



**GOVERNMENT OF RWANDA**  
**RWANDA ENVIRONMENT MANAGEMENT**  
**AUTHORITY**



**SECTOR SPECIFIC ENVIRONMENTAL IMPACT  
ASSESSMENT GUIDELINES FOR  
TANNERY PROJECTS**

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# FOREWORD

# ACRONYMS

AfDB	African Development Bank
BOD	Biological Oxygen Demand
CBOs	Community Based Organizations
CDO	Community Development Officer
CFCs	Chlorofluorocarbons
DfID	Department for International Development
EIA	Environmental Impact assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ETP	Effluent Treatment Plant
FAO	Food and Agriculture Organization
GHGs	Green House Gases
GTZ	Germany Technical Cooperation
GoR	Government of Rwanda
IEE	Initial Environmental Examination
IRST	Institute for Scientific and Technological Research
ISAR	Rwanda Institute for Agricultural Science
JICA	Japan International Corporation
KIST	Kigali Institute for Science, Technology
MDGs	Millennium Development Goals
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MINIJUST	Ministry of Justice
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Environment and Natural Resources
MINIRENA	Ministry of Natural Resources
MINISANTE	Ministry of Health
NGOs	Non-Governmental Organizations
NORAD	Norwegian Agency for Developmental Cooperation
NUR	National University of Rwanda
RBS	Rwanda Bureau of Standards
RDB	Rwanda Development Board
REMA	Rwanda Environment Management Authority
RLI	Rwanda Leather Industries Ltd
SIDA	Swedish International Development Agency
SQMT	Standards, Quality Assurance and Metrology
ToR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization

# DEFINITIONS

**An Impact:** is the effect of any action that affects one or more elements of the natural, social or economic environment, either adversely or beneficially.

**Authority:** means the institution responsible for organising the EIA procedure by undertaking screening, guiding developers on assessment procedures, conducting public hearings, reviewing EIA reports based on the terms of reference (ToR) and taking decisions on approval or disapproval of proposed projects. The Authority is also responsible for monitoring implementation of environmental protection measures recommended by EIA studies.

**Compensation:** Is considered as an appropriate mitigation measure for unavoidable impacts when actions to minimize such impacts on people are not possible or insufficient.

**Cumulative Impacts:** Those impacts that result from the incremental impact of the proposed action added to the impacts of other past, present, and foreseeable future actions.

**Developer:** Means a person, group of persons or agency developing a new project or proposing to extend an existing project which is subject to an EIA process.

**Direct Impacts:** Those impacts that are caused by the action and which generally occur at the same time and place as the action.

**Environment Impact Assessment:** A systematic examination conducted to determine whether or not a project will have any adverse impacts on the environment.

**Environment:** Are the physical factors of the surroundings of the human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and built environment.

**Environmental Economic Analysis:** An analysis of the expected environmental impacts of projects from an economic perspective.

**Environmental Impact Statement:** The written report which presents the results of an Environment Impact Study.

**Environmental Impact Study:** means the study conducted to determine the possible environmental impacts of a proposed policy, project or activity, and measures to mitigate any such impacts.

**Environmental Monitoring:** the continuous determination of the actual and potential effects of any activity or phenomenon whether short-term or long term. Observation of effects of developing projects on environmental resources and values; including sampling, analysis, temporal monitoring during the project construction stage and continued periodic monitoring following commencement of project operation

**Guidelines:** the description of the methodology for conducting EIAs for projects, and the responsibilities for the different stakeholders within the EIA process.

**Impact:** Is the effect of any action that affects one or more elements of the natural, Social, political or economic environment, either adversely or beneficially.

**Indirect Impacts:** Those impacts that induce changes in the natural environment, population, economic growth, and land use, as a result of actions not directly linked to the project in question.

**Lead Agency:** any Ministry, Department, Parastatal agency, Local Government system or Public Officer in which or in whom any laws vests functions of control or management of any segment of the environment.

**Mitigation measures:** Actions which reduce, avoid or offset the potential adverse environmental consequences of a project, and include engineering works, technological improvements, management measures and ways and means of ameliorating effects to the environment and losses suffered by individuals and/or communities, including compensation and resettlement.

**Participation:** A process through which stakeholders' influence and share control over development initiatives and decisions or resources that affect them.

**Pollution:** Any direct or indirect alteration of the physical, thermal, chemical, biological, or radioactive properties of any part of the environment by discharging, emitting or disposing waste so as to affect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to public health, safety, or welfare or to animals, plants or aquatic life to cause a concentration of any condition, limitations or restriction to a healthy environment.

**Project brief:** a summary statement designed to achieve specific objectives within a given area and the likely environmental impacts and mitigation measures thereto.

**Project:** A set of planned activities designed to achieve specific objectives within a given area and time frame.

**Proponent/Developer:** means a person, group of persons or agency developing a new project or proposing to extend an existing project which is subject to an environmental impact assessment process.

**Review:** Critical examination and assessment of an EIA/EIS and its conclusions and recommendation.

**Scoping:** Early, open identification of potentially significant environmental impacts and de-emphasis or elimination of insignificant impacts or impacts which have already been covered by other EIAs.

**Screening:** Selection of actions or projects requiring EIA. Common methods for screening include: project threshold, sensitive area criteria, positive and negative list, preliminary assessment/ IEE.



**Significance:** an expert evaluation/judgment of the magnitude of impact or the degree to which a proposed activity or project may (potentially) impact on the environment if implemented.

**Significant effect:** substantial, or potentially substantial, adverse changes in any of 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 aesthetics and includes both the natural and built environment.

**Stakeholder:** Those affected by the outcome of a project or can affect the outcome of a proposed project either negatively or positively.

**Tanning:** This is a process of converting putrescible animal hides and skins to a stable commercial product called Leather.

**Waste:** is a by-product of day to day activities or anything, which is no longer useful to someone and one need to get rid of. It is something, which the first user does not want anymore, and therefore throws it away.

# **PART I: INTRODUCTION**

## **1.1 Environmental Impact Assessment Background**

A major concern of the Republic of Rwanda is sustainable economic development. There has been a concerted effort to improve the quality of the environment and enhance economic well-being. Rwanda promulgated a constitution in 2003 that clearly states in Article 29 that – every citizen is entitled to a healthy and satisfying environment. The constitution is backed by laws principal among which is the Organic law N° 04/2005 of 08/04/2005. This law determines the modalities of protection, conservation and promotion of environment in Rwanda. The lead government ministry for environment is the Ministry of Natural Resources (MINIRENA) while the overall responsibility of environmental management lies with Rwanda Environment Management Authority (REMA) that was established in November 2006. One of the key functions of REMA includes the implementation of Environmental Impact Assessment (EIA). The Government of the Republic of Rwanda has also enacted laws and formulated Sectoral policies such as those on water and sanitation, land, and agriculture and biodiversity protection to enable environmental protection.

The government through its statutory environmental management agency (REMA) is acting coherently and comprehensively to achieve environmental conservation. It is a realization that development and environmental management should go hand-in-hand so as to achieve sustainable development. However investments in environmental protection are still considered a liability by many enterprises mainly due to lack of awareness of the benefits. Practice has shown that considering environmental factors at par with production helps in minimizing material losses, protecting the environment and also reduction of liabilities in the long run. The government in recognition of the need to protect the environment from adverse impact of developmental activities requires the conduct of EIA of projects that are likely to have significant effect on the environment before implementation. The development of EIA guidelines is therefore a response to Government and public concern for improvement in project management to ensure a clean and healthy environment.

## **1.2 Tanning Industry Context and the need for Guidelines**

Leather production is a highly polluting process, if not controlled properly. Loss of biodiversity (both flora and fauna) within fragile ecosystems can be envisaged. Any contamination may lead to immediate or long-term destructive effects in the environment, thus monitoring of the wastewater becomes a critical issue. Additionally, health and accidents risks for the employees and the neighboring population are high and new environmental legislation calls for immediate action and close self monitoring of the tanneries. The current tanning process is of a conventional, potentially more damaging nature and the raw hides are of inferior quality. A sustainable tanning industry in Rwanda needs improved productivity in a controlled environment. It is against this background that these EIA Guidelines have been developed with the following key objectives.

## **1.3 Objectives of these Guidelines**

The overall objective of these guidelines is to ensure the sustainability of tanneries development in Rwanda. This will be achieved through:

- i. Providing guidance for undertaking environmental impact assessment of tannery developments,
- ii. Guiding various stakeholders on safe production, use, handling of tanneries products; and managing adverse impacts and enhancing positive ones in a manner that add competitive value to tanneries business.
- iii. Helping enforce Environmental policies and applicable environmental legislations and standards applicable to tanneries,

#### **1.4 Target group for the Guidelines**

These guidelines are prepared mainly to assist regulators/authority and lead agencies (e.g. REMA, Rwanda Development Board, Ministry of Agriculture), EIA practitioners, and proponents/developers and, that are directly involved in the implementation of tannery projects. In addition, individual researchers and other interested persons can use them for different purposes, but with an overall aim of sustainable development.

#### **1.5 Linkage to the General EIA Guidelines**

These EIA Guidelines for the tannery industries are intended to be used hand in hand with the General EIA Guidelines for Rwanda (2006). As such, the EIA processes that are generic and are clearly stipulated in the general guidelines have not been repeated in these sector specific guidelines. The guidelines provide a framework under which to conduct assessment and identify impacts that may arise from the specialist nature of the tannery industry. Focus is therefore put in on the processes that are involved in the tanning of the hides and skins into both leather and other finished/semi-finished products.

#### **1.6 Responsibilities of Different Stakeholders in EIA Process**

##### **1.6.1 The Authority**

The Authority has a responsibility to organise the EIA procedure by undertaking screening, guiding developers on assessment procedures, conducting public hearings, reviewing EIA reports based on the terms of reference (ToR) and taking decisions on approval or disapproval of proposed projects. The Authority is also responsible for compliance, enforcement and monitoring implementation of environmental protection measures recommended by EIA studies.

##### **1.6.2 Lead Agencies**

Lead agencies such as government ministries or departments have the responsibility for management and protection of environmental resources, public health and socio-economic development. Lead agencies have the responsibility to take part in EIA of projects under their sectors. They provide valuable technical information to EIA experts and the Authority during EIA process and studies and are involved in the review process.

##### **1.6.3 Developers**

The developer has direct responsibility for the project and should provide necessary information about the project at all stages of the EIA process. Developers hire experts to undertake EIA studies on their behalf and answer questions about potential impacts and

proposed mitigation recommendations at public hearings. Developers have the responsibility to implement the environmental management plan including mitigation measures as proposed in the EIA report and carry out subsequent environmental monitoring and auditing.

#### **1.6.4 EIA Experts**

EIA experts are professionals registered with the Authority to undertake impact studies. They help the developer to carry out EIA, design mitigation measures, prepare EIA report, and design environmental management and monitoring plans.

#### **1.6.5 Academic and Research Institutions**

Members of academic and research institutions are commonly co-opted on EIA Teams and Technical Committees. They also institutionalise environmental education in their curricula such as Veterinary Medicine, EIA.

#### **1.6.6 The Public and Civil Society Organisations**

Communities/organisations have a right to take part in the EIA process. Public participation allows important social and environmental problems to be identified and gain consensus on nature and adequacy of proposed mitigation measures and recommendations. The role of the public in the EIA process includes contributing information and advice to EIA studies during scoping and public hearing process. The public also advises project developers and the Authority on approaches to avoid, minimize or compensate for adverse environmental impacts.

#### **1.6.7 International Funding Organisations**

All international funding organisations require EIA for projects they are to fund. Social and Environmental Safeguard Policies of these funding organisations should be reviewed in consideration of these sector specific EIA Guidelines for Tannery Projects.

### **1.7 Cost of EIA**

Under Article 69 of the Organic Law (No. 04/2005 of 08/04/2005), it is indicated that EIA shall be carried out at the expense of the developer. Upon project approval, a developer is required to pay an administrative fee to the environmental fund (FONERWA) to be determined as a percentage of the estimated cost of the investment.

### **1.8 How to use the Guidelines**

These Guidelines are presented in nine parts:

- a) Part 1: Introduction
- b) Part 2: EIA Process
- c) Part 3: Guidelines Use By the Authority and Lead Agencies
- d) Part 4: Guidelines for Use by Project Developers
- e) Part 5: Guidelines for EIA Practitioners
- f) Part 6: Guidelines for Mitigation of Social Impacts

- g) Part 7: Guidelines for Public Consultations
- h) Part 8: Guidelines for Resettlement and Compensation
- i) Part 9: Synopsis of Tanning, Possible Impacts and Mitigation  
Annexure and Checklists

It might not be necessary to read this document in consecutive order, nor to study all its chapters. The document is arranged in such a way, that the different players in the EIA process can greatly benefit by referring to the chapter that is relevant to them.

## **PART 2: EIA PROCESS**

### **2.1 EIA Process in Rwanda as Applicable to the Tannery Sector**

EIA is a systematic step by step process that is initiated by the proponent/developer and it involves many stakeholders whose contributions are vital to cause informed decision on a proposed tannery project. The steps of carrying out EIA are outlined here below and summarized in Figure 1. The relevant components can be applied to policies and projects during the conceptual and design stages, or after completion of policy and/or project formulation and design but before actual implementation. An EIA procedure and timelines has been presented in Annex Q. The basic components of EIA process are described as follows:

### **2.2 Project Brief**

A developer is required to prepare a project brief which is a description of the project. This is background information on the project for consideration by the Authority. The EIA process normally begins once the developer has submitted the project brief to the Authority for comments. Suggested format for a Project Brief for tannery projects is presented in Annex C.

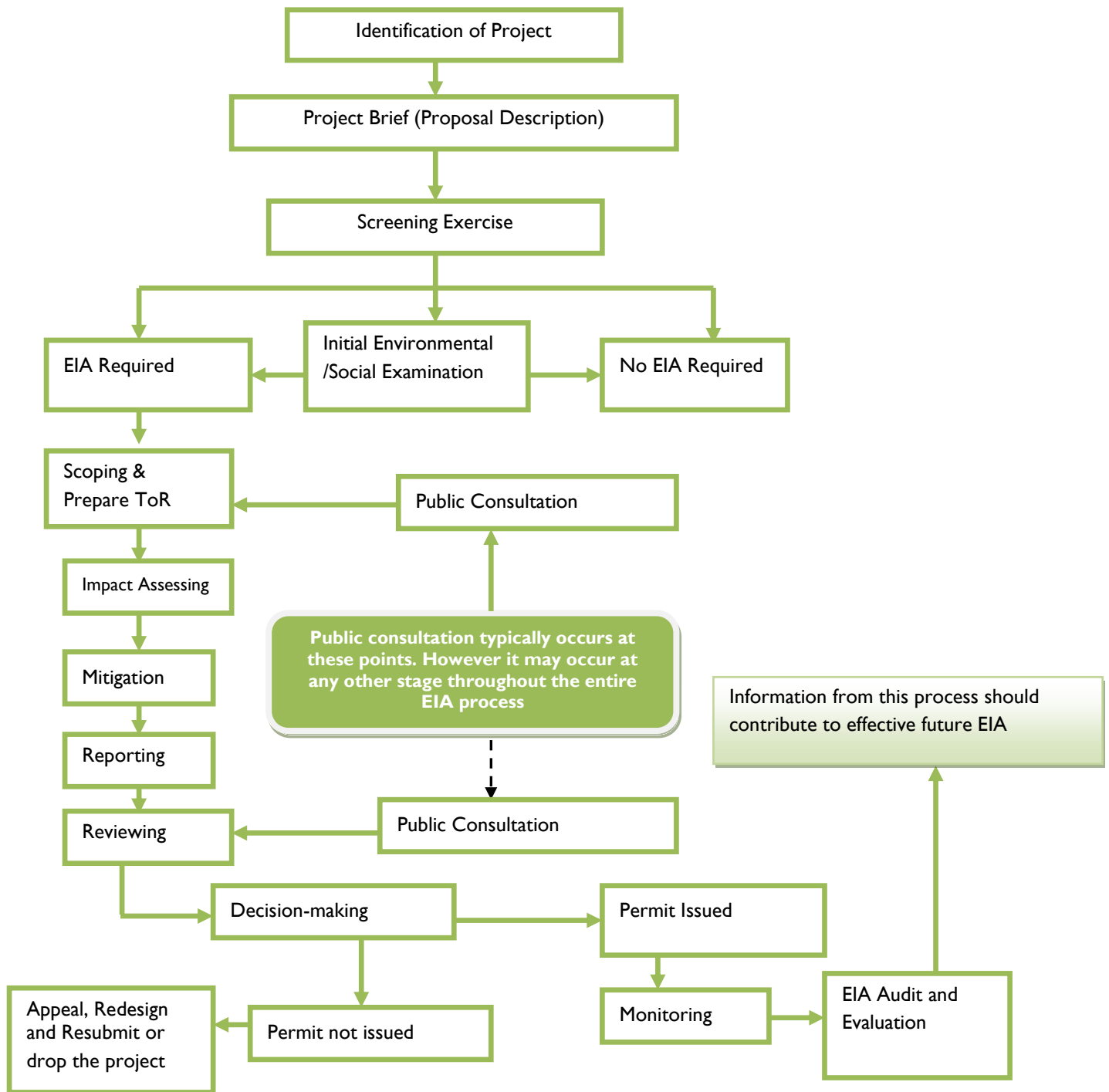
### **2.3 Phase 1: Screening**

This is the task of deciding whether or not an EIA is required for a particular project. Basic details of the proposed development will be needed for the project to be screened. Screening results in the categorization of the proposals in three categories:

- i. No EIA required (Project Exempted)
- ii. Initial Environmental Examination (IEE) required for confirmation if EIA is required or not
- iii. Full EIA required

For tannery projects factors like the category of waste, the size of the population to be served by the project or impacted by the project and project location are the critical information required to determine whether an EIA is necessary. The general Guidelines for EIA in Rwanda (REMA 2006) provide the general criteria for screening however, screening guidelines for tannery projects have been provided under Annex D. The Ministerial Order establishing the list of works, activities and projects that have to undertake EIA should also be considered under the screening exercise. However every project will have unique associations to require screening. A summary of information on screening is provided in the Table 1 and Annex M shows assessment forms for different categories of projects.

**Figure 1: Steps in carrying out EIA displayed as a Flow Chart**



**Table 1: Summary information on screening**

Screening	Typical proposal that require full-scale EIA	Screening methods	Screening information required by decision-makers	Typical project list categories
<p>It is a process for determining whether or not a proposal requires full-scale EIA and the level at which the assessment should occur</p>	<ul style="list-style-type: none"> <li>• Natural resources exploitation</li> <li>• Infrastructure</li> <li>• Industrial activities</li> <li>• Extractive industries</li> <li>• Waste management and disposal</li> </ul>	<ul style="list-style-type: none"> <li>• IEE</li> <li>• Project lists - inclusive</li> <li>• Exclusive list</li> <li>• Decision-makers' discretion</li> </ul>	<ul style="list-style-type: none"> <li>• Information on the proposal and its potential impacts</li> <li>• Level of confidence of predictions- impacts</li> <li>• Characteristics of the environment and its resilience</li> <li>• Planning, environmental management and decision-making framework</li> <li>• Degree of public interest</li> </ul>	<ul style="list-style-type: none"> <li>• Full-scale EIA required</li> <li>• Some further environmental analysis required</li> <li>• No EIA required</li> </ul>



If a decision is made at screening stage to exempt a project, or to approve its environmental aspects the basis of identified mitigation measures, such a decision shall be contained in a Certificate of Approval of the EIA issued by the Authority.

If, however, after screening, it is determined that the project requires a detailed Environmental Impact Study, such a certificate shall only be issued after approval or disapproval of an EIA. See also section 2.1.2 of the General EIA Guidelines for Rwanda that lists the project categories (IL1, IL2 and IL3). Annex D and E provides details on screening Guidelines and Screening Checklist for tannery projects.

## **2.3 Phase II: Environmental Impact Study**

### **2.3.1 Scoping**

Scoping, or identification of potential environmental impacts, is an important early stage of the EIA process to ensure that the EIA is properly carried out. For a project to be properly scoped, a site visit and preliminary consultations with relevant regulatory authorities and lead agencies must be included at the scoping stage. Ideally public consultation should also be carried out the scoping stage. Consultations should involve exchange of information about the characteristics of the proposed project, and assistance to the consultant in identifying regional and local issues and/or sources of information of relevance to the EIA process. From consultations and a preliminary assessment of baseline conditions the consultant must:

- i. Identify the characteristics of the proposed development that are likely to give rise to impacts.
- ii. Identify what type of impacts that may arise that need to be addressed in the EIA study.
- iii. Determine which environmental resources and people in the vicinity of the proposed site are likely to be particularly sensitive to the above impacts, and what categories of impacts are likely to be a problem in this respect.
- iv. Suggest delineation of the appropriate boundaries to be considered in the EIA Study.
- v. Provide questions about the proposed project which should be answered through the EIA Study.
- vi. Give alternatives to the proposed action.
- vii. Indicate the full range of stakeholders to be consulted and suggestions for full public involvement in the process.
- viii. Identify the full range of stakeholders who may be affected or are interested in the proposed project.
- ix. Provide other technical aspects related to the proposed action.
- x. Identify other past, or foreseeable future projects in the area that may be impacted upon by, or will impact on the proposed project; and
- xi. State how the proposed project conforms to existing laws, policies and regulations.

In case the project characteristics or the boundaries of the proposed site changes, the potential impacts may also change, and the scope of the EIA will need to be reviewed. There are generally benefits from focusing attention on the key issues of concern. Not all

issues identified will have the same degree of relevance for all proposals. The identification and prioritization process should therefore result in:

- i. A list of all issues with a preliminary estimate of the relative significance of their impacts.
- ii. Identification of the key issues.
- iii. An explanation as to why other issues are not considered to be very important in the proposal.

The EIA should address the key issues (e.g. Waste) as fully as practicable. However the level of analysis should reflect the level of significance of the impacts and their importance for the proposal. Lesser attention should be given to those issues which have lesser significance. For significant issues, there should be sufficient analysis to develop a sustainable mitigation strategy for any potential adverse impacts. The consideration of alternatives, particularly alternative sites or schemes, during the scoping stage is often a good idea. The scoping report should indicate why the preferred alternative was chosen on environmental grounds. The main part of the EIA can then concentrate on the preferred option. Alternative processes within the scheme may be dealt with as mitigation measures. An important output of scoping is the ToR for the EIA study. A guideline for preparation of ToR for tannery projects is given under Annex N.

The scoping exercise shall conclude with the identification of the relevant interdisciplinary expertise necessary to address the identified significant impacts. The names and qualifications of the experts identified to undertake the Environmental Impact Study shall be approved by the Authority. A Scoping Checklist is presented in Annex F and a summary of information on scoping is also provided in the Table 2.

### **2.3.2 Baseline Environmental Conditions of the proposed Project**

Based on the information from the scoping exercise as contained in the ToR, an Environmental Impact Study shall be conducted and an Environmental Impact Statement (EIS) will be prepared. Annex A presents a List of Projects for which these Guidelines apply and Annex B presents a Composition of the EIA Team. Annex G further presents Issues to Be Considered in EIA Study. Existing data should be collated as the first step in collection of baseline information. It can then be reviewed for its relevance to the proposed site, its being current or not, and used as a basis for determining what survey work may be needed. Original site surveys are almost always bound to be required for most categories of effect, such as air quality, odours and noise; socio-economic situation; water quality and aquatic biology; terrestrial ecology; landscape, land-use, spatial planning elements. In most cases published information usually does not exist at a suitable scale, or is not generally applicable to the development in question. Original surveys should be conducted initially at a general level to identify whether more detailed survey will be required.

Where baseline data is to be collected first hand, careful consideration must be given to the design of the survey and sampling program. Data collection must focus on the key issues needing to be examined for the EIA (identified during the Scoping process), and should be collected at the appropriate time(s) of year taking into consideration seasonal climatic variables.

**Table 2: Summary information on scoping**

Scoping	Purpose of scoping	Steps in scoping process	Who is involved in scoping	Outline of ToR
<ul style="list-style-type: none"> <li>• A process of interaction</li> <li>• Identifies               <ol style="list-style-type: none"> <li>Scope of EIA study</li> <li>Important issues</li> <li>Information for decision-making</li> <li>What to be considered during EIA</li> </ol> </li> <li>• Identifies concerns, evaluates, organizes, presents to assist decision-making</li> </ul>	<ul style="list-style-type: none"> <li>• Consider project alternatives</li> <li>• Inform affected public</li> <li>• Identifies impacts</li> <li>• Understand local values</li> <li>• Evaluated concerns</li> <li>• Define EIA boundary</li> <li>• Determine methodology and consultation procedures</li> <li>• Establish ToR for EIA</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare outline of the EIA scope</li> <li>• Develop the scope through informal discussion</li> <li>• Make the draft scope widely available</li> <li>• Identify issues of concern</li> <li>• Evaluate concerns</li> <li>• Incorporate concerns</li> <li>• Develop strategy for addressing concerns</li> <li>• Provide feedback</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent</li> <li>• The Authority</li> <li>• Lead Agencies</li> <li>• Environmental Practitioners, Experts, consultants</li> <li>• Those affected by the project</li> <li>• The wider community</li> </ul>	<ul style="list-style-type: none"> <li>• Background to the proposal</li> <li>• Context of the issues</li> <li>• Alternatives</li> <li>• Institutions and public involvement</li> <li>• Required information</li> <li>• Analysis of impacts</li> <li>• Mitigation and monitoring</li> <li>• Conclusions and recommendations</li> <li>• Requirements for managing the EIA</li> </ul>

Consideration of likely monitoring requirements should be considered during survey planning, so that the data collected is suitable for use as a baseline to monitor impacts or success/failure of mitigation measures in the future. The need for long-term sampling should also be assessed as early as possible. This will maximize the time available for this to be carried out. Data should be collected over a sufficiently wide area to make sure that any effects likely to be caused by the development can be assessed. The area involved will not only vary for different proposals, but for the same proposal, will vary for each specialist type of data collected. For example, effects on watercourses (e.g. rivers) should be assessed as far up and downstream as necessary to assess and monitor beneficial or deleterious changes in water quality or aquatic biota. The distances involved will depend on the characteristics of any existing waste discharge close to the watercourse(s) in question, and on the location and characteristics of other discharges affecting the watercourse(s).

### **2.3.3 Prediction of Impacts**

Impact prediction must encompass the whole waste management cycle from waste generation, temporary storage, transport, landfill (construction and operation) for solid wastes and for wastewaters both construction and operation of the wastewater works. Impacts should be quantified wherever possible, or fully described if not quantifiable. The following regarding impacts should be considered:

- i. Nature ( positive, negative, indirect, direct) of impact;
- ii. Magnitude of impact;
- iii. Duration (short term, long term, intermittent, continuous) of impact;
- iv. Extent and location (area/volume covered, where impact occurs)of impact;
- v. Whether impacts are reversible or permanent;
- vi. Timing (during construction, operation, immediate, delayed, decommissioning) of impact;
- vii. Likelihood (risk, uncertainty or confidence in prediction) of impact;
- viii. Significance (local, regional, global) of impact

Impacts on the following specific aspects of the physical, socio-cultural and biological environment must be assessed:

- i. Water quality (surface and groundwater pollution);
- ii. Air quality (odour, dust, aerosols, CFCs, GHGs);
- iii. Social, economic and cultural environment;
- iv. Waste management (pre project waste management activities e.g. the Kigali solid waste dump site);
- v. Flora and fauna;
- vi. Transport and access;
- vii. Hydrology and groundwater;
- viii. Visual environment, aesthetics and landscape;
- ix. Risk and hazards (accidents; contamination; infections such as hepatitis, cholera; other health issues, etc).

Impacts of the scheme as proposed should be clearly identified, so that if for any reason mitigation is not implemented, the consequences will be clearly identified in the EIA. The impacts and the assigned mitigation measures must be presented clearly for easy understanding and adoption of the mitigation measures.

### **2.3.4 Evaluation**

A criterion for evaluation of impacts has been provided in these guidelines. Where possible, legislative standards or international standards should be followed (e.g. discharge standards,

waste management regulations, etc). If no suitable standards exist, descriptive criteria may be used, but must be fully explained. Evaluation of significance of impacts should take account of the magnitude, duration and extent of impact, and whether the impact is temporary or permanent. All predictions of impacts have an element of uncertainty associated with them. The consultant should identify and, where possible, quantify the level of uncertainty associated with these predictions. Some indication of probability of occurrence of impacts should also be included.

### **2.3.5 Mitigation**

Mitigation strategies must be considered both in relation to individual impacts and collectively for all impacts. Many mitigation measures can be incorporated into the early design stages of the project by regular communication between the consultant and developer or designer of the project. Reporting of mitigation should include such specific features which have been incorporated during the EIA process into the planning and design of the proposed development. Where mitigation has not already been incorporated into the design or siting of the proposed project during the EIA process, or specific commitment to mitigation measures from the developer has not been obtained, mitigation measures should be included as recommendations, and should be clearly identified as such. Mitigation must cover all the phases of the project (construction, operation/implementation and decommissioning). The whole waste management chain from generation, removal, transportation and final disposal must comply with the national legal instruments. In cases where licenses or permits are required they must be obtained before implementation of the project. For solid wastes recommendations for monitoring impacts in the form of an environmental management plan (EMP) should be included.

### **2.3.6 EIA Report Preparation and Submission**

The EIA experts shall compile results of an impact study into a report termed an Environmental Impact Report. This document should provide the Authority with sufficient information to objectively appraise and either approve or disapprove of a proposed project. The Environmental Impact Report should be forwarded to the developer who shall have the responsibility of submitting it to REMA. Under Annex O and Annex B, the basic contents of an EIA report and a proposed list of experts for tannery projects are presented respectively.

## **2.4 Review of the EIA Report**

Review of the EIA Report /Environmental Impact Statement (EIS) is normally done by the Authority, lead agency(s) or an independent panel of reviewers. In this review, the level of address of the ToR set out for the study shall be considered. The Lead Agency, stakeholder and public comments shall be taken into account in making a decision by the Authority to approve or disapprove the EIS. Based on the contents of the EIS, and taking into account the Lead Agency review findings and the stakeholder and public comments on the EIS, the Authority shall, undertake to approve or disapprove the environmental aspects of the project, or part thereof, and issue a Certificate of Approval of the EIA. The Authority may also issue such approval subject to such conditions it deems necessary.

After approval or disapproval of the environmental aspects of the EIS by the Authority, the Lead Agency decision makers and licensing authorities, will be taken appropriate action to approve or deny the project based on all of its merits (environmental, social, economic, political or other factors) and a Record of Decision shall be prepared. After reaching a decision on the proposed action, if it is approved, the developer will be licensed or permitted to implement the project in accordance with the mitigation measures stipulated in the Environmental Impact Statement and any other terms and conditions attached to the approval. If it is denied, the developer may, if such denial is based on environmental

considerations that can further be improved, be urged to revise the proposed action to eliminate adverse impacts. The developer may appeal against the decision. In case a proponent is not satisfied with the decision on the EIA, he may lodge an appeal.

## **2.5 Monitoring and Audits**

Monitoring is normally adopted as a mechanism to check that any conditions imposed on the project is being enforced or checks the quality of the affected environment. Audits are a periodic assessment to test the accuracy of impact predictions and check on environmental management practices for compliance with statutory requirements. Annex P presents issues to be considered in preparing an EMP.

## **2.6 Public consultation**

Involvement of the public or stakeholders in the EIA process is widely recognized as a fundamental element of the process. Timely, well planned and well implemented public involvement in the EIA process contributes to successful design, implementation, operation and management of projects. The typical 'Public' consulted during EIA are stakeholders such as:

- i. Local people/community (e.g. community close to the project site)
- ii. Proponent and beneficiaries
- iii. Government lead agencies (e.g. Local Government, Town/Municipal Councils, etc)
- iv. NGOs and CBOs
- v. Others such as development partners (Donors), academics, research institutions, the private sector

## **2.7 Holding Public Hearings**

The Authority in consultation with the Lead Agency, in case where it recognises that it is necessary to hear opinions of the public in concerned areas, shall hold public hearings on the days contained in a notice for public hearings. Annex H presents a Format of Questionnaire for Public Hearing. A notice for a public hearing must be made at least 10days to the meeting. Such a notice may be: posted in or near the affected community, published in the daily/local newspaper in an official/local language or notify the public through any other suitable media. The notice shall contain information on: location, time, items to be considered for the meeting.

Public hearings are to be held at: project site, meeting place within Authority/Lead Agency quarters, social centres and any other convenient place identified for this purpose.

## **2.8 Decommissioning or Relocation**

For various reasons a project may be decommissioned. The decommissioning may have impacts on the environment that have to be understood in order to put in place adequate mitigation measures. The impact may be caused by items such as written off equipment, chemicals, physical structures, etc of the project if they are just abandoned on site without proper management. An environmental assessment of the decommissioning or relocation process will provide adequate mitigation measures.

## **PART 3: GUIDELINES USE BY AUTHORITY AND LEAD AGENCIES**

### **3.1 Introduction**

The Authority and Lead Agencies are mandated to promote the development, strategically manage and safeguard the national and sustainable exploitation and utilization of tannery resources for social-economic development in the country. They are also charged with the role of inspecting, regulating, monitoring and evaluating activities of private companies engaged in the tannery sector so that the resources are developed, exploited and used in a rational and sustainable manner. Further, they provide policy guidance on all issues relating to the development, exploitation and management of tannery resources. Annex L presents an Environmental Criteria for Locating the Project.

### **3.2 The Role of the Authority and Lead Agencies in the EIA Process**

This chapter describes the role of the Authority and Lead Agencies in the EIA Process. On the other hand, if the Authority and Lead Agencies is the developer, the Guidelines for Developers apply.

### **3.3 Environmental Screening of Projects**

The developer prepares the project brief and provides ten (10) copies to the Authority. If the Authority deems the project brief to be complete, one copy is forwarded to the Lead Agencies. The content of a well-written project brief is given in Annex C.

Screening of tannery projects is conducted following the steps described in Part 2 of these Guidelines. The detailed checklist used for screening can be found in Annex E. Project developers are, however, advised that in addition to the screening procedures given above, all projects can be assessed according to their specific design and environmental components that are likely to be affected. For example, a project located in or near a fragile or sensitive ecological system can have potential for significant environmental impacts due to location rather than scale.

#### **Timeframe for screening**

The Authority in consultation with other stakeholders shall decide on the project within two weeks after submission of the project brief by the developer irrespective of whether:

- A conditional or unconditional approval for the project shall be granted.
- A further assessment of environmental impact shall be required.

### **3.4 Environmental Impact Review**

If an environmental impact review (EIR) is required, the Developer prepares an EIR report which is submitted to the Authority. The Authority can rely on their expertise and the checklists provided in Annexure and Part 2 to assess the nature and level of likely environmental impacts. Depending on their assessment, the project can be approved or it may be decided that a detailed EIA is necessary. If the screening exercise determines that the project has significant environmental impacts and identifies appropriate mitigation measures, the Authority shall recommend that the developer make necessary changes to eliminate the potential significant impacts. If the developer makes a commitment to fulfill the Authority's conditions to eliminate or reduce the effects of potential significant impacts, the

project shall be approved and the Authority issues a Certificate of Approval of EIA. On the other hand, if potential significant impacts cannot be eliminated easily the project shall not be approved; the screening decision can require that the project be subjected to a detailed EIS study.

### **3.5 Scoping Report & ToR for the EIS study**

The developer in consultation with the Authority and other key stakeholders shall undertake to prepare the ToR for EIS study. For this purpose, all relevant documents should be made available to the stakeholders. Annex N presents a format for the content of the ToR. The scoping report including the ToR shall be reviewed by The Authority with the aid of the scoping checklist given in Annex F.

### **3.6 Review of Environmental Impact Statements**

The developer submits ten (10) copies of the EIS to The Authority. The Authority in consultation with stakeholders such as Lead Agencies reviews the EIS to determine if it is complete and whether it addresses the potential significant environmental impacts as identified during scoping and as stipulated in the ToR for the study. The Authority shall circulate the EIS to other stakeholders and interested parties for review and comments. The Authority in close consultation with stakeholders shall hold a public hearing to review the EIS.

#### **3.6.1 Review Parameters**

The main objective of the review exercise is to critically examine whether the EIS adequately addresses the significant environmental issues identified during scoping and in the ToR for the EIS study; whether the results and findings presented are scientifically and technically sound and coherent enough to be understood by decision makers and the public in general, and whether reasonable alternatives have been suggested to the proposed action.

#### **3.6.2 Procedure for Review**

- Does the work done comply with the ToR?
- Is the presentation consistent? Are there no contradictions of facts and issues in the document?
- Does the project location conform to the existing laws and policies?
- Did the study team adequately involve the local communities and the general public during the study period?
- Did the study team follow the tannery sector EIA guidelines, and other EIA guidelines and regulations?

#### **3.6.3 Impacts Assessment and Evaluation**

- The EIS addresses the potential significant impacts identified during scoping.
- Categorizing the different impacts into direct or indirect impacts.
- Determining the impacts that are more sensitive.
- Identifying impacts that need a compensation plan.
- Identify long and short-term impacts.
- Comparing the proposed project impacts with best alternative option projects.
- Risk analysis adequately done.

#### **3.6.4 Mitigation Measures**



- Existence of a list of mitigation measures.
- Validity and adequacy of the proposed mitigation measures.
- Impacts that cannot be avoided have been identified and accordingly addressed.
- A compensation plan has been drawn for unavoidable impacts that cannot be mitigated.
- Mitigation and support measures are technically and scientifically sound.
- Mitigation measures were drawn in close consultation with the public and local communities.

### 3.6.5 Implementation and Monitoring of Projects

- A good analysis of the institutional, financial and personnel resources to operationalise the mitigation plan.
- The schedule of the mitigation plan is achievable.
- Are the standards set in the mitigation plan achievable and meaningful?
- A study specified the institution(s) responsible for the monitoring and evaluation of this phase.

Below is a sample of a monitoring plan. For a detailed review checklist, refer to Annex P.

N	Parameter	Location	No. of Samples	Materials & Methods	Frequency	Standards	Responsibility
<b>1.</b>	<b>Construction Phase</b>						
	Air & Dust	Construction Sites	3	Visual & Measurement of PM	Quarterly	RBS	Developer & Authority
	Noise	Equipment & Construction Sites	4	Noise Meters	Weekly	RBS	Developer & Authority
<b>2.</b>	<b>Operation Phase</b>						
	Water (pH, Heavy Metals)		4	Laboratory	Monthly	RBS	Developer & Authority
	Treated Effluent (BOD <sub>5</sub> , COD, Temperature, pH, SS)	Effluent Discharge Point	8	Laboratory	Monthly	RBS Effluent Discharge Standards	Developer & Authority
	Treated Sludge	Wastewater Treatment Plant	2	Laboratory	Monthly	RBS	Developer & Authority

The Authority shall finally conduct an independent assessment of the EIS to determine its adequacy in informing a correct decision to be taken on the environmental aspects of the project. The Authority shall in turn forward the comments on the EIS to lead agencies so as to guide the latter in taking a final decision on the project.

### 3.7 The Authorities Role in Monitoring

The Authority shall monitor compliance and implementation of activities to ensure that the design criteria, mitigation measures and monitoring requirements are implemented.

# **PART 4: GUIDELINES FOR USE BY PROJECT DEVELOPERS**

## **4.1 Introduction**

Developers of tannery projects can be private investors, NGOs. Developers ought to understand their EIA obligations right from the planning and design stages, and the associated screening activities by the time they submit a project brief or the EIS to the Authority. The EIA should be part and parcel of the project owner's planning cycle. Figure 2 presents the ideal linkage between the project cycle and the EIA process.

## **4.2 Application of the EIA as part of the Project Cycle**

The EIA shall be conducted as an integral part of the overall project cycle from project identification to pre-feasibility study, feasibility study, project design and other phases, and shall therefore form the basis for environmentally sound project implementation and monitoring. The EIA conducted at the early planning stage can serve as a tool that assists and guides developers through providing environmental information and raising environmental concerns at key stages in the project cycle leading to projects designed with in-built mitigation measures. Design proposals with potentially adverse environmental impacts can therefore be mitigated while those found to be incapable of mitigation could be changed appropriately. The EIA applied at this critical stage permits early indication of practical design changes aimed at either avoiding or minimizing identified negative environmental impacts or enhanced environmental benefits.

## **4.3 The Role of the Developer in the EIA Process**

The Developer is responsible for undertaking an EIA, and shall meet all the costs associated with it. Such costs shall include, among others, cost for conducting the EIS study, preparation, production and distribution of EIS for comment and review by agencies, interested parties and other stakeholders. The developer must ensure that the EIA is carried out before projects can be licensed or approved by the responsible Agencies. All financing institutions such as World Bank and other donors also demand this requirement.

## **4.4 Steps a Developer takes to conduct EIA**

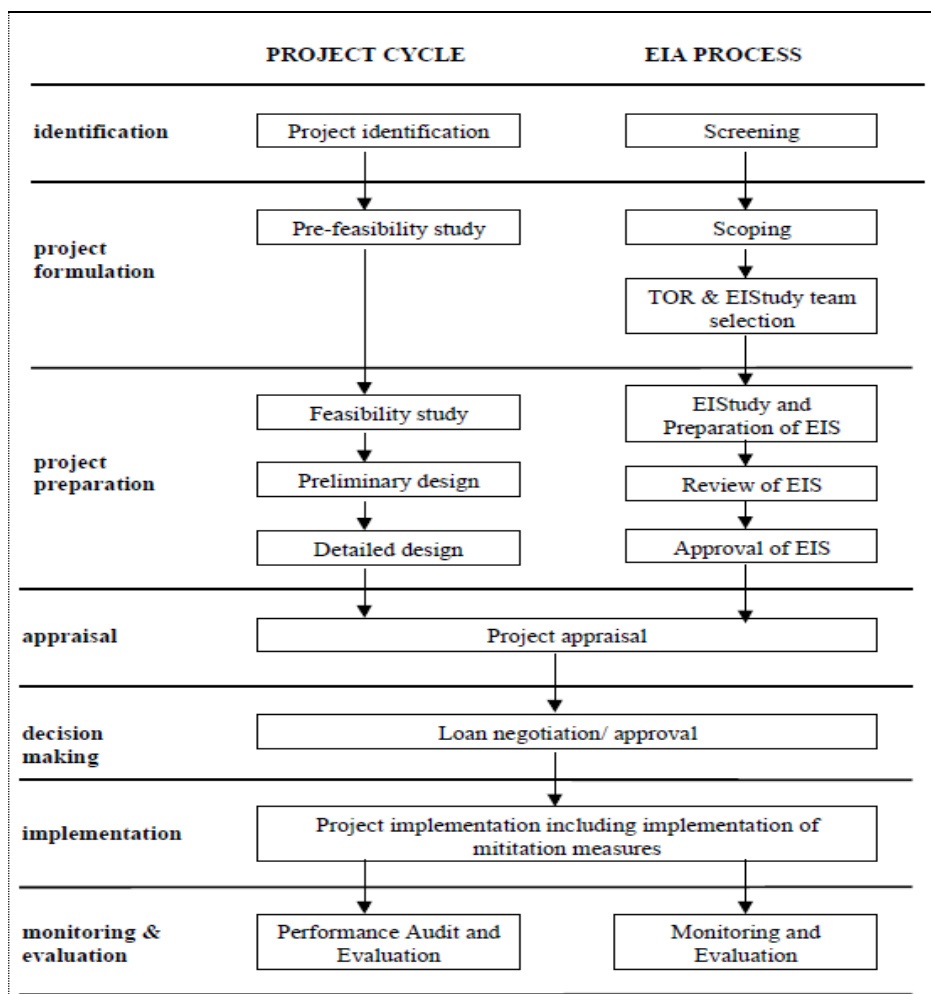
The developer is expected to go through the following steps from the design stage to the time their project is issued a Certificate of Approval:

### Step 1: Initial Screening

Developers need to undertake their own screening to identify environmental issues of major concern at an early stage of the project. For screening tannery projects, the following questions can offer guidance to the developer:

Nature of project:

- Can the project cause significant environmental impact?
- Can the project lead to increased or decreased discharge of fossil carbon dioxide, methane or other greenhouse gases?



**Figure 2: EIA and Typical Tanning Project Cycle**

(Source: Adapted from Seminar on Environmental Assessment Procedures between the Republic of Uganda and the World Bank, Final Report, 1998)

Siting of the project:

- Is the project located within or near environmentally sensitive areas such as sources of public water supply, areas of unique historic, cultural, archaeological, scientific or geological interest and ecologically fragile ecosystems such as wetlands?

Natural resources affected:

- Can the proposed project result in direct or indirect negative or positive impacts to the natural resources in the surroundings?
- Can the project develop systems, which permit sludge nutritive salts, building waste, excavated materials or other waste products to be taken care of or brought back into ecocycles?
- Can the project improve or impair the living conditions of the settled population or nomadic groups?

The detailed screening checklist given under Annex E could also be useful for initial screening of projects by developers.

### Step 2: Assessment of project alternatives

At this early project stage, a thorough assessment of all the possible project alternatives should be conducted with a view to determining the most optimal in terms of environmental

and social considerations. This assessment should begin early in the planning process before the siting, type and scale of a tannery project is decided upon. For a tannery project, the following alternatives should be considered:

- Site / location alternatives
- Project scale or size alternatives
- Source of tannery alternatives
- Construction, operation, decommissioning design alternatives
- 'No-project' alternative

### Step 3: Project planning and designing

Once the developer has identified the potentially environmental impacts; he can identify appropriate mitigation measures which can be incorporated into the project design. This can minimize time and costs associated with conducting EIAs, and in any case EIA must be considered as part and parcel of the planning and design for all tannery projects. Good practice demands that costs for mitigation are incorporated in the total project budget.

### Step 4: Preparation and submission of the project brief

The developer prepares a project brief which he submits to the Authority. The purpose of the brief is to provide sufficient and relevant information on the proposed project that can allow the Authority and Lead Agencies to establish whether or not the project is likely to have significant impact on the environment and determine the level of EIA required. If adequate mitigation measures are identified in the project brief, this may eliminate the need for further assessment and the project may be approved, subject to any other conditions that may be set to ensure implementation of the proposed mitigation plan. The detailed content of the project brief is given in Annex C. The developer is required to submit ten (10) copies of the project brief to the Authority, which in turn sends a copy to Lead Agencies.

### Step 5: Screening of projects

After submitting a project brief to the Authority, it is screened by the Authority in consultation with Lead Agencies. After screening, the Authority is in position to determine whether a detailed EIS study is required, or an EIR is necessary or the project is exempted. The screening process is aimed at the following:

- Identification of major environmental issues at a very early stage.
- Better utilization of financial and human resources by focusing on major environmental issues of the project.

### Step 6: Environmental Impact Review

The objective of an EIR is to determine the environmental impacts a tannery project may have, and to define adequate mitigation measures for the significant impacts. The findings of the EIR are presented in the EIR report. This report should be brief and precise i.e. between 5-30 pages.

**The EIR report should contain the following but not limited to:**

- Background and objectives of the project proposal
- Description of the project and the project components
- Description of the affected environment
- A list of the potential significant environment impacts of the project
- Identification of adequate mitigation measures to address the environmental impacts

- A list of agencies, organizations and individuals consulted.
- A list of the technical team that conducted the EIR

Depending on the decision taken on the EIR by the Authority, the project can be subjected to an EIS study or a Certificate of Approval can be issued.

#### Step 7: Scoping

Scoping is then conducted to determine the most critical issues that need to be addressed during the EIS study. The developer in consultation with the Authority and other interested parties undertakes scoping. Good practice demands that there should be full participation of the public during scoping. A scoping checklist and basic information needed for EIS study are given in Annex F and G respectively.

#### Step 8: Preparation of the TOR and Conducting an EIS study.

The TOR for the EIS study are developed basing on the scoping results. The developer in close consultation with the Authority and other key stakeholders shall prepare the TOR for the study. The scoping results including the TOR shall be submitted to the Authority in order for it to determine their completeness and adequacy. A general outline for the contents of TOR is given in Annex N. At this point, the developer needs to source and hire experienced experts to undertake the different tasks specified in the TOR. Most likely this support is already acquired during earlier stages of the EIA process.

#### Step 9: Hold meeting with Practitioner

The Developer and EIA Practitioner should hold a meeting to discuss and review the key findings of the EIS study. In this meeting, the Practitioner should also advise the Developer.

#### Step 10: Submission of the EIS to the Authority

The outcome of the EIS study is an EIS. Upon completion of the study, the developer shall submit ten (10) copies of the EIS to the Authority. The Authority can in turn send copies to Lead Agencies and other key stakeholders for review and comments. The EIS shall be a public document, which can be made available to any person requesting for it. The details of the content of an EIS are presented in Annex O. Any comments made shall be forwarded to the Authority so that these shall be taken into consideration in approving or disapproving the contents of the EIS. A Certificate of Approval of the EIA shall be issued by the Authority to the developer and shall indicate whether or not the environmental aspects of the EIS have been approved. The developer shall then present this certificate to any other licensing authorities that shall take appropriate decision on the project.

### **4.5 Developer's Role in Monitoring**

The developer of a tannery project, that has obtained its Certificate of Approval on the basis of proposed mitigation measures, shall ensure that the mitigation measures and actions proposed to protect the environment are adopted and implemented. The developer shall recruit competent environmental staff to conduct self-monitoring, self record-keeping and self reporting. The information gathered through monitoring shall be stored and made available during inspection. The developer shall also undertake all reasonable measures to mitigate undesirable environmental impacts not contemplated in the EIS and shall accordingly report on these measures to the Authority. Annex P gives a list of monitoring requirements.

# **PART 5: EIA GUIDELINES FOR PRACTITIONERS**

## **5.1 Introduction**

In these guidelines, an EIA practitioner refers either to a team of individual consultants assembled for the purpose of conducting an EIA or a firm of consulting specialists contracted to carry out the feasibility study and detailed engineering designs for a proposed project, and to also plan and conduct the EIA for the project. EIA practitioners play a key role in the EIA process. EIA practitioners must make a review of existing policy, legal and institutional frameworks for Rwanda that are relevant to tannery projects.

### **Roles and responsibilities of Practitioners include:**

- Conducting an EIR
- Conducting and managing an EIA for a proposed project
- Conducting the EIStudy
- Communicating and reporting on the findings of the EIStudy, also known as preparation of the EIS

This section is aimed at guiding practitioners on procedures and steps for conducting EIA, the EIStudy and preparing EIS for tannery projects. After screening a tannery project, the Authority in consultation with Lead Agencies might decide that the project can lead to significant impacts on the environment. The developer can then be required to conduct an EIStudy.

### **An EIStudy comprises of the following steps:**

- Scoping
- Preparation of ToR for EIStudy
- EIStudy
- Preparation of EIS

## **5.2 Scoping of Projects**

### **5.2.1 Collection of Baseline Data for Scoping**

The project brief contains a good deal of baseline data about a given tannery project. However, more often than not, it does not provide all the required information. The information gaps should be identified and more information collected to facilitate the identification of impacts. A checklist of information required for scoping is given in Annex F.

### **5.2.2 Scoping of projects**

Roles and responsibilities of Practitioners include:

- Conducting an EIR
- Conducting and managing an EIA for a proposed project
- Conducting the EIStudy
- Communicating and reporting on the findings of the EIStudy, also known as preparation of the EIS

### 5.2.3 Steps of an EIStudy

- Scoping
- Preparation of ToR for EIStudy
- EIStudy
- Preparation of EIS

The scoping exercise is aimed at identifying all the key and significant impacts and issues pertaining to a development project. It is vital for defining the focus and scope of the EIStudy.

#### Scoping is undertaken in order to:

- Specify which issues and impacts the EIStudy shall focus on and the methodologies to be used.
- Formulate project alternatives to be assessed during the study.
- Identify stakeholders and the methodology for their participation in the EIA process.
- Determine the type and quality of information and data required for the study.
- Determine the type of specialists to constitute the study team.

Scoping of tannery projects must involve the local community, independent experts, NGOs, Government Departments and International partners in development. Extensive consultations have to be made so that the project is accepted both locally and internationally. The scoping team should visit the project site to acquaint themselves with, and obtain first hand information on the local environment at the location of the project. Reference should also be made to the chapters on Guidelines for Mitigation of Social Impacts, Public Consultation and Resettlement and Compensation as these sections tackle various aspects of scoping. The main output of the scoping exercise is to define the ToR of the EIStudy.

### 5.3 Preparation of the ToR for the EIStudy

The ToR for the EIStudy is developed basing on the scoping results. This should be done in consultation with the Authority and other key stakeholders. The scoping results including the ToR shall be submitted to the Authority which can review the scoping report and ToR with a view to ensuring their completeness and adequacy. The technical team to undertake the EIStudy is identified and their names and qualifications forwarded to the Authority for approval. See Annex B for the proposed Expert list to undertake EIA for tannery projects.

### 5.4 Environmental Impact Study

The detailed content of the EIS and the procedures in conducting the EIStudy and preparing the EIS can vary from project to project. The major tasks of the EIStudy are self-reviewing of the EIS; the issues to be considered are presented in Annex G.

#### 5.4.1 Environmental Baseline Study

This involves the collection of relevant data and information on physical, ecological, economic, socio-cultural and demographic conditions in the project area. These data form the basis for determining the existing environment and the expected changes on the environment by implementing the project. The project brief and the baseline data for scoping might contain useful baseline data about a given tannery project. However, most tannery projects are relatively complex and the information available from the project brief and the scoping exercise might not be adequate. The practitioner should be able to identify any information gaps, and plan to collect more relevant data. Some of the required data might already be available in the research, academic and government departments respectively.

Wealth of information does exist in District Environment profile reports, the census and other reports, and in several government departments. The collected data should be comprehensive enough to address the specific issues identified in the EIStudy.

#### **5.4.2 Description and quantification of impacts**

The identification of most of the significant impacts, both positive and negative is usually accomplished during the scoping exercise. More in-depth studies may be required to identify other impacts. After the identification of all the possible significant impacts, an attempt should be made to describe the precise nature of the impact on its receiving environment. The significance of impacts has to be judged upon its magnitude, extent, severity, duration and likelihood. Quantitative assessment methods may be useful in comparing different impacts. Impacts can be described as follows:

- Direct or indirect impacts
- Temporary or permanent impacts
- Reversible or irreversible impacts
- Short term or long term impacts
- Simple or complex impacts
- Primary or secondary impacts
- Local or regional or global impacts
- Cumulative or non-cumulative impacts
- Continuous or intermittent impacts

The quantification of significant impacts can be based on the use of various indicators and weighing the impacts against threshold values, where these exist. Such threshold values may be in form of standards for various environmental parameters to be assessed during the study. Where environmental standards do exist, the environmental parameters under investigation should be compared with the national standards to determine their acceptability and conformity with the regulations. It is worth noting that environmental standards developed by RBS are still voluntary standards. It is, therefore, desirable that the importance or significance of such impacts is based on sound and scientific principles i.e. RBS standards, WHO and UN standards.

#### **5.4.3 Environmental Economic Analysis**

Whenever possible, environmental economic analyses should be made as part of EIAs. This is important for several reasons. An economic analysis and a valuation in monetary terms of the environmental impacts and of the proposals for necessary measures make it possible to integrate the conclusions of the EIA into the economic and financial analysis of the project assessment. It is then possible to weigh up the project's costs and benefits and the advantages and disadvantages of different possible alternatives and scenarios. Environmental economic analysis can also be used to find the most effective instruments to solve environmental problems that may arise as a result of the project. An environmental economic analysis should be included in the EIA if the cost of making this analysis is reasonable, and if it is not too difficult or time-consuming. If a socio-economic analysis is made of the project proposal, the environmental impact should always be included in it.

#### **5.4.4 Project Alternatives**

The EIStudy must include a thorough assessment of all the possible project alternatives with a view to determining the most optimal in terms of environmental and social considerations. This assessment should begin early in the planning process before the siting, type and scale



of a tannery project is decided upon. For a tannery project, the following alternatives should be considered:

- Site / location alternatives
- Project scale or size alternatives
- Source of tannery alternatives
- Construction, operation, decommissioning design alternatives
- 'No-project' alternative

#### **5.4.5 Impact Mitigation**

One of the main objectives of EIA is to predict and prevent unacceptable adverse environmental effects through recommending the implementation of appropriate project modifications or actions that reduce, avoid or offset the potential adverse consequences of a project. Impact mitigation can only be possible when the full extent of the anticipated environmental and social problems is understood. Impact mitigation therefore has to affect the sources of impacts which include location, construction practices; operation and implementation of projects; maintenance; and cumulative impacts. Mitigation should not be treated as an isolated activity but rather as being inherent in all aspects of the EIA process right from the project design stage. Prescribed mitigation measures should be discussed preferably in each topic e.g. soil, air quality, water, cultural heritage). Mitigation costs should be integrated in the contract dossier and bills of quantities as distinctive cost items so that both the contractor and the developer cannot overlook them.

#### **5.4.6 Monitoring Program**

Identifying impacts and related mitigation measures without ensuring their compliance makes little sense. Therefore a detailed monitoring and evaluation program has to be part of the EIS. It shall contain a schedule for inspecting and reporting upon the implementation of the project and associated mitigation measures. The monitoring programme shall also identify the key indicators of environmental and social impact and their respective threshold level above which the impact is significant. The program shall provide a schedule for monitoring each indicator and for reporting the monitoring results to the Authority. A list of monitoring requirements is given in Annex P.

#### **5.5 Preparation of EIS**

After conducting the EIS study, the findings have to be presented in an EIS. The key content of an EIS is given in Annex O.

**The EIS shall provide a description of the following:**

- The project & activities. The proposed site and reasons for rejecting alternative sites.
- A description of the potentially affected environment including specific information necessary for identifying and assessing the environmental effects of the project.
- The material inputs into the project and their potential environmental effects.
- An economic analysis of the project.
- The products and by-products of the project.
- The environmental effects of the project including the direct, indirect, cumulative, short-term and long-term effects and possible alternatives.
- The measures proposed for eliminating, minimizing or mitigating adverse impacts.
- An identification of gaps in knowledge and uncertainties, which were encountered in compiling the required information.
- An indication of whether the environment of any other state is likely to be affected and available alternatives and mitigating measures.

# **PART 6: GUIDELINES FOR MITIGATION OF SOCIAL IMPACTS**

## **6.1 Introduction**

An EIA must also address the human or social environment, which includes the social and socio-economic impacts due to the implementation of a tannery project. One of the main objectives of social impact assessment (SIA) is to predict and prevent or moderate unacceptable adverse social effects on the proposed actions or projects. This is done through involving the community and all other stakeholders so that changes can be recommended at the planning, design and implementation stages. SIA should be carried out at every stage of the project cycle.

## **6.2 Project Planning**

At the planning and design stage of all tannery projects, it must be ensured in the design that people are an integral part of the environment and are going to be active participants in the overall project environment. The following guidelines can apply:

- The developer can identify the social impacts;
- The developer can focus on preventing social impacts;
- During the design, the consulting engineer/EIStudy team must describe the main phases of the project; vis-à-vis the project cycle to ensure that the stakeholders fully understand what the project is all about.
- The consulting engineer/EIStudy team should take note of the significant social cultural
- The EIStudy team describe direct and indirect area of influence
- Key Issues in the project area are identified.
- The consulting EIStudy team should formulate a management plan to prevent undesirable social-impacts if possible at the design/planning stage.

## **6.3 The Project Brief**

For the purpose of addressing socio-economic impacts in the project brief, the developer should ensure the following:

- Key social-economic activities and cultural issues within the project area are highlighted in the brief.
- The methodology for addressing gender concerns during recruitment of personnel and distribution of socio-economic benefits to the local community is clearly detailed.
- The EIA expert who prepares the project brief should utilize the services of a competent sociologist/socio-economist.

## **6.4 Assessment and Mitigation of Social Impacts during the EIStudy**

Although every project is unique, in most cases there is a series of more or less standard steps through which the analysis must proceed in order to achieve good results.

Step 1: Develop an effective public involvement plan, so that all affected interests can be integrated in the project design and plan.

The level of public participation needed varies with the nature of the action under review. For a complex project, a social assessment may be useful at the outset to establish the general character of the community, define the potentially affected groups, and determine best mechanisms for their involvement. In a simpler case, merely consulting with local leaders

and experts may be sufficient to obtain the critical data on which to build a public involvement program.

Step 2: Identify and characterize alternatives.

Alternatives are developed based on the purpose and need for the action, but the analyst needs to consider what they are and obtain sufficient data on each to frame the analysis. Alternatives can relate to the socio-economic sensitivities for example location of waste disposal sites vis different locations; sensitivity of location of tannery in cultural sites and access to social services like roads, schools and health centres amongst others.

Step 3: Determine baseline conditions.

Having established a means of working with the public, and obtained basic data on each alternative, the analyst now tries to define the pertinent existing conditions in each potentially affected area i.e. the affected social environment. The analyst seeks answers to questions like:

- What populations may be affected? Are they concentrated or dispersed? After defining the Area of Influence.
- How does each population relate to the natural or built environment?
- What is the historical background of each population?
- What are the political and social resources, power structure, and networks of relationship in each group?
- Are there low-income or minority populations or other disadvantaged groups involved? Do they have special needs?

**As basic information about each alternative, the following is needed:**

- Locations
- Land requirements
- Needs for ancillary facilities (roads, utilities, etc.)
- Construction or implementation schedule
- Size of the work force (construction and operation, by year or month)
- Facility size and shape (if a facility is involved)
- Need for a local work force
- Institutional resources
- What kind of cultural and attitudinal attributes characterize each group? How do they feel about political and social institutions? How do they relate to the environment? To change?
- What are the relevant demographic and economic characteristics? Is there significant unemployment or underemployment? Is housing available? Access to utilities? Education? Transportation? Are there seasonal or other patterns of in-migration and out-migration?

At a minimum, this kind of information should be developed based on existing literature, government documents, and consultation with experts and the community. For a more complicated project, formal studies may be needed. Indicators should be used to describe the social structure. These indicators should facilitate the identification especially of disadvantaged groups, and to describe and measure the social impacts analysed in the sequel. These indicators could include:

**Table 3: Indicators for Social Impact Assessment**

<b>1.</b>	<b>Social indicators</b>	<ul style="list-style-type: none"> <li>▪ <b>Registered crimes/disputes (per 1,000 pop.)</b></li> <li>▪ <b>Crimes/disputes involving women &amp; vulnerable groups (per 1,000 pop.)</b></li> </ul>
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		<ul style="list-style-type: none"> <li>▪ <b>Primary school attendance Male &amp; Female</b></li> <li>▪ <b>Number of households</b></li> <li>▪ <b>Number of female-headed households</b></li> <li>▪ <b>Number of community based organizations</b></li> </ul>
<b>2.</b>	<b>Economic indicators</b>	<ul style="list-style-type: none"> <li>▪ Average land holding per household (hectares)</li> <li>▪ Percentage households owning land, owning domicile, renting land, renting domicile</li> <li>▪ Agricultural Production</li> <li>▪ Maize, Rice, Millet, Cassava, Banana (tons/ha/annum)</li> <li>▪ Fish catch (tons per household/per annum)</li> <li>▪ Employment</li> <li>▪ Number of male/ female wage earners</li> <li>▪ Average household income &amp; expenditure (per annum)</li> </ul>
<b>3.</b>	<b>Health indicators</b>	<ul style="list-style-type: none"> <li>▪ Birth rate and Death rate</li> <li>▪ Infant mortality rate (per 1000 live births)</li> <li>▪ Average weight of children ages 5 - 12 (kg.)</li> <li>▪ Incidence of disease (per 1,000 pop./per month)</li> <li>▪ Diarrhoea, Upper Respiratory Infection, Tuberculosis, Hepatitis, Malaria or other endemic diseases</li> <li>▪ Number of Health Post cases registered (average/month)</li> </ul>

Step 4: Define the scope of the effort.

The assessment of social impacts must be scoped to make sure it is focused on the right things, and that the right methods are employed. The scope has to be included in the TOR for the EIS. Scoping must be carried out in consultation with the affected groups and through the public participation process. Factors to consider in establishing the scope include:

- Probability that an event can occur
- Number of people potentially affected
- Duration of potential impacts
- Values of benefits and costs to affected groups
- Potential for reversibility or mitigation
- Likelihood of subsequent impacts
- Relevance to decisions
- Uncertainties over probable effects
- Controversy

Step 5: Project probable impacts.

Analysis of potential social impacts involves the study of data provided by the agencies involved, records of previous experience with similar actions or similar populations, census data and other vital statistics, documents and secondary sources, and field research involving interviews, meetings, surveys, and observation. Social impacts are generally manifested in one or more of the following changes:

- People's way of life - how they live, work, play and interact with one another on a day-to-day basis;
- Their culture - shared beliefs, customs and values;
- Their community - its cohesion, stability, character, services and facilities;
- Their environment - the quality of the air and water people use, the availability and quality of the food they eat, the level of dust and noise to which they are exposed, the adequacy of sanitation, their safety and fears about their security, and most importantly, their access to and control over resources.

The EIA expert should endeavor to analyze all these broad areas of impacts so that no major types of social impacts are overlooked. There are a number of methods of projecting impacts. These methods depend on factors like the scope of the action, the area where it occurs, and the availability of pertinent data. Projection methods include:

- Comparative: comparing with similar actions and their effects
- Straight-line trend projection: taking an existing trend and projecting it into the future
- Population multiplier: for actions involving increase or decrease in given populations; each unit of change in a given population implies change in other variables such as housing and use of natural resources
- Scenarios: generate logical or data-based models and play them out
- Expert advice: obtain the thoughts of experts about likely scenarios or changes
- Calculation of "futures foregone": for example, the future of small minority-owned businesses in a community if the proposed action does NOT take place
- Computer modelling: very suitable for quantitative impacts

#### Step 6: Predict responses to impacts.

The following questions are important in predicting responses to impacts:

- Can a group be highly influenced by what its leaders think, and can the leaders be positive or negative about the project?
- Are there ways for the population to adapt with the project, or is it likely to relocate?
- Can a group continue to carry out its valued ways of life, or can they be irrevocably lost?

#### Step 7: Consider indirect and cumulative impacts.

This is an important aspect that must be considered because most social impacts are not direct; they may occur well after the action is taken, and possibly in areas distant from the project. Many populations, especially local communities, are severely at risk of cultural extinction due to a variety of pressures, and a given project may lead to their extinction.

#### Step 8: Recommend new alternatives as needed and feasible.

As serious impacts are identified, consider what alternatives might alleviate the problems, and work with the project managers and affected groups to determine whether these are feasible and implementable.

#### Step 9: Develop a mitigation plan.

Work with project managers and affected groups to establish ways to mitigate social effects, and put this plan forward in the EIS. Establish monitoring programs to make sure that mitigation actually occurs.

# **PART 7: GUIDELINES FOR PUBLIC CONSULTATIONS**

## **7.1 Introduction**

Tannery projects have different impacts or effects in areas where they are located. Such impacts may directly or indirectly affect different categories of social groups, agencies, communities and individuals. These are collectively referred to as project stakeholders or the 'public'. It is, therefore, very crucial that during the EIA process, appropriate mechanisms for ensuring the fullest participation and involvement of the public are taken by the Authority or/and the developer in order to minimise social and environmental impacts and enhance stakeholder acceptance. This part highlights the need for public participation and involvement during the EIA process for tannery projects, and the methodology for systematic involvement of the public. The terms 'public' and project stakeholders are interchangeably used throughout this part.

## **7.2 Public Consultation and Involvement**

The consultation and involvement of the public is very desirable throughout the EIA process. However, it is very critical at the following stages:

- Project design
- Scoping
- EIS review

It should also be noted that the need and degree of public consultation and involvement can vary according to the nature and characteristics of the project. For example, very intensive and extensive consultations can be required for a large tannery projects. This can also generally apply to any other tannery project characterized by the following:

- Substantial land-take
- Displacement of families or communities
- Disruption of the means of livelihood of families and communities
- Destruction of communal assets and property
- Need for resettlement and compensation
- Inundation of land and property

## **7.3 Methodology for Involvement of the Public Selection of stakeholders**

A tannery project has got a wide range of stakeholders. These generally include individuals, organized groups, local and international NGOs or institutions with specific interest in a project including the Authority. Sometimes, it might be useful to involve individuals such as academics and research scientists who may have special local knowledge about the project environment. It should be recognized that different stakeholders have different interests in a project, thus the need to carefully identify and appropriately categorize them. This should preferably be initiated as early as possible in the project cycle preferably at the project planning stage. Special care should be taken to ensure that the concerns and views of the directly affected, the poor, minority and other highly vulnerable groups are not overshadowed by the more influential groups. The interests of women as a special group should also be captured.

## **7.4 Consultations with Stakeholders**

Once the stakeholders have been identified and properly categorized, the process of involving them in the EIA process should begin. For a tannery project, consultations involve an exchange of vital information or facts and key issues between the developer, and the

stakeholder community on the other. The consultation process should accord the stakeholder community every opportunity to comment on the merits, demerits and any other aspect of the proposed project. The process must be well planned and coordinated so that participation is convenient and cost-effective to all the parties involved. An effective consultation process should generally ensure that:

- The public have got a clear understanding of the proposed project;
- Feedback mechanisms are clearly laid out and known by parties involved.

## **7.5 Consultation Methodology**

There are numerous techniques and approaches that can be used for seeking the views of the public and consulting various project stakeholders. The following are recommended for tannery projects:

- a) Public Meetings: These may be specially convened meetings for people living in or near the project area. These may target officials and residents of villages/imigugudu adjacent to the project area. They may also apply to larger urbanized communities. The meetings are generally open and anybody is free to attend and participate in the proceedings. Public meetings are an ideal technique for a project developer to inform or educate the public about what the proposed development is about in general terms. To a good extent, they also enable the public to express their views and feelings about the project. Though the meetings are not formal, detailed notes of the important points and issues raised during the session should be minuted by the developer. These should be kept on file for reference purposes.
- b) Interviews: These may be structured or semi-structured. Interviews should be undertaken with key individuals representing the range of publics likely to be interested or affected by the project. For tannery projects, these may include local council officials, elders and civic leaders adjacent to the project area. They should also target individuals considered to represent the views of distinct social groups such as women and the poor. Interviews are very effective in assessing public sentiments about the project.
- c) Surveys: Surveys are an effective technique for determining public attitudes, values, and perceptives on various issues regarding the proposed project. Surveys can be conducted by individual interviews, or in small group interviews. The respondents should be carefully selected for this technique to achieve its objective.
- d) Operating Field Offices: The establishment and operation of special field offices serve as a liaison with the developer and the public. This is quite applicable to projects necessitating close local contact and coordination, an example being a hydropower project where compensation and resettlement for displaced people must be undertaken. For this approach to be effective, the offices must be well publicised so that they are known to the public.
- e) Open Houses: These are publicized accessible locations where the information on the proposed project and the EIA can be found. A member of the EIA team should be present to explain and discuss issues, and record the viewpoints and concerns of visitors. An open house is open and accessible to any person and the times of opening should be well publicized.
- f) Advising Stakeholder Panels: Good experiences have been made with the establishment of official advising panels, which consist of representatives of the different stakeholder groups. These panels are especially useful for negotiations concerning resettlement plans.

## 7.6 Responsibility for Ensuring Public Participation

The Authority should take lead in ensuring that the public fully participates in the EIA process. As a matter of good practice, developers should also ensure an optimal level of public involvement at different stages of the EIA process.

## 7.7 Public Consultation within the EIA Process

In practice, public consultation is not a linear but an iterative as well as an on-going process. Figure 3 illustrates the critical points at which consultations must be conducted.

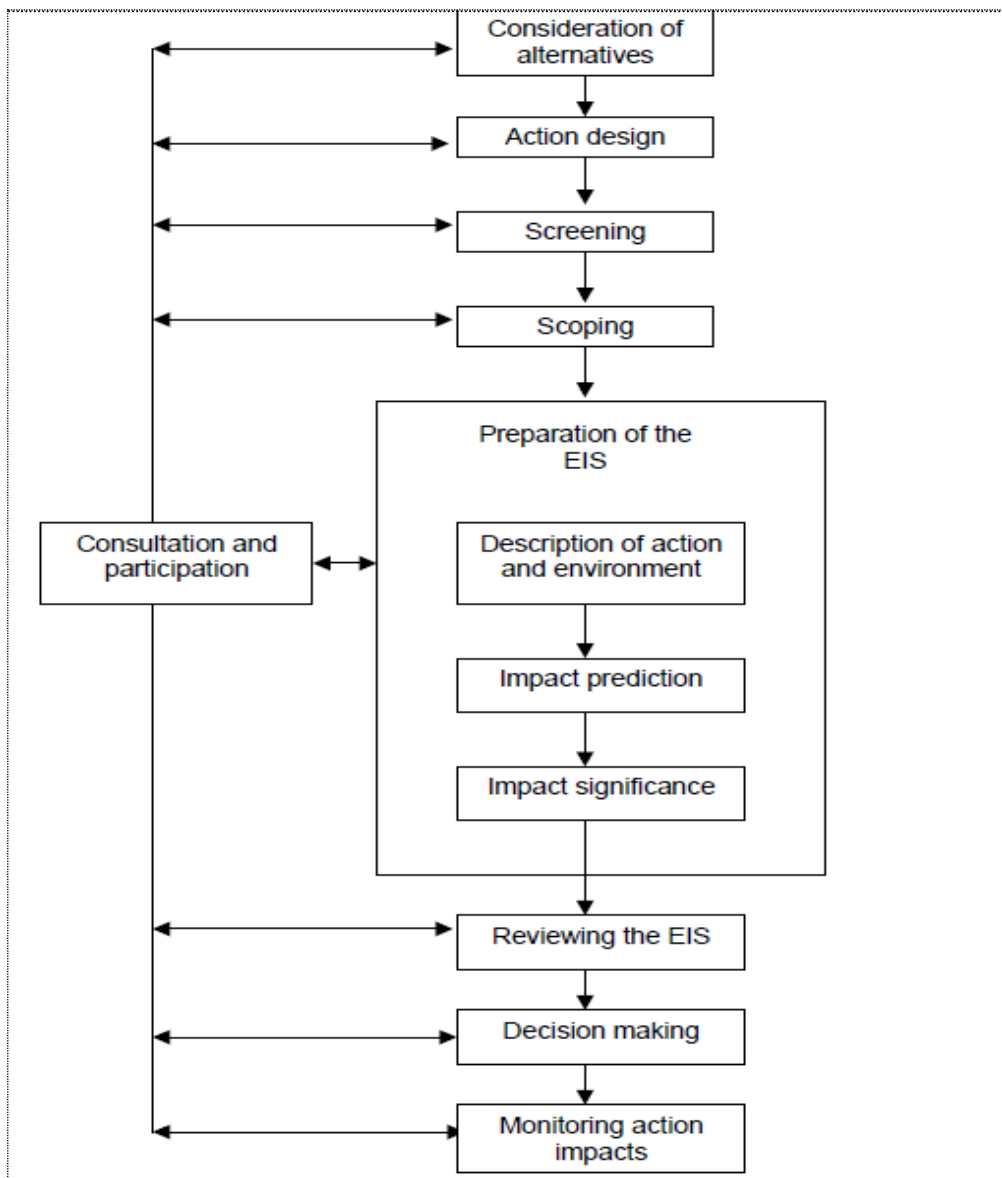


Figure 3: Critical Points at which consultations must be conducted

Different stages of the EIA process do require different levels of public consultation and involvement. However, public involvement becomes very critical at the following stages:

- Public consultation before the commissioning of the EIA study
- Public consultation during the EIA study
- Public consultation during EIS review



## **7.8 Public Consultation before Commissioning of the EIStudy**

On submission of the project brief to the Authority, it might be decided that the views and comments of the public on the project shall be sought. The Authority is obliged to publish the developer's notification and other relevant documents in a public notice within 4 weeks from the date of submission of the project brief and/or notice of intent to develop. For the purpose of publishing the developer's notification in the public notice, the project brief should be appropriately summarized out, including: Nature, size, location of the project and Site characteristics. The notification should also clearly specify where the developer's documents can be found. The public and other stakeholders should submit their objections, views and comments to the Authority within 21 days from the date of publication of the notice.

## **7.9 Preparation of Public Consultation Plan**

It is important that a plan for stakeholder involvement is prepared before the EIStudy begins. This should be done with input from a sociologist/socio-economist with knowledge of the local cultures and different approaches or techniques available for implementing stakeholder involvement. Such a plan should consider:

- The stakeholders to be involved
- Matching of stakeholders with approaches and techniques of involvement
- Traditional authority structures and political decision-making processes
- Programming of the implementation, in time and space, of the different approaches and techniques for stakeholder involvement
- Mechanisms to collect, synthesise, analyse and, most importantly, present the results to the EIStudy team and key decision-makers
- Measures to ensure timely and adequate feedback to the stakeholders
- Budgetary / time opportunities and constraints

## **7.10 Public Consultations during the EIStudy and EIS Review**

During the EIStudy, the study team should endeavor to consult the public on environmental concerns and any other issues pertaining to the project. Though consultations are very critical at the scoping stage, ideally, it should be an on-going activity throughout the study.

During the EIS review, the public is given additional opportunity for ensuring that their views and concerns have been adequately addressed in the EIS. Any earlier omissions or oversight about the project effects can be raised at this stage. To achieve this objective, the EIS and related documents become public documents after submitting them to the Authority. Upon receipt of EIS for a tannery project, the Authority shall publicize its contents and go further to identify the relevant stakeholders and the concerned area or region; and also the location of places for inspection of the EIS. Further, the Authority shall make copies or appropriate summaries of the statement available for public inspection.

This should be accomplished within two weeks from the receipt of the EIS. The Authority in close consultation with Lead Agencies can decide on the most suitable locations or places where the EIS content can be accessed conveniently by the public. The public notice should include a concise summary of assessment data indicating the following: Size and nature of the project, Location, Site characteristics and Key results of the EIStudy. The notice should also specify the locations or places where the EIS may be consulted or viewed in addition to a notification to send or copy any comments to the Authority. An official review appointment can be announced, where the reviewing authority has to answer questions and remarks from the public. These questions have to be handed in written form before-hand.

# **PART 8: GUIDELINES FOR RESETTLEMENT AND COMPENSATION**

## **8.1 Introduction**

The tannery projects for which these guidelines apply are likely to fall into two categories: the old projects that may need rehabilitation or expansion, and thus require additional pieces of land and the new projects that may require new land altogether. In both cases, the relocation of populations and disruption of the peoples' livelihoods might occur. When relocation of people or communities is inevitable, there is a need to resettle them and ensure that their new places offer similar or better facilities compared to the old environmental and socio-economic set-up.

However, in all types of tannery projects, every effort must be made to avoid relocation of communities. Involuntary displacement is generally known as an agent for disrupting and impoverishing communities. It should, therefore, be avoided, or at least minimized. Where it is unavoidable, the displaced persons should not only be adequately compensated for their losses at replacement cost, but also be given opportunity to share in tannery development project benefits. Further, they should be assisted in all ways possible in order to improve their livelihood. Provisions for compensation are supposed to avail enough resources for the affected communities to purchase replacement properties. The compensation scheme should also ensure that displaced people are not worse off, economically and socially, than they were before their displacement.

For tannery projects, compensation would have to be paid for land, property and crops, where land is acquired for the purpose of enabling the development project to take place. However, no compensation need to be paid for any buildings, property or crops that were erected or grown after the cut-off period or in areas designated for tannery projects such as the right of way for transmission lines in a road reserve.

## **8.2 Policy Framework**

The objectives of the policy framework include the following key elements:

- Involuntary resettlement should be avoided or minimised through design efforts.
- Where involuntary resettlement is inevitable, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to give the persons displaced by the project the opportunity to share in project benefits.
- Displaced persons should be assisted in their efforts to improve their livelihoods and standard of living or at least to restore them, in real terms, to pre-displacement levels.

Affected people/communities refer to people who are directly affected socially and economically by the tannery development projects. This can usually be caused by the involuntary land-take or use of other assets that may result in:

- Relocation or loss of shelter.
- Loss of assets or access to assets.
- Loss of income sources or means of livelihood, whether or not the affected persons must move to another location.
- The involuntary restriction of access to legally designated parks and protected areas that could result into adverse impacts on the livelihood of the displaced persons.

The resettlement policy applies to all development projects and activities in the tannery sector irrespective of the developer or financier of the project. This policy also covers resettlement and compensation resulting from complementary activities that are not directly part of the immediate tannery investment project, but are necessary to achieve its objectives as set forth in the tannery investment project documents. The policy applies to all displaced persons regardless of the total number affected or the severity of impact. Particular attention should be paid to the needs of vulnerable groups among those displaced: especially those below the poverty line, the elderly, women and children, the disabled local communities and ethnic minorities.

### **8.3 Legal Framework**

The EI Study team should determine the legal requirements for compensation including the existence of local bye-laws, if any. In addition, it should work out a framework for co-ordination between the different players in compensation. The position of the government of Rwanda in relation to resettlement and compensation to be paid if damage is caused to land is clear under the constitution and other Rwandan laws as well as for most of the development partner policies and guidelines.

### **8.4 Development Partners Safeguard Policies and Guidelines**

Each development partner has its own guidelines. The World Bank, for example has the Draft OP 4.12 “Involuntary Resettlement” which requires that displaced persons be compensated at full replacement cost, assisted with relocation/ resettlement and during the transition period. The developer should be encouraged to offer replacement land rather than cash compensation when the residual land holdings are not economically viable.

### **8.5 Stakeholder Analysis and Census of the Affected Persons**

Prior to any compensation or relocation of person/communities, it is imperative to identify the stakeholders and carry out a census of the affected persons and communities. The census can take into account of all the people affected together with their means of livelihood. The census can in particular identify the vulnerable groups, which should be protected. These include women, the disabled, the orphans, widows and other minorities. During the census exercise of the affected persons, the local leaders, Community Development Officer (CDO) from the project area should work together with the developer to ensure a smooth exercise. Both immovable and movable properties can be counted and eventually valued. The major stakeholders in the tannery projects can include the following:

- Local Governments ( District Administration, and Sector Heads)
- Local Council Chairmen in all the affected settlements
- Representatives of the Authority and Lead Agencies
- Development partners if relevant

### **8.6 Constraints to Monetary Compensation**

Monetary compensation as a means of compensating those directly affected by a development project has not been very effective in Rwanda. There have been a significant number of cases where compensation provisions and property acquisition practices did not provide sufficient resources to enable the affected communities to purchase replacement assets. There are several reasons for this and these include the following:

- Under-valuation of assets by government valuers
- Changes in price of the alternative properties
- Delayed payments leading to loss of value (e.g. because of inflation)
- Unsuitable manner of payment whereby it is not clear whether people should be paid a lump sum or installments

- Misappropriation of funds earmarked for compensation

In view of the foregoing, monetary compensation may not be the best mode of compensating local communities. Thus there is a need to put in place a community driven development plan to implement compensation. Furthermore, compensation or resettlement for large tannery development projects is complicated by the fact that these responsibilities are handled by different institutions altogether.

## 8.8 Inventory of Affected Assets

The EIStudy team must undertake a detailed survey of all losses that can result for each household, enterprise, or community affected by the project. The survey should account for land acquisition and loss of physical assets as well as loss of income either temporary or permanent resulting from displacement of household members from employment or income-generating resources (for instance, potters from clay deposits, fishers from fishing grounds, small-scale suppliers or vendors from customers). Assets held collectively, such as water sources, livestock grazing areas, irrigation systems, and community structures should be recorded separately.

It is essential for resettlement planners to consult with the affected people during this stage to develop a reasonable consensus on the methods and formulae for assigning value to lost assets and income forgone during resettlement. In some jurisdictions, it may be necessary for local authorities to validate claims to assets. However inventories of assets are compiled, heads of households should be required to countersign them to minimize the possibility of subsequent claims or disputes regarding claims. The following are important inventory categories:

- a) Land use/land capability: All land acquired or otherwise affected by the project, whether on a permanent or a temporary basis, must be surveyed, classified by type, and recorded. Civil authorities typically classify and assess the value of land by use (for instance, irrigated agriculture, non irrigated agriculture, pasture, forest, housing, and commercial). However, such classification may overlook the difference between present and potential land use requirements of affected people. For example, shifting cultivators practice crop rotation over wide areas and long periods of time. In such a case, land that appears unused may in fact be in a fallow cycle awaiting cultivation some years hence. Such a differentiation typically requires detailed soils maps and an assessment of land capability and carrying capacity. In addition, even in cases where cadastral survey maps demarcating land ownership and classification are available from the local land revenue office, these maps may be dated and no longer accurate. The EIStudy team should be prepared to undertake independent surveys of land use and assessments of capacity to ensure the accuracy and equitable payment of compensation claims.
- b) Houses and associated structures: Dwellings, separate kitchens, toilets, storerooms, barns, stables, livestock pens, granaries, and workshops for cottage industry should be classified by construction materials (timber, wattle, bamboo, reed, brick and mortar, concrete, earth). All structures should be included in the inventory regardless of whether they are permanently inhabited or occupied intermittently by transient populations.
- c) Other private physical assets: Such assets include non-moveable assets such as standing crops, fruit and fodder trees, firewood and timber woodlots, plantations (rubber, oil palm), fencing, wells, irrigation structures, and graves or tombs.
- d) Private enterprises: Shops, workshops, stalls, factories, and other business establishments should be surveyed and recorded. These should be classified according to ownership (private business, public enterprise, joint venture). Individuals losing their enterprises, employees losing jobs, or vendors losing customers should be enumerated, and the value of these losses incurred during the resettlement period should be estimated.

At the community level, the assets survey should provide an inventory and an assessment of the losses of public resources including:

- i. Common property resources: Such resources include forest and woodlands (sources of building and craft materials, biomass for domestic tannery) and pasture.
- ii. Public structures: These include schools, clinics, meeting halls, places of worship, wells/communal water points, livestock watering points, bathing and washing platforms, bus shelters, and monuments.
- iii. Cultural property: Cultural property includes archaeological sites, burial grounds, monuments, shrines, places of worship, artefacts, and sites of religious or historical significance.
- iv. Infrastructure: All infrastructure that can be destroyed or disrupted by the construction of the project should be enumerated, including roads and bridges; irrigation and drainage channels; water and sewage lines; power lines; and communication lines. The inventory of assets should be cross-referenced with the census and linked with the census in a single database. It is advisable for resettlement planners to photograph, document, and register all assets described above by household, enterprise, or community organization. Digitised photographs can be used to record assets for storage in computerized census and socio-economic databases.

## **8.9 Valuation for Lost Assets**

The EIStudy team should establish transparent methods for the valuation of all assets affected by the project. These methods should include consultation with representatives of the affected communities to assess the adequacy and acceptability of the proposed compensation. Such consultation is especially important where market values for assets are not well established or are intangible (social or cultural values that are not readily monetized). The study should also take note of changes in price and values of assets between evaluation and compensation. After acceptable compensation rates are established, they are applied to the inventory of losses for all households and enterprises affected by the project. A simple software application can be used to create a database that combines census data, inventory of losses data, and compensation formulae. This database can then be used to budget compensation payments and to track progress in settling compensation claims.

## **8.10 Payments**

The EIStudy team should draw up a payment plan, which can streamline procedures so as to avoid delayed payments. The team should establish the best criteria for effective payments. The latter may include installments, pre-season or lump sum, depending on the socio-economic characteristics of the society in question. Payments should be made at the people's place of residence or other places that are easily accessible. Peasant communities are often unable to properly manage large sums of money following compensation. Special attention should be paid to this point in order to guarantee that compensated people are economically not worse off than before the displacement.

## **8.11 Resettlement in Tannery Projects**

- a) Objectives in Resettlement: The main objective in resettlement is to ensure that the displaced population receives benefits from the displacing project. Involuntary resettlement, therefore, should be an integral part of the tannery development project and should be handled at the onset of the project, i.e. at the planning and feasibility stages. When communities or individuals are forcibly moved, it is likely that production

systems are dismantled, kinship groups may be scattered, jobs may be lost and social networks may collapse leading to a host of other socio-economic ills. This is why involuntary resettlement should take into account all the socio-economic characteristics of the affected people.

b) Basic Requirements for Resettlement Plans: There are at least four basic requirements for tannery development projects where resettlement can occur. These are as follows:

- i. *Resettlement Timetables*: It is essential that a resettlement timetable, which is well co-ordinate with proposed tannery development activities, is put in place so that the resettlement exercise is not left to be implemented towards the end of the tannery project. Resettlement timetables should provide for phased resettlement to allow construction/improvement works and resettlement to take place at minimal cost.
- ii. *Restoration of Lost Incomes*: Resettlement plans should target restoration of lost incomes due to tannery development projects. The desirable plan to restore lost incomes should include compensation costs, resettlement costs, administrative costs, rehabilitation costs and costs of lost local government or Central Government public assets. To minimize losses to the community, it is essential that compensation is paid upfront and a compensation timetable/programme is put in place.
- iii. *Resettlement Budget*: Inadequate financial resources for a resettlement programme may lead to its failure. Therefore it is necessary to prepare an adequate budget to meet the costs of resettlement. There are two aspects to preparing the resettlement budget. These are as follows:
  - if the budget is too low, then the funds can be inadequate and this can lead to delays in implementing the tannery project; and
  - If the budget is excessive, it may discourage the Developer/Development partners from investing in that particular project.

c) Contents of a Compensation and Resettlement Plan: Where the tannery project can displace people involuntarily, severe socio-economic problems are likely to arise. It is necessary therefore that the Developer ensures that the displaced population receives benefits from the project. This can only be possible if a people-oriented resettlement plan is evolved and implemented. Resettlement plans should include the following key components:

- i. *Objective* - The objective of the plan should be well considered to the effect that the displaced people should benefit from the proposed tannery project through compensation assistance in moving, and assistance to improve their former living standards and any other considerations relevant to the development area.
- ii. *Policy* - The current government policy on resettlement should be stated, as well as other regulations particularly with respect to land tenure, local governance and environment. The project development partners' policy on resettlement should also be included.
- iii. *Community Participation* - All the identified key stakeholders should be actively involved in community participation
- iv. *Baseline Survey* - This can cover the community and their socio – economic situational analysis.
- v. *Legal Framework*
- vi. *Alternative Sites* - With regard to alternatives for resettlement sites, the EIStudy team needs to:
  - Identify possible alternative sites together with the host and resettlees.
  - Identify the productive potential of alternative sites as well as availability of other sources of income.
  - Identify the comparable employment opportunities, infrastructure, services and production opportunities.

- Identify and prepare relocation sites and drawing up timetables and budgets for resettlement.
  - vii. Valuation of and Compensation for loss of assets - Resettlement plans must target restoration of lost incomes as a result of implementing the project. To ensure this, the plan should: Pay special attention to the legal arrangement for land title registration and site occupation; sensitize the affected communities on the laws and regulations on valuation and compensation; Establish eligibility criteria for affected households; Establish access to communal facilities.
  - viii. Land Tenure, Acquisition and Transfer - The Developer should review the land tenure system both in the host community and the affected community. The Authority and Lead Agencies should together work out the compensation eligibility for land dependent populations. Evaluation and grievance procedures should be explained to the community making sure that both customary and titled resettles are equally treated. The plan should take into consideration the time required to process land titles.
  - ix. Access to Training and Credit - If the baseline survey indicates that the resettles cannot get the same employment opportunities as before then the plan must include alternative employment strategies for the displaced people. It may be necessary to institute vocational training, employment counselling, extension of credit and any other as may be identified.
  - x. Shelter, Infrastructure and Social Services - The plan should provide for infrastructure at the new sites. It is preferable that the GoR (through the Ministry) provides suitable building materials while settlers construct their own dwellings according to their culture and tastes. The developer should facilitate this.
  - xi. Implementation Schedule - It is essential that a sound schedule for executing the resettlement operation evenly over the duration of tannery development projects requiring resettlement is put in place so as to avoid "end-bunching". The resettlement plan should include an implementation schedule for each activity covering the initial baseline and preparation, actual relocation and post relocation economic and social activities.
- d) Potential Scope of Resettlement/ Compensation in Tannery Projects: Examples of different activities relating to tannery development projects may lead to resettlement / compensation are summarized in Table 4.

**Table 4: Potential Resettlement / Compensation Impacts**

NO	Potential Resettlement / Compensation Impacts
1.	Extensive permanent land-take leading to relocation and need for compensation to communities and individuals
2.	<ul style="list-style-type: none"> <li>▪ Temporary land take near construction sites leading to temporary relocation and compensation</li> <li>▪ Downstream impacts like loss of land and infrastructure could require relocation and compensation</li> </ul>
3.	<ul style="list-style-type: none"> <li>▪ Permanent land-take for project and access roads leading to relocation and need for compensation to communities and individuals</li> <li>▪ Temporary land-take near construction sites leading temporary relocation and compensation</li> </ul>

- e) Consultations with, and Participation of Displaced Persons in Planning and Implementation: It is important that the affected persons/community, Developer and the EIA study team start interacting right from the time it is first realized that compensation / resettlement may be necessary, i.e. during project planning or at the latest, during the feasibility stage. Various members of the community should also be involved in negotiations, including: Leaders and representatives, Local NGOs and CBOs and District Environment Officers, CDOs.

- f) Grievance Redress Mechanism: The affected community should be given an opportunity to review the survey results. In case any complaints arise from the affected communities, a grievance committee must be put in place to quicken the process of conflict resolution. This is to avoid the tedious process of courts of law, which are often not appreciated and out of reach by local communities. The grievance committee should be formed at the lowest level of activity (e.g. Village level) and should include some of the following: Village Elder, Woman leader and Representative of the Authority and developer. The procedure should be such that if the complainant still does not agree with the decision of the grievance committee, she or he should be encouraged to appeal to the Probation Officer of the Local Government based at every district. If he still does not agree to the decision, he may be encouraged to go to the court as a last option. It is important that the grievance committee is acceptable to all the stakeholders. This can be achieved by circulating its membership to community for acceptance.
- g) Resettlement Monitoring and Evaluation Arrangement: It is important that a resettlement implementation plan is formulated so that it can serve as a basis for the resettlement monitoring and evaluation. The plan can ensure that the contractor is aware of his responsibilities. The plan needs to define criteria and indicators against which to measure the success of the resettlement. To implement this plan it is imperative that a social monitoring team is instituted. This can be responsible for monitoring the resettlement/compensation activities and implementing the social mitigation measures proposed in the resettlement/compensation plan. The monitoring team should closely liaise with local implementation committee which would have been put in place for that purpose. The monitor should report to the Authority / Developer and his/her reports should be availed to the district authorities who may wish to make comments or adjustments in accordance with emerging local bye-laws or concerns. Depending on the project specific situation, the monitoring team should include: Sociologists, Urban physical planners, Medical Doctor, Public health specialists, Agricultural experts.

The Resettlement monitoring team's main activities should include the following:

- i. Overview and review compensation and/or lease agreements for land-take (both temporary for the use of the Contractor and permanent for the tannery development works),
- ii. Check that no land has been taken unnecessarily, no crops destroyed unnecessarily and no buildings nor trees destroyed unnecessarily,

Review reinstatement and/or future management plans of construction facilities such as camps.



# PART 9: SYNOPSIS OF TANNING, POSSIBLE IMPACTS AND MITIGATION

## 9.1 Introduction

Tanning is a process of converting putrescible animal hides and skins to a stable commercial product called *Leather*. Before the tanning process, curd hides and skins arriving at a tannery are trimmed to remove long shanks and unwanted materials for leather making. Then the soaking, liming, re-liming, fleshing, de-liming, bating degreasing and pickling processes are carried out to create a conducive situation for tanning process. Figure 4 presents a flow diagram of a tanning process. For each end product, the tanning process is different and the kind and amount of waste produced may vary enormously. Annex I presents the chemicals used in Tanning Processes and their hazard status.

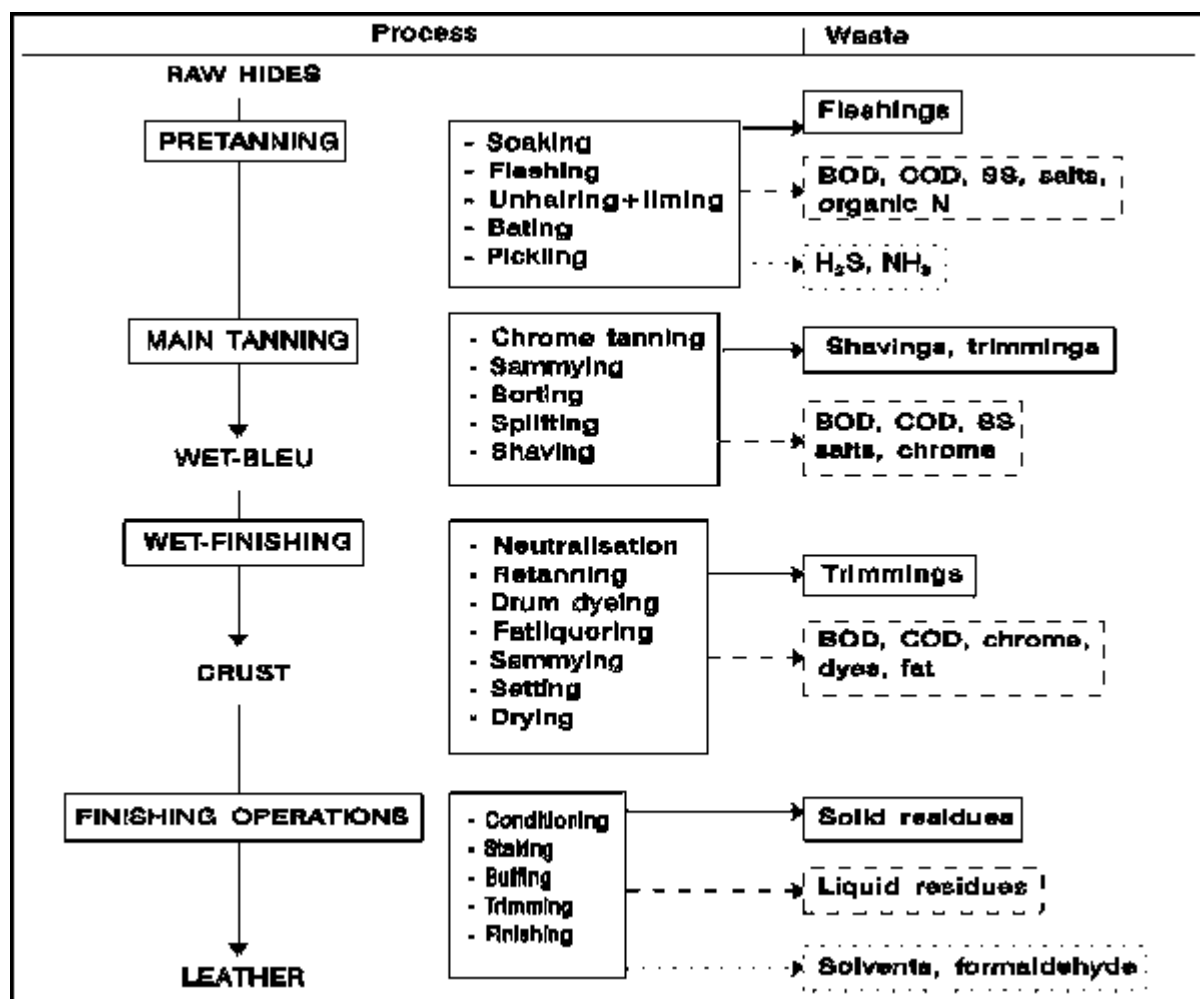


Figure 4: A flow Diagram of a Tanning Process

## 9.2 Major Operations in a tannery

The production processes in a tannery can be split into four main categories.

### 9.2.1 Hide/skin storage and beam house operations

Hides are prepared for tanning by cleaning and conditioning and by ensuring the correct moisture. The following processes are typically carried out in the beam house of a tannery and these include: a) Soaking, b) Liming and unhearing and c) Fleshing and/or splitting.

### 9.2.2 Tan yard process

Typically, the following processes are carried out in the Tan yard: a) De-liming and Bating; b) Pickling; c) Tanning (*Chrome Tanning and Vegetable Tanning*);

### 9.2.3 Post-tanning Wet Work

This involves further processing of the stabilized collagen network and may comprise a further tannage when special characteristics such as perspiration resistance are required. Conditioning softening, dyeing or bleaching may also be carried out. Few solid wastes are produced, and the aqueous effluents do not generally contribute significantly to the overall load of pollutants from the tannery.

### 9.2.4 Drying and Finishing

The leathers are sammied to remove moisture, and then dried. The final finishing process includes mechanical treatment of grain and flesh, followed by application of surface finish. The major environmental problem in finishing is undoubtedly air emission of solvents. Some aqueous waters may be generated. Solid wastes may arise from trimmings and buffing dust.

## 9.3 Impacts of Tanning Industry on the Environment

Though there are some positive impacts related to the tannery industry, these guidelines are intended to help in the identification of potential negative impacts and to assist the lead agencies in making approval decisions. Some of the positive impacts include:

- i. Generation of employment opportunity
- ii. Economic gain through export market
- iii. Local market opportunity from the sell of hides and skins

Negative impacts include: The main sources of negative impacts are chemicals used for tanning processes. The tanning industry gives rise to two types of hazard involving chemicals. These are, firstly, those concerning particular chemicals used in the various tanning processes, and secondly, chemical substances produced as by products by the chemical reactions occurring when a hide undergoes the tanning process. Tanning generated wastes can cause environmental pollution in different environmental mediums. Tables 5 & 6, presents pollutants that causes negative impacts on air, water, human and land.

### 5.1.1 Impacts on air, water and land environment

**Table 5: Impacts on air, water and environment**

No	Pollutants	Symbol	Main Negative Effects	Impact medium
1.	Ammonia	NH <sub>3</sub>	Pungent odour and adverse effects on aquatic life like fish	Water & Air
2.	Total Kjeldahl Nitrogen	TKN	Causes excessive plant growth and formulation of algae cause eutrophication and reduction of oxygen	Water
3.	Trivalent Chrome	CR III	Toxic to human, aquatic life and crops At high temperature oxidizes to chrome VI, which is highly	Water & Land

			toxic	
4.	Chloride	Cl	Harmful to plants and agriculture, corrodes metal and piping in civil construction	Water & Land
5.	Biochemical Oxygen Demand (Winkler)	BOD5	BODs indicate the quantity of oxygen may be consumed while biologically degrading the organic constitute.	Water
6.	Chemical Oxygen demand (Dichromate)	COD	CODs-is measure of oxygen consumed during chemical oxidation of the constituents of effluents.	Water
7.	TDS, Sulphates & Chlorides	TDS CL-SO4	Harmful to plants & civil structures & affect the soil structure & properties by causing dispersion of clay	Water & Land
8.	Oil & Grease	O&G	Forms surface films on water and shoreline deposits which lead to environmental degradation and interfere with biological processes	Water & Land
9.	PH	PH	Acidic conditions cause concreter and metal corrosion and are toxic to aquatic life, High alkaline conditions are toxic	Water & Land
10.	Suspended Solids	Suspende d Solids	Can form deposits and create anaerobic condition (odour) which pose a danger to aquatic life	Water
11.	Sulphide	S2-	Odour nuisance at low levels and fatal in high concentrations Poisonous to aquatic life, depletes dissolved oxygen damages sewerage systems	Water & Air
12.	Sulphate	SO4	May cause corrosion of concrete and piping and limits the use of the water bodies for both human and agriculture In anaerobic conditions, can be converted sulphides.	Water & Land

**Note:** One tone of raw hide converted into about 200 kgs of finished leather the remaining 800 kgs is waste or pollution.

### 5.1.2 Impacts on human health and occupational safety due to exposure to hazardous chemical

**Table 6: Impacts on human health**

1.	Physical Hazards	<ul style="list-style-type: none"> <li>▪ Exposure to high noise levels from mechanical equipment.</li> <li>▪ Callosities on hands caused by continuous work with hand tools</li> <li>▪ Eye stain due to poor illumination in the tannery.</li> </ul>
2.	Chemical Hazards	<ul style="list-style-type: none"> <li>▪ Skin rashes and dermatoses as a result of exposure to cleaners, solvents, disinfectants, pesticides, leather-processing chemicals etc.</li> <li>▪ Allergies-contact and systemic-caused by many of the chemicals used in tanneries.</li> </ul>
3.	Biological hazards	Raw hides and skins may be contaminated with a variety of bacteria, molds, yeasts and various diseases (e.g., anthrax, leptospirosis, tetanus, Q-fever, brucellosis, etc.) also the large quantities of dust produced in buffing operations would normally be contaminated with disease-bearing microorganisms.
4.	Ergonomic, and psychosocial organizational factors	Acute musculoskeletal injuries caused by physical overexertion and awkward posture while moving heavy or bulky loads, in particular bundles of hides; Low back pain due to prolonged working in a standing or semi-bending posture and Heat stress.
5.	Accident hazards	<ul style="list-style-type: none"> <li>• Slippery floors, while moving heavy loads such as containers of chemicals.</li> <li>• Electric shocks caused by contact with defective electric Mmachinery</li> <li>• Blows &amp; crushing injuries caused by rotating or moving parts of Mmachinery</li> <li>• Acute poisoning and/or chemical burns by inhalation, ingestion or skin contact with constituents of tanning process liquors, or poisonous gases released</li> <li>• Burns caused by contact with hot surfaces or splashed of hot solutions</li> <li>• Cuts and stabs caused by manual or mechanized working tools</li> <li>• Eye injuries caused by flying particles from rotary buffing machines.</li> </ul>

**Table 7: Potential Impacts, Consequences and Mitigation Measures**

Potential Impacts	Causes	Consequences	Mitigation Required
Modification of aquatic habitats	A variety of chemicals is used in the tanning industry including Cr, NH <sub>4</sub> , Ti, Na <sub>2</sub> SiF <sub>6</sub> , Na <sub>2</sub> S, CaO, Na <sub>3</sub> OH <sub>4</sub> , Na <sub>2</sub> SO <sub>4</sub> , (CH <sub>2</sub> ) <sub>6</sub> N <sub>4</sub> , AlNH <sub>4</sub> (SO) <sub>2</sub> . These chemicals can be found in waste effluent or they can reach the effluent discharge as a result of spillage. As well there is waste including leather and hair from the hides that can find its way into the aquatic habitat.	Receiving water bodies become highly polluted and toxic, rendering them unfit for other uses and destroying existing fauna and flora; loss of biodiversity. Organic wastes can deplete oxygen levels surface waters, resulting in damaged habitat and aquatic communities.	Containment and treatment facilities to ensure that effluent discharges are within the regulated limits. Chemicals should be stored and handled in such a manner as to prevent spillage.
High energy consumption	Aging high production tanneries use large amount of energy, particularly in winter.	Depending on source of energy, could contribute to greenhouse effect (if fossil fuel derived) or if hydro derived, could result in pushing high demand on limited supply that would result in additional energy sources to be found.	For new tanneries building design and construction should be compact and energy efficient.
Injuries	Tanneries use heavy machinery, which, if not fitted with protective shields, can cause injury.	Lost productivity, work days and income.	Safety instructions; safety clothing where appropriate (e.g. hard hats); protective guards on all machinery.
Illness	A number of chemicals have to be handled in the tanning process. Some of these can be dangerous to the health of workers if not properly stored and handled.	Lost productivity, work days and income. Long term illness.	Effective training in the handling of chemicals; protective clothing (e.g. respirators, gloves of inert material); proper storage for highly volatile compounds.
Solid waste and contamination of groundwater and surface water.	Hair and small quantities of skin and leather waste during the tanning process.	Small quantities of leather do not present a problem. Hair of hides often contains parasites and disease. Unknown as to whether or not these could find their way into groundwater and surface water and pose a threat to health.	Minimize amount of waste; treat hides before removal of hair (or treat hair after removal).
High water consumption	Large tannery uses large amounts of water.	Drawdown of water table which could affect other users.	Ensure proper water apportionment with other competing users; efficient water use and recycling.

## **9.4 Mitigation Measures in Tannery**

### **9.4.1 Cleaner Production Mechanisms**

Annex J and K presents Cleaner Production Issues and tannery effluent standards respectively. A number of cleaner production mechanisms (CDM), which will reduce the level of pollutants entering the effluent, as compared to under conventional processes include:

- a) Sodium chloride for hide's preservation can be recovered from the soaking process and reused in the pickling process. Suppliers of hides can be advised to supply green or frozen hides which are not preserved with salt. This should significantly reduce chloride levels in the effluent.
- b) Enzymes can be used in the de-hairing process in order to cut down on the amount of sodium sulphide in the effluent.
- c) A high chrome fixation system can be in place to ensure high chrome exhaustion in tannage. This can result in a reduction of chrome effluent and therefore heavy metals to the effluent treatment plant (ETP). This method also reduces solid waste.
- d) The drying beds of the ETP are made of concrete and lined. The drained effluent can be channelled back into the ETP minimising the possibility for leaching and contamination of ground water.
- e) Oxygen rich algae system in ETP: this system comes close to the way that nature would remedy naturally occurring pollution. Spirulina algae that has been cultivated in the last two lagoons utilises carbon dioxide and nitrogen nutrients found in tannery effluent as a feed source and produces oxygen as a by-product. This method can help the lagoons to continue being aerobic. Other nutrients like phosphates and potassium are also utilised by the algae.
- f) Carbon dioxide deliming process: This has been experimented with and the results were positive. Full implementation of this process can reduce the usage of ammonium sulphate and hence reduce the discharge of nitrogenous compounds to the effluent with a corresponding lowering of the BOD level.
- g) Chrome liquor recycling process: It is proposed that this process should soon be employed and can result in a reduction of chrome effluent.
- h) Evaporation of salt containing liquors using existing pits is an area actively being considered to further reduce chloride levels in the ETP.

### **9.4.2. Wastewater Treatment**

All wastewater generated by tannery operations can be subjected to treatment in the project's effluent treatment plant (ETP) before discharge to the aquatic environment to ensure full compliance with accepted RBS standards (also see Annex K for Tannery Effluent Standards). The various process stages of the ETP, employing physiochemical and biological treatment methods, are outlined in the following flow diagram in Figure 5.

## FLOW DIAGRAM - EFFLUENT TREATMENT PROCESS

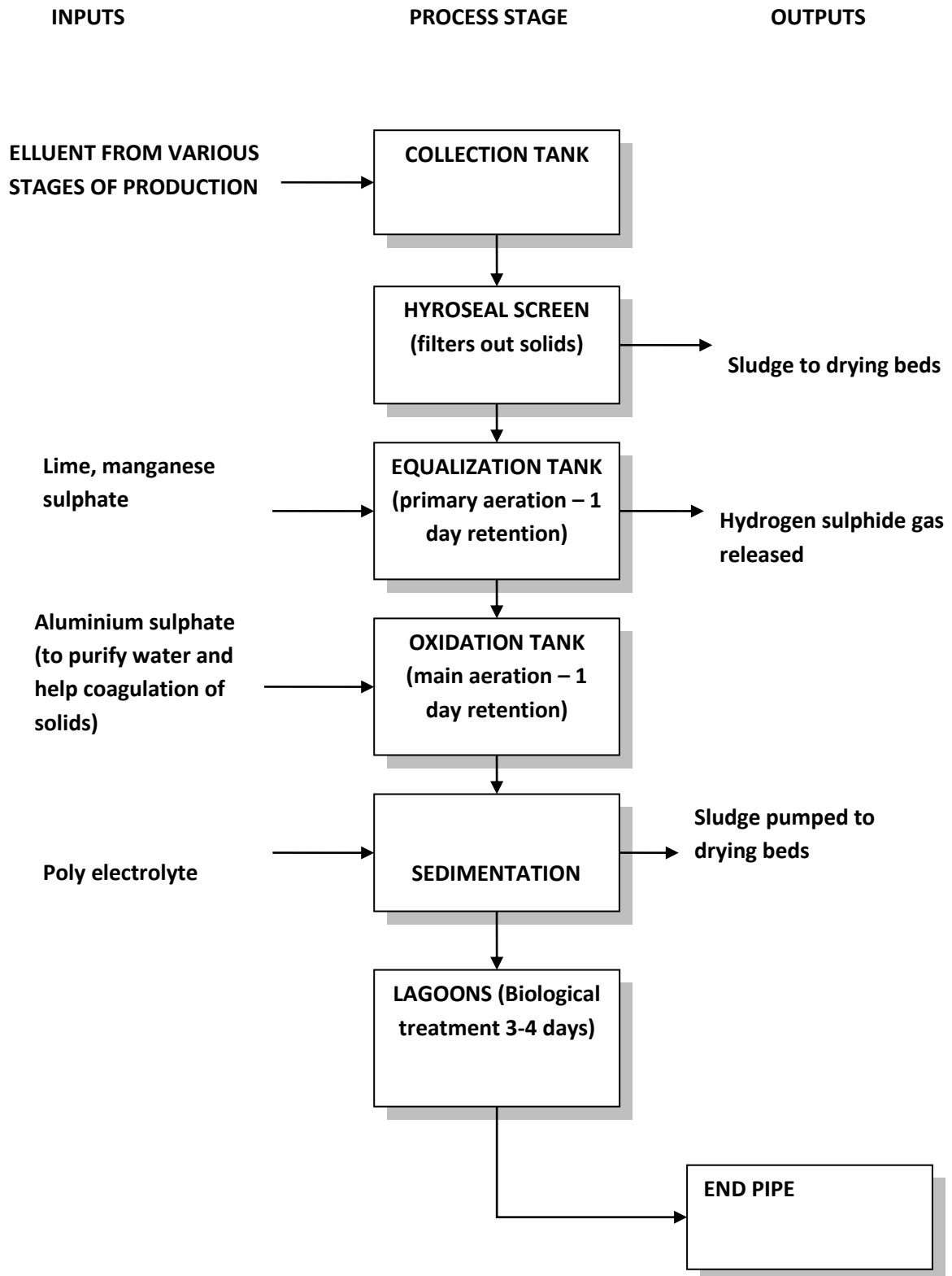


Figure 5: The breakdown of wastewater found in the ETP system

- 25 % in the retention tanks
- 50% In the lagoons
- 25% in the end pipe

Chemical dosages in equalisation, oxidation and sedimentation will be regulated according to the levels of wastewater generated. The ETP was rehabilitated in 1992 with the help of United Nations Industrial Development Organisation (UNIDO) experts. The plant is presently in good working order, drying beds inclusive.

### 9.4.3 Solid Waste

All solid waste from tannery operations such as leather shavings / trimmings, dry sludge and empty containers and sacks of toxic chemicals should be disposed of by burial at this site. The disposal site should be managed by the tannery according to Waste Management Guidelines and Regulations for Rwanda. These measures will include:

- a) Empty chemical containers are first damaged before disposal
- b) The transportation of waste to the disposal site will be by designated vehicle (tractor and trailer) following a scheduled route and will be conducted in a manner so as not to cause scattering of waste.
- c) A full time employee will be employed by the project to manage the disposal site and ensure proper disposal of waste, prevent scavenging, fire etc.
- d) The disposal site will be enclosed and secure from unauthorised persons
- e) Hazardous and safety signs will be displayed in appropriate places to indicate the disposal site.

It is proposed by the project that future landfills taken into use should be lined to reduce the potential for leaching and subsequent pollution of ground water.

### 9.4.4 Odour and Air Emissions

Fumes and gasses emitting from tannery operations can be removed by use of extractors and exhaust fans to ensure worker welfare and safety within the plant. Some of the cleaner production mechanisms that were mentioned in section 9.4.1 will also help to reduce on air emissions e.g. Use of enzymes in the dehairing process will result in a reduction of sodium sulphide in the effluent in turn reducing the “tannery smell”. Implementation of a carbon dioxide deliming process will reduce the ammonia odour in the plant. In addition, as part of the tannery’s implementation of cleaner production projects, water based topcoats will be used in place of solvent based topcoats to reduce fumes emitted from leather finishing.

### 9.4.5 Environmental Management Plan

The following environmental management plan (EMP) can be followed in allocating the responsibilities for the daily monitoring of environmental issues and implementation of mitigation measures and the responsibility for auditing activities to various stakeholders.

**Table 8: Proposed Environmental Management Plan Structure**

No	Environmental Issue	Mitigation measures	Responsibility	Due Date	Audit	Cost (RWF)
I.	Effluent discharge	<ul style="list-style-type: none"> <li>• Implementation of cleaner production projects</li> <li>• Effective treatment of effluent in ETP ensuring compliance with</li> </ul>	Developer (e.g. Engineer)		<ul style="list-style-type: none"> <li>• REMA</li> <li>• Independent Auditors</li> </ul>	

		<p>REMA/RBS regulations /Standards</p> <ul style="list-style-type: none"> <li>• Daily checks on effluent to monitor pH, retention, hydrogen sulphide</li> <li>• Effluent analysed monthly by RBS /NUR– results sent six monthly to REMA)</li> </ul>				
2.	Solid waste	<ul style="list-style-type: none"> <li>• Disposal at land fill in compliance with REMA regulations</li> </ul>	<p>Tannery Manager</p> <p>Production Manager</p>		<ul style="list-style-type: none"> <li>• REMA</li> <li>• Independent auditors</li> </ul>	
3.	Air emissions	<ul style="list-style-type: none"> <li>• Implementation of cleaner production projects</li> <li>• Abstraction of gasses / fumes by exhaust fan</li> </ul>	<p>Tannery Manager</p> <p>Production Manager</p>		<ul style="list-style-type: none"> <li>• REMA</li> </ul>	
4.	Storage and handling of chemicals	<ul style="list-style-type: none"> <li>• Compliance with REMA regulations / guidelines and RBS standards</li> </ul>	<p>Tannery Manager</p> <p>Production Manager</p>		<ul style="list-style-type: none"> <li>• REMA</li> </ul>	
5.	Worker health and safety	<ul style="list-style-type: none"> <li>• Adherence to safe working practices / guidelines</li> <li>• Workers safety committee</li> <li>• Safety and emergency procedures and equipment</li> <li>• Annual medical checkups</li> </ul>	<p>Tannery Manager</p> <p>Production Manager</p> <p>Clinical officer /visiting doctor</p>		<ul style="list-style-type: none"> <li>• REMA</li> <li>• Ministry of Labour</li> </ul>	



# ANNEXURES

## ANNEX A: LIST OF PROJECTS FOR WHICH THESE GUIDELINES APPLY

All leather/skin/hide processing industry including expansion and modernization require prior environmental clearance. Based on pollution potential, these projects are basically classified into Category IL3 and Category IL2 and IL1:

- Category IL3: New tanneries projects outside the industrial area or expansion of existing units outside the industrial area.
- Category IL2 and IL1: All new or expansion of projects located within a notified industrial area/estate.

Besides, there are general as well as specific conditions, when it applies, a Category IL2 and IL1 project will be treated as Category IL3 project.

In case of expansion or modernization of the developmental Activity:

- Any developmental activity, which has an EIA clearance (existing projects), when undergoes expansion or modernization (change in process or technology) with increase in production capacity or any change in product mix beyond the list of products cleared in the issued clearance is required to submit new application for EIA clearance.
- Any developmental activity due to expansion and its total capacity, if falls under the purview of either Category IL3 and Category IL2 and IL1, then such developmental activity requires clearance from respective Authority.

The sequence of steps in the process of prior environmental clearance for Category IL3 and Category IL2 and IL1 projects are shown in Appendix 1 of the EIA Guidelines for Rwanda, 2006.

## **ANNEX B: COMPOSITION OF THE EIA TEAM**

The success of a multi-functional activity like an EIA primarily depends on constitution of a right team at the right time (preferable at the initial stages of an EIA) in order to assess the significant impacts (direct, indirect as well as cumulative impacts). The professional Team identified for a specific EIA study should consist of qualified and experienced professionals from various disciplines, in order to address the critical aspects identified for the specific project.

The Team Leader should be a Certified Environmental Practitioner by the Authority. Based on the nature and the environmental setting, the following professionals may be identified for EIA studies depending on the location of the project whether in a built up area or in an vegetated area:

- Environmental Management Specialist
- Air and Noise quality Specialist
- Occupational Health & Safety Specialist
- Soil Scientist
- Chemist (experience in waste management)
- Plant Ecologist
- Aquatic Ecologist
- Sociologist / Socio-economist
- Environmental Lawyer
- Water Quality Specialist
- Environmental Toxicologist

The suggested team members should possess at least a Bachelors degree with 5 years of work experience in the field of expertise.

## **ANNEX C: CONTENT OF A PROJECT BRIEF**

Project briefs are concise documents (20 pages) that should contain the following information:

### **1. Contact details of the Developer**

- Name of the developer
- Main postal address, telephone, fax and e-mail details for the developer
- Name of the main contact person and direct postal address, telephone, fax and e-mail details

### **2. Characteristics of the project**

- Brief description of the proposed project including type of project, the form of energy source, size of the project in terms of capacity installed, transmitted or distributed, length of transmission, distribution lines, number of people to benefit from the project, raw materials needed as well as product by product or emissions
- Reasons for proposing the project (justification of the project, project objectives)
- Background of the project: How was the project conceived; Findings from previous studies such as energy supply and demand analysis that contributed to the conception of the project; Relationship with other existing/planned projects
- Project site: Maps and photographs showing the location of the project relative to surrounding physical, natural and man-made features; Existing land-uses on and adjacent to the site and any future planned land uses; Protected and sensitive areas like national parks, forests, wetlands, sites of cultural interest; Alternative project sites; Reasons for choosing the particular site
- Baseline data: The baseline data should include information relevant to the proposed project that will depend on the source of energy of a particular project. It will include data on some of the following: Geology and soils, Climate and rainfall conditions, Settlement areas, Drainage patterns, Total river basin, Long term average flow of a river, Water level of reservoir, Design flood level, Reservoir area during normal storage, Minimum and Maximum Water level in downstream, Submerged land, Land requirement for construction, Land use and tenure, Sites of cultural or historic value, Human population and demographic trends, Local government set up, Major economic activities, Public health status Key social-economic activities and cultural issues
- Physical form of the development: Layout, buildings, other structures, construction materials, etc. including details such as: Energy source (hydro, petroleum, solar, biomass, wood, etc.); Raw material consumption rate; Access roads; Project land within project boundary; Site preparation activities such as clearing of land, forests, drilling, blasting, excavation of land, etc.; Time needed for project development
- Construction practices: Specific construction techniques to be used with emphasis on any potential impacts of construction e.g. noise, dust. Needed housing, transportation, etc. for the workers
- Operations: Operations with particular emphasis on number of workers to be employed, working hours, housing and transportation needs, occupational health and safety hazards. Any expected air, water or waste discharge from proposed action
- Preliminary analysis of alternatives: The brief should indicate reasonable alternatives to meet project objectives. This may lead to alternatives that are more sound from an environmental, social cultural and economic point of view from the originally proposed project. Alternatives can be other energy sources, construction of smaller energy facilities, alternative sites, and different technologies.

- Other large development projects ongoing or planned for within the area of influence of the energy project

### **3. Characteristics of the potential impacts**

A brief description of the likely impacts of the project considering the following factors:

- Impacts on people, human health, gender distribution of socio-economic benefits, fauna and flora, soils, land use, material assets, water quality and hydrology, air quality, climate, noise and vibration, the landscape and visual environment, historic and cultural heritage resources, and the interactions between them
- Nature of the impacts (i.e. direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative)
- Extent of the impacts (geographical area, size of the affected population/habitat/species)
- Magnitude and complexity of the impacts
- Probability of the impacts
- Duration, frequency and reversibility of the impacts
- Mitigation incorporated into the project design to reduce, avoid or offset significant adverse impacts
- Transboundary nature of the impact

It is important to remember that only such information can be requested, that the developer reasonably can be expected to have at the stage in the development the project has reached. If screening is being carried out early in the project's life only some information will be available.

## **ANNEX D: SCREENING GUIDELINES**

These screening guidelines should be used in reference to the project screening criteria presented in Annex E and the General Guidelines for EIA for Rwanda of 2006.

### **Methods to be used in the Screening Process**

Screening is that part of the EIA process which determines whether an EIA is required for a particular project. A number of steps are involved in deciding whether EIA is required for a proposed project. A diagrammatic flow of decision making steps in screening is presented below and explanation of each step is given below. The process is followed through until a decision is made on whether or not EIA is required.

#### Step 1—Is the Project an Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment?

The first step in the screening exercise is to determine whether the project (components) is either listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment. In summary, if a project is not of a type listed in the Ministerial Order, is not required, unless a special reason exists for further environmental examination of the project.

#### Step 2 - Is the Project on a Mandatory List Requiring EIA?

The second task is to determine whether there is a mandatory requirement for EIA for the project under Rwandan Law (Ministerial Order establishing the list of works, activities and projects that have to undertake EIA). An EIA will be required if the project is listed under Article 2 of the Ministerial Order. Also considered in the screening analysis are the project size, type and location relative to sensitive environment. In summary, if a project is on a mandatory list then EIA will be required.

#### Step 3- Is the Project on an Exclusion List exempting it from EIA?

This step is used to check whether there is any legal exemption for the project. Some projects may be classified by the state as emergency activities that require quick response and delay may cause disaster. These are set out in exclusion or negative lists of projects. If a project is on an exclusion list then EIA will not be required. National legislation may provide for exceptions to exclusion lists if the project is in a specified sensitive location. Such an exception would apply if the project were likely to have significant effects on a fragile environment e.g. wetlands, surface water, lake shores, river banks, unstable slopes). National legislation must also be checked to determine any other locations defined as sensitive in which an exclusion list would not apply.

#### Step 4 - Case-by-Case Consideration: Is the Project Likely to have Significant Effects on the Environment?

Mandatory and exclusion lists are designed to simplify the process by identifying thresholds and criteria defining projects, which are always or are never considered likely to have significant effects on the environment. If a project is not on a mandatory or exclusion list a screening decision must be made on a case-by-case basis. In undertaking case-by-case screening, the following information is required for decision-making:

- Information about the proposal/project and its potential impacts
- Level of confidence in impacts.

- Characteristics of the environment and its resilience to change.
- Planning, environmental management and decision-making framework.
- Degree of public interest.

In addition such guidance may refer to indicative thresholds and criteria. This is used to check project activities/components that do not appear on the mandatory and exclusion lists. In summary, where it is decided that a project is likely to have significant effects on the environment through a case-by-case examination, then EIA will be required.

#### Step 5 - The Screening Decision

When a formal screening decision has been made, it will be submitted to the Authority for review and final decision. The Authority keeps the final decision. Additional information for decision-making might also be required hence there is need for the screening team should consult the Authority and Lead Agencies to discuss the project and use it as a base for decision-making. The screening team should also consult literature of screening exercises for similar projects. The methods used in previous screening exercises may be adopted by the screening team as found suitable.

#### **Professional judgment**

Based on the professional experience of the screening team, judgement can be made to predict the magnitudes of the impact of the project on the environment and decide the levels of EIA required. The following should be considered during screening:

- i) Identification of assessment issues and the selection of Valued Environmental Components (VECs);
- ii) Establishment of study boundaries and criteria for the assessment of the significance of environmental effects for each of the VECs;
- iii) Identification of past, present and likely future projects that could result in cumulative environmental effects in combination with the project;
- iv) Identification of project-environment interactions and likely environmental effects;
- v) Assessment of the significance of residual environmental effects; and
- vi) Determination of the need for further environmental study (EIA) or no EIA.

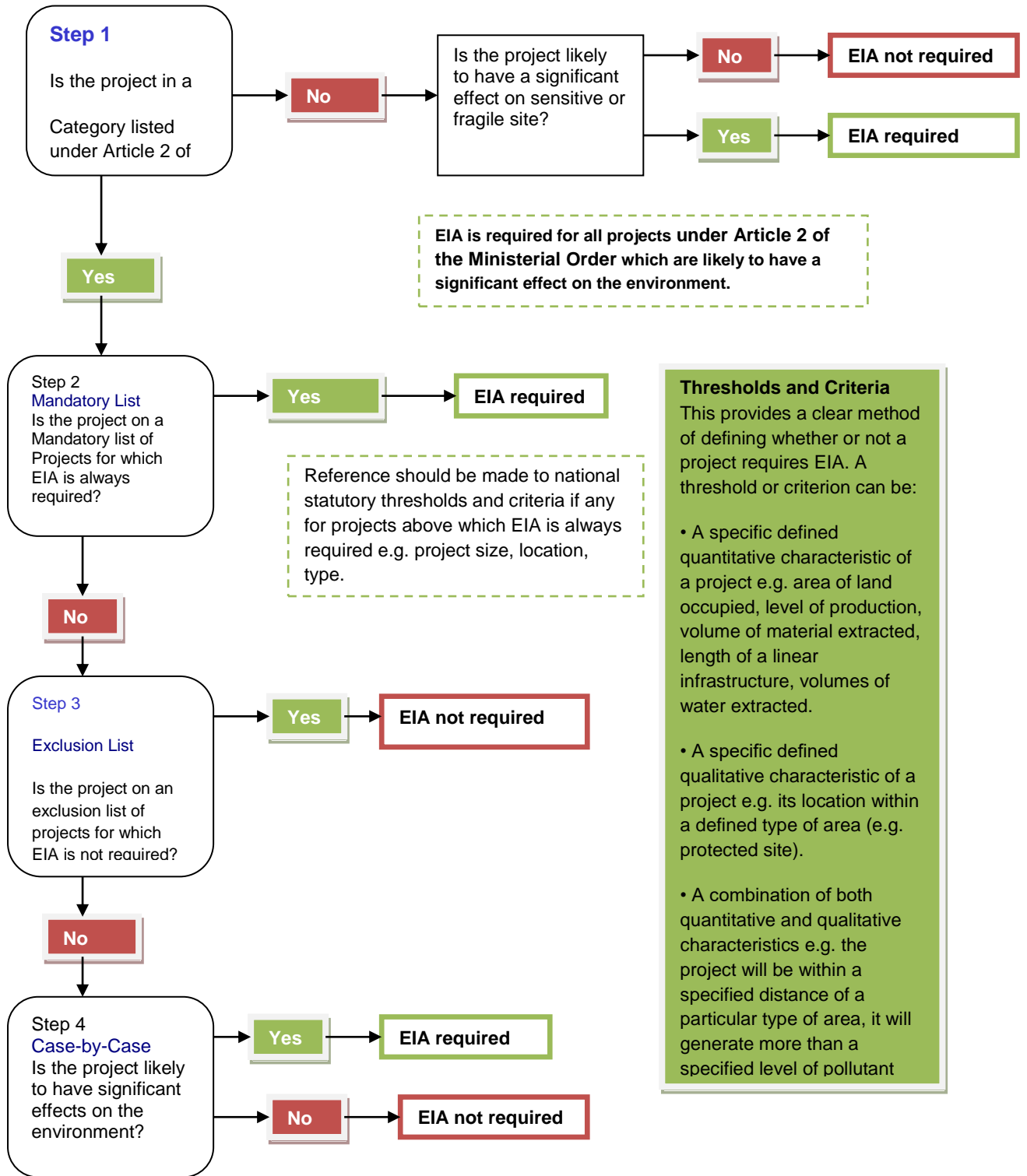
The analysis should consider the project-related environmental effects, cumulative environmental effects, and the incremental environmental effects of the continued operation of the project. The analysis should also provide an integrated evaluation of project-related and cumulative environmental effects. Valued environmental components considered in the screening exercise are:

- vii) Atmospheric Environment.
- viii) Aquatic (water) Environment.
- ix) Sensitive environment (e.g. wetlands, hills, slopes, lakeshores, river banks, forest, schools, nature conservation areas, etc).
- x) Terrestrial Environment.
- xi) Public and Worker Health and Safety.
- xii) Socio-economic conditions

#### **Screening results**

The result of the screening should clearly describe the path followed in Diagrammatic flow chart presented above to arrive at the screening decisions. Annex E presents a Screening Checklist that can be used to explain the screening results.

**Diagrammatic flow of decision making steps in screening**



## ANNEX E: SCREENING CHECKLIST

No	Questions	Yes / No / Briefly describe	Is this likely to result in a Significant effect? Yes/No/? - Why?
1.	Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (Topography, land use, changes in water bodies, etc)?		
2.	Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?		
3.	Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?		
4.	Will the Project produce solid wastes during construction or operation or decommissioning?		
5.	Will the Project release pollutants or any hazardous, toxic or noxious substances to air?		
6.	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?		
7.	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater?		
8.	Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?		
9.	Will the Project result in social changes, for example, in demography, traditional lifestyles and employment?		
10.	Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?		
11.	Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?		
12.	Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other water bodies, forests or woodlands, which could be affected by the project?		
13.	Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, migration, which could be affected by the project?		
14.	Are there any inland or underground waters on or around the location, which could be affected by the project?		
15.	Are there any areas or features of high landscape or scenic value on or around the location, which could be affected by the project?		



16.	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?		
17.	Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?		
18.	Is the project in a location where it is likely to be highly visible to many people?		
19.	Are there any areas or features of historic or cultural importance on or around the location, which could be affected by the project?		
20.	Is the project located in a previously undeveloped area where there will be loss of virgin green land?		
21.	Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?		
22.	Are there any plans for future land uses on or around the location, which could be affected by the project?		
23.	Are there any areas on or around the location, which are densely populated or built-up, which could be affected by the project?		
24.	Are there extractions of resources by the project that can impact ecosystems?		
25.	Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?		

## ANNEX F: SCOPING CHECKLIST

No.	Questions to be considered in Scoping	Yes/No/?	Which characteristics of the project environment could be affected and how?	Is the effect likely to be significant? Why?
<b>Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc)?</b>				
1.	Permanent or temporary change in land use, land cover or topography including increases in intensity of land use?			
2.	Clearance of existing land, vegetation and buildings?			
3.	Creation of new land uses?			
4.	Pre-construction investigations e.g. boreholes, soil testing?			
5.	Construction works?			
6.	Demolition works?			
7.	Temporary sites used for construction works or housing of construction workers?			
8.	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?			
9.	Underground works including mining?			
10.	Reclamation works?			
11.	Dredging?			
12.	Production and manufacturing processes?			
13.	Facilities for storage of goods or materials?			
14.	Facilities for treatment or disposal of solid wastes or liquid effluents?			
15.	Facilities for long term housing of operational workers?			
16.	New traffic during construction or operation?			
17.	New transport infrastructure?			
18.	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?			
19.	New or diverted transmission lines or pipelines?			
20.	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?			
21.	Stream crossings?			
22.	Abstraction or transfers of water from ground or surface waters?			
23.	Changes in water bodies or the land surface affecting drainage or run-off?			
24.	Transport of personnel or materials for construction, operation or decommissioning?			
25.	Long term dismantling or decommissioning or restoration works?			

26.	Ongoing activity during decommissioning which could have an impact on the environment?			
27.	Influx of people to an area in either temporarily or permanently?			
28.	Introduction of alien species?			
29.	Loss of native species or genetic diversity?			
30.	Any other actions?			
<b>Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?</b>				
1.	Land especially undeveloped or agricultural land?			
2.	Water?			
3.	Minerals?			
4.	Aggregates?			
5.	Forests and timber?			
6.	Energy resources?			
7.	Any other resources?			
<b>Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?</b>				
1.	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, and water supplies)?			
2.	Will the project result in changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)?			
3.	Will the project affect the welfare of people e.g. by changing living conditions?			
4.	Are there especially vulnerable groups of people who could be affected by the project e.g. hospital patients, the elderly?			
5.	Any other causes?			
<b>Will the Project produce solid wastes during construction or operation or decommissioning?</b>				
1.	Spoil, overburden or mine wastes?			
2.	Municipal waste (household and or commercial wastes)?			
3.	Hazardous or toxic wastes (including radioactive wastes)?			
4.	Other industrial process wastes?			
5.	Surplus product?			
6.	Sewage sludge or other sludges from effluent treatment?			
7.	Construction or demolition wastes?			
8.	Redundant machinery or equipment?			
9.	Contaminated soils or other material?			
10.	Agricultural wastes?			
11.	Any other solid wastes?			

<b>Will the Project release pollutants or any hazardous, toxic or noxious substances to air?</b>				
1.	Emissions from combustion of fossil fuels from stationary or mobile sources?			
2.	Emissions from production processes?			
3.	Emissions from materials handling including storage or transport?			
4.	Emissions from construction activities including plant and equipment?			
5.	Dust or odours from handling of materials including construction materials, sewage and waste?			
6.	Emissions from incineration of waste?			
7.	Emissions from burning of waste in open air (e.g. slash material, construction debris)?			
8.	Emissions from any other sources?			
<b>Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?</b>				
1.	From operation of equipment e.g. engines, ventilation plant, crushers?			
2.	From industrial or similar processes?			
3.	From construction or demolition?			
4.	From blasting or piling?			
5.	From construction or operational traffic?			
6.	From lighting or cooling systems?			
7.	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?			
8.	From any other sources?			
<b>Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters or groundwater?</b>				
1.	From handling, storage, use or spillage of hazardous or toxic materials?			
2.	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?			
3.	By deposition of pollutants emitted to air, onto the land or into water?			
4.	From any other sources?			
5.	Is there a risk of long term build up of pollutants in the environment from these sources?			
<b>Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?</b>				
1.	From explosions, spillages, fires etc from storage, handling, use or production of hazardous or toxic substances?			
2.	From events beyond the limits of normal environmental protection e.g. failure of pollution controls systems?			
3.	From any other causes?			
4.	Could the project be affected by natural disasters causing environmental			

	damage (e.g. floods, earthquakes, landslip, etc)?			
<b>Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?</b>				
1.	Changes in population size, age, structure, social groups etc?			
2.	By resettlement of people or demolition of homes or communities or community facilities e.g. schools, hospitals, social facilities?			
3.	Through in-migration of new residents or creation of new communities?			
4.	By placing increased demands on local facilities or services e.g. housing, education, health?			
5.	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?			
6.	Any other causes?			
<b>Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?</b>				
1.	Will the project lead to pressure for consequential development which could have significant impact on the environment e.g. more housing, new roads, new supporting industries or utilities, etc?			
2.	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g. supporting infrastructure (roads, power supply, waste or waste water treatment, etc)			
3.	Will the project lead to after-use of the site which could have an impact on the environment?			
4.	Will the project set a precedent for later developments?			
5.	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?			

## **ANNEX G: ISSUES TO BE CONSIDERED IN EIA STUDY**

### **1. Ecological Considerations**

- (a) Biological diversity including impacts on:
  - i. The number, diversity, breeding habitats, etc of wild animals and vegetation
  - ii. Gene pool of plants and animals.
- (b) Sustainable use including effect of proposal on:
  - i. Soil quality
  - ii. Breeding of fish and game or wild animals.
  - iii. Natural regeneration of woodland and sustainable yields
  - iv. Water resources and uses; Wetland resources and wise use of wetlands
- (c) Ecosystem maintenance including effects on:
  - i. Food chains
  - ii. Nutrient cycles
  - iii. Aquifer recharge, water run-off, rates, etc
  - iv. Area extent of habitats
  - v. Fragile ecosystems (water, wetlands, soils)

### **2. Social considerations including effects on**

- i. Employment
- ii. Social cohesion or disruption
- iii. Human health
- iv. Immigration or emigration
- v. Communication – roads opened, closed, re-routed, etc
- vi. Local economy
- vii. Culture and cultural values
- viii. Aesthetics

### **3. Landscape**

- i. Views opened or closed
- ii. Visual impacts (features, removal of vegetation, waste piles, etc)
- iii. Compatibility with surrounding area
- iv. Amenity opened or closed

### **4. Land uses**

- i. Impacts on current land uses
- ii. Possibility of multiple use
- iii. Effects on surrounding land uses and land use potentials

## Guidance for Assessment of Baseline Components and Attributes

Attributes	Sampling		Measurement Method	Remarks
	Network	Frequency		
<b>A. Water</b>				
Parameters for water quality: pH, temp, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium salinity; Total nitrogen, total phosphorus, DO, BOD, COD, Phenol; Heavy metals; Total coliforms, faecal coliforms; Phyto plankton; Zooplankton; Fish & other aquatic flora & fauna (parameters are given in ToR for EIA studies based on tanning process, raw material, technology.	Set of grab samples for ground and surface water for the whole study zone. For lab. Analysis the samples should be preserved for safe transport.	Diurnal and season-wise	Samples for water quality should be collected and analyzed as per: RBS Standards for Rwanda. Methods for sampling and testing of industrial effluents Standard methods for examination of water and waste water analysis published by RBS.	
<b>For Surface Water Bodies</b>				
Total Carbon, pH, Dissolved Oxygen, Biological Oxygen Demand, Free NH <sub>4</sub> , Boron, Sodium Absorption Ratio, Electrical Conductivity	Monitoring locations should include up-stream, on site, downstream of proposed discharge point. Besides sampling should cover width of the river in case water quality modelling is proposed. Standard methodology for collection of surface water (RBS standards). At least one grab sample per location per season.	Yield & impact on water sources to be measured during critical season. River Stretch within project area be divided in grids (say 1 km length and 1/3 width) and samples should be from each grid at a time when the wastewater discharged by sources of pollution is expected to be max.	Samples for water quality should be collected and analyzed as per: RBS Standards for Rwanda. Methods for sampling and testing of industrial effluents Standard methods for examination of water and waste water analysis published by RBS.	Historical data should be collected from relevant offices such as MINIRENA (RNRA)
<b>Parameters for wastewater characterization</b>				
Temp, colour, odour, turbidity, TSS, TDS, pH, alkalinity as CaCO <sub>3</sub> , total hardness as CaCO <sub>3</sub> , chloride, sulphate as SO <sub>4</sub> , Nitrate as NO <sub>3</sub> , Fluoride, Phosphate as PO <sub>4</sub> , Chromium (Hexavalent, total) Ammonical Nitrogen as N, TKN, % sodium, BOD at 20 C, COD, DO, total residual chlorine as Cl <sub>2</sub> , oil and grease, sulphide, phenolic compound	Implant Source depending upon the different waste streams the parameters can be optimized. Grab and composite sampling representing avg of different process operations as well as worst emission scenario should be represented	Different operational cycles as well as raw material variations should be reflected in the analysis	Samples for water quality should be collected and analyzed as per: RBS Standards for Rwanda.	All plant sources categorized as: Different Process waste streams as well as run-off conditions; ETP wastewater sanitary wastewater

<b>B. Land Environment</b>				
Soil, Particle size distribution, Texture, pH, Electrical conductivity, Cation exchange capacity, Alkali metals, Sodium Absorption Ratio (SAR), Permeability, Porosity	One surface sample from each waste site and prime areas, (soil samples be collected as per RBS specifications) in the study area	Season-wise	Collected and analyzed as per RBS soil analysis standards	The purpose is to assess the significant impacts due to leaching of wastes or accidental releases & contaminating
<b>C. Hazardous Waste</b>				
Permeability And porosity, Moisture pH, Electrical conductivity, Loss on ignition, Phosphorous, Total nitrogen, Cation exchange capacity, Particle size distribution, Heavy metal, Ansonia, Fluoride	Grab and Composite samples. Recyclable components have to be analyzed for the recycling requirements.	Process wise or activity wise for respective raw material used.	Analyzed as per RBS standards	Depending on the waste characteristics and place of discharge.
<b>D. Noise</b>				
Hourly equivalent noise levels	Inplant (1.5 m from machinery or high emission processes)	At least one day continuous in each season on a working and non-working day	Noise level metre	RBS Air Quality Standards to be observed.
<b>E. Air Pollutants</b>				
SPM, RPM, SO <sub>2</sub> , NO <sub>2</sub> , CO, H <sub>2</sub> S*, NH <sub>3</sub> , HC*, Fluoride*, Pb*, VOC-PAH*, Mercury*	10 to 15 locations in the project impact area depending on size.	8 - 24 hourly twice a week	Gravimetric (High – Volume), EPA Modified West & Gaeke Method, Arsenite Modified Jacob & Hochheiser, NDIR technique, Infra Red analyzer, Specific Ion meter	Monitoring Network of Minimum 2 locations in upwind side, more sites in downwind side / impact zone.

\* Project Specific concerned parameters needs to be identified by the project proponent and shall be incorporated in the draft ToR, to be submitted to the Authority for the consideration and approval



## **ANNEX H: FORMAT OF QUESTIONNAIRE FOR PUBLIC HEARING**

The public has a right to express their opinion in the EIA processes. There is no standard format of questionnaire for public consultation however the following may be used to guide the process.

### **1. Presentation of an overview of the proposed project which should include but not limited to:**

- a. Name and title, address of developer
- b. Name, purpose, objectives and nature of the project

After the overview presentation the public may be guided to assess the following sections (2 to 6) and express their opinion.

### **2. Project impacts:**

- a. Are there identified impacts on any environmentally sensitive areas (e.g. wetlands, lakes, rivers, steep slopes, conservation areas, etc)?
- b. Have all impacts been considered (social, economic, cultural, biophysical, etc)?
- c. Are there explicit indications of positive impacts of the project?
- d. Have offsite (e.g. downstream and upstream) effects of the project been considered?
- e. Have transboundary impacts been considered (if applicable)?
- f. Have cumulative impacts been considered and the nature of impacts clearly stated?
- g. Are there additional impacts to be considered?

### **3. Mitigation measures:**

- a. What mitigation measures are proposed? Are they relevant?
- b. Are experiences from previous similar project adequately used in this EIA?
- c. Have concerned population and other groups been involved and have their concerns been adequately addressed by the project preparation?
- d. If settlement is involved, is it clearly and adequately provided for?
- e. If compensation is involved, are adequate compensatory measures provided for?
- f. Are there additional mitigations to be considered?

### **4. EIA Procedure:**

- a. Has the Waste Management EIA Guidelines been adequately used?
- b. Have the national policies and other statutory requirements been adequately addressed by the project and EIA?
- c. In which phases of the decision-making process has environmental assessment been included? Where they the appropriate stages?
- d. Is there an economic analysis of the project that also assesses the environmental impacts?
- e. Have there been adequate consultations (e.g. community, lead agencies, other stakeholders)?
- f. Are there any identifiable gaps in the EIA process?

### **5. Project alternatives:**

- a. Have all the possible project alternatives been addressed?
- b. Are the impacts of the alternative adequately analyzed?
- c. Are the selected alternatives the best?
- d. What additional alternatives should be included?

**6. Project Implementation:**

- a. Are there adequate capacities for implementing the EIA recommendations?
- b. Have the responsibilities for project implementation including impact mitigation and monitoring been clearly stated?
- c. Is there a clear Environmental Management Plan for the proposed project?
- d. Is the developer committed to the suggested environmental management suggestions?
- e. Are there any suggestions to improve on environmental management within the project?

**ANNEX I: CHEMICALS USED IN TANNING PROCESSES AND THEIR HAZARD STATUS**

Hazard Potential	Chemicals	Remarks
<b>High Potential</b>	<ul style="list-style-type: none"> <li>• acetic acid hydrogen peroxide</li> <li>• ammonia oxalic acid</li> <li>• (slaked lime, lime) sodium chlorite</li> <li>• calcium hydroxide sodium hydroxide (caustic soda)</li> <li>• formaldehyde sulphuric acid</li> <li>• formic acid sulphides and hydrosulphides</li> <li>• glutaraldehyde hydrochloric acid (e.g. sodium sulphide, sodium</li> <li>• (muriatic acid, spirits of salts) hydrosulphide, calcium hydrosulphide)</li> </ul>	
<b>Moderate Potential</b>	<ul style="list-style-type: none"> <li>• aluminium sulphate</li> <li>• amyl acetate (as lacquer constituents)</li> <li>• amyl alcohol (as lacquer constituents)</li> <li>• benzyl alcohol (lacquer solvent) carbon black</li> <li>• chromium salts (trivalent) enzymes</li> <li>• isopropyl alcohol perchloroethylene toluene</li> <li>• white spirit</li> </ul>	
<b>Low Potential</b>	<ul style="list-style-type: none"> <li>• alums oils</li> <li>• acetone paraffin</li> <li>• albumen pigment dispersions</li> <li>• ammonium chloride sequestering agents</li> <li>• ammonium sulphate silicones</li> <li>• borax, boric acid sodium acetate</li> <li>• casein sodium bicarbonate</li> <li>• calcium chloride sodium citrate</li> <li>• castor oil china clay sodium carbonate</li> <li>• ethanol (ethyl alcohol) sodium formate</li> <li>• fat liquors sodium metabisulphite</li> <li>• fats sodium nitrite</li> <li>• ferrous acetate sodium phthalate</li> <li>• ferrous sulphate sodium sulphite</li> <li>• gelatine sodium thiosulphate</li> <li>• glues (for some glues, solvent synthetic tannins may contribute to toxicity) tragacanth</li> <li>• lactic acid titanium salts</li> <li>• lanoline vegetable tanning extracts</li> <li>• lecithin waxes</li> <li>• wetting agents</li> </ul>	
<b>Miscellaneous</b>	<ul style="list-style-type: none"> <li>• Dyestuffs</li> <li>• Fungicides</li> </ul>	<p>These may vary widely in toxicity from potentially quite serious if inhaled or ingested, to non-toxic.</p>

## **ANNEX J: CLEANER PRODUCTION ISSUES THROUGH TANNING PROCESS**

### **Cleaner Production Issues to Consider for Mitigation Purposes:**

- Process fresh hides or skins to reduce the quantity of salt in wastewater, where feasible.
- Reduce the quantities of salt used for preservation. When salted skins are used as raw material, preterit the skins with salt elimination methods.
- Use salt/ chilling methods to preserve hides, instead of persistent insecticides and fungicides.
- When antiseptics or biocides are necessary, avoid toxic and less degradable ones, especially those containing arsenic, mercury, lindane, pentachlorophenol/chlorinated substances.
- Flesh green hides instead of limed hides.
- Use sulphide and lime as a 20–50% solution to reduce sulphide levels in wastewater.
- Split limed hides to reduce the amount of chrome needed for tanning.
- Consider the use of carbon dioxide in delimiting to reduce ammonia in wastewater.
- Use only trivalent chrome when required for tanning.
- Inject tanning solution in the skin using high-pressure nozzles; recover chrome from chrome-containing wastewaters, which should be kept segregated from other wastewaters.
- Recycle chrome after precipitation and acidification. Improve fixation of chrome by addition of dicarboxylic acids.
- Recycle spent chrome liquor to the tanning process or to the pickling vat.
- Examine alternatives to chrome in tanning, such as titanium, aluminium, iron, zirconium, and vegetable tanning agents.
- Use nonorganic solvents for dyeing and finishing.
- Recover hair by using hair-saving methods to reduce pollution loads. For example, avoid dissolving hair in chemicals by making a proper choice of chemicals and using screens to remove hair from wastewater.
- Use photocell-assisted paint-spraying techniques to avoid over-spraying.
- Precondition hides before vegetable tanning. Through good management, water use can be reduced by 30–50%, to 25 litres per kilograms (l/kg) of raw material.

### **Recommendations for reducing water consumption include the following:**

- Monitor and control process waters; reductions of up to 50% can be achieved.
- Use batch washing instead of continuous washing, for reductions of up to 50%.
- Use low-float methods (for example, use 40–80% floats). Recycle liming, pickling, and tanning floats. Recycle sulphide in spent liming liquor after screening to reduce sulphide losses (by, say, 20–50%) and lime loss (by about 40–60%).
- Use drums instead of pits for immersion of hides.
- Reuse wastewaters for washing—for example, by recycling lime wash water to the soaking stage. Reuse treated wastewaters in the process to the extent feasible (for example, in soaking and pickling).

### **Waste reduction measures should include the following:**

- Recover hide trimmings for use in the manufacture of glue, gelatin, and similar products.
- Recover grease for rendering. Use aqueous degreasing methods.
- Recycle wastes to the extent feasible in the manufacture of fertilizer, animal feed, and tallow, provided the quality of these products is not compromised.
- Use tanned shavings in leather board manufacture.
- Control odour problems by good housekeeping methods such as minimal storage of flesh trimmings and organic material.
- Recover tannery from the drying process to heat process water

## ANNEX K: TANNERY EFFLUENT STANDARDS

Voluntary Standards for discharge of environmental pollutants as per RBS should be given special consideration. Tannery Effluent Standard (After Primary Treatment): Disposal Channel/Conduit Carrying Wastewater to Secondary Treatment Plant

Type of Tanneries	Parameter	Concentration limit not exceed, mg/l ( except pH)
Chrome tanneries / Combined chrome and vegetable tanneries	PH	6.5 – 9.0
	SS	Not to exceed 600
	Cr concentration after treatment in the chrome waste water stream	45
Vegetable tanneries	pH	6.5 – 9.0
	SS	Not to exceed 600

### Tanneries – Effluent Standards

Pollutant	Concentration in mg/l, except pH	Quantum per raw hide processed
PH	6.5 – 9.0	-
* BOD (at 27oC, 3 days)	100	-
Suspended Solids	100	-
Sulphides (as S)	1	-
Total Cr (as Cr)	2	-
Oil and Grease	10	-
Wastewater generation	-	28 m <sup>3</sup> / tonne

\* For effluent discharged into inland surface waters BOD limit should be made stricter to 30mg/l

## ANNEX L: ENVIRONMENTAL CRITERIA FOR LOCATING THE PROJECT

The following environmental criteria for locating tanning industry project in any area of the country should be given due consideration.

- Environmental Sensitivity value and availability based on the uniqueness, sensitivity and inventory of natural resources in the specific section of the identified areas;
- Importance social importance and priority based on heritage and archaeological sites and level of attractiveness to the public for purposes of leisure, tourism and recreation;
- Land use zone whether the selected area is in compatible with the national or local land use plans or not;
- Alternative technologies Introduction and promotion of environmental sound alternative technologies, which are suitable to the local situation;
- Carrying capacity of the natural resources; etc.

## ANNEX M: ASSESSMENT FORMS FOR DIFFERENT CATEGORIES OF PROJECTS

### a) CATEGORY IL3

#### 1. General Information

- 1.1 Project title:-----  
(Give the complete title of the project that will be used in issuing the permit/license)
- 1.2 Name of the owner (Identify the owner(s) of the project with complete address) -  
-----  
-----
- 1.3 Name of the person in charge (the responsible person): -----  
-----
- Address: -----  
-----
- Telephone No: -----Fax No-----
- 1.4 The Competent Administrative Authority: -----  
-----

#### 2. Nature of Project

- 2.1 Location of the project (Please attach a readable map that clearly shows the location and boundaries of the project in relation to residential areas, neighboring activities, etc.... The map should have a suitable and clear scale) -----  
-----
- Project Address:-----  
-----
- Total area for project (m2):.....
- 2.2. Type of project:  
New / Extension/Type of extension: -----  
 If the type of project is an extension, has an EIA study been submitted for the original project? Yes  No
- Date of obtaining a previous approval from the Authority: -----
- 2.3 Project Objectives, Phases and Timing:  
Establishment:-----Actual operation:-----
- 2.4 A Brief Description of the Project (diagrams and layout should be attached if possible).
- 2.4.1 Main components of the project: -----  
-----
- 2.4.2 Storage Capacity (mention the units used):-----  
-----
- 2.4.3 Electrical supply used: -----Source: -----  
Rate of Consumption: -----
- 2.4.4 Source of water (public, groundwater, surface water, others): -----  
Water use: -----Rate of consumption: -----

#### 3. Waste Resulting From the Project

- 3.1. Solid wastes: -----Type -----  
Amount: -----Method of disposal:-----
- 3.2. Wastewater : -----Type -----Amount: -----  
Method of disposal:-----
- 3.3. Gas emissions: -----Type: -----  
Rate of emission: -----Method of control:-----
- 3.4. Method of protection and control of noise pollution:-----
- 3.5 Precautions taken to ensure workers' safety:-----
- 3.6. Precautions taken against fire-----

**Declaration**

I hereby, declare that the information submitted above is accurate and true and that in case there is any modification of the information stated above, the Authority shall be notified through the competent administrative authority giving the license.

Name: -----  
Identity Card number and address: -----  
-----  
Position (in the capacity of): -----  
Date: -----  
Signature: -----

**To be filled by the Competent Administrative Authority**

Authorization of the Competent Administrative Authority:-----  
-----  
Name: -----  
Professional title: -----  
Signature: -----  
Stamp

**b) CATEGORY IL2 AND IL3:**

**1. General Information**

1.1. Project title: -----  
*(Give the complete title of the project that will be used in issuing the permit/license)*  
1.2. Type of project -----  
1.3. Name of the owner *(Identify the owner(s) of the project with complete address)* -----  
-----  
1.4. Name of the person in charge (the responsible person): -----  
-----  
Address: -----  
Telephone No: -----Fax No-----  
1.5. The Applicant *(If the Applicant is different from the owner of the project, identify the Applicant and his relationship to the owner (contractor, representative, etc. Give complete address of the Applicant)* -----

**2. Project location and Surrounding Environment**

2.1 Location of the *project (Describe the exact location of the project, the area to be occupied. Please attach a readable map that clearly shows the location and boundaries of the project in relation to residential areas, neighboring activities. The map should have a suitable and clear scale)* -----  
2.2. Type of project: New  Extension  Type of extension: -----  
 *If the type of project is an extension, has an EIA study been submitted for the original project?* Yes  No   Date of obtaining a previous approval from the Authority: -----  
-  
2.3. Surrounding Environment *(A general description of the area surrounding the project including a description of the different activities, historical areas, protected areas, tourist and recreational areas, etc...)* -----  
2.4. Baseline data *(A description of the existing environmental conditions or a quantitative analysis of the surrounding water, ambient air, ...etc):* -----

**3. Project Objectives, Phases and Timing: -----**

**4. A Brief Description of the Project (diagrams and layout should be attached if possible).**

- 4.1. Main components of the project: -----
- 4.2 Electrical supply used: ----- Source: -----  
Rate of Consumption: -----
- 4.3 Source of water (public, groundwater, surface water, others): -----  
Water use: -----Rate of consumption: -----
- 4.4 Type of fuel (natural gas, solar, fuel oil): ----- Source of fuel: -----  
Rate of consumption: -----
- 4.5 Chemicals (types and quantities): -----
- 4.6 Reasons for choosing the technology used (If possible) -----
- 4.7 Expected number of workers: -----

**5. Wastes Resulting From the Project**

- 5.1. Solid wastes: -----Type -----Amount: -----
- 5.2. Wastewater: -----Type -----Amount: -----
- 5.2. Gas emissions: -----Type: -----Rate of emission: -----
- 5.4 Hazardous Waste: ----- Type : ----- Amount : -----

**6. Wastes, Treatment Methods, Disposal and Disposition**

- 6.1. Waste water:
  - Municipal waste water: -----  
-----  
Discharge rate: cubic meter/day  
Methods of discharge -----
  - Industrial waste water: -----  
-----  
Discharge rate: cubic meter/day  
Expected analyses of industrial wastewater: -----  
In case of treatment - Description of the treatment unit and analysis of waste water after treatment :-----  
-----  
Methods of discharge: -----
- 6.2. Gas emissions:  
(The type of gas emissions and the concentrations of SOx, HC, NOx, COx, particulates etc.)  
-----
- 6.3 Solid wastes: -----Type: -----Amount: -----  
Methods of transport, handling and storage: -----Methods of disposal: -----
- 6.4 Hazardous wastes: -----  
Type: -----Amount: -----Methods of treatment: -----  
Methods of disposal: -----

**7. Significant Environmental Impact(s) and Mitigation Measures:**

- 7.1 Impact of the project on the air quality and mitigation measures: -----
- 7.2. Impact of the project on water quality and availability and mitigation measures: --
- 7.3. Impact of the project on soil quality and fertility and mitigation measures: -----
- 7.4. Impact of the project on marine life and mitigation measures: -----
- 7.5. Socioeconomic impacts and mitigation measures: -----
- 7.6. Noise: -----Control Measures: -----
- 7.7. Other predicted and significant impacts of the project and mitigation measures:-----

**8. Relevant Measures Undertaken to Protect the Health and Safety of Workers and the Surrounding Community: -----**

**9. Project Alternatives: -----**



**10. Monitoring Programme:** -----  
-----

**11. Environmental Management Plan:** -----

**12. Decommissioning Method:** -----

**Declaration**

I hereby, declare that the information submitted above is accurate and true and that in case there is any modification of the information stated above, the Authority shall be notified through the competent administrative authority giving the license.

Name: -----

Identity Card number and address: -----  
-----

Position (in the capacity of): -----

Date: -----

Signature: -----

**To be filled by the Competent Administrative Authority**

Authorization of the Competent Administrative Authority: -----  
-----

Name: -----

Professional title: -----

Signature: -----

Stamp

## **ANNEX N: CONTENT OF TOR FOR EIA STUDY**

The following is a guide for the Authority to develop ToRs for an EIA study.

### **1. INTRODUCTION**

(*Name of developer*) has applied to the Authority to carry out an environment impact assessment (EIA) for the proposed (*name of project*) in accordance with requirements of EIA Regulations of the Republic of Rwanda. (*Name of developer*) intends that the proposed project will incorporate all practical and cost-effective measures for avoiding or minimizing negative environmental impacts, for capturing environmental benefits and for ensuring sound environmental management. Thus, the purpose of the EIA study is:

- i. To provide (*developer's name*) with advice on how project design can avoid or mitigate negative impacts and to enhance anticipated environmental benefits,
- ii. To prepare for review by Authority, an EIA report and Environment Environmental Management Plan (EMP) according to Sector Specific EIA Guidelines for Tannery Projects.

### **2. PROJECT DESCRIPTION**

The EIA Expert should provide a description of proposed project and any alternatives being considered in sufficient detail to benefit stakeholders and decision-makers. Policies, legislation, regulations directly relevant to the proposed project should be discussed in the EIA report.

### **3. ENVIRONMENTAL CONCERNS TO BE ADDRESSED IN THE EIA**

The following are the key biophysical, resource use and socioeconomic issues to be addressed by the EIA study; (*List the issues here.*)

Issues include:

- Surface water quality of nearby water sources and other surface drains.
- Details on ground water quality.
- Details on water quality parameters such as Colour, pH, BOD, COD, Total Suspended Solids, TDS Oil & Grease , Total Kjeldhal Nitrogen, Sulphides, Chloriodes, Total Chromium , Total Coliform bacteria etc.
- Details on existing ambient air quality and expected, stack and fugitive emissions for PM10, PM2.5, NH3, SO<sub>2</sub>\*, NO<sub>x</sub>\*, VOCs\*, etc., and evaluation of the adequacy of the proposed pollution control devices to meet standards for point sources and to meet RBS standards. (\* refers to as applicable).

While the impact study is to be focused on the above issues, the EIA Experts may, in the course of the impact study, identify further concerns which should be investigated. Any such other issues should be brought to the attention of the Authority and (*developer's name*).

### **4. ENVIRONMENTAL MANAGEMENT**

The expert should pay particular attention to identifying and recommending measures or practices for avoiding, mitigating or managing negative impacts of the project and for enhancing potential environmental and socio-economic benefits. Any potential measures or practices identified by the EIA Expert should be brought to the attention of (*developer's name*) for possible inclusion in project design and planning. The EIA expert should prepare an EMP for *construction phase*, *operation phase* and *decommissioning* of the project. The EIA Expert should estimate the costs of implementing this plan, including all capital, operating and training costs.

## **5. RELATIONSHIP OF EIA TO PROJECT PLANNING AND DESIGN**

To maximize opportunity for good environmental planning and design of the project, EIA Experts should work closely with *(developer's name)* to offer feasible options to enhance the project's environmental performance.

## **6. PUBLIC CONSULTATION**

*(Developer's name)* is obliged to ensure that all concerned public and private stakeholders in the project have adequate input during the EIA study. The EIA Expert should therefore undertake comprehensive consultation with the local community, relevant lead agencies such as *(provide examples of agencies the Authority identified or that took part in formulating ToR)* in addition to any relevant stakeholders identified when conducting the impact study.

## **7. CONTENT OF THE EIA REPORT**

At minimum, the EIA report produced by EIA Experts should contain information outlined in the Sector Specific EIA Guidelines for Tannery Projects.

## **8. REPORTING REQUIREMENTS**

The expert should submit a final EIA report including EMP to *(developer's name)*. Who after reviewing appending an EIA Report Addendum to it, if necessary, will submit *(number)* copies of the final draft report to the Authority. The EIA Expert and developer should be available for discussions about the EIA report with REMA and participate in any public hearings organised by the Authority.

## **9. EIA TEAM MEMBERS**

EIA experts recognised and authorised by the Authority to undertake this study are listed below *(List EIA Experts here)*.

## ANNEX O: BASIC CONTENTS OF AN EIA REPORT

The EIA report should entail:

i) **Executive summary** of the EIA report which should be brief and focus on following matters:

- Name and location of the project;
- Name of the developer
- Name of the agency preparing EIA report;
- Main impacts identified;
- Mitigation recommendations;
- Environmental monitoring plan.

ii) **Objectives of the project**, including ideas, intentions and particular objectives.

iii) **Description of the proposal and its alternatives**. In this part, it is necessary to describe in detail the proposed project and its alternatives including those not subjected to prefeasibility study or feasibility study. Attention should be concentrated to the comparison of different alternatives. Following are the required contents of the section "*Description of the proposal and its alternatives*":

- The stage of the project cycle where the project is being implemented (pre-feasibility study, feasibility study or design);
- Outlines of the plan for impact prediction and mitigation measures;
- Raw materials, supplies, energy, water and equipment to be used for implementing the project and its alternatives;
- Operational parameters such as capacity and product output;
- Tables, photographs, diagrams and maps;
- Comparison of characteristics of alternatives (extent, location, technology, products, energy and raw materials demands) in the present socio-economic, technical and environmental situation;
- A summary of project technical, economic and environmental characteristics.

iv) **Discussion on the proposal and its relation to relevant policies laws and programmes** (sectoral and regional). In this section, the proposal must be shown to be in line with policies, laws, institutional framework and development strategy of Rwanda.

v) **Description of present (baseline) environmental state (analysis of initial state)**. In this section, the environment in the project area should be appropriately described. The following aspects should be presented:

- Environmental baseline conditions (natural and socio-economic);
- Sensitivity and values (cultural, aesthetic) of environment in the project area.

v) **Impact assessment**. In this section, the spatial and temporal scope of the impacts and characteristics of different impacts (whether positive or negative, direct or indirect, their intensity, extent and significance) should be presented for the project and also for all alternatives considered. The following aspects should be presented:

- Assessment of all impacts to the local population;
- Environmental data base, study methods and assumptions;
- Limitations and reliability of the data and study results;
- Compliance with the environmental standards and license issuing procedures;
- Significance of impacts, criteria and standards used for assessment of impact significance;

- Measures to avoid and mitigate impacts.

In this section, methods of data collection, methods and criteria used for assessing degree of danger and significance of impacts must be indicated. Cumulative impacts must be emphasised. A summary table of impacts for each alternative should be provided.

vi) **Evaluation and comparison of alternatives** and selection of one that is environmentally suitable. The main content of this section is the comparison of the main positive and negative impacts, impact mitigation and monitoring measures of alternatives. The environmentally suitable alternative is determined based on the following aspects:

- Impacts with largest effects, measures for avoiding, mitigating and managing them;
- Impacts for which the developer has committed to take prevention measures and unavoidable impacts;
- Allocation of cost and benefit between the levels, partners and population of the project area;
- Information on protection measures or resettlement, acquiring opinions of the public;
- Environmental improvement opportunities.

vii) **Impact management and environmental monitoring plan (EMP)**. In this section, tasks to ensure the implementation of mitigation measures and monitoring of impacts should be presented. This is a plan for monitoring and management of impacts during the implementation and operation of the project, where the responsibilities between the state and investor are differentiated. This plan includes the following contents:

- Description of mitigation measures;
- Implementation schedule including indicators, costs, etc;
- Assignment of responsibility for implementation;
- Monitoring of implementation;
- Report on evaluation of implementing such the plan.

viii) **Summary & Conclusion (This will constitute the summary of the EIA Report)**

- Overall justification for implementation of the project
- Explanation of how, adverse effects have been mitigated

ix) **Public Disclosure.** Names of the public and institutions consulted

x) **Annex** Names of consultants that undertook the EIA study, ToRs, Site lay-out plans, structural drawings (including effluent treatment plant), where tables, drawings, maps, pictures, documents and information used as reference should be presented.

## **ANNEX P: PREPARING ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN**

### **A. Environmental Management Plan**

The major output of environmental assessment for proposed project is an EIA report, which includes Environmental Management Plan (EMP). In view of the increasing importance in improving the quality of project implementation and to ensure compliance with required mitigation and monitoring measures identified EIA report will include, as part of EMP, concerned government or related agency undertaking the activities included in environmental management and monitoring plan.

Environmental management involves the implementation of environmental protection and mitigation measures and monitoring of significant environmental impacts. Environmental protection measures are taken to (i) mitigate environmental impacts, (ii) provide in-kind compensation for lost environmental resources, or (iii) enhance environmental resources. These measures are usually set out in an EMP, which covers all phases of the project and outlines mitigation and other measures that will be undertaken to ensure compliance with environmental regulations and reduce or eliminate adverse impacts. The EMP will also cover a proposal for recommending the proposed project to use goods and products that are environmentally friendly.

The contents of an EMP should include the following:

- a) Summary of potential impacts
- b) Description of planned mitigation measures
- c) Description of planned environmental monitoring
- d) Description of planned public consultation process
- e) Description of responsibilities for the implementation
- f) Description of responsibilities for reporting and review
- g) Work Plan: staff chart, schedules, activities and inputs of all including lead agencies
- h) Procurement Plan that is environmentally responsible
- i) Detailed cost estimates
- j) Mechanism of feedback and adjustment

### **Format for Environmental Management Plan Matrix**

N	Project Component	Activities	Impacts	Mitigation Measures	Results indicators / baseline	Period	Responsible Entity	Frequency	Cost (RWF)

### **B. Environmental Monitoring Plan**

Environmental monitoring involves (i) planning a survey and sampling program for systematic collection of data/information relevant to environmental assessment and project environmental management; (ii) conduct of the survey and sampling program; (iii) analysis of samples and data/information collected, and interpretation of data and information; and (iv) preparation of reports to support environmental management. Environmental monitoring is normally carried out before and during planning to establish baseline data needed for environmental assessment and evaluating environmental impacts during project implementation. It continues through project operation to detect changes in the key environmental quality parameters, which can be attributed to the project. The results of the monitoring program are used to evaluate the following: (i) extent and severity of the

environmental impacts against the predicted impacts; (ii) performance of the environmental protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the project EMP.

Environmental monitoring should have clear objectives, and the survey and sampling program designed to focus on data required to meet the objectives. In addition, the design of the monitoring program has to take into account its practicability considering the technical, financial, and management capability of the institutions that will carry out the program and period of monitoring that will be needed to achieve the objectives. The monitoring program should include action or emergency plans so that appropriate action can be taken in the event of adverse monitoring results or trends. It should also be constantly reviewed to make sure that it is effective, and determine when it can be stopped.

An Effective Environmental Monitoring Plan should include:

- a) Realistic sampling programme (temporal and spatial)
- b) Sampling methods relevant to sources
- c) Collection of quality data
- d) Comparable new data with other relevant data used in environmental assessment
- e) Cost-effective data collection
- f) Quality control in measurements and analysis
- g) Innovative methods (e.g. automated stations tracing pollutants)
- h) Appropriate databases
- i) Data interpretation by multidisciplinary team
- j) Internal reporting and external checks
- k) Allowance for third party inputs
- l) Avenues for public participation (e.g. public presentations, external assessments)

Both the environmental management and monitoring plans need to include who will implement them, when, and where. The capacity of the executing agency, Local Government and community organization should be reviewed to identify feasible approach for implementing the plans. The project lifecycle should be taken into account in setting the timing of implementation. For example, the EMP should identify environmental mitigation measures that should be implemented in the engineering design for the contract documents, and materials to be avoided in procurement, among others. On the other hand, the location for monitoring should be selected based on where the impacts would occur and the areas to be affected. To ensure that the environmental management and monitoring plans will be implemented, it is necessary to identify the key management issues to be included.

**Format for Environmental Monitoring Plan Matrix**

<b>N</b>	<b>Project Phasing</b>	<b>Environmental / Social Issues</b>	<b>Monitoring Indicators</b>	<b>Responsible Entity</b>	<b>Monitoring Activity</b>	<b>Frequency of Monitoring (e.g. Daily, Weekly)</b>	<b>Cost (RWF)</b>
<b>1</b>	<b>Construction</b>						
<b>2</b>	<b>Operation</b>						
<b>3</b>	<b>Decommissioning</b>						

## ANNEX Q: EIA PROCEDURE AND TIMELINES

