construction of sewage system

**B.11 Water Sector**

- Canalisation of water courses
- Diversion of normal flow of water
- Water transfers scheme
- Abstraction or utilisation of ground and surface water for bulk supply
- Water treatment plants

**B.12 Health Sector**

- Vector control projects (malaria, bilharzia, trypanosomes etc)

**B13 Land Reclamation and development Sector**

- Rehabilitation of degraded lands
- Coastal land reclamation
- Dredging of bars, groins, dykes, estuaries etc.
- Spoil disposal
- Establishment of estates for residential/commercial purposes
- Petrol stations

**B.14 Resettlement/relocation of people and animal**

- Establishment of estates for residential/commercial purposes

**B.15 Multi-sectoral Projects**

- Agro-forestry
- Dispersed field-tree inter-cropping
- Valley cropping
- Living fences and other linear planting
- Windbreak/shelterbelts
- Integrated conservation and development programmes e.g. protected areas.
- Integrated Pest Management (e.g. IPM)
- Diverse construction - public health facilities schools, storage building, tree
- Nurseries, facilities for eco-tourism and field research in protected areas, enclosed latrines, small enterprises, logging mills, manufacturing furniture carpentry shop, access road, well digging, camps, dams, reservoirs.
- River basin development and watershed management project

- Food aid, humanitarian relief

**B.16 Trade: Importation and Exportation of the following**

- Hazardous Chemicals/Waste
- Plastics
- Petroleum products
- Vehicles
- Used materials
- Wildlife and wildlife products
- Pharmaceuticals
- Food
- Beverages

## *Attachment No. 3*

### **A LIST OF ACTIVITIES AND ENTERPRISES – MAINLY SMALL SCALE THAT MAY OR MAY NOT REQUIRE EIA (depend on seriousness of impacts)**

- Fish culture
- Bee-keeping
- Small animal husbandry and urban livestock keeping
- Horticulture and floriculture
- Wildlife catching and trading
- Production of tourist handicrafts
- Charcoal production
- Fuel wood harvesting
- Wooden furniture and implement making
- Basket and other weaving
- Nuts and seeds for oil processing
- Bark for tanning processing
- Brewing and distilleries
- Bio-gas plants
- Bird catching and trading
- Hunting
- Wildlife ranching
- Zoo, and sanctuaries
- Tie and dye making
- Brick making
- Beach sailing
- Sea weed Farming
- Salt pans
- Graves and cemeteries
- Urban Livestock Keeping
- Urban agriculture
- Fish landing stations
- Wood carving and sculpture
- Hospitals and dispensaries, Schools, Community centre and Social halls, play grounds
- Wood work e.g. boat building
- Market places (livestock and commodities)
- Technical assistance
- Rain water harvesting
- Garages
- Carpentry
- Black smith
- Tile manufacturing
- Kaolin manufacturing

- Vector control projects e.g. Malaria. Bilharzia, trypanosomes
- Livestock stock routes
- Fire belts
- Tobacco curing kilns
- Sugar refineries
- Tanneries
- Pulp plant
- Oil refineries and ginneries
- Artisanal and small scale mining
- Rural Road

## *Attachment 4*

### **ENVIRONMENTALLY SENSITIVE AREAS AND ECOSYSTEMS**

1. Areas prone to natural disaster (geological hazards, floods, rain storms, earthquakes, kind slide, volcanic activity etc)
2. Wetlands (flood plains, swamps, lakes, river etc) and waterbeds characterised by one or any combination of the following conditions.
  - (a) Tapped for domestic purposes, brick making
  - (b) Within the controlled and/or protected areas;
  - (c) Which support wildlife and fishery activities;
  - (d) Used for irrigation agriculture, livestock grazing
3. Mangrove swamps characterised by one or any combination of the following conditions:
  - (a) With primary pristine
  - (b) Adjoining mouth of major river system
  - (c) Near or adjacent to traditional fishing grounds
  - (d) Which act as natural buffer against shore erosion strong winds and storm floods
4. Areas susceptible for erosion e.g.
  - (a) Hilly areas with critical slopes
  - (b) Unprotected or bare lands
5. Areas of importance to threatened cultural groups
6. Area with rare/endangered/or threatened plants and animal
7. Areas of unique socio-cultural history archaeological, or scientific importance and areas with potential tourist value
8. Polluted areas
9. Are subject to desertification and bush fires
10. Coastal area and Marine ecosystems:
  - Coral reefs
  - Islands
  - Lagoons and estuaries
  - Continental shelves
  - Beach front etc
  - Intertidal zones
  - Marine reserves
11. Areas declared as:

National parks, watershed reserves, forest reserves, sanctuaries, other wildlife reserves and sacred areas, wildlife corridors, hot-spring areas
12. Mountainous areas, water catchment and recharge areas of aquifers.
13. Areas classified as prime agricultural lands or range lands
14. Greenbelts or public open spaces in urban areas
15. Burial sites and graves

### Environmental and social characteristics

#### Screening Criteria

##### ***Potential Impacts of the project proposal:***

Consider magnitude of impacts, spatial extent, duration, intensity of change, reversibility and whether impacts are manageable). Will project implementation:-

- cause significant changes on the environment (on site, off site, transboundary short/long term?)
- give rise to public health impacts or unsafe conditions
- significantly divert resources to the detriment of other natural and human communities

##### ***Characteristics of receiving environment:***

The following aspects should be looked at:-

- part of conservation/protected area network
- existing or potential environmentally sensitive areas
- vulnerability to natural or induced hazards
- potential for rehabilitation, relocation and compensation
- special purpose or categorized area
- situation where communities are vulnerable
- involve extraction of renewable or non-renewable resources
- degraded or contaminated site
- cumulative effects and assimilative capacity of environment

##### ***Resilience of Natural Human Environment to cope with changes:***

- absorb impact without suffering irreversible change
- can land use at or around the site be sustained
- can sustainable use of site be achieved beyond project life.
- contingency or emergency plans to deal with accidentals events

##### ***Confidence of Predicted Impacts:***

- level of knowledge on resilience of ecosystem
- adequate baseline information for impact prediction and management
- present community value on land use and resource use known or likely to change

##### ***Sustainability criteria:***

- alternative uses of natural resources
- alternative uses of the area fore-gone
- inter-generation equity
- transboundary or global issues and other precautionary principle

***Degree of public interest:***

- controversy of the project
- amenity, values or life style of community be affected
- large numbers of people require relocation
- potential for conflict of interest
- proposal result in inequities between sectors of economy

***Presence of planning, policy framework and other decision making tools***

- Consistency with existing planning, and policy framework and legislation/guidelines