

# Strategic Impact Assessment: A Potential Tool Contributing to Sustainable Development in the Sudan

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## Abstract

This paper aims to appraise the process and performance of Environmental Impact Assessment (EIA) in the Sudan and explores the prospects of adopting Strategic Environmental Assessment (SEA). The occurrence of two political events in the Sudan in the last decade (2011-2021)—the secession of Southern Sudan in 2011 and the cessation in 2019 of the previous political regime which has reined for thirty years—was portrayed from an environmental perspective. The implications of the secession of Southern Sudan on the country's natural resources are underscored while the second event implies a new governance system with major legislative and institutional alterations. Within this context, the paper argues that the Sudan needs to improve its classical project-restricted EIA system as well as upgrade the environmental assessment to the higher tier of policies and plans i.e. to SEA. Justifications for the application of (SEA) in the Sudan are highlighted considering the overarching impinging impact of climate change on the country's degraded and over exploited resources. Steps and prerequisites towards the application of SEA are expressed. The institutional and legislative reforms as well as human resources capacity building are underlined. Towards applying SEA, the Sudan is urged to take on board the experience of other countries—especially within Africa—in the realm of SEA.

## Keywords

Sustainable Development, Environmental Impact Assessment, Strategic Impact Assessment, Environmental Institutions and Legislation

## 1. Introduction

The Sudan is a country endowed with a variety of natural resources, both biotic and abiotic. Even prior to its independence in 1956, the Anglo-Egyptian Condominium has administrated several management instruments towards conserving the country's environment and natural resources. Some of these date to the beginning of the 20th century and are linked to the country's forestry service. In 1902, the government established the Forests and Woodlands Service and the first formal national forest policy was drawn up in 1932 (UNEP/HCENR, 2020). There are over 150 natural resources laws and sectoral regulations dealing with forests, health, water supply, land tenure, game, protected areas, fisheries and marine resources among other sectors of natural resources (Ali, 2007). Prominent landmarks in the realm of the environment protection and natural resources conservation were achieved in the last decade of the 20th century. The year 1991 saw the establishment of the Higher Council for Environment and Natural Resources (HCENR) to oversee, co-ordinate and liaise on issues pertaining to, and linked with the environment and natural resources. The State had adopted the National Strategy for Development (NSCD) for the decade 1992-2002. The culmination of these governmental steps occurred in 1994 when the environment portfolio was promoted to a ministerial level. The country, at the governmental as well as the non-governmental levels, made an initiative towards establishing a National Environmental Action Plan (NEAP). In the legislative arena the Environment Protection Act was passed by the National Assembly in 2001. A quarter century development strategy for the period 2007-2032 was formulated and was planned to be implemented at shorter phases' intervals. After the political change in 2019, the EPA 2001 was amended and a new HCENR was established headed by the Prime Minister (UNEP/HCENR, 2020). On the community level, many NGOs and CBOs are playing a watchdog role, advocating initiatives, implementing projects and raising awareness in the realm of environmental protection and natural resources conservation.

Despite these official and non-official efforts, the country is beset with a multitude of natural resources-related problems. Desertification is the major environmental problem in the Sudan. Wildlife is dwindling due to poaching, desertification, encroachment of agriculture into rangelands. The situation is exacerbated by the recognised fact that Sudan is among the most vulnerable countries in the world to climate variability and change. According to the Notre Dame Global Adaptation Initiative (ND-GAIN) index (2021) of the University of Notre Dame, Sudan ranks 177 out of 182 countries indicating that, indicating that the Sudan has high vulnerability levels and low levels of readiness to adapt to climate change.

Paradoxically, the advent of peace that ended a twenty-year civil war in southern Sudan has also resulted in the secession of Sudan by the creation of the Republic of Southern Sudan in 2011. The secession of southern Sudan has had an even more far-reaching implication that transcended the political arena. This momentous event hurled into history archives attributes that had for more than

a century become synonymous with the Sudan. Phrases like “*the biggest country in Africa and the Middle East*”, “*The third source of the Nile*” and “*the bread-basket of the Arab World*” are no longer valid. As a result of the secession, the Sudan lost 25 per cent (619,745 km<sup>2</sup>) of its total land area, including 68 per cent of its forest and woodland areas, 47 per cent of its wildlife reserves and protected areas and 75 per cent of its oil reserves. The proportion of land classified as arid increased from 65 per cent to 90 per cent (UNEP/HCENR, 2020). More critically, while the livestock population fell by only 28 per cent to 104 million head, the natural rangeland resources, on which livestock depends, fell by 40 per cent (Abdel Magid & Warrag 2011). With the Sudan entering a new political regime, the policy makers must take on board the repercussions of losing these vital resources and make do with whatever remains available. This is a huge challenge and as aptly put by Denny (1984) “Exploitation need not be the antithesis of conservation”, the country has to manage its resources now within a more stringent, holistic and sustainable—oriented perspective.

One of the indispensable tools in the strive for realizing sustainable development is Environmental Impact Assessment. Environmental Impact Assessment is the evaluation of the effects likely to arise from a major project (or other action) significantly affecting the environment. It is a systematic process for considering possible impacts prior to a decision being taken on whether or not a project should be given approval to proceed (Jay et al., 2007).

The benefits of conducting impact assessment activities are too many to be contained in this article and, therefore, some are highlighted below:

- 1) Contribute to high level of efficiency in utilizing natural resources
- 2) Contribute to decreasing the project cost in the long run
- 3) Decrease/ avoid judiciary liability and processes
- 4) Avoid correction costs and measures later
- 5) Public is aware of environmental impacts
- 6) Avenue for people to air their views and express their interests

Within the country’s new development in the framework of politics, economy, natural resources and socio-demographic dynamics, it is deemed a crucial priority to review, appraise, and reform the process of Environmental Impact Assessment in the Sudan.

## 2. The Profile and Status Quo of Environmental Impact Assessment in the Sudan

History records that Environmental Impact Assessment—without giving it the trademark—was practiced in the Sudan prior to the 1950s when the Equatorial Nile Project Study, motivated by the proposed Jonglei Canal Project, was completed (JIT, 1954). This could be, as envisaged by Moghraby (2002), the first EIA in Africa. In fact, the Equatorial Nile Project Study could be the first ever endeavour in the realm of EIA worldwide. More than thirty years passed where no EIAs were carried out and with no legislations specifically tailored to the process of EIA. The establishment within the University of Khartoum of the Institute of

Environmental Studies (IES) in 1978 provided a scientific arena for commencing and carrying out proper EIAs. The first EIA study conducted by Sudanese experts was for Sudan's Southern Route in 1984 (IES, 1985). The tempo of conducting EIAs has accelerated since the last decade of the last century, linked primarily with the onset of oil activities and the construction of roads (Ali, 2007).

The process of EIA system in the Sudan eventually received formal legal support when the *Environmental Protection Act* (EPA) was passed in 2001. In this policy-oriented framework legislation for the protection of the environment and natural resources, Article 17, Chapter III mandates the conductance of an environmental feasibility study to be accepted by the (HCENR).

The development of the EIA process in the Sudan against selected international events in the realm of EIA is illustrated in **Table 1**.

A comprehensive review and assessment of the EIA performance in the Sudan is available in Ali (2007). The assessment underscored legislative, administrative, institutional and procedural shortcomings constraining the efficient conductance of and benefits from EIA. Despite the 2001 EPA has made the practice of EIA mandatory, regulations and guidelines for the EIA process are just about to be endorsed. Paradoxically, the picture is brighter in the petroleum arena and at the State of Khartoum. The Ministry of Energy and Mining has enacted the "Protection of the Environment in Petroleum Industry Regulations" in 2002, now the Health, Safety and Environment Regulations of 2011. In response to the boom in gold mining—both by artisanal miners and companies, the "Requirements and Guidelines on Health, Safety and the Environment and Corporate Social responsibility management System" were produced by the Sudanese Mineral Resources Company in 2017.

The participation of local communities in the process of EIA is one of the major issues underpinning the efficiency of the practice in the Sudan. The concepts that people should participate in development not just as beneficiaries but as contributors to planning, implementation, monitoring and evaluation, and that participation is an end as well as a means of development, are now part of the ethic, if not yet the practice, of the sustainable development (Heaver, 1999).

### 3. Strategic Impact Assessment (SEA)

The roots of EIA emerged in the USA when the National Environmental Policy Act (NEPA) was signed into law on the first day of 1970 and required federal agencies to assess the environmental effects of their proposed actions prior to making decisions (Alm, 1988). Many countries followed suit and were provoked to introduce EIA policy as seen in **Table 1**. However, for decades, in almost all countries, EIA has been restricted to readymade proposals for development projects that have already been defined in design, time and location. Such conventional EIAs have brought out many criticisms and raised several questions such as:

Has it been sufficient to do EIAs for projects only?

**Table 1.** International EIA events against EIA milestone developments in the Sudan (Ali, 2007).

Year	EIA Event	Country/Region
1954	The “Equatorial Nile Project and its effects on the Anglo-Egyptian Sudan, 1948-1953”	Anglo-Egyptian Sudan
1969	USA NEPA Enactment	USA
1973	EIA system established	Canada
1974	EIA system established	Australia
1975	EIA system established	West Germany
1976	EIA system established	France
1984	EIA system established	Japan
1984	Sudan’s Southern Stock Route EIA	Sudan
1989	Operation (OD) 4.00	The World bank
1989	Lomé IV Convention	EC/ACP countries
1990	Initial proposal for SEA Directive	European Community
1991	Establishment of HCENR	Sudan
1992	Agenda 21 Earth Summit	Brazil
2001	“The SEA Directive” EU’s Directive 2001/42/EC	European Union
2001	Environmental Protection Act	Sudan

How deep is projects’ EIA involved in developmental policies and strategies?

What are the roots of environmental impacts identified in EIAs?

To what degree have classical EIAs contributed to sustainable development agenda?

In response, there grew a contention worldwide that classical EIA falls short of addressing the complicated issues underling developmental policies and plans. To address these shortfalls a new philosophy has emerged and there was a call for the application of EIA at an earlier stage of the developmental chain *i.e.* the stages of policies, plans and programmes. Only in the last decade of the last century has the concept of a higher-tier assessment begun to emerge in Europe and materialized into Strategic Environmental Assessment (SEA). Simply defined as an appraisal of the environmental impacts of a policy which is used in decision-making (Thérivel, 1997). The UK took the leadership role in SEA not only because it created the terminology but also because it was the most active in establishing guidance for good practice in SEA since 1991 (Partidário, 2012). SEA guidance on procedures for SEA of bills and other governmental proposals were passed on 1995 in Denmark, while the European Union, formal requirements for the assessment of the environmental effects of certain plans and programmes have been adopted in Directive 2001/42/EC (Partidário, 2012).

Several African countries have made adopted and are practising SEA. In South Africa the development of SEA theory can be traced to the report entitled SEA Primer (CSIR, 1966), which was intended to be the first step in the development of SEA as an accepted tool for strategic environmental planning and manage-

ment (Rossouw et al., 2000). Other countries followed suite and Botswana and Tanzania promulgated SEA legislation in 2001 and 2004, respectively (CSIR, 2007).

Therefore, the concept of strategic environmental assessment indicates the type of environmental assessment which can help managers and leaders in policy decision making in policies, plans and programmes. In other words, whereas conventional EIA keeps dormant to be approached by a specific project delineated in space and time, SEA addresses such projects while they are in the womb of plans and polices (Ali, 2005). Policy EIAs present an opportunity to examine the environmental implications of national and regional development policies and proposals before decisions are made to implement specific projects conceived under such policies. The main differences between (EIA) and (SEA) are portrayed in **Table 2**.

The advent of SEA and its execution at the PPPs level, have not, and should not obviate the justification of and benefit from EIA indeed, SEA could strengthen and streamline projects' EIAs. Abaza et al. (2004) have specified four spheres where this could be portrayed:

- The policy and planning issues that are addressed either ineffectively or not at all by EIA could be clearly addressed;

**Table 2.** Comparison between EIA and SEA (modified from UNEP, 2002).

EIA	SEA
For projects	For policies, plans and programmes
Takes place at the end of decision-making cycle	Takes place at earlier stages of decision-making cycle
Reactive approach to development proposal	Pro-active approach to developmental proposals
Identifies specific impacts on the environment	Identifies environmental implications on issues of sustainable development
Assess the effect of a proposed development on the environment	Assess the effect of the environment on development needs and opportunities
Considers limited number of feasible alternatives	Considers broad range of potential alternatives
Treats symptoms of environmental deterioration	Pursues the roots of environmental impacts
Limited review of cumulative effects	Early warning of cumulative impacts
Emphasis on mitigating and minimizing impacts	Emphasis on meeting environmental impacts objectives, maintaining natural systems
Narrow perspective, high level of detail	Broad perspective, lower level of detail to provide a vision and overall framework
Well-defined process, clear beginning and end	Multi-stage process, overlapping components, policy level is continuing iterative
Focuses on standard agenda, treats symptoms of environmental deterioration	Focuses on sustainability agenda, gets at sources of environmental deterioration
Responsibility and finance of proponent	Responsibility and finance of the government

- Cumulative effects, especially from spatially related actions, could early be warned of;
- Potentially significant effects of specific proposals are pre-examined thereby the time and effort necessary for EIA are reduced.

Ideally, SEA and EIA should be vertically integrated or tiered with environmental considerations being considered at the policy, plan and programme level and then flowing down to the project level. However, while EIAs are often described as being nested within a particular SEA, Warner (2021) warned that this has not always happened, with EIAs for specific projects often occurring in the absence of a broader environmental vision for a particular marine region and associated activities and industries. On the other hand EIAs that have already been undertaken in sectors such as deep seabed mining may well inform subsequent SEAs for broader regions and for the sector more generally (Warner, 2021).

#### 4. Justification for the Need to Apply SEA in the Sudan

The practice of EIA in the Sudan shares the same feature with other countries viz-a-viz its scope has been restricted to development projects dealing with natural resources only. There had been no environmental assessment on the many policies, plans and programmes that have been proposed and implemented in the realms of education, health, energy, transport and governance.

Two major political events have occurred in the Sudan in the last decade (2011-2021). The first was the secession of Southern Sudan in 2011 while the second was the cessation in 2019 of the previous regime which has reined for thirty years. As sited above, the impact of first event was manifested in the country's reduction in its forest and woodland areas, rangelands, wildlife reserves and protected areas and oil reserves and the proportion of land classified as arid increased from 65 per cent to 90 per cent (UNEP/HCENR, 2020). With the 2019 political change, the Sudan is poised to shift to a new governance system. Both events entailed and necessitated the updating of older legislations and institutions and adoption of new ones, based on a review and appraisal of the older systems. Unfortunately, no significant progress has been achieved since 2011 and many of the pre-secession governance systems are still prevailing. As starkly highlighted in the first State of Environment and Outlook -2020 report, there is an absence of a comprehensive national natural resource governance framework (UNEP/HCENR, 2020). This report is not only acclaimed as being the first endeavour to take stock of the country's environment, but more for postulating an alternative Bending the Curve scenario for the era 2020-2030 to culminate with the SDGs (UNEP/HCENR, 2020). This scenario calls for and highlights the initiation of an inclusive national endeavour to establish a natural resource governance framework for the Sudan that would lead to strengthening and reinforcement of natural resource policies at federal, state, local and community levels (vertical alignment), as well as across different sectors (horizontal alignment).

There are many development projects which have been implemented at the ecosystem level as well as the legislations that control the utilization of natural resources at the federal level. A case in point is the ambitious programme of the Dams Implementation Unit in building Merowe Dam and heightening Roseires dam as well as setting plans to build more dams in the River Nile in the Sudan. According to the author's contention, this was a missed valuable chance for the conducting of SEA. Instead, each of built or proposed dam has undergone a separate EIA study with no or insignificant attention to the cumulative impacts of building and operating these dams in one single water ecosystem.

Within such a context, the *new Sudan* is striving to improve its environmental governance system to conserve its ecosystems, restore degraded ones and utilize its natural resources within a sustainability strategy. Towards such a goal, the Sudan would not only seek to improve its classical project -restricted EIA system, but more important to upgrade it to the higher tier of policies and plans i.e. to SEA.

In summary the drivers for tweaking the status of environmental governance and natural resources utilizations in the Sudan are:

1) The country is a multi-governed State with its vital sectors of economy, agriculture, power generation, education and governance in transition phase.

2) With the reliance on gold mining as a major GDP component after the secession of the Sudan, emphasis should be given—as cited by [Iyer \(2017\)](#) to maintaining economic viability of the mining operations while in turn taking care to preserve the ecological and social sustainability of the country.

3) The impinging impact of climate change and the further stress it would exert on the degraded and over exploited resources.

4) The emergence from the political and monetary isolation will be reflected in the availing of international funds and loans as well as in attracting large investments in the natural resources.

The Sudan portrays a wide spectrum of opportunities and avenues subject to SEA in such as:

- Spatial and land use plans
- Transboundary development programmes
- Natural resource management strategies
- Legislative and regulatory bills
- Investment and borrowing activities
- International aid and development assistance
- Structural adjustment funds and operations
- Macro-economic policy
- Sector-specific policy, plans and programmes
- International trade agreements

## **5. Steps and Prerequisites towards the Application of SEA in the Sudan**

For Sudan to incorporate and effectively apply SEA, institutional and legislative



reforms are required. These include, but are not limited to:

- The Sudan must have a comprehensive national natural resource governance framework to guide and regulate the exploitation of its natural resources.
- Establishment of sectoral policies in water resources, land use, mineral resources, forests, rangelands, energy, etc.
- The appraisal of the EIA practice in the Sudan will not only improve it but would constitute a solid platform for forming, adopting and implementing of SEA.
- The EPA 2001, though amended in 2020, needs to be further reviewed and upgraded to incorporate explicitly the conductance of SEA.
- To address the intricate issues of State-Federal natural resources, strategic environmental assessment regulations on both the federal and State levels are needed.
- An Environmental Commission—a national EIA body—mandated solely to oversee all the EIA/SEA processes is needed.
- Human resources capacity building is needed for developing SEA skills.
- The designation of a higher degree institute as a centre of excellence in environmental management in general, and in EIA/SEA in particular. The Institute of Environmental Studies (IES) of the University of Khartoum with its history and experience in EIA aspects (teaching, research and practice) since the eighties of the last century, could fill in this niche and further, create a regional and international EIA address.
- Sufficient funds need to be availed by both the proponents and government for conducting SEA.

As a closing note, the time is now opportune for the Sudan to embark on the higher tier of impact assessment equipped with its experience in EIA and augmented with experiences and lessons learnt at both regional and international level. At this juncture it is very pertinent to reiterate that the adoption of SEA does not in any way imply that the classical EIA will be abandoned. Once via SEA a specific plan has been adopted, any projects stemming from it would need to be subjected to the normal EIA process.

While addressing the above prerequisites and during the endeavour to institutionalize the conducting of SEA in the Sudan, it is very pertinent to take on board the practice of SEA in other countries. As [Ali \(2007\)](#) compared the profile and performance of EIA in Egypt, Uganda and Sudan, it is even more apt to do the same for those countries which are adopting and applying SEA. However, the task is not that easy as the practice of SEA in many African counties is either lacking or new and within such a context the appraisal of the experience is not easy. Albeit the meager information, the research of [Retief \(2007\)](#) on the effectiveness of SEA in South Africa is very valuable and his conclusion and recommendations need to be taken on board by the Sudanese policy and decision makers. Retief's research outcome is that SEA has failed to inform or influence decision making in South Africa and the shortcoming is attributed the non-conformance

of SEA practice to the main international effectiveness criterion or the “litmus test” for SEA (Sadler, 2004). For countries like Sudan just on the threshold of treading into the uncharted land of SEA, Retief’s suggestion that “*the practitioners need to either redefine the purpose of SEA, or fundamentally rethink the way in which SEA is being applied*” should be taken at the back mind of policy and decision makers in the realm of impact assessment.

## 6. Conclusion

The current formidable task facing the policy makers in the Sudan is how to strike a delicate balance between developing and utilizing the country’s natural base that has dramatically been reduced by the secession of Southern Sudan, eroded by mismanagement and exacerbated by climate change. The environmental assessment model the country needs and should aspire to is the one that is carried out within a strategic framework of capacity building and improved legislation. Strategic Impact Assessment is advocated as a tool for achieving sustainable development that could contribute to the direction of development towards regions with environmental persistence or redirected away from fragile and environmentally sensitive areas. SEA is an opportunity for policymakers in the Sudan for providing a new mindset approach for laying more realistic, sustainable national development strategy. The application of SEA requires intuitional and legislative reforms as well as human resource capacity building. The experience of other countries in SEA application, in particular those of African countries, should be sought, reviewed and the lessons learnt from them are incorporated. The case of South Africa merits high attention not only for its long experience in practising SEA, but it is in SA where a lot of research exists on the effectiveness of SEA (Retief et al., 2021).

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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