

## The Role of SEA in Delivering High Level Environmental Policy Objectives in Coastal Zone Management in Egypt

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### Abstract

Egypt is witnessing a rapid urbanization and economic development that have the potential to cause significant environmental impacts. Since 1994 Environmental Impact Assessment (EIA) for various projects and implementation of its mandatory recommendations have been used as a means to minimize environmental impacts. Recognizing the continuous impacts on the natural environment due to human activities, and aiming to further strengthening the EIA system, Egypt initiated its National Strategy for Sustainable Development (NSSD) in 2006. However, two decades after its implementation, EIA is still not adequately integrated into the higher-levels of policy making in Egypt nor its benefits are sufficiently appreciated by the wider community. Strategic Environmental Assessment (SEA) used as a tool for addressing the environmental concerns resulting from the implementation of policies, plans and programs may contribute into enhancing EIA system and influencing its benefits to the wider public. This paper evaluates the current EIA system, and discusses the potential role of SEA in overcoming the EIA shortcomings and delivering high level environmental policy objectives in Egypt. The potential role of SEA in sustaining the coastal zone in Egypt is investigated as an example in this paper. Despite challenges of implementation, it is concluded that introducing SEA into the environmental assessment in Egypt may contribute positively into achieving high level environmental objectives and promoting the principles of sustainable development.

**Keywords:** Strategic environmental assessment; Environmental impact assessment; Sustainability; Coastal environment; Coastal management; Egypt

### Introduction

Like any developing nation, human and economic developments through infrastructure facilities such as housing, industrial, economic and recreational projects are key priorities in Egypt. However, a balance is needed to meet those priorities without compromising environmental sustainability. Environmental Impact Assessment (EIA) was formally adopted in Egyptian environmental system in 1994 [1] as an environmental management tool to identify, predict, evaluate and mitigate biophysical and social effects of development proposals. Since its introduction, EIAs have been used in major decisions making process in order to protect the environment and to reduce potential environmental degradation associated with major developmental projects.

Recognizing the critical need to further incorporate environmental concerns into higher levels of policy-making, Egypt initiated its National Strategy of Sustainable Development (NSSD) in 2006. Although NSSD sets the broad principles of human and environmental development strengthen the effectiveness of the EIA process in dealing with environmental concerns, it has not yet been enforced or practiced. Strategic Environmental Assessment (SEA) on the other hand, as an important tool toward ensuring sustainability [2], may contribute to strengthening the current EIA system by introducing the principles of sustainable development into high level environmental policy objectives in Egypt [3].

The aim of this paper, therefore, is to evaluate the effectiveness of the current EIA system in Egypt, and explore the potential use of SEA in resolving shortcomings associated with project-level EIA. The role of SEA as a means to deliver Egyptian National Environmental Strategy and to meet challenges facing in effective implementation of the EIA is demonstrated through an example of coastal zone management planning process.

### Environmental legal and administrative framework in Egypt

The Egyptian Environmental Affairs Agency (EEAA), established by presidential decree in 1982 under the Ministry of State for Environmental Affairs, was the first governmental authority concerned with the protection of the Egyptian environment and a co-ordination body responsible for environmental policy making. The establishment of the EEAA was an important step to protect the environment; however, the agency was very small compared to the expectations and the role it was supposed to play. Then, in the early of 1990s, the government sponsored a new Environment Protection Law (4/1994). The law mandated the EEAA to act as the coordinating body for environmental management and to mainstream environmental considerations into all the policies of the various sectoral ministries at the national and local levels.

For the purpose of integrating efforts and resources to achieve effective protection of the environment, the National Environmental Action Plan (NEAP) was launched as a significant document representing the first attempt to incorporate environmental issues in the government's political agenda. The NEAP included important themes such as strengthening institutional capacity and developing human resources; and identified key Egyptian environmental problems such as land degradation, solid waste management, and air and water pollution. Additionally, the document suggested adoption of economic measures

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Received April 29, 2015; Accepted May 20, 2015; Published June 02, 2015

**Citation:** Ibrahim H, Hegazy I (2015) The Role of SEA in Delivering High Level Environmental Policy Objectives in Coastal Zone Management in Egypt. J Coast Zone Manag 18: 405. doi: [10.4172/2473-3350.1000405](https://doi.org/10.4172/2473-3350.1000405)

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to support environmental improvement [4,5].

Egypt has undertaken several initiatives to prevent the ongoing deterioration of its environmental quality. Towards this, Egypt launched the National Strategy of Sustainable Development (NSSD), which was approved by the Council of Ministers in 2006. NSSD identifies mechanisms to implement sustainable development practices and enforces the role of EIA during planning, implementation and post-commissioning phases for major projects. NSSD fosters adoption of principles of integrated environmental management for coastal and marine environments, application of valuation systems to estimate the costs of environmental degradation and rehabilitation, strengthening of institutional and legal frameworks, and raising of public awareness and participation [6]. However, this strategy has not been enforced either legally or administratively.

### Evaluation of EIA system in Egypt

Criteria to evaluate the performance and effectiveness of EIA system were primarily adopted from Wood [7]. These criteria are based on EIA aims and stages and have been applied to evaluate EIA systems in developing and transitional countries [8,9]. The criteria can be divided into four main attributes, namely legislative framework of EIA, administrative procedures of EIA system, stages of EIA process, and measures to improve EIA effectiveness.

Law No. 4 of 1994 with respect to the environment requires the adoption of plans and policies using appropriate procedures to prevent and combat the deterioration of the environment. EIA was defined and recognized in this law as a measure to protect the environment, and it was introduced as a tool to bring environmental concerns into the Egyptian decision making process. This Law explains the procedures of EIA (Figure 1) and clarifies the roles and responsibilities of the concerned agencies involved in the EIA process. However, similar

to EIA legislations in countries of the Middle East and North Africa [10], and most of the transitional and developing countries [9,11], EIA suffers from several shortcomings that can constrain its effectiveness. The governing EIA Law neglects the role of public participation or involvement of stakeholders in the EIA process, fails to consider cumulative impacts, project alternatives, capacity building and public awareness, and most importantly, lacks provisions for Strategic Environmental Assessment (SEA) [12-15].

Administratively, the Central Environmental Impact Assessment Department (CEIAD) at the EEAA is responsible for screening, scoping, revision and evaluation of EIA studies before proposed projects are given approval [16,17]. The screening phase includes list-based screening by comparing projects against a mandatory list that require full EIA. Currently, there are three screening forms produced by EEAA concerning infrastructure projects, industrial projects, petrol filling stations, reclamation and dredging operations, and service projects. However, these forms lack guidelines, criteria and thresholds for screening such as project scale, cumulative impacts, and the sensitivity of proposed site [15].

Once EIA is required, it must be conducted by the project proponent through a consulting firm with respect to registering environmental consultants performing environmental assessment of projects and environmental studies. A list of accredited local, regional, and international consulting firms is maintained by the EEAA. Like most of the Arabian countries, Egypt suffers from shortages in human, financial and technical resources to undertake environmental studies. Therefore, merging consulting experience with local environmental knowledge represented by Egyptian institutions of academia and environmental research should reflect positively in capacity building.

Scoping and EIA preparation are conducted by the appointed consulting firm after a deliberation with the CEIAD to overcome

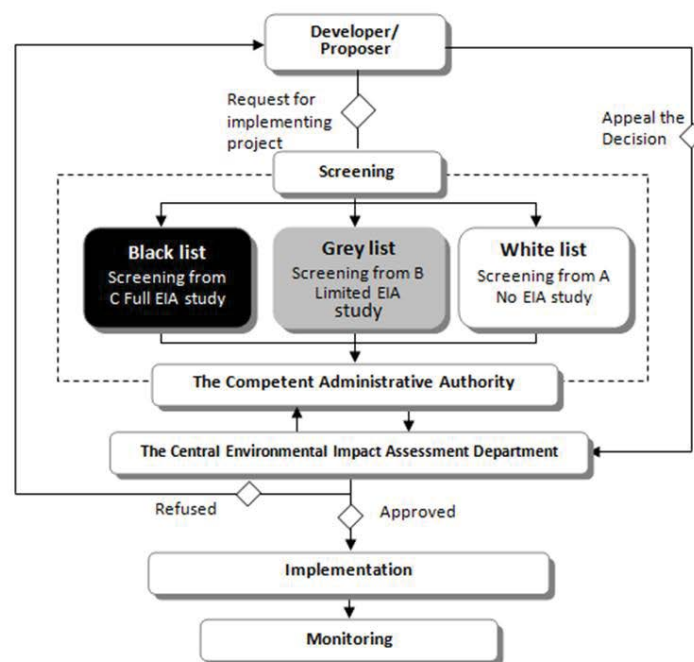


Figure 1: EIA procedures in Egypt, source: adapted from EEAA [17].

the possibilities of neglecting significant impacts. Reviewing the EIA reports is conducted by the CEIAD within 30 days of submission date. Like most of the Arabian countries [18], there is no formal procedure for reviewing the EIA reports in Egypt. The review committee in the CEIAD is typically composed of multidisciplinary technical staff. Consulting with external experts and consideration of public inputs and comments are rare practices in Egypt.

Limited public participation in the EIA process is considered a key obstacle in achieving effective EIA in developing countries [9], and Egypt is no exception. Public participation is influenced by social, cultural and political contexts within which EIA takes place [19,20]. The obstacles affecting public participation in Egypt include lack of related provisions in the EIA legal instruments, limited awareness of the benefits of the EIA process, inaccessible EIA documents, and lack of impact on decision-making process.

There is no a legal requirement for the preparation of environmental management plans (EMPs). No mandatory advice to the developer to prepare an EMP for establishments that need full EIA in Egypt is set down in the EIA guidelines. According to the guidelines [16], the management plan should include:

- A recommendation of feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels;
- Measures for emergency response to accidental events; and
- An estimation of the impacts and costs of these measures and of the institutional and training requirements to implement them.

One more key obstacle in the Egyptian EIA system is that regulations do not include any requirement for mitigation to be undertaken. General requirement are included in sectoral guidelines [8]. Demonstration of the inclusion of mitigation measures is a key criterion for review in the EIA reports related to coastal zone management.

Environmental monitoring is an important process in examining the accuracy of the predicted impacts and their associated mitigation measures [21]. Monitoring in Egypt is generally part of the approval conditions that are to be conducted by the project proponent. However, the Law 4/1994 only requires the monitoring of air emissions and wastewater effluents of major industrial projects with respect to environmental standards (air and water) and its subsequent amendments.

Training and building capacity are important means to improve the effectiveness of EIA system [22]. Facilitating environmental training and education, and promoting environmental awareness are critically required to enhance the effectiveness of EIA process in Egypt. Likewise, follow-up and monitoring the performance of EIA by examining the predicted impacts and compliance with the approved mitigation measures are essential initiatives to improve the effectiveness of EIA [23]. Such initiatives are limited in Egypt.

### **Rationale for SEA in the environmental system in Egypt**

About two decades after making EIA mandatory in Egypt, its effectiveness is still constrained by insufficient enforcement, limited public participation, limitations in associated resources and capacity building, and the fact that most of the projects are in their late stages of planning and implementation when seeking environmental authorization [15]. These shortcomings might be attributed to the fact that EIA is not adequately integrated into the higher-levels of policy making in Egypt and its importance and benefits are not adequately

understood by the concerned public. These inherent limitations of EIA may warrant the consideration of adopting higher-level management tools such as Strategic Environmental Assessment (SEA) that aim to prevent negative environmental impacts and enhance positive development at the decision/ policy making stage. SEA is defined as the process of evaluating the environmental consequences of proposed policies, plans and programs, and addressing them into higher-level decision making [24]. SEA as a tool to integrate environmental considerations into decision-making may contribute toward achieving environmentally sound and sustainable development [25].

SEA has emerged as an important element in environmental decision-making process in developed countries, including Europe and North America [26]. However, SEA is still relatively new in developing countries [3,27]. Although the Egyptian National Strategy of Sustainable Development could have implications that are interlinked with SEA principles, SEA has not been explicitly recognized or legally adopted as a mechanism to deliver high environmental policy objectives in Egypt.

The identified constraints at the project level-EIA are not limited to Egypt, but are also widely reported in developing and transitional countries [9,28,29]. The adoption of SEA could contribute to resolving such constraints by integrating environmental concerns into plans, policies and programs of the relevant governmental bodies [30]. Hence, SEA would foster further cooperation at the strategic level between concerned governmental bodies. However, such cooperation could be effective only if a legal framework on SEA is adopted.

SEA has a role in strengthening institutions and governance by ensuring that key environmental principles are employed in existing systems [31]. Generally, the environmental concerns are currently integrated in a sectoral manner into the mandate of relevant institutions in Egypt. SEA, therefore, may overcome the current sectoral approach of dealing with environmental issues.

Limited or no public participation is significant constraint that affects the performance of EIA in Egypt. This is of critical importance as public participation will increase the environmental awareness and subsequently decrease the general perception among the public and the project proponents that EIA is a formality rather than an essential and integral part in environmental sustainability. Such perception might be attributed to the limited degree of legal and administrative enforcement, which in turn reflects negatively on the proponent's commitment to subsequent environmental mitigation and monitoring activities. SEA aims to make decision-making process more rational and transparent [32]. It requires a defined role for public and stakeholder's participation in decision making with respect to critically examining the environmental impacts and reaching a consensus on the mitigation measures. Therefore, improved public participation and awareness may improve the effectiveness of EIA in Egypt.

The contribution of SEA in achieving the main goals of the Egyptian NSSD is evident. SEA normally verifies that the goals of proposed plan or alternative are environmentally sound and consistent with broader policy, plans and programs [33]. This will ensure that the developmental projects in Egypt are in line with the framework and principles of the NSSD. SEA can also assist the decision-making process in improving the policies and strategies of developmental plans, which will reflect positively on the sustainability in both environmental and socioeconomic aspects [33].

Within the Egyptian context, the national development plan has only outlined the changes in terms of "social justice, political stability, system of government, quality of life, social and spiritual values, and

national confidence”, it is implicit that these changes will go hand in hand with changes in the physical environment. Physical changes are expected in the national landscape of Egypt: conversion of rural to urban areas; desert reclamation for roads and amenities; opening of more land to accommodate the increase in population; greater exploitation of natural resources; and more. All these have to be guided by development policies and strategies which are expected to follow the path of achieving the national development objectives of “attaining a balanced development” and “growth with equity”. The social, economic and physical changes in the country have to be guided so as to ensure that in the pursuit of economic development, adequate attention will be given to the protection of the environment, so as to maintain the long-term sustainability of the country’s development.

One of the ways of managing environmental changes is through assessing the impacts of social and economic changes, and prescribing measures or mitigations to avoid or minimise any unavoidable negative impacts of these changes [3]. By integrating SEA into planning processes, which in turn is integrated with socio-economic planning, environmental management is enforced at an early stage, where mitigation measures can be formulated as strategies and policies, instead of only as conditions attached to planning permissions which are given to individual development projects. Planning with this function represents a proactive approach to environmental management, instead of a reactive approach which is normally associated with EIA.

The planning process in Egypt involves a large number of agencies and organisations in plan-making as well as in formal decision-making. Organisation-wise, none of the local planning authorities in Egypt can be considered as competent authorities in environmental management, or even in environment-related matters, since the majority of them do not have expertise in any planning or environmental field of study. Decisions at all stages in the planning process are made by officials, whose main concerns are naturally for their particular non-environmental fields of expertise and jurisdiction. A systematic presentation of the environmental impacts of decisions at all levels in the planning process can assist officials and politicians without environmental training or expertise to make decisions on policies and strategies which are non-environmental in their objectives.

The assessment of environmental impacts and its presentation in a form which is closely akin to EIA will assist decision-makers to realise the implications of making decisions which are detrimental to the environment. This is particularly crucial in decisions on alternative strategies and policies. Introducing SEA would help to ensure a procedure for decision-makers to take account of possible effects of development investments on environmental quality and natural resources productivity. Decision-makers would be informed of the environmental pros and cons of decisions made at every stage of the planning process.

### **SEA potential role in coastal zone management**

Egypt enjoys a vital strategic location between three continents. This gives it a special significance from the point of view of biodiversity. The coastal zones are sensitive and diverse ecosystems [34]. The Egyptian coastline extends 3,500 kilometres along the Mediterranean Sea and Red Sea in addition to the Suez and Aqaba gulfs [35] (EEAA, 2005). The coastlines of Egypt are rich with ecosystems such as coral reefs, mangroves, sand dunes, sea grass beds, estuaries and coastal forests. Coral reefs are associated with a high diversity of assemblages of fish. However, at the same time the coast of Egypt is one of the most densely populated in the MENA region [36].

The coast of Egypt with its internationally recognized biodiversity is also very important for the country’s economy. But these areas require strong protection. Yet, a significant percentage of the population is dependent on coastal resources for their livelihood. Conflicts over resource use, particularly in coastal and marine areas, have been increasing due to rapid industrialization and urbanization. To be more specific, Egypt’s coastal areas range from globally significant coral systems in the Red Sea to severely degraded Mediterranean ecosystems. The coastal zones are exposed to many pressures, as they suffer from many development activities and the resulting pollution [37].

Indeed, the marine environment and coastal zones in Egypt are under intensive pressure from industrial, urban, tourism and agricultural developments. These are causing shoreline erosion, increased coastal flooding, water pollution and deterioration of the natural resources and habitats. Oil spills in the Gulf of Suez and the Red Sea are also a major concern [38]. So the major issues affecting the coastal zone include:

A) Severe damage to the natural resources and biological diversity of the coastal ecosystems as a result of environmentally unfriendly practices such as land filling, dredging, illegal fishing, recreation facilities etc.

B) Coastal and marine water quality is being affected by land-based pollution (eutrophication, pesticide residue, microbiological contaminations are reported as particular problems in the Nile delta and lagoons, with heavy metals being a specific problem in the Bay of Alexandria).

C) Serious coastal erosion along the Mediterranean coast, particularly in the Nile delta.

D) Waste produced from maritime transport, in addition to oil pollution accidents, mostly illicit discharge of bilge water and oily waste.

E) Crude oil leakage accidents from pipelines extending hundreds of kilometres into the sea bottom, transferring crude oil from production wells to storage areas.

These threats not only have serious negative effects on the environment, but also impact upon the national and local economy, and human well-being. The problems are multi-dimensional and multi-located, and the Egyptian government has recognized the need to respond to these challenges by applying integrated coastal management approach in order to control and better manage the haphazard development of different economic sectors [36,39]. Evidence is increasing that most adverse environmental effects may not result from the direct effects of a particular project, but from the combination and interaction of individual minor effects of multiple projects over time. Several coastal and marine developmental projects are undertaken simultaneously and although each one of this project conduct EIA, there is no evidence that the cumulative impacts of these projects are taken into consideration.

Consequently, it is important to investigate whether a certain developmental project is environmentally evaluated in relation to other similar existing or planned developments. Toward this, implications of SEA in selected Egyptian EIA reports were systematically reviewed. Generally, EIA reports are considered confidential documents in Egypt. Twenty Egyptian EIA reports related to major coastal development were obtained officially from the environmental authority, and personally from relevant environmental consultants. Relevant studies [40] were used to formulate a checklist of questions to review the Egyptian EIA reports (Table 1). The EIA reports covered the coastal and marine

• Are appropriate alternatives considered?
• Are cumulative effects addressed directly in the report?
• Are any other existing or planned developments with which the project could have identified cumulative effects?
• Are cumulative effects on the environment of the project together with other existing or planned developments in the locality sufficiently described?

**Table 1:** Questions used to review twenty EIA reports for SEA implications.

environment. These major projects were carried out on the Red sea coastline between 2008 and 2013.

Consideration of appropriate alternatives is considered as wider methodological factor in SEA [27]. Investigation of feasible alternatives was found lacking in the above Egyptian EIA reports as most of the projects were in the late stages in planning and implementation. Some reports justified why alternative sites were not taken into consideration. This was due to the fact that the EIA was conducted after the project site was allocated or purchased by the project proponent. Lee [41] noted that the majority of EIA reports in some developing countries were strong descriptively, but weak analytically. It was clear from the reviewed Egyptian reports that one of the key shortcomings was related to the lack of cumulative impacts analyses. Although several projects were carried out simultaneously, the cumulative impacts that may result from these projects were completely neglected in the concerned EIA reports.

SEA facilitates early identification of potential impacts and cumulative effects [26]. Reclamation and dredging activities are taking place within a relatively small geographical range in Egypt, and could have several cumulative consequences on the coastal and marine environments. SEA also allow for a more comprehensive approach in considering alternatives for projects, and implementing effectively mitigation and compensation measures [42,43].

Globally, effectiveness of coastal planning has often been restricted by the lack of institutional coordination [44]. SEA has the advantages of integrating the coastal concerns while proposing planning policies; therefore, facilitating consultation between various organizations as well as the public in Egypt [43].

Limited awareness of the relationship between biophysical and socioeconomic processes is recognized as a challenge to effective coastal management [45,46]. SEA can identify social, economic, and environmental issues associated with reclamation in Egypt, and subsequently assist in the implementation of the important principle of sustainability.

### Challenges facing SEA in Egypt

Within the Egyptian context, the absence of SEA legislation in the national environmental legal framework of the country is considered as the most important constraint that hinders the effective application of SEA. In this context, sufficient political will is considered an important [3]. In Egypt even after the January 25th Revolution the environmental issues remain secondary in the national agenda. For many government agents and part of the national society environment issues are depicted as in clashing with economic development. The fact is that without a strong political will SEA integration and implementation will be not effective.

Generally, it is expected that SEA could contribute to delivering high level environmental policy objectives in Egypt by resolving the shortcomings of project-level EIA and promoting the principles of sustainable development. However, similar to many countries in the

world [47-49], there are difficulties and challenges associated with the implementation of SEA in Egypt. One of the key challenges facing the implantation of SEA is the lack of awareness of the importance and benefits of SEA [50]. Consequently there is a critical need to introduce the concepts of SEA and environmental sustainability into various governmental bodies and relevant stakeholders in Egypt. Another obstacle that may restrict the effectiveness of SEA is the lack of knowledge on how to implement SEA [28]. Therefore, to ensure an effective implementation of SEA in Egypt, guidelines on SEA process and procedure, including screening, scoping, public participation, impact assessment, mitigation and monitoring should be prepared. SEA is also challenged by the limitations in technical capacities and financial support [50]. Efforts should be made to enhance the capacity building of SEA in Egypt, including technical training, providing and sharing related knowledge, and supporting relevant institutions.

The success of SEA is primarily dependent upon the proficiency and capacity of existing planning and decision-making systems [27]. In Egypt, there is an absence of an effective cross-sectoral body or institution to implement and evaluate the SEA principles. Generally, planning and decision-making are carried out in a sectoral manner according to the mandate of each ministry or governmental body. Although the EEAA assumes such responsibility of integrating environmental concerns within the policies, plans and programs of governmental ministries, and coordinating activities regarding environmental issues among various stakeholders, it does not have the administrative or legal capacity to effectively oversee the overall sectoral policies, plans and programs across all sectors of institutions and agencies [15].

### Conclusion

The current EIA system in Egypt is constrained by the fact that most of the projects are in their late stages of planning and implementation when seeking environmental approval. Added to this insufficient enforcement, limited public participation, lack of resources and training and capacity building remain as the key issues. Adoption of SEA in Egypt might contribute to reducing or mitigating the rapid degradation of the environment by intervening at the high level policy development stage when decisions are taken to initiate different projects. Often physical developments and projects are the result of implementation of a policy or plan, for example an extended highway network may be an outcome of a new transport policy.

SEA can contribute to resolving the shortcomings associated with the current EIA system, and achieving the goals of sustainability. Nonetheless, an effective implementation of SEA in Egypt requires introducing and enforcing SEA law provisions, producing guidelines, clarifying administrative and procedural responsibilities of concerned bodies in SEA sharing knowledge, institutionalizing networks, encouraging public participation, and building capacity.

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