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Quality of Environmental Impact Assessment Reports for Lodge Developments in Protected Areas: The Okavango Delta Case, Botswana

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Abstract: This paper evaluates the quality of environmental impact assessment (EIA) reports for lodge developments in Botswana's Okavango Delta, which is a wetland of international importance and forms part of a transboundary conservation area and world heritage site. A quality review of 31 EIA reports, approved between 2013 and 2021, was conducted by applying a context specific EIA report quality review package. The review package consists of four review areas with seventeen categories and 64 sub-categories, adapted from similar international packages to address the specific legal requirements for EIA in Botswana as well as best practice. Results show that the overall quality of the reports are poor, with 71% graded 'unsatisfactory'. In general, descriptive areas of the EIA reports fared better, while the performance of the more analytical areas was 'poor'. Key areas of weakness include - the identification of impacts; prediction and assessment

of impact magnitude; as well as identifying alternatives and mitigation measures. Overall results suggest that currently EIA report content is insufficient to inform decision-making towards sustainable tourism development in the Okavango Delta. It is recommended that areas of weakness can be addressed by providing clear strategic direction; developing a central data management system; setting norms and standards for tourism development as well as building capacity and awareness of key stakeholders. This will ensure that EIA remains a tool of choice for decision making and avoid becoming a mere 'red-tape'/administrative process aimed at securing development approvals.

Keywords: environmental impact assessment; quality; report review; lodge development; protected areas; tourism; Okavango Delta, Botswana.

JEL Classification: Q56; Q24; Q26; R11; Z32.

Introduction

Internationally, expansion of tourism infrastructure (such as lodges) places increased development pressure on often sensitive protected areas (Li, 2023), especially in regions such as sub-Saharan Africa where nature-based tourism contributes significantly to the overall economy of many countries (Spenceley, 2003; Manrai *et al.* 2020). Various policy instruments exist to regulate the environmental performance of tourism developments, dealing with for example water, waste and energy (Alberts *et al.* 2022; Morante-Carballo *et al.* 2023). In this regard, environmental impact assessment (EIA) is internationally recognized as one of the most successful and widely applied environmental policy instruments (Bond *et al.* 2020), also within the African context (Sandham *et al.* 2022). EIA is generally understood as a pro-active decision support instrument, that aims to predict and consider mitigation options for potentially significant environmental impacts before decisions are made or actions taken (Yan, 2023). For this reason, EIA has an important role to inform decisions on future tourism developments, such as lodges, within protected areas.

1. Research Background

Whilst the potential contribution and importance of EIA as a decision support instrument is recognized, much research has gone into designing frameworks for environmental assessment performance evaluation, to determine how well EIA is being done and what it is achieving (Marsden 1998; Retief, 2007; Bond *et al.* 2022). Much of the performance evaluation research focus on EIA 'effectiveness' (Sadler 1996; Morrison-Saunders and Retief, 2012; Alberts *et al.* 2020). Different dimensions of 'effectiveness' have been identified of which a key dimension is so-called 'substantive effectiveness'. This dimension evaluates the quality of inputs to decision making, as mainly reflected in the EIA reports submitted to regulators. The rationale being that good quality EIA report inputs/content would lead to better decisions and ultimately more effective outcomes. Numerous studies exist in several regions of the world that focus on evaluating EIA report quality, including southern African countries (see Sandham *et al.* 2022 for a detailed literature review). EIA report quality is commonly evaluated within specific country jurisdictions and for specific sectors. For example, EIA report quality has been reviewed in the South African context for sectors such as the explosives industry (Sandham *et al.* 2013a), mining (Sandham *et al.* 2008a), water management (Sandham *et al.* 2008a), tourism (Malepe *et al.* 2022), biological control (Sandham *et al.* 2010), as well as for protected areas (Wylie *et al.* 2018; Sandham *et al.* 2020). The reason for the regional and sectoral focus is that report quality is context specific and will depend on the local legislative and policy context as well as sector specific requirements (Sandham *et al.* 2013b).

The uniqueness of EIA in the context of protected areas and the need for report quality research within the tourism sector has recently been highlighted by several authors (see for example Sandham *et al.* 2020; Alberts *et al.* 2021, Malepe *et al.* 2022, Zaini *et al.* 2023). It is pointed out that these EIAs are conducted within a unique biophysical, socio-economic and governance context. This requires tailored EIA practice and specific skills to confront the many complexities and challenges, such as weak public participation and dealing effectively with mitigation and monitoring. Moreover, although protected area management authorities are responsible for the management of these areas, EIA provides, in many cases, the only regulatory measure outside of the management authority's mandate to regulate development. It, therefore, provides an important addition to regulatory checks and balances where regulatory systems are weak or non-existent. EIA, thus, has the potential to strengthen the management authority's and affected communities' ability to influence development decisions and deal with developmental pressures affecting protected areas.

Botswana provides an ideal case country against which to explore the quality of EIA reports in the context of tourism related protected area development. This is because tourism is one of the primary economic sectors, and the majority of EIAs undertaken has been for the development of tourism infrastructure (Tshwene-Mauchaza, 2013; Segosebe 2020). Moreover, within the Botswana tourism context, the Okavango Delta is considered the

premier tourist destination with nationally the highest tourism related lodge development pressure (Mochankana *et al.* 2023). The delta is considered the jewel in Botswana's biodiversity and tourism crown. In addition to being rich in biodiversity, it is also a formally declared protected area (Republic of Botswana, 1992), a world heritage site (Matswiri 2017), the only Ramsar wetland of international importance in Botswana (Department of Environmental Affairs, 2008), part of a transboundary conservation area, and a site of key bird diversity (Ratsie *et al.* 2011). This pristine area is a hotspot for nature-based tourism and, thus, vulnerable to degradation by the very tourism resource that drives the region's economy (Keitumetse *et al.* 2023). According to the country's legislation, developments in a protected area, such as the Okavango Delta, trigger the need to conduct an EIA (Republic of Botswana, 2012). Yet, unlike its neighbor, South Africa, research evaluating EIA Report quality in Botswana generally, and in relation to tourism specifically is seriously lacking. This, despite EIA practice being mandatory since 2005 (Segosebe 2020). Therefore, this research aims to evaluate the quality of EIA reports for lodge developments in the Okavango Delta with a view to make recommendations to improve EIA practice for tourism development in protected areas.

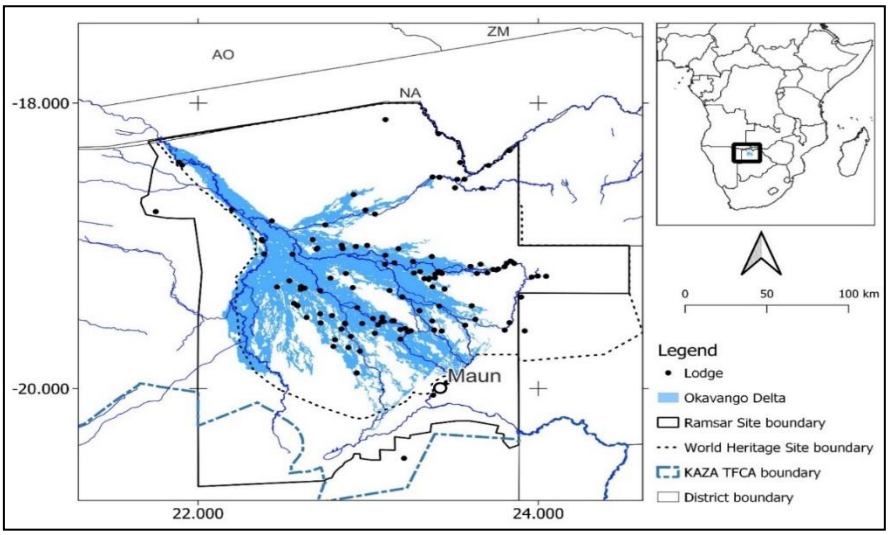
2. Method

To address the aim of the paper, a case study approach, which is commonly employed in research dealing with EIA report quality, was applied (Sandham *et al.* 2020; Alberts *et al.* 2021; Claassens *et al.* 2022). Section 2.1 provides an explanation of the selection of cases, while Section 2.2 outlines the EIA review package used. Finally, Section 2.3 describes the evaluation and analysis of the EIA reports. From an ethics perspective this research was approved by the North-West University's Faculty of Natural and Agricultural Sciences Ethics Committee (NWU-01218-22-A9) as having 'low risk' because it involves content evaluation of documentation that is generally available in the public domain.

2.1. Selection of Cases

A sample of 31 EIA cases was purposively selected from a pool of more than a hundred approved EIA reports for developments in Botswana's North-West District. The 31 selected EIA cases are summarised in Table 1 and the location of lodge developments in the core area of the Okavango Delta is shown in Figure 1. An attempt was made to ensure representation across years and across consultants.

Figure 1. Distribution of lodge developments in the Okavango Delta



The following five report selection criteria were used:

- Criterion 1: The complete and final EIA reports had to be readily available to the reviewer.
- Criterion 2: EIA reports had to relate to tourism lodge developments. Although tourism infrastructure such as guesthouses, campsites, hotels, agrotourism projects, houseboats, boat rides and general safaris also triggers EIA, to ensure consistency in the types of infrastructure - only lodge development were considered for this research.
- Criterion 3: EIA reports had to include lodge developments located within the core area of the Okavango Delta (see Figure 1).

- Criterion 4: EIA reports had to be relatively recent (i.e. the last decade - developments between 2013 and 2021); and
- Criterion 5: EIA reports had to be representative of different environmental consultants to ensure a level of representivity across the pool of EIA professionals working in the Okavango Delta.

The lodging types included in the selected EIA cases (Table 1) were primarily tented camps, although brick and mortar facilities were occasionally included.

Table 1. Summary of 31 selected EIA cases for lodge developments in the Okavango Delta

Year	Case study selection
2013	Mopiri Lodge by Leganang Motanzi
2013	Sandibe Okavango Safari Lodge by andBeyond
2013	Tubu Tree Camp by Ngamiland Adventure Safaris (Pty) Ltd
2014	Banoka Bush Camp by Safari Adventure Company (Pty) Ltd
2014	Linyanti Tented Camp by Linyanti Explorations (Pty) Ltd
2014	Little Vumbura Camp by Okavango Wilderness Safaris (Pty) Ltd
2014	Shakawe River Lodge by Shakawe Fishing Safaris (Pty) Ltd
2015	Camp Okavango by Desert and Delta Safaris (Pty) Ltd
2015	Chief's Camp by Sanctuary Retreats
2015	Gomoti Tented Camp by Santawani Partnership (Pty) Ltd
2015	Mombo Camp by Wilderness Safaries (Pty) Ltd
2015	Vumbura Plain Camp by Okavango Wilderness Safaris (Pty) Ltd
2016	Drotsky's Cabins by Eileen Drotsky
2016	Jacana Camp by Ngamiland Adventure Safaris (Pty) Ltd
2016	Jao Camp, Concession Headquarters and related infrastructure by Ngamiland Adventure Safaris (Pty) Ltd
2016	Kwetsani Camp by Ngamiland Adventure Safaris (Pty) Ltd
2016	Zarafa Camp by Linyanti Explorations (Pty) Ltd
2017	Camp Moremi by Desert and Delta Safaris (Pty) Ltd
2017	Chitabe and Chitabe Lediba camps by Flamingo Investments
2017	Khwai Camp by Kgori Safaris (Pty) Ltd
2018	Baines' Camp by Sanctuary Retreats
2018	Khwai Leadwood Camp by Ntsogotlho Holdings (Pty) Ltd
2018	Xigera Camp by Great Explorations (Pty) Ltd
2019	Mankwe Bush Lodge by Kgori Safaris (Pty) Ltd
2019	Selinda Camp by Linyanti Explorations (Pty) Ltd
2019	Shinde Camp by Ker and Downey Botswana (Pty) Ltd
2020	Pepere Island Lodge by All Star Investments (Pty) Ltd
2020	Two Lagoons Camp by Makgobokgobo Youth Trust
2021	Little Vumbura by Okavango Wilderness Safaris (Pty) Ltd
2021	Seba Camp by Abu Private Reserve
2021	Xaro Lodge by Xaro (Pty) Ltd

The accommodation tourism grading of these facilities ranked from three to five stars. The average bed size across the facilities included in the sample was eight rooms, while the average number of staff units was 24. The 31 EIA reports were compiled by eight different environmental consultants. On average, 3 to 5 reports were reviewed per year between 2013 and 2021. The cases are dealt with anonymously in the results and discussions section.

2.2. EIA Quality Review Package

The Lee and Colley EIA report quality review package (Lee *et al.* 1999), initially developed for the United Kingdom context, is commonly adapted internationally to different national and sectoral contexts. The package consists of multiple criteria arranged in a four-level hierarchical structure that consists of an overall report grade, review areas, categories and sub-categories (see Lee *et al.* 1999, Sandham and Pretorius, 2008).

For the Botswana EIA report review, a total of seventeen categories, with 64 sub-categories were developed (see Table 2). Since the legal provisions for EIA in Botswana specify only the minimum report requirements, a report that satisfies these requirements would be regarded as minimally complete, rather than necessarily of good quality. To enable the determination of quality beyond legal compliance (completeness of information), international literature was used to develop the review sub-categories as part of the review package. Additional literature considered to adapt the sub-categories included EIA quality review research on wetland-affecting projects (Sandham *et al.* 2008), biodiversity-rich areas (Hallatt *et al.* 2015; Swanepoel *et al.* 2019), tourism facilities (Wylie *et al.* 2018) and protected areas (Sandham *et al.* 2020). Ramsar recommendations for EIA in wetlands of international importance were also included (Ramsar Secretariat Convention, 1997).

Table 2. Summary of review areas and review categories applied for the quality review of EIA reports for lodge developments in the Okavango Delta

Review Area	Review category	Review sub-category
Review area 1: Description of project and environment	1.1 Project description	1.1.1 Proponent identification 1.1.2 Purpose and objectives of application 1.1.3 Time and space boundaries 1.1.4 Description of design, size, coordinates 1.1.5 Presence and appearance of development 1.1.6 Nature of production process 1.1.7 Nature and quality of raw materials 1.1.8 Identification of applicant 1.1.9 Details of EAP 1.1.10 Identification of legislation and guidelines
	1.2 Site description	1.2.1 Need and desirability of the application 1.2.2 Area of development site 1.2.3 Demarcation of land use area 1.2.4 Duration of project phases
	1.3 Waste	1.3.1 Means of transporting raw materials 1.3.2 Types and quantities of waste 1.3.3 Waste treatment, disposal and disposal routes
	1.4 Environmental description	1.4.1 Area to be affected by development: geographical, physical, biological, social, economic and cultural aspects
	1.5 Baseline description	1.5.1 Effects occurring away from immediate affected environment 1.5.2 Important components of the affected environment 1.5.3 Existing data sources 1.5.4 Local land use plans, policies consulted, and other data collected
Review area 2 Impact identification and evaluation	2.1 Definition of impacts	2.1.1 All possible effects on environment, cumulative, short, medium and long term, permanent and temporary, positive and negative 2.1.2 Interaction of effects on human beings, flora and fauna, soil, air, water, climate, landscape, material assets and cultural heritage 2.1.3 Impacts from non-standard operation conditions -accidents etc 2.1.4 Impacts from deviation from baseline conditions
	2.2 Identification of Impacts	2.2.1 Impact identification methodology - project specific checklists, matrices, panels of experts, consultations, etc 2.2.2 Brief description of impact identification methods used
	2.3 Scoping	2.3.1 Contact general public and special interest groups 2.3.2 Proof of advertising and notifications to interested and affected parties(landAPs) 2.3.3 Collect opinions and concerns of landAPs and notify landAPs 2.3.4 List of all persons identified as landAPs

Review Area	Review category	Review sub-category
		2.3.5 Summary of issues raised by landAPs
	2.4 Prediction of impact magnitude	2.4.1 Data to estimate magnitude of key impacts 2.4.2 Methods used to predict impact magnitude 2.4.3 Predictions of impact in measurable quantities
	2.5 Assessment of impact significance	2.5.1 Significance of impacts on affected community and society in general 2.5.2 Significance of impacts in terms of national and international quality standards 2.5.3 Justification of proposed method of assessing significance
Review area 3: Alternatives and mitigation	3.1 Consideration of feasible alternatives	3.1.1 Description of alternatives 3.1.2 Description of alternative processes, designs, and operating conditions 3.1.3 Reasonableness of identified alternatives 3.1.4 For severe adverse impacts, rejected alternatives identified 3.1.5 Comparative assessment of all alternatives identified 3.1.6 Identification of best feasible available environmental option
	3.2 Scope and effectives of mitigation measures	3.2.1 Consider mitigation of all significant adverse impacts 3.2.2 Mitigation measures 3.2.3 Extent of effectiveness of mitigation when implemented
	3.3 Mitigation and Monitoring plan	3.3.1 Record of commitment to mitigation measures 3.3.2 Monitoring arrangements
Review area 4: Presentation and communication	4.1 Layout	4.1.1 Introduction/description of layout 4.1.2 Information logically arranged 4.1.3 Use of maps, figures and charts 4.1.4 Chapter summaries for very long chapters 4.1.5 External sources acknowledged
	4.2 General Presentation	4.2.1 Presentation of information 4.2.2 Technical terms, acronyms/abbreviations defined 4.2.3 Statement presented as an integrated whole
	4.3 Presentation of Environmental Issues	4.3.1 Emphasis to potentially severe impacts 4.3.2 Statement must be unbiased 4.3.3 Opinion as to whether activity should/ should not be authorised 4.3.4 Minutes of meetings and responses to comments
	4.4 Emphasis of impacts	4.4.1 Non-technical summary of main findings and conclusions 4.4.2 Summary must cover all main issues

2.3. Evaluation and Analysis

The relevant EIA-related documentation associated with each of the 31 EIA cases was carefully and systematically reviewed against the sub-categories (Table 2) to determine the extent/degree to which each criterion was addressed. Assessment symbols ranging from A to F (Table 3) were used to score/grade each of the sub-categories. The review is hierarchical and for each level, the review is based on the review grades of the previous level. The scoring of sub-categories informed the scoring of the review categories, which in turn informed the scoring of each of the four review areas.

Table 3. List of assessment symbols/scores (from Lee *et al.* 1999)

Symbol	Explanation
A	Well performed. No important tasks left incomplete.
B	Generally satisfactory. Completed, only minor omissions and inadequacies.
C	Just satisfactory. More pronounced omissions and/or inadequacies.
D	Just unsatisfactory. Parts are well attempted but must, as a whole, be considered just unsatisfactory because of omissions or inadequacies.
E	Unsatisfactory. Significant omissions or inadequacies.
F	Very unsatisfactory. Important task(s) poorly done or not attempted.
N/A	Not applicable. The review topic is not applicable or irrelevant in the context of this EIA report.

A pilot review phase was included where five EIA reports were independently co-reviewed by a second reviewer. The two reviewer scores were then compared towards reaching a consensus score. This was done to calibrate the single scoring of the remaining 26 reports. The use of multiple reviewers to calibrate and refine the review method is commonly used and considered best practice for EIA report evaluation (Lee *et al.* 1999).

3. Results

Table 4 summarizes the overall report grades, review area grades and review category grades of the 31 EIA reports for lodge developments in the Okavango Delta. Reports graded A to C were deemed to be "satisfactory", while reports graded D to F were deemed to be "unsatisfactory".

The analysis of the overall quality of the 31 EIA reports shows that only 29% (n = 9) of the reports were of satisfactory quality. None of the reports were described as 'well performed' (A) and only three (9%) of the reports were 'generally satisfactory' (B), while six (19%) were 'just satisfactory' (C). The majority of the EIA reports (71%, n = 22) were graded as unsatisfactory (D to F). Ten of the reports (32%) were regarded as 'just unsatisfactory' (D), while nine of the reports (29%) were graded as 'unsatisfactory' (E) and three of the reports (9%) were 'very unsatisfactory' (F). A summary of the quality review results (A to F) of the four different review areas is outlined in Figure 2.

Figure 2. Grading (A to F) per review area for the 31 EIA lodge development reports

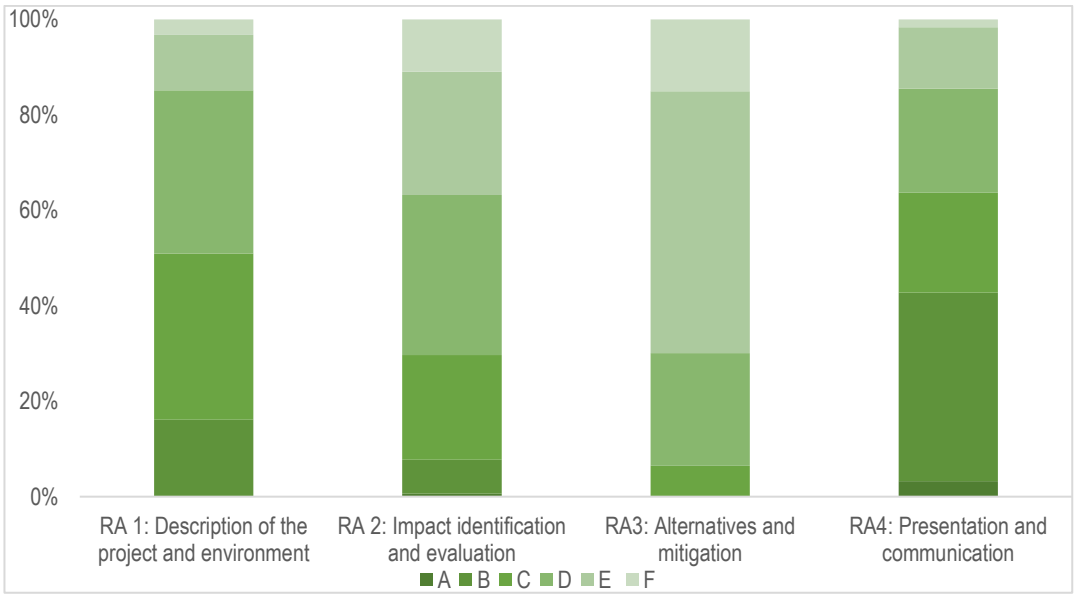


Table 4. Overview of results of the quality review of a sample of 31 EIA reports for lodge developments in the Okavango Delta

Summary of review sub-category		A	B	C	D	E	F	% A – C (satisfactory)	% D – F (unsatisfactory)
	Overall report grades	0	3	6	10	9	3	29	71
1	Description of project and environment	0	3	13	11	3	1	51	49
1.1	Project description	0	6	18	7	0	0	77	23
1.2	Site description	0	9	11	10	1	0	64	36
1.3	Waste	0	3	4	16	6	2	23	77
1.4	Environmental description	0	4	11	10	5	1	48	52
1.5	Baseline description	0	3	10	10	6	2	42	58
2	Impact identification and evaluation	0	2	7	12	8	2	30	70
2.1	Definition of impacts	0	0	7	16	7	1	23	77
2.2	Identification of impacts	0	4	9	9	7	2	42	58
2.3	Scoping	1	3	11	8	0	8	48	52
2.4	Prediction of impact magnitude	0	4	2	9	14	2	19	81
2.5	Assessment of impact significance	0	0	5	10	12	4	16	84

Summary of review sub-category		A	B	C	D	E	F	% A – C (satisfactory)	% D – F (unsatisfactory)
3	Alternatives and mitigation	0	0	2	8	16	5	6	94
3.1	Consideration of feasible alternatives	0	0	2	3	17	9	6	94
3.2	Scope and effectives of mitigation measures	0	0	3	9	16	3	10	90
3.3	Mitigation and monitoring plan	0	0	1	10	18	2	3	97
4	Presentation and communication	0	12	8	8	3	0	64	36
4.1	Layout	2	15	9	4	1	0	84	16
4.2	General presentation	1	17	7	4	2	0	81	20
4.3	Presentation of environmental issues	1	11	6	4	8	1	58	42
4.4	Emphasis of impacts	0	6	4	15	5	1	32	68

In general, performance of descriptive report areas (Review Area 1 and 4) constantly outperformed analytical report areas (Review Area 2 and 3). The best performing area was Review Area 4 (presentation and communication) where 64% of the reports (n = 20) were regarded as satisfactory (A to C) and 36% (n = 11) were regarded as unsatisfactory. The second-best performing review area was Review Area 1 (description of the project and environment) where 16 of the reports (51%) were graded as satisfactory and 15 of the reports (49%) were regarded as unsatisfactory. Review Area 2 (impact identification and evaluation) performed poorly, with 70% (n = 22) of the reports graded as unsatisfactory and only 30% (n = 9) of the reports graded as satisfactory. The weakest performing review area in this research was Review Area 3 (alternatives and mitigation), which had the lowest frequency of satisfactory scores of only 6% (n = 2), with 94% (n = 29) of the reports scoring unsatisfactory grades (D to F). Each of the four review areas are individually discussed in the next sub-sections.

4. Discussions

The sections below provide discussions on the performance of the EIA reports against the four review areas.

4.1. Review Area 1: Description of the Project and the Environment

The descriptive sub-categories of Review Area 1 performed satisfactorily. Reports largely included a description of the location of the proposed lodge development (1.1), supported by aerial photographs and maps. The better-performing reports provided additional information on building designs and structural plans (1.1.4). However, for a number of the reports the consultants provided background on the geographical setting of the development at a too large scale (1.2.2) (entire Delta area), without providing adequate site-specific information. Better-performing reports provided site descriptions at a concession scale, which is an improvement from the Delta-scale descriptions, but still did not contain sufficient site-specific information. Ideally, the project and site descriptions should focus on the locality (zone) as well as the buffer area to inform decision-making. Site-specific geographic descriptions will allow for more accurate impact identification and assessment, and improved EIA follow-up and monitoring.

When reflecting on the description of the proposed lodge developments, the project descriptions mainly focused on the construction phase of the proposed project (1.1.3). The operational, decommissioning and modification phases of the proposed lodge developments were, mostly, not adequately addressed. Given that the construction phase would generally have shorter-term, local impacts, compared to the other project phases, this omission is regarded as a major weakness. Similarly, the nature and quantity of raw materials (1.1.7) was limited to the construction phase of the proposed lodge developments.

Another important category, which generally scored poorly, was the description of the legal setting/framework (1.1.10). This provides, amongst others, a benchmark for determining significance of impacts in terms of local, national and international legal requirements. Consultants generally provided exhaustive lists of potentially applicable legislation, however, the applicable provisions/requirements of the legislation and how it may apply to the specifically proposed lodge development, was generally not addressed.

Finally, considerations for the storage, handling and transportation of waste were poorly addressed in most of the EIA reports reviewed (1.3.3). Some of the reports, however, attempted to estimate the types and quantities of waste that will be generated from the proposed developments (1.3.2). Again, the estimations generally focused on the construction phase of the proposed developments, without adequate consideration of the operation- and decommissioning phases. The management of waste was also identified as a weakness in other research on EIA

report quality in South African protected areas (Sandham *et al.* 2020; Claassens *et al.* 2022; Malepe *et al.* 2022). Dealing effectively with waste management is seemingly a key challenge for tourism developments in sensitive areas such as protected areas.

4.2. Review Area 2: Identification and Evaluation of Key Impacts

Review Area 2 scored the second lowest of the review areas, with 70% of the reports being of unsatisfactory quality. Except for archaeological impact assessment (AIA), which is a legal requirement, specialist reports were generally lacking from the EIA reports. Therefore, impacts on the environment, communities, flora and fauna, soil, air, water, climate, landscape, material assets and cultural heritage (2.1.2), were generally poorly defined and assessed despite the availability of a wealth of published research in these areas. Because of its biodiversity richness and international importance, the Okavango Delta region leads the entire country in environmental-related research and could therefore be considered data rich. Research conducted cover a range of focus areas including fish and wildlife, ornithology, environmental economics, nature-based tourism, community-based natural resource management, climate, conservation, hydrology, and forest resources. Despite this, evidence of research uptake in the EIA reports was lacking except in cases where the relevant EIA consultant happened to be part of a relevant research project. More importantly, the link between available research/data/information and impact assessment was found to be low. While some reports might have indicated important information during the baseline description, this information did not inform the assessment of impacts. Impact assessment (specifically, severity and magnitude estimations) never referred to existing data/information. Similarly, results of existing monitoring reports were surprisingly not considered during impact identification and assessment. Existing monitoring data could have informed the identification or impacts as well as their probability and magnitude. Impact assessment (specifically, severity and magnitude estimations) never referred to existing data/information.

The performance of public participation considerations included in the reviewed EIA reports were variable, ranging between adequate and not addressed at all. One consultant claimed that IandAP consultation was unnecessary given that the environmental management plan was addressing pre-existing facilities. In most cases, the method for the identification of IandAPs were not indicated (2.3.1 – 2.3.4). It was thus difficult to determine who were included and excluded and for what reason. The weak public participation could also be as a result of weak scoping, treated mostly as a box-ticking exercise, rather than an integral part of impact identification and assessment. Impact identification and analysis remained generic and did not integrate scoping considerations.

Predictions of impact magnitude (2.4) and assessment of impact significance (2.5) were two of the poorest performing areas. Impact statements were generally vague and EIA reports did not indicate how consultants derived impact magnitude and significance ratings. Again, existing research, specialist reports and monitoring reports did not inform the assessment of magnitude or significance of impacts (2.4.1). These are the key areas informing the EIA decision-making process. When these areas are inadequately addressed, impact assessment is not only in vain, but also adds little value for the time and money spent by the project proponent. Additionally, in the absence of this information, decision-making by the authorities is based on guesswork and not reliable EIA information. The prediction of impact magnitude and assessment of impact significance were also identified as key areas of weakness by Malepe *et al.* (2022) and Sandham *et al.* (2020) for EIA report quality in South African protected areas.

4.3. Review Area 3: Alternatives and Impact Mitigation

Review Area 3 was the poorest performing review area with 94% (n = 29) of the EIA reports graded as unsatisfactory (D to F). Most notably, the consideration of feasible/reasonable alternatives was not adequately addressed (3.1.1 and 3.1.3). In effect, the majority of the EIA reports only seem to defend and justify the initial proposal ("preferred alternative"). The statement that there were no alternative sites to consider was repetitive across the reports. To state that there were no siting alternatives for a 2500 m2 facility in a 6 500 km2 concession suggests no serious attempt to consider siting alternatives. This similarly applies to the description of alternative processes, designs, and operating conditions (3.1.2), where consultants dubiously indicated that no alternatives were available for consideration.

In relation to the consideration of effectives of mitigation measures (3.2.3), the summary recommendation was always to approve the proposed development, which implies that for 31 lodge developments in a pristine natural environment all impacts could be mitigated to an acceptable level. This seems hard to accept and begs the question if mitigation in EIA is taken seriously. Moreover, proposed mitigation measures (3.2.1 and 3.2.2) were highly generic, not reflecting unique site-specific or process-specific characteristics of individual lodge

developments. Recommendations made from the EIA were mostly vague, for example "consider environmental law" or "prevent pollution from waste". Mitigation measures were not explicit to the type of activities and significance of its impacts. Generic mitigation measures make EIA follow-up, monitoring and auditing difficult to implement and ultimately unenforceable.

4.4. Review Area 4: Communication of Results

Review Area 4 was the best performing of all the review areas, with 64% (n = 22) of the EIA reports being of satisfactory quality. Two areas for improvement were identified for Review Area 4. Firstly, although maps, charts and images were generally provided in the EIA reports (4.1.3), in some instances this information was left for the reader to interpret, without the necessary elaboration of what it means in relation to the proposed lodge developments (4.1.1). While this might seem trivial to more-sophisticated audiences, it generally creates a limitation to some non-technical readers. Secondly, the lack of emphasis on particularly severe and significant impacts (4.3.1) tend to obfuscate the key message. Most of the reviewed EIA reports resorted to providing a list or inventory of impacts, leaving it to the reader or decision makers to rank them. Communicating the most significant impacts in the executive summary section is probably the best way to ensure that the most important message gets communicated to stakeholders and decision makers.

Conclusions and Further Research

This paper aimed to evaluate the quality of EIA reports for lodge developments in the Okavango Delta with a view to make recommendations to improve EIA practice for tourism developments. The results reveal that the overall quality of EIA reports for lodge developments were unsatisfactory for the majority of reports (71%). In general, performance in analytical areas consistently performed worse than more descriptive areas. These results mirror those for tourism developments in protected areas in the broader region, specifically South Africa (see for example Wylie *et al.* 2018; Sandham *et al.* 2020; Malepe *et al.* 2022). In order to improve quality, and consequently - EIA practice, we make the following recommendations towards addressing some of the key identified weaknesses. Although these recommendations are directed at the Botswana context, we believe they do have broader application for international EIA practice in protected areas with high tourism development pressure:

- *Need for clear strategic direction*: Many of the identified weaknesses could be addressed by providing clear strategic direction to inform project level EIA reports and decision making. The strategic direction starts with clear policy on development in protected areas linked to strategies and plans that set out well defined outcomes. Strategic environmental policy instruments such as strategic environmental assessment (SEA) has been applied successfully to guide project level tourism development in protected areas internationally (Retief, 2006). Such strategic instruments could pro-actively guide decision around for example location alternatives and tourism densities, that are notoriously difficult to deal with at project level, and which has also been highlighted as particular weaknesses in the evaluated EIA reports. Without strategic direction decision making tends to be piece meal and *ad hoc* leading to cumulative effects and unintended impacts that cannot be accurately predicted as project specific level.
- *Establishment of a data and information management system*: Decision making and prediction in protected areas happen, in many cases, in a data rich context, because many of these areas house extensive and long-term research projects. This is also the case for the Okavango Delta. However, the research results suggest that even amidst the wealth of data and information, gaps in baseline information and data exist. Moreover, there seems to be a lack of awareness by the consultants of the existence of much of the information. For this reason, the development of a central and well-coordinated information management system is recommended for the Okavango Delta region, with the sole aim to coordinate, collate and make available all existing information for the purpose of decision making. Current practice, in a comparative context in South Africa, suggests that a web-based spatial environmental screening decision-support tool has had a meaningful level of success in sharing information and guiding EIA screening and prediction decisions (Cilliers *et al.* 2022).
- *Development of norms and standards*: The development of norms and standards for lodge developments in protected areas in Botswana generally, and the Okavango Delta specifically, could address many of the EIA weaknesses related to impact prediction, mitigation and monitoring. Combined with strategic instruments such as SEA that deals with location alternatives and densities, norms and standards could deal with project specific operational and design aspects such as waste, water and energy management. Moreover, the norms and standards would ensure feasible compliance monitoring and enforcement and significantly strengthen

the environmental management plan component of the EIA report. Examples of norms and standards for nature-based tourism and lodge development already exist and could be adapted and contextualised for Botswana.

- *Capacity building and awareness*: Capacity building and awareness is needed at two levels. Firstly, the consultants and regulators involved in EIAs for lodge developments in protected areas need to be made aware of the strategic context (once developed), relevant norms and standards (once developed) as well as available information and data. This will allow them to prepare quality EIA reports that align with strategic and project level best practice. The existing professional registration system in Botswana could also serve as a mechanism to facilitate the latter. This could even be in the form of a separate certification for consultants, as well as dedicated regulators working specifically in protected areas. Secondly, awareness needs to be built with relevant communities to allow them to participate meaningfully in the EIA process. As already highlighted, EIA is in many instances the only voice afforded to marginalized communities, about developments that affect their livelihoods. Best practice guidelines already exist for Africa, that could be adapted more specifically for Botswana (Aucamp *et al.* 2023).

The EIA report quality results suggest that significant weaknesses exist within the Botswana EIA system, as it relates specifically to tourism development in some of the most iconic protected areas in the country. The pressure for tourism development such as lodges is unlikely to abate, and therefore addressing these key weaknesses in EIA is important. By implementing the recommendations described above many of the weaknesses could be addressed resulting in better quality EIA reports and ultimately better strategic and project level decision making. Improvement in the quality of EIA in Botswana would support responsible tourism development while at the same time protect the sanctity of unique and precious protected areas of international significance such as the Okavango Delta.

Credit Authorship Contribution Statement

Leungo Boikanyo L. Leepile: Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft;
Claudine Roos: Validation, Writing – review and editing;
Francois Pieter Retief: Conceptualization, Methodology, Supervision, Writing – review and editing;
Hans Jurie Moolman: Writing – review and editing;
Reece Cronje Alberts: Writing – review and editing;
Dirk Petrus Cilliers: Writing – review and editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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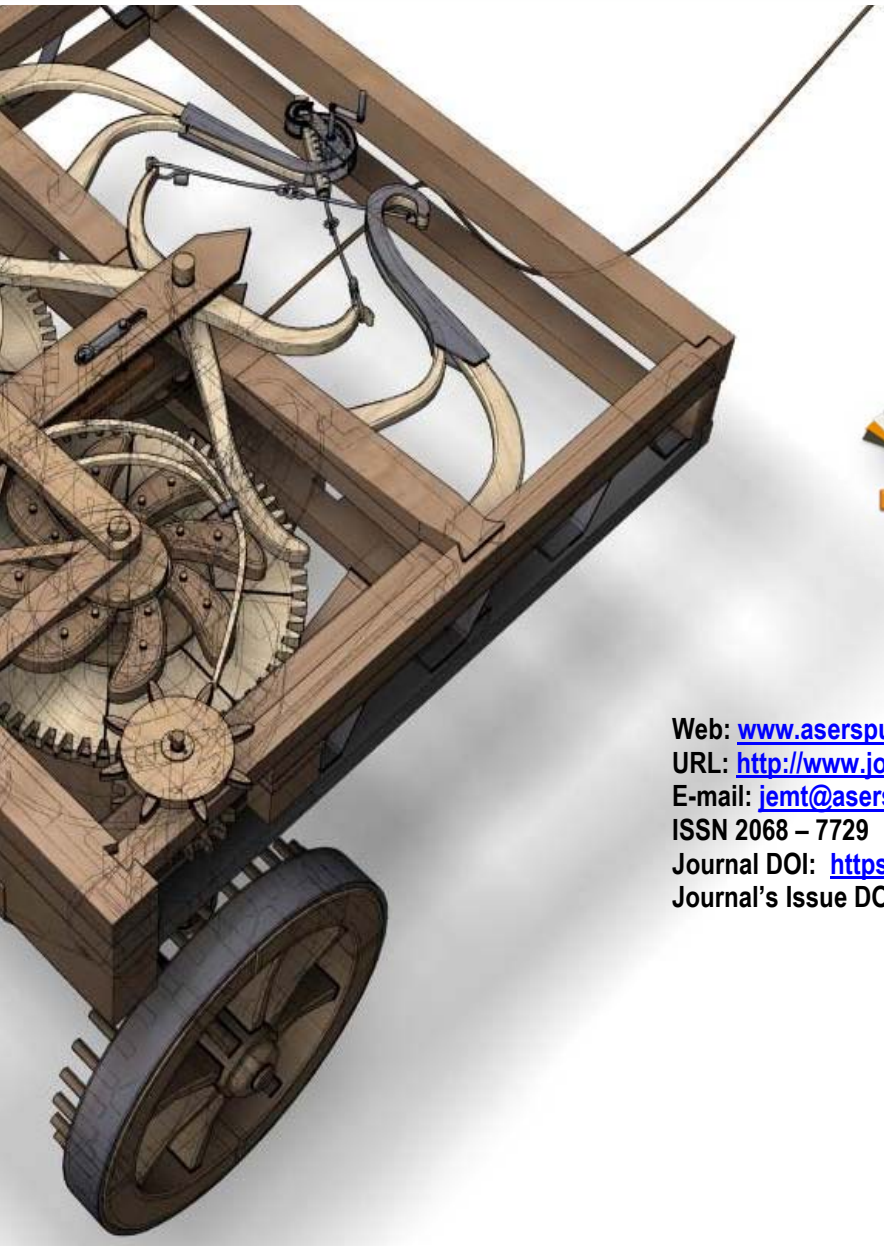

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