IUCN Eastern Africa Programme

Somali Natural Resources Management Programme

Environmental Impact Assessment Manual and Guidelines for the Somali Water Sector

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IUCN

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Environmental Impact Assessment Manual and Guidelines for the Somali Water Sector

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FOREWORD

Environmental Impact Assessment (EIA) has emerged as a dominant methodology for incorporating environmental parameters into development planning and is an established requirement in many countries, and with development and donor agencies. The European Union's *Environmental Manual* stipulates that all projects for consideration by EU must undergo an EIA review. This has not been systematically applied under the EC Rehabilitation Programme for Somalia.

Complicated EIA guidelines, lack of data, lack of technical ability to apply the guidelines and a general lack of awareness of EIA are the main reasons given for not conducting EIAs.

The need for and value of EIA in improving water sector projects has been recognized by the Water and Sanitation Sectoral Committee under the Somalia Aid Coordination Body (SACB) and the committee has actively supported the preparation of these gudelines.

The overall goal was to prepare a practical user-friendly EIA process (including both environmental, social and economic assessment) to enhance the integration of environmental planning in the EC Rehabilitation Programme for Somalia, with particular applicability to the rural water sector.

The manual was prepared during November-December 1997 as part of the IUCN Somali Natural Resources Management Programme.

During field testing in the North Western region, consultations were held with the Somali authorities and most of the organizations that are actively involved in implementation of water development projects in the Region. A core team of Somali professionals from these institutions and organizations carried out the field testing together with the IUCN consultants. Project areas for the testing were selected by three implementing agencies (OXFAM, Swiss Group and AICF). Results from the testing are briefly summarized in case studies referred to in the guidelines.

Reasons for not carrying out EIAs for most of the ongoing water development projects in Somalia have been mentioned above. Lack of data is often referred to as a major restriction. However this does not mean that EIAs cannot be done. Whatever information that is available (often not very comprehensive) should be used and in fact a main source of information for the EIA is from interaction with project beneficiaries which should always be included. By applying EIA, the process itself will gradually generate experience and data that will improve the base for project planning. A main benefit from EIA is that professionals representing different disciplines work as a team broadening the dialogue across sector boundaries. Close interaction between such teams and local people as part of the EIA process would go a long way in ensuring high standards of future projects.

GLOSSARY OF TERMS

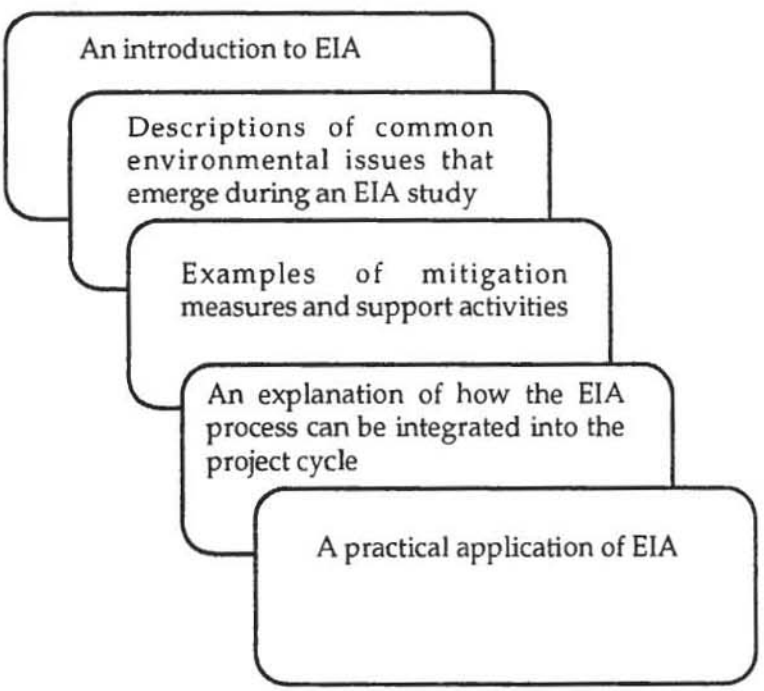
anticipated impact	impact that is expected to occur
balley	earth dam
berkad	cemented underground water tank
checklist	list of [environmental] issues to be referred to for identification of impacts
conservation	protection from harm, decay or loss
cumulative impacts	those impacts that result from the incremental impact of the proposed project, ie. from a number of interventions rather than from a single intervention.
direct impacts	those impacts that are caused by the action and which generally occur at the same time and place as the action
environment	the physical factors of the surroundings of human beings, (including land, water, atmosphere, climate, sound, odour, taste), the biological factors of animals and plants and the social factor of people and their livelihoods, and includes both the natural and built environment
environmental impact assessment (EIA)	a systematic examination conducted to determine whether or not a project will have any negative impacts on the environment
environmental impact statement (EIS)	a written report which presents the results of an environmental impact study
forage	food for livestock
guidelines	a set of steps which illustrate the course of action to be taken
implementation	the act of carrying out works required by, or to complete, a project
implementing agency	the organisation that is responsible for carrying out or doing the project
indirect impacts	those impacts that induce changes in the natural, physical or social environment, or in production systems, as a result of an immediate impact
linkage	relationship between one or more aspects
magnitude [of impact]	size or significance of impact
maximise [impacts or benefits]	make the most of, enhance
mitigation measures	actions which reduce, avoid or offset potential adverse environmental consequences of a project
monitoring	process of checking achievements of a project or intervention by keeping continuous records
participation	a process through which stakeholders influence and share control over development initiatives and decisions on resources that affect them
scoping	process for early identification of potentially significant environmental impacts and elimination of insignificant impacts
screening	determines the level to which an environmental impact assessment study is required
stakeholders	those persons affected by the outcome of a project or can affect the outcome of a proposed project, either negatively or positively
support measures	actions which bring out, enhance or improve potential positive environmental consequences of a project

INSTRUCTIONS FOR USING THE MANUAL

OBJECTIVE OF THE MANUAL

The objective of this manual is **to assist all people involved in the water sector to develop projects that minimise negative impacts on the environment and maximise positive ones, so as to ensure the long-term success of the project.**

THIS MANUAL CONTAINS



HOW TO USE THE MANUAL

The first three sections are intended to introduce the user to the EIA process.

Section IV gives instructions for using the EIA methodology in the field.

The manual attempts to integrate the EIA steps into the normal project planning and implementation procedures. Many of the steps to be followed during an EIA study are already included in these procedures, and therefore the EIA study should be carried out as part of routine project activities.

The manual explains who is responsible for the different steps in the EIA process, and who can be involved.

WHO WILL USE THE MANUAL?

The manual is intended for use by the following target groups:

- **project managers and water engineers from local and international private sector organisations** who design and implement water sector projects. These people will take the lead in conducting EIAs as steps within the project cycle.

- **Somali professionals** (range scientists, agriculturalists, foresters, social development specialists, etc), who will provide specialist input as required during the EIA Study.

- **local administrations, elders and water committees** who control access and use of natural resources. These people will assist in coordinating or mobilising the community to participate in the EIA process as well as in monitoring of impacts, mitigation and support measures.

- **EC Somalia Unit** who should review and endorse project proposals, provide guidelines for EIA, ensure that EIAs are carried out and review the assessments.

- **other donors and implementing agencies** who may want to use the manual as a guideline to complementing their efforts in EIA in the water sector.

I INTRODUCTION TO EIA

WHAT IS EIA?

EIA= environment + impact + assessment

EIA is a process for:

- **identifying;**
- **predicting;**
- **measuring; and**
- **communicating.**

→ both positive and negative impacts on the environment that may result from a development project or intervention.

EIAs give suggestions for avoiding or lessening negative effects (ie. mitigation of impacts), and enhancing positive ones. They include subsequent monitoring of effects and evaluation of assessments.

"Environment" means:

- the physical environment (eg. soil, air, water sources);
- the biological environment (forests, wildlife, wetlands, etc.);
- production systems (ie. land use, agriculture and livestock); and
- the socio-economic and socio-cultural environments (such as public health, effects on lifestyle, etc.).

The EIA process should begin at the planning or project identification phase of the project cycle and must continue throughout the entire project cycle.

WHY DO EIAs?

All projects have impacts, whether good or bad, big or small.

The provision of water is associated with improved health (through improved hygiene and sanitation), which increases productivity levels among beneficiary communities, and consequently enhances social well-being.

improve project output

However, water development often has far reaching impacts on the utilisation of other natural resources such as grazing land, agricultural land, forest areas, etc., which result in, among other things, the concentration of people and livestock and intensified agricultural production. These changes can cause serious environmental degradation if no preventive measures are included in water development programmes. EIAs intend to improve the output of a project, rather than inhibit its development, by broadening the scope of the project. Through the EIA process, opportunities for developing other activities come to light. Similarly the EIA process will pre-empt negative impacts which will allow the developer to plan for avoiding or mitigating those impacts.

encourages teamwork therefore better planning

The main benefit from carrying out an EIA is that local leaders, land users, water engineers and other professionals come together to study the linkages between water, production systems, social well-being, natural resources and the environment in general to attain a better understanding of the expected effects of project interventions. This type of team work broadens the basis for analysis of long-term benefits of the proposed project activities, enabling planners to design projects that are better adjusted to the local situation.

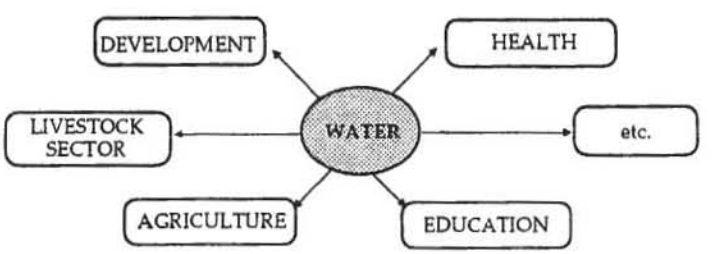
Furthermore, EIAs contribute to the decision-making process by ensuring that potential impacts are considered in a thorough and systematic manner, and allow negative impacts to be avoided or mitigated. This then serves to reassure decision-makers that EIAs do in fact improve the output of a project.

WHY THE WATER SECTOR?

"water is life"

The availability of water is the lifeline in semi-arid and arid areas and a major limiting factor for the development of most sectors. Improved water supply in these areas often attracts settlement at the site of supply, or contributes to a change in production systems with increasing demand for additional development activities.

Thus water becomes the basis for a multi-sectoral approach to planning and implementation of development programmes because the water sector is the entry point for many other interventions such as agricultural and livestock development, health, education, etc. The availability of water is essential to the success of all these activities.



WHAT DOES AN EIA INVOLVE?

The EIA process basically involves the following steps:

- Understanding the project concept
- Screening
- Scoping
- Environmental Impact Assessment study
- EIA review
- Implementation
- Monitoring and evaluation

In this manual, these steps have been elaborated upon to respond to the needs of the Somali water sector.

WHO SHOULD DO THE EIA?

Any organisation or individual who intends to develop a water supply to serve a community or village should consider involving various stakeholders in order to establish the environmental implications of the proposed intervention. In particular, these will include the following individuals:

- project managers
- water engineers
- water users
- elders
- Somali professionals

II COMMON ENVIRONMENTAL ISSUES RELATED TO WATER DEVELOPMENT IN SOMALIA

In order to illustrate the outcome of an EIA study, some common environmental issues, mitigation measures and support activities are presented here. These refer to the most common water supplies implemented in Somalia, i.e. shallow wells, boreholes, balleys (small dams or ponds), berkads (cemented ground tanks) and springs. In developing this manual, the EIA process was tested. Three such test sites are presented as case studies in Section IV.

i) Lafta Farawayne Village in Woqooyi Galbeed Region (berkads and balleys)

ii) Allay - Baday township in Woqooyi Galbeed Region (existing borehole)

iii) Abdi Farah Village, Odweyne District, proposed rehabilitation of a borehole

WHICH ISSUES COME OUT IN AN EIA STUDY?

Water quality	Ground water sources (particularly boreholes) could have high chemical contents restricting utilisation of the water. Problem to predict with lack of hydro-geological data, and other records;
	Surface water in berkads and balleys often have poor bacteriological quality.
Water quantities	Need to study accumulated impact of water supplies constructed or planned in an area. Sometimes as many as 500 shallow wells, 300 berkads, series of ballies, etc., could have combined effect on groundwater levels and surface water availability downstream;
	Provided boreholes in rangeland areas are at recommended spacing (30 - 50 km apart) there is minimal risk of causing permanent lowering of groundwater tables. But hydrogeological data is hard to find;
	High evaporation losses from berkads and balleys to be considered in the technical design.
Forest and woodlands	Water sources attract settlement and thus increase demand for construction materials, fencing materials fire wood and charcoal with risk of over-exploitation.
Land use changes	Changes in livestock movements and herd composition due to improved access to water;
	Move towards agro-pastoralism (mixed farming);
	Cropland and grazing land being fenced restricting free access for grazing.
Agricultural production	Increased production from mixed farming but need to analyse expected long term effects on land productivity.

Livestock production	Increased utilisation of forage that was earlier not accessible due to water shortages;
	Increased milk yields in mixed farming (agro-pastoralists);
	Need to analyse expected long term effects on availability of forage.
Land degradation	Soil erosion caused by overgrazing, deforestation, poor farming methods, roads, tracks and paths.
Water usage pattern	Increase in domestic human consumption;
	Less money spent on purchase of water;
	Less time spent on water collection.
Public health	Health status is closely linked to water quality, quantity and level of management of water supply which is also linked to sanitation and personal hygiene.
Nutrition	Level of agricultural production is closely related to food availability and nutritional status among the community.
Food security/ drought preparedness	Increased production from both livestock and agriculture contribute to improved food security and drought preparedness, but need to analyse expected long term trends.
Settlement	Water attracts settlement with intensified utilization of natural resources causing land degradation (sacrifice areas) around water sources.
Income generating opportunities.	Owners of berkads generate income from selling water;
	Balleys could provide some water for irrigation of kitchen gardens and for other small scale irrigation;
	Added income from agricultural and livestock products.
Cause of conflict	Can cause conflict unless there is equal distribution of water between the various social groups.

WHAT ARE MITIGATION MEASURES AND SUPPORT ACTIVITIES?

Some of the issues mentioned above can be tackled by water technicians alone, but in many cases inter-sectoral collaboration would be needed.

Examples of mitigation measures and project components in order to respond to positive impacts are:

Distribution of water sources

If the EIA study has indicated that the proposed water source could have major negative impacts from concentration of people and livestock, also having considered other activities in the proposed project area, there would be need to explore possibilities of developing additional water sources geographically spread out to reduce risk of degradation around each of them.

Integrated extension programmes

Identified positive and negative impacts on production systems would form the basis for inter-disciplinary extension and training activities. Apart from the water sector, depending on local needs, input from other sectors like livestock, agriculture, forestry, roads, community development, education health would be needed.

Such programs would aim at preparing the communities to take on full responsibility for sustainable management of their environment.

Examples of Extension Programme Components:

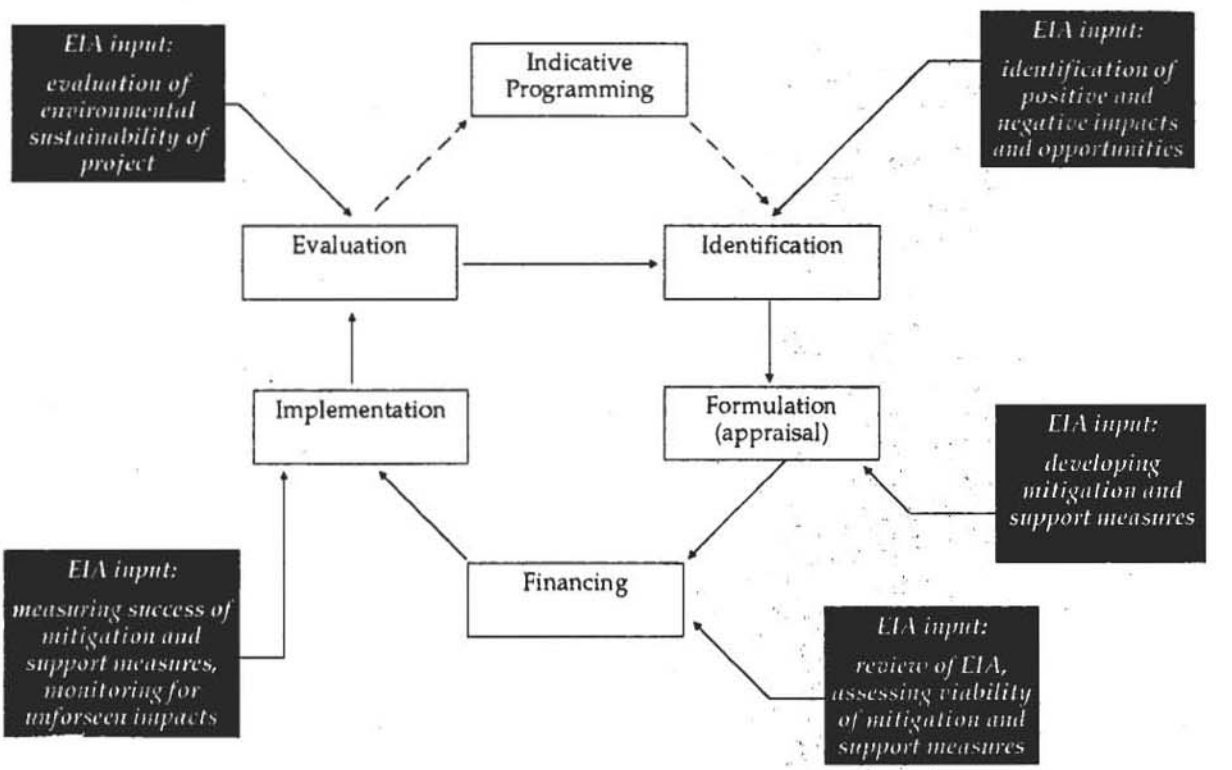
- Further participatory development of land use and land management plans in critical water catchments for improved water retention and recharge of ground water and for reduction of siltation and pollution of balleys and berkads
- Soil and water conservation including dryland farming techniques and water harvesting for crop production
- Agroforestry and management of natural forests and woodlands
- Afforestation of critical water catchments (mainly through protection and natural regeneration)
- Forage production and conservation of fodder
- Conservation oriented rural roads programs
- Realignment of tracks and routes for reduction of soil erosion
- Development of improved marketing facilities of agricultural and livestock products and arrangements for efficient supply of inputs
- Introduction of larvae eating fish into berkads to reduce mosquitoes
- Proper drainage around water sources to avoid breeding grounds for mosquitos
- Improvement of cleanliness in berkad catchments including construction of latrines
- Encourage income generating activities (livestock trade, petty trade, farm produce, poultry , training of artisans etc.)

III PLANNING FOR ENVIRONMENTAL MANAGEMENT

EIA AND THE EU PROJECT CYCLE MANAGEMENT

Conducting EIAs does not entail the introduction of new concepts or procedures. EIA involves a sequence of steps which already exist in the standard EU Project Cycle Management, and can therefore be easily integrated into that Cycle.

The diagram below shows the EU Project Cycle Management, and how EIA fits into it.



METHODOLOGIES FOR LOCAL PARTICIPATION

Although EIA can be conducted as a separate exercise, it should preferably be part of participatory planning. The table below illustrates parallels between the stages in participatory planning methods and the EIA process.

PARTICIPATORY PLANNING	EIA PROCESS	
Identification of local priorities to address needs	Understanding the project concept	- Water Development Strategy - Identification of objectives - Historical background - Project components - Other projects and their activities - Collection of baseline data
	Screening	
	Scoping	
Action planning technical assessment and design	EIA Study	- Identification of environmental impacts. - Causes of impacts and opportunities from positive impacts. - Developing mitigation/support measures.
	Review	Assessing viability of mitigation and support measures.
Implementation	Implementation	
Monitoring and Evaluation	Monitoring and Evaluation	

Involving the local communities in the EIA process is of utmost importance because:

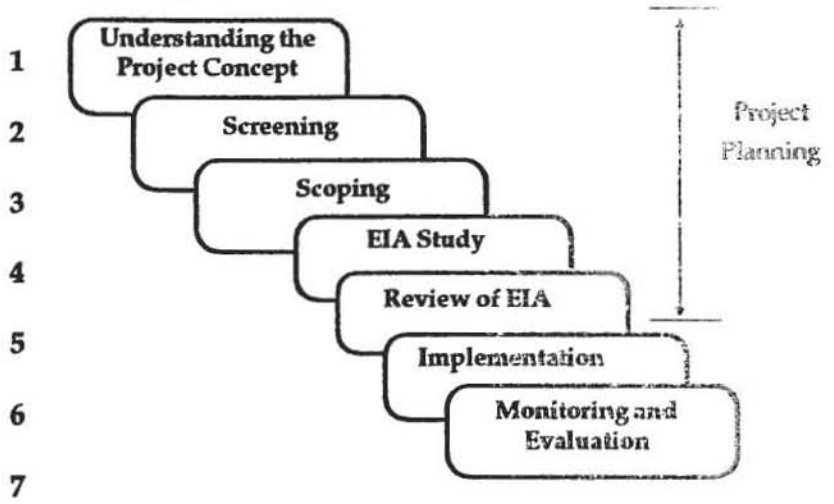
- they are the beneficiaries of the proposed development, and must be involved in order to ensure sustainability of the intervention; and
- they have valuable knowledge of the project area which is necessary during planning of the intervention or project.

There are several participatory methods employed for identifying needs and priorities of the beneficiary communities. The most frequently used are:

- informal dialogue on a one to one basis
- informal group discussions
- formal group discussions
- participatory rural appraisals (PRA)
- rapid rural appraisals (RRA)

IV THE PRACTICAL APPLICATION OF EIA

As mentioned earlier the EIA process has the following steps:



Understanding the project concept, screening, scoping, the EIA study and the EIA review are all part of project planning.

STEP 1 UNDERSTANDING THE PROJECT CONCEPT

Q. Why do we need to understand the project concept?

A. It provides the basis for the next steps of the EIA process

Screening, scoping and the EIA study are conducted on the basis of the following:

needs and priorities

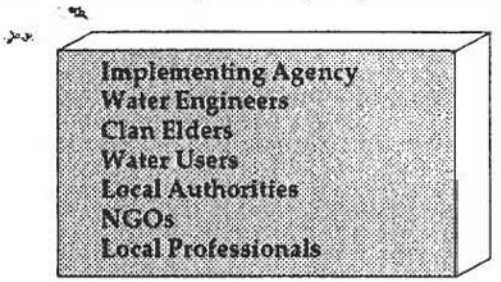
background data

- an understanding of the objectives as being needs and priorities identified by the intended beneficiary communities;
- adequate historical and background data;
- an understanding of other activities in the proposed project area;
- the project components (ie. does the project involve digging one shallow well or does it involve numerous interventions such as a number of boreholes, berkads and ballies over a large area, etc).

These issues are normally addressed when an implementing agency is planning interventions in a particular sector, in this case the water sector. Participatory appraisal methods are useful at this stage, particularly for establishing the needs and priorities of the target communities.

Q. Who can be involved in Step 1?

A. Input from several persons or agencies is required here, and they must work together as a team. This activity is done partly in the office and partly in the field.

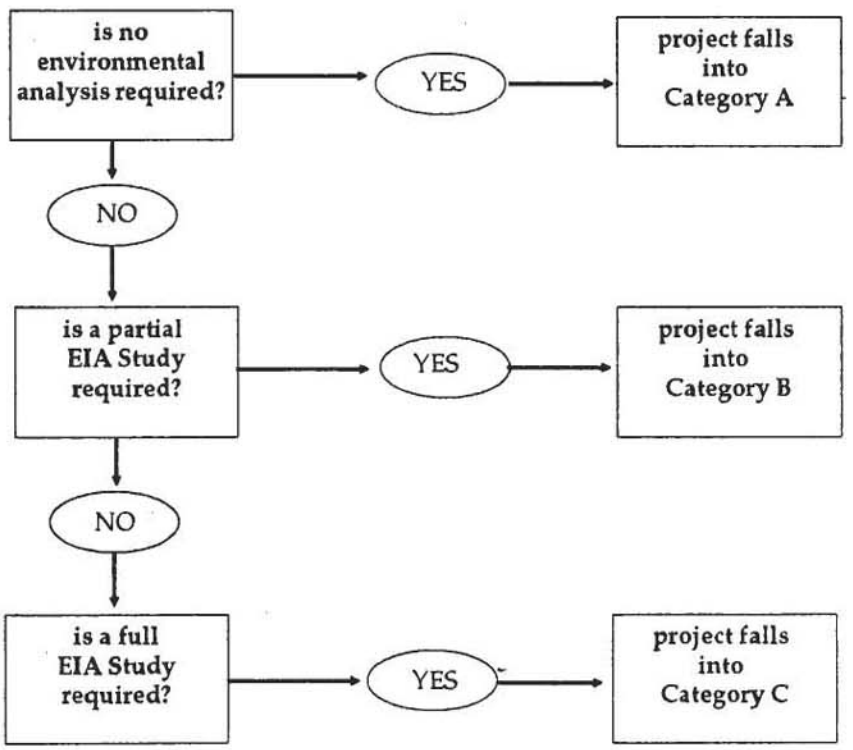


STEP 2 SCREENING

Q. What does screening do?

A. It determines the extent to which an EIA study is required

that is:



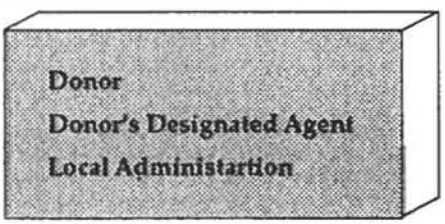
Information obtained during Step 1 will assist in screening. Factors such as location, the size and extent of the intervention all affect the screening category into which a project is placed.

A step-by-step guide to screening is presented in Annex I.

The type and scale of the projects proposed to be undertaken under the EC Rehabilitation Programme for Somalia are generally small scale interventions that may have some major environmental impacts, particularly when a number of interventions are implemented in a small or confined area. These projects would therefore usually fall into Category B.

Q. Who can be involved in screening?

A. Screening is normally done by the donor agency or the relevant environmental authority. Provided the necessary information is available, it is a short exercise which can be carried out in the office.



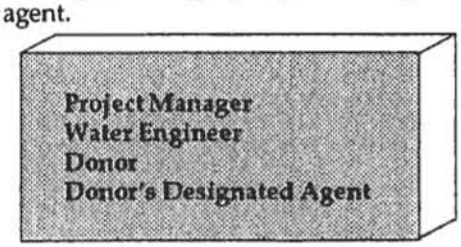
STEP 3 SCOPING

Q. What does scoping do?

A.
- identifies the major environmental issues at hand;
- determines how these issues will be addressed during the EIA study;
- identifies who should be involved in carrying out the EIA study;
- determines whether expertise to conduct the EIA is available in-house;
- determines whether external expertise is required (eg. local professionals working independently or with other organisations);
- establishes how much input is required by each person on the team;
- determines whether more and what kind of information is needed to conduct the EIA study;
- determines how the EIA study can fit into the normal planning cycle of the project;
- plans the logistical and practical requirements of the study.

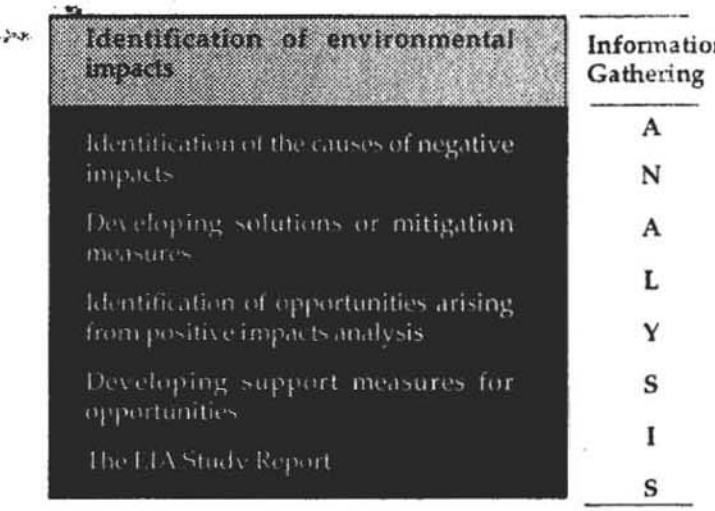
Q. Who does the scoping?

A. Scoping is part of the planning of the EIA study, and should be done by the project manager of the implementing agency, water engineers, the donor or the donor's designated agent.



STEP 4 ENVIRONMENTAL IMPACT ASSESSMENT STUDY

The EIA study comprises six activities:



Activity 1 Identification of Environmental Impacts

Q. What does this activity do?

A.
- ◆ it identifies positive impacts;
- ◆ it identifies negative impacts.

With experience, it is possible to identify in advance what the likely impacts will be [illegible] rehabilitating a water supply or installing a borehole, etc. However such experience is not always available at the start or conceptual stage of a project. A checklist has therefore been developed to give a guideline about the types of impacts that need to be considered. The checklist is not exhaustive, since it is essentially a tool to start a process of analysis of impacts. It will [illegible] have to be revised from time to time, or after a given period of use in the field to [illegible] issues that were not apparent during testing in the field.

The checklist is presented in the following pages.

Q. What does a checklist do?

A.
- ◆ it summarises impacts;
- ◆ it gives a quick and simple visual indication of positive and negative impacts;
- ◆ it gives an indication of the significance of positive and negative impacts.

The checklist has been designed to facilitate the assessment of impacts in the field. It must be looked upon as a guide to a step in the assessment process rather than being the actual assessment itself.

✔ Read through the checklist to familiarise yourself with environmental aspects that affect or can be affected by the project. Environmental aspects are categorised as follows:

- ✓ the physical environment (ie. soil, air, water sources, etc),
- ✓ biological environment (forests, wildlife, etc),
- ✓ production systems (land use, agriculture and livestock), and
- ✓ socio-economic and socio-cultural environment (public health, effects on lifestyle, etc).

✔ If issues which are not listed emerge, you must note these issues and modify the checklist accordingly for future use.

✔ For each environmental aspect listed, go through the checklist horizontally (ie. from left to right).

✔ The second column asks whether a change will occur as regards the present situation (in relation to, for example, land use, traditional management systems, drought coping mechanisms) as a result of the intervention. Answer yes or no.

✔ Use the third column to describe these changes, and to describe the impacts resulting from the changes and/or directly and indirectly from the intervention.

✔ Then estimate the magnitude of the impact. This can be indicated as follows:

Magnitudes of impacts:	
++	major positive
+	minor positive
0	zero or negligible impact
-	minor negative
--	major negative
??	doubt

ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST

TYPE OF SUPPLY: Groundwater: borehole/shallow well/spring/groundwater dam
Surface water: berkad/balley/other _____

NAME OF SUPPLY: _____

NAME OF ASSESSOR: _____

DATE OF ASSESSMENT: _____

MAGNITUDE OF IMPACTS:

+ +	major positive impact	+	minor positive impact
- -	major negative impact	-	minor negative impact
0	zero or negligible impact	?	unknown or doubtful
n/a	not applicable		

	Impacts on or caused by:	Will there be a change from the present situation Y/N	How will the environment be affected? Describe the changes and impacts that may occur.	Magnitude of impact	Linkages between impacts
	PHYSICAL ENVIRONMENT				
1	Groundwater				
	- quality				
a	physiochemical				
b	bacteriological				
c	- quantity (availability, adequacy, fluctuations, depth of water table)				
d	- aquifer capacity (depletion, replenishment)				
e	- saline intrusion				
2	Surface water				
	- quality				
a	physiochemical				
b	bacteriological				
c	- quantity (availability, adequacy, fluctuations)				
3	Leakage/seepage				
4	Ponding				
5	Siltation				
6	Evaporation				
7	Soil				
a	- erosion (due to construction)				
b	- stability				
8	Air pollution (dust)				
9	Noise pollution (due to construction, pumps)				
10	Suitability of site location				

	Impacts on or caused by:	Will there be a change from the present situation Y/N	How will the environment be affected? Describe the changes and impacts that may occur.	Magnitude of impact	Linkages between impacts
	BIOLOGICAL ENVIRONMENT				
11 a b	Forests/woodland - improvement or degradation - utilisation of woody species (eg.fencing, building, firewood)				
12	Vegetation (clearing for construction of intervention)				
13	Wildlife				
14 a b	Aquatic ecosystems - condition (improvement, degradation, depletion of) - ecology (animals, plants)				
15 a b	Wetland ecosystems - condition (improvement, degradation, drainage of) - ecology (animals, plants)				
16	Introduction of disease vectors (creation of vector habitats) harmful to humans and/or livestock				
17	Suitability of site location				
	PRODUCTION SYSTEMS				
18	Sustainability of changes in land use (eg. from ranching to farming)				
19 a b c d	Agriculture - agricultural productivity - changes in agricultural practices (irrigation, water harvesting, fodder production) - increase in land under cultivation - erosion (due to agricultural malpractices)				
20 a b c d e	Livestock - livestock production - livestock movement - overgrazing (degradation of range, settled areas, common grazing areas, etc) - erosion (trampling, access routes) - changes in traditional livestock husbandry				

	Impacts on or caused by:	Will there be a change from the present situation Y/N	How will the environment be affected? Describe the changes and impacts that may occur.	Magnitude of impact	Linkages between impacts
	SOCIO-ECONOMIC & SOCIO-CULTURAL ENVIRONMENT				
21 a b c d	Water usage patterns - utilisation of available water - distance to source - utilisation of saved time - changes in traditional water management practices (use of designated watering points, water rights, transport, storage)				
22 a b c	Public health - water related diseases - sanitation/hygiene - solid waste disposal				
23	Food security				
24	Nutrition				
25 a b c d e	Settlement/sedentarisation - in-migration to existing settlements - sedentarisation in rangelands - community set up (cohesion, separation) - fencing off of land for private utilisation - access roads to water points				
26 a b c d	Income generating opportunities - agricultural products - livestock products (milk, meat, ghee, hides, skins) - sale of water - employment on project				
27	Traditional attitudes to drought preparedness				
28	Security/conflict				
29	Safety of intervention structures (dam walls, deep ponds)				
30	Sites of cultural/historic importance				
31	Suitability of site location				

highlight linkages

✔ In the final column, highlight any linkages that are observed or may arise as a result of the intervention. Linkages give an indication of the complexity of impacts. An impact initially regarded as being positive may encourage activities having negative impacts.

An increase in land under cultivation may give increased crop yields which in turn may increase a household's income. But depending on the capacity of the land to sustain that type of production, this practice may lead to depletion of the soil and subsequently reduced yields.

The links are denoted by referring to the numbers given to each environmental aspect, in this case 18, 19b, 19c, 19d and 26a.

These are illustrated in three case studies (Lafta Faraweyne Village, Allay Baday borehole and Abdi Farah Village) that are presented in this section.

✍ **Note** When filling in a checklist, the following must be considered:

Impacts can be direct or indirect.

Examples of direct impacts:

- increased income from sale of water
- shorter distance for consumers to water source
- risk of livestock or children drowning in uncovered berkads

Examples of indirect impacts:

- water sources attract settlement which leads to change in land use (cutting of trees for charcoal, clearing vegetation for agriculture)

Impacts can be positive or negative. A positive impact may in itself have repercussions that are beneficial or adverse. These secondary (ie. indirect) impacts must also be examined. Establishing links helps to identify indirect impacts.

Examples of positive impacts:

- increased agricultural and livestock production
- ..... having the following negative impacts from utilising the land beyond its capacity:
- land degrardation
- reduced production levels in the long term

Impacts may occur in the short term or long term. Short term ones are usually most apparent during the assessment, but long term ones could have a lasting and substantial impact.

short term impact resulting from provision of water

- cutting of bushes and trees for fencing water points

long term impact resulting from provision of water

- reduced food security

The EIA should study the cumulative impact of all components of the project or programme.

In Lafta Faraweyne, the impact of hundreds of berkads combined with a number of balleys needs to be studied in entirety, rather than each water source separately. In carrying out an EIA, it is important to consider impacts on the entire area of influence of the whole project. In some cases, this may extend across international, regional or local boundaries or demarcation lines, but nonetheless the impacts must be addressed. The Allay Baday borehole illustrates an intervention with impact over a wide geographical area.

✍ **Note** If the project includes a number of interventions or different project alternatives, one checklist should be completed per intervention or alternative, whether of the same type or not. The checklists can then be condensed in tabular form to give an indication of cumulative impacts arising from all the interventions.

An example of such a comparison is presented in Annex II.

If a project comprises 3 berkads, 4 ballies and a shallow well, one checklist will have to be completed for each berkad, each balley, and the shallow well. Once checklists for all the interventions or alternatives have been completed, a comparision of impacts for each intervention/alternative should be made, listing type of impact against intervention.

CASE STUDY 1

LAFTA FARAWAYNE VILLAGE IN WOQOOYI GALBEED REGION

Background
Village with 800 households on a plateau with fertile soil (Haud area)
Total annual rainfall 300-400 mm
Agro-pastoralists practising rain water harvesting for crop production.
Berkads and balleys are the main water sources.

History of water development
The first berkads constructed in 1961 and 1962.
Have completed construction of 95 berkads and 14 balleys - 300 berkads are under construction.
Most berkads damaged during the civil war in 1988.
Nearest permanent water source is 10 hours round trip

Major negative impacts found from EIA study on berkads were summarised into three groups:
- Low bacteriological water quality combined with vector born diseases cause health problems
- Berkads are not covered causing:
  - substantial water losses due to evaporation;
  - risk of people drowning; and,
  - pollution via dust.
- The area attracts settlement resulting in land degradation through soil erosion from:
  - overgrazed areas;
  - clearing of vegetation for agriculture;
  - cutting of trees and bushes for fencing and construction;
  - concentrated water runoff from roads, tracks and paths.

Major positive impacts found from EIA study on berkads:
- More water available for households.
- Shorter consumer distance to water source.
- Improved sanitation/hygiene.
- Increased area under cultivation.
- Increased income from sale of agriculture and livestock products.
- Increased income from sale of water.
- Reduce conflicts as can assist other with water.

Mitigation and support measures were suggested as follows:
- Put fish that eat impurities and insect larvae into the berkads.
- Close channels leading into the berkads during the first three rainfall events to allow for flushing out of impurities from the berkad catchments. After that inspect cleanliness and clear remaining rubbish before opening the channels leading into the berkads.
- Construct latrines to avoid contamination of catchments.
- Need to find ways of covering berkads. Berkads are wider than the normal height of trees. In earlier days berkads were made long and narrow allowing them to be covered using support of local timber. Need to change design?
- Live fencing was suggested as a way of preventing vegetation being cut for fencing.
- Rain water harvesting from roads, tracks and, paths into crop fields or pastures to be further supported. This would increase livestock and agricultural production and at the same time reduce soil erosion problems and compensate for loss of groundwater recharge from water harvested in berkads.
- Further support to participatory development of land use and land management plans for reduction of siltation of balleys and berkads.
- Develop plans for management of natural forests and woodlands.
- Further encourage forage production and conservation of fodder.

CASE STUDY 2

ALLAY - BADAY TOWNSHIP IN WOQOOYI GALBEED REGION

Background

This is a small township 94 km west of Hargeisa about 3 km from the Ethiopian border. It has about 5,000 inhabitants with nearly 10,000 surrounding transitory pastoral population.
The area is arid with an average erratic rainfall of 300 mm annually received in bimodal pattern.

History of water development

A bore hole 5 km from the center has been rehabilitated. Prior to this, major water supply sources were through several seasonal balleys and a number of individual berkads. During severe drought, this is supplemented by trucking of water by water tankers.
People come for water from as far a 60-70 km from the bore hole.
Often Jijiga Town in Ethiopia collects its water from here.
The bore hole is operated only during the dry seasons (often four months per year) and at that time continuously for 22 hours per day (2 hours for the town dwellers and 20 hours for livestock keepers).

Major negative impacts from the bore hole

- Attracts settlement causing:
  - cutting of trees for fencing and char coal burning;
  - increase of land opened for agricultural activities;
  - more land degradation caused by roads, tracks and paths.
- Concentration of livestock causing:
  - greater pressure from increased number of animals on limited land for grazing reducing local access to forage;
  - overgrazing of the area that earlier was a forest;
  - weed infestation.
- Reduced drought preparedness as people over-rely on borehole and having no preparedness for breakdown of operations.
- Fencing of land is a major issue causing conflicts in the area.

Major positive impacts from the bore hole

- Access to sufficient quantities of good quality water.
- More water available for domestic human consumption.
- Shorter distance form consumer to water source.
- Improved health status.
- Increased production both from agriculture and livestock.

Mitigation and support measures were suggested as follows:

- Could use some water from balleys for irrigation to reduce reliance on charcoal burning and other unsustainable utilisation of natural resources.
- Support to the already initiated kitchen gardens.
- Income generation from livestock and agriculture needs to be invested in improved infrastructure and services to improve on the welfare of the settlers.
- Rehabilitate additional boreholes for better distribution of people and animals.
- Need to have better preparedness in case the equipment brakes down (workshop back-up, spares etc.).
- Need to enforce land use regulations - people would have to destroy fences that have been put up in areas meant for free range. Need workshops and conferences for people to agree (chiefs sultans and elders can solve this problem).

CASE STUDY 3

OODWEYNE DISTRICT, TOGDHEER REGION

General background

Oodweyne District is on the Haud Plateau area with approximately 300-350 mm annual rainfall.
Droughts occur frequently, often every second year.
Highly pastoral community with Agro-pastoralism slowly growing, only seven out of the 38 villages practice agriculture with some enclosures (farms) for production of fodder, partly for sale and partly serving as a fodder reserves.
Only small scale irrigation is practised in home gardens.
No proper roads connect villages, vehicles are passing on tracks that deteriorate from year to year.
Access to curative health, immunization, drinkable water or school enrolment is below 5%. Only 33% of the population have access to permanent water points during dry periods of the year.

History of water development

Traditionally people dig wells along the banks of toggas to water their animals.
During 1960's and 70's some berkads were constructed in good grazing areas combined with support to veterinary services, establishment of fodder banks and construction of some balleys. Three bore holes were constructed but none is functioning now and the berkads were destroyed during the civil war.
As trucking of water over long distances is very common, people request that bore holes be constructed.

Abdi Farah Village, Odweyne District, proposed rehabilitation of a borehole

Major negative impacts found from EIA study were:

- Overgrazing caused by livestock concentration (although numbers of livestock due to the war are relatively small now this could change in future).
- Erosion caused by trampling of large numbers of animals.
- In-migration to existing settlement with risk of over-exploitation of natural resources.
- Erosion from access roads.

Major positive impacts were:

- Increased domestic human water consumption.
- Reduced distance from consumer to source.
- More time for agriculture and other development work.
- Reduced trucking of water.
- Improved public health.
- Improved food security.
- Improved utilisation of rangeland.
- Improved income generating opportunities from increased agriculture and livestock production.

Suggested mitigation and support measure:

- Need to look into development/rehabilitation of additional boreholes in the area to lessen concentration of livestock at each site.
- Re-align roads, tracks and stock routes to avoid movement straight up and down slopes.
- Prevent off road driving.
- Improve drainage of roads and tracks (harvest water and lead into plots for agriculture production and/or fodder production).
- For the immigrating communities, be prepared to provide needed services (health, schools, production inputs etc.).
- Train and equip veterinary assistants in collaboration with local veterinary association.
- Improve irrigated gardens of existing farming households.
- Train advisors and facilitate access to inputs for household gardens.
- Train advisors and facilitate access to inputs for existing cereal cultivators.
- Train the beneficiaries in management and technical procedures for operation of the borehole.

Activity 2 Identification of Causes of Impacts

Q. What does this activity do?

A. It provides the necessary information to proceed with the next step which involves developing solutions for any adverse impacts that may occur as a result of the project or intervention.

To arrive at a long lasting solution which will avoid or lessen the impact, it is of course better to deal with the cause of a problem rather than its symptom.

In some cases causes of impacts are fairly obvious, eg. soil erosion caused by trampling, whilst in other cases input may be required from specialists, eg. lowering of groundwater table and replenishment of aquifers.

If the causes are identified as being of a scale such that mitigation cannot be handled by the implementing agency or beneficiary community, it may be that a full EIA study needs to be commissioned, in which case the study would propose and advise on appropriate mitigation measures and their implementation.

Activity 3 Developing Solutions or Mitigation Measures

Q. What does this activity do?

A. It develops solutions to lessen or avoid negative impacts.

Once the causes of environmental impacts have been identified, measures to lessen their impact need to be developed. These measures are termed as mitigation measures. Establishing linkages between production systems and the different environments forms an important part of the process for developing appropriate mitigation measures, because the extent of indirect impacts can be anticipated.

Solutions can be simple (eg. fencing off a water point intended for human use to protect it from livestock) or may involve technological solutions such as spreading out water collection points over a larger area in order to dissipate or scatter the effects of localised erosion and overgrazing, and thereby lessening their impacts. The case studies in the boxes give examples of mitigation measures.

Before and during implementation, mitigation would apply to anticipated impacts, whereas after implementation, mitigation would deal with both existing and anticipated impacts.

Remember: While developing measures for mitigation, elders and community members should be involved because they may have valid suggestions for mitigation, and moreover can indicate whether proposed mitigation measures are practical or feasible in relation to their communities' needs and capabilities.

Activity 4 Identifying Opportunities Arising From Positive Impacts

Q. What does this activity do?

A. It highlights other benefits that may result from the project or intervention.

Apart from identifying negative impacts, the checklist will indicate positive impacts that may arise from the project. Some of these positive impacts may represent the project objectives, while others may be unintentional.

Nonetheless in some cases it is possible to enhance positive impacts.

If a borehole presents an opportunity for increased small scale agriculture (such as kitchen gardening or fodder production) whether through saved time or simply the provision of water, it may be possible to encourage this activity.

The project management will have to decide which activities arising from positive impacts they would want to support.

Activity 5 Developing Support Measures for Opportunities

Q. What does this activity do?

A. It proposes ways of maximising the benefits from positive impacts.

When opportunities for enhancing positive impacts have been identified as being suitable for providing assistance, mechanisms to support their implementation need to be developed.

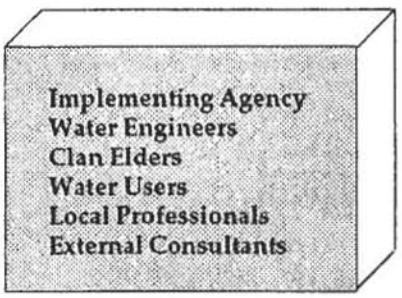
This may include things like training, provision of seeds, provision of technical assistance such as soil conservation techniques, etc. Other examples are illustrated in the case studies.

At this point it is also necessary to consider linkages so that indirect repercussions from the support measures can be established, and therefore the extent to which support is required can be determined.

Remember: While developing support measures for opportunities, elders and community members should be involved because they may have valid suggestions for support measures, and moreover can indicate whether proposed support measures are practical or feasible in relation to their communities' needs and capabilities.

Q. Who can be involved in carrying out these activities?

A. Activities 1 to 5 of the EIA study can be done by several persons having different professional specialisations and experience relevant to the project area (including clan members/beneficiaries), who must work together as a team. This is an effective way of obtaining a comprehensive picture of possible impacts. The exercise is done partly in the office and partly in the field.



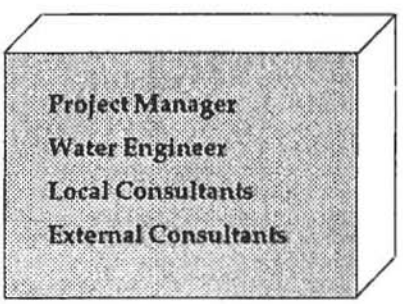
Activity 6 The EIA Study Report

Q. What does this activity do?

A. It assembles all the findings and recommendations of the study and presents them in a comprehensive document.

Q. Who prepares the EIA study report?

A. Usually the project manager or water engineer from the implementing agency, or local or external consultants are involved in the preparation of the EIA study report.



Once the EIA study is completed the findings and recommendations for mitigation and support measures have to be presented as an EIA Study Report. The report is sometimes called an Environmental Impact Statement. The requirements of the report and its format are presented in Annex III.

Q. What does this activity do?

A.
- It examines the EIA Study Report for adequacy, completeness and environmental acceptability;
- It ensures that all significant environmental consequences of the project have been identified;
- It determines whether proposed mitigation and support measures have been satisfactorily addressed;
- It assesses whether the implementing agency or target communities have the manpower resources, training and expertise to implement the proposed mitigation and support measures;
- It examines the financial viability of proposed mitigation and support measures;
- It establishes whether further environmental work is necessary.

If it is decided that the proposed mitigation or support measures are viable, then the next step is implementation of the project with the mitigation or support measures. It may be that the implementing agency does not have qualified manpower to carry out the proposed measures, in which case it may have to bring in local or external expertise to assist.

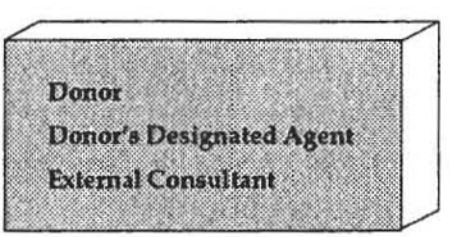
If, however, the measures proposed are not considered financially feasible, it may be necessary to redevelop solutions or return to the beginning of the EIA process, ie. understanding the project concept.

If, on the other hand, the project is considered environmentally unacceptable, then the project can be altogether rejected.

Guidelines for reviewing EIAs are presented in Annex IV.

Q. Who can be involved in reviewing the EIA Study Report?

A. The review of the EIA study can be done by the donor, its designated agent, or an external consultant who may be hired to do this. The review can be done in the office.



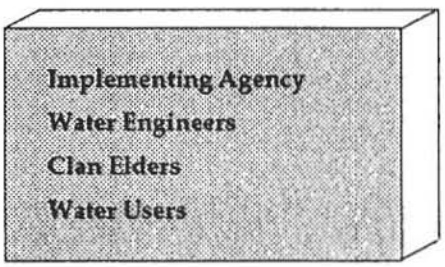
STEP 6 IMPLEMENTATION OF THE PROJECT

Q. What does this activity do?

A. It ensures the implementation of the project with the recommended mitigation and support measures.

Q. Who can be involved in project implementation?

A. Project implementation is done by the implementing agency and the clan/beneficiary community.



STEP 7 MONITORING AND EVALUATION

It is natural to proceed from participatory planning to participatory assessment to monitoring and evaluation during the implementation of a project. Most agencies have a programme in place for monitoring their projects and conducting evaluations. Monitoring and evaluation for the purposes of EIA should be incorporated into existing methods of monitoring and evaluation.

Q. What is monitoring?

A.
- It is a tool to predict unforeseen adverse impacts, so that these can be avoided or mitigated.
- It is a process for collecting data which is generally thought to be lacking in Somali water sector development.
- It enables trends to be established, which is useful in future programme planning, for example when a project is to be expanded to other regions.

For the EIA process, project monitoring requires indicators to be identified which serve essentially as markers of achievement or degradation. They give an indication of the success of mitigation and support measures, as well as advance warning of unforeseen impacts on the environment. Examples of possible indicators that can be used for monitoring particular environmental impacts are listed on the following page.

Environmental Impact	Indicators
Rangeland degradation	- recovery capacity during wet season
Forests (depletion of)	- changes in total area of forest in project area
Soil erosion	- gully formation/healing
Overgrazing	- amount of ground cover, amount of weed infestation
Public health	- incidence of malaria, intestinal worms, typhoid, number of households boiling water
Solid waste disposal	- amount of garbage at water points

Monitoring and evaluation is discussed in depth in IUCN's report on Local Level Monitoring and Evaluation Systems (December 1997).

Q. What is evaluation?

A.
- It is the periodic review of the monitoring process.
- It gives an indication of the efficiency, applicability and success of mitigation and support measures.

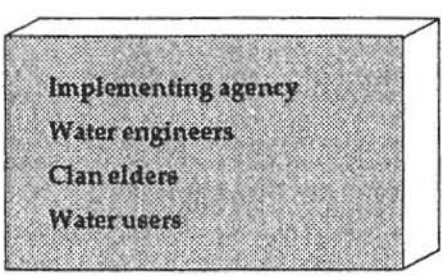
If mitigation measures are not considered successful, it may be necessary to revert back to the EIA stage where problems have to be identified again, and solutions redeveloped.

Similarly if support measures are not considered successful, other opportunities may have to be identified, or the support measures may have to be modified in order to achieve their original aims.

Q. Who can be involved in monitoring and evaluation?

A. The beneficiary communities/clan members are best placed to record environmental changes, particularly with regard to unforeseen environmental impacts.

The implementing agency must also be involved in the collection of monitoring data and its analysis.



ANNEX I: SCREENING

WHAT IS SCREENING?

Screening is a process which categorises projects according to the level of environmental analysis required by those projects.

The benefits of screening are that:

- ❖ It highlights at an early stage, potentially significant environmental impacts; and,
- ❖ It prevents human and financial resources from being applied to environmental analysis of projects with minor or negligible impacts.

Screening is a short exercise that is done at the desk by the donor or relevant environmental authority.

SCREENING CATEGORIES

The screening categories described below are those used in the EU's Environmental Manual. Projects may fall into any one of the following screening categories:

Category A	Projects that are unlikely to have significant environmental impacts and therefore require no environmental analysis
Category B	Projects that are potentially likely to have significant environmental impacts because of their type, scale or other relevant characteristics
Category C	Projects that are highly likely to have significant environmental impacts because of their type, scale or other relevant characteristics

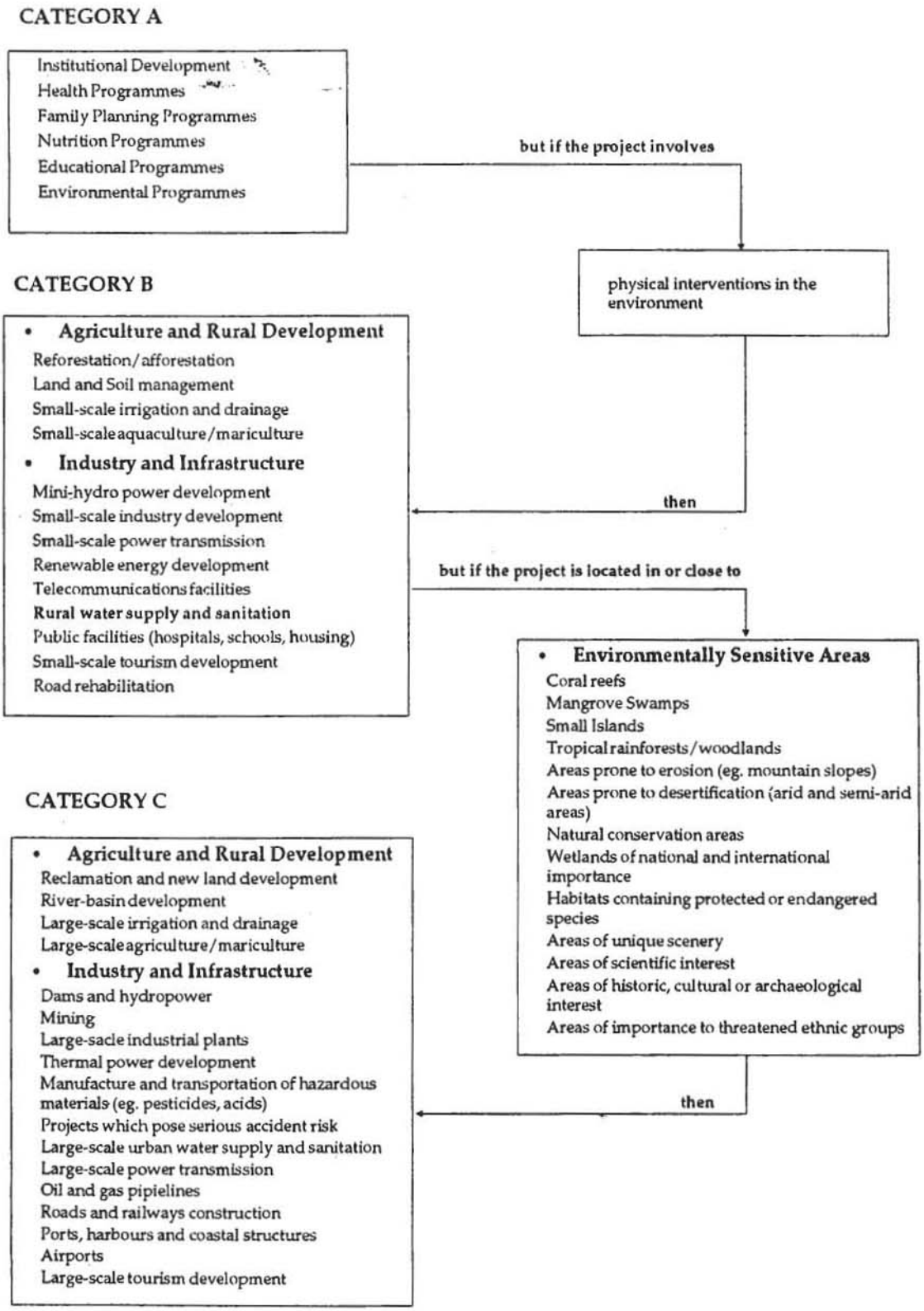
The flow diagram on the following page lists examples of development projects in the various categories.

WHAT TYPE OF INFORMATION IS REQUIRED FOR SCREENING?

In order to place a project in the appropriate category, it is necessary to have an understanding of:

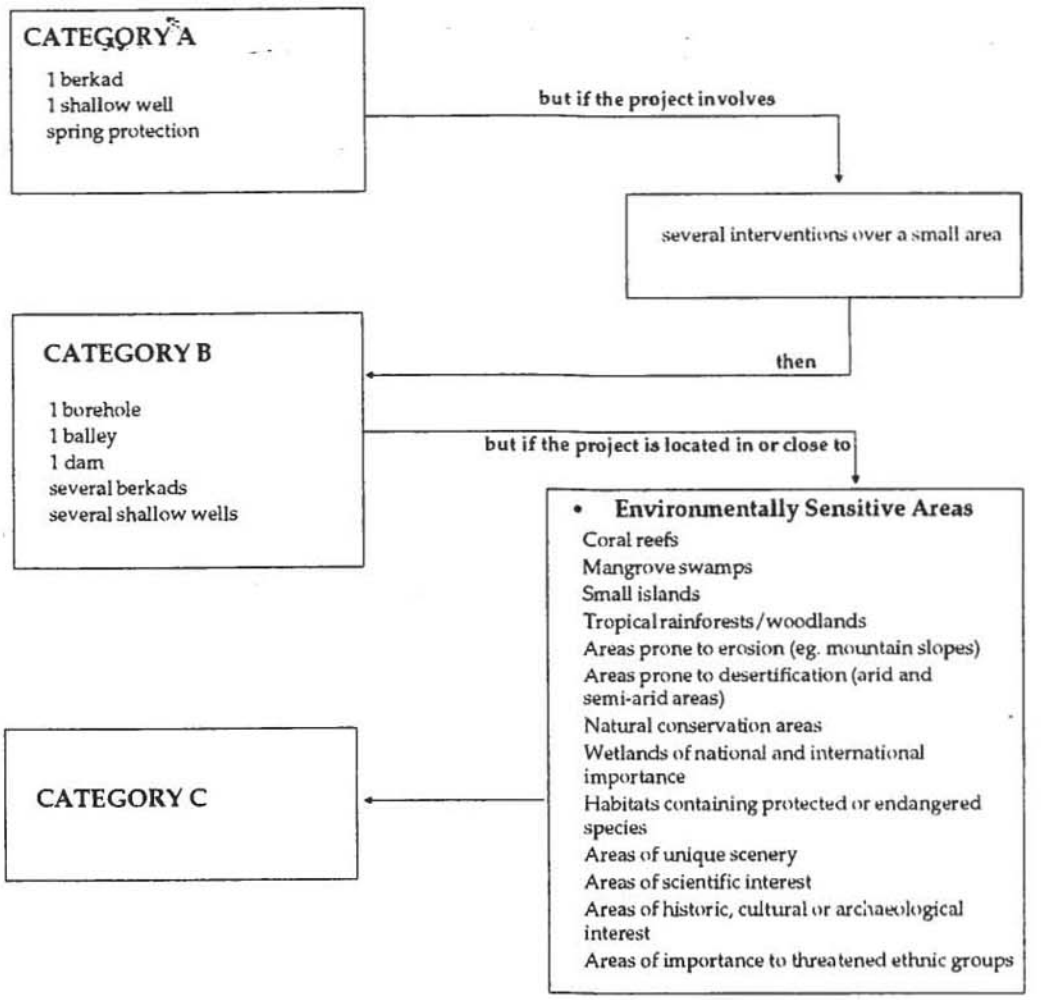
- ❖ the objectives of the project or intervention;
- ❖ historical and background information on the project area (including climate, rainfall, hydrology, soils, land use, socio-cultural aspects, etc);
- ❖ other activities in the proposed project area being carried out by the communities or other organisations;
- ❖ components of the project;
- ❖ expected output and results of the project.

Figure 1: Screening Categories for EIA



The flowchart in Figure 1 can be adapted to rural water development in the Somali context as follows:

Figure 2: Screening Categories for the EIA Process in Somalia



The type and scale of projects proposed to be undertaken under the EC Rehabilitation Programme for Somalia are generally small scale interventions that may have some major environmental impacts, particularly when a number of interventions are implemented in a small or confined area. These projects therefore fall into Category B.

However, if the projects are located in environmentally sensitive areas, a full scale EIA is normally required. Full scale EIAs as required by Category C projects generally take one or more years to carry out. They involve detailed studies on the ecological, sociological and physical environments. In addition, they are supposed to put in place mechanisms for monitoring the environment, and ensure that, at least in the beginning (ie. the first one or two years), these mechanisms are effective.

Carrying out such an EIA for rural Somali water development projects is not feasible, given that project cycles are normally one or two years long. Besides, the financial resources required for such studies would be considerable.

In light of the above, if projects proposed for rural Somali water development fall into Category C, it may be advisable to abandon them.

ANNEX II: AN EXAMPLE OF COMPILATION OF CHECKLISTS

EIA testing; example of aspects considered and of ratings obtained

MAGNITUDE OF IMPACTS:

+ +	major positive impact	+	minor positive impact
- -	major negative impact	-	minor negative impact
0	zero or negligible impact	?	unknown or doubtful
n/a	not applicable		

IMPACTS ON OR CAUSED BY:	S/W	Balley	Berkad	B/H
PHYSICAL ENVIRONMENT				
Groundwater				
- quality				
physiochemical	++			?
bacteriological	?			?
- quantity: (availability, adequacy, fluctuations, depth of water table)	- -			?
- aquifer capacity (depletion, replenishment)	0			?
Surface water				
- quality				
physiochemical		++	++	
bacteriological		- -	- -	
- quantity (availability, adequacy, fluctuations)		-	+	
Leakage/seepage	N/A	-/+	0	0
Ponding	0	0	0	-
Siltation	N/A	- -	-	N/A
Evaporation	N/A	- -	-	N/A
- Soil erosion (due to construction)		-	0	N/A
- Soil stability	+	0	0	N/A
Air pollution (dust)	-	- -	-	0
Noise pollution (due to construction, pumps)	0	0	0	0
Suitability of site location	-	+	-/+	?
BIOLOGICAL ENVIRONMENT				
Forests/woodland				
- utilisation of woody species (eg.fencing, building, firewood)	0	-	- -	-
Vegetation (clearing for construction of intervention)	-	-	-	-
Wildlife	0	+	0	-
Introduction of disease vectors (creation of vector habitats) harmful to humans and/or livestock	- -	- -	- -	-
Suitability of site location	+	++	++	+

PRODUCTION SYSTEMS				
Sustainability of changes in land use (eg. from ranching to farming)				
Agricultural productivity				
- changes in agricultural practices (irrigation, water harvesting, fodder production)	--	-+	+	+
- increase in land under cultivation	--	-	-+	+
Livestock				
- livestock production	0	-	-+	++
- livestock movement	0	0	-+	-/+
- overgrazing (degradation of range, settled areas, common grazing areas, etc)	0	- -	-	- -
- erosion (trampling, access routes)	0	- -	- -	- -
- changes in traditional livestock husbandry	0	-+	+	0

SOCIO-ECONOMIC & SOCIO-CULTURAL ENVIRONMENT				
Water usage patterns				
- utilisation of available water	++	++	++	++
- distance to source	++	++	++	++
- utilisation of saved time	++	++	+	++
- changes in traditional water management practices (use of designated watering points, water rights, transport, storage)	+	0	-/+	++
Public health				
- water related diseases	0	- -	- -	++
- sanitation/hygiene	0	- -	++	++
- solid waste disposal	0	-	+	0
Food security	+	+	+	++
Nutrition	+	+	+	+
Settlement/sedentarisation				
- in-migration to existing settlements	0	-	0	- -
- sedentarisation in rangelands	0	0	0	-
- community set up (cohesion, separation)	++	++	+	-/+
- fencing off of land for private utilisation	0	0	0	-
- access roads to water points	0	-	-	- -
Income generating opportunities				
- agricultural products	+	+	++	+
- livestock products (milk, meat, ghee, hides, skins)	+	+	++	++
- sale of water	0	0	++	++
- employment on project	0	+	++	+
Traditional attitudes to drought preparedness	0	+	-/+	0
Security/conflict	+	+	+	+
Safety of intervention structures (dam walls, deep ponds)	+	+	- -	0
Sites of cultural/historic importance	N/A	N/A	N/A	N/A
Suitability of site location	+	++	++	++

ANNEX III: PROPOSED FORMAT FOR EIA REPORTING

The final task in an EIA study is the presentation of results in such a way that decision makers are provided with all the necessary background information, findings of the study and recommendations for mitigation in a clear systematic manner to enable them make the right decision.

a) Executive summary

Non-technical executive summary presenting recommended measures for prevention or reduction of negative impacts, for improvement of overall benefits of project and for monitoring of project impacts.

b) Area of influence

Give brief description of the area influenced by the project; Physical environment (geology, soils, climate); Biological environment.(vegetation, wildlife etc.); Production systems (pastoralism, agro-pastoralism, agriculture,etc.); Socio-economic environment (population, health, land tenure, land use, economic activities, infrastructure)

c) Project description

A brief description of the project; purpose, location, project components, size, capacity, history of water development, influence from other projects operating or planned in the same area.

d) Potential environmental impacts of the proposed project

Describe major positive and negative impacts. Where possible describe impacts quantitatively and with economic values. Explain any shortfall in baseline information. Identify any special studies likely to be needed.

e) Proposed mitigation measures and measures to enhance project output

Recommend feasible and cost effective measures to prevent or reduce negative impacts to acceptable levels and to enhance positive impacts for improvement of overall benefits of project.

Present a plan with budget estimates for the implementation of proposed measures.

f) Monitoring plan

Develop a plan with a budget for monitoring of the implementation of proposed measures. Specify needs for inputs such as training and institutional strengthening.

ANNEX IV: REVIEW OF ENVIRONMENTAL IMPACT ASSESSMENTS

PURPOSE OF REVIEWING EIAS

When the EIA study is complete, the implementing agency or external consultant will put together the study findings in the form of an EIA Study Report (or Environmental Impact Statement as it is sometimes called).

The purpose of reviewing environmental assessments is to examine the adequacy of the EIA study and evaluate its conclusions with regard to:

- compliance with Terms of Reference for the EIA;
- the environmental acceptability of the project;
- the financial implications of incorporating mitigation measures recommended in the EIA report.

RESPONSIBILITY FOR REVIEWING EIAS

The responsibility for reviewing EIAs lies with the donor or funding agency. The donor may choose to employ a consultant to review the EIA and assess the financial implications of proposed mitigation and support measures.

STEP BY STEP GUIDE TO CONDUCTING REVIEWS OF EIA STUDY REPORTS

The following steps provide a guideline for the persons reviewing an EIA.

	Questions to be asked:	Action to be taken if answer is NO	Remarks
STEP 1	Does the EIA study fully address all the requirements of the Terms of Reference?	Return to implementing agency to fully address TOR	In some cases, Terms of Reference may not have been drawn up for the EIA. In these cases proceed to Step 2
STEP 2	Does the EIA report follow the EU Environmental Guidelines Manual, or any similar guidelines prepared by the local administration if they exist?	Return to implementing agency for compliance with guidelines	
STEP 3	Have key environmental issues been addressed?	Return to implementing agency for addressing all key issues	
STEP 4	Have all significant negative impacts been identified?	Return to implementing agency for identifying all major negative impacts	

STEP 5	Have mitigation measures for adverse impacts been properly developed?	Return to implementing agency for developing suitable mitigation measures	
STEP 6	Have all positive impacts been identified?	Return to implementing agency for identifying all possible positive impacts.	
STEP 7	Have measures to enhance positive impacts been properly described?	Return to implementing agency for describing means to enhance positive impacts.	
STEP 8	Are findings technically and scientifically sound?	Return to implementing agency for verification of findings	
STEP 9	Have measures to maximise beneficial impacts and mitigate adverse ones been incorporated into the economic analysis of the project?	Return to implementing agency to include costs of mitigation in economic analysis	
STEP 10	Can the report be easily understood by decision makers and the general public?	Return to implementing agency for modification of report	

To assist in answering the above issues, the following should be considered:

Impact Identification

- does the project have an impact on any environmentally sensitive areas?
- is there a clear statement of significant beneficial and adverse impacts?
- have all risks arising from the project been evaluated?
- have off-site, trans-boundary effects been considered?
- have all possible long-term and permanent impacts been considered?
- have clan elders and water users been involved in identifying impacts?

Mitigation Measures

- what mitigation measures have been proposed?
- what alternative sites or designs have been considered?
- have experiences from previous projects been considered?
- are there any significant negative impacts that cannot be avoided or mitigated?
- have the clan elders and water users been involved in developing mitigation measures?

Implementation

- ❖ Are the institutional arrangements, personnel and financial resources adequate to implement recommended mitigation and support measures?
- ❖ Does the EIA specify who will be responsible for monitoring?

TIME FRAME FOR REVIEWING EIAs

The EIA Study Report should be reviewed within a month of submission of the report.

REVIEW PANEL

Normally reviews of EIA Study Reports are carried out by a multi-disciplinary team of individuals. In the context of the development of rural Somali water supplies, this may include any of the following:

- ☞ a water engineer;
- ☞ an EIA specialist;
- ☞ an ecologist;
- ☞ a sociologist/anthropologist;
- ☞ a hydrologist;
- ☞ an agriculturalist/agronomist;
- ☞ a soils specialist;
- ☞ a public health specialist;
- ☞ a physical planner.

TARGET COMMUNITY INVOLVEMENT

Clan elders and beneficiaries from the water development project must also be informed of the findings of the study, because they are the ones that will be affected by the project. Although it would be difficult or impossible for them to provide written comments, the implementing agency should elicit the views of the clan elders and beneficiaries, especially with regard to recommendations for mitigation of adverse impacts and enhancement of positive ones.