Journal of Applied and Advanced Research 2022, 7: 8-17
Doi: 10.21839/jaar.2022.v7.7478

Research Article

# A critique of the EIA Report selected from the East African region considering what is required in an ideal EIA report

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*(Received: January 14, 2022; Revised: March 04, 2022; Accepted: March 07, 2022; Published: March 15, 2022)*
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**ABSTRACT**

At present, every country strives to realize development for its people. Therefore, to achieve this requires the construction of various projects for the realization of a country's socio-economic and political development. However, the development of the projects is associated with various ecological challenges that can have an impact on society as a whole and the environment. Therefore, there is a need to conduct an environmental impact assessment (EIA), a tool that can be used to determine the environmental, social and economic impacts of a project before making a decision. The EIA process is linked to the detailed report containing all possible environmental, social and health impacts after, during and after the project. Therefore, this paper aims to deliver the critique of one of the EIA reports in the East African region. To achieve this, EIA legislation and guidelines for preparing and verifying EIA reports in the East African region will be examined. The critique contains the issues that include the advisory team (environmental and social impact assessment team), an executive or non-technical summary, a description of the proposed project, a description of the development, the local environment and initial conditions, the political, legal and administrative framework, and public participation/stakeholder analysis in the EIA process.

**Key words:** Decommissioning, Environmental Impact Assessment, Environmental Management Plan, Environmental Impact Assessment Report, Environmental Monitoring and auditing, Public Participation

## INTRODUCTION

Environmental Impact Assessment (EIA) means *"an examination, analysis and assessment of planned activities to ensure environmentally sound and sustainable development"* (UNEP, 1987). EIA is a tool used to identify the environmental, social and economic impacts of a project before decision-making. EIA is a planning tool to identify, predict and evaluate potential environmental impacts and mitigation measures in the early stages of proposed projects (Makmor & Ismail, 2016).

The preparation of high-quality EIA reports or Environmental Impact Statements (EISs) is among the important components of effective translation of EIA policy and law into reasonable practice. Though, just having EIA policy and law are not the only prerequisites for producing good quality EIA reports. There are a lot of key issues which are considered for the achievement of quality EIA reports. For instance, political commitment to EIA, availability of EIA guidelines and legislation, resources allocated to EIA, nature and experience of various participants in EIA process, the interaction between stakeholders involved in EIA, and type and size of project are considered as determinants of quality EIA report (Kabir & Momtaz, 2012; Kamijo & Huang, 2016; Kamijo & Huang, 2019). On other hand, opportunities for public participation, enhancing the quality of the information provided to decision-makers, methods of impact analysis and cost-effectiveness are addressed for achieving quality EIA reports (Glucker *et al.,* 2013; Zhang *et al.,* 2013).

In developing countries including EA countries, it appears to be very difficult to improve the quality of EIA reports under present constraints such as limited funding, human resources, and information. To address these issues, there is a need for a good sociopolitical context in which the EIA system has to operate favourably. This should be associated with competent interaction between stakeholders and an assessment of the generic nature of the impacts related to the projects.

The East African region is located in the east part of Africa. Most of the countries in the region are along the Indian Ocean coast. The region consists of 11 countries namely Tanzania, Kenya, Uganda, Burundi, Rwanda, Eritrea, Sudan, Ethiopia, Somalia, Djibouti and South Sudan (African Financial Markets Initiative, 2020), as indicated in Figure 1.

These countries are experiencing socioeconomic development through the construction of various projects such as infrastructures, energy, water, health, and buildings. They are doing all these to realize the development and raise the living standards of their people. Most of these countries have adopted EIA policies and laws which provide the guidelines and acquire big projects to undergo EIA before implementation. Despite their socio-economic development progress in recent years, East African countries experience environmental problems that are associated with the

mismanagement or overutilization of the natural and poorly planned development projects motivated by rapid population growth (Temesgen Gebreyesus *et al.,* 2017). Moreover, there have been an absence or poor quality EIA reports undertaken for some projects. This affects the environment and implementation of the project becomes very difficult due to poor public participation.

## Legislative provisions for EIA in the East African region

The basic elements of an EIA system are very much present in EA countries. A well thought out environmental legislation and EIA guidelines have been formulated and adopted since 1995 and Uganda being the first EA country to formulate Environmental Act which included the EIA section and later in 1998 the EIA regulations were imposed (Republic of Uganda, 1998). East African countries have EIA policies and laws which have been formulated and adopted in different periods to each country, as indicated in Table 1.

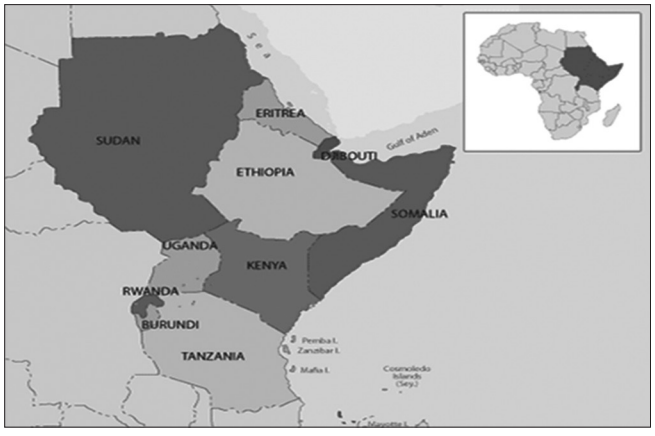


**Figure 1:** East African region (African Financial Markets Initiative, 2020)

## Guidelines for preparation and review of EIA report in the East African region

To facilitate all activities to be conducted by the concerned agencies and proponents, the Environmental Agencies formulated guidelines for the preparation and review of EIA reports in their respective countries. These guidelines include various sections on commencing EIA, assessing impacts, mitigation and impact management, and other main features of EIA reports. They explain reviewing and decision making, monitoring and auditing, and project management. The guidelines also suggest qualities of successful inter-disciplinary EIA team members and the need for inter-agency coordination. Moreover, guidelines suggest the role of stakeholders in the scoping process and advocate the significance of considering alternative development options (Katiba Institute, 2019).

A comparative analysis concerning the merits and demerits of popular impact identification methods against checklists, matrices, networks and overlays is the other commendable feature of guidelines. However, it would be interesting here to see what these guidelines expect from EIA reports and what criteria have been suggested for evaluating them. Every country has set the criteria depending on the environment and requirements of the country to evaluate EIA reports (Temesgen Gebreyesus *et al.,* 2017), as shown in Table 2. The guidelines and criteria for the EIA report in all East African countries are almost designed at the same level. However,

**Table 1:** Policy and law in EA countries

| No. | Country | EIA policy/law | References |
|---|---|---|---|
| 1. | Tanzania | EIA regulations of 2005 in the National Environmental Management Act of 2004 | (URT, 2005) |
| 2. | Kenya | EIA regulations of 2003 in the Environmental Management and Coordination Act of 1999 | (GoK, 2012) |
| 3. | Uganda | EIA regulations of 1998 in the National Environmental Act of 1995 | (Republic of Uganda, 1998) |
| 4. | Rwanda | EIA regulations of 2006 in the Organic Law Determining the Modalities of Protection, Conservation and Promotion of the Environment in Rwanda of 2005 | (Sharma & Hategekimana, 2018) |
| 5. | Burundi | EIA regulations of 2010 in Law No 1/010 of 2000 on the Code of Environment | (Republic of Burundi, 2018) |
| 6. | South Sudan | Still in progress (finalize and approve environmental policies in South Sudan) | (Republic of South Sudan, 2018) |
| 7. | Ethiopia | The EIA Proclamation No 299 of 2002 | (Damtie & Bayou, 2008) |
| 8. | Eritrea | EIA regulations in the Environmental Protection Proclamation No. 179/2017 | (Andemariam, 2018) |
| 9. | Sudan | EIA regulations in the Environmental Protection Act of 2001 | (Ahmed & Abdella Elturabi, 2011; Ali & Idris, 2016) |
| 10. | Somalia | EIA regulations in the Somaliland Environmental Management Law No. 79/2019 | (Somaliland Government, 2019) |
| 11. | Djibouti | EIA regulations in the Environmental Code in Law No. 51/2009 | (Oxford Business Group, 2016) |

some differences may occur to some countries in ways like how are they designed or formulated but in general, they look almost the same.

## A CRITICAL REVIEW OF THE SELECTED EIA REPORT

A sample of one EIA report relating to the health sector has been randomly selected for a critical review (Kaijage, 2015). Table 3 represents the detailed information of the project.

The proposed project was among the National Public Health Laboratories under the East Africa Public Health Laboratories Networking Project funded by the World Bank. Thus, the primary objective of undertaking an Environmental and Social Impact Assessment of this project was to ensure compliance with:-

i. The National Environmental Act 2004 and EIA and Audit Regulations of 2005
ii. The Public Health Laboratories Networking Project's Environmental Management Plan
iii. World Bank's environmental and social safeguards requirements

The project was essentially about the development of a one-storey building infrastructure for laboratory and other hospital operations. The EIA regulations of 2005 GN No. 349 of 2005 put this project under type B mandatory list of projects, which required EIA.

Any EIA report in Tanzania entails enough content as stipulated in the EIA regulations, as indicated in Table 4.

As indicated in Table 2, the official criteria for evaluating EIA reports are considered in providing the critique of the report. No EIA report meets the criteria completely. Thus, this offers the opportunity for the analysts to evaluate any EIA report. This evaluation is considered a critique. A critique is a careful analysis of an argument to determine what is said, how well the points are made, what assumptions underlie the argument, what issues are overlooked, and what implications are drawn from such observations (Buckley, 2016). It is a systematic, yet personal response and evaluation of what you read. The following are some main issues observed in the selected report:

### The team of the consultants (Environmental and Social Impact Assessment team)

EIA process requires skilled and experienced consultants with different professionals. Consulting team may consist of individual EIA practitioners with different educational backgrounds and professional experiences to justify the needs of the assessment. Depending upon the complexity of a project, a consulting team may decide to involve a subject specialist besides the core EIA professionals. The expertise generally needed should encompass areas such as civil and environmental engineering; chemical and environmental engineering; environmental monitoring; life sciences with training in ecology; air pollution meteorology and modelling; and social sciences. EIA practitioners play an essential role in bridging the gap between proponents, the concerning impact assessment regulatory authority and general public interests (Shah, 2013).

Conducting an assessment requires teamwork and the collaboration of its members, the technical aspects alone do not determine the success or failure of Environmental and Social Impact Assessment (ESIA) performance (Chanthy & Grünbühel, 2015). Depending on the complexity of the project, subcontracting of additional experts may be needed for full coverage of all technical aspects, and harmonization among various technical and management specialists is a must (Shah, 2013).

**Table 2:** Official criteria for evaluating EIA reports in the East Africa region (Rebelo & Guerreiro, 2017; Temesgen Gebreyesus *et al.,* 2017; YoungProfsNet, 2018)

| No. | Criteria |
|---|---|
| 1. | Whether the executive summary presents significant impacts, cumulative effects of impacts, mitigation measures, requirements for monitoring and supervision? |
| 2. | Whether the project description is complete and at least includes aspects that can affect the environment? |
| 3. | Whether project alternatives are described? |
| 4. | Whether baseline conditions have been described adequately in an easily understandable manner with comments on the quality of data? |
| 5. | Whether significant impacts have been predicted and evaluated with an indication of potential impacts that were expected at the scoping stage but not found at this stage? |
| 6. | Whether mitigation measures to control adverse impacts and enhance project benefits have been proposed? |
| 7. | Whether institutional arrangements for implementing mitigation measures have been defined in the form of the Environmental Management Plan (EMP)? |
| 8. | Whether the costs of implementing all recommendations have been adequately budgeted in the cost estimates? |
| 9. | Whether monitoring program is described and commitment made with reasons for and detail of costs of carrying out monitoring activities? |
| 10. | Whether local people have been involved in the study process and an overview of the issues raised and their treatment is given? |
| 11. | Whether the EIA report is written with clarity, free of jargon and explains technical issues in terms that are intelligible to a non-technical reader? |

**Table 3:** Details of the project (EIA report) (Kaijage, 2015)

| | |
|---|---|
| Name of the EIA report/project | Proposed Construction of One-Storey Laboratory Building on Plot Number 1829 of St. Benedict's Ndanda Hospital in Masasi District, Mtwara Region, Tanzania. |
| Proponent | Benedictine Fathers of Abbey-Ndanda. |
| Consultant | Mr Erneus Kaijage, Eco Consult Associates. |
| Project Funding Agency | World Bank. |
| Submitted date | May 2015. |

**Table 4:** Details of the EIA project report as suggested by EIA guidelines in Tanzania (URT, 2005)

| No. | EIA structure | Contents |
|---|---|---|
| 1. | Proposed undertaking/Development | • Title of Proposal (general classification of undertaking);<br>• Description of Proposal (nature of the undertaking, unit processes [flow diagram], raw materials, list of chemicals {source, types a quantities}, storage facilities, wastes/by-products {solid, liquid and gaseous) and their management;<br>• Scope of Proposed Project (size of the labor force and working hours, equipment and machinery, installed or production capacity, product type, the area covered facility/proposal, market);<br>• Project cost; and<br>• Technology to be used. |
| 2. | Proposed site description | ▪ Proof of land ownership;<br>▪ Location: Administrative Location and Latitude and Longitude;<br>▪ Attach a site layout plan and Location map;<br>▪ Current zoning;<br>▪ Distance to nearest residential and/or other facilities;<br>▪ Adjacent land uses (existing & proposed);<br>▪ A declaration that the project site is not within or near the sensitive ecosystem/areas (e.g. water bodies, protected areas, schools, public utilities |
| 3. | Infrastructure and utilities | • Structures (buildings and other facilities);<br>• Land required;<br>• Water (source, quantity);<br>• Power (type, source & quantity);<br>• Road; and<br>• Other major utilities (e.g. sewerage, etc.) |
| 4. | Environmental impacts | ▪ Potential environmental effects of proposed undertaking (both construction, operation and decommission phases); and<br>▪ Project alternatives (site, design and/or technology). |
| 5. | Other environmental issues | • Potential significant risks and hazards associated with the proposed project (including occupational health and safety) and its Emergence Preparedness and Response Plan; and<br>• State briefly relevant environmental studies already done and attach copies as appropriate. |
| 6. | Methodologies of conducting the scoping exercise | ▪ Data collection methods<br>▪ data analysis techniques |
| 7. | Synthesis of the results of the scoping | • An overview or profile of the proposal<br>• The environment and community that is likely to be affected<br>• The range of potential impacts<br>• The ways these impacts may be mitigated or managed<br>• Terms of References (ToR) |
| 8. | Stakeholders involvement | ▪ Type of stakeholders to be consulted or involved<br>▪ Methods used to identify and select the stakeholders<br>▪ Stakeholders concerns |
| 9. | Project alternatives | In case, the scoping exercise results in need for alternatives:-<br>▪ Description of each alternative<br>▪ Summary of adverse impacts of each alternative<br>▪ Mitigation measures were proposed for each alternative, and<br>▪ Selection of alternative |
| 10. | Environmental Management Plan (EMP) | Description of the administrative aspects of ensuring that mitigation measures are implemented and their effectiveness monitored, after approval of the EIA |
| 11. | Monitoring plan | Technical aspects of monitoring the effectiveness of mitigation measures (including Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget and procurement schedules) |
| 12. | Decommissioning Plan | ▪ Decommissioning procedure<br>▪ Restoration of land and water negatively impacted<br>▪ Management of excess materials and waste<br>▪ Environmental emergency and response |
| 13. | Disclosure of Consultants engaged | The names of the Consultants engaged with their brief resume and nature of Consultancy rendered |

The EIA process of the selected project required at least consultants with various professionals such as health practitioners, environmentalists, civil and water engineers, sociologists and project planners. This EIA process involved only three practitioners: an environmental specialist (team leader), sociologist and chemical engineer. This was a

limitation to obtaining the effectiveness, efficiency and quality EIA report because the comprehensive team helps to ensure the quantitative analysis of significant environmental impacts and provide credibility to the information provided in the report.

## Executive or non-technical summary

The executive summary gives a concise description of the main findings and recommendations. It is not meant to summarize all of the contents of the EIA report. Instead, the focus is on the key information and options for decision-making. Except for very large proposals, the executive summary should be kept short, no more than seven pages and preferably less. Often, the executive summary is the only part of the report that decision-makers and most people will read. It can be written for distribution to the public as an information brochure (Rathi, 2018).

An executive summary should describe:-

- The proposal and its setting;
- The terms of reference for the EIA;
- The results of public consultation;
- The alternatives considered;
- Major impacts and their significance;
- Proposed mitigation measures;
- The environmental management plan; and
- Any other critical matters that bear on the decision

In the selected EIA report, an executive summary was presented in 11 pages. It contains non-technique language summarizing the findings of the study. It consists of parts such as the introduction of the project, policy and legal framework, environmental and social impact assessment, assessment of impacts and mitigation measures, major significant impacts, resettlement action plan, stakeholder engagement, monitoring and auditing, Cost-Benefit Analysis and decommissioning.

## Description of the proposed project

This chapter describes the relevant systems of the proposed project. This should include the project location, layout, components, inclusive of the drainage system, description of materials utilized and produced (mass balance), design criteria adopted, and the access ways to be used. Project information should be described in terms of the following activities, such as site preparation, construction, and operation on-site, transportation, welfare, and closure. Project descriptions provide the following details: - a) the problem of the project, b) a set of goals for the project, c) the overall objectives for the project, d) a project plan that describes the activities that members will undertake.

In the selected EIA report, a description of the project is presented in section 2. It shows project area and activities; workforce and equipment; structure and content of the laboratory; project requirements; other requirements and supporting services; management of construction waste and safety and health systems.

## Description of development, local environment and baseline conditions

A baseline study is essential to be able to define the level of impact expected and to enable the monitoring of impacts after the development has occurred (Save the Children, 2015). Baseline studies usually entail a collection of background information and data on the physical environment and socio-economic setting of a proposed site for development (Edwin-Wosu & Sunday, 2016). In some cases, baseline information needs to be gathered in the field, and in others may already be available and need only be collated. A selected EIA report gives a comprehensive description of the development of the constructed building for health services with the justification that 'the process has been selected based on highest development efficiency, experiences and safe operation'. The interesting issue is that the description of the local environment was made based on primary and secondary data about socioeconomic and environmental aspects.

Moreover, in this report, the baseline conditions related to land use, topography, geology, soil type, and climate were identified. It is important to identify these aspects to examine the impacts and mitigation measures during the project development and operation. Literature shows that no data about baseline conditions is available with concerned agencies and it takes too much time and resources to collect data about the baseline condition of an area for every EIA study in Tanzania (Guilanpour & Sheate, 1997). Interestingly, in this report, some specific methods or techniques were used to get these data. These methods include a review of secondary data/information, focus group discussions, household interviews, and meetings with key community/family people/informers such as relevant staff at the hospital, relevant government officials and district and ward authorities and household interviews with affected people.

## Policy, legal and administrative framework

EIA takes place within the legal and/or policy frameworks established by individual countries and international agencies. Its practice can be improved through a better understanding of the different arrangements that are made for EIA provision and procedure, and how these can contribute to successful EIA. Those developing or reviewing EIA systems need to be particularly aware of the strengths and weaknesses of existing arrangements and elements that can improve EIA as a tool to achieve sustainable development (UNEP, 2002b).

There are several policies and legislations, which set out the legal and regulatory requirements and which are relevant to the proposed construction of the laboratory building of the St. Benedict's Ndanda hospital. There are also pertinent national standards governing environmental management and protection, health and safety. In the selected EIA report, the discussion of Tanzania national and sectoral policies and legislation, which are relevant to environmental and social issues on the planning and implementation of the construction

of this building was conducted.

In this report, the following national policies were identified: - National Environment Policy of 1997, National Health Policy of 2003, Water Policy of 2002, the National Land Policy of 1995, National Forest Policy of 1998, the National Investment Promotion Policy of 1996, and the National Employment Policy of 1997. Legal documents and Acts included the following: - Environmental Management Act of 2004, Water Resource Management Act of 2009, the Land Act of 2002, the Village Land Act of 1999, the Occupational Health and Safety Act of 2003, the Mining Act of 1998, and the Local Government Act of 1982. Moreover, relevant safeguard policies such as World Bank Safeguards Policies; and International Labour Conventions were considered in this report.

Administrable, the Environmental Management Act of 2004 Cap 191 gives a mandate to NEMC to enforce the compliance process. It empowers NEMC to determine whether a proposed project should be subjected to an EIA, approves consultants to undertake the EIA study, invites public comments. In carrying EIA review NEMC carries site verification visits, convenes the Technical Advisory Committee and advises the responsible Minister to issue an Environmental Certificate/ approve the EIS. Continuously NEMC is responsible for carrying out monitoring and auditing the environmental performance of the project. The key institutions that have a role to play as far as EIA for this project are concerned. At the national level, it included the Vice President's Office (Division of Environment), NEMC, Ministry of energy and Minerals, Ministry of Water, Ministry of Lands, Housing and Human Settlements Development, and Tanzania Investment Centre. At the local government level, it included the Mtwara Regional Secretariat Office, Masasi District Director Office, Mwena ward, Ndanda Village, and community (residents of Ndanda village and residents along the transmission line) as well as Benedict's Fathers of Ndanda.

Thus, these helped the consultant team to conduct the EIA process under the consideration of the relevant policies, laws and regulations and with regard to the considerably administrative structure.

## Identification and assessment of environmental and social impacts

The main goal of the EIA process is to identify both beneficial and adverse inter-related socio-economic, cultural and human-health impacts likely to be induced by the proposed project (Maclean *et al.,* 2014). The report defined socioeconomic, environmental and health impacts in more detail.

In the selected report, the environmental and social impacts were presented. However, no quantitative methods were applied in the prediction of impact magnitude and assessment of impact significance. However, the consultant explained that *"various data analysis methods were used (e.g. SPSS and Excel) to come up with descriptive Statistics and establish baseline information*" but in reality, there are few areas where these quantitative methods were used to predict the impacts. Only thematic means were used to explain the likely adverse or positive impacts. Moreover, EIA report assessment of impact significance has been made based on self-developed criteria by considering the severity of the risk on the environment and human health, probability of occurrence, legal requirements, views of affected parties and data reliability. Impact significance rating is not defined on any point scale.

Interestingly, the consultant recognizes the requirements for social impact assessment studies to address site-specific characteristics required for the identification of positive and negative socio-economic impacts and make recommendations on effective solutions to be considered during the implementation of ESMP. To achieve this, the triangulation of various data collection methods was necessary to elicit various quantitative and qualitative data.

## Public participation/stakeholder analysis in EIA process

Public participation (PP) plays an important role in the EIA process. PP is necessary for minimizing or avoiding public controversy, confrontation and delay, and can make a positive contribution to the EIA process (Glucker *et al.,* 2013). The main stakeholders are the proponent, the regulators, and the community (Morrison-Saunders *et al.,* 2001). Although it has been emphasized in the guidelines that all stakeholders should be consulted during the scoping stage in practice, the public involvement appears predominantly unipolar and without using any technique. There is no specific technique used to select and acquire the specific stakeholders of the selected report/project.

In the selected EIA report, the public community were used in the EIA process. The use of public representatives may lead to biases in giving the responses to the consultation team or they may give comments according to their interests hence affecting the entire community or public interests (Flöthe & Rasmussen, 2019). The main reason for the limited involvement of stakeholders during EIA studies appears to be that the public consultation is legally required only after the EIA report has been submitted to the responsible authority (Hostovsky *et al.,* 2010). However, this report, shows that public consultations were made before the final approval of the report.

In the selected EIA report, stakeholders' concerns were presented. Stakeholders include:-

- Local government - Masasi district Council where consultations were conducted with District Executive Director, District Medical Officer, District Engineer, District Health Officer, and District Environmental Officer.
- At the ward level consultations were done with Ward Executive Officer, Ward Councilor and Village Executive Officer.
- At the village, consultations were done with the

Village chairperson, Village Executive Officer and elderly members of the local community from villages surrounding the project.
- At the St. Benedict's Ndanda hospital consultations were held with hospital management and staff including lab technicians, Maintenance unit, safety officer, Matron, hospital cleaners, and representative of the hospital administrator, board secretary
- The Contractor
- Other stakeholders included Non-governmental organizations/civil society organizations dealing with poverty, HIV/AIDs.
- At the national level, a national dissemination meeting was held in Dar es Salaam and was attended by the various representatives of government agencies and ministries including the Dar es Salaam City Council, Division of Environment in the Vice President's Office, NENC, Ilala and Kinondoni Municipal Councils and PMO-RALG, Occupation Safety Health Agency and the Ministry of Natural Resources and Tourism. Others participants were NGO representatives such as Wide Wildlife Fund, SHIVYAWATA and several social and environmental experts from private companies and consulting firms.

## Alternatives and mitigation of impacts

Mitigation is the stage of the EIA process when measures are identified to avoid, minimize or remedy impacts. These measures are implemented as part of the process of impact management, together with any necessary adjustments to respond to unforeseen impacts (UNEP, 2002a).

In the selected report, potential mitigation and enhancement measures for potential issues/impacts/risks at design, construction, operation and decommissioning phases were discussed. The scope of the effectiveness of mitigation measures embraces both the construction and operation stages to environmental impacts and human health. Commitment to mitigation revolves around qualitative statements indicating the need to provide education and health facilities as well as control air pollution due to incineration and arrangement for solid waste management. On the other hand, print and electronic media reports reveal that once the project starts operation, no mitigation measures or community facilities are provided by the proponents. Moreover, other projects' proponents do not even bother to listen to the affected communities unless some individuals or non-governmental organizations come forward and file complaints to the relevant authorities against the proponents (Arts *et al.,* 2001; Sánchez & Gallardo, 2005).

## Environmental and Social Management Plan (ESMP)

An ESMP is an implementation plan for mitigation, protection and enhancement measures that are recommended in the EIA. ESMP is a widely applicable management tool in development projects. The ESMP is one of the important components of EIA in Tanzania, according to the EIA and Audit regulation of 2018 (United Republic of Tanzania, 2018). It is also an essential requirement for environmental safeguards according to World Bank Policy.

Principally, ESMP is required to address the detailed measures to be taken during the implementation and operation of a project to eradicate or reduce significant environmental and social impacts, or to minimize them to acceptable levels (CEMMATS Group Ltd, 2018). Second, it shows the necessary and practical actions required to implement the mitigation measures in the Environmental Statement (Sánchez & Gallardo, 2005). EMP serves to ensure environmental and social (safety, and health) impacts are managed throughout the construction and operation phases.

Since, the main objectives of the ESMP for the Ndanda hospital project were to identify the possible environmental impacts of the proposed sub-projects and develop measures to minimize, mitigate and manage the predicted impacts. While considering the construction and operation phases of the project, the ESMP consisted of mitigation measures; monitoring measures; institutional measures and costs. It clearly shows the potential direct impacts, management measures, indicators, responsible persons and estimated costs at all phases of design, site selection, mobilization/construction, operation, socioeconomic and decommissioning.

## Management and monitoring plans

There are should be monitoring requirements identified through the EIA process to monitor the environmental and social performance of the project. The overall objectives of the monitoring activities are to- (i) ensure regulatory requirements are met; (ii) check that impacts do not exceed project standards and other environmental standards; (iii) verify predictions made in the EIA by obtaining real-time measurements; (iv) verify that mitigation measures are effective and implemented in the manner; (v) provide early warning of potential environmental impacts; and (vi) inform future operations and contribute to continuous improvement in the management of environmental and social issues related to the project.

In the selected EIA report, the Environmental and Social Monitoring Plan is presented. It is presented in the table showing various issues such as potential direct impacts, parameters to be monitored, monitoring frequency, monitoring area, measurement unit, target level/standard, responsibility, and estimated costs. All of these issues are considered in different phases such as site selection, mobilization/construction phase, social-economic, and decommissioning.

## Cost-Benefit Analysis

Cost-benefit analysis (CBA) is a systematic approach to estimating the strengths and weaknesses of alternatives used to determine options that offer the best approach to achieving benefits while preserving savings. In 1848, Jules Dupuit a French engineer and economist introduced the concept of CBA (Vatin *et al.,* 2016). Since then CBA has been applied in

different socioeconomic and environmental studies to explain the costs and benefits of the related projects. CBA is a simple tool, best used for making straightforward financial decisions (Thomas & Chindarkar, 2019). It assumes that benefits should exceed the cost of the project. This theory is best if there are financial projections and data on the related project to implement.

There are three basic stages in the EIA process: (i) a baseline study; (ii) a predictive and evaluative stage; and (iii) a monitoring program. The second stage of the process can be divided into (a) identification of impacts, (b) prediction of impacts, and (c) evaluation of impacts. The role of CBA is at the evaluation stage (Hundloe *et al.,* 1990). Before the selection of the project and reasonable alternatives, a screening process is involved to determine if a full evaluation is required. CBA is appropriate for this undertaking.

Scoping is a related concept, the aim of which is to delineate the central issues in impact assessment. Likewise, CBA is appropriate for this task. CBA can also be used in a monitoring program. The usefulness of CBA can be shown clearly, once it is understood that ultimately impacts occur to resources and attributes that are valued by humans. In many applications of CBA to environmental issues, it is necessary to place monetary values on non-market goods such as clean air, clean water, and biodiversity and wilderness areas (Munda, 1996). Before the project is approved by the proponent it has to pass the net present value test.

In the selected EIA report, the costs and benefits were used to calculate the value of the project in light of social value in terms of the importance of the service to the public. According to the proponent, the net present value of the project was positive with a promising payback period. The conclusion from the developer indicated that the project was economically viable (Kaijage, 2015). Moreover, the report indicated quantifiable and non-quantifiable benefits to the developer, community and the government. Furthermore, Environmental CBA was assessed in terms of negative versus positive analysis. The analysis was considering whether the impacts can be mitigated and the costs of mitigating the impacts were reasonable.

### Project decommissioning plan

Decommissioning is the end of the project life (Invernizzi *et al.,* 2018). The decommissioning report should be prepared either as part of the Environmental Impact Statement (EIS) or separately, indicating how impacts will be dealt with, including costs of mitigation measures, issues on the welfare of workers, or resource users (Bond *et al.,* 2003). To ensure a quality decommissioning plan, International Organization for Standardization (ISO) creates documents that provide requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose (ISO, 2015).

In the selected EIA report, the project decommissioning plan was presented but in terms of the preliminary decommissioning plan. It is presented in brief in two pages without a detailed explanation on how to conduct restoration of the site to a safe condition that minimizes potential residual environmental impact and permits reinstatement of activities.

## COMMUNICATION OF RESULTS

### A critical review of the selected eia report

Guidelines about contents in the EIA and Audit Regulations of 2005 in Tanzania presented the format for EIA report presentation, as indicated in Table 4 (URT, 2005), the layout and presentation of the report depended upon this format. The results were communicated in a form that portrays an image of the format. Interestingly, the baseline data about physical and biological environment, socio-economic and waste management aspects were predominantly obtained from primary and secondary sources. Thus, data were updated, reliable and efficient.

However, the impact identification and assessment were made without using any quantitative techniques/methods. Quantitative methods are statistical techniques that lead to a numerical analysis of the variables that affect the decision-making process and the evaluation of different solutions and alternatives, leading to the adoption of appropriate decisions that achieve the objectives of the project (Sadiq Rababh *et al.,* 2019). A quantitative analyst's main task is to present a given hypothetical situation in terms of numerical values. Quantitative analysis helps in evaluating performance, assessing financial instruments, and making predictions. Quantitative methods are used to find the best ways of allocating resources, especially if these resources are scarce (Corporate Finance Institute, 2020). Interestingly, the language was clear with not a lot of technical words that are difficult to interpret by the readers.

## CONCLUSION AND RECOMMENDATIONS

Conducting a good EIA and disseminating a quality EIA report are important tools for successful project implementation. This is because the high quality EIA report details all socio-economic and environmental concerns related to the specific project. During the implementation of the project, the impacts examined in the EIA report must be closely monitored. However, there may be issues on the implementation side, making the EIA report a mere formality. Therefore, the following recommendations were derived from the critical examination of selected EIA reports:

- Proponents should hire or involve more experts with different specialties to ensure that all socio-economic, environmental and health concerns are examined in detail.
- The consultants must use quantitative methods or techniques to identify and assess the potential socio-economic, environmental and health impacts of the

project.
- The EIA reports should include a detailed and high quality project decommissioning plan.

## ACKNOWLEDGEMENTS

The authors thank the African Union and the Pan African University Life and Earth Sciences Institute for awarding the doctoral scholarship; and the National Institute for Medical Research, University of Dodoma, Tanzania for granting study leave to the authors. In addition, the authors thank Prof. Chris O. Ikporukpo, Prof. A.S. Gbadegesin and Ms. Witness Gerald Mushi for their assistance in writing this paper.

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