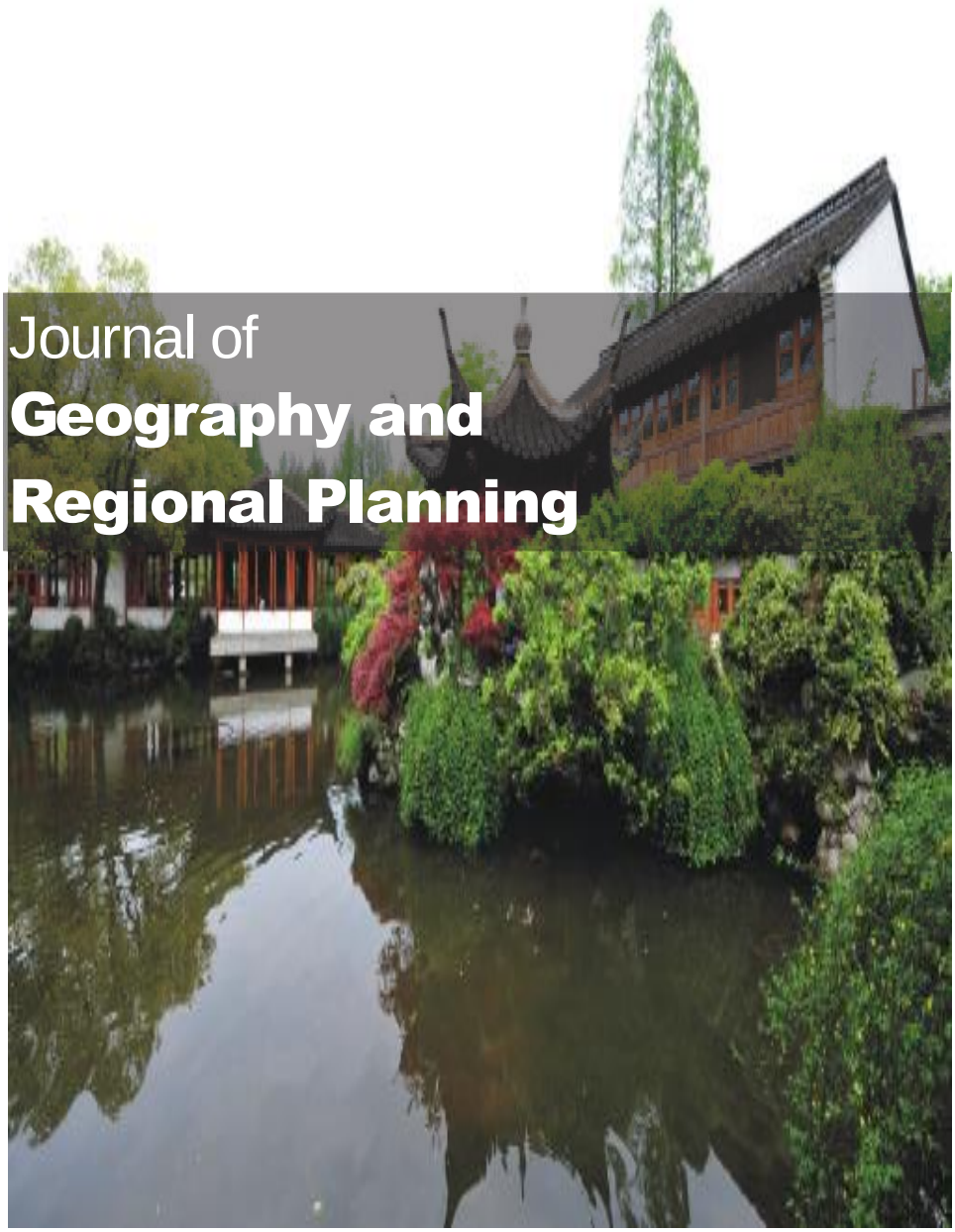
OPEN ACCESS



Journal of Geography and Regional Planning

July-September 2020
ISSN: 2070-1845
DOI: 10.5897/JGRP
www.academicjournals.org

ACADEMIC JOURNALS
expand your knowledge

About JGRP

Journal of Geography and Regional Planning (JGRP) is an open access journal that publishes high-quality solicited and unsolicited articles, in all areas of Journal of Geography and Regional Planning such as Geomorphology, relationship between types of settlement and economic growth, Global Positioning System etc. All articles published in JGRP are peer-reviewed.

Indexing

Dimensions Database, Google Scholar, Matrix of information for the analysis of journals (MIAR), Microsoft Academic

JGRP has an h5-index of 8 on Google Scholar Metrics

Open Access Policy

Open Access is a publication model that enables the dissemination of research articles to the global community without restriction through the internet. All articles published under open access can be accessed by anyone with internet connection.

TheJournal of Geography and Regional Planning is an Open Access journal. Abstracts and full texts of all articles published in this journal are freely accessible to everyone immediately after publication without any form of restriction.

Article License

Article Copyright

When an article is published by in the Journal of Geography and Regional Planning, the author(s) of the article retain the copyright of article. Author(s) may republish the article as part of a book or other materials. When reusing a published article, author(s) should; Cite the original source of the publication when reusing the article. i.e. cite that the article was originally published in the Journal of Geography and Regional Planning. Include the article DOI Accept that the article remains published by the Journal of Geography and Regional Planning (except in occasion of a retraction of the article) The article is licensed under the Creative Commons Attribution 4.0 International License.

A copyright statement is stated in the abstract page of each article.
The following statement is an example of a copyright statement on an abstract page.
Copyright ©2016 Author(s) retains the copyright of this article.

Self-Archiving Policy

The Journal of Geography and Regional Planning is a RoMEO green journal. This permits authors to archive any version of their article they find most suitable, including the published version on their institutional repository and any other suitable website.
Please see http://www.sherpa.ac.uk/romeo/search.php?issn=1684-5315

Digital Archiving Policy

The Journal of Geography and Regional Planning is committed to the long-term preservation of its content. All articles published by the journal are preserved by Portico. In addition, the journal encourages authors to archive the published version of their articles on their institutional repositories and as well as other appropriate websites.
https://www.portico.org/publishers/ajournals/

Metadata Harvesting

The Journal of Geography and Regional Planning encourages metadata harvesting of all its content. The journal fully supports and implement the OAI version 2.0, which comes in a standard XML format. See Harvesting Parameter

Memberships and Standards

Academic Journals strongly supports the Open Access initiative. Abstracts and full texts of all articles published by Academic Journals are freely accessible to everyone immediately after publication.

All articles published by Academic Journals are licensed under the Creative Commons Attribution 4.0 International License (CC BY 4.0). This permits anyone to copy, redistribute, remix, transmit and adapt the work provided the original work and source is appropriately cited.

Crossref is an association of scholarly publishers that developed Digital Object Identification (DOI) system for the unique identification published materials. Academic Journals is a member of Crossref and uses the DOI system. All articles published by Academic Journals are issued DOI.

Similarity Check powered by iThenticate is an initiative started by CrossRef to help its members actively engage in efforts to prevent scholarly and professional plagiarism. Academic Journals is a member of Similarity Check.

CrossRef Cited-by Linking (formerly Forward Linking) is a service that allows you to discover how your publications are being cited and to incorporate that information into your online publication platform. Academic Journals is a member of CrossRef Cited-by.

Academic Journals is a member of the International Digital Publishing Forum (IDPF). The IDPF is the global trade and standards organization dedicated to the development and promotion of electronic publishing and content consumption.

Contact

Editorial Office: jgrp@academicjournals.org

Help Desk: helpdesk@academicjournals.org

Website: http://www.academicjournals.org/journal/JGRP

Submit manuscript online http://ms.academicjournals.org

Academic Journals
73023 Victoria Island, Lagos, Nigeria
ICEA Building, 17th Floor,
Kenyatta Avenue, Nairobi, Kenya.

Editors

Prof. Prakash Chandra Tiwari
Department of Geography
Kumaon University
Uttarakhand,
India.

Prof. João J Ferreira
University of Beira Interior - Portugal.
Estrada do Sineiro,
Portugal.

Christopher Bryant
Géé de Montréal And
University of Guelphographie,
Université de Montréal &
University of Guelph,
Canada.

Editorial Board Members

Table of Content

Vol. 13(3), pp. 63-69, July-September, 2020
DOI: 10.5897/JGRP2019.0739
Article Number: 8B1D13564563
ISSN 2070-1845

http://www.academicjournals.org/JGRP

ACADEMIC JOURNALS
expand your knowledge

Journal of Geography and Regional Planning

Full Length Research Paper

Perception of local community toward protected woodlands at Dugda Woreda, East Shewa Zone, Oromia, Ethiopia

Tsegu Ereso Denbel

Department of Natural Resource Management, College of Agricultural Science, Bule Hora University West Guji Zone, Oromia, P. O. Box 144, Ethiopia.

Received 22 June, 2019; Accepted 20 September, 2019

Woodlands of Ethiopia are estimated to be around 70%. Unfortunately, this woodland is seriously under threats, mostly linked to human interference, livestock and climate change. To overcome these problems, protected woodlands were implemented in different parts of the country including Dugda Woreda Giraba KorkeAdii Kebele. However, the perception of local community towards protected woodlands was not studied. As a result, the main purpose of this study was to assess the perception of local community toward protected woodland at Dugda Woreda, East Shoa Zone, Oromia, Ethiopia. Before deciding the method of data collection, a reconnaissance survey was undertaken to obtain the impressions of the study site conditions and select sampling sites. A purposive sampling technique was employed to select the kebele from the Woreda. The sample size of households for the survey was determined by the proportional sampling method. A total of 138 households were selected for the survey; of these, 61 households are poor, 53 households are medium in terms of income and 21 households are rich. Semi-structured questionnaires were prepared for household interviews and the data were analyzed using Microsoft excel and SPSS and results were presented using descriptive statistics. Of the total respondents, 88.32% had positive attitudes towards the protected woodland practices. However, various problems were also identified such as shortages of firewood (83.34%) and scarcity of pastureland (74.64%) and poor infrastructure which are challenges to the sustainability of protected woodland for the future.

Key words: Community, perception, protected, woodland.

INTRODUCTION

Woodlands once covered over 40% of the global tropical forest areas (Mayaux et al., 2005) and 14% of the total African surface. Their proportion of the landmass of Ethiopia is estimated to be around 70% woodland (Endale et al., 2017). Ethiopia owns diverse vegetation resources that include high forests, woodlands, bush lands, plantations, and trees outside forests. Next to forest resources, protected woodlands represent a huge

E-mail: haresa21@gmail.com.

wealth of biological resources (Zegeye et al., 2011). The DugdaWoreda woodland has benefited the local community by providing or supplying the dominant part of the pasture, fuel wood, medicinal, honey production and as well as serving as the habitat of biodiversity. In the Central Rift Valley of Ethiopia, the natural vegetation is mainly made up of Acacia-dominated woodland, a highly fragile ecosystem adapted to semi-arid conditions with erratic rainfall, growing on a complex and vulnerable hydrological system (Hengsdijk and Jansen, 2006). Unfortunately, these woodlands are being lost at an alarming rate (Pimm et al., 2006; Jhariya et al., 2014; Kittur et al., 2014; Negi et al., 2018).

Understanding of farmer's perceptions about natural resource management is one of the important factors to be able to develop effective conservation intervention. Community participation in woodland resources management helps to create a platform to enhance dialogues and negotiations among farmers and outsiders (Wegayehu, 2006). Any endeavor attempting to develop sustainable and effective conservation of woodland, rules, regulations, institutions and strategies need to take farmers' perceptions of land use into account (Tefera et al., 2005). The objective of this paper was to highlight the perception of the local community to protected woodland for a sustainable land use system.

MATERIAL AND METHODS

Description of the Study area

The study was carried out in Dugda Worda, Giraba Korke Adi Kebele. Giraba Korke Adi Kebele is located at 8°6̀00'' to 8°10̀ 00'' N Latitude and 38°42'30'' to 38°51'30''E Longitude (Figure 1). The administrative seat of the Woreda is Meki town, which is located 132 km from Addis Ababa along the main road that goes through Mojjo to Hawassa. The Woreda is bordered with SNNPRS to the West, Zeway Dugda Woreda to the East, Bora Woreda to the North and Adami Tullu Woreda to the South (CSA, 2012).

Methods of data collection

Sampling design and sampling techniques

A preliminary reconnaissance survey was undertaken in the first week of November 2017 in order to obtain the impressions of the study site conditions and to select sampling sites. During this period, overall information on the study site was obtained and the sampling method to be used was identified. The purposive sampling technique was employed to select the kebele from Woreda because of woodlands that have been extensively protected for a long period. Kebele refers to the smallest governmental administrative unit of the Woreda in the study area. Local people's perception about protected woodland is significantly influenced by the economic condition of the farmers. Thus, wealth status was used as the criterion to stratify households into different economic categories for the survey into 'poor', 'medium' and 'rich' wealth categories with the assistance of the Key Informant (Table 1).

After stratifying sample households based on the wealth criteria, a representative sample size of the respondents was determined by using Yamane's formula (Yamane and Sato, 1967). Thus;

$$n = \frac{N}{1+N(e)^2}$$

Where, n=Sample size, N=total population, e= level of precision (0.08).

In Giraba Korke Adii there were 1107 Households (HHs), and out of these, 168 HHs were rich, 422 HHs were medium and 517 HHs were poor (Dugda Woreda Agricultural Office, 2015). Therefore, the sample size was determined as follows:

$$n = \frac{N}{1+N(e)^2} = \frac{1107}{1+1107\times(0.08)^2} = 138$$

To determine sample size in terms of the number of respondents, the researcher employed the proportional sampling technique and a total of 138 HH samples were selected proportionally (Table 2)

Data collection techniques

Data collection was conducted starting from November 2017 to May 2018. Data were collected using household surveys, key informant interviews, field observations, and focus group discussions (FGD). These are the most important data collection methods to measure attitude or outlook and perception of local communities for protected woodland.

Household survey

The sample respondents from the selected households were selected by using proportional sampling, which was conducted by giving codes for all households to be selected. After completion, the questionnaire was distributed to 138 households. Different age groups, educational background, distance from the protected woodland, and source of income were included in the questionnaire. Questionnaires were translated into local language to "Afaan Oromo". Before performing the interview, half day training was given for the data collectors on how they can collect valuable data for the research.

Key informant interview

The Kebele tour was made with selected community members and development agents. During the tour, ten randomly selected farmers were asked to give the names of five key informants who had lived in the area for long and were assumed to have adequate knowledge of their locality. From the total list, five key informants who were frequently mentioned were selected. Key informants were used to categorize randomly selected households into wealth ranks through local criteria and to collect further information on the management and uses of woodlands. The data collected from key informants were used as the triangulation method and are not included in the analysis.

This form of interview used less strictly formulated questionnaires that can provide the participants with a more relaxed atmosphere to express their thought. In selecting key informants, the first step was to identify the relevant groups from which they can be drawn. The second step in this process was to select a few informants from each group. The common practice is to consult several well-oriented persons in order to prepare a list of the possible informants. The list was large enough to include substitutes in case some informants were not available. During the interviews, key informants tend to suggest names of other persons who, in their opinion, are excellent key informants.

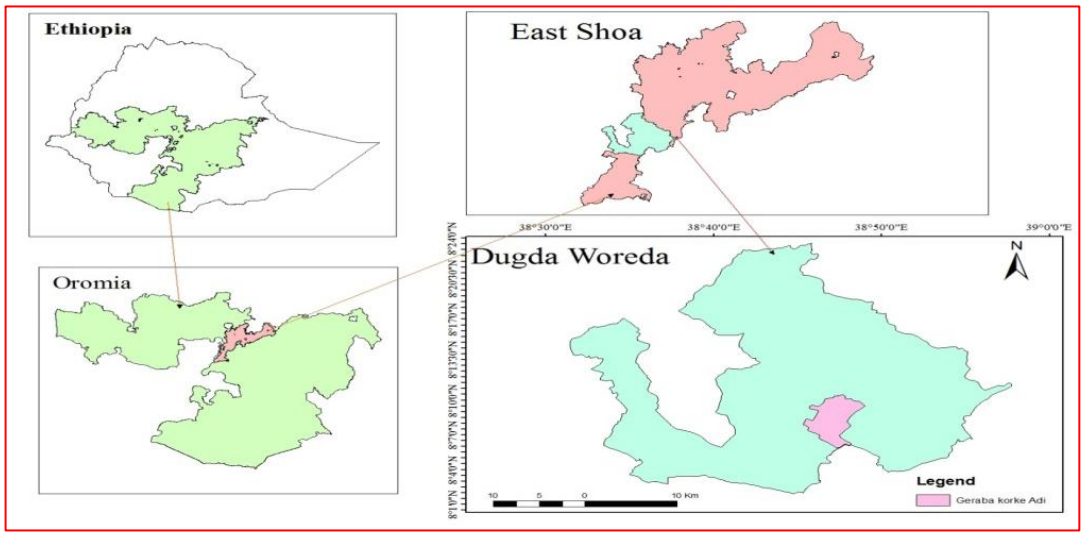


Figure 1. Map of the study area.

Table 1. Wealth status criteria for local community at study area.

Criteria	Wealth status		
	Poor	Medium	Rich
Cattle	1-5	5-20	20-30
Irrigation land	<1.5 h	3-4 h	4-5.5 h
Crop land	<3 h	3-5 h	5-10 h
Home in the town	×	×	√
Motor cycle	×	√	√
Car	×	×	√

Source from Dugda Woreda Agricultural Brue.
√ they have; ×, they do not have.

Table 2. Sample size determination method.

Wealth status	HH' no	How to compute	Sample size
Rich	168	$\frac{168 \times total\ \ sample}{total\ HH'} = \frac{168 \times 138}{1107}$	21
Medium	422	$\frac{422 \times total\ sample}{total\ HH'} = \frac{422 \times 138}{1107}$	53
Poor	517	$\frac{517 \times total\ sample}{total\ HH'} = \frac{517 \times 138}{1107}$	64
Total	1107	$\frac{168 \times 138}{1107} + \frac{422 \times 138}{1107} + \frac{517 \times 138}{1107}$	138

Own Computation: 2017-2018.

Focus group discussion

The FGD was used as complementary to the household survey. FGD participants were selected based on their age, knowledge about the area and duration of residency in the study area (Girma et al., 2010). Community leaders and local translators participated for better achievement of discussion. Information collected from group discussion was summarized using a text analysis method.

Field observation

For the sake of getting adequate and relevant information about the perception and attitude of local communities, observation of what

Table 3. Characteristic features of the respondent.

Parameter	Characteristic features of the respondent	
Age	n=138	
	18-29 year	10
	30-40 year	23
	40-50 year	34
	50-60 year	39
	>60 year	32
Wealth		n=138
	Poor	64
	Medium	53
	Rich	21
Education		n=138
	1-4	61
	4-8	39
	8-10	25
	10-12	8
	Diploma and above	5
Sex		n=138
	Male	119
	Female	19

Own Computation: 2017-2018.

people were doing in their daily activities for their livelihoods, an overview of their living environment, and interaction of local communities with the protected woodland were conducted. Moreover, observations of what people have and do not have, and who does exploration of what local people do, when and for how much, were assessed for the identification of major reasons for conflict.

Source of data

Primary and secondary data were employed.

Primary data

Primary data were collected through questionnaires and interviews. The semi-structured questionnaires were designed to obtain from the community the perception of society toward protected woodland.

Secondary data

Secondary data were obtained largely through the analysis of various documents relevant to the study both from published and unpublished documents. This includes institutional reports, books, records, and journals/papers/articles which provide baseline information for the study.

Data analysis and presentation

The data gathered from the household survey were analyzed using SPSS 16.0 and Microsoft excel to understand the perception of the local community toward protected woodland, the local community, management practices, and the current condition of protected woodland. Data obtained from key informants, and field observations were used as supplementary information for the formal survey. Finally, results were presented in descriptive statistics which include: tables, percentages graph, diagrams/charts as needed to show the number of households corresponding to their responses towards protected woodland.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondent

Household characteristic of the respondent: Age, Education status, wealth categories and sex are given in Table 3). Majority of the respondents (86.2%) were male household and 13.8% of the total respondents' female headed households. In Giraba Korke Adiikebele, 7.25% of the respondents were young (18-29 years old), 41.31% were adult (30-50) and 51.45% were old (>50 years old). The age of most respondent (92.75%) in the study area ranged from 20-60 years old with the mean age of 46.5% years. From the total number of respondents (n=138), 46.38% households were poor, 38.41% households were medium and 15.22% households were rich by wealth status. The education level of most respondent (76%) was having attended primary school (1-8 class) (Table 3).

Benefits of protected woodland to the local community

From the total of respondents, 81.15% indicate that protected woodland provided fuel wood, whereas 65.22% benefited from grass harvest for construction (Table 4).

Management practice of protected woodland

Management activities as indicated by the most respondents would be necessary for the attainment of the objectives of protected woodland. About 81.88% of the respondents said that protected woodlands are properly managed by the local communities. However, the remaining (18.11%) of the respondents had no detailed information about the management practices of the protected woodland (Table 5). Majority of interviewees showed their happiness for the current management activities but the medium and poor farmers in the communities participated highly in management practices. This is because the medium and poor farmers need to harvest more grass for construction of houses and the source of income were small than for the rich farmers.

Management challenges of protected woodland

In the study area, there is a scarcity of fuel wood, grazing

Table 4. Contribution of protected woodland for local community.

Wealth status	Fuel wood for ceremony respondents (%)	Harvest grass for construction respondents (%)	For honey production respondents (%)	Medicine respondents (%)
Poor	40.57	34.06	19.56	13.77
Medium	31.16	23.19	10.86	11.59
Rich	9.42	7.97	2.17	3.62

Own Computation: 2017-2018.

Table 5. Participation of local community, government and non-government in the management of protected woodland.

Degree of participation management activity	Poor	Medium	Rich
	Yes	Yes	Yes
Government	16 (11.59%)	23 (16.54%)	10 (7.24%)
Non-government	12 (8.69%)	19 (13.7%)	6 (4.34%)
Local community	57 (41.13%)	41 (29.71%)	15 (10.87%)
Local institution (Idir and Iqub)	39 (28.26%)	20 (14.49%)	12 (8.%)

Own Computation: 2017-2018.

Table 6. Challenges found in local community.

Challenges in local community	Poor	Medium	Rich
	Yes	Yes	Yes
Scarcity of fuel wood	56 (40.58%)	47(34.06)	12 (8.7%)
Scarcity of pasture	43 (31.16%)	51 (36.96%)	9 (6.52%
Road accessibility to PW	35 (25.36%)	43 (31.16%)	16 (11.59%)
Climate change	61 (44.2%)	51 (36.96%)	19 (13.77%)
Government participation	13 (9.42%)	9 (6.52%)	5 (3.62%)

Own Computation: 2017-2018.

land, road accessibility to protected woodland and less attention given by government to protected woodland are the main challenges that hinder the sustainability of these resources. These problems that hinder the sustainability were discussed accordingly; 83.34% of the respondents identified shortage of fuel wood, 74.64% shortage of grazing land, 68.11% poor infrastructure, 94.33% climate change (jijjirama qillensa in Local language by Afaan Oromo), 19.56% less government participation which are the major challenges found in study area (Table 6).

Causes of woodland degradation

The major causes of degradation of protected woodland are camel intervention, expanded crop land, illegal tree cutting and over-grazing. Accordingly, 51.45% of the respondents identified that camel intervention was the major problem for protected woodland mostly in the winter season. Similarly, 19.57% of the respondents indicated that expanded agricultural land, 13.77% illegal tree cutting, 5.8% over grazing and 0.72% charcoal production are other causes of degradation of protected woodland (Figure 2).

Attitude of local community toward protected woodland

From the total number of respondents (N=138), 88.39% had a positive opinion for provisions they get from protected woodland and were interested in amending the management practices of protected woodland in the future (Table 7). This implies that large numbers of the communities have a constructive outlook towards the protected woodland practice as means of provision of fuel

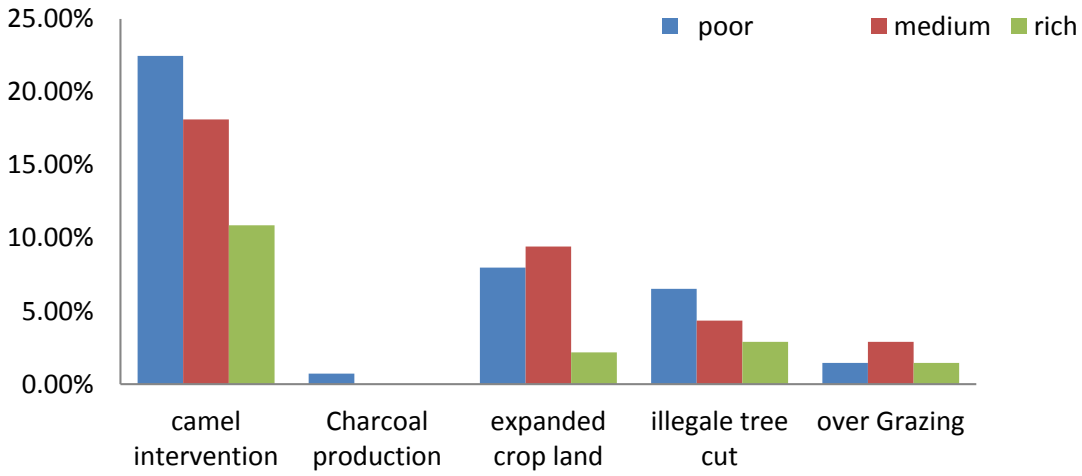


Figure 2. Causes of woodland degradation in woodland.

Table 7. Attitude of local community toward protected woodland.

Questions	Response of the respondent (N=138)		
	Poor	Medium	Rich
	Yes	Yes	Yes
Is there any benefit you gained from PW?	57 (41.3%)	51 (36.95)	14 (10.14%)
Is there any complaint in sharing the benefit?	7(5.07%)	0 (0%)	0 (0%)
Do you expand your agriculture land to woodland?	8 (5.78%)	11 (7.97%)	1 (0.72%)
Do you want to change PW to AL?	3 (2.17%)	7 (5.07%)	13 (9.42%)

Own Computation: 2017-2018. PW=Protected Woodland; AL=Agricultural land.

Figure 3. Tsegu Ereso Photo: 2017-2018.

wood during mourning, weeding, grass contribution for construction, and as a source of income, reducing soil erosion and by absorbing carbon dioxide from the atmosphere and reducing climate change (Figure 3).

The main provisions of the woodland for the local community were fuel wood and grass. After the grass was harvested, the woodlands were allowed to be grazed only by oxen. Even though a large number of the local

community have a positive attitude toward protected woodland, about 5.07% of the respondents complained that there is unequal distribution of benefits particularly in protected woodland as they indicted in Table 6.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

REFERENCES

Central Statistical Agency (CSA) (2012). Ethiopia demographic and health survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International 430 p.

Dugda Woreda Agricultural Office (2015). Baseline data of total land coverage and agricultural activity. Unpublished document.

Endale Y, Derero A, Argaw M, Muthuri C (2017). Farmland tree species diversity and spatial distribution pattern in semi-arid East Shewa, Ethiopia. Forests, Trees and Livelihoods 26(3):199-214.

Girma E, Assefa T, Deribew A (2010). Cigarette smokers' intention to quit smoking in Dire Dawa town Ethiopia: an assessment using the Transtheoretical model. BMC Public Health 10(1):320.

Hengsdijk H, Jansen H (2006). Agricultural development in the Central Ethiopian Rift valley: A desk-study on water-related issues and knowledge to support a policy dialogue (No. 375). Plant Research International pp. 1-25.

Jhariya MK, Bargali SS, Swamy SL, Kittur B, Bargali K, Pawar GV (2014). Impact of forest fire on biomass and carbon storage pattern of tropical deciduous forests in Bhoramdeo Wildlife Sanctuary, Chhattisgarh. International Journal of Ecology and Environmental Sciences 40(1):57-74.

Kittur B, Swamy SL, Bargali SS, Jhariya MK (2014). Wildland fires and moist deciduous forests of Chhattisgarh, India: divergent component assessment. Journal of Forestry Research 25(4):857-866.

Mayaux P, Holmgren P, Achard F, Eva H, Stibig H, Branthomme A (2005). Tropical forests cover change in the 1990s and options for future monitoring. Philosophical Transactions of the Royal Society 360:373-384.

Negi VS, Joshi BC, Pathak R, Rawal RS, Sekar KC (2018). Assessment of fuelwood diversity and consumption patterns in cold desert part of Indian Himalaya: implication for conservation and quality of life. Journal of Cleaner Production 196:23-31.

Pimm S, Raven P, Peterson A, Sekercioğlu ÇH, Ehrlich PR (2006). Human impacts on the rates of recent, present, and future bird extinctions. Proceedings of the National Academy of Sciences 103(29):10941-10946.

Tefera M,Teketay D, Hulten H, Yemshaw Y (2005). The role of enclosures in the recovery of woody vegetation in degraded dryland hillsides of central and northern Ethiopia. Journal of Arid Environments 60(2):259-281.

Wegayehu B (2006). Analysis of farmers' preferences for development intervention programs: a case study of subsistence farmers from East Ethiopian highlands. African development Review 18(2):183-204.

Yamane I, Sato K (1967). Effect of temperature on the decomposition of organic substances in flooded soil. Soil Science and Plant Nutrition 13(4):94-100.

Zegeye H, Teketay D, Kelbessa E (2011). Diversity and regeneration status of woody species in Tara Gedam and Abebaye forests, northwestern Ethiopia. Journal of Forestry Research 22(3):315.

Vol. 13(3), pp. 70-76, July-September, 2020
DOI: 10.5897/JGRP2019.0753
Article Number: FAC261264757
ISSN 2070-1845

http://www.academicjournals.org/JGRP

ACADEMIC JOURNALS
expand your knowledge

Journal of Geography and Regional Planning

Review

Challenges and opportunities in environmental impact assessment and environmental audit practice in Kenya

Ngetich J. K.[1]* and Ndiema A. C.[2]

[1]Department of Environmental Monitoring, Planning and Management; School of Environmental Studies, University of Eldoret, Kenya.
[2]Department of Agribusiness Management and Extension; School of Agriculture Veterinary Science and Technology, Masinde Muliro University of Science and Technology, Kenya.

Received 18 November, 2019; Accepted 27 May, 2020

Environmental Impact Assessment and Environmental Audit are tools of trade which are available for use by environmental managers around the world. They are applied as early as possible in decision-making throughout the life cycle of proposed development projects and actions that may have potentially significant impacts on biophysical and socio-cultural environments. These instruments provide for individual stakeholder and community participation in screening, scoping, environmental impact identification and evaluation, prior to development of Environmental and Social Management plan. Despite the application of Environmental Impact Assessment and Environmental Audit techniques in environmental management in Kenya for the past two decades, environmental problems continue to persist as evidenced majorly by incessant flooding, drought conditions, collapsing buildings and dams. There are very high hopes in Kenya for environmental conservation and restoration following the roll out of the Competence Based Curriculum (CBC) which entrenches environmental activities on three strands; the environment and its resources, the social environment and the care of environment. Competence Based Curriculum will produce environmental conscious citizens who will contribute towards making the planetary earth a better place to live in. The paper examines Environmental Impact Assessment and Environmental Audit practice in Kenya and suggests measures for better environmental management.

Key words: Environment, impact, assessment, audit, competence based curriculum.

INTRODUCTION

Environmental Impact Assessment (EIA) refers to a systematic assessment which is conducted to determine whether or not a program, activity or project will have negative impacts on the environment. Environmental Audit (EA) on the other hand is the systematic, periodic, objective and documented assessment of an operation, activity, project or a programme against selected audit criteria. Environmental Impact Assessment and Environmental Audit are tools of trade which are available for use by Environmental managers. EIA is applied in

*Corresponding author. E-mail: ngetichjob@yahoo.com.

decision-making throughout the life cycle of proposed development projects and actions that may have potentially significant impacts on biophysical and socio-cultural environments. These instruments provide for citizen participation in screening, scoping, environmental impact identification and evaluation, prior to development of Environmental and Social Management plan. It is hypothesized that despite the application of Environmental Impact Assessment and Environmental Audit techniques in environmental management in Kenya for the past two decades, environmental problems continue to persist as evidenced mainly by incessant occurrences of flooding, drought conditions, collapsing buildings and dams. The paper discusses EIA/EA as it is practiced in Kenya and offers some insights on how it can be strengthened for better environmental management in Kenya.

Theoretical background

It should be noted that the National Environmental Policy Act (NEPA) was introduced in the United States in 1969 and which required Environmental Impact Statements (EIS) to be prepared for projects that were likely to have impacts on the environment. Environmental assessment was accepted in principle at the United Nations conference on human environment in 1972 at Stockholm when the framework of modern environmental international and national policy was laid down. The overall objective of EIA as designed was to ensure that environmental concerns are integrated in all development activities in order to contribute to sustainable development. The ultimate goal of EIA/EA is to have a better quality of life for present and future generations through sustainable management and use of the environment and its natural resources.

In Kenya environmental issues are anchored in the Constitution of Kenya 2010. Article 42 provides that every citizen has a right to a clean and healthy environment. Article 10 recognizes public participation as a principle of governance, while Article 69 gives the state a responsibility to encourage public participation in environmental management. Article 242 outlines transparency and timely provision to the public accurate information as a principle of public service and these include environmental information (Republic of Kenya, 2010).

The Environmental Management and Coordination Act (EMCA) 1999 and as amended in 2015 is the framework law that governs environmental issues in Kenya**.** Section 58 sets out the need for EIA for all projects listed on the second schedule of the Act. It further states the time period within which oral or written comments from members of the public and institutions should be submitted to the National Environmental Management Authority (NEMA). The Environmental Impact Assessment and Audit regulation of 2003, further spells out guidelines on how EIAs and EAs are conducted.

Entrenchment of Competence Based Curriculum (CBC) in Environmental Management in Kenya

There is a paradigm shift in the Kenyan education system following the introduction of competence-based curriculum (CBC). The CBC is set to replace the current 8-4-4 system of education which has been operational since 1986. The CBC adopts a 2-6-3-3-3 model. The CBC is a new system of education designed by the Kenya Institute of Curriculum Development team and launched by the Ministry of Education in 2017. The CBC is designed to emphasize on the significance of developing skills and knowledge and also applying those competencies to real life situations (Jackson and Felix, 2018).

The CBC has in its course content environmental activities in learning from pre-unit to grade 3. In terms of content there are three units of environment which are known as strands; strand one covers environment and its resources including water, soil, plants, animals and energy; strand two deals with social environment encompassing, harmonious living in the community, keeping safe in the community, safe travels, environmental culture events as well as enterprise projects. The third strand is on the duty to care for environment and it involves caring for plants and animals, soil, water, energy and waste management. The opportunity here is that the children under CBC curriculums are being inculcated with good ethos important for environmental conservation, as they will be the ones to contribute towards making EIA/EA practice more effective in the future.

Problem statement

Environmental issues have no boundaries and any human endeavor is likely to have negative environmental impacts if it is not properly monitored. With the burgeoning population coupled with a myriad of strategies targeted at meeting the needs of humanity, the capacity of the planetary earth to meet these demands will not be sustainable, unless EIA/EA is used by all as a technique for environmental management. Despite the application of Environmental Impact Assessment and Environmental Audits as a tool in the environmental managements in Kenya over the past two decades, environmental problems continue to persist as manifested by incessant incidences of floods and drought conditions, climate change, proliferation of informal settlements, deforestation, collapsing buildings and dams. This underscores the need for interventions through the use of EIA/EA for environmental enhancement.

METHODOLOGY

This is a review paper which seeks to enhance understanding of environmental issues within the context

of EIA/EA practice whereby the main source of information was derived from desktop review.

Literature review involved extensive reading of materials from library and internet sources. The Government of Kenya publications were scanned thoroughly including; constitution of Kenya (2010), Environmental Management and Coordination Act (EMCA cap387), Environmental Impact Assessment and Environmental Audits regulations and Environmental policies in Kenya. The reports from Environmental Institute of Kenya (EIK), a professional environmental body were useful. In addition, the EIA/EA reports from National Environmental Management Authority (NEMA) website provided the required data that informed the structure of the paper. Interviews were done with NEMA official as well as the Registered Lead Experts and where data on EIA/EA practice in Kenya was sourced.

Environmental impact assessment/environmental audit practice in Kenya

It should be noted that there is a Curriculum which is used to train environmental managers who are either designated as Lead Experts or Associate Experts. The Curriculum is approved by both NEMA and the relevant EIA/EA training institutions. The EIA/EA course objectives are to;

(1) Prepare/ or write EIA study reports
(2) Carry out Environment Audits and write EA report
(3) Use EIA as a decision-making tool in project planning and management
(4) Mainstream EIA /EA practices in organizations
(5) Initiate Eco-friendly projects
(6) Form a team and participate in EIA/EA report writing
(7) Review EIA/EA study reports.

In terms of the course content; there are seventeen topics which are covered in the curriculum and which are outlined as;

(1) Introduction to Environmental Impact Assessment, Auditing and Monitoring
(2) Policy and legal framework for EIA/EA in Kenya and Multilateral Environmental Agreements
(3) Stakeholder and public participation in EIA/EA
(4) Environmental economics
(5) Environmental Management Systems standard and practices
(6) Environmental information systems and technology for EIA/EA
(7) EIA methods
(8) Environmental Auditing
(9) Strategic Environmental Assessment
(10) EIA/EA report writing
(11) Review and decision-making process of EIA/EA study reports.
(12) Environmental management Plan
(13) EIA/EA Project management
(14) Social Impact Assessment (SIA)
(15) Health Impact Assessment (SIA
(16) Industrial Ecology
(17) Occupational Health and Safety Management

Environmental impact assessment and environmental audit methodology

EIA is a process that requires consideration of the environment and public participation in the decision-making process of project development. An Environmental Impact Statement (EIS) is a review document prepared for assessment in the EIA process. The stages in EIA process include the following:

(1) Screening, to decide which projects should be subject to environmental assessment. Criteria used include threshold, size of the project and sensitivity of the environments,
(2) Scoping is the process which defines the key issues that should be included in the environmental assessments,
(3) EIS preparation is the scientific and objective analysis of the scale, significance and importance of impacts identified,
(4) Review panel guides the study and then advises the decision-maker (Brilhante et al., 2002; Njuguna, 2007; Republic of Kenya, 2015).

The standard EIA process as it is practiced in Kenya is as shown in Figure 1.

RESULTS AND DISCUSSION

EIA/EA submission and review

Once the EIA/EA document is prepared and submitted to NEMA. EIS is reviewed with the possibility of a license being issued or not. When EIA/EA study reports are under review, consideration is put on whether projects fall in three categories; notably; Low, Moderate and High-risk projects. Table 1 shows some selected categories of Environmental risk projects which must undergo EIA process in Kenya.

The Low risk and the Medium Risk Impact projects are processed and approved at respective offices of County Directors of Environment, at the County or regional level; while the High-Risk Impact Projects, are sanctioned at NEMA headquarters based in Nairobi.

Role of environmental experts and the environment institute of Kenya

Environmental Impact Assessment Expert is a person or

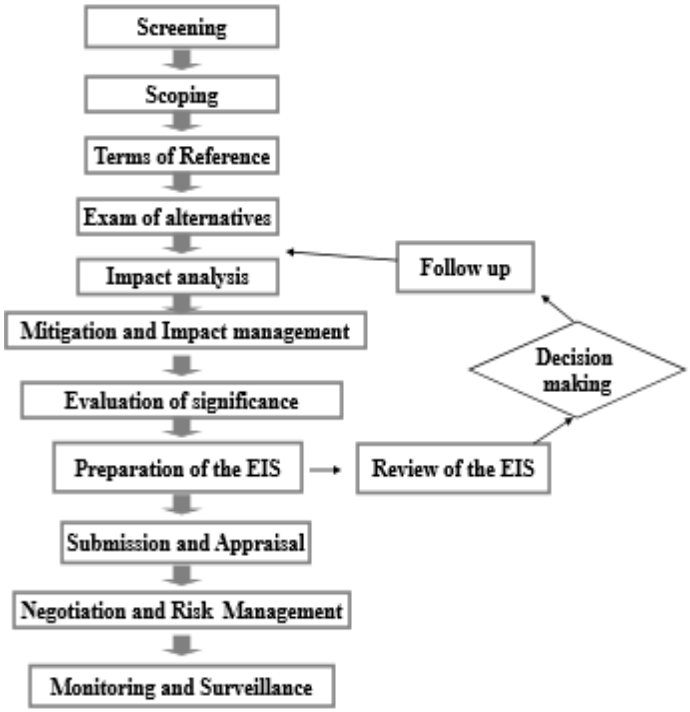


Figure 1. Standards EIA Process in Kenya.

Table 1. EIA Projects in Kenya.

S/N	Low risk projects	Medium risk projects	High risk projects
1	Establishment of places of worship including churches, mosques and temples	Shopping centers,	Water resources and related infrastructure
2	Dispensaries, health centers and clinics;	Construction and rehabilitation of roads	Marine resource exploitation and reclamation,
3	Car and bus parks;	Drilling for purposes of utilizing ground water resources	Waste disposal works,
4	Cottage industry,	Reforestation and afforestation;	Processing and manufacturing industries,
5	Schools and related infrastructure for learners one hundred	Artisanal mining	Mining and other related activities

Source: Republic of Kenya (2019).

a Firm registered by NEMA and Environment Institute of Kenya (EIK, 2019) to conduct Environmental Impact Assessment and Audit. EIK is a professional membership body for the professionals working in the field of environmental management and administration. The membership is drawn from various sectors of the economy including academia, agriculture, industry, consultancy, lead agencies, national and county governments and NGO's. It was registered under societies Act Cap 108 laws of Kenya on the 4th August 2014 and has 1300 members since then. The aims and objectives of EIK are contained in its current constitution and are stated as:

i) to promote and advance the practice of integrated environmental assessment,
ii) to facilitate the acquisition of knowledge through collaboration with relevant parties,
iii) to promote, maintain and advance the highest professional standards and best practice in the field of sustainable development, for the public good,
iv) to engage in any other activities in the interest of the profession as may be approved by the committee from time to time,
v) to establish branches and institutes as deemed necessary from time to time (EIK, 2019).

NEMA currently registers Lead Experts free of charge for the purpose of preparing EIA/EA reports on its behalf. The registered Experts fall in two categories of either,

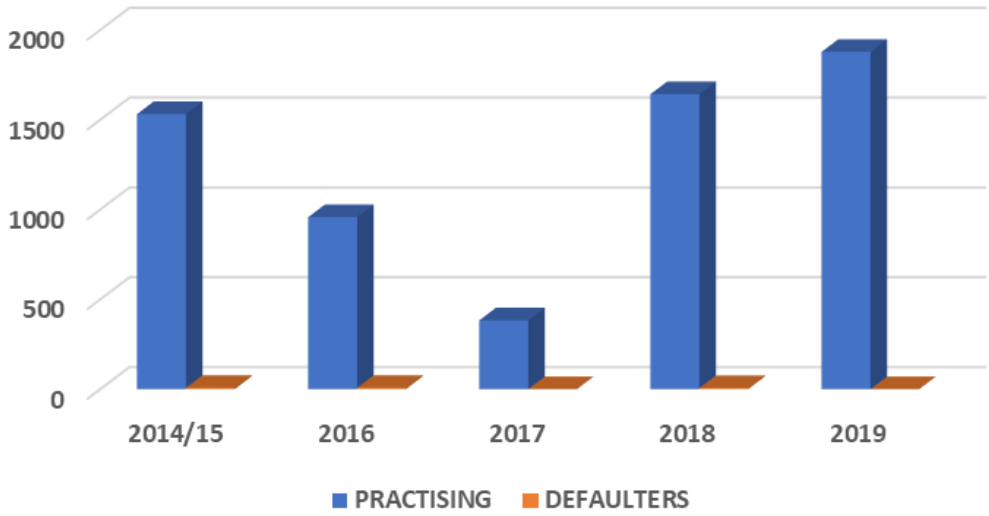


Figure 2. Licesnsed and Derigistered Experts
Source: www.eik.co.ke, June 2019.

Lead Experts or Associate Experts. Since its foundation, the number of Experts registered by EIK is on the increasing trend. In 2014/2015, there were 1531 Experts and the number increased to 1877 Experts in 2019. Figure 2 shows the number of licensed and deregistered Environmental Experts in Kenya. It should be noted that NEMA is responsible for disciplining Environmental Experts with unethical conducts and as such 7 Experts so far have been deregistered.

Once the Lead Experts have finalized the process of writing EIA/EA reports, the reports so prepared are submitted to NEMA for review and subsequent issuance of licenses. NEMA circulates reports to various Lead Agencies with clear instructions to give feedback of EIA/EA reports within 21 days, failure to which the project is considered approved. When reviewing EIA/EA study reports, the comments and inputs should revolve around the following concerns;

i). Whether the project site is ideal for the proposed project,
ii). Have the applicable legislations been cited and their compliance plans discussed?
iii). Does the report identify potential positive and negative environmental, cultural and social impacts?
iv). Has the report identified appropriate (including indigenous/local) mitigation measures for the impacts in (3) above?
v). Has the report adequately considered alternative project site, technologies, materials, design, including re-routing beyond what is proposed?
vi). Is the Environmental and Social Management Plan (ESMP) adequate, effective, efficacy, practical? and
vii). Other issues of concern on the project (KIA, 2006; Gerald, 2015; UOE, 2019).

Challenges in environmental impact assessment and environmental practice

There are a number of challenges associated with EIA/EA practice in Kenya, which range from institutional, legal and operational to ethical concerns.

Structure of processing EIA/EA

NEMA is the recipient of all EIA/EA reports which are prepared by Lead Experts. Once received NEMA circulates EIA/EA study reports to various Lead agencies and institutions for comments. Among the Lead Agencies whose inputs are required include; the Lands Officer, the County Physical Planner, Public Officer, Kenya Road Authority, National Construction Authority, Water Resource Management Authorities and the like. When preparing the EIA/EA study reports NEMA requires the proponent to attached approved drawings, designs, and specification as part of appendices to justify the need for approval. It is at this point that the process of the regularization of unsuitable site for project is done which negates the objectives and purpose of EIA. The starting point should be to carry out site evaluation and due diligence to ascertain the suitability of the land and ownership details prior to preparation of any EIA study reports. It should be noted that some projects involve designs such as architectural and structural drawings which have financial implications to the proponent as they are prepared by professional designers and if the EIA/EA study reports are rejected on account of inappropriate locations, the proponents will incur heavy losses and as such NEMA should not put many demands on the applicants at the preliminary stages.

NEMA also requires that EIA/EA study reports which are normally circulated to the Lead Agencies for comments are to be received within 21 days; failure to submit comments for EIA/EA report renders the project approved. This legal requirement does not take into account the circumstances under which the Lead agencies operate. It may not be possible to give inputs within specified timeframe because of logistical issues which the Lead Agencies face including; lack of transport to the site, shortage of personnel and security concerns in some cases. There is need to facilitated the Lead Agencies in order to provide timely feedback to NEMA on EIA/EA projects.

Institutional and legal overlaps

Whereas the Constitution of Kenya 2010 is clear on distribution of functions between the National and County government, there are instances where the county government have enacted their own county specific laws which contradicts some sections of EMCA cap 387 and its supporting regulations. For example counties have a responsibility to monitor noise levels, but in case the matter touching on noise level lands in court, the County governments have no jurisdiction, but to turn to NEMA for help as it is empowered by law to appear and give the necessary evidences in court , and hence the need for clear definition of their mandates.

Environmental impact assessment and environmental audits for old projects

In Kenya, EIA/EA process was introduced in 1999. Although there was a window period when some projects were allowed to undergo through initial audits, only industrial establishments were given such preferential treatment and all other development were left out. In this regard most development project which had been carried out prior to 1999 stills exists and continuous to have significant impacts on the environment. The legal experts argue that the law cannot be applied in retroactive manner and this underscores the need to fix this EIA/EA lacuna.

Interrelations between zoning and environmental impact assessment

Urban areas and cities are governed by various planning norms which require that specific urban planning and development standards are adhered to in order to ensure sustainable urban livelihoods. Globally it is estimated that half of the population will be living in urban areas and cities by 2050. This calls for the need for meticulous planning, and zoning is one of the techniques which is used to create spatial order. Whereas zoning specifies permissible planning standards, EIA on the other hand allows any development to be carried out in the zoned area so long as an EIA is done. This leads to change of user and attendant conflicting and competing land uses which go against sustainable human settlement planning. There is need to draw a line between zoning and the scope of Environmental Impact Assessment within the context of urbanization.

Unethical EIA/EA practices

It has been pointed out by various key informants that some Lead and Associate Experts who are registered by NEMA to prepare EIA/EA study reports are doing shoddy work. In some instance the Experts are involved in cutting and pasting of reports leading to production of EIA/EA reports which if they are used for decision making purpose will result in licensing of a project that will have long term negative environmental impacts. There is need for quality control of EIA/EA study reports which emanate from the Environmental Expert and due diligence must be ensured prior to approval of projects.

None- allocation of funds for EIA/EA projects

In an effort to ensure ease of doing business in Kenya, the Government suspended collection of licensing fees for Environmental Impact Assessment regulation. The decision has affected the revenue stream for NEMA as the regulator and thus militating against its efforts for ensuring environmental sustainability. It is notable that there are numerous public installations and projects which are ongoing and others are set to be implemented. During conceptualization of these projects and subsequence budgeting, the cost of undertaking EIA/EA projects are not factored in the annual budgets and as such, in some cases EIA/EAs are not done as required resulting in deleterious environments impacts. In some case, the County and National governments can bulldoze projects to be implemented without EIA/EA being done, a situation that makes the government to be seen as culprits in facilitating environmental deterioration and which should not be condoned. All stakeholders in environmental management should embrace the culture of transactive leadership where the principles of leading by example and role modeling are observed.

CONCLUSION AND RECOMMENDATIONS

As the country's population increases coupled with the need to meet associated development requirements, the ability of the planetary earth system to support these demands may not be sustainable, unless sound environmental planning and management practices are effectuated. In this regard both international and local

institutions should create synergies for conservation and protection of the environment. The National and County governments should re-engineer and re-aligned policies and legislations that govern EIA/EA practice. Currently the laws are implemented by two offices with diverse vertical and horizontal levels of command which do not auger well for environmental management. There should be one central unit which should be responsible for handling environmental litigation issues associated with EIA/EA practice.

There is need for an independent professional body to guide the operations of Registered Lead and Associate Experts in the industry. Currently the Environmental Institution (EIK) is more of club of Experts that is responsible for professional developments of its members and has no powers to discipline rogue environmental Experts who are involved in unethical practices such as cutting and pasting of reports as well as overcharging and undercharging on EIA/EA fees. NEMA should not overload itself with matters of handling professional misconduct but instead this should be relinquished to the proposed professional body and which should be made self-regulatory through its membership to ensure integrity of EIA/EA reports. There is also need for NEMA to change the circulation strategy of the EIA/EA reports to the Lead Agencies and to submit EIA/EA reports to independent Assessors or Experts in specific fields where the projects relate to. By so doing NEMA will be able to benefit from external checking and ensure environmental integrity. In order to maintain a serene and a health environment, financial health of EIA/EA stakeholders must be ensured and therefore the government and other partners should allocate adequate financial resources to EIA/EA activities in their budgets. Although Competence Based Curriculum (CBC, 2019) is in its nascent stage in Kenya, it recognizes environmental activities right from pre-school to grade 1, 2 and 3 where strands such as environment and its resources; social environment and care for the environment are inculcated in children and as such these offers EIA/EA an opportunity for it to withstand the test of times as tool for environmental management for now and in the future.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Brilhante O, El-Hefnawi A, El-Sherif D (2002). Integrated Approach to Environmental Impact Assessment and IHS, Rotterdam. Available at: https://www.scribd.com/document/109082807/Integrated-Approach-to-EIA-Training

Competence Based Curriculum (2019). Competency Based Curriculum, Education News in Kenya. Accessed from https://kenyayote.com/what-is-competency-based-curriculum-cbc 3rd July 2019.

Environment Institute of Kenya (EIK) (2019). Environmental Experts. Available at: www.eik.co.ke

Gerald K (2015). Environmental Engineering. Graw Hill Education , New Delhi.

Jackson M, Felix S (2018). Know More, Environmental Activities, Nairobi, Storymoja Books, Nairobi, kenya. Available at: https://storymojaafrica.com/products/know-more-environmental-activities-learners-workbook-grade-1

Njuguna N (2007). Environmental Planning and Management. Towards Better Environmental Law, Management, Evaluation and Impact Assessment. ARTS Press, Nairobi.

Kenya Institute of Administration (KIA) (2006). EIA Course Training Government of Kenya (2010). The Constitution of Kenya.

Republic of Kenya (2015). Environmental Management and Coordination Act. Government Printer, Nairobi. Kenya.

Republic of Kenya (2019). Legal Notice NO. 31, Government Printer Nairobi.

University of Eldoret (UOE) (2019). Environmental Impact Assessment and Audit Training Report. Unpublished Report,University of Eldoret.

Related Journals: