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Research article

An evaluation of the environmental impact assessment practice in Uganda: challenges and opportunities for achieving sustainable development

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ABSTRACT

Environmental Impact Assessment (EIA) is a broad process that emerged from the National Environment Policy Act, 1970 in the U.S. Its primary objective is to generate information on the likely impacts of a project on all aspects of the environment and used in agency decision making and in the long run protect the environment and achieve sustainable development. EIA practice in Uganda was formally established through the National Environment Act, 1995 and now in practice for over 25 years. However, there is increasing level of water pollution especially Lake Victoria, rivers, streams, aquifers and soils. This research reviewed the institutional, legal and regulatory framework for EIA, related literature and EIA documents especially EIA reports and conducted key EIA stakeholders survey using questionnaires to identify capacity and practice issues. The results revealed that, there was gap between law and practice arising from inadequate and ineffective public participation, weak follow-up, low key stakeholder's capacity, political interference, lack of SEA practice and not embracing EIA in a transboundary context. However, there is fairly good and comprehensive institutional, legislative and regulatory framework for EIA, good local governance structures, adequate staffing, robust national planning framework, active non-state actors and regional groupings. In order to maximize the potential of EIA as a means for achieving the SDGs, we recommended measures to address the challenges facing the EIA practice as well as utilize the existing opportunities within the context in which EIA is applied.

1. Introduction

Environmental impact assessment (EIA) is a broad process that emerged from the National Environmental Policy Act 1970 (NEPA) in the U.S. It is the process of assessing proposed action for their likely effects for all the aspects of the environment before decisions are taken to commit to these actions and developing appropriate responses to the issues identified in the assessment (Morgan, 2012). NEPA require federal agencies to produce environmental impact assessment statements (EISs) for projects under their authority to explain to the public that all the impacts of the proposed undertaking on all aspects of the environment are identified and addressed before implementing the project.

The basic principle of EIA is that, it should be participative (Jigme Choki, 2015) and public participation has been considered as an essential integral component of EIA since its inception through the NEPA process. According to (Enserink et al., 2006) different levels of public participation may be relevant to the different phases of an EIA process from initial community analysis and notice of the proposed intervention to approval decision making, to monitoring and follow-up. However, to maximize the potential of EIA as a tool for achieving the sustainable development goals (SDGs), public participation during the EIA process ought to be emphasized at the policy level (strategic environmental assessment), the initial EIA phases especially scoping, but also important during the study, review, monitoring and post - environmental audit conducted in line with the SDGs.

The original objective of EIA is to generate relevant data and therefore information which must be used in the decision making processes of environmental agencies and such should be well documented. According to the UN (2019) global issue, big data through different sources and new analytical approaches, if applied well can enable more agile, efficient and evidence – based decision making and can better measure progress on the SDGs in a way that is both inclusive and fair. Big data gives unprecedented power to understand, analyze, forecast or predict and ultimately change the world to be a better place to live. Big data made into open

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data ensure power is shared bearing a huge potential to transform the way policies, plans and projects are made (Maaroof, 2015, p. 16). A big data –driven approach such as in Deng et al. (2020, p. 8) offers novel insights into local policy or project evaluation and suggest the need for joint control strategies. This approach is particular relevant for Uganda with various transboundary resources including lakes and rivers.

Today many scholars (Bond and Pope, 2012; Kolhoff et al., 2016) consider environmental protection and sustainable development as the substantive objective of EIA which currently is to be achieved through the SDGs with 17 integrated goals, 169 targets and 232 indicators (UN, 2019; Woolbridge, 2015). Achieving the SDGs require integrated action on social, environment and economic challenges with a focus on inclusive, participatory development that leaves no one behind (UN, 2019) which EIA should be able to achieve.

The SDGs view the economy, society and the environment as embedded system and not competing "pillars (Woolbridge, 2015). Whereas, the Millennium Development Goals (2000–2015) maintained a retrospective narrow focus on poverty reduction, the SDGs include new themes which reflect an approach that sees the environment, economy and society as embedded systems rather than separate competing "pillars": e.g. urban areas, water and sanitation, energy and climate change are all promptly featured (Woolbridge, 2015, p. 2).

The SDGs are highly "integrated" and "interdependent"; for example, using coal to improve energy access (goal 7) in the Asian countries, say, would accelerate climate change and acidify the oceans thereby undermining goals 13 (climate action) and 14 (life below water) as well as accelerating damage to health due to air pollution which also disrupts goal 3 (good health and wellbeing (Nilsson et al., 2016, p. 321). Therefore, for the 2030 Agenda on sustainable development to be able to deliver on its potential, the EIA process should be able to ensure that mutually reinforcing actions are taken and trade-offs minimized.

The study (Le Blanc, 2015, p. 1, 7) reflected that, two proposed goals 12 (sustainable consumption and production) and 10 (reduced inequality) provide critical connections among other goals and make the SDGs more tightly linked as a network. SDG 12 (responsible consumption and production) is linked to 14 other goals while SDG 10 (reducing inequality) is linked to 12 other SDGs through targets. For example, we cannot ensure clean water and sanitation (SDG 6), as well as end poverty (SDG 1), zero hunger (SDG2), ensure good health and wellbeing (SDG 3) and so on when our air, waters, soils are polluted and other natural and environmental resources are degraded. The role of the EIA is to ensure that, production, consumption and related activities as well as other development projects protect and ensure sustainable resource utilization.

In Uganda, the SDGs have been mainstreamed in the Second National Development Plan (NDPII) making it one of the first countries to develop its NDP in line with the SDGs. Sectors and local governments (LGs) are expected to align their development plans and policies to the NDP. There is a fully fledged national SDGs secretariat in the office of the Prime Minister and the President has appointed the Minister in charge of General Duties as the Cabinet Focal Point Minister in charge of SDGs. With this robust national planning framework and SDG institutionalization, "geared up" impact assessment might be used as a major means to facilitate the achievement of the SDGs so long as it is comprehensive, strategic and integrated in its application (Morrison-Saunders et al., 2020). It is generally accepted that, SEA and impact assessment in general can play an instrumental role in fostering sustainable development and the paper (González Del Campo et al., 2020) has illustrated the opportunities for mutualism between SEA and the SDGs. However, SEA practice has not been in practice in Uganda for the last 25 years of EIA practice and hence a missed opportunity.

Our search in the Ronald B. Mitchell and the International Environmental Agreements (IEA) Database Project, 2002–2019, reveal that, Uganda has ratified several MEAs with provisions for EIA which include; the Convention on Wetland of International Importance Especially as Waterfowl Habitat (1971), the United Nations Convention on the Law of the Sea (1982), the United Nations Framework Convention on Climate Change (1998), the Convention on Biological Diversity (1992) and the Convention to Combat Desertification in these Countries Experiencing Serious Drought and/or Desertification Particularly in Africa (1994). The later three are the outcomes of the United Nations Conference on Environment and Development, Rio, 1992. The Rio Declaration on Environment and Development 1992, Principle 17 states that EIA, as a national instrument, shall be undertaken for proposed activities that are likely to have significant adverse impact on the environment and are subject to a decision of a competent national authority.

In order to provide for sustainable management of the environment and as a commitment to the MEAS, the practice of EIA in Uganda was established by the National Environment Act (NEA), 1995 which was being repealed at the time of conducting this research. According to the National Environment Management Authority (NEMA) Bill 2017, the reasons for repealing the NEA, 1995 were to make it conform with existing government policies, to continue the existence of NEMA which is the competent authority established the under the NEA 1995. It was also to provide for emerging environmental issues such as climate change, management of hazardous wastes, environmental concerns related to petroleum activities, management of plastics and plastic products, to introduce international best practices such as SEA, to establish an Environmental Protection Force and Environmental Tribunal and to enhance penalties for offences under the Act and other related matters.

Despite the 25 years of EIA practice in Uganda, several studies including (Bateganya et al., 2015; Ochieng et al., 2010; Kayima et al., 2008; Mbabazi et al., 2010; Mghweno et al., 2008; Namuhani, 2015; Oguttu et al., 2008; Walakira and Okot-Okumu, 2011; Scheren et al., 2000; Sekabira, 2010) reveal increasing levels of pollution of lakes particularly Lake Victoria, rivers, streams, aquifers and soils due to discharge of untreated industrial and agricultural effluents and increased degradation of wetlands. Many authors allude that, despite the existence of good guidelines and environmental legislations, environmental degradation continue to be a good concern of developing countries (Alshuwaikhat et al., 2007, p. 311). However, there has been no research in Uganda to find out the inherent and contextual factors limiting EIA in addressing these prevailing environmental concerns despite the practice of EIA in Uganda for the last 25 years.

The objectives of this research were therefore to review the institutional, legal and regulatory framework for EIA, identify gaps between theory and practice and the challenges involved, identify the opportunities within the context in which EIA was applied, and make recommendations to address the challenges and utilize the opportunities to make EIA an effective means of achieving sustainable development within the framework of the SDGs.

2. Methods and materials

The research focused on EIAs for manufacturing industries with operation permits issued by the NEMA between 2000 and 2005. The research used mixed methods (both quantitative and qualitative) and data was collected between June 2018 and August 2019. Data was collected in two phases. The first phase involved the in-depth review of the institutional, legal and regulatory framework for EIA identifying the key legal and regulatory provisions and the institutional set-up. The second phase was survey of key EIA stakeholders to establish the stakeholder's capacities and actual EIA practices. Data was collected by review of literature on the institutional, legal and regulatory framework for EIA in Uganda and documentary (EIA reports) analysis. The second phase was key EIA stakeholders survey using questionnaires designed for various categories of key stakeholders who included developers, environment officers, the affected community and staff of environmental Non – Governmental Organizations (ENGOs). The development of the questionnaires was informed by the information generated in the first phase of data collection. Interview guides were used to collect information from key informants (heads of directorates in the NEMA).

In total 179 respondents were interviewed (5 heads of departments and sections in the NEMA, 44 natural resource and environment officers, 100 households around 4 manufacturing industries, 30 staff from 17 ENGOs). The heads of the directorates and sections interviewed where selected by virtue of their positions as heads of departments and sections directly responsible for EIA i.e. departments of environment monitoring and compliance, the EIA coordination unit, district support coordination and public education, policy planning and information and legal affairs section. The natural resources and environment officers interviewed were selected using systematic sampling based on the district natural resources officers, district and municipal environment officers list as at February 2015 which was obtained from the NEMA.

The 4 processing and manufacturing industries where systematically selected from the list of processing and manufacturing industries approved during the years 2000–2005 which was obtained from the NEMA, EIA coordinating unit. 25 households within the radius of not more than 1 kM from each of the 4 processing and manufacturing industries were selected using systematic sampling. The household heads were interviewed and because the household list could not easily be obtained, households at an interval of two to the north, east, south and west of the manufacturing industry were selected for the interview.

The 30 ENGOs where identified from the EIA reports for the period between 2000 and 2017 which participated in the EIA processes. From the 30 ENGOs only 17 could be located and 30 staff (at least one from each of the ENGOs) were selected. The staff from the ENGOs were selected because of their positions in relation to EIA activities. The staff of the ENGOs were asked to rate their level of satisfaction with their relevant capacities required for EIA and their role in the EIAs processes. The rating was based on a Likert-scale of 1–5 where 1 = neutral, 2 = very dissatisfied, 3 = dissatisfied, 4 = satisfied and 5 = very satisfied.

Data was analyzed using descriptive statistics particularly frequencies, percentage scores, and mean scores. Spearman's correlation was used to establish the relationships between potential factors that were likely to influence the role of ENGOs in EIA (independent variable) and the role of ENGOs (dependent variable). The role of the ENGOs in EIA was defined by 12 components which included participation in public hearing, submission of comments on EIA reports, involvement in decision making, public campaign, direct action, post environmental audit, collaboration with other stakeholders, facilitating grievances mechanism, education and awareness creation, community training on environmental rights, lobby and advocacy, and support to society. These factors were transformed into a single variable (Y = Role of ENGOs in EIA). The role of ENGOs were assumed to likely be affected by ENGO's ability to access and disseminate EIA information (X_1), ability to access and use equipment for monitoring pollution (X_2), ability to collaborate with other stakeholders (X_3), and the institutional and regulatory framework for EIA (X_4). These factors were operationalized by their own sub-components and a general linear regression model; $Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \mu_i$ was formulated to mainly test for the significance of these factors which were likely to affect the role of ENGOs in EIA (Y) . In the model, α is the coefficient of the factors likely to affect the role of ENGOs and μ_i is the error term.

3. Results and discussion

The National Environment Action Plan (1991–1994), the subsequent National Environment Management Policy, 1994, the 1992 United Nations Conference on Environment and Development and the MEAs that ensued, the international organizations (World Bank, ADB, UNDP, UNEP) and regional environmental agreements have influenced and continue to influence the development of policies, enabling laws and institutions for sustainable management of the environmental in Uganda including the use of EIA. The institutional, legal and regulatory framework for EIA comprises of the enabling laws particularly the 1995 Constitution of the Republic of Uganda, the EIA law framework (NEA 1995, now NEA, 2019), sector specific legislations and the EIA regulations (now the ESIA Regulations, 2020) and other related regulations.

3.1. The constitution of the Republic of Uganda, 1995

The 1995 Constitution of the Republic of Uganda (the supreme law of the country) has rich provision for environmental protection and natural resources conservation. These include among others; the National Objective and Directive Principles of State Policy, Objective XIII and XXV11 mandates the state and local governments (LGs) to protect the important natural resources on behalf of the people of Uganda and promote sustainable use of natural resources respectively.

Article 39 of the 1995 Constitution grant constitutional right to clean and healthy environment for every Ugandan while article 17 (1) (j) impose duty on every citizen to create and protect a clean and healthy environment. Article 41 (1) provide that, every citizen has a right of access to information in the possession of the state or any other organ or agency of the state except where the release of the information is likely to prejudice the security or sovereignty of the state or interfere with the right to the privacy of any other person. This can be interpreted to include right of access to environmental information to which the aforementioned exceptions do not apply.

Article 50 (1) & (2) stipulate mechanisms for enforcement of the above rights. It provides that, any person who claims a fundamental or other rights or freedom guaranteed under the Constitution has been infringed or threatened is entitled to apply to a competent court for redress which may include compensation and any person or organization may bring against violation of another persons' or groups' human rights.

Article 237 (2) (b) of the Constitution provides that, the Government or LG as determined by parliament by law, shall hold in trust for the people of Uganda and protect, natural lakes, rivers, wetlands, forest reserves, national parks, and any land to be reserved for ecological and tourist purposes for the common good of all Ugandans.

These provisions offer civil society and the general public an opportunity of protecting and conserving the environment and important natural resources through public interest litigation. This opportunity has been utilized in some cases such as the Environment Action Network Ltd v. Attorney General and NEMA, Green watch v. Attorney General and NEMA, Environmental Action Network Ltd v. British America Tobacco Ltd, Greenwatch and another v. Golf Course Holdings Ltd, Byabazaire Grace Thaddeus v. Mukwano Industries Ltd at the High Court of Uganda. However limited judiciary review, lack of awareness of environmental rights and obligations, and limited judiciary capacity are the main challenges to the judiciary protection of these environment related rights (Twinomugisha, 2007 pg, 257).

3.2. The NEA 1995 (repealed by the National Environment Act, No.5 of 2019)

The NEA, 1995 part III established the institutional set-up for environmental management in Uganda. Section 4 of the Act established the NEMA as the competent authority with powers to coordinate, monitor and supervise all activities in the field of the environment. NEMA is headed by an Executive Director (ED) and is an agency of the Ministry of Water and Environment (MWE). The policy making body for the NEMA is the Policy Committee on the Environment (PCE) which comprise of 11 members. These includes ministers of relevant ministries, the prime minister (equivalent of cabinet secretary in other countries) as the chairperson. The chairperson of the board of directors and the ED, NEMA are ex-officio members of the PCE.

There is a Board of Directors for the NEMA, appointed by the minister MWE and approved by the PCE. The Board of Directors is responsible for overseeing the implementation of policies and the functions of the authority. The membership of the board comprises of the chairperson, the vice chairperson, one representative each of ministry of agriculture, animal industry and fisheries, MWE, ministry of finance, planning and

economic development, two representatives each of academia and research institutions, local non-governmental organizations (NGOs) and the private sector and one representative from the ministry of tourism, wildlife and antiquities. The board has an excellent composition representing government, the academia, civil society and the private sector unlike the PCE which comprise of political elites only.

The Board of Directors can on the advice of the ED, appoint as many technical committees as it considers necessary to give advice on matters relating to the environment. Within this provision, there is a technical committee on EIA to advice the board and the ED on technical matters relating to carrying out EIA as required under the Act and other relevant laws.

NEMA consists of five directorates which include, office of the ED, finance and administration, district support coordination and public education, policy planning and information, environmental monitoring and compliance (EMC). The directorate of EMC is responsible for EIA and ensures effective implementation of EIA.

Uganda operates decentralized governance system based on LGs, as such some of the functions of the NEMA such as environmental awareness promotion, EISs review, monitoring, environmental audit and compliance enforcement and others are delegated to districts (the higher LG unit) while the center (the NEMA) retain absolute powers for final review, approval and licensing. Districts and lower LG units are encouraged to recruit and designate environment officers (EOs) for that purpose and other functions related to environment planning and management at the LGs. LGs are also encouraged to established district environment committees (DECs) and local environment committees (LECs) at the district and lower local government units respectively. The EO is the secretary to the DEC and the DECs, the LECs and the EOs are part of the institutional set up for environmental management including EIA under the NEA 1995.

The survey results revealed that, out of the 44 EOs interviewed, 38 (86.4%) reported formal establishment of DEC in their districts while only 6 (13.6%) did not and 29 (65.9%) had LECs formally established and only 15 (34.1%) did not have formally established LECs.

Majority 18 (40.9%) of the EOs reported that, the DEC often meet which is relatively more frequent compared to the LECs meetings (see Figure 1). On the other hand, majority 17 (38.6%) reported that, the LEC rarely meet, 7 (15.9%) reported LECs never meet, 8 (18.3%) reported that, the LECs sometimes meet, 10 (22.7%) reported that, the LECs often meet and 2 (4.5%) were neutral. The issues mainly discussed relate to environmental protection such as illegal charcoal burning, illegal logging and licensing of timber products, waste management at the community level, water and sanitation.

This LG structure present an opportunity for promotion of consultative mode of decision -making which is one of the objectives of EIA (Macintosh, 2010) and the LG structures can be used to promote the governance commitment of Agenda 21. Just as argued (Alshuwaikhat, 2005, p. 314), to ensure that sustainable development needs are implemented at local level and impact assessment is to be considered a tool for promoting sustainable development, SEA should be established in Local Governments such as municipals and applied by the local authorities on a regular basis. The robust national planning framework (the NDP) to which the LGs are to align their development plans offers an excellent opportunity for the application of SEA which is now been introduced under section 47 of the NEA, 2019 and guided by the SEA Regulations, 2020.

The survey also revealed positive trend in the recruitment and designation of environment officers by LG units since the coming into force of NEA, 1995. This was further encouraged because one of the thematic area for annual LG assessment by Ministry of LG is the extent to which LGs have mainstreamed environment in development planning. Out of the 44 EOs interviewed, majority 19 (43.2%) had master's degree, 11 (25%) had postgraduate diplomas and 1 (2.3%) had PhD qualification while 13 (29.5%) had bachelor degrees in environmental science related disciplines which is the minimum requirement. If these EOs are well facilitated, equipped, skilled and motivated, they offer an opportunity for EIA to be implemented following rational-scientific process which is one of the principles for EIA effectiveness as an instrument of sustainable development (Morrison-Saunders, 2011). In addition, monitoring and compliance enforcement will be enhanced thereby ensuring sustainable consumption and production (agenda 12) which is linked to 14 more other goals related to water, good health and wellbeing etc. according to Le Blanc, (2015, p. 7).

The challenge we found was that, 31 (70.5%) of the 44 EOs interviewed reported not having any pollution monitoring equipment (air pollution sensors, sound level meters, water quality test equipment) in their departments. 30 (68.2%) did not receive any training on the use of these equipment while only 14 (31.8%) did. They take samples to the center (the NEMA) for analysis or assess pollution from observing physical properties. In the case of noise pollution, they rely on complaints from neighbors around facilities. This constrains the capacity of the EOs to undertake monitoring and enforce compliance to environmental standards which is reported in the Uganda Vision 2040 pg. 98 to be low.

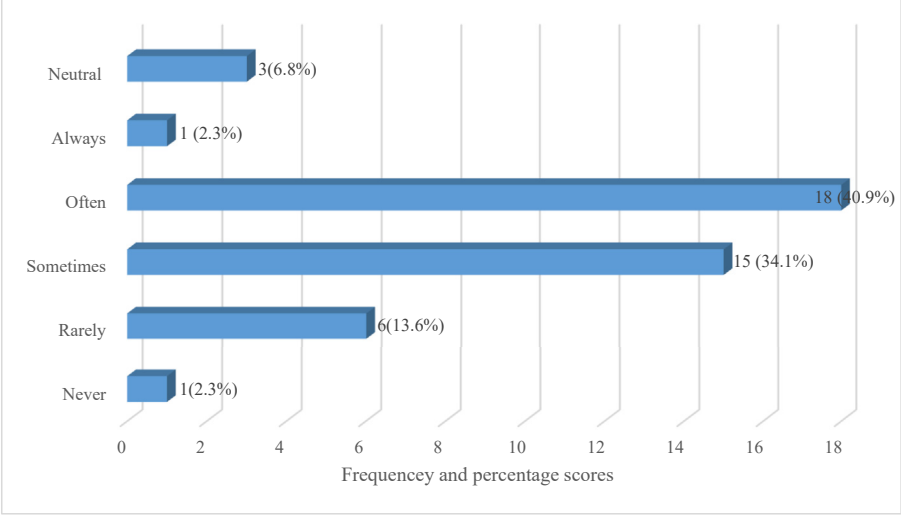

Figure 1. Frequency of DEC Meetings as reported by the EOs.

The Local Government Act 1997, section 38 and 39 mandates districts councils and lower local councils to make ordinances and byelaws respectively which are not inconsistent with the 1995 Constitution of the Republic of Uganda or any other law made by the parliament of Uganda. 29 (65.9%) of the 44 LGs surveyed had ordinance or byelaws related to environmental management especially waste management, water points protection, bush burning, charcoal burning, tree logging etc. while only 15 (34.1%) did not have. This offer an opportunity for complementing the national EIA laws, building synergies for implementation of EIA conditions of approval at the local level and compelling local industries and other entities to comply with EIA regulations.

The majority 23 (52.3%) of the EOs were satisfied with the existing institutional set up for environmental management which include EIA as a key component, 18 (40.9%) were dissatisfied while 3 (6.8%) were neutral. However, 32 (72.7%) of the EOs recommended changes to the existing institutional set-up for EIA. Majority 11 (25%) recommended decentralization of EIA. However, at the time of the survey, the NEMA was already setting up 4 regional centers (Northern, Eastern, Western and Central) with mandate to handle some EIAs in collaboration with the districts in the respective regions. 9 (20.5%) recommended inclusion of the LGs in EIA decision making, 5 (11.4%) recommended strengthening of enforcement mechanism, 3 (6.8%) recommended change in the financing method i.e. EIA should be financed by NEMA and the developer only pays the EIA fees to NEMA and 4 (6.8%) recommended capacity building for EIA management by the LGs. They also suggested that NEMA should make direct transfers from the National Environment Fund to LGs for activities specific to EIA. Only 18.2% of the environment officers reported having received funds from NEMA for EIA specific activities. The concern of direct procurement and payment of environment practitioners (consultant) by developers has also being raised in another study (Fearnside, 2015, p. 389) who argued that, in an arrangement where EIAs are contracted and paid directly by the project proponent, reports are biased towards project approval.

Section 19, of the NEA 1995, formally instituted the EIA practice in Uganda. Since 1996, the number of EIAs approved and certified by the NEMA has been increasing. According to the NEMA EIA database, between the financial year 2002/2003 and 2016/2017 there were 5,187 EIAs approved and certified by the NEMA and the trend is represented in Figure 2. The number of EIAs between 1996 and March 2007, is estimated to be about 1,500 (Akello, 2007, p. 24), and therefore put together with the EIAs in the financial year 2017/2018, the EIAs approved and certified by the NEMA is currently estimated to be over 6000. This requires enhanced capabilities for EIA follow –up if the country is to reduce the current level of pollution and natural resource degradation which may threaten the attainment of SDGs especially goal 12 (responsible consumption and production) which has more linkages to other goals through targets.

In addition, this trend in the EIA approval and licensing were project – level EIAs which research (Alshuwaikhat et al., 2007, p. 228) revealed to have limitations in addressing alternatives, cumulative impacts, fails to anticipate projects, ignores the impacts of small individual activities which may be harmful among others which could be overcome by SEA. However, SEA, was not legislated and therefore not in practice for the 25 years of EIA practice in Uganda. This lack of SEA during the development of policies for the Oil and Gas sector in Uganda, presents a big future challenge.

EIA is undertaken by an expert (environmental practitioner) whose name and qualifications are approved by the NEMA in accordance with the Conduct and Certification of Environmental Practitioners, Regulations 2003. The expert on behalf of the developer leads the consultation process and this remains a challenge in terms of transparency and effectiveness. This has also been opined (Cotton and Mahroos-Alsaiari, 2015) that, developer – led consultation process undermines the effectiveness of public participation and EIA effectiveness as an instrument for achieving sustainable development.

The NEA, 1995 section 23 provided for monitoring by the regulator (NEMA) or its delegated entity. Out of the 16 manufacturing industries, 10 (62.5%) reported that monitoring was sometimes done, 5 (31.3%) reported that monitoring was rarely done and only 1 (6.3%) reported that monitoring was often done. Similarly, 90% of the 100 household interviewed reported that, no staff from the LG visited their area for reasons related to the activities of the manufacturing industry located in their community. These monitoring visits conducted were mostly reactive rather than proactive. This implies that, compliance by manufacturing industries were not enforced and therefore the low level of implementation of mitigation measures.

Section 22 of the NEA 1995, provided for environmental audit by the regulator or its delegated entity. To bring more effect to this provision, regulations 31 and 32 of the EIA Regulations, 1998 (now the ESIA Regulations, 2020) provide for self-audit by developers and audit by the regulator or its delegated entity respectively. However, 1 out of the 16 manufacturing industries undertook post – self environmental audit. The 15 manufacturing industries did not undertake any environmental audit, including the initial environmental audit which must be conducted within three years from the date of project commencement (EIA Regulations, 1998, regulation 32, sub-regulation 2). This lack of post-environmental audit is also reported in other studies (Wang et al., 2019). The frequency of environmental audit is determined by facility ownership, nationality of ownership, geographic scope of operation and size of operation (Earnhart and Leonard, 2013). It is revealed (Glasson, 2005) that, post-environmental audit and monitoring serve to identify the errors between predicted and actual impacts and improve project management in a local community by maximizing project benefits and minimize negative impacts. Therefore, post-environmental audit and monitoring could facilitate the attainment of the SDGs if effectively undertaken at project level and therefore a missed opportunity in the case of Uganda.

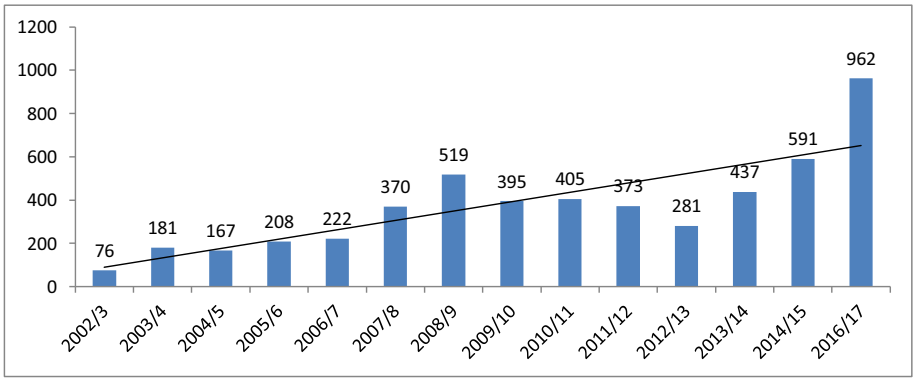

Figure 2. Trend in EIA approval and certification by NEMA (source; NEMA EIA database).

Section 104 of the NEA, 1995, provides for appeal mechanisms against decision of the authority that is deemed erroneous by an individual or group of individuals. This provision is one of the themes of good practice identified (Joseph et al., 2015, p. 243). Any person or group of persons aggrieved with the decision of NEMA can appeal the decision within the structure of NEMA or through the high court of Uganda. The former appeal mechanism was opposed by respondents in a study (Joseph et al., 2015, p. 248) as the respondents felt that appeal should not be heard by the original decision-maker. However, the later appeal mechanism has been successful to some extent in reversing some decisions of the NEMA such as in the case of Advocate Coalition for Development and Environment v. Attorney General & NEMA (2004) which sought the high court to declare illegal, the issuance of permit to Kakira Sugar Works limited to convert Butamira forest reserve to sugar cane plantation without submission of project brief or carrying out EIA.

Freedom of access to information is provided for in sections 85, 86 and 87 of the NEA, 1995 derived from article 41 of the 1995 Constitution of the Republic of Uganda. It also provided for integration of environmental education into the school's curriculum and charge NEMA with the responsibility of gathering, analysis and management of environmental information including dissemination to the public. Study reveal that, public access to environmental information is a dire tool for stimulating stakeholder – centered participatory environment and sustainability governance (Kobayashi, 2012). NEMA and the Local Governments in response publish annual and biannual state of the environment reports respectively but the effectiveness of integration of environmental education into the school curriculum calls for another research.

However, access to EIA documentations still remains a challenge. There was no mechanism for public notice on EIA initiations, draft EIA are not published apart from final reports for large projects, mostly donor funded. Payment of fees and other conditions to access EIA documents (EIA Regulations, 1998 Regulation 29(2)) constrained access to EIA documents which were deemed public documents. The EIA legislations and regulations are in English which cannot be understood by the majority of the population and none was translated into any local language such as Luganda which is widely spoken in central, western and some parts of eastern Uganda. In addition, the EIA reports were written in English and non-technical summary of the EIA report were not produced. This limited access to environmental information, constrained public participation in EIA because as argued (Twinomugisha, 2007, p. 254) access to information enable citizens to participate meaningfully in decisions that directly affect their livelihood and to be able to monitor governmental and private sector activities.

The NEA, 1995 sections 67 and 61 mandates the NEMA and the courts to issue environmental restorations orders respectively. Sections 95 through to section 101 stipulates offences and penalties related to different aspects of EIA. Any person who commits these offences is liable on conviction to imprisonment for a term not exceeding 18 months on average or to a fine not less than 188,572/= (US $51) on average and not more than 18,000,000/= (US$ 4,865) on average or both. We argue that these penalties and fines were not deterrent or cannot alter behavior of individuals and firms. This is also acknowledged in the policy and principles of the NEMA bill 2017 and this general outdated and ridiculous penalties in the environment and natural resource sector are identified (Banadda et al., 2009). Secondly the capacity of the regulator to undertake environmental and natural resource valuation for the purpose of awarding damage liabilities was low which is also acknowledged in another study (Akello, 2007). In addition, the capacity of the judiciary to try environmental cases is also low (Twinomugisha, 2007 pg, 257). All these constrain enforcement of EIA regulations through the courts as the last resort which is seen to work locally and globally especially in Australia through the Environment Defenders Office (EDO).

The National Environment Act 1995, section 93, stipulate the possibility of proposing fiscal measures (tax incentive and disincentive) to be included in the national budget for environmental management. Environmental authorities today are faced with the dilemma of choosing between two strategic options; the command-and-control (CAC) instrument such as the regulated EIA and the economic incentive (EI) instruments such as carbon tax or other forms of environmental taxes. Uganda mainly uses the former option while the latter option was used in the financial year 2002/3 in which 20% tax was introduced on polythene carrier bags to discourage its production and usage. There was also higher tax on imported second hand vehicles which are more than 10 years from the date of manufacture in the financial year 2006/7. There was also established permit and license system where charges, fees and other levies were imposed like fees for pollution license and the Refundable Performance Deposit Bond. However, due to lack of scientific studies, these economic incentives have proved ineffective as polythene carrier bags could be seen littering the region at the time of conducting this research. Study (Liu et al., 2014, p. 141) indicate that, no single instrument CAC or EI instrument is overwhelmingly superior but their careful integration based on scientific rationale can build synergies offering an opportunity for sustainable development.

3.3. Sector specific legislations with provisions for EIA in Uganda

The NEA 1995, Cap 153 triggered the enactment of several sector specific legislations with provisions for EIA. The Uganda Wildlife Act 1996, sections 16 and 17 provided for EIA and environmental audits and monitoring respectively. The provisions of section 3 of the Water Act, 1997, Cap. 152 set favorable and inevitable terms for EIA. The Physical Planning Act 2010 section 37, provide that where a development application relates to undertakings that require EIA to be conducted, the relevant approving authority may grant preliminary approval of application subject to the applicant obtaining EIA certificate in accordance with the National Environment Act.

The sector laws that came into force before the NEA 1995 were repealed so as to include EIA. As a result, the Forestry Act (1947) was repealed by the National Forestry and Tree Planting Act, 2003 to the effect that, sections 8 sub-sections 3 and 4 (b), section11 subsection (3) (b) and section 38 provide for EIA. The Mining Act (1949) was repealed by the Mining Act (2003) to the effect that, section108 provide for EIA and environmental audit.

There has been a recent drive in repealing environmental laws in Uganda since 2008 and explained by two factors. First, the Oil and Gas Policy (2008) and the Petroleum (Exploration, Development and Production) Act 2013 following the discovery of commercial quantities of oil and gas in the Albertine Graben which is a wildlife protected area (PA). This resulted to the repealing of the NEA, 1995 by the NEA, 2019, and the Wildlife Act, 1996 which was repealed by the Wildlife Act, 2019 in which sections 23 and 24 provide for EIA and environmental audit respectively.

However, the interesting provision is that, section 186 of the Petroleum (Exploration, Development and Production) Act 2013 is provided supremacy over other relevant laws. It states, “subject to the Constitution, the NEA and the Access to Information Act, 2005, the Petroleum (EDP) Act, 2013 shall take precedence over all existing Acts relating to Petroleum activities in Uganda and where there is a conflict between the provisions of the Petroleum (EDP) Act, 2013, and any other written law, the provisions of the Petroleum (EDP) Act, 2013 shall prevail”. This tantamount to prioritizing a finite natural resource to a renewable natural resources as the Petroleum (EDP) Act, is made superior to other sectoral laws aimed at protecting renewable natural resources.

However, an opportunity is provided by the provisions of the Petroleum (EDP) Act, 2013 section 125 which seek entities intending to supply goods and services in the Oil and Gas sector to demonstrate capacity to meet the health, safety and environment standards of the petroleum activities. As a result, there is an increasing demand for ISO certification now undertaken by Uganda National Bureau of Standards including the ISO 14000 (Environmental Management Systems) which can be linked to the EIA established environmental management systems stipulated under the Environment Audit Regulations, 2006 regulation 9 and now provided

for in the Environment Audit Regulations 2020, regulation 23 and in accordance to section 49 of the NEA, 2019.

The need to achieve middle income economy by 2040 (Uganda Vision 2040) which is to be achieved through increasing private sector investment, infrastructure development, oil and gas, industrialization, large scale commercial farming, ICT among others is another driving force behind the repealing of sector specific legislations. In order to encourage, promote and facilitate private investment in Uganda the Investment Code Act, 1991 was repealed by the Investment Code Act, 2019. EIA was only implied in section 18, sub-section (2)(d) of the Investment Code Act, 1991 which stated "the investor will take necessary steps to ensure that, the operations of his or her business enterprise do not cause any injury to the ecology or environment". On the other hand, the Investment Code Act, 2019 section 17(c) provide that, an application for investment shall be accompanied by EIA certificate issued in accordance with the relevant laws.

The challenge is that, though the Investment Code Act, 2019 explicitly provides for EIA, other provisions are likely to condition the regulator (NEMA) to fast track the EIA process which may roll back the effective application of EIA as a means of achieving sustainable development. Section 10 (4) provides that where a secondary permit (in this case EIA certificate) is denied, the public sector agency (in this case NEMA) shall give reasons to the investor. The NEMA is one of the agencies listed in section 10 (2) of the Investment Code Act, 2019 to be cooperating with Uganda Investment Authority (UIA) in effecting registration, licensing and approval of establishing investment in Uganda. Section 11 (3) of the Investment Code Act, 2019, requires the NEMA to sign agreement with UIA that will define the service commitments and maximum delivery timelines for the services it offer to investors. This can be challenging to a systemic process like EIA though timeline is one of the measures of EIA effectiveness. These provisions provide testimony to what many scholars argue that, politicians and other lobbyists portray EIA as time consuming, bureaucratic and barrier to development and there are cited governments seeking to simplify EIA process to remove this purported barrier without evaluating its effectiveness (Bernard et al., 2014; Bragagnolo et al., 2017; Fearnside, 2014, 2015, 2016; Fonseca and Rodrigues, 2017).

3.4. Environmental regulations or statutory instruments for EIA in Uganda

Within the framework of the NEA 1995, section 107, the EIA Regulations, 1998 was passed which detail the procedures for conducting EIA and defines the role of stakeholders in EIA. Other related regulations include; the Audit Regulations, Effluent Discharge Regulations, Hilly and Mountainous Area Management Regulations, Management of ozone Depleting Substance and Products Regulations, Minimum Standards for Management of Soil Quality Regulations, Noise Standards and Control Regulations, Waste Management Regulations, Conduct and Certification of Environment Practitioners Regulations, and Wetlands, Riverbanks and Lakeshores Management Regulations.

The NEA 1995, section 21 (2) and the EIA Regulations, 1998, regulation 33 imposed responsibility on developers to propose and implement mitigation measures contained in the EIS and these arising from post-environmental audit respectively. However, the survey results revealed that, the implementation of mitigation measures among manufacturing industries was low ranging between 35 – 40% of the proposed mitigation measures. Equally, of the 44 environment officers interviewed, 10 (22.7%) perceived very low level of implementation of mitigation measures, 22 (50%) perceived low implementation, 10 (27.7% perceived moderate implementation, 1 (2.3%) perceived high implementation and another 1 (2.3) perceived very high level of implementation.

The survey indicated that, 14 of the 16, industries do not have waste water treatment facilities despite its inclusion in EIA reports. This lack of waste water treatment facilities in manufacturing industries in Uganda have been identified in other studies (Walakira and Okot-Okumu, 2011; Pierre and Wondwosen, 2016; Scheren et al., 2000). The reasons advanced by the developers for the low level of implementation of the mitigation measures included; inadequate public infrastructure such as the sewerage system and connectivity which is also sighted by another study (Pierre and Wondwosen, 2016), erratic power supply leading to use of thermal generators, limited monitoring and compliance enforcement, inadequate capacity to adopt clean technologies and limited mentorship by the regulator or delegated entities. This low level of compliance to environmental laws, regulations and standards is also recognized in the Uganda Vision 2040 pg. 98, but causes are not cited.

Another challenge is that, most natural resources in Uganda are transboundary in nature, the rivers especially river Nile, the lakes, oil and gas etc. It becomes difficult to attribute pollution to a single source for example the pollution of lake Victoria is attributed to multiple sources from Kenya and Uganda (Scheren et al., 2000). Uganda has not embraced EIA in transboundary context except for large projects that have spatial coverage in more than one country such as the Standard Gauge Railway, the East Africa Crude Oil pipe line. As of 20th July 2020, Uganda just like many other countries did not sign or ratify the important UN Treaties and Protocols related to EIA in transboundary context which include the UN Convention on EIA in Transboundary Context (Espoo, 1991), Protocol on SEA to the Convention on EIA in a Transboundary Context (2003) and the Convention on Access to Information, Public Participation in Decision – Making and Access to Justice in Environmental Matters (2003). Scholars (Bice, 2019; Bice and Fischer, 2020) have alluded the failure of EIA in addressing transboundary impacts as one of the EIA challenges in the 21 century while big – data drive approach by Deng et al. (2020, p. 8), suggest the need for regional joint control strategies especially for transboundary environmental and natural resources.

3.5. The environmental impact assessment process in Uganda

The thematic stages in the EIA process differ from one country to another but generally it includes screening, scoping, assessment (examination of alternatives, impact analysis, mitigation and impact management and evaluation of significance), reporting, review, decision making and follow-up (Glasson, 2008; Jigme Choki, 2015; Andreou and Jones, 2014; Morgan, 2012; Senécal et al., 1999; UNEP, 2002). The important requirement is that, the EIA process should provide appropriate opportunities to inform and involve the interested and affected public, and their input and concerns should be explicitly addressed in the documentation of impacts and decision making about development projects (IAIA & IEA, 1999, p. 3 in Jigme Choki, 2015).

According to the EIA Regulations, 1998 (now the ESIA Regulations, 2020), the EIA process which is represented in Figure 3, included submission of project brief to the NEMA, screening by the NEMA in consultation with lead agency to determine if EIA is required and of what scale (environmental impact review, environmental evaluation or full EIA). The third stage is development of terms of reference (ToR) by the developer in consultation with the NEMA and the lead agency. After the approval of the TOR, the developer proceeds to conducts the study while ensuring full and effective participation of the public and the affected community. After the completion of the study, the developer prepares EIA report which is submitted to NEMA and transmitted to the lead agency for comments. This is followed by review of the EIA report and thereafter approval decision by the executive director. The decision of the executive director, NEMA is based on the ToR, the comments of the lead agency, the general public, the persons specially affected by the project, report of public hearing if any and any other factor/s the executive director may deem important. Just like in other EIA system the final stage is EIA follow up.

The EIA regulations, 1998 (Now ESIA Regulations, 2020) regulations 12, 19 and 20 gave opportunity for public participation during the EIA study and review of EIA reports by the people likely to be affected by the project and the general public which include civil society organizations. These provisions meet one of the themes of good practices which advocate for legal foundation of all key elements of the EIA process (Joseph et al., 2015, p. 242). While it is argued that, public involvement typical

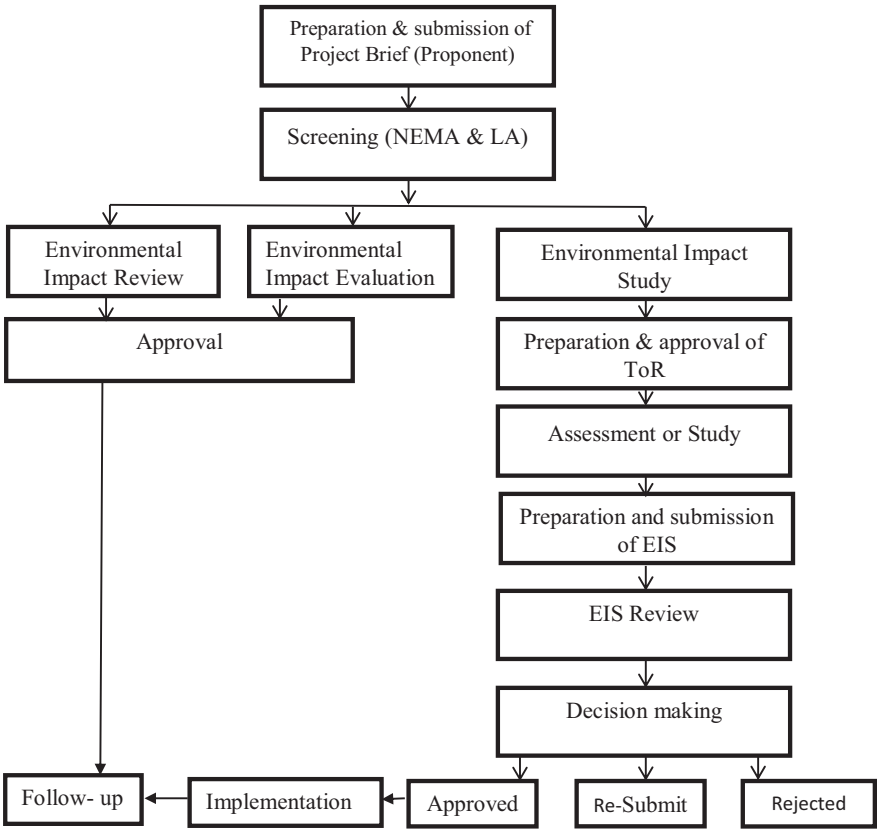

Figure 3. The EIA process in Uganda; adapted from the EIA Regulations, 1998

occurs at scoping and reviewing and may also occur at any other phase of the EIA process from the initial stages, through decision making to monitoring and follow-up (Enserink et al., 2006; Jigme Choki, 2015; Joseph et al., 2015), scoping had no explicit legal foundation in the Uganda EIA process contrary to another EIA study (Ecaat, 2004, p. 17).

In addition, there were no formal guidelines for scoping and public participation in general though provided for in the NEA 1995, section 18, subsection 8(c). Legally founded and well-coordinated and effective scoping is an important element in the EIA process if EIA is to be used for achieving the SDGs. EIA literature suggest that, through a well – conducted scoping phase, relevant issues will be scoped in for detailed assessment while minor issues will be scoped out (Borionia et al., 2017, p. 201). It is also argued that, good practice scoping is a means to integration of EIA and prevent disintegration into the different aspects of the environment (Canter and Ross, 2014) while (Greig and Duinker, 2014) argue that inadequate integration and lack of focus are but two of a plethora of ills that thwart environmental assessment and prevent it from becoming the go – to tool for sustainable development.

The inadequate and ineffective public participation in all windows for public participation in the EIA process particularly scoping, EIA study and review was caused by limited knowledge of EIA legislations, limited access to EIA information, poverty and unemployment, developer – led consultation process and lack of transparency in public participation particularly during public hearing. For example, according to the Oil in Uganda newsletter, issue 21, December 2019 Civil Society Organizations are seeking the High Court of Uganda, to cancel the ESIA certificate for the Tilenga Oil project because the public hearing during the EIA was marred with irregularities and illegalities.

The survey revealed that, 94% of the 100 households from the neighborhood of 4 manufacturing industries reported no involvement in the EIA process. 37% of the respondents have lived in the area for 6–16 years and only 29% lived in the area for 1–5 years. This implied that, the majority of the respondents were in the area when the EIAs were conducted. The documentation in the EISs indicated attendance list comprised of mainly village Local Councils (LCs) members which was not representative of the population in the community. The current level of poverty of 21.4% (UBOS: NHS 2016/2017) and unemployment of 1.74% (World Bank 2010–2020 macro trends) made communities more vulnerable to EIA manipulation by developers and consultants. Social benefits of manufacturing industries were given emphasis in EIA reporting to seek project approval which determine the pay of environment practitioners (consultants). There were incidences when environment practitioners withheld certificates of approval or permits for nonpayment of consultancy fees by developers.

The study revealed that, 15 (93.8%) of the 16 manufacturing industries perceived their industries had social impact on the community (employment, market and security). 8 (50%) of the manufacturing industries perceived their industry had environmental impacts. Only 2 (12.5%) perceived that their industry had health impacts on the community particularly on workers. Such EIA manipulation by giving false information, information exaggeration, withhold of information, undervalue or overvalue of impacts by both the developers and the EIA consultants have been identified in other studies (Enríquez-de-Salamanca, 2018).

The 44 environment officers interviewed perceived that political influence was a major factor that constrain the implementation of EIA legislations and regulations in Uganda, followed by inadequate funding, and lack of pollution monitoring equipment and the results are represented in Figure 4. In Brazil political appointees have domineered the technocrats and reduced the effectiveness of EIA as an instrument of sustainable development (Fearnside, 2015). It is also argued that, effective protection of the environment would only be achieved when all stakeholders, not just political elites, would have ownership over the EIA process (Fagan and Sircar, 2010).

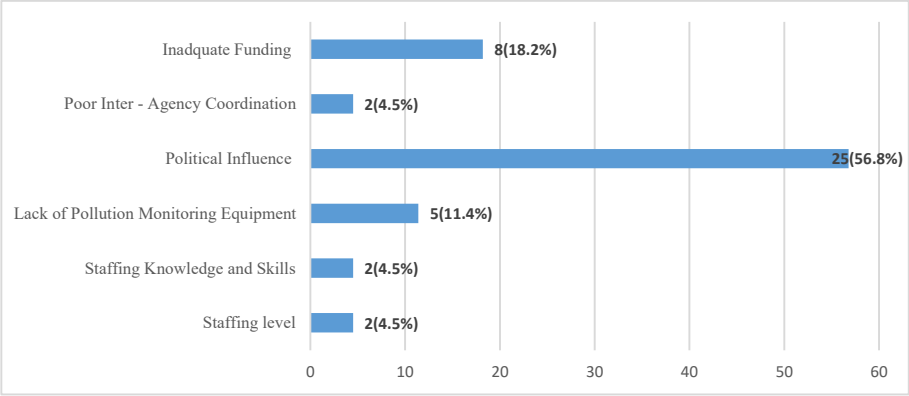

Figure 4. EO's perception of potential factors affecting implementation of EIA laws in Uganda.

Politician are viewing EIA as bureaucratic, and barrier to investment and development and therefore the need to simplify it. This is evidenced in the repealing of the Investment Code Act, 1991 and the provisions of the Investment Code Act, 2019 highlighted in section 3.3. The rolling back of EIA in Uganda is likely to worsen due to the drive to achieve middle income economy by 2040, the need to draw the Oil and Gas dollar and to recover the economy from the effects of the COVID-19 more than what is alluded (Rosa, 2013) in Australia.

The survey of EIA reports for manufacturing industries for the period, indicated that 31 ENGOs were involved in EIAs. ENGOs can provide input to policy, express opinion on current issues, foster environmental awareness and education, advice on technical matters, engage in political lobby, form coalition, litigate, interact with development planning and take direct action (Jeffrey, 2018). ENGOs can also be policy entrepreneurs seeking to address environmental issues by going beyond the provisions of public regulation (Schweizer et al., 2016).

The results of the survey reveal that, the ENGOs were dissatisfied with their participation in public hearing (mean = 3.13), submission of comments on EIA reports (mean = 3.23), involvement in decision making (mean = 3), public campaign (mean = 3.30), direct action (mean = 2.97), post environmental audit (mean = 2.87), collaboration with other stakeholders in the EIA process (mean = 2.77) and facilitating grievances mechanism (mean = 2.87). On the other hand, the ENGOs were satisfied with their role in education and awareness creation (mean = 4.33), training on environmental rights (mean = 3.57), lobby and advocacy (mean = 3.53) and support to society (mean = 3.90). This means the ENGOs involvement was mainly on education/training and awareness raising and advocacy and less involved in activities related to influencing decision making and direct actions which are the core activities to promote effective application of EIA for sustainable development.

The results of the spearman's correlation revealed that there is strong positive correlation between the ability to access and use equipment for measuring pollution and the role of ENGOs in EIA ($r = 508$). It also revealed that, there was moderate positive correlation between the institutional and regulatory framework for EIA and the role of ENGOs in EIA ($r = 0.366$). Interestingly, there was weak positive correlation between ability to access and disseminate EIA information and the role of ENGOs in EIA ($r = 0.311$). The results of the linear regression model revealed that, ability to access and use equipment for monitoring pollution positively and significantly affect the role of ENGOs in EIA ($\alpha = 0.05$, $\rho = 0.003$). Furthermore, the results indicated that, institutional and regulatory framework for EIA positively influence the role of ENGOs in EIA. This means an improvement in the current institutional and regulatory framework for EIA leads to an improvement in the role of ENGOs in EIA. Interestingly the results indicated that, ability to access and disseminate EIA information negatively influences the role of ENGOs in EIA and also is not statistically significant ($\alpha = 0.05, \rho = 0.64$).

The lack of explicit legal foundation of the role of ENGOs in the EIA process in the institutional and regulatory framework and lack of transparency were key institutional and regulatory factors constraining the role of ENGOs in the EIA process. This evidence is also provided by the Independent newspaper (June 7, 2020), which reported that civil society organizations under their umbrella organization Civil Society Coalition on Oil and Gas in Uganda accused the NEMA for lack of transparency in the public hearing of the ESIA for the East African Crude Oil Pipeline project. Further, Oil in Uganda newsletter, issue 21, December 2019 reported that, civil society organizations were seeking the High Court of Uganda, to cancel the ESIA certificate for the Tilenga Oil project because the public hearing during the EIA was marred with irregularities and illegalities. Other institutional factors constraining ENGOs participation in EIA included the stringent national institutional regulations guiding the operation of ENGOs, the access to EIA related documentations and information and timing of the EIA phases. Study (Khan et al., 2020) reveal that, ENGOs in developing countries are usually not consulted during the EIA process and also not strong enough in terms of availability of resources compared to developed countries were EIA systems are mature and stakeholder participation is well institutionalized.

Just as in this research in which we found that, the ability to access and use equipment for monitoring pollution positively and significantly affect the role of ENGOs in EIA, it is also argued (Fagan and Sircar, 2010, p. 612) that ENGOs which are more technically or scientifically oriented are those that are more likely to be involved in EIA. Main while, those that focus on social mobilization and cannot source technical knowledge are likely to be less involved in the EIA process.

4. Conclusion and recommendations

EIA is well legislated and institutionalized in Uganda with over 25 related legislations and regulations. This has resulted to an increase in EIA application and certification by developers and NEMA respectively. Despite this high rate of application of EIA by developers and the subsequent approval and certification by NEMA, there is increasing environmental degradation and pollution of lakes especially lake Victoria, rivers, streams, aquifers and soils which is a threat to achieving the SDGs since, environment, economy and society are highly integrated (Woolbridge, 2015). Well legislated and institutionalized EIA in a country does not guarantee environmental protection and sustainable development unless there is good practice. The high level of environmental pollution and natural degradation does not imply failure of EIA but certainly the situation would have been worse in the absence of EIA legislation and practice. EIA challenges in Uganda relate to public participation, EIA follow-up, political interferences, project – level EIA, lack of EIA in transboundary contexts and the lack of EIA at policy, plan and program level (SEA). EIA opportunities exist in governance structure, staffing, national planning frameworks, and active none-state actors. To maximize

the potential of EIA as an instrument of sustainable development, challenges must be addressed and existing opportunities must be utilized.

To promote public participation in the EIA process in Uganda, efforts should be made to increase access to information, promote use of digital platforms for information exchange, remove conditions for access to EIA documents, publish EIA initiations on the website for NEMA, legitimize and develop formal guidelines for public participation, establish an independent body to conduct public hearing and review which can be a reputable CSO. Alternatively improve transparency in public hearing.

To improve EIA follow-up we recommend equipping, training and facilitation of environment officers, involvement of environment officers in the EIA process, making the process engaging, persuasive and collaborative, mentor developers especially on post-environmental audits. There should be rational integration of EIA with economic incentive instruments such carbon tax or pollution tax, the EIA certificates should be made renewable and contingent on post-environmental audit reports, improvement on the connectivity and accessibility of the urban sewerage system, make EIA a formal 'social contract' between the regulator, the developer and potentially affected community. Deliberate efforts should be made to link the EIA process to the ISO 14000 (Environmental Management System) certification by Uganda National Bureau of Standards (UNBS). Such that as EIAs ends, EMSs begins and can be partial solution to the lack of follow-up in the Uganda's EIA process.

There should be capacity building of the judiciary to handle environment cases and expeditious training of the staff of NEMA in environment and natural resources valuation. This will enhance the capacity of the staff to be able to attach value to environmental and natural resources for purpose of awarding damage liabilities to offenders in the courts.

There should be increased political will for environmental protection by appreciating the interdependence of environment, economy and society if sustainable development must be achieved. The Policy Committee on Environment should not be dominated by political elites but have broader representation of the civil society, the academia and the private sectors.

Countries including Uganda need to embrace EIA in a transboundary context for development projects that are likely to have transnational spatial impacts e.g. plantation agriculture in the Lake Victoria islands, hydropower development on rivers etc. in Uganda. This should be the initiatives of regional groupings such as the Intergovernmental Authority on Development (IGAD) in Eastern Africa and the East African Community (EAC).

There should be capacity building of LGs especially the local government structures, the Districts Technical Planning Committees, the District Environment and Natural Resources Committees, the Local Environment and Natural Resources Committees for EIA and the SEA which is now introduced in the NEA, 2019 section 47 and guided by the National Environment (SEA) Regulations, 2020.

There is urgent need for country capacity building for SEA which should be applied with rigor in the next planning periods. Since government agencies including local governments are supposed to align their plans to the NDPs, equally project - level EIA phases must be sensitive to the SDGs. Monitoring and evaluation of projects subjected to EIA should be based on the SDG indicators.

There is need to build the capacity of civil society organizations especially their scientific capacity and/or collaborate with universities and research institutions. This will enhance their capacity to generate independent scientific information for evidence-based debate and influence decision-making during public hearing or other avenues for public participation. The CSOs can enforce environmental compliance of entities including state through environmental innovation strategies as identified (Schweizer et al., 2016) especially in a neoliberal society. The role of civil society organizations in EIA should have explicit legal foundation and favorable national laws regulating their activities especially licensing and renewal.

International finance institutions (World Bank, African Development Banks etc.) and international development agencies such as UNDP, FAO which have their own environmental impact and social safeguard guidelines allows for hybrid EIA. However, these institutions and organizations should ensure effectiveness of the EIAs of the projects they fund and get involved in EIA follow-up. Otherwise in Uganda, such institutions and organizations have been accused by civil society organizations for funding projects in environmental fragile ecosystems without proper EIA such as the Oil Palm Plantation in Kalangala island in Lake Victoria and the Bujagali hydropower project on river Nile.

Declarations

Author contribution statement

Taako Edema George: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

Kiemo Karatu, Andama Edward: Conceived and designed the experiments.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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