

Environmental impact assessment application in infrastructural projects in Malawi

Ishmael Bobby Mphangwe Kosamu

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Abstract The current increase in the number of development projects in Malawi is leading to loss of natural resources and the general degradation of the environment. Both the Malawi Environmental Management Act of 1996 and the Guidelines for Environmental Impact Assessment of 1997, prescribe a list of infrastructural projects that must undergo environmental impact assessment (EIA) before their implementation. This study identifies the key limitations of EIA application to infrastructural projects in Malawi. A desktop study used to gather information in this study involved a review of several documents such as EIA reports, policies and laws, books, journals and internet articles. Primary data was obtained from policymakers, contractors, EIA practitioners and the general public using both structured and unstructured interviews, as well as through questionnaires. Focus group discussions and direct observations were employed wherever necessary in the study. Major limitations to successful EIA in infrastructural projects in Malawi include: (1) limited experience and practice of EIA practitioners; (2) cost of EIA process; (3) limited links between EIA and urban planning procedures; (4) lack of political will; (5) project delays; (6) lack of effective monitoring and auditing, (7) lack of data, especially those to be used in predictive models. This violates the principles of sustainability science and the international best practices for EIA that were developed by the

International Association for Impact Assessment. It is recommended that active environmental management should actively involve the interests of all stakeholders, and that follow up of predicted environmental impacts resulting from any project should entail monitoring, auditing and reporting.

Keywords Environmental management · Environmental impact assessment · Infrastructural project · Sustainability science

Introduction

Malawi is a small landlocked country with a population of about 13.1 million in a land area of 95,776 km². The population density is about 139 people/km² (National Statistics Office 2008), making Malawi one of the most densely populated countries in the world. About 85% of Malawi's population is rural and lives primarily on subsistence agriculture (National Statistics Office 2008). The annual per capita income is US\$ 160 according to the World Bank (2004), and it is estimated that 65.3% of the population lived below the poverty line between 1997 and 1998 (National Economic Council 2000).

It has been realized that poverty in Malawi is one of the root causes of environmental degradation. Some of the environmental problems in Malawi include soil erosion, deforestation, water resources degradation, fisheries depletion, loss of biodiversity, air pollution, and human habitat degradation. The rate of deforestation between 1990 and 2000 is estimated at an annual rate of 2.4% (United Nations Food and Agriculture Organisation 2001). This is the tenth highest rate of deforestation in Africa and is significantly higher than both Africa's deforestation rate of

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I. B. M. Kosamu (✉)
Department of Physics and Biochemical Sciences,
The Polytechnic, University of Malawi,
Private Bag 303, Blantyre 3, Malawi
e-mail: ikosamu@poly.ac.mw; ishkosamu@yahoo.com

0.78% and the world's average deforestation rate of 0.22% (United Nations Food and Agriculture Organisation 2001).

In an effort to improve the livelihood of the people (poverty reduction), the government of Malawi is faced with the challenge of building social and physical infrastructure while at the same time safeguarding the environment.

To avoid detrimental effects that development projects can have on natural resources, environmental impact assessment (EIA) is now being embraced and used as a tool within the wider context of serving the objectives of sustainable development. This role was highlighted at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in June 1992. This conference (also known as the Earth Summit) came up with a document now known as 'Agenda 21', in which principle 17 of the Rio Declaration—to which Malawi is party—states:

“Environmental Impact Assessment as a national instrument, shall be undertaken for proposed activities that are likely to have adverse impact on the environment and are subject to a decision of a competent national authority” (United Nations Conference on Environment and Development 1992)

Since then, EIA has spread throughout the world to ensure that environmental values are considered in development planning.

In this regard, Malawi prepared and adopted a National Environmental Action Plan (NEAP) in 1994. The NEAP estimated that the discounted economic cost of the major forms of degradation amount to over 10% of the formal Gross Domestic Product (Department of Environmental Affairs 1994). This is quite a substantial income loss considering the size of Malawi's economy.

The Malawi parliament passed the Environmental Management Act (EMA), (Act No. 23, 1996) on 28 June 1996. Following the enactment of the EMA, the Department of Environmental Affairs (DEA) was created and charged with the responsibility to oversee, coordinate and supervise the operationalization of the EIA process in Malawi. In accordance with the provision of the EMA, the Department of Environmental Affairs developed the Guidelines for Environmental Impact Assessment in Malawi in 1997. List A4 of these guidelines outlines that some infrastructural projects must undergo EIA before their implementation (Department of Environmental Affairs 1997).

Despite all these developments, Malawi has generally been slow to incorporate EIA as a regular planning and monitoring tool for sustainable project execution.

In other countries, such as Japan, EIA has often been used to justify development decisions and to avoid public

opposition rather than to prevent environmental degradation (Barret and Therivel 1989). This was seen to be common especially when project proponents were a government department. In certain cases, due to the diversity in national interests, environmental considerations were deliberately overshadowed or squeezed into other “high profile” programmes. In the process, many plant, animal and marine species have been lost. In Lithuania, EIA as a process faces many challenges including incompetent authorities, political pressure and inadequate EIA experts (Kruopiene et al. 2009). Similar challenges were observed in Sri Lanka, Hong Kong and Portugal (Zubair 2001; Hung 2007; Ramos et al. 2008), in addition to lack of environmental data and effluent standards. Studies on the Island of Mauritius highlighted lack of EIA follow-up monitoring as the major challenge in the EIA system (Ramjeawon and Beedasy 2004).

The focus of this paper is to look at the main challenges that are crippling the EIA mechanism in Malawi, with particular focus on infrastructural projects.

Methodology

A pre-selection was conducted among organizations that are involved in infrastructural development. These include road construction, irrigation projects, housing projects, industrial site development and hospital construction. Only organisations that had previously submitted EIA reports to the Department of Environmental Affairs were used to come up with a statistical population. A total of 20 private and public organisations were thus identified. The study was conducted between August and November 2008. Primary and secondary data were obtained using a desk review and a national survey. The aim was to answer some key questions, e.g., is data available to support EIA decision making? Do politics affect the EIA process? What resource constraints are there? Is EIA as a process considered throughout the project cycle?

Desk research

A desk review of such documents as EIA reports submitted to DEA, policies and laws, books, journals and internet articles, was carried out. Some of the key documents reviewed include : National Environmental Policy of 2004, National Water Policy of 2004, National Strategy for Sustainable Development of 2004, Malawi Economic Growth Strategy of 2006, National Land Policy of 2002, National Environmental Action Plan (NEAP) of 1994, National Adaptation Programme for Action (NAPA) of 2006, National Environmental Policy, Environmental Management Act of 1996, EIA guidelines of 1997, Water

Resources Act of 1969, and the Water Pollution Control Regulation of 1978.

The quality and adequacy of the EIA reports submitted to DEA were examined using the criteria listed in Table 1.

Figure 1 shows how the review was carried out. Assessment starts at the lowest level, which is a sub-category level (level 1). Each sub-category is awarded an alphabetic symbol (A, B, C, D or E) as a grade according to the quality of information presented under that sub-category. In this case, A = Excellent, B = Good, C = Satisfactory, D = Poor, E = Very Poor. An average grade then is calculated for each respective category at level 2. In this

way, the average grade for each area at level 3 was calculated. Finally, from the grades given to each area, an overall average grade of the EIA report was determined (level 4). Where there is no information under a sub-category, or the sub-category was not attempted at all, 'N' is assigned to complete the record.

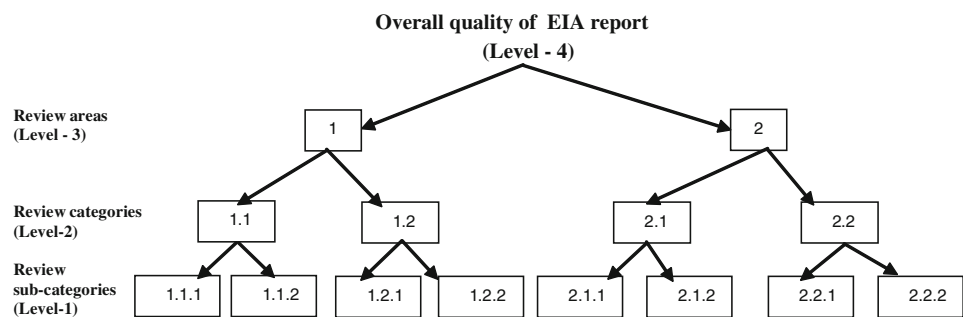
Field survey

Primary data was obtained from EIA practitioners, policy makers, contractors and the general public using both structured and unstructured interviews as well as through

Table 1 Criteria for quality and adequacy of an environmental impact assessment (EIA) report

1. Description of the development and baseline conditions (Area#1)	3. Environmental management plan and follow-up (Area#3)
1.1 Description of project	3.1 Mitigation measures
1.1.1 Background and objectives of project	3.1.1 Description of adverse Impacts to be mitigated
1.1.2 EIA aims and scope	3.1.2 Mitigation measures with justification
1.1.3 Policy and legal framework for EIA	3.1.3 Implementation arrangements of mitigation measures
1.2 Description of project	3.1.4 Residual impacts
1.2.1 Location of project	3.2 Follow-up: monitoring program
1.2.2 Project components and activities	3.2.1 Parameters/activities to be monitored
1.2.3 Selection of project alternatives	3.2.2 Monitoring plan and implementation arrangements
1.3 EIA: approach and methodology	3.2.3 Reporting and communication of monitoring result
1.3.1 Screening	4. Presentation of EIS (Area#4)
1.3.2 Scoping and bounding	4.1 Layout
1.4 Environmental baseline	4.1.1 Logical arrangement of information
1.4.1 Natural physical environment	4.1.2 List of references
1.4.2 Biological Environment	4.2 Presentation
1.4.3 Socio-economic environment	4.2.1 Comprehensible to non-specialist
1.4.4 Sources of data with justification	4.2.2 Defining technical terms
2. Identification and evaluation of key impacts (Area#2)	4.2.3 Presented as an integrated whole
2.1 Identification of impacts	4.3 Executive summary
2.1.1 Description of impacts identified at different phases	4.3.1 Non- technical summary
2.1.2 Beneficial impacts and adverse impacts	4.3.2 Recommendations
2.1.3 Methods used for identifying impacts with justification	
2.2 Evaluation of impacts	
2.2.1 Prediction of impacts	
2.2.2 Significance of impact on affected community	
2.2.3 Significance of impact on bio-physical environment	
2.2.4 Methods used for evaluation of impacts	
2.2.5 Risk and uncertainties	
2.3 Alternatives	
2.3.1 Analysis of alternatives	
2.3.2 Selection of alternatives	
2.4 Community involvement	
2.4.1 Description of community	
2.4.2 Involvement of community at different stages	
2.4.3 Approaches of community involvement	
2.4.4 Findings of community involvement	

Fig. 1 Assessment criteria for quality and adequacy of environmental impact assessment (EIA) reports. Adapted from Lee et al. (1999)



questionnaires using both open ended and closed questions. This data was used for qualitative analysis. Most communities in Malawi have formed local associations that look at the pros and cons of proposed development activities within an area. The associations are known as Development Associations (DAs) and are comprised of people's representatives on development issues at community level, including Chiefs and Village Headmen. When there is a proposed project, contractors first have to consult these associations. The associations then facilitate meetings with the stakeholders in the area. Six focus group discussions were held as a means of obtaining information regarding EIA. These focus group discussions provided an opportunity to observe and gather important information from the respondents. This particularly worked well for the illiterate.

Results and discussion

Limited experience and practice of EIA practitioners

An evaluation of the human resource capacity indicates that a lack of well-qualified EIA practitioners is a serious constraint to effective EIA performance in Malawi. Some environmental units do not have the technical or clerical/support staff to manage the EIA process adequately. Even when specialists exist, many of them lack sufficient experience and training in doing environmental audits, let alone to review EIA reports prepared by project proponents. Tarr (2003) reported that Malawi had only three professionally trained EIA personnel. Although this is not entirely true, as highlighted by a random sample from six developers (Table 2), the truth still remains that Malawi has very few EIA experts. It is not surprising that Spong and Walmsley (2003) noted that some EIA reports were returned to proponents because individual consultants instead of multi-disciplinary teams had prepared them. Figure 2 highlights the quality of EIA reports in Malawi.

Similar observations have been made in Angola, South Africa and Botswana (Rossouw et al. 2003; Mpotokwane and Keatimilwe 2003). As best practice, the EIA process should ensure that the appropriate techniques and experts

Table 2 Number of EIA experts for selected developers in Malawi

Developer	Number of EIA experts
Terrastone	0
EMC Jatula Associates	1
Mota Engil	2
Fargo	1
Mkaka Civil Engineering	0
Cilicon	0

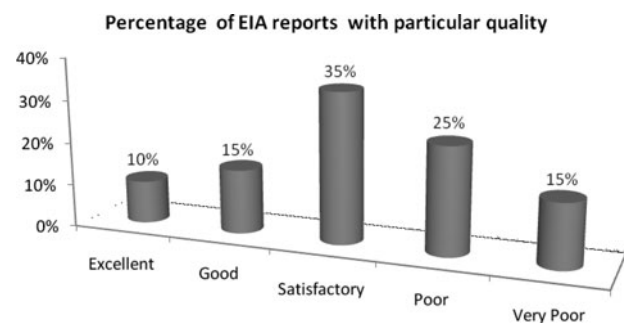


Fig. 2 Quality of EIA reports in Malawi

in all relevant disciplines are employed (International Association for Impact Assessment 1999). Tertiary education should be supported to create a sustainable future through human resource development (Onuki and Mino 2009).

Cost of EIA

EIAs are conducted to reduce waste and therefore improve the effectiveness of resource utilization. It is pleasing to note that most donor funded projects in Malawi are now requiring EIAs as a condition for providing funds and support for projects. While EIAs involving international funding institutions are usually of reasonable quality, EIAs by local proponents are often completed in cursory manner. Many EIA procedures and recommendations (monitoring networks, environmental management plans, and auditing programmes) are simply ignored as a consequence of

financial constraints. The International Association for Impact Assessment (IAIA) recommends that, as best practice, an EIA process should achieve its objectives with the limits of available information, time, and resources (IAIA 1999). Of the 20 project proponents (especially small and medium-scale entrepreneurs) that were interviewed, 60% cited the high costs of compliance with EIA requirements as a demoralizing factor. The study noted that there are some contractors who have opted to develop illegally and, if approached by the environmental authorities, they claim that their structures were developed before EIA was implemented in Malawi. Authorities at the Department of Environmental Affairs confirmed this malpractice. This is unfortunate because if environmental costs were fully integrated in the planning process, EIAs would not be regarded as an economic burden, but rather as a means of promoting sustainable development. There is, however, ongoing debate about the link between sustainable development and EIA. It is argued that, to some extent, EIA as a practice serves as one of the tools for the promotion of sustainable development. Unfortunately, most developers consider approval of the EIA report as the end of the matter. The real costs of the EIA process are in the long-term activities of monitoring and auditing.

Links between EIA and urban planning procedures

The Town and Country Planning Act of 1988 requires that a proponent must submit a layout plan for any proposed infrastructural development project to a Town and Country Planning Committee for approval. Although approval requires a sound plan by the proponent to ensure environmental sustainability, this study noted that in some cases (e.g., Department of Physical Planning and Surveys: South) the officers responsible for town planning had no copy of the EIA guidelines although they constantly need them for their job. It is important that these officers should coordinate with environmental agencies, especially the DEA, to enhance effective project approval. Spong and Walmsley (2003) also mentioned that developers sometimes learned of the need to undertake EIAs only after they had completed detailed design and feasibility studies.

Political will

Despite the authority of the city and town assemblies (local authorities) to require environmental considerations in project approval, most EIAs in Malawi are either donor driven or ad hoc. Moreover, decisions by the DEA are often subject to constraints, depending, for example, on whether current government policy supports or opposes the proposed project or whether the project proponent is a government authority. This may limit DEA authority in

requiring, reviewing or monitoring EIA implementation. There was a case in which delayed road construction until an EIA was done flared up into political conflict and public outcry. Political commitment and will are necessary if EIA and the project are to achieve their intended results (Shpyth 1991). In fact governments and responsible authorities are trustees of public resources and should therefore offer guidance to project proponents.

Project delays

Any proponent of a project that falls under the prescribed list of projects (i.e., projects that require an EIA) must first of all present a project brief to the Technical Committee on the Environment (TCE) which draws Terms of Reference (TORs) for an EIA of the project. After an EIA report has been prepared and submitted to the DEA, the TCE reviews the report and recommends amendments to the report prior to the approval. It is only after a thorough amendment to the report has been done that the TCE gives a go-ahead to the DEA to offer a certificate of approval. This cycle of events, which in most cases is bureaucratic, takes a long time. Project proponents have complained that this causes project delays or withholding of funds by donor organizations. It is very important that the duration of the EIA process be minimal to reduce the financial burden on the project proponent during the waiting period.

Lack of effective monitoring and auditing

The Environmental Management Act of 1996 notes the need for monitoring and auditing after a project receives its certificate of approval. However, in many cases, once a license is issued, there is very little control or enforcement of EIA requirements and/or conditions. It is not surprising therefore to note that there are some unlicensed developments that take advantage of the lack of enforcement capacity. The lack of monitoring and auditing also reduces the ability to get feedback on the effectiveness of the mitigation measures that are proposed and implemented. Thus, the DEA cannot identify success stories or learn from past experiences to improve the formulation and implementation of future EIAs. There is an urgent need to emphasize that approval of an EIA report must not mistakenly or intentionally be regarded as the end of the matter by the project proponents. In fact the real, long-term activities of EIA implementation come under monitoring and auditing. Poor governance and corruption have also been highlighted in most African countries. A good example is the Rufiji prawns project in Tanzania, where cabinet had a greater say on approval than the National Environmental Agency (Lissu 1999).

Lack of data

A complete, objective and verifiable EIA requires that up-to-date and accurate data are available for all aspects of the project. Baseline information includes the establishment of both the present and future state of the environment in the absence of the project (Denis 1999; Morris and Therivel 1995). Lack of data for use, especially in predictive models, poses a major challenge to EIA practitioners in Malawi.

There is little information defining baseline environmental conditions upon which subsequent environmental analysis is based. This lack of data renders EIA predictions unreliable and promotes the use of qualitative rather than quantitative indicators. This means that, in many cases, decisions are based on speculation, personal judgment, or past experience rather than scientific analysis and prediction. The recommendations given in EIA may therefore be inappropriate or impractical, resulting in poor efficiency, timeliness and credibility of an EIA process.

In some cases, data generation requires laboratory studies. In most research centers and university colleges in Malawi, testing facilities are limited. If Malawi is to develop a sustainable society as highlighted by Komiyama and Takeuchi (2006), then there is an urgent need to develop environmental databases for successful EIAs. The data that is gathered should actually be used to adjust environmental monitoring plans, as was successfully done in the Volta Development Scheme in Ghana (Kalitsi 1999).

Conclusion

The future of EIA in Malawi very much depends on the genuine integration of EIA into the planning process. The number of EIAs carried out has increased dramatically between 1998 and 2008. Between 1998 and 2002, only 35 EIAs were performed. This figure has increased to 394 as of 2008. However, as established, very few of these reports (25%) are of good quality due to such issues as lack of data, cost of EIA, lack of human resources, project delays and lack of effective monitoring, auditing and reporting. All concerned stakeholders must therefore address these issues in order to make the EIA process and outcomes in Malawi effective. The existence of the lead agent, the DEA, has improved the EIA process considerably in many ways. Empowering the lead agent with financial and human resources would reduce the current inability to effectively monitor and audit EIAs. Politicians also play a very important role in informing the public on issues of environmental management. In Malawi, however, most politicians know very little about EIA. This means that the

public in Malawi is not getting enough, correct information on issues relating to EIA. This is an area that requires more investment from both the government of Malawi and development partners such as the World Bank in order to improve dissemination of information to the public. Curriculum in the educational institutions in Malawi should, to a certain extent, be framed to capture issues of environmental management. University of Malawi and Mzuzu University have recently started both Bachelors and Masters Degrees in Environmental Sciences and this will certainly build local capacity on issues of Environmental Impact Assessment.

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