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SEA IN EGYPT: THE CASE OF NORTH-WEST SUEZ GULF

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ABSTRACT

Land Use Planning (LUP) in Egypt is a process that incorporates various authorities and stakeholders. It identifies all spatial potentials, problems and constraints reaching definite spatial decisions. In Egypt environmental studies are restricted to individual project level as an Environmental Impact Assessment. The participatory process integrated with the SEA is one key reason for the weak involvement of different stakeholders within the process of LUP. This paper discusses the potentials of incorporating SEA within the LUP process in Egypt. This is done through a case study of North-West Suez Gulf (NWSG) area with a critical approach of its current LUP. NWSG is an environmentally sensitive area that suffers from conflict between industrial, tourism, and quarrying activities. Yet it accommodates precious environmental bio-systems both marine and desert life.

The paper starts by classifying and analyzing the different plans and spatial documents dictating development and investment in NWSG. The outputs of the research are presented at two levels. The first concludes with the identification of areas of development and enhancement in the LUP process generally in Egypt. The second is the definition of serious environmental conflicts within the LUP of NWSG.

Keywords: North-West Suez Gulf (NWSG) Area, Land Use Planning (LUP), General Organization Of Physical Planning (GOPP).

INTRODUCTION

In response to the loss of natural resources in the world, protecting the environment became a vital issue in the last two decades. This means that it is vital to put into consideration the environmental protection in all development activities that man conducts on Earth.

Thus, the principles of sustainable development should be an integral part of all Policies, Programs and Plans. This also implies that environmental issues should be considered when



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making decisions as economic and social issues. Strategic Environmental Assessment (SEA) is the most promising way to make this happen (OCED, 2006).

Physical Planning Process (land use planning) in Egypt

After National Development Plan (Five-Year Development Plan), other plans and development programs start in the field of urban planning and development according to the instructions and guidelines that came in the five year plan, all Ministries start to work to achieve the general goals of this plan. And inside each Ministry and administrative body there will have their own plans and programs. In the field of urban planning and according to the instructions of Ministry of housing, the General organization of physical planning (GOPP) is the administrative body responsible of make all strategic plan and planning strategies for all parts in Egypt .GOPP is the working arm of the Ministry of Housing, Utilities and Urban Development (HUUD) responsible of preparing all land use planning in Egypt based on law no.119 of 2009 it is obligatory by law to get approval of the GOPP on all new or upgrading of land use planning in Egypt. The competent authorities in urban planning and development are responsible for put planning strategies, policies and program and sent it to the Council for Planning and Urban Development for approval. Council reviews all the Regulations for the governorates concerning building licenses regulations and guidelines for the New Urban Communities Authority, Tourism Development Authority, Industrial Development Authority and National organization for urban harmony(ELKhateeb, 2010).

EA in Egypt

In Egypt, the application of EIA on projects started since the emergence of environmental law No. 4 in 1982. Despite the existence of good EIA guidelines and legislation in Egypt and many other developing countries, environmental degradation continues to be a major concern in Egypt. And until now EIA hasnot been able to provide Environmental Sustainability Assurance ESA (1) for Egypt and all other developing countries (Sadler, 1996) .

Until now there is no legislation or law for applying SEA on PPP levels in Egypt, and PPP in Egypt came without involving the environment in it, and because plans and policies come

(1)ESA (Assurance is an evaluation method that uses a specified set of principles and standards to assess the quality of Environmental sustainability. Assurance scope can cover specific areas of performance: social, ex. human rights, labor standards, diversity and environmental, ex emissions, energy use, environmental management systems.



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before any project is established then the damage of environment happens in an early stage before cascade down to projects. In Egypt, there are many conflicts in this process as SEA in Egypt is still neglected till now, although all projects must be subjected to an EIA before having the establishing licenses. But we must mention that, EA has developed rapidly in the last few years in Egypt. Environmental Awareness has also increased in the public arena. As a result of this public awareness; many projects had been reconsidered before implementation as a response of the public pressure, and in some cases these projects have been put to halt.

One of these latest projects was the petrochemical factory ‘‘Agrium’’ in the governorate of Damietta. Due to public pressure it was relocated somewhere else because of the strong local opposition to the project; despite the presence of an EIS held by the project initiators and approved by the Egyptian Environmental Affairs Agency (EEAA)(2).

This case is expected to rise from time to time in Egypt because there is no systematic approach to handle EA when preparing Policies, Program and Plans in Egypt. According to the Egyptian environmental law only projects and buildings must be checked or have an EIA. This is to be followed with the regular building permits. There is no clear reference in the environmental law to the EA of PPP.

The cumulative impact (3) is another important aspect that does not seem to have been given much attention. As a result, allocation of uses in Egypt came without calculating the carrying capacity of the natural environment. The cumulative impacts of industrial uses, for example, should be a main aspect when evaluating the impact of a new industrial facility. This is not always the case and in many cases left to subjective judgments of the evaluator.

EIA is carried in Egypt since emerge of the environmental law, and there are currently 8 guidelines prepared by the EEAA concerning EIA process for these 8 development sectors. Urban development is one of these development sectors, but what is carried in the real is making a general state of environment (SOE) to the environment and description of the

(2)The Egyptian Environmental Affairs Agency (EEAA): The Egyptian Environmental Affairs Agency (EEAA) is the central institution involved in environmental protection and co-ordination in Egypt. EEAA operates under the Ministry of Environment under Laws No. 4/94 and No. 102/83.

(3)Cumulative Impacts (CI) are the effects on an area from one or more activities as they accumulate over time and space.



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proposed urban project and then make the EIA for one or two of the pioneer projects (like marina –hotel – the largest residential compound) and other land use plan remain with no impact assessment and consequently the whole land use plan doesn't subject to impact assessment. And if it is subject to it, it will be like a step to have the license not a supporting tool to the decision making as it done after the land use plan is crated not before it, or in the design phase to select best alternative based on the recommendation of the environmental study (EEAA,2005).The following table presents development sectors that EIA is applied on it;

Table (1): the EIA guideline for development sectors

Guidelines for Oil and Gas Sector
Guidelines for Cement Manufacturing Plants
Guidelines for Pharmaceutical Plants
Guidelines for Land Reclamation Projects
Guidelines for Assessment of Urban Development
Guidelines for Development of Ports, Harbors and Marinas
Guidelines for Municipal Waste Water Treatment Works
Guidelines for Industrial Estates Development

Current Situation of Environmental Studies that Carried on LUP Process in Egypt

There is Major conflict in the planning process in Egypt that there is no relation between the environmental studies that came in the strategic plans or programs and the environmental efforts and projects that is held by the EEAA, as the EEAA is responsible for analyze the EA made by developer on specific projects. According to that; till now there is no role for the EEAA in accept or refuse any plan or physical planning because according to law only projects situated to EIA and there is no mention of strategic assessment on the higher levels of planning. Even in the urban development EIA guideline, the assessment is carried only to the major or the pioneer project but the other master plan is described its impact generally without details, and this study is done after the master plan is designed not before putting its concept. When we analyze the development plans and strategic plans, we can say that it includes economic, social and political targets but no EA was conducted during the preparation phases and of course there are environmental objectives and goals.



Environmental studies are carried now on the PPP (Policy, Plans, and Programs) are done by the administrative body to investigate the current environmental status and to mention some recommendations for achieving sustainable development and protect the environment. But there is no Strategic Assessment carried on the Policy, Programs or Plans in Egypt, so the environment deterioration happened early before assessing the impacts of specific project.

Environmental studies playing as a supportive study in the whole program but not a tool to judge on the Plan or the Physical Planning by it; as there is no legislation for assess the Plans or Programs in Egypt. As a result of that a lot of environmental deterioration happened in the environment in the last years because we don't assess the environmental impact of the physical planning or the programs. The EEAA only demand an assessment for projects and neglect the cumulative impacts, for example in planning an industrial zone there is no assess for the cumulative impacts from the total number of factories, although each factory has a separated EA study.

1- Why Involving SEA in LUP Process in Egypt.

SEA in LUP can make visible the environmental objectives and contribute to more systematic synthesis of local or regional environmental challenges. SEA can thereby make visible the priority to be given to environmental considerations in planning solutions. The next figure represents the impact from LUP in society, economic and environment.

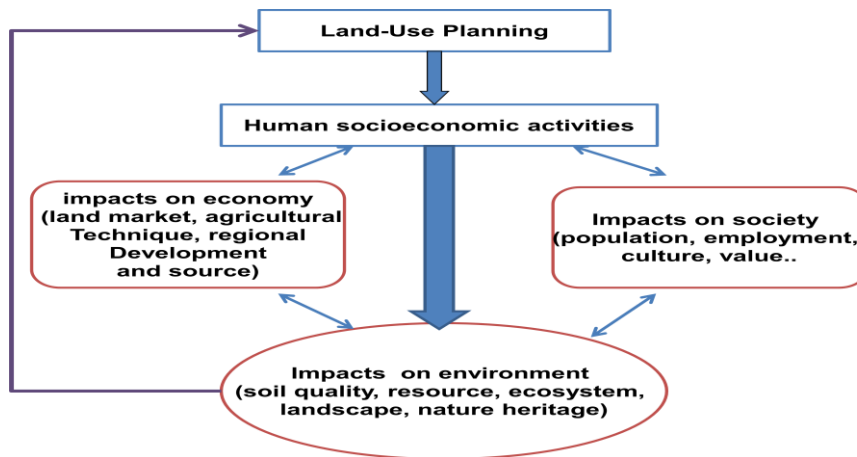


Figure (1): impacts of land use planning in economy, society and environment.

adapted from(Tao *et al.*, 2007)



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Because of the rapid urban development in Egypt it is necessary now to start thinking of integrating SEA in land use planning process, to save the environment from current threats that made by irreversible decisions. Land use planning in Egypt is a process which incorporates different parties and authorities. However, the GOPP is the authority responsible of putting all land use planning policies, plans and programs. Based on law no. 119 of 2008 the GOPP must approve any proposed plan from other authorities such as, tourism development authority.

The conflict is raised because there are two poles in Egypt responsible of planning process, the first pole is administrative bodies responsible of putting planning strategies and the second is the administrative bodies responsible of allocating uses in Egyptian lands because the property of these lands are belonging to them. This confliction in land state authorities was solved by the establishment of The National Center for Planning State Land Uses which was established to guarantee the complete coordination between the state authorities to achieve the maximum possible exploitation of the state lands.

By reviewing new physical planning law no.119 of 2008, there is no mention of EA for physical planning on all its levels, as well as it is not obligatory to carry these studies as it is not mentioned in the law. Also in the new environmental law 19 Of 2009 there is no mention of SEA in any parts of its articles, and consequently it not implemented in Egypt till now.

Although the application of EIA on projects started since 1994 but environmental degradation continues to be a major concern in Egypt. And until now EIAs have not been able to provide sustainability and save the Egyptian environment. The planning process (policy, plans and programs) in Egypt are came before any establishment of projects, so deterioration of environment is happened in an early stage before cascading down to project level.

So it is important to take the environmental issue into consideration from first point of planning process (five year development plans till detailed urban planning). Environmental issue must be a major driving force in the planning process in Egypt like other driving forces that govern the planning process. Involving the EA as a supporting and parallel tool to the planning process; will save the Egyptian environment and save it to the coming generations.

Participatory in SEA & LUP Process in Egypt.



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According to SEA directive the identification of authorities to be consulted within the SEA are those which, by reason of their specific environmental responsibilities, are likely to be concerned by the environmental effects of implementing the plans or program. The SEA Directive requires two mandatory consultations with relevant environmental authorities. The first occurs during determination of the scope of the SEA and the second is during the review of the proposed draft programming document and the accompanying Environmental Report. (Glasson *et al.*, 1994)

In LUP process in Egypt public participation still till now is limited; almost participation is applied in the upgrading plans of villages, cities or governorates. But in new development or land use plans the public participation is limited and almost all preparations of the work is done in closed doors without inform public or stakeholders.

This problem appeared in Cairo 2050 development plan which is stopped after the 25th January revolution due to the change of the government policy toward the low income housing, and comprehensive planning for all Egypt. With the opposite the public participation is an essential part in the SEA process.

Incorporating SEA within LUP in Egypt (Case of; North-West Suez Gulf (NWSG) area)

Introduction to the Case Study (NWSG Area)

The case study is the development of North West zone of Suez Gulf zone which is located in the Gulf of Suez; The Red Sea and the Gulf of Suez constitute a unique and valuable ecosystem, not just as a unique environment, but as one of a high diversity, great scientific and ecological sensitivity, and of great beauty and tourist-value.

Although most of the projects in this area made a separate EIA study according to the Egyptian environmental law No. 4/94; But there is no overall study for the cumulative impacts of all uses in this area (industrial –tourism) and even the development of these two major economic sectors is separate and there is no integration between these two main poles.

Location



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The case study is located at the North West zone of Gulf of Suez and provides for unique economic condition; as it contains Sokhna port, which is one of the important ports, besides its location near to Suez Canal which connect the whole world by connecting Red Sea and Mediterranean Sea. It is, consequently, well-positioned to export to and import from all major international markets, including Europe, North America, Africa and all parts of Asia. The NW Gulf of Suez Zone’s location on the Gulf of Suez makes it especially competitive for trade with Asia, as the pattern of traffic at Sokhna Port indicates. Sokhna Port has the potential to become a highly competitive trans-shipment point between Asia, Europe and Africa. This area is located in the west coast of Suez gulf and lay under the Suez governorate.



Figure (2): The location of the case study in the north west coast of Gulf Suez.

The Gulf of Suez, which is a major water body in the Project Area, is the north-western arm of the Red Sea between Africa proper (west) and the Sinai Peninsula (east) of Egypt and contacts the Gulf of Aqaba. Also, the Gulf is linked to the Mediterranean Sea by Suez Canal in the north.

As shown in figure (1); the case study area is laying under the authority of Suez governorate and its distance from Cairo is 120 km and it connected to Cairo through; old Cairo – Sokhna road and new Cairo – Sokhna road, the first one separating the economic zone (the first and the only special economic zone in Egypt) into Northern Special Economic Zone (N-SEZ) and Southern Special Economic Zone (S-SEZ).

Environmental situation of the case of North-West Suez Gulf (NWSG) area

As this case is located in Suez Gulf, and according to ((ECAA), 2004) the area consists of a composition of unique environment from Gulf, Mountains and accordingly contains sensitive natural live. Besides that, the area already suffers from conflict in decision making process, as it contained mixed uses that were developed there with irreversible decisions and without any coordination between current uses. This make the environment in this site is under pressure



due to the conflict in land uses especially the allocation of high polluting factories in the area. Thus any future development plans for this area must subject to SEA due to the sensitivity of its nature.

Major environmental characteristics of the site;

Marine life:

In this part we will look at the regional scale of the area, as it is too hard to study the marine life in specific part of the Gulf of Suez so we will discuss the whole marine life in the red sea.

a- Coral reefs:

There are little or no corals in the northern half of the Gulf. From Ain Sukhna to the strait of Gubal only patchy fringing reefs are found with a limited coral diversity.

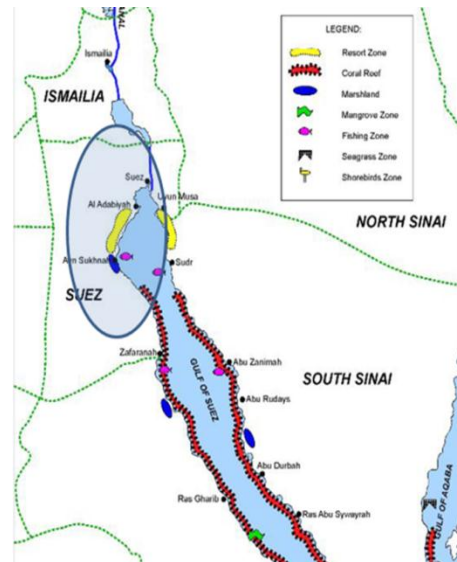


Figure (3): Environmental characteristics of North west of Suez gulf.
 ((JAICA), 2008)



Figure (4): location of coral reefs in the Suez Gulf.
 ((EEAA), 2004)

a- Salt marshes

Salt marshes are also sensitive to pollution. There are various types of salt marsh vegetation. Marshes are extremely productive and are valuable habitats for many species.

They are essential habitats for numerous birds, both as roosting and breeding sites for resident species and stopover and feeding grounds for migrants. Large reed marshes are found in the coastal lakes along the Mediterranean shore. However, these marsh areas are enclosed within the lakes which are only connected to the sea through narrow gaps.



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b- Turtles

Sea turtles are listed as globally threatened species and they are very sensitive to pollution. Nesting sites are particularly vulnerable and are therefore considered to be priority areas for protection. The Red Sea seems to be more important for nesting sea turtles than the Mediterranean. The Red sea Islands are especially important. However, it should be stressed that sea turtles have not yet been adequately surveyed in Egypt. Surveys for sea turtles are particularly needed along the Delta and North Sinai coasts as well as the Red Sea.

Turtles lay their eggs on sandy beaches during summer. The peak nesting period is June-July. The females bury the eggs in the sand. The nests are normally located above the high tide level and the turtles prefer nesting on isolated beaches.

c- Marine Mammals

Data on occurrence of marine mammals in Egyptian waters are scarce. Dolphins and dugong (*Dugong dugong*) occur in the Red Sea. The dugong is a rare resident of the Egyptian part of the Red Sea. The main areas for dugongs are large sea-grass beds on which they feed.

d- Sea-Grass Beds

In the Gulf of Suez, Gulf of Aqaba and in the Red Sea sea-grass occurs within the lagoons in the coral fringe. Sea-grass beds are important nursery areas for reef fish and shrimps. They are also feeding grounds for many fish, for Green Turtles and for Dugong.

e- Fish

In the Red Sea as a whole 800 different species of fish are encountered. The number of species decreases from the south to the north. In the Gulf of Suez, the abundance of reef fish is small due to the scarcity of coral reefs.

Most of the fish on the reef lay pelagic eggs and the larvae are also planktonic. Eggs and larvae stay on shallow water on the reefs and are therefore highly vulnerable to water pollution like; oil spills.

4-Flora

The mangroves in the Red Sea are important habitats for birds. Several species of birds are residents of the mangroves, the most prominent being the Spoonbill, Reef Heron, Green Heron and Ospreys. Many migratory and wintering shore birds use the mangroves for food and shelter, which is, otherwise, extremely scarce along the arid Egyptian Red Sea coast.



Mangroves are highly productive ecosystems providing food and shelter for a large number of species. They are important breeding and nursery areas for fish and crustaceans and they are essential habitats for numerous birds. The area also the home of several desert plants that tolerate salinity and drought, such as date palms.

FAUNA & BIODIVERSITY

a- Biodiversity

Coastal and marine resources located in the Gulf of Suez and Red Seas is one of the four main habitats in Egypt. Suez is the location of many reptiles including gecko, lizards, snakes and vipers. Suez is the home of desert mammals, such as the red fox and dorcas gazelle. The Governorate is an important station on the route of many migratory birds ((EEAA), 2004)

Industrial, mining, power generation, navigation and tourism are the major economic activities in the Governorate, and constitute serious threats to the biodiversity in that area of the country.

b- Bird Sites

Around 70 % of the bird species encountered in Egypt are migratory species which are found only in Egypt on a seasonal basis. The coasts of Egypt are situated along extremely important migration routes for birds and there are very important wintering areas for water birds along the coast.

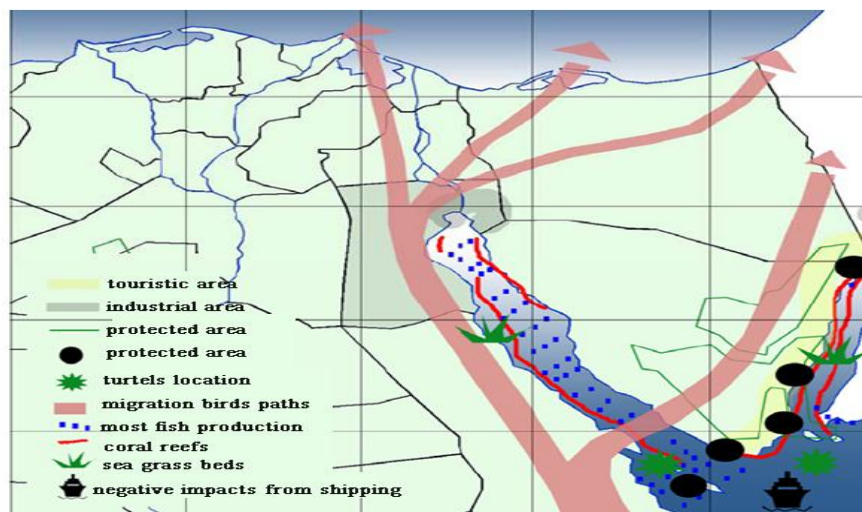


Figure (5) Migrating birds paths which is passing through the case study area.

((EEAA), 2004)

The migrating birds pass a number of internationally important bottlenecks along the Mediterranean and Red Sea Coast (Zaranik, Ras Mohammed, Suez, AinSukhna and Gabel Zeit). Very large concentrations of migrants can be found in the spring and autumn in these areas including a high percentage of the world population of several species.



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Classifying & analyzing the different plans/ spatial documents dedicating development & investments in the case study

After the 1973 war, HUUD Ministry was charged with responsibility for the reconstruction and future development of the Suez Canal Zone. A massive immediate and long range reconstruction and development program was then initiated. During the first phase of the program under series of planning studies, three master plans for Port Said, Ismailia and Suez cities (march 1976) and a regional plan (September, 1976) for the entire area were prepared (Farouk, 2006).

In January 1978 strategies and plans for tourism development in the Suez Canal Zone were prepared with the assistance of UNDP according to Egyptian government request.

In 1979, environmental guidelines and long term strategy for industrial development at Suez City to be major industrial city was prepared with assistance of UNDP.

In 1992, west coast of Suez Gulf was declared according to the Presidential decree 445 under the authority of the TDA.

In 1993, according to the presidential decree 458, industrial investment was declared in the south of the Suez city between coastal roads (Suez- Zaafarana) and the Cairo- Suez road, under the authority of the North Gulf Coast development Agency following to the Ministry of HUUD.

In 1996, according to the Prime Minister decree (2) modified in 1998, the area along the Cairo - AinSokhna road was assigned for heavy industrial activities under the authority of Suez Governorate (Farouk, 2005).

Decree No. 35 of 2003 establishing the General Organization for Special Economic Zone, and the establishment of the SEZ in North West part of Suez Gulf.

Analyzing Land uses in the study area:

The ongoing development of this area creates a confliction in its land uses, especially with its strategic location and its connectivity with the whole world through Sokhna port. The following figure presents the land uses in the case study area.



The current land uses of the area can be divided into the following:

a. Northern Special Economic Zone

(N-SEZ):

Northern Economic Zone with an area of about 102.2 km², it was developed in the light of the success of the development of the southern SEZ, which represents the first stage. It is divided in principle to (9) sectors, and still under development.

b. Southern Economic Zone (S-SEZ):

Decree No. 35 of 2003 establishing the General Organization for Economic Zone in the North West Gulf of Suez, as the first special economic zone in the country. The estimated area of this area in the first stage will be 90.2 square kilometers.

It divided into the following:

The first sector is (Suez Industrial Development / Sawiras), the second Sector is (El Dorado for the integrated development / Cleopatra), the third sector (the company the Egyptian-Chinese joint investment), and the fourth sector (Suez Gulf Development Company / Ahmed Ezz).

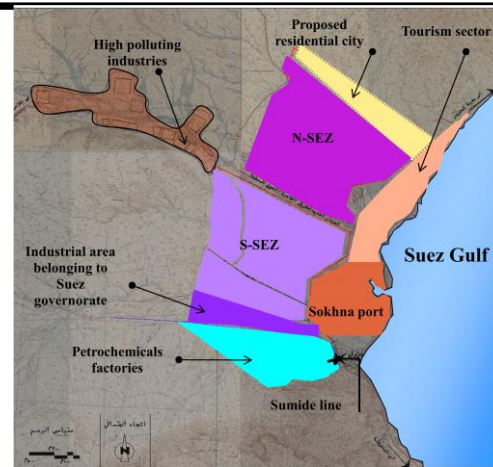


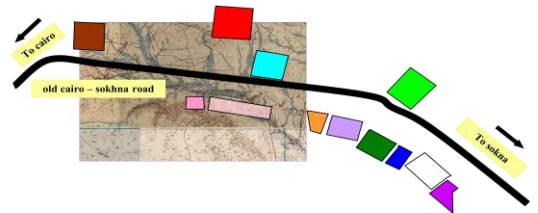
Figure (6): Land uses in the case study area (GOPP, 2010)



a. High polluting industries:

This area contains numbers of cement factories and it is following Suez governorate. It is Located North West of the southern region (the first phase of the economic zone on the Cairo / AinSukhna old - outside the boundaries of SEZ.

This area includes a number of factories and companies reach 12 factories had been allocated without a planning framework, and its area is 10.3 square kilometers; as shown in next figure.



area	Factory name	area	Factory name
١٧٧,٢	pharos for cement	٢٣١	Egyptian cement
١٧٧,٥	EGY for ce	٢٣٧	Arabian co
٨٨,٦	EGY for iron	٢٣٢	Cleopatra cement
٢٢٤,٨	El swidy for cement	٢٣٢	el minnya cement
١٢٠	Gulf cement	٨٧	international cement
٢٣٨	Suez cement		

b. Industrial zones south the S-SEZ:

This area is located south to the first sector of the S-SEZ, its area is about 10.3 km² and it is still a vacant land. And it follows the authority of Suez governorate.

Figure (7): Existing factories in the high polluting industrial area.

c. Petrochemicals industries:

This area is located south of the Industrial zone; its Area is about 17 km². It was established under The Decree No. 458 for the year 1993 which identified this region and the authority Of the New Urban Communities Authority, which has Prepare a detailed land use plan for it.

d. Sokhna port:

It is an important port on the Gulf of Suez; it serves the loading and unloading operations in accordance with high technology. With Focus on; implementing strategic projects as a supporting facilities to the logistics and cargo. The aim of this port is to attract global investment to the area. The total area allocated to these activities around 22 km².

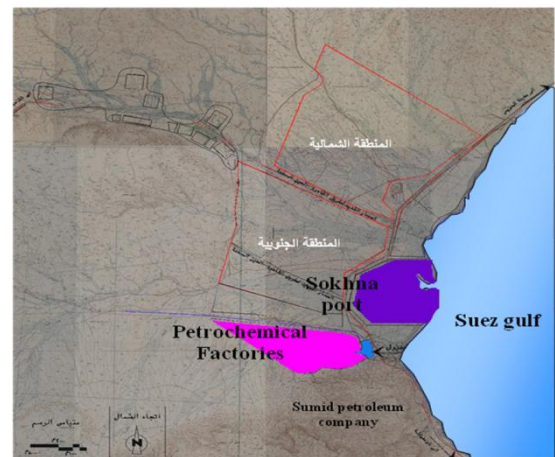


Figure (8): Petrochemicals industries and Sokhna port. (GOPP, 2010)

e. Tourism sector (Al Ain Al Sokhna):



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Al Ain Al Sokhna was declared as a touristic site under the presidential decree No. 445 of 1992 to allocate some land for tourism purposes. It is surrounded on the east by the Gulf of Suez and bounded to the west through the Suez- Zafranna road. The area of tourism area is about 17 km². This area includes a number of villages and hotel accommodation; the number of hotel rooms reaches 2000 rooms (TDA, 2010).

Role that SEA can play in the future development of this area.

Applying the SEA in this case can help in selecting the most appropriate alternative that compatible with the current situation of the area, in order to apply the SEA on this area we put three alternative to the development of it with the students of fourth year in the environmental planning course hold in Urban planning department Faculty of Engineering, Ain Shams University, Egypt 2011 (EPC, 2011). The three plans were done after several workshops with students concerning the case study and the work takes the following steps;

- Analyzing the current condition of the study area.
- Understand current problems and situation.
- Site visit to the site to collect all data and visit locations.
- Propose three development plans for the area which is develop the area from three different perspectives but one of them is the current situation alternative.
- Applying SEA to select the most appropriate proposed plan that is compatible with the environment there.
- The students were divided into three groups and each one work to develop one proposal and then we apply SEA on the proposals. The first proposal is the do-nothing plan (current situation), the second one is the enhancement of the clean energy in the site and the third one is to invest in business. The following part will discuss each alternative separately, and then assess the proposed objective of each case separately and then comparing them together to select the most suitable alternative that compatible with the sensitivity of the location of the case study and current environmental characteristics.

7-1 Assessment of alternative one (the to-do nothing Alternative);



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The without project scenario means that the land uses remain as it is with no change, consequently any environmental problems will remain too.

To keep the area as it is was no change in land use plan; means strengthen importance of SEZ (industrial zone) and decrease importance of tourism development. The objectives of this proposal can be summarized in the following points;

- 1-Develop an international economic zone to compete with other areas in the world.
- 2-Provide more employment chances.
- 3-Attract investors to invest in the area.

Figure (9) the existing situation of the case study area. (EPC, 2011)

Assessment of objectives in relation with key environmental issues:

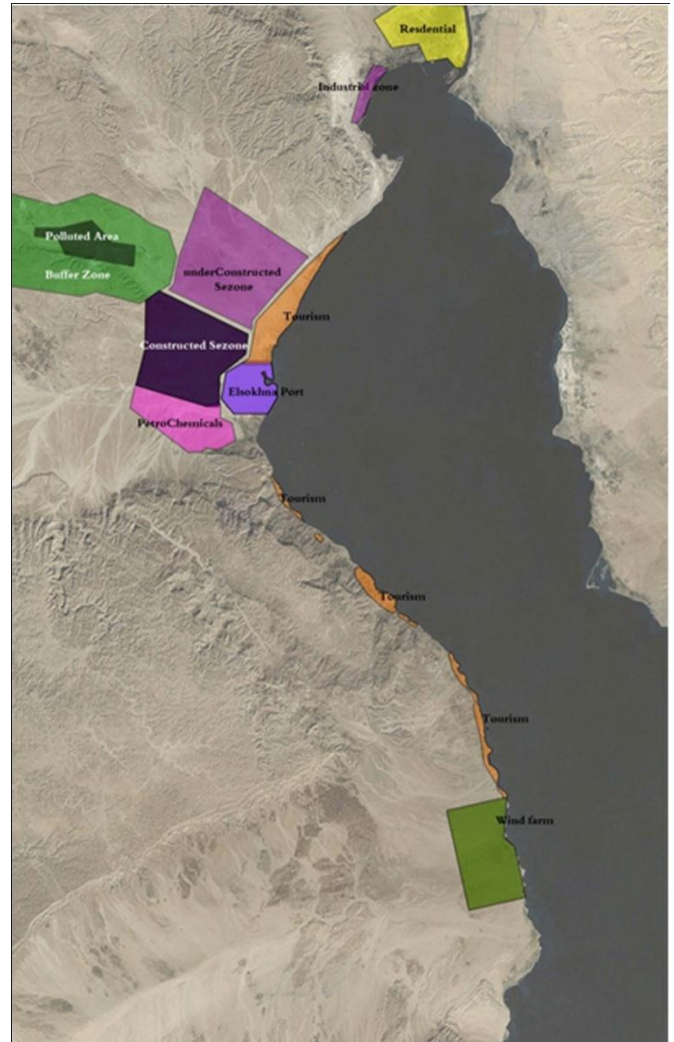


Table (3) Conclusion of Assessment of Alternative1. (EPC,2011)

	Alternative 1
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Environmental issue	Objective 1	Objective 2	Objective 3
soil	high negative impact	High negative impact	High negative impact
air	high negative impact	High negative impact	High negative impact
water	high negative impact	High negative impact	High negative impact
flora	Medium negative impact	Medium negative impact	Medium negative impact
fauna	Medium negative impact	Medium negative impact	Medium negative impact
Marine life	High negative impact	High negative impact	High negative impact
Population & human health	High negative impact	positive impact	High negative impact
landscape	medium negative impact	Medium negative impact	Medium negative impact
Material assets & culture heritage	No significant impact	No significant impact	No significant impact

7-2 Assessment of Alternative 2; the Enhancement of the Clean Energy in the site

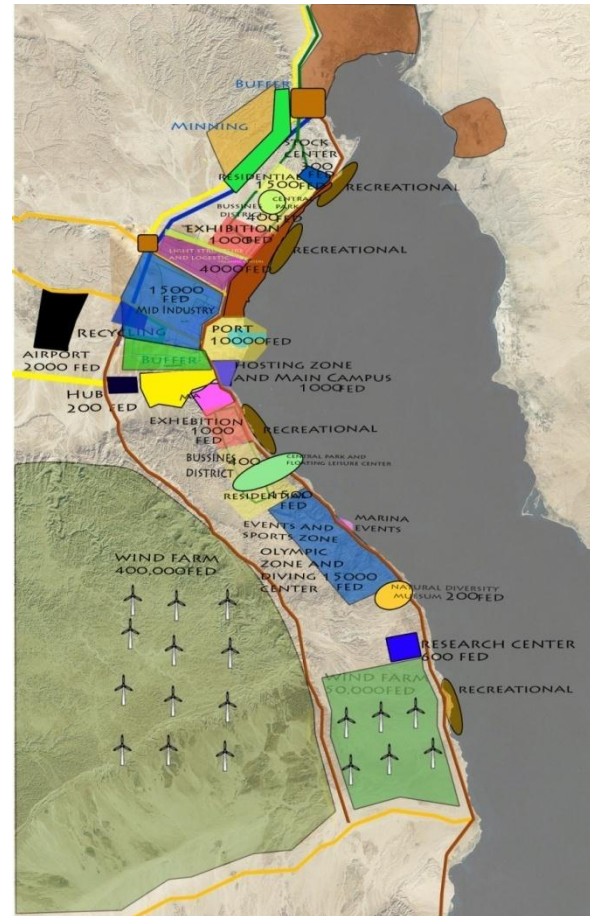
Our vision for the area is to create a science and business city where the science of renewable energy is being touch, developed and applied all in one place in a comfortable business environment, good quality of life and experience of prosperity and leisure in order to use all the site area in development not only the thin line of the coast but taking in account the hinterland area. Already there is a patch of wind farm in the case study area in the south area, and this proposal recommend to increase it in desert and sea as the area is categorized as one of the best wind speeds in Egypt.

The objective of this alternative are;

Objective 1: promoting renewable energy science, industry and business and introducing recycling.

Objective 2: developing a pole of industry to the whole world.

Objective 3; maximizing and guiding the interactive spirit raising the quality of life and reaching zero-unemployment level.





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Figure (10) : Strategy Of Alternative 2; The Enhancement Of The Clean Energy In The Site. . (EPC, 2011)

Table (5) Conclusion of Assessment of Alternative2(EPC, 2011)

Environmental issue	Alternative 2: the Enhancement of the Clean Energy in the site		
	Objective 1	Objective 2	Objective 3
Soil	Medium negative impact	Medium negative impact	Medium negative impact
Air	Medium negative impact	Medium negative impact	High negative impact
Water	Medium negative impact	Medium negative impact	High negative impact
Wild life	High negative impact	Slight negative impact	Medium negative impact
Marine Life	High negative impact	High negative impact	High negative impact
Population & human health	Positive Impact	Positive Impact	High negative impact
			Positive Impact
landscape	Slight negative impact	Slight negative impact	Slight negative impact
Material assets & culture heritage	Medium negative impact	Slight negative impact	Medium negative impact



assessment of Alternative three; to invest in business

The aim of this alternative is to invest in industrial zone in the SE-zone by attract investors to invest in the site beside supply a good environment to worker in this projects by developing the resorts and residential compounds in the area..

Objectives of this alternative;

Objective 1; expansion of SE-zone & other industrial projects in the area.

Objective 2; expansion & development of ports & marinas along the shore.

Figure(11) the strategy of alternative three.(EPC, 2011)

Objective 3; facilitate the connectivity of the site via building an airport.

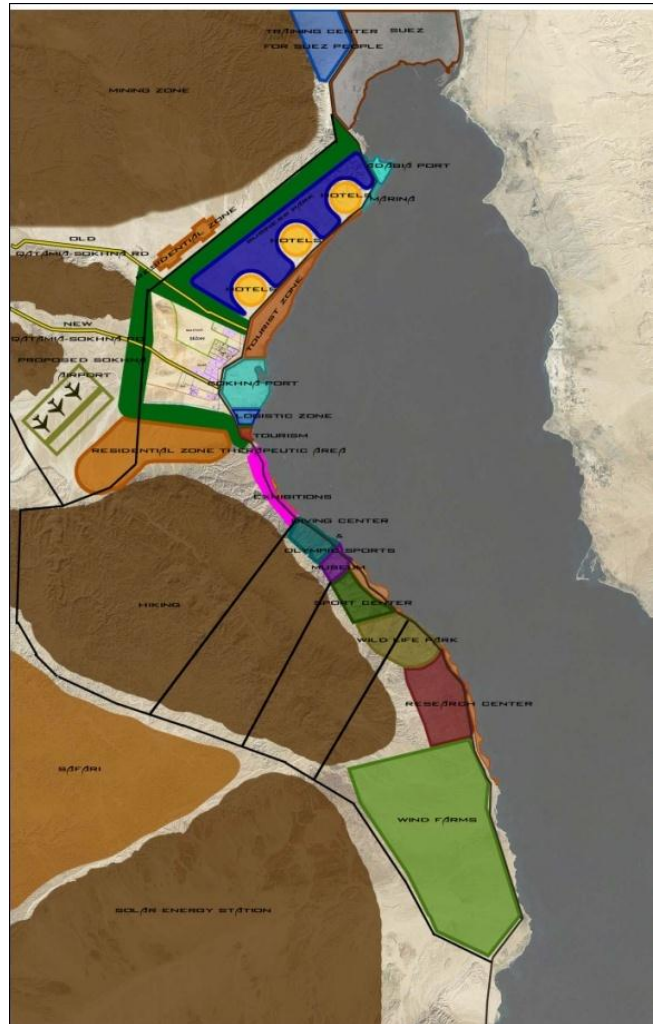


Table (7)Conclusion of assessment of proposal three.(EPC, 2011)



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Environmental issue	Alternative 3: (Make An industrial city by providing a residential city & Air port)		
	Objective 1	Objective 2	Objective 3
Soil	Slight negative impact	No Significant impact	Medium negative impact
Air	High negative impact	Slight negative impact	Medium negative impact
Water	High negative impact	High negative impact	No Significant impact
Wild life	Medium negative impact	Medium negative impact	Slight negative impact
Marine Life	High negative impact	High negative impact	No Significant impact
Population & human health	Positive Impact	Positive Impact	High negative impact
landscape	Slight negative impact	No Significant impact	Slight negative impact
Material assets & culture heritage	No Significant impact	No Significant impact	Medium negative impact

Assessment Result

Based on the analysis of the assessment table, alternative two & three is the most favorable alternatives as they contain less number of negative impacts comparing with the first alternative, but if we compared between them (second and third) the second alternative will be the most appropriate one, as it contains less number of no significant impact which mean uncertainty of the impact.

The following table represents the comparison between the three alternatives.

2- Potentials for implementing SEA in Egypt

As mentioned before the EA is known in Egypt since the emergency of the environmental law in the eighties and the Environmental assessment is known from this date till now. The Environmental Assessment is taught to students in many Faculties of Engineering in Egypt for example, Ain Shams University, Cairo University and Alexandria University. Beside that the Housing and Building National Research Center (HBRC) is helping in the capacity building of administrative authorities by prepare a workshops and training course in SEA although till now it is not obligatory by law to make SEA study to development plans, also the GOPP through its partnership with Egyptian faculties like faculty of Engineering, Ain shams university trying to enhance the capacity building of the employees and engineers in the field of environmental studies and SEA specially. This beside the new spirit that appears in the



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Egyptian community after the revolution, they now want to apply the concepts of transparency and public participation and these two items is the back bone of the SEA study, and if we could apply real participation in the coming project it is easy to convince people to share in the SEA study. Beside all of he above potentials; the risk that the Egyptian environment faces due to continues development will encourage decision makers to adopt new assessment like SEA to help in take decisions loaded with environment respect.

Table (8) comparison between the three proposals of the development of the study area.
.(EPC, 2011)

E I	Alternative 1			Alternative 2			Alternative 3		
	Ob1	Ob2	Ob3	Ob1	Ob2	Ob3	Ob1	Ob2	Ob3
S	H -VE	H -VE	H -VE	M -VE	M -VE	M -VE	S -VE	No	M -VE
A	H -VE	H -VE	H -VE	M -VE	M -VE	H -VE	H -VE	S -VE	M -VE
W	H -VE	H -VE	H -VE	M-VE	M -VE	H -VE	H -VE	H -VE	No
WL	M -VE	M -VE	M -VE	H -VE	SL -VE	M -VE	M -VE	M -VE	SL -VE
M L	M -VE	M -VE	M -VE	H -VE	H -VE	H -VE	H -VE	H -VE	No
SE	H -VE	H -VE	H -VE	+VE	+VE	H -VE	+VE	+VE	H -VE
L	H -VE	+VE	H -VE	SL -VE	SL -VE	SL -VE	SL -VE	No	SL -VE
M. CH	M -VE	M -VE	M -VE	M -VE	SL -VE	M -VE	No	No	M -VE

S: soil – A: Air – W: Water –WL: Wild life – ML: Marine life – SE: socio economic – L: landscape –M.CH: Material assets, Cultural heritage.
S –ve: slight negative impact, M –VE: Medium negative impact, H-VE: High negative impact, +ve: positive impact, NO: no impact.

CONCLUSION & RECOMMENDATIONS



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Land use planning is a decision-making process that facilitates the allocation of land to provide the greatest sustainable benefits; the role of SEA is to achieve this goal in order to avoid environmental deterioration consequences caused from irreversible decision making.

To integrate SEA in LUP in Egypt a lot of changes must be done in order to facilitate this implementation; these changes are in legislations, laws, capacity building, TOR for strategic plans and other changes in responsibilities of key authorities and bodies. As the focus of the Egyptian environmental Law is only for project level assessment, and to implement the SEA it must be a part of the Egyptian Law.

The research recommend that the implantation of SEA must happen in three levels; Level one is the test period of implantation, level two is the limited implementation and level three is the wide implementation.

- At the first level; in the test period SEA will be done in some certain samples and during this period it is not obligatory by the law. During this period developing of capacity building is started by a lot of training courses programs.

The experienced SEA will be carried by experts and the aim of this step is to train in-house experts of institutions and governmental authorities.

Also announcement of the process to the public is started from this step, through media, meetings, lectures and newspapers.

- At the second level; after finishing the previous level, the implementation of SEA will be obligatory by law but for certain level of land use planning like; governorate or regional level, and also while this period the enhancement of capacity building will continued with supporting research institutes to develop their work in the file of SEA, beside making partnerships with foreign countries famous in this field especially Europe countries.
- At the third level; SEA now is obligatory to be implemented in all levels of LUP in Egypt based on the findings and results of the previous two levels. And based on this, the SEA process can be updated or changed.

In order to integrate SEA in LUP, the research recommends some changes and determination of the role of each concerning key responsibilities and participants, as in order to implement SEA we must have the qualified capacity building capable of achieve all SEA process. The following table the recommendation of the changes that need in each authority to help in applying SEA in the LUP process in Egypt.



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Table (9): Recommendations for Enhancement of the current state authorities to help in apply SEA in LUP in Egypt

Participant	Recommended Actions
EEAA	1- Enhance capacity building by training programs funded by international donors.
	2- Provide necessary fund from Ministry of environment and ministry of finance.
	3- Build a network of experts to work with the GOPP to train the staff.
GOPP	1- Strengthen environmental consideration by enhancement capacity buildings by network of training programs.
	2-Cooperation and protocols with research institutes in the field of SEA to integrate it in the research topics.
	3-Update land use planning process & TOR to make SEA a part of it—create screening criteria.
Regional branches offices of the EEAA	1- Strengthen their role in monitoring plans and programs.
	2-Achieve the concept of de- centralization in fund and man power.
	3- Enhancement capacity building through planned courses and cooperation with research institutions.
Governorates	1- Strengthen role of the governorate in monitoring plans by achieving concepts of un-centralizations.
	2-Enhance capacity building to the environment departments and emphasis on cooperation with EEAA.
	3- Provide appropriate fund to them.
Public	1- Enhance public environmental awareness. Through programs and plans.
	2-Public must know of their role in making decisions by enforcing new articles in laws.
	3-Develop participation between public through workshops, meetings and public media.
	2-Enhance human resources in the line of the future development vision of the GOPP.
	3- Develop a T.O.R for implementing SEA by cooperation with EEAA- research institutes.
Review Authority	1- Create a review authority in a higher level of planning authority.
	2- Cooperation with this authority and other ministries is a must, beside cooperation with high council of urban planning.
	3- Give all authorities to it to refuse or accept plans with no forces but with achieving transparency –public participation.

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