THE REPUBLIC OF RWANDA

RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

Final Report

Guidelines for Environmental Impact Assessment for Water Resources Management In Rwanda

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FOREWORD

The principal environment management law, the Organic Law No. 04/2005 provides the modalities for protection, conservation and promotion of environment in Rwanda. The requirement for all projects to be subjected to Environmental Impact assessment (EIA) is stated by the Organic Law in article 67. General principles and specific responsibilities for the management of the environment are clearly spelt. The Rwanda Environment Management Authority therefore within its mandate has embarked on the preparation of environmental management regulations and guidelines. These guidelines for EIA for water resources management are one such sectoral guideline prepared to provide for the EIA process specific to water resources management.

These guidelines serve as an administrative directive to guide EIA for water resources management. The guidelines should be used together with the General EIA Guidelines 2006 and any other relevant EIA instruments developed by REMA

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Director General, REMA

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LIST OF ACRONYMS

ADB	African Development Bank
CP	Cleaner production
EA	Environmental Audit
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environmental Impact Assessment
EIR	Environment Impact Review
EIS	Environmental Impact Statement
ELECTROGAZ	Parastatal in Charge of water and electricity supply services
EMP	Environmental Management Plan
EMS	Environmental Management System
GoR	Government of Rwanda
IEE	Initial Environmental Examination
ISAR	Institut des Sciences Agronomiques du Rwanda
IRST	Institute for Scientific and Technological Research
ISO	International Standards Organisation
IWRM	Integrated Water Resources Management
KIST	Kigali Institute for Science and Technology
LG	Local Governments
MDGs	Millennium Development Goals
MINIRENA	Ministry of Natural Resources
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINICOM	Ministry of Commerce and Industry
MININFRA	Ministry of Infrastructure

MINITERE	Ministry of Lands, Environment, Forestry, Water and Mines (Now ministry of Natural Resources, MINIRENA)
MINECOFIN	Ministry of Finance and Economic Planning
MINIJUST	Ministry of Justice
MIGEPROFE	Ministry in Prime Minister's Office in charge of Gender and Family Promotion
MINISANTE	Ministry of Health
MINEDUC	Ministry of Education
NEMA	National Environment Management Authority
NGOs	Non Governmental Organization
NUR	National University of Rwanda
ORTPN	Office Rwandais du Tourisrme et des Parcs Nationaux
RBS	Rwanda Bureau of Standards
REMA	Rwanda Environment Management Authority
SWAP	Sector Wide Approach
TDA	Transboundary Diagnostic Analysis
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VECs	Valued Environmental Components
WB	The World Bank
WRM	Water Resources management

DEFINITIONS

These definitions apply to terms used in *the following guidelines:*

Authority: Means the Rwanda Environment Management Authority.

Environment: 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.

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.

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

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

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.

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

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.

Guidelines: Means the description of the methodology for implementation of environmental impact assessment

Integrated water Resources Management*: Integrated water resources management is a systematic process for the sustainable development, allocation and monitoring of water resource use in the context of social, economic and environmental objectives.*

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 and indirect alteration of the physical, thermal, chemical, biological or radioactive properties of any part of the environment by discharging, emitting or depositing wastes 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, or to cause a contravention of any condition, limitation or restriction to a healthy environment.

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

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

Scoping: Is the early transparent process of interaction that identifies concerns, evaluates them, organises by eliminating insignificant impacts and focusing on significant impact for further assessment so that attention and therefore resources, can be effectively and efficiently utilised.

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 the magnitude of impact or the degree to which a proposed activity or project may (potentially) impact on the environment if implemented.

Significant effect: On the environment means: "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".

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

Water: *includes drinking water, river, stream, watercourse, reservoir, well, dam, canal, channel, lake, swamp, open drain, or underground water*

Water Resources Management: *the management of sources of water which are useful or potentially useful to humans.*

Wetland: Means areas permanently or seasonally flooded by water where plants and animals have become adapted, and include swamps, dambos, marsh, peat land, mountain bogs ,banks of rivers vegetation, lake shore vegetation areas, impeded drainage area.

PART I: INTRODUCTION

1. INTRODUCTION

The enabling environment for environmental protection and conservation includes the constitution of the Republic of Rwanda (2003) that in Article 29 states 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 determining the modalities of protection, conservation and promotion of environment in Rwanda. Other formulated laws and sectoral policies include those on water and sanitation, land, and agriculture and biodiversity protection. Key institutions have been formed to manage the environment. In recognition of the need to protect the environment from adverse impact of developmental activities EIA of projects that are likely to have significant effect on the environment, is required by the government of Rwanda before implementation.

1.1 Background to the Environmental Impact Assessment guidelines

Large projects such as agriculture and manufacturing industries in many cases pollute the environment and degrade sensitive ecological areas like water resources, forests and wetlands. To effectively manage environmental challenges such as water pollution, eutrophication, deforestation, wetland degradation, soil erosion, invasive aquatic weeds and the loss of biodiversity, GoR established Rwanda Environmental Management Authority (REMA) to coordinate and oversee all aspects of environmental management for sustainable development. One of REMA's principal functions is to oversee the conduct of EIA in Rwanda.

Ministry of Natural Resources (MINIRENA) is the lead government agency for environment, but the overall responsibility of environmental management lies with REMA.

In response to environmental management challenges the *General Guidelines and Procedure for Environment Impact Assessment* for Rwanda was published in 2006. *The EIA Guidelines for Water Resources Management has been prepared to specifically improve environmental management of projects that impact water resources*. The EIA Guidelines will serve agencies and individuals involved in the EIA, water resources managers and those in the management of projects with potential impacts on water resources.

1.2 Water Resources

Water is a vital and precious resource for people, for the diverse ecosystems on which we depend, for domestic use, agriculture, industry, transport, power generation ,recreation and ecosystem maintenance. Water supply must be in sufficient quantity and quality to support the different uses (or sectors) sustainably. Freshwater is therefore a key strategic resource for sustaining the environment and economic growth. Because of human and natural causes that have had impact on Rwanda's water resources; the resource has been changing both in the quantity and quality. Sustainable management of water resources is the key to ensure that this

resource provides its services to people and the environment. Effective water resources management is a vital step towards ecologically sustainable development.

Rwanda has surface water in the form of lakes and wetlands. In the Congo Basin, the major water resources is Lake Kivu while the Nile basin has five groups of lakes, namely Lakes Bulera and Ruhondo and other small lakes such as Lake Karago to the north; Lake Muhazi the centre; Lakes Rweru, Cyohoha south, Cyohoha north, Kidogo, Gashanga, Rumira, Kilimbi, Gaharwa of Bugesera; Lakes Mugesera, Birira and Sake of Gisaka; Lakes Mpanga, Cyambwe and Nasho,Lakes Ihema, Kivumba, Hago, Mihindi, Rwanyakizinga of the Akagera National Park. The most important rivers are: Akagera, Nyabarongo, Akanyaru, Ruhwa, Rusizi, Mukungwa, Kagitumba Muvumba, Sebeya and Nyabugogo.

1.3 Why EIA Guidelines for WRM

There is rampant degradation of water resources in the East African regions diminishing the vital natural functions and values of this ecosystem. The impact is quite evident especially with poor land use (e.g. agriculture), manufacturing industries and urban councils where lack of capacity and compliance is causing significant pollution of water sources. Siltation is quite evident in Rwandan watercourses that are characteristically brown due to poor catchtment land use and resultant soil erosion. It is in the interest of all governments that Environmental Management Systems (EMS) are implemented and complied with by the different sectors and enterprises.

This document,*' Environmental Impact Assessment Guidelines for Water Resources Management'* will provide guidance on the undertaking of comprehensive EIA. It is therefore important that the EIA guidelines for Water Resources Management be provided to enable usage of water resources in a sustainable manner and negative effects mitigated.

1.4 Definition of Environmental Impact Assessment

Environmental impact assessment (EIA) is *"an assessment of the impact of a planned activity on the environment"*. EIA is the process used to integrate environmental management with planning for development proposals. In essence, EIA is a systematic process whereby information about the environmental effects of an action is collected and evaluated, with the conclusions being used as a tool in decision-making. The General Guidelines and Procedure for Environmental Impact assessment (GoR 2006) defines EIA as *"a systematic, reproducible and multilevel process of identification, prediction and analysis of significant environmental impacts (positive or negative) of a proposed project or activity and its practical alternatives on the physical, biological and socio-economic characteristics of a particular geographical area in order to provide information necessary for enhancing decision making"*.

1.5 The Purpose of the Guidelines

The EIA guidelines are to provide clear and detailed advice on carrying out effective EIA for Water Resources Management. This includes amongst others the purpose of EIA and the

guidelines, the role of EIA in decision-making, the policy, legal and institutional framework, the EIA procedure and the assessment process. The overarching goal is the achievement of ecologically sustainable development.

EIA is generally used to accomplish the following:

i) Identify whether or not (YES or NO) a proposed policy, project or activity is likely to have significant impacts (both adverse and beneficial).
ii) If YES, identify the potential significant environmental impacts.
iii) Analyze the significance of the adverse environmental impacts.
iv) Determine whether the adverse impacts can be mitigated.
v) Recommend preventive and/or mitigation measures.
vi) Identify and assess any other alternatives to the proposed policy, project or activity and associated activities.
vii) Recommend whether or not the proposed policy should be implemented or modified.

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The *'Environmental Impact Assessment Guidelines'* for Water Resources Management (WRM) will provide guidance on the undertaking of comprehensive water resources management EIA in Rwanda.

1.5.1 The Objectives of the Guidelines

The objectives of EIA guidelines are to:

i) provide direction and information for decision making by the REMA in water resources management EIA;
ii) provide advice on EIA processes as regards the management of water resources;
iii) enable proponents/developers and stakeholders to participate effectively in water resources management EIA process and related administrative actions; and
iv) enable environmentally adequate management of all development project activities that may negatively impact water resources

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1.5.2 The Scope of EIA Guidelines

The Water Resources Management EIA guidelines are intended to apply to all proposals that will affect water resources and which are listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment and those listed in these guidelines (appendix V). The Guidelines shall principally be used by:

a) Rwanda Environment Management Authority (REMA);
b) EIA consultants/Experts undertaking water resources management EIA studies or projects that affect water resources in Rwanda;
c) Proponents of projects with water resources management components or projects with adverse impacts on water resources;
d) Stakeholders affected by water resources management proposals; and

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e) Community representatives, researchers, and other interested persons and organisations.

These guidelines provide advice to encourage sound EIA outcomes across all phases of planning for projects in the water resources sector from project conception and design to approval. When using these guidelines it should be recognised that each water resources management proposal has specific features (e.g. location, type of water resources, conservation status of water resources, nature of project, etc) and proposal specific issues that should be taken into account. The approach used to conduct the EIA should take account of the particular circumstances of the individual proposals.

1.5.3 Quality assurance

Roles and responsibilities of key stakeholders in water resources project management process are dynamic and because of the rapid socio-economic development, it may therefore be necessary to review the WRM EIA Guidelines periodically. This reflects a continuous improvement approach to the provision of advice and information by the REMA. Reviews may be triggered by changes to policy or legislation; changes in the role of REMA; or requests for reviews by stakeholders**.**

PART II: POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK

2. POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES MANAGEMENT EIA

2.1 International Context of Environmental Assessment

Environmental Impact Assessment is a national and international key requirement for environmental management of development projects. EIA is therefore a tool for sustainable environmental management that is globally recognised. To ensure sustainable development the Government of Rwanda has ratified several international conventions and agreements on the protection of the environment and sustainable development. Some of these that have a relevance to Water Resources Management include:

i) The Convention on Biological Diversity and its Habitat, Presidential Order n° 017/01 of 18 March 1995.
ii) The United Nations Framework Convention on Climate Change, Presidential Order n° 021/01 of 30 May 1995.
iii) The Bonn Convention on conservation of migratory species of wild animals ratified by Law n° 35/2003 of 29 December 2003 .
iv) The Stockholm Convention on Persistent Organic Pollutants, Presidential (POP), Presidential Order n° 78/01 of 8 July 2002.
v) The Rotterdam Convention on the establishment of international procedures agreed by states on commercial transactions of agricultural pesticides and other poisonous products, by Presidential Order n° 28/01 of 24 August 2003.
vi) The Kyoto Protocol to the Framework Convention on Climate Change ratified by Law n° 36/ 2003 of 29 December 2003.
vii) The Washington Agreement on International Trade in endangered species of Wild Flora and Fauna, Presidential Order n° 211 of 25 June 1980.

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2.2 The Environmental Impact Assessment Process in Rwanda

Environmental protection, sustainable management and rational use of natural resources such as water are clearly stated by the Constitution of the Republic of Rwanda (2003). The overall goals for environmental management in Rwanda are set by the national Environment Policy of 2003. The environment policy emphasises improved management of the environment at both central and local levels that is consistent with the policy on decentralisation and good governance. Institutional and legal reforms are provided for by the environment policy. All government policies take into account environmental protection as a priority (Environment Indicators, REMA 2007). The Economic Development and Poverty Reduction Strategy (EDPRS) of 2007 takes the environment as a sector and as a cross cutting issue. A high priority of the EDPRS is to ensure sustainable and integrated water resources management and development for multipurpose use. It also sets the task for the preparation of a National Water Resources Management master Plan.

The implementation of environmental management strategies employs the Sector Wide Approach (SWAP), which enables the different stakeholders to work together for sustainable environment management.

2.2.1 Requirements for Environmental Impact Assessment

The Organic law (No 04/2005 of 08/04/2005) has specific provisions that deals with EIA, the requirements for EIA and what constitute an EIA. General and specific responsibilities for the management of the environment and environmental conservation are clearly spelt. The Organic Law therefore determines the modalities of protecting, conserving and promoting the environment in Rwanda. The Relevant articles in the Organic law to Environmental Impact Assessment and Water Sector projects are:

General provisions:

i) Article 3: *Every person has the duty to protect, conserve and promote environment. The State has a responsibility of protecting, conserving and promoting the environment.*

ii) Article 6: *Every person in Rwanda has a fundamental right to live in a healthy and balanced environment. He or she also has the obligation to contribute individually or collectively to the conservation of natural heritage, historical and socio-cultural activities.*

iii) Article 7 (30): *Provides for the Polluter pays principle. Every person who demonstrates behaviour or activities that cause or may cause adverse effects on environment is punished or is ordered to make restitution. He or she is also ordered to rehabilitate it where possible*.

Specific provisions to water resources:

i) Article 15: *Rivers, artificial lakes, underground water, springs, and natural lakes are part of the public domain. Their use is at disposal of every individual in accordance with law.*

ii) Article 16: *Places where water is drawn for human consumption must be surrounded by a protective fence, as provided for by article 51 of this organic law*.

iii) Article 17: *The use, management of water and its resources shall not in any way use unfair methods of exploitation that may lead to natural disasters such as floods or drought. Any acts concerned with water resources like watering plants, the use of wetlands and others, shall always be subject to prior environmental impact assessment.*

iv) Article 18: *Water from the sewage system as well as any liquid waste must be collected in a treatment plant for purification before being released into a river, a stream, a lake or a pond*.

v) Article 19: *Swamps with permanent water shall be given special protection. Such protection shall consider their role and importance in the preservation of the biodiversity.*

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vi) Article 39: *Any form of fishing is carried out in accordance with law and it is governed by competent authorities. Traditional or modern fishing is carried out in accordance with authorisation issued by competent administrative authorities and it shall take into account conservation of the environment*

vii) Article 40: *Public administration, private institutions, international organisations, associations and individuals are obliged to conserve the environment at all possible levels.*

viii) Article 41: *Laws and regulations in application shall guarantee the right to everyone to a healthy environment and shall ensure equal opportunities within ecosystems and between the urban and rural areas*.

ix) Article 45: *The State, the population as well as land developers are obliged to sustainably exploit natural resources in respect of laws relating to environmental conservation.*

x) Article 52: *The State shall identify reserved areas for protection, conservation or rehabilitation of:*
4⁰ water systems and its quality and
5⁰ banks and shores, rivers, streams, lakes, plains, valleys and swamps.

xi) Article 55: *The State is obliged to establish concrete measures for the better management of water resources, which considers the quality of its sources, and determines means of raising the volume of water and avoiding its wastage*.

xii) Article 60: *Generally, decentralised entities are responsible for the implementation of laws, policies, strategies, objectives and programmes relating to protection, conservation and promotion of the environment in Rwanda*.

xiii) Article 61: *Within the framework of conservation and protection of the environment, decentralised entities are particularly responsible for*:
3° efficient management of rivers, lakes, sources of water and underground water;

xiv) Article 67: *Every project shall be subjected to environmental impact assessment, before obtaining authorisation for its implementation. This applies to programmes and policies that may affect the environment. An order of the Minister having environment in his or her attributions shall determine the list of projects mentioned in this organic law*.

xv) Article 69: *The environmental impact assessment shall be examined and approved by the Rwanda Environmental Management Authority or any other person given a written authorisation by the Authority. The promoter pays a levy reduced from the operating cost of his or her project excluding the working capital. This tax is determined by the law establishing the National Fund for the Environment. The environment impact assessment shall be carried out at the expense of the promoter*.

xvi) Article 70: *An order of the Minister having environment in his or her attributions establishes and revises the list of planned works, activities and projects, and of which the public administration shall not warrant the certificate, approve or authorise without an environmental impact assessment of the project. The environmental impact assessment shall describe direct and indirect consequences on the environment.*

xvii) Article 75: *provides for Control, Monitoring and Inspection*.

xviii) Articles 80-94: *contain the lists of prohibited activities that impact negatively on the environment and natural resources*.

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xix) Articles 95 -115: *elaborates punitive sanctions against activities that adversely impact on the environment and natural resources*

The above provisions among others should be used to guide Environmental Impact Assessment for the Water sector projects in Rwanda to ensure sustainable water resources exploitation and integrated water resources management (IWRM). There are other legislative instruments and various socio-economic development strategy documents whose relevance to water resources management vary depending on each particular project activities or location. The following additional documents need to be consulted during water sector Environmental Impact Assessment:

i) Law No 16/2006 of 03/04/2006 on organisation, operation and attributions of the Rwanda Environment management Authority (REMA).
ii) Organic Law No 29/2005 of 31/12/2005 determining the Administrative Entities of the Republic of Rwanda, including all annexes.
iii) Law No 08/2005 of 14/07/2005 determining the use and management of Land in Rwanda.
iv) Sectoral Policy on Water and Sanitation (October 2004).
v) Disaster Policy Framework (2003).

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There are additional key national undertakings that provide for the protection of the environment and natural resource conservation. These include among others:

i) The Rwanda Investment And Exports Strategic Action Plan, 2005-2007" and "Vision 2020" that calls for a well regulated environment management system that takes into account principles of sustainable development while at the same time contributing to poverty reduction and water resources is identified as a key investment area.
ii) The Agricultural policy (July 2004) which recognises the need for the protection against land, water and soil degradation
iii) The Strategic Plan for Agriculture in Rwanda (October 2004) that in section 8.2 (345 -347) recognises the need for the protection of environment, water and land.

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2.3 Institutional Responsibility

The key government intuitions concern with the management of the environment and water resources in particular are MINIRENA, MINAGRI, MINIFRA, MINICOM, MINALOC, MINECOFIN, MINIJUST, (MIGEPROFE), MINISANTE, MINEDUC and REMA. These institutions have roles and responsibilities in the EIA process. *Roles of stakeholders in the EI process are listed in section 3 and section 4 of the General Guidelines and Procedure for Environmental Impact Assessment*. Summary of institutional responsibilities in water resources management is in appendix VIII of these Guidelines.

The Ministry of Natural Resources (MINIRENA) is government lead ministry for environmental management in Rwanda. The mission statement of (MINIRENA) consists of ensuring a rational management of lands, taking care of the conservation and protection of the environment in view of a sustainable human development. It is responsible for the

formulation of policies and laws aimed at the protection and rational use of environment and water resources is a key element of the environment which requires protection. The organisation, functioning and responsibilities of REMA are elaborated by Law No 16/2006 of 03/04/2006.

Other public institutions important to the EIA process in Rwanda are Authority for Tourism and National Parks (ORTPN), Rwanda Bureau of Standards (ORN), as well as higher teaching and research institutes such as the National University of Rwanda (NUR), Kigali Institute for Science, Technology (KIST), Rwanda Institute for Agricultural Science (ISAR), Institute for Scientific and Technological Research (IRST).

Non Governmental Organisations (NGOs) and partner agencies are also involved or supporting financially the environmental management activities in Rwanda. These organisations includes among others the Global Environment Facility (GEF), United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), United Nations Food and Agriculture Organisation (FAO), United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), World Bank (WB) and USAID.

The Water Resources Management EIA will be guided by water resources sector policies, laws, regulations and standards for Rwanda.

PART III: THE GUIDELINES FOR WATER RESOURCES MANAGEMENT EIA

3. THE BASIC COMPONENTS OF THE EIA PROCESS

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 project. The steps of carrying out EIA are outlined hereafter from section 3.1 to 3.5 and summarized by Figure 1.

The basic components of the EIA Process consist of three interconnected phases: screening, environmental impact study, and decision-making. The basic components of EIA process, including outputs and inputs, are described as follows:

3.1 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 is submitted to REMA. The EIA process normally begins once the developer has submitted the project brief to REMA for screening of the proposed project. A format for a Project brief is presented in Appendix I of these guidelines.

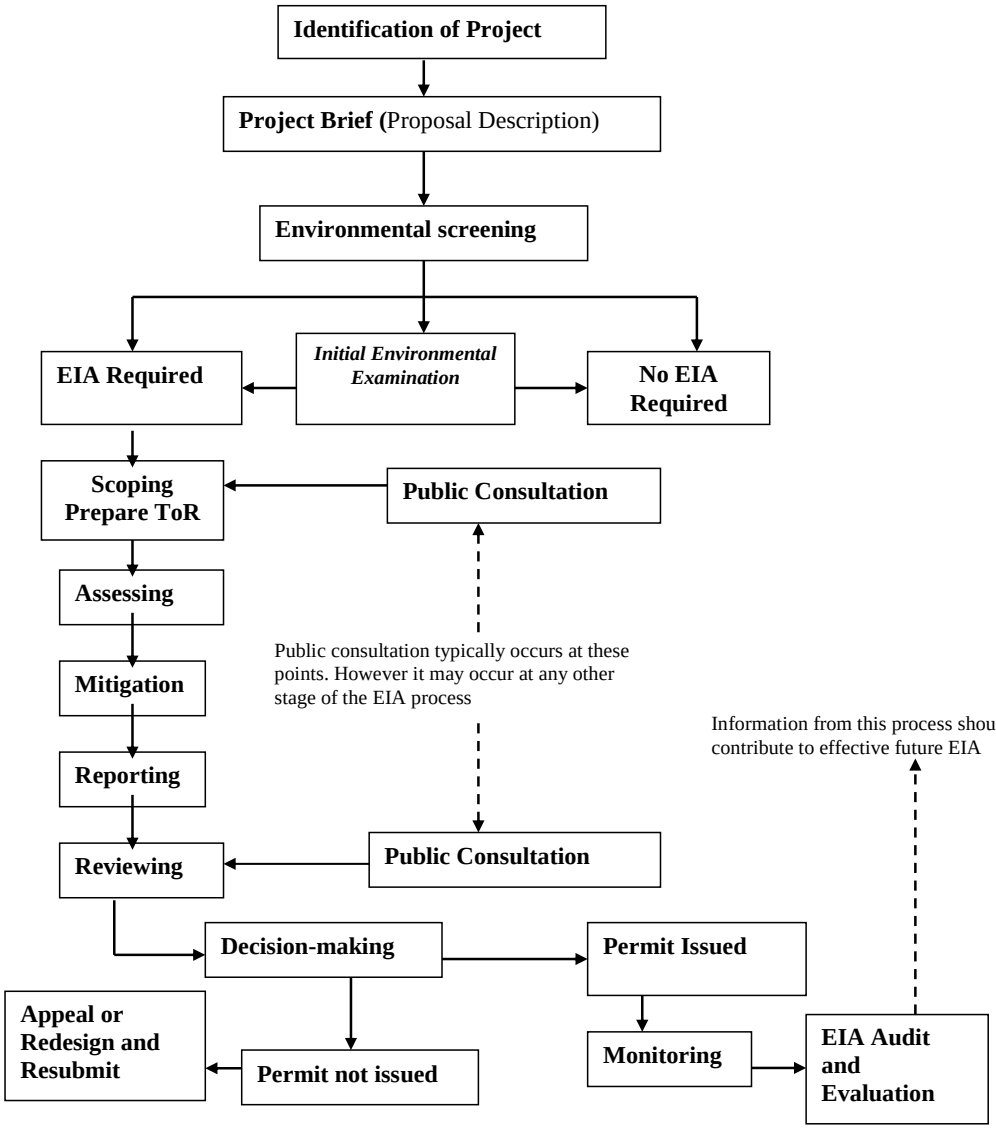
3.2 Screening

Not all Water Resources development projects may necessarily cause adverse effects on the environment due to differences in scale of the operation, nature of the proposed project and its location. Thus, not all proposed projects requiring EIA shall undergo the entire process, or necessarily the same level.

The objective of screening phase therefore is to determine if a proposed project has or does not have significant impacts. If it is determined not to have potential to cause significant environmental impacts, it shall be categorically excluded from further environmental impact assessment and an appropriate decision shall be made to approve and implement the project, with, where appropriate, recommendations to the developer, for sound environmental management of the project. If, however, it is not exempt, and is found to have the potential for significant environmental impacts, further screening is conducted to determine if mitigation measures can readily be identified through further Environmental Impact Review (EIR) or a full Environmental Impact Study shall be required. If in conducting the EIR adequate mitigation measures are incorporated for the identified impacts, the environmental aspects of the project can be approved.

If, on the other hand, adequate mitigation measures are not identified, the project shall be subjected to further detailed Environmental Impact Study. Appendix II presents key steps in screening projects.

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



The screening process, therefore, assists in determining whether a proposed project:

i) Clearly does not require EIA i.e. exempt category;
ii) Has significant environmental impacts for which mitigation measures can readily be identified either directly or through environmental impact review; or
iii) Have significant environmental impacts whose mitigation measures cannot readily be identified, hence requiring a detailed Environmental Impact Study.

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 Environmental Impact Assessment* issued by the Authority- REMA.

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 of an Environmental Impact Assessment. A summary of information on screening is provided in the Table 1 below. See also section 2.1.2 of the general EIA guidelines for the project categories (IL1, IL2 and IL3).

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
It is a process for determining whether or not a proposal requires full-scale EIA and the level at which the assessment should occur	• Dams, barrages, wiers • Irrigation, • Water treatment plants • Inter-basin transfers • River diversions • Natural resources exploitation • Infrastructure • Mining industry • Hydropower development • Industrial activities • Urban water supply • Waste management and disposal • Substantial changes in farming or fishing activities	• IEE • Project lists inclusive • Exclusive list Decision-makers' discretion	• Information on the proposal and its potential impacts • Level of confidence of predictions- impacts • Characteristics of the environment and its resilience • Planning, environmental management and decision-making framework • Degree of public interest	• Full-scale EIA required • Some further environmental analysis required • No EIA required

Projects that require EIA in Rwanda are listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake

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Environmental Impact Assessment. Appendix IV of these guidelines list projects exempt from EIA while appendix V lists those that have to undergo EIA. Typical projects include water supply (e.g. urban and irrigation), water treatment, water conveyance, ground water abstraction (pumping), ground water recharge, gravity schemes, watercourse diversions, wastewater treatment, irrigation, use of water from wetlands, water abstraction from lakes or rivers, hydropower projects, dams, reservoirs, etc.

3.3 Scoping

Scoping involves identification of potentially significant environmental impacts and/or elimination of insignificant impacts, and is applied to all activities which require a full Environmental Impact Study. Scoping includes meetings with the relevant lead agencies and all other stakeholders to obtain their comments on what should be included in the EIA study and what alternatives should be considered.

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 (e.g. REMA, MINIRENA) and lead agencies (e.g. MINAGRI, MINALOC, MINICOM, MININFRA, ELECTROGAZ and RURA) 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 identifying regional and local issues and/or sources of information of relevance to the EIA process. Question format for public hearing is presented in appendix VII together with guidelines for public participation. From consultations and preliminary assessment of baseline conditions the Consultant/Expert hired by the Developer must:

i) Identify the characteristics of the proposed development that are likely to give rise to impacts on water resources.
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) Provide alternatives to the proposed action.
vii) Provide 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 project proposed.
ix) Identify other technical aspects related to the proposed action.

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x) Identify other past or foreseeable future projects in the area that may be impacted upon by, or will impact on the proposed project.
xi) Identify how the proposed project conforms to existing laws, policies and regulations.

There are general 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.

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The EIA should address the key issues as fully as practicable. However the level of analysis should reflect the level of significance of the impacts on water resources 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 should always be considered. 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 Terms of Reference (ToR) for the EIA study. After the identification of the major issues for the EIA during screening and scoping the Developer prepares the ToR to guide the EIA study. The Developer then hires a consultant/EIA expert to carry out the EIA study. A Summary of information on scoping is given in the Table 2 below.

Table 2: Summary information on scoping

Scoping	Purpose of scoping	Steps in scoping process	Who is involved in scoping	Outline of ToR
1. A process of interaction 2. Identifies a. i. Boundaries of EIA study b. ii. Important issues c. iii. Information for decision-making d. iv. What to be considered during EIA 3. Identifies concerns, evaluates, organizes, presents to assist decision-making	4. Consider project alternatives 5. Inform affected public 6. Identifies impacts 7. Understand local values 8. Evaluated concerns 9. Define EIA boundary 10. Determine methodology and consultation procedures 11. Establish ToR for EIA	12. Prepare outline of the EIA scope 13. Develop the scope through informal discussion 14. Make the draft scope widely available 15. Identify issues of concern 16. Evaluate concerns 17. Incorporate concerns 18. Develop strategy for addressing concerns 19. Provide feedback	20. The proponent/developer 21. The authority (REMA) 22. Lead agencies 23. Environmental practitioners, experts, consultants 24. Those affected by the project 25. The wider community	26. Background to the proposal 27. Context of the issues 28. Alternatives 29. Institutions and public involvement 30. Required information 31. Analysis of impacts 32. Mitigation and monitoring 33. Conclusions and recommendations 34. Requirements for managing the EIA

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Suggested format for ToR for Water Resources Management EIA is in appendix VI.

3.4 Baseline Environmental Conditions of the proposed Project

Based on the information from the scoping exercise as contained in the Terms of Reference, an Environmental Impact Study shall be conducted and an Environmental Impact Statement (EIS) will be prepared. Existing data should be obtained and organised as the first step in collection of baseline information. It can then be reviewed for its relevance to the proposed project. To determine impacts site visits are important. Impacts are usually on, plant and animal species, invertebrates, biodiversity, the resources type (e.g. ground water, river, lake, rain water harvesting etc), water quality and hydrology, uses of the water resource by communities and others. Identifying the location of the project in relation to other features (water resources, wetlands, hills, forests, etc) is important. It is important to obtain adequate information on water resource, its status (quality and quantity), uses and other attributes like values to the community and the environment. The EIA will consider specific issues during the assessment and reporting (Table 3).

Table 3: Issues to be considered in doing Environmental Impact Assessment

~~i.~~1. Ecological Considerations

- ~~(i)~~(a) Biological diversity including impacts on:
  - i. The number, diversity, breeding habitats, etc of wild animals and vegetation, especially of aquatic life
  - ii. Gene pool of plants and animals (aquatic and water dependant).
- ~~(ii)~~(b) Sustainable use including effect of proposal on:
  - i. Soil quality (e.g. salinization, water logging, etc)
  - ii. Breeding of fish and other aquatic animals (local and migratory).
  - iii. Natural regeneration of aquatic vegetation (e.g. sedges and reeds)
  - iv. Aquatic resources (water quality, quantity, fish, etc)
- ~~(iii)~~(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

~~ii.~~2. Social considerations including effects on

- i. Employment and source of livelihood
- 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

~~iii.~~3. Landscape

- i. views opened or closed
- ii. visual impacts (features, removal of vegetation, material piles, etc)
- iii. compatibility with surrounding area
- iv. amenity opened or closed

~~iv.~~4. Land uses

- i. impacts on current land uses
- ii. possibility of multiple use
- iii. effects on surrounding land uses and land use potentials

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Data collection must focus on the key issues that need 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. Monitoring requirements should be borne in mind during planning, so that the data collected is suitable for use as a baseline to monitor impacts or success or failure of mitigation measures in the future. The need for long-term sampling should also be assessed as early as possible. Data should be collected over a sufficiently wide area to make sure that any impacts likely to be caused by the development can be assessed.

3.5 Prediction of Impacts

Impact prediction must encompass the whole system from water quality including but not limited to the following, planktons, plants, animals, soils, sediments and hydrology at and around the proposed project site. Impacts should be quantified wherever possible, or fully described if not quantifiable. The impacts will vary depending on the nature of the project. The following regarding impacts of projects in the water sector should be considered:

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

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Beneficial as well as adverse impacts on the following specific aspects of the physical, socio-cultural and biological environment must be assessed:

i) Water quality and quantity
ii) Social, economic and cultural environment.
iii) Flora and fauna (micro- and macro-).
iv) Microclimate.
v) Hydrology and groundwater.
vi) Visual environment and landscape.
vii) Health and Diseases
viii) Floods and drought
ix) Accidents
x) Climate change aspects

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Impacts and assigned mitigation measures must be clearly presented for easy understanding and adoption of the mitigation measures. *Checklists for impact identification for water sector projects are found in appendix III of these guidelines.*

3.6 Evaluation:

The criteria for evaluation of impacts must be stated. During evaluation national environmental laws, regulations or standards should be applied and also international laws, regulations or standards where applicable should be followed. Where no suitable regulations and standards exist, descriptive criteria may be used and 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.

The consultant should where possible, quantify the level of uncertainty associated with the prediction of impacts. Some indication of probability of occurrence of impacts should also be included.

3.7 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.

Mitigation measures must cover all the phases of the project. The whole water project must comply with the national legal instruments. In some cases permits and licences may be required for proper management and protection of water resources. Some projects may require prescribed procedures based on national regulation.

Less complex projects like protected springs, boreholes, deep wells and shallow wells the mitigation measures include among others protecting the sources by:

i) Fencing off a buffer zone in the catchment against pollution.
ii) Banning activities (e.g. Cultivation, sanitary facilities, waste disposal, grazing, etc) that may pollute the water source within some distance (Articles 85, 86,87, 88, 89 of Organic Law) from the water source based on water resources protection regulations and public health regulations.
iii) Having in place water management committees to control use and maintain functionality.

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In cases where licenses or permits are required by law, they must be obtained before implementation of the project. Surface water (e.g. rivers, lakes) must be protected against pollution and degradation. The protection must be based on the national water resources management regulations, or national regulations on protection of river banks, lakeshore and wetland. Activities like cultivation, waste dumps, sanitary facilities, industries will be regulated base on Organic law to mitigate pollution.

Water abstraction and conveyance must comply with water regulations including drinking water quality regulations and seek permits or license that control abstraction (quantity). Groundwater must be protected against pollution from waste dumps and sanitary facilities.

Water resources exploitation projects must comply with some requirement or information as prescribed by the national water resources regulations. Key compliance areas are with water quality standards; effluent standards for domestic wastewater and effluents for Industrial wastewaters. Water resource activities like borehole drilling, dams and reservoirs developments have to obtain permits or licence before implementation. The conditions for obtaining permits or licences are prescribed in national water resources regulations. For example, boreholes details required include location (basin, aquifer), diameter and test yield, intended water use and pumping regime. For irrigation requirements include crops to be irrigated and acreage, quantity (m^3) of water required per day, type of soil, soil permeability, and water or wastewater disposal. Recommendations for monitoring impacts in the form of an environmental management plan (EMP) should be included in the EIA report.

3.8 EIA Report

Details of EIA report preparation is provided in Appendix X, where all the sections of the report are discussed to help on the report preparation. An EIA report must contain an Environmental management Plan (EMP) for the project to ensure environmental protection. EMP preparation procedure is found in appendix IX.

3.9 Review

Review of the EIA Report /Environmental Impact Statement (EIS) is normally done by the authority (REMA), a government lead agency or an independent panel of reviewers. In this review, the level of address of the Terms of Reference 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. REMA issues a Certificate of Approval of the Environmental Impact Assessment 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 approval is denied, the developer may appeal against the decision.

3.10 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 periodic assessment to test the accuracy of impact predictions and check on environmental management practices for compliance with statutory requirements.

3.11 Decommissioning

A project may be terminated for various reasons. The decommissioning may have impacts on the environment that requires adequate mitigation measures. An environmental assessment of the decommissioning process should be done to provide adequate mitigation measures.

3.12 Cost of EIA

Article 69 of the Organic Law (Nº. 04/2005 of 08/04/2005) indicates that environment impact assessment 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.

3.13 Professional Expertise required for the EIA process

EIAs for Water Resources Management projects should include, but not necessarily be limited to, the following professionals:

i) Water resources management specialist
ii) Environmental specialist
iii) Water engineer
iv) Environmental Lawyer
v) Aquatic fauna and flora specialist;
vi) Hydrologist/hydro-geologist;
vii) Socio-economics specialist(with knowledge of equity and gender issues in water resources management)
viii) Health (public health, occupational health) specialist
ix) Development planner or landscape architect
x) Antiquities specialist and heritage specialist

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The composition of the EIA team will vary depending on the project type and complexity. Minimum academic qualifications should be a University degree or its equivalent in the respective fields of specialisation stated above. The team should have experience in Water Resources Management and/or water related EIAs. Some team members may fulfil several of the above roles if suitably qualified and experienced. Each member of the team, for their specialist subject(s), will follow the basic processes identified above: screening, *scoping, consultation, baseline data collection, prediction and evaluation of impacts, and identification of mitigation measures.*

Appendix I: Project brief format

The developer/Proponent shall submit a project brief containing the following information to REMA:

1. Name and title, address of developer
2. Name, purpose, objectives and nature of the project:
    a. Outline of the project including size of project,
    b. Design and activities that shall be undertaken during and after the implementation of the project,
    c. Inputs (e.g. raw water, energy source, etc) and products/outputs (e.g. sludge, manure, treated water, wastewater, containers, agricultural irrigated crops, etc), wastes and, sources of inputs etc.
3. Description of how the proposed project site and its surroundings, and alternative sites, if any:
    a. Geographical area to be affected – boundaries, area to be directly impacted
    b. Flora and fauna
    c. Meteorological information
    d. Topographic information
    e. Land use in and surrounding the site
4. Description of how the proposed project and its location conform to existing laws, regulations and policies governing such project and the use of the site/area proposed for its location.
5. Description of any likely environmental impacts that may arise due to activities of the various phases/stages of the project and proposed mitigation measures
    a. Site preparation: actions needed to prepare the site for the intended use (e.g.: blasting, vegetation removal, grading, filling, etc.);
    b. Construction practices: specific construction techniques to be used with focus on any potential impacts of construction (e.g.: noise, dust etc) and other requirements for workers (e.g.: housing, transportation etc);
6. Description of any other alternatives which are being considered (e.g.; siting, technology, construction and operation procedures, sources of raw materials, handling of wastes etc.).
7. Any other information that may be useful in determining the level of EIA required.
    a. The built facilities: specific description of any buildings or related facilities that will be created to meet the objectives of the project (e.g.: size);
    b. Operations**:** with particular emphasis on the number of workers, their working hours, housing and transportation needs, occupational health or safety hazards, raw materials (sources and supply routes), and products (basic items and transportation needs). Any expected pollution of air, water and land from the proposed action; and
    c. Decommissioning and Restoration: plans for closure of the site (and for restoration of the site to productive post-closure use.

Appendix II: Screening Process in EIA

1. Methods used in the Screening

Screening is the EIA process which determines whether an EIA is required for a particular project and at what level of assessment. A number of steps are involved in deciding whether EIA is required for a proposed project. These steps are elaborated below as steps 1 to 5 of the EIA screening process. These steps of EIA screening should be 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 listed under either in the above Article, Appendix V of the EIA Guidelines for Water Resources Management or in The World Bank Category A or B projects.

In summary, if a project is not of a type listed in the Ministerial Order or The World Bank Category A and B projects, EIA 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 step determines whether there is a mandatory requirement for EIA. An EIA will be required if the project is listed under mandatory list for EIA (Appendix V of the EIA Guidelines for Water Resources Management or if it is in the World Bank Category A and B list of projects). 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?

Step 3 is to check whether there is any legal exemption for the project. The state may classify some projects as emergency activities that require quick response and delay may cause disaster. These projects are set out in exclusion or negative lists of projects. *If a project is on an exclusion list EIA will not be required.*

There may be 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., surface water, lake shores, river banks, wetlands, etc). The Authority may also 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?

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:

~~1~~i) Information about the proposal/project and its potential impacts
~~2~~ii) Level of confidence in impacts
~~3~~iii) Characteristics of the water resource and surrounding environment and their resilience to change
~~4~~iv) Planning, environmental management and decision-making framework
~~5~~v) Degree of public interest

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In addition screening may refer to indicative thresholds and criteria which is used to check project activities/components that do not appear on the mandatory and exclusion lists. Project size, type and location relative to the water resource and other sensitive environment are also considered during screening.

In summary, where it is decided that a project is likely to have significant effects on water resources and the environment through a case-by-case examination, then EIA will be required.

Step 5 - The Screening Decision

When the screening process is completed, the authority will make the final decision and the developer will be informed in writing. Screening decision is made based on the findings of steps 1 through to 4 above. In the screening process the Authority may consult the relevant lead agencies to discuss the proposed project.

Professional judgment

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

i) Identification of assessment issues and the selection of Valued Environmental Components (VECs);

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ii) Establishment of study boundaries and criteria for the assessment of the significance of environmental effects for each of the VECs;

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iii) Identification of past, present and likely future projects that could result in cumulative environmental effects in combination with the project;

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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 that should be considered in the screening exercise are:

i) Aquatic (water) Environment;
ii) Sensitive environment (e.g. nature conservation areas~~ areas~~, breeding areas, migratory route area, transboudary, etc.);
iii) Terrestrial Environment;
iv) Public and Worker Health and Safety; and
v) Socio-economic conditions

The screening process follow logical series of steps as described above in steps 1-5. These screening steps are summarised below in Figure AI.

Professional judgment

Based on the professional experience the authority and the screening team can make judgement to predict the magnitudes of the impact of the project on water resources and other related environment and decide the levels of EIA required for the project.

The following should be considered during screening:

~~a.~~i) Identification of assessment issues and the selection of Valued Environmental Components (VECs);

~~b.~~ii) Establishment of study boundaries and criteria for the assessment of the significance of environmental effects for each of the VECs;

~~c.~~iii) Identification of past, present and likely future projects that could result in cumulative environmental effects in combination with the project;

~~d.~~iv) Identification of project-environment interactions and likely environmental effects;

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~~e.~~v) Assessment of the significance of residual environmental effects; and

~~f.~~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 that should be considered in the screening exercise are:

i) Aquatic (water) Environment;

ii) Wetland Environment;

iii) Sensitive environment (e.g. nature conservation areas, transboundary resource, etc.);

iv) Terrestrial Environment;

v) Public and Worker Health and Safety; and

vi) Socio-economic conditions

The screening process follow logical series of steps as described above in steps 1-5. The screening steps are summarised below in Figure AI.

Screening results

The result of the screening should clearly describe the path followed in Figure AI to arrive at the screening decisions

Checklist such as the one displayed below (Table A.I) can be used to explain the screening results.

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Figure AI: Diagrammatic flow of decision making steps in screening

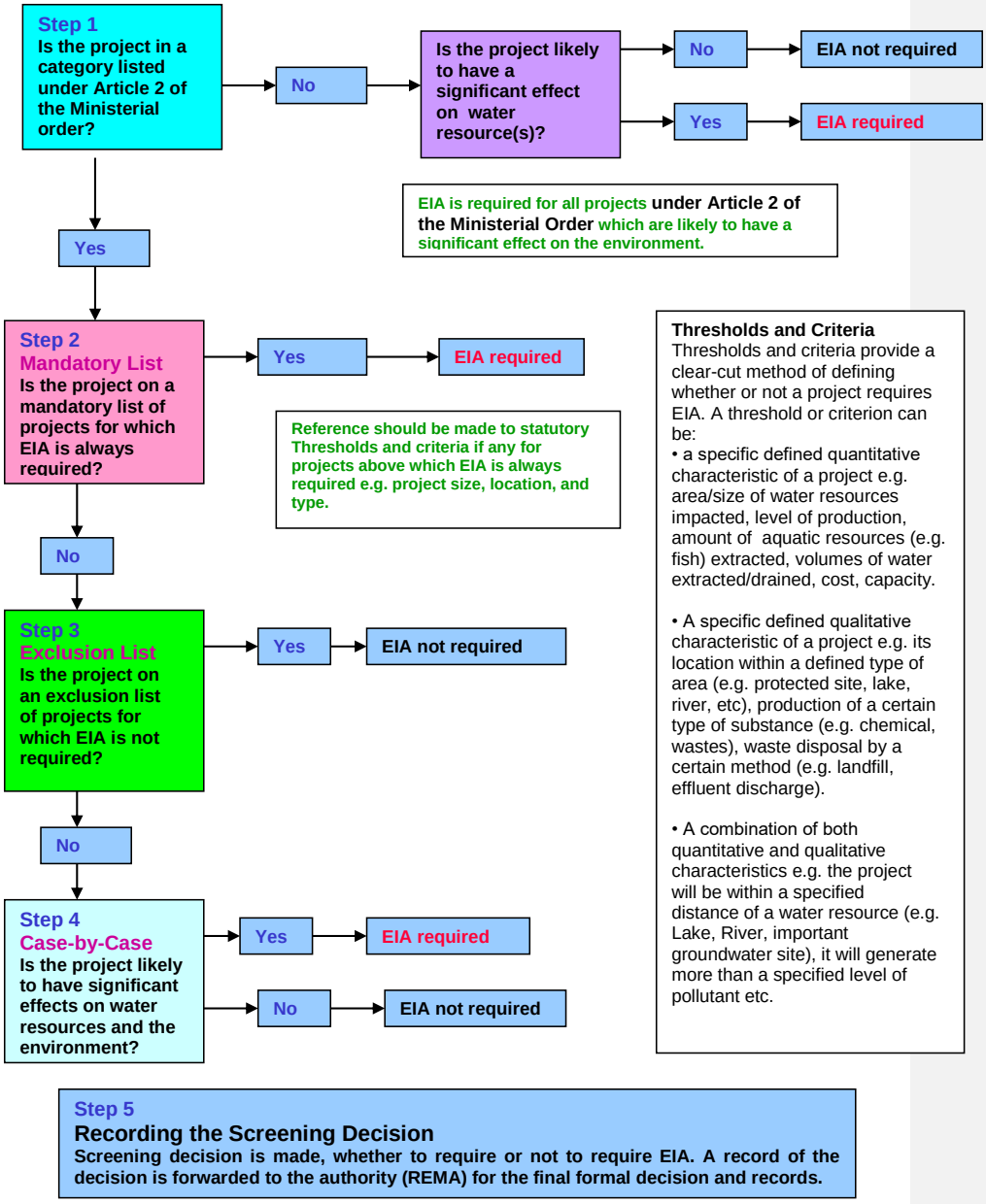

Table A3.1. Screening checklist results

Brief Project Description:			
Questions	**Yes / No /?**	**Quantity (where applicable)**	**Is this likely to result in a Significant effect? Yes/No/? - Why?**
1. Will project activities involve actions which will cause physical, chemical and biological changes of water bodies?			
2. Will project activities cause changes in the functions, values and attributes ~~-~~of a water resource?			
3. Will the Project use or extract water resources materials such as water, fish, sand, sediment, clay?			
4. Will the project violate any legal requirement for the protection of water resources?			
5. Is the water resource(s) protected by any national, regional and global laws, conventions, etc?			
6. Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to water ecosystem (fishing grounds, fish breeding area, refugia, etc) or aquatic sources of livelihood to communities (e.g. fish, water, etc)?			
7. Will the Project lead to risks of contamination of ~~r~~ water from releases of pollutants into surface waters and groundwater?			
8. Will the Project involve abstraction of large volumes surface or groundwater?			
9~~.~~. Will the project involve disposal of materials that will cause filling that covert open water to dry land?~~2~~			
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			

Brief Project Description:			
Questions	**Yes / No /?**	**Quantity (where applicable)**	**Is this likely to result in a Significant effect? Yes/No/? - Why?**
or around the location apart from water resources which are important or sensitive for reasons of their ecology e.g. wetlands, forests which could be affected by the project?			
13. Are the water resources or 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. Does the project interfere with marine navigation?			
17. Are there any areas or features of historic or cultural importance on or around in or close to the water source~~-~~, which could be affected by the project?			
18~~-~~. Are there any plans for future water resource uses on or around the location, which could be affected by the project?			
19. Are there planned extractions of resources by the project that can impact aquatic ecosystems?			
20. Does the water resource or water resources in or around the location contain important, high quality or scarce resources e.g. fish, sand, stones, aquaculture, fisheries, tourism, minerals, which could be affected by the project?			

When using these screening guidelines also refer to project screening criteria found in Appendix 2 of the General Guidelines for EIA for Rwanda and appendix III of the~~—~~ EIA Guidelines ~~fro~~ for Water Resources Management.

Appendix III: Detailed checklist for water resources impact identification

The following checklist is for use to determine whether a proposed project, policy, program or activity is likely to have significant environmental effects. The project back ground information should include the following:

~~a)~~1 Project: e.g. Water Treatment Plant for Kigali City
~~b)~~2 Lead Agency: e.g. MINIRENA and MINAGRI
~~c)~~3 Developers name and address: e.g. Kigali CITY Council, Address
~~d)~~4 Project location: e.g. Kigali
~~e)~~5 Description of project (Describe the whole actions involved, including activities during different phases of the project, and secondary, support, or off-site features necessary for its implementation Attach additional sheets if necessary).
~~f)~~6 Description of Proposed Project site and surroundings.

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Environmental factors potentially affected
The environmental factors ticked below would be potentially affected by this project, as indicated by the checklist on the following pages.

-----Geology -----Air quality -----Hazards and Risks
-----Biological resources -----Noise -----Recreation
-----Aesthetics -----Public services -----Other Economic Activities
-----Water Quality and Hydrology-----Utilities and Service System -----Positive Impacts
-----Land Use and Planning -----Energy -----Transportation and traffic
-----Population and Housing -----Public Health and Safety -----Cultural Resources

Tick as appropriate (All answers must take account of the whole actions, involved, including off-site as well as on-site, cumulative as well as project level indirect as well as direct, and construction as well as operational impacts.)

Geology

Will the proposed activity:	Impact Potentially Significant Unless Mitigation Incorporated	Impact Significant
Result in unstable earth conditions or charges in geologic substructure		
Result in disruptions, displacement, compaction or over-covering of the soil		
Results in change in topography or ground surface relief features		
Display evidence of hazards, such as landslides or excessively steep slopes, that could result in slope failure		
Be located in the vicinity of soil that is likely		

Will the proposed activity:	Impact Potentially Significant Unless Mitigation Incorporated	Impact Significant
to collapse, old mining properties or areas of subsidence caused by ground water draw down		
Be located in a zone that alteration will result in soil erosion		
Biological Resources		
Will the proposed activity:		
Cause fish or wildlife population to drop below self-sustaining level		
Threaten to eliminate a plant or animal aquatic community		
Substantially diminish or reduce habitat for fish, wildlife, or aquatic plants		
Interfere substantially with the movement of resident or migratory fish or wildlife species		
Change the diversity of species, or number of any species of aquatic plants or animals		
Introduce new species of plants and animals into the area		
Adversely affect significant riparian lands, wetlands, marshes, forests, woodland important for catchment hydrological cycle or other wildlife habitats		
Water quality and hydrology		
Will the proposed activity:		
Substantially degrade water quality		
Contaminate a public water supply		
Substantially degrade or deplete groundwater resources		
Interfere substantially with groundwater recharge		
Cause substantial flooding, erosion, or siltation		
Result in changes in currents, or the course of direction of water movement		
Alter the course of flow of flood water		
Change the amount of surface water in any water body		
Discharge into surface waters, result in any		

Will the proposed activity:	Impact Potentially Significant Unless Mitigation Incorporated	Impact Significant
alteration of surface water quality, including but not limited to temperature, nitrogen, phosphorus, BOD, COD, dissolved oxygen or turbidity		
Alter the direction or rate of flow of ground waters		
Cause change in the quantity of ground waters, either through direct additions or withdrawals		
Substantially reduce the amount of water otherwise available for public water supplies		
Expose people or property to water related hazards such as flooding		
Interfere with other proposed facilities that would be located in flood-prone areas		
Enhance impact of the proposed facilities that would increase off-site flood hazard, erosion or sedimentation		
Population, Housing and employment		
Will the proposed activity:		
Attract people to the Project area and expose them to hazards found in the area		
Induce substantial growth or concentration of population		
Displace a large number of people		
Alter the location, distribution, density or growth rate of the human population of an area		
Affect existing housing, or create a demand for additional housing		
Conflict with the housing and population projects and policies		
Public health and safety		
Will the proposed activity:		
Attract people to allocation and expose them to hazards found there		
Create a potential health hazard or involve the use, production, or disposal of materials which pose a hazard to people or animals or plant populations in the area affected		
Create a risk of structural failures that expose people to danger and death.		

Will the proposed activity:	Impact Potentially Significant Unless Mitigation Incorporated	Impact Significant
Release hazardous substance (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident that will pollute water sources		
Expose people to potential health hazards		
Pose a public health and safety hazard through release of toxic emissions		
Result in unsafe conditions for employees, residents, or surrounding neighbourhoods		
Comply with all applicable laws regarding water resources use		
Cultural: **Will the proposed activity:**		
Disturb or destroy a resource which is associated with an event or person of recognized significance in Rwandan History		
Disturb or destroy an archaeological resource with recognized importance in prehistory		
Disturb or destroy an archaeological or historic resource which has a special pr particular quality such as oldest, best example, largest, or last surviving example of its kind		
Disturb or destroy any human remains		
Disturb, alter, or destroy a site that is currently used for religious ceremonial, or other sacred purposes		
Disturb, alter or destroy a site that is important in preserving unique ethnic cultural values		
Positive Impacts: The proposed activity will result in the following Positive Impacts (List)		
General		
Will the proposed activity:		
Substantially degrade the quality of the environment		
Achieve short-term environmental goals to the disadvantage of long-term environmental goals		
Cause possible cumulative environmental effects that are individually limited but cumulatively considered or for the incremental		

Will the proposed activity:	Impact Potentially Significant Unless Mitigation Incorporated	Impact Significant
effects of an individual project are considered when viewed in connection with -past projects -current projects; and -probable future projects		
Cause substantial adverse effects on human beings, either directly or indirectly.		

Appendix IV: Water Resources Management Projects which are likely to be exempted from the EIA process

The following list identifies those water resources management projects which are normally exempt from the EIA Process. The characteristics and anticipated physical effects of each project should be carefully considered when or if they are exempted from further steps of the EIA Process.

- Construction of repair of water sources - (Exempted)
- Sustainable water resource management enforcement actions -(Exempted)
- Minor (e.g. domestic, institutional, small businesses, etc) water resource uses where the daily consumption is low and the project area is not densely populated. It should be where Environmental factors such as geology, hydrology, and climate, social and human safety, cultural and economic factors favour such type of exploitation with insignificant impacts.- (IEE can be done to determine the level of EIA or exempt the project from EIA)
- Information collection (scientific or educational) except if it involves use of chemicals or endangered species or alien materials. (IEE can be done to determine the level of EIA or exempt the project from EIA)
- Emergency repairs to facilities within the character of surroundings of a water resource- (Exempted).

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Appendix V: Water Resources Management Projects to be considered for Environmental Impact Assessment

All projects listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment (infrastructure, agriculture and animal husbandry, works in parks and its buffer zones and works of extraction mines) and those that directly impact the water resources. Projects considered for EIA in the water resources sector should include but not limited to the following:

1. General -
   a) An activity out of character with its surroundings
   b) Any water resources structure of a scale not in keeping with its surroundings
   c) Major changes in a water resource

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2. Dams, rivers and water resources including -
   a) Storage dams, barrages and weirs;
   b) Dams that qualify for EIA are the ones which can contain, store or dam more than 50 000 cubic metres of water, whether that water contains any substance or not, and which has a wall of a vertical height of more than five metres, measured as the vertical difference between the lowest downstream ground elevation on the outside of the dam wall and the non-overspill crest level or the general top level of the dam wall
   c) Rivers diversions and water transfer between catchments
   d) Flood-control schemes
   e) Drilling for the purpose of utilizing ground water resources including geothermal
   f) Water abstraction –surface and groundwater
   g) Drilling and motorized water pumping
   h) Construction and operating gravity water schemes
   i) Construction of water reservoirs
   j) Water use for irrigation.
   k) Water course diversion, Drainage canals and conveyance pipe laying

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3. Natural conservation and water catchment areas including -
   a) Creation of national parks, game reserves and buffer zones
   b) Establishment of wilderness areas
   c) Formulation or modification of water catchment management policies;
   d) Policies for management of ecosystems, especially by use of fire
   e) Commercial exploitation of natural fauna and flora from a water resource or catchments

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4. Mining, including quarrying and open-cast extraction of the following minerals from major water catchments:

- ~~i)~~a) Precious metals; Diamond; Metalliferous ores; Coal; Phosphates; Limestone and dolomite; Stone and slate; Aggregates; Sand and gravel; Clay.
- ~~ii)~~b) Exploitation for the production of petroleum in any form.

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5. Forestry related activities in water resources catchment or/and their surroundings Including:

a) Timber harvesting
b) Clearance of forest areas
c) Reforestation and afforestation

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6. Agriculture in water resources catchment
a) Large scale agriculture;
b) Use of new pesticides;
c) Introduction of new crops and animals;
d) Use of fertilizers.

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7. Processing and manufacturing industries within major water resources catchment
a) Mineral processing, reduction of ores and minerals;
b) Smelting and refining of pres and minerals;
c) Brick and earthenware manufacture;
d) Cement works and lime processing;
e) Glass works;
f) Fertilizer manufacture and processing;
g) Explosive plants;
h) Oil refineries and petro-chemical works;
i) Tanning and dressing of hides and skins;
j) Abattoirs and meat processing plants;
k) Chemical works and processing plants;
l) Brewing and malting;
m) Bulk grain processing plants;
n) Fish processing plants;
o) Pulp and paper mills;
p) Food processing plants;
q) Plants for manufacture or assembly of motor vehicles;
r) Plants for construction of repair of aircraft or railway equipment;
s) Plants for manufacture or processing of rubber;
t) Plants for the manufacture of tanks, reservoirs and sheet-metal containers;
u) Plants for the manufacture of coal briquettes

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8. Waste disposal in water resources of/and their surroundings including –
a) Sites for solid waste disposal;
b) Sites for hazardous waste disposal
c) Sewage disposal works
d) Major atmospheric emissions

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e) Major emissions in hydrology
f) Offensive odours

9. Designation of natural conservation areas in water resources or/and their surroundings:

~~33.~~a) Creation of national parks, game reserves, and buffer zones;
~~34.~~b) Formulation or modification of forest management policies;
~~35.~~c) Formulation or modification of water catchment management policies
~~36.~~d) Policies for management of ecosystems, especially by use of fire;
~~37.~~e) Commercial exploitation of natural fauna and flora;
~~38.~~f) Introduction of alien species of fauna and flora

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Appendix VI: Sample Terms of Reference (ToR) for wetland management EIA studies

1. INTRODUCTION

The following guide to develop ToRs for wetland management EIAs was adopted with modifications from appendix 4 of the General Guidelines and Procedure for Environmental Impact Assessment 2006.

A Developer applies to Rwanda Environment Management Authority (REMA) to carry out an EIA for a proposed project with potential impacts on water resources in accordance with requirements of EIA Regulations of the Republic of Rwanda. The objective is 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. Therefore the purpose of the EIA study is to:

~~a.~~i) provide the Developer with advice on how project design can avoid or mitigate negative impacts and to enhance anticipated environmental benefits, and

~~b.~~ii) prepare for review by REMA, an EIA report and Environmental Management Plan (EMP) according to national EIA Guidelines and Regulations, 2006.

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The Guidelines for EIA for Water Resources Management should be followed during the EIA process. The following are specific issues to address in the EIA study;

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 and water resources management should be discussed in the EIA report. Relevant documents on water resources management and conservation should also be reviewed.

3. ENVIRONMENTAL CONCERNS TO BE ADDRESSED IN THE EIA

The water resources management EIA study should address key ecological (biophysical), water resources uses, socioeconomic and catchment landuse issues. In particular the impacts on water quality, quantity, water uses, pollution, abstraction and services potential of the water source should be addressed. Refer to section 3.5 of the Guidelines for EIA for water resources management where key issues are presented.

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 REMA and the Developer.

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 on water resources 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 the Developer for possible inclusion in project design and planning.

In particular, the expert should prepare an Environmental Management Plan (EMP) for *construction*, *operation* 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 the Developer to offer feasible options to enhance the project's environmental performance.

6. PUBLIC CONSULTATION

The Developer 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 REMA, MINAGRI, MINIRENA, MINALOC, MININFRA, MIGEPROFE, ELECTROGAZ 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 Appendix X of Guidelines for Environmental Impact Assessment for Water Resources Management.

8. REPORTING REQUIREMENTS

The expert should submit a final EIA report including Environmental Management Plan (EMP) to the Developer. The Developer after reviewing and appending an EIA Report Addendum to it, if necessary, will submit 10 copies of the final draft report to REMA.

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 to undertake the EIA study must be recognised and authorised by REMA. Professional experts to undertake this study are listed in section 3.14 of Guidelines for Environmental Impact Assessment for Water Resources Management.

Appendix VII: Format of questionnaire for public hearing

1. Introduction

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 use to guide the process.

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

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

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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. lakes, rivers, groundwater, wetlands, 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?

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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?
g.

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4. EIA Procedure

a. Has the Water Resources Management 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?
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?

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5. Project alternatives

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

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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?

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7. Guidelines and procedure for Public Participation and Involvement in the EIA process for water Resources Development

The central policy of the EIA process is the full opportunity for public involvement and participation throughout the entire EIA process. People, including individuals, or groups of local communities who may be directly affected by water resource development project will clearly be a focus for public involvement. Those directly affected can often be easily identified and may include project beneficiaries, those likely to be adversely affected, or other stakeholders with interest or are likely to benefit or to be affected by the proposal in one way or the other. These may include government agencies, NGOs etc.

How to involve the public in the EIA process

The various methods of public participation in the EIA process have different intrinsic levels of involvement which may be determined on a project-by-project basis. For example, informal small group meetings may be the best way to discuss an item of specific concern with a small group, whereas a mass media campaign involving public displays and advertising may be adopted in other circumstances. The public may appropriately be involved in the EIA process through:

- Informing the public about the proposed project,
- Participation in scoping exercises
- Open public meetings/hearings on the projects,
- Inviting written comments on proposed projects from those who can put their comments in writing'
- Use of community representatives,
- Comment and review of the Environmental Impact Statements,
- Making relevant documents available to any interested members of the public in specified places or at the cost of reproduction.

Stages for public involvement in the EIA process

In its broadest sense, public involvement and participation is an on-going activity which takes place throughout the entire EIA process.

Public consultation before EIA is done.

After receiving and screening/reviewing the developer's project brief, the Authority, in consultation with the Lead Agency should decide whether it is necessary to consult and seek public comment, when and how it should be done. Objections and comments from the public and other stakeholders shall be submitted to the Authority and to the Lead Agency.

Public consultation during the EIA.

The team conducting the EIA shall consult and seek public opinion/views on environmental aspects of the project. Such public involvement shall be during scoping and any other appropriate stages during the conduct of the study.

Public consultation after EIA is done (Review)

The Environment Impact Statement (EIS) shall be a public document and may be inspected at any reasonable time by any person. Considering the scale and level of influences likely to result from the operation of the proposed project, the Authority, in consultation with the Lead Agency, shall decide regions where it is necessary to make the contents of the EIS known to the public.

Presenting opinions on the EIS

Those members of the public who may have opinions from points of view for environmental conservation on the EIS may present their written opinions to the Authority.

Notification on public hearings.

Where it is necessary to hold public hearings on a proposed project, a notice for the public hearings must be made public. Such a notice may be:

- Posted in or near the affected community,
- Published in a daily newspaper in an official language
- Published in a local newspaper in an appropriate local language,
- Notified to the public through any other suitable media.

The notice shall contain full information about the location, time of the proposed meeting, and the items to be considered by the meeting; and shall also announce that no decisions are to be made on matters not so noticed.

Where to hold public hearings

- Project site
- Meeting place within Lead Agency quarters/board room
- Any other facility with adequate capacity, and available for this purpose
- Social centres
- Any other convenient place identified for this purpose

Appendix VIII: Summary of Institutional responsibilities in water resources management

Institutions	Responsibilities
REMA	Coordination and supervision of environmental protection activities undertaken by environmental promotion agencies (e.g. EIA in the water sector, water resources regulation, etc)
MINAGRI	Is in charge of agriculture production and animal husbandry. Ensure that sector projects undergo EIA to conserve the environment and natural resources (water, soils, etc).
MINALOC	Is in charge of mobilising the population to participate in the management and protection of the environment (e.g. best practices in water use and exploitation).
MINICOM	Is in charge of the promotion of industries, trade and agro-livestock production cooperatives and management of protected tourist areas. To ensure and promote environmental conservation (e.g. water resources) in the sector.
MININFRA	In charge of the organisation of human settlement, town planning, public infrastructure and transport. Ensure infrastructure development takes account of environmental protection (e.g. water and land).
MINECOFIN	In charge of the mobilisation of funds, coordination of donors and allocation of budgets to different Ministries. Coordination of the financing IERM projects. Projects include IERM projects.
MINIJUST	In charge of giving support in the resolution of conflicts by formulating appropriate laws(e.g. on water, land, forest, etc)
MIGEPROFE	In charge of mobilisation of men and women in the activities of natural resource protection and management.
MINISANTE	In charge of hygiene and sanitation. Promote activities that avoid pollution of water sources and maintain good health from use of water resources.
MINEDUC	In charge of training human resources in the management and protection of natural resources. Education and awareness on water and sanitation.
Higher Institutions of Learning	In charge of curriculum development and capacity building and research in IWRM and environmental management
ELECTROGAZ	It is a public utility for production, transmission and distribution of Water and Electricity in Rwanda.
NGOs/CBOs	In charge of support and working with communities in environment and water resources management projects, capacity building and financing community projects. Involved in projects that utilise water.
Developers	The developer has direct responsibility for the project and should provide necessary information about the project at all stages of the EIA process
Development partners	Support sector budgets including the water sector
Local Governments and Districts	Implement decentralized services (e.g. sanitation and water management, exploitation and provision)
Private sector	Work under contract to implement environment management projects (e.g. design and construction of water management facilities)
Community	Demand and contribute positively to water resources management and sanitation to ensure environmental conservation. and good health
EIA Experts	They are professionals registered with REMA to undertake impact studies

Appendix IX: Preparing Environmental Management Plan

~~i)~~a) 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.

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~~ii)~~b) 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 (see Table A 9.1). The EMP will also cover a proposal for recommending the proposed project to use goods and products that are environmentally friendly.

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Table A9.1: Contents of an EMP

i)	Summary of potential impacts
ii)	Description of planned mitigation measures
iii)	Description of planed environmental monitoring
iv)	Description of planned public consultation process
v)	Description of responsibilities and authorities for the implementation of Description of responsibilities for reporting and review
vi)	Work Plan: staff chart, schedules, activities and inputs of all including lead agencies
vii)	Procurement Plan that is environmentally responsible
viii)	Detailed cost estimates
ix)	Mechanism of feedback and adjustment

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~~iii)~~c) 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

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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.

~~iv)~~d) 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 (see Table A9.2). 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.

Both the environmental management and monitoring plans need to include who will implement them, when, and where. The capacity of the executing agency, LG, 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.

Table A2: Features of an Effective Environmental Monitoring Plan

~~i)~~• Realistic sampling programme (temporal and spatial)
~~ii)~~• Sampling methods relevant to sources
~~iii)~~• Collection of quality data
~~iv)~~• Comparable new data with other relevant data used in environmental assessment
~~v)~~• Cost-effective data collection
~~vi)~~• Quality control in measurements and analysis
~~vii)~~• Innovative methods (e.g. automated stations tracing pollutants)
~~viii)~~• Appropriate databases
~~ix)~~• Data interpretation by multidisciplinary team
~~x)~~• Internal reporting and external checks
~~xi)~~• Allowance for third party inputs
~~xii)~~• Avenues for public participation (e.g. public presentations, external assessments etc)

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Appendix X: Contents of Water Resources management EIA Report

Environmental Impact Assessment (EIA) report or Environmental Impact Statement (EIS) is the final output of the EIA study for communicating the study findings to the authority (REMA), Lead Agencies, and the public and other stakeholders. The information provided should be clear, succinct and objective. It should include maps, drawings, photos, or other descriptive detail. Only data relevant to the decision-making process should be included. This section of the guidelines outline suggested chapters, subsections and contents for EIA reports on proposed projects.

An EIA report must be technically robust, but at the same time it must be clear and easy to read and understand. The principal advice is to keep the report short, simple and avoid use of technical terms unless absolutely necessary. However technical appendices may be included as appropriate. Below is the proposed contents list for the EIA report:

1. Executive summary.
2. Introduction .
3. Legislative framework.
4. Description of the proposed development.
5. Description of the existing environmental conditions within and surrounding the site (baseline data).
6. Prediction and evaluation of significant environmental impacts (Potential impacts, Residual impacts).
7. Mitigating measures.
8. Alternatives.
9. Environmental Management Plan (EMP).
10. Conclusions.
11. Bibliography/ list of references.
12. Appendices (e.g. technical information).

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1. Executive Summary

The summary must be written in non-technical language to facilitate understanding by all readers. It should be concise and must give an overview of:

i) What the project is/
ii) What the significant environmental impacts will be/
iii) What has been done or is recommended to minimize these impacts/
iv) What significant residual impacts will remain after mitigation?

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2. Introduction

Background to the project, the purpose of the EIA, responsibility for the EIA, the content of the EIA report, responsible party for preparing the EIA report and EIA methods used

3. Legislative Framework

This section deals with the laws and their administrative regulations considered during the planning and implementation of the project, e.g. the Organic Law on the environment, Decentralization policy, Environment policy, water and sanitation Policy, etc. This section must highlight the Policy, legal and institutional matters related to the proposed project. *For further information on policy, legal and institutional framework refer to section 2.2.1 of the guidelines*. The documents for review will differ depending on the nature of the project being assessed and the category of water sector being threatened with impact.

4. Description of the Proposed Project

This section of the report should be brief, and may refer to a feasibility study carried out by the developer or their agent. Such a feasibility report should be summarized within the main EIA report, and could be incorporated as a technical appendix. The following should be covered briefly.

4.1. Objectives and Scope of the Proposal

There should be a clear statement of the objectives of the proposal, including rationale and/or need for the development.

4.2 The Location

The following information should be provided:

a) Title details and land tenure;
b) Land use constraints;
c) Maps, plans or photographs and a site description, clearly identifying the location of the proposed development relative to:

i) Other water project facilities
ii) Wetlands.
iii) Forests
iv) Land and water uses.
v) Surface water and groundwater
vi) Community settlements or facilities
vii) Vegetation and fauna communities.
viii) Infrastructure, roads, utilities.

d) Compatibility of the proposal with:

~~a)~~i) Any strategy such as local management plans;
~~b)~~ii) Critical water resources location in relation to proposed activities
~~c)~~iii) Forest location in relation to proposed activities
~~d)~~iv) Other water uses in relation to proposed activities

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~~e)~~v) Local land use plans
~~f)~~vi) Local community activities in the area
~~g)~~vii) Any historical sites, cultural or environmental protection areas.
~~h)~~viii) Community water uses

4.3. Description of activities to be done at the project site

Describe the works required prior to commencement of operations, including:

i) Any additional land requirement during construction period.
ii) Timing, staging and hours of construction work.
iii) Proposed construction methods including temporary works, the equipment to be used.
iv) Methods and route of transport of the equipment to the site.
v) Pollution control systems, e.g. erosion and sediment control systems, wastewater holding tanks, noise and dust mitigation strategies.
vi) Import or export of material to/from the site, including method and route of transport.
vii) Any stabilization structures or earthworks including dredging, reclamation, excavation or landfill, quantities of material to be moved out of or onto the site, the method of disposal of excess material, the sources of material to be brought to site.
viii) Details of the workforce, including source, expected numbers and distribution throughout construction.
ix) Details of potential water (groundwater and surface water), wetlands and land and contamination which may constrain work on the site or disposal of excess material.

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5. Potential Impacts, Alternatives and Consultation

The section summarizes the outcome of the process of identification and prioritization of potential impacts, it should include:

i) All issues identified.
ii) The key issues which will need a full analysis in the EIA.
iii) The issues which will not need a full analysis in the EIA, and a reasoned assessment of why they do not need full analysis.

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A summary of the general alternatives (e.g. alternative locations, alternative schemes) should be given, with the reasons for the selection of the preferred option. The section should include details of who has been consulted, and the outcome of such consultations.

5.1 Potential Impacts

Scoping of the EIA should develop from a preliminary investigation of baseline conditions, consultation with regulatory bodies, and a preliminary site visit. The construction phase is likely to give rise to negative impacts regarding land take, environmental degradation, noise, dust, traffic, and movement into and off the site of materials.

During operation negative impacts on water quality and quantity, hydrology in general may also occur. Negative impacts are likely regarding loss of useful land to the project, sensitive ecosystem

degradation, and landscape alteration. Drainage caused by project activities may have a negative impact on groundwater, flora and fauna

The procedures or methodology used to identify and priorities issues should be outlined but it should include:

i) Relevant guidelines issued by government authorities, provisions of any relevant environmental protection legislation, and relevant strategic plans or policies;
ii) Relevant research such as catchment activities impact water quality and quantity, hydrology ,flora, fauna and ecology as a reserve for plants and animals, nutrient dynamics, water purification, breeding habitats and refugia, etc and relevant preliminary studies or pre-feasibility studies.

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5.2 Alternatives

The EIA should include an assessment of the environmental impacts or consequences of adopting alternatives, including:

i) Alternative location(s).
ii) Alternative schemes and layouts of the development and services (these may be further developed under mitigation section).
iii) Alternative management or operational practices (these may be further developed under mitigation section)

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The scoping exercise can explicitly report on what grounds the preferred alternative was chosen. The main part of the EIA can then concentrate on the preferred option.

5.3 Consultation (need of expression of the procedures and processes for consultation: how it will be conducted)

The EIA report should include details of consultation undertaken as part of the EIA process. Those consulted should include relevant government agencies, NGOs, and the public. A brief description of the reason for and the outcome of consultation should be included. Regulatory powers in water resources management and protection and other stakeholders including communities must be consulted. Other agencies or departments might include those responsible for wetlands, forestry, land, biodiversity, conservation of natural resources, etc., as appropriate.

6. Description of the Existing Environmental Conditions within and surrounding the project site

An overview of the existing environment should be provided in order to place the proposal in its local and regional context, and to provide baseline data which may be used for subsequent monitoring. General information to be provided for specific issues identified as potentially important in the assessment of impacts from project is discussed in the following subsections as appropriate:

~~i)~~1. Water quality and quantity.
~~ii)~~2. Aquatic flora and fauna.

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~~iii)~~3. Socio-economic and cultural environment.
~~iv)~~4. Land use (e.g. crop agricultural activities, livestock raring, etc)
~~v)~~5. Biodiversity.
~~vi)~~6. Hydrology and groundwater.
~~vii)~~7. Meteorology
~~viii)~~8. Microclimate.
~~ix)~~9. Health and Diseases.
~~x)~~10. Major water uses (e.g. community fishing, irrigation, domestic use, industrial use, commercial fishing, transport, hydropower, reservoir, etc).
~~xi)~~11. Water type (e.g. groundwater, river, lake, well, springs, etc) and status.
~~xii)~~12. Visual environment and landscape
~~xiii)~~13. Navigational uses
~~xiv)~~14. Environmentally sensitive areas

Data must be specific to the proposed site, rather than general information on a particular area, and the EIA should only deal with issues relevant to the proposal being assessed. Each issue and the level of detail should match the level of importance of the issue in decision-making. To make the EIA report easier to read, it may be sensible to include the specialist detail for each of the following sections as a technical appendix to the report, with a summary of each section in the main EIA report.

7. Water Quality

Discussion should focus on those water quality characteristics that may be altered, and on the assimilation capacity of water that will be affected by the project. The existing microbiological, chemical, biological and hydraulic conditions of water for the project and any water body nearby. Baseline data collected should be sufficient that predicted conditions can be calculated should the development be approved.

The following conditions must be assessed for water and projected conditions when the proposed project is implemented:

i) Faecal coliforms (as indicators of faecal contamination).
ii) Levels of dissolved oxygen and Biochemical Oxygen Demand.
iii) Particulate matter (increased turbidity and reduced light penetration).
iv) Chemical contaminants from likely industrial or agricultural sources such as metals. biocides (insecticides, herbicides, etc), PCBs and hydrocarbons.
v) Heavy metals.
vi) Aquatic biological indicators (invertebrates).
vii) Nutrients (nitrogen and phosphorus).
viii) Eutrophic state.
ix) Plankton species and diversity.
x) Biodiversity status.
xi) Aquatic weeds.
xii) Endemic fish species.

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8. Social, Economic and Cultural Issues

Baseline data collection should cover the following:

i) Existing community use of the water resources in the area
ii) Other stakeholders use of water resources in the area
iii) Existing health of the local population (in quantitative terms where possible) which may be affected by impacts on water resources;
iv) Existing potable water usage of the community, which may be affected ;
v) Local employment conditions which may be affected during construction and operation;
vi) Existing economic situation which may be affected by negative impacts on water resources in the project area (other developments, land values, agriculture, tourist facilities);
vii) Identification of items or sites of cultural or historical significance likely to be affected by the proposal, and an assessment of their cultural and/or financial importance.

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Areas or sites of particular social or cultural importance or sensitivity should be plotted on maps or diagrams, shown in relation to the proposed development.

9. Waste management

Waste management projects can have adverse impact on water sources. The waste may be from industries, municipalities or agricultural activities. Disposal of waste products is an important aspect of EIA, which is often omitted or not fully investigated. Data on existing and proposed waste management systems that are close to and discharge or will discharge into water bodies should be obtained to enable project managers prevent or minimize impacts to water resources.

10. Flora and Fauna

Flora and fauna or their habitats which are likely to be disturbed or obliterated during construction or operation of the project must be identified and their importance evaluated. As a general rule, distribution data should be presented as habitat or species location maps, shown in relation to position of the proposed works. Data collection and surveys should include:

a) Identification, description and distribution of habitats that may be directly or indirectly affected especially those:

~~a)~~ Supporting threatened or protected species or habitats;
~~b)~~ Of socio-economic importance (e.g. tourism, crafts, aquaculture or subsistence fisheries, cultural).
~~c)~~ Of nature conservation or scenic importance.

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b) Assessment of the importance of the habitats or species identified above, in terms of International, National, Regional or Local importance.

11. Hydrology and Groundwater

Hydrological issues to consider which may either be affected by the development, or affect the development itself include:

i) Existing drainage patterns, including the location of community wells and identification of areas prone to flash floods, the range of water heights/depths in the area.
ii) Groundwater regime and quality, e.g. depth to groundwater level, whether groundwater is used for water supply and its quality, whether control of the use of groundwater is done in the proposed project area.
iii) Presence and importance of structures likely to be affected by changes in groundwater levels.
iv) Number and location of ground water abstraction points within the project area

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12. Visual Environment and Landscape

The nature of the existing visual environment and landscape should be assessed for their sensitivity to impacts such as changed or obstructed views. Particularly sensitive receptors likely to be affected in the vicinity should be identified, such as tourist establishments, prestigious developments, schools, etc.

13. Prediction and Evaluation of significant Environmental Impacts

EIA report should include a discussion of impacts during both construction and operation of the proposed project. Impacts of different aspects of the proposed project on the above sectors of the environment should be considered separately. The criterion for evaluation of the significance of impacts should distinguish between impacts which are:

i) Positive and negative.
ii) Reversible and irreversible.
iii) Short term and long term.
iv) Direct, indirect or cumulative.

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The Criteria should be based on local legislative standards wherever possible. Where these are not available, acceptable international standards may be used (e.g. WHO, US EPA, etc. guidelines). In all cases the choice of the appropriate standard must be robust and defensible. If no suitable standard is available, then the criteria developed and used must be clearly explained in the EIA. Use of matrices can be very helpful in co-coordinating and summarizing information for this section of the EIA report. For this section of the report, impacts should be considered before or without mitigation, unless particular mitigation is already incorporated into the design and development description included in the earlier part of the EIA report.

14. Mitigation Measures and Alternative Process

This section considers mitigation measures and strategies to reduce negative impacts on the water resources, the environment and stakeholders. Mitigation must be *sustainable, integrated and feasible.* Some mitigation measures should be implemented at a very early stage of design of the works easily, but are difficult or expensive to implement once early design has been completed.

Therefore it is vital that any mitigation should be discussed and developed in consultation with the developer and regulatory authorities throughout the EIA process. This section of the EIA report should therefore be a summary of any mitigation already implemented in the ongoing design of the facility, and also include any recommended mitigation strategy to be implemented during construction and operation of the works.

This section may also include any enhancement measures for which there is a commitment from the developer, which will enhance any positive impacts of the development. This may include measures such as planned public education programmes in integrated water resources management and wise use of water and aquatic resources.

15. Residual Impacts

This section should give a summary of those impacts which will remain assuming mitigation has been implemented. It will therefore include those impacts for which there are no suitable or only low levels of mitigation, and also positive impacts of the project.

16. Monitoring Plan

A Monitoring plan should be carefully designed and related to the predictions made in the EIA and the key environmental indicators. This should be designed to demonstrate the potential ecological sustainability of the proposal. The EIA should outline the need for, and use of any proposed monitoring plan, its duration and reporting procedures, define suitable criteria for monitoring, and actions to be taken in the event of non-compliance with these criteria.

Parameters which may be relevant include:

a) Performance indicators in relation to critical operational issues including:

i) Plankton communities and diversity (e.g. benthic macroinvertebrates)
ii) Water quality (Faecal coliform, suspended solids, colour, nitrogen and phosphorus, etc)
iii) Water uses by the community
iv) Ground water (quality and quantity) and hydrology
v) Groundwater drawdown
vi) Water conservation activities

b) Monitoring of complaints received.

c) Environment Management Plan

This is a document to show commitment to EIA principles and it will demonstrate that sound environmental practices will be followed during the construction and operation of the development. The plan shall include the following aspects:

i) Management of construction impacts, (e.g. disposal of waste material, re-vegetation management plans, drainage system)

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ii) Management of operational impacts, (e.g. Wastes, effluent quality and quantity management, leachates, hazardous materials, ground water drawdown, drainage, conveyance, water abstraction, water use, etc)
iii) Strategies and action plans to feed information from the monitoring program into the management practices
iv) Public awareness and training programmes for operational staff
v) Indicators of compliance with licensing and approval requirements
vi) The key information that will be monitored, its criteria and the reasons for monitoring (e.g. hydrology, flora and fauna, soils, water quality, water existing uses, water volumes and flows, conservation activities status, population density in the water catchment).
vii) Actions to be undertaken if the monitoring indicates a non-compliance with the defined criteria or an abnormality.
viii) Internal reporting procedures and links to management practices and action plans.
ix) Reporting procedures to relevant authorities and, if appropriate, to the consent authority or the community.

15. Conclusions

This should be a summary of the prediction of the impacts and evaluation of the impacts, the mitigation measures assigned to the impacts and the alternatives and also the identified residual impacts to emphasize:

~~i)~~a) Which impacts are likely to be significant?
~~ii)~~b) How significant they will be?
~~iii)~~c) Which parts of the environment are likely to be affected?
~~iv)~~d) Whether mitigation is possible
~~v)~~e) The likely success of mitigation measures adopted or recommended to alleviate those impacts.

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This information can be presented either as text, or as summary tables, if desired. The developer shall submit the EIS to the Authority (REMA) that will in-turn forward copies to the Lead Agency and to the stakeholders and interested parties for comment and review, before approval is considered. Any comments received shall be taken into account in making a decision on the EIS.