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IMPLEMENTATION OF ENVIRONMENTAL STRATEGIES ON THE PLANNING PROCESS IN EGYPT

A Thesis Submitted in Partial Fulfillment of the Requirements for the PHD Degree in Urban Planning

By

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Dedication

To my family, my beloved husband, and my wonderful sons; Aly and Mohamed.

Acronyms

LUP	Land Use Planning
EA	Environmental Assessment
EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
EEAA	Egyptian Environmental Affairs Agency
ERA	Environmental Risk Assessment
SIA	Social Impact Assessment
CIA	Cumulative Impact Assessment
SA	Sustainability Appraisal
PPP	Policy, Plan, Program
ESA	Environmental Sustainability Assurance
MDG	Millennium Development Goals
IA	Impact Assessment
HIA	Health Impact Assessment
IAIA	International Association for Impact Assessment
OECD	Organization for Economic Co-operation and Development
NEPA	National Environmental Policy Act

MSEA	Ministry of State for Environmental Affairs
UNCED	The United Nations Conference on Environment and Development.
UNECE	The United Nations' Economic Commission for Europe
WHO	World Health Organization
FAO	The Food and Agriculture Organization of the United Nations
HUUD	Ministry of Housing, Utilities and Urban development
GOPP	General Organization of Physical Planning
HBRC	The Housing and Building National Research Center
TDA	Tourism Development Authority
CAPMAS	Central Agency for Public Mobilization and Statistics
CA	Competent Authority
RA	Review Authority
AT	Assessment Team
SEZ	Special Economic Zone
N-SEZ	Northern Special Economic Zone
S-SEZ	Southern Special Economic Zone

Abstract

Decisions taken in Egypt are not enough loaded by environmental considerations, and consequently a lot of environmental deterioration is happening in the Egyptian Environment due to this Situation.

Until now project level assessment dose not save the Egyptian Environment because it happens after decisions are taken in high level and it doesn't taken any accumulative impacts in account.

Strategic Environmental Assessment (SEA) is a supporting tool to decide the making process. Transparency and public participation is the backbone of this assessment, SEAs appeared in the last two decades to emphasize the concept of sustainability via applying the mentioned two concepts.

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.

This research advocates that; the adoption of a tool like SEA can help in better decision making, and solve current environmental problems in Egypt. As it is applied in the high level of decision making process, so saving the environment happens in higher level and before we cascade down to project level.

This research aims to develop a road map for applying SEA approach in land use planning in Egypt via constructing SEA model compatible with the Egyptian context. This context was explored in two directions, first exploring current Environmental studies in Egypt, and secondly exploring current land use planning in Egypt and identifying its procedure and institutional frameworks.

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 in 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 making decisions as economic and social issues. Strategic Environmental Assessment (SEA) is the most promising way to make this happen (OCED, 2006) (1).

Development of EA& Appearance of SEA

The development and consequent adoption of Environmental Assessment (EA) procedures have gained momentum in recent years all over the world. These EA are varied from Environmental Impact Assessment (EIA), which is initiated in 1969 to other assessments which appear in the world to solve the limitation of EIA; like Social Impact Assessment, Cumulative Impact Assessment and SEA. SEA came as a comprehensive tool of all this previous assessments and it is carried out in early stages on Policy, Plans and Programs (PPP).

The fact that EIA would not apply beyond projects to PPP levels was the first, and remains the single most common, reason cited as justification of the need for SEA.

The main argument has been that important decisions were taken before projects were identified, during the formulation of PPP, and that these decisions were not subjected to EA.

SEA is recognized as an important decision supporting tool for integrating environmental considerations along with social and economic considerations

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(1) *OECD: organization for economic cooperation and development is an international organization helping governments tackle the economic, social and governance challenges of a globalised economy.*

into proposed PPP. SEA has been defined as:" systematic process in which environmental, economic and social consequences of proposed policies, plans and programs are evaluated at the earliest appropriate stage of decision-making (Therivel *et al.*, 1992, Wood and Djeddour, 1992, Lee and Walsh, 1999, Partidario and Clark, 2000, Ficher, 2007)

Moreover, it is often considered as a complement to project-based (EIA), so that EAs are conducted at all levels of decision-making; from policy/plan/program formulation to project management and implementation.

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 has not been able to provide Environmental Sustainability Assurance ESA (2) 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 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 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

(2)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.*

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)(3).

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 (4) 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.

Having portrayed the above situation in Egypt, this research aims to exploring the current practice of EA studies in Egypt and emphasizing how SEA processes could be integrated at an early stage of the planning process in Egypt. This should hold a higher probability for cleaner environments and achieve goals of sustainability in Egypt.

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*(3) **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.*

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

Therefore the research aims to set a context for implementing SEA in land use planning process in Egypt. So it can be used as a guiding instrument for decision makers and competent authorities that are responsible of putting policies, plans and programs in the field of land use planning.

Research Structure*:*

This research is divided into four parts; the first part represents the introduction and methodological approach, the second part is the literature review, the third part investigates SEA in international experience and current Egyptian condition, and the fourth part is the application part.

These parts can be summarized as follow and they are described in figure 1;

The first part; (Introduction& Research Methodology)

This part consists of the introduction part and chapter 1.

Chapter 1: (Research Methodology)

The aim of this chapter is to discuss the research methods that the researcher has been used to achieve the research main goals and objectives. In This chapter, the ways of conduction these methods are described in details.

The second part; (Literature Review)

This part is divided into;

Chapter two: (Review on Environmental Assessment)

The aim of this chapter is to; distinguish SEA from other type of assessments in the same scale, so other low level assessment (Project Assessment) is excluded from the scope of this research.

Chapter three: (SEA in Action)

This chapter is the introduction to understand SEA definition and procedure. The SEA definition is reviewed and discussed and then a final definition was concluded based on these literatures.
The SEA process was studied in three different guidelines;

1- EU Directive for SEA which is applicable in all EU countries.
2- SEA in a non-European country; (Turkish guideline).

3- SEA in an international financial institution such as; Organization for Economic Co-operation and Development (OECD).

Chapter Four: (Integrating SEA in Land Use Planning)

As SEA is applied in many development sectors, the focus of this research is to study the implementation of SEA in land use planning as one of the major sectors on which SEA is applied.

So the aim of this chapter is to understand how this implementation is happening in land use planning, and discuss its methods, tools and institutional frameworks.

The third part; (Practice of SEA)

This part consists of two chapters;

Chapter 5: (SEA in International Experience)

This chapter is discussing SEA procedure in four case studies in the field of land use planning, in order to help in constructing the Egyptian SEA model based on the finding of this chapter beside the findings of literature review.

Chapter 6: (Investigating SEA & Land Use Planning Process in Egypt)

In this chapter the current Egyptian condition was explored in order to build the Egyptian SEA model which is compatible with the Egyptian context.

This chapter is divided into two parts; in part one explored land use planning process in Egypt in laws, institutional bodies, governmental organizations and framework. This was surveyed by collecting data through interviews, questionnaires, intensive workshops, and experts meetings.

Part two explored the EA studies in Egypt and its relation with land use planning process, and the same research methods were used.

The aim of this chapter is to draw a picture of the current Egyptian condition to help in constructing the SEA model.

The fourth part; (the Application)

Based on the findings of previous chapters, this part represents the application part and it consists of three chapters as follow;

Chapter 7: (Developing Egyptian SEA Model)

In this chapter the SEA model is constructed based on the findings of literature, findings of cases comparison and findings of studying current Egyptian condition.

Chapter 8: (Appling SEA Model on an Egyptian Case Study)

After the model is constructed in the previous chapter, the model is tested in this chapter by applying it on an Egyptian case study. The North West zone of Suez gulf was selected due to its unique location and current sensitive situation, beside the data availability. It contains the first and the only special economic zone in Egypt which is located near to one of the most beautiful beaches in Egypt (Al Ain Al Sokhna). The dual usage of this area as a touristic and industrial zone, results in a massive damaging effect on the environment. SEA model will be tested by applying it on the new land use proposal for this area which is created by the GOPP (5).

The process was conducted but with some limitations which are; lack of information and time length.

Chapter 9: (Conclusions & Future Recommendations)

The finding of the research is summarized in this chapter, describing future actions and recommendations.

(5) GOPP: *General organization for physical planning is the administrative authority responsible on land use planning in Egypt.*

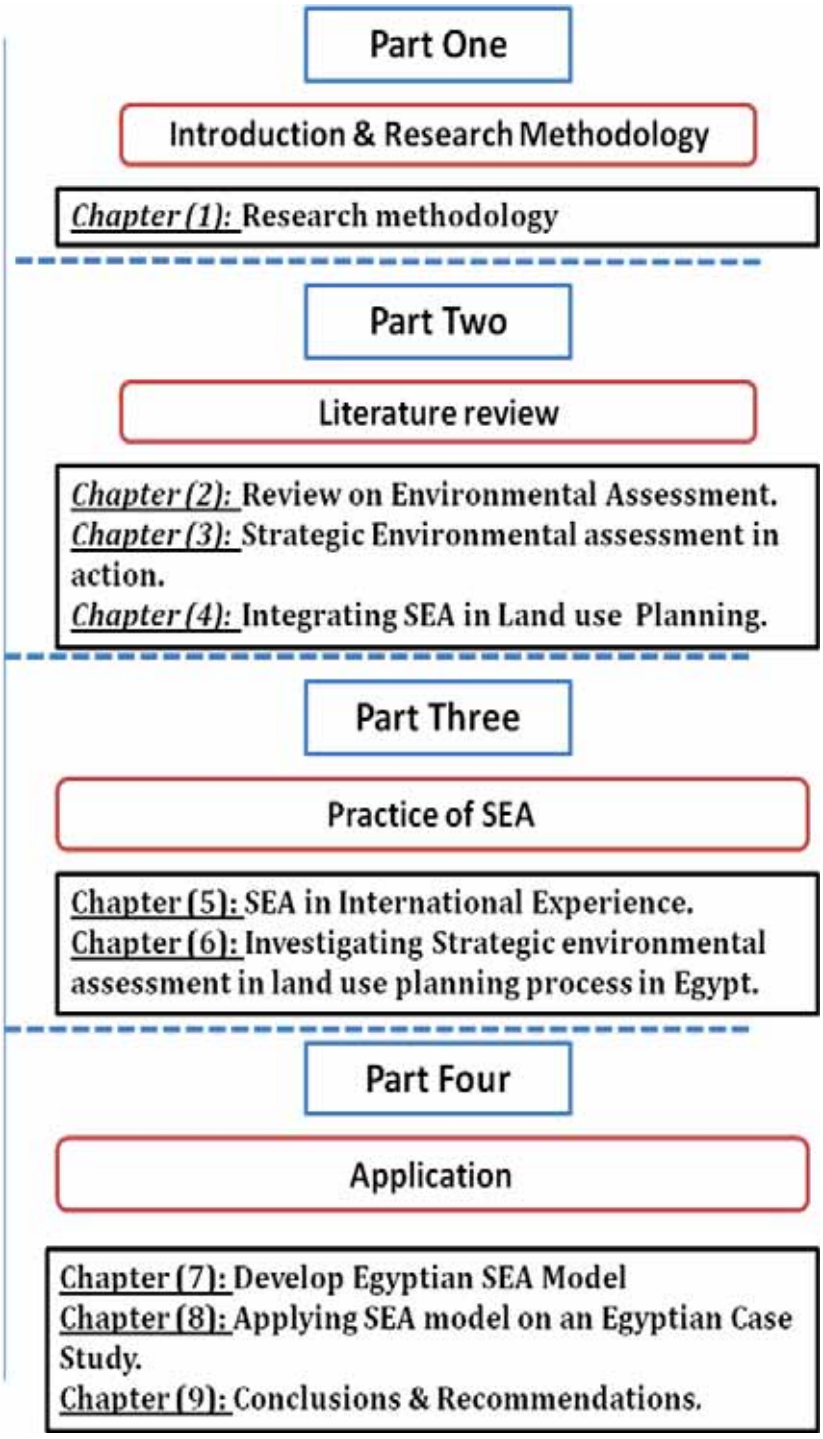

Figure (1): Research Structure

1- Chapter 1: Research Methodology

Introduction:

Methodology refers to; 'branch of philosophy that analyses the principles and procedures of an inquiry in a particular discipline'(Neuman, 1997).
Research methodology is essential as; it provides effective research with study results. It can be defined as; procedures, ways, methods and techniques that are applied to capture and gather all relevant information for the research.
The research is conducted in terms of research philosophy which includes the employment of research strategy and the research instruments utilized in order to achieve the main goal of the research and the other research objectives.

The purpose of this chapter is to:

- Discuss the motivation for selecting the research topic and discussing the research aim and objectives ;
- Discuss the research approach and the rational for using it;
- Introduce the research instruments and methods that had developed and utilized to achieve the research goals.

This chapter sets out the development of the research methodology by realizing the aim and objectives of the research and put reasonable answers for the research questions.

The research starts with summarizing the concept of SEA as a decision making supporting tool especially in the field of spatial and land use planning.

Following this the comparison between four case studies, in order to study the SEA process in a concrete case study to help in building the SEA model which is compatible to the Egyptian context.

After that, the researcher explores the Egyptian context in two parallel directions, the first one is exploring the environmental studies which are carried on land use planning process in Egypt, and the second one is exploring the physical planning system in Egypt.

Following that the establishing of the SEA model which is build based on the findings of the literature review, besides the finding of exploration the environmental condition and physical planning process in the Egyptian context.

In this chapter research methods are explained, with clarification of why these certain methods are chosen to create the Egyptian SEA model. It ends with explaining selection criteria of foreign examples and Egyptian case study (test example) with the limitation of data availability and research time length.

1-1 Motivation of Selecting the Research Topic

The ongoing development in Egypt made a lot of pressures in the Egyptian environment capacity due to the neglecting of integrating environmental thinking in decision making process. Egypt had implemented EA (project level) since 1982 when the environmental law was set.

This ongoing development threatens the Egyptian environment because the EA is carried only in low levels of decision making process, and the entire decision making process is made without any EA.

Many experts and specialist in the field of environment in Egypt; based on some established surveys and interviews argued that the degradation of the Egyptian environment will continue, as the protection of the Egyptian faces a lot of challenges due to the lake of environmental awareness from one hand, and the neglecting of implementing EA in the high tiers of decision making process (PPP) from other hand.

As a lot of irreversible decision making processes are taken first, so the environmental deterioration happened before implementing projects. In rare cases the public pressure in Egypt help to stop such projects that were made based on irreversible decisions; like case of Agrium factory in Damietta city where the public pressure cause stopping of working in building this project and move it in other place although this factory had an approved EIS(6) from EEAA. But this cannot be happened in all other development decisions, so

(6)**Environmental Impact Statement (EIS):** is a document required by the EEAA to approve on build new establishments, an EIS describes the positive and negative environmental effects of proposed project.

the motivation of selecting this topic was to try to make a road map for implementing SEA in Egypt especially in the field of land use planning to help in finding solutions to the current Egyptian situation.

This motivation was build after attending courses of creating a curriculum for Impact Assessment for undergraduate student in faculty of Engineering, Ain Shams University, under the umbrella of tempus project titled (CEIAC) which was funded by the European union, and in it a partnership was made between number of governmental bodies in Egypt and universities in Europe to create this curriculum.

This was the beginning of thinking in SEA as a new approach knowing worldwide for more than 20 years, but still a new terminology in Egypt, the participation of the researcher in this project help in conducting expert interviews, questionnaires for focus groups and discussing the concept of integrating SEA in Egypt with a lot of governmental bodies shared in this project; like General Organization for Physical Planning (GOPP), EEAA and Housing & building research center (HBRC) and other experts from different disciplines.

1-1-1 Criticism of Current Egyptian Condition

Although the application of EIA on projects started since 1982 but environmental degradation continues to be a major concern in Egypt. And until now EIA has not been able to provide sustainability and save the Egyptian environment.

The planning process (PPP) in Egypt happened 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 as the first steps of planning process (from five year development plans till detailed urban planning).

1-1-2 SEA can be an Answer

The current trend of industrialization and urbanization in developing nations has a huge impact on Environment. Pollution sources increase with the expansion of cities and cause contamination of water, air and soil. The absence of urban environmental planning and management strategies has

resulted in greater concern for future urban development (Alshuwaikhat, 2005).

This research advocates the adoption of SEA as an important mean to achieve sustainable development and solve current environmental problems. SEA is applied in the high level of decision making process, so the save of environment is happened in higher level and before we cascade down to project level.

In Egypt, the lack of transparency, accountability and ineffective public participation in the development of the PPP would be mitigated by implementing a tool like SEA in the decision making process.

1-2 Goal & Objectives of the Research

1-2-1 Goal

The main goal of this research is to set a context for implementing SEA in land use planning process in Egypt. So it can be as a guiding instrument for decision makers and competent authorities that are responsible of putting policies, plans and programs in the field of land use planning.

1-2-2 Objectives

To realize this aim, there are seven objectives the research attempts to realize, as follows:

1. Distinguish SEA from other type of assessments.
2. Understand the concept of SEA and studying its procedure in different guidelines (ex; EU directive).
3. Study SEA process in land use planning.
4. Investigate EA in Egypt in order to analyze the current condition of the EA.
5. Investigate planning process in Egypt starting from socio economic plans till other plans and programs, especially in the field of land use planning.
6. Study SEA examples to compare SEA process in each one in order to establish an Egyptian SEA model.
7. Develop an Egyptian SEA guideline/framework (Egyptian SEA model) appropriate to the Egyptian context based on previous five steps.

8. Examine the proposed SEA guide lines (Egyptian SEA model) on a selected Egyptian case study.

Research questions are then set out. They seek practical answers in order to realize the above research aim and objectives, as follows:

1- What is EA? And what is the different between SEA and other type of assessment?
2- What is SEA and how it is applied in different countries?
3- How the SEA is integrated in the Land use planning process?
4- In what level the environmental assessments are carried out in Egypt?
5- How decisions are taken in Egypt from socio economic plans till land use plans especially its institutional framework and process?
6- How the SEA process is implemented in different case studies in the field of land use planning?
7- How will the research develop an Egyptian SEA model appropriate with our Egyptian context?
8- How the SEA model can be tested to check its applicability?

1-3 Summary of Literature Review Findings

The main aim of the literature review is to understand the concept of SEA and its procedure especially in the field of land use planning.

Distinguishing SEA from other type of assessment was an important finding of this part, as assessments are carried for economic, social and environmental aspect. The focus of this research is to study EA that is carried in high level of decision making process (PPP).

Studying SEA process in three different guidelines; the first was EU SEA directive, the second was Turkish guidelines and the third was the guidelines of OECD, helped in understand the process of SEA from three different perspectives; two of them are part of country legislation and is obligatory to carry it out, and the third one is for financial organization which use SEA in its development work all over the world to achieve concept of sustainability.

This selection of the three guidelines was made to make the study not directed to one specific process but to conclude a SEA process based on the comparison of these three guidelines that represent a directive for European countries, non-European country and economic organization.

From this comparison the research concludes that SEA process can differ from country to another especially in the arrangement of the steps but generally all the SEA steps are presented in the three guideline, even if the headline of each step is not the same and some steps are merged together or separated. Generally the SEA process is a process of implementing SEA for PPP; these procedures is a supporting tool helping the decision maker's better understanding and consequently enhance decision making process. But it not by itself a decision making it only a supporting tool for taking decisions.

And from this literature we can conclude that SEA process must go through four stages illustrated in the next diagram.

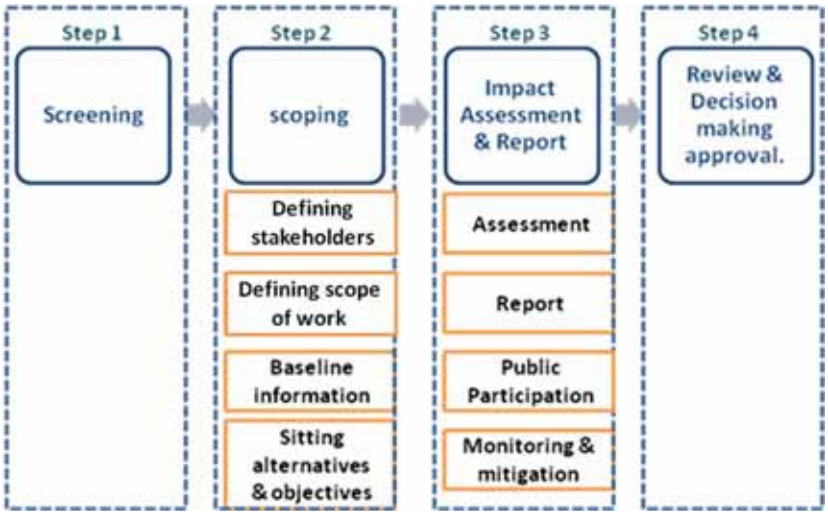

Figure (2): Main steps in the SEA procedure.
Source: researcher based on ((EU), 2001) (Mustafa, 2003) (OECD, 2006)

The last part of the literature was studying SEA process in land use planning, understanding the concept of tiering was one of the major findings of this part. The SEA process as discussed before is varied from country to another, even between European countries there are some changes.

In the field of land use planning in Germany and France for example; there is no screening step when SEA is conducting for land use planning and it is obligatory by law that all tiers of land use planning must subject to SEA, the contrast is in Austria; there is screening step and the concept of tiering is different there, SEA is not applied in all land use planning levels but in specific levels, and in between there is bylaws study.

The outcomes of the literature review presented the base of building the Egyptian model, which was built based on this, beside comparison of foreign cases, and studying in depth the Egyptian context to create a model compatible to the Egyptian condition not copied from other guidelines without respecting our local condition.

The research aim is to develop an enhanced SEA model; which is the Egyptian SEA model in order to provide decision makers a holistic vision about the current situation of environmental strategies in Egypt and the need for implement SEA in Egypt based on current Egyptian condition and finding of literature analysis.

1-4 Research Methodology

This research is a qualitative research. 'Qualitative research is the collection and analysis of extensive narrative data in order to gain insights into a situation of interest not possible using other types of research'(Gay, 1996). This research is used mainly for primary research to study the details of research and emphasize on describing, understanding, and explaining current Egyptian condition in the field of environmental studies that is carried in land use planning, and exploring the process of land use planning in Egypt. Besides, this research is also able to assist in constructing and developing the Egyptian SEA model.

1-4-1 a Rationale for Using a Qualitative Methodology

(Goodson and Walker, 1991) reveal that 'the task of research is to make sense of what we know' and the sense we make is determined by the selection and politics of our approach.

In this research most of data collected are not numerical data, all are descriptive data of current Egyptian situation in the field of carrying out land use planning, beside describe environmental studies in order to build a real vision of the EA in Egypt, and investigate whether there are any EA carried on high level of decision making process.

However, qualitative research is primarily concerned with gaining direct experience with a setting and is intrinsically an exploratory endeavor (Mann, 2003). Thus it has the potential for generating new theories and ideas and is therefore particularly applicable to this study.

In this research the researcher had collected qualitative data in the form of transcripts, interviews, survey and descriptions while at the same time we had also collected data that can be measured and represented in numbers (questionnaires).

1-4-2 Research Methods

In the attempt to build an Egyptian SEA model the researcher will use different research methods such as; questionnaire, interviews and document analysis.

In the fourth part, the researcher will construct a model based on the document analysis on the previous parts. This model is the proposed Egyptian SEA model and this model will tested by applying it on an Egyptian case study to have conclusions and recommendations as shown in the next figure.

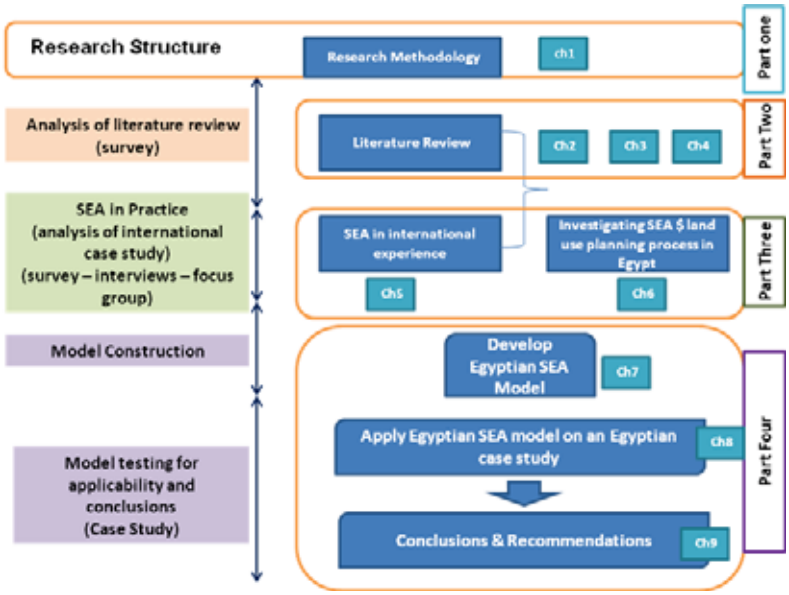

Figure (3): Methodology of the Research.

As discussed before, the aim of the research is to construct Egyptian SEA model, this model is constructed based on analysis of the literature review and adopting it with the exploratory survey of the Egyptian context, in this survey t explored the land use planning process in Egypt in its institutional framework, legislations, laws, experts' interviews and consultation.

The model construction is developed through four main stages illustrated in next figure;

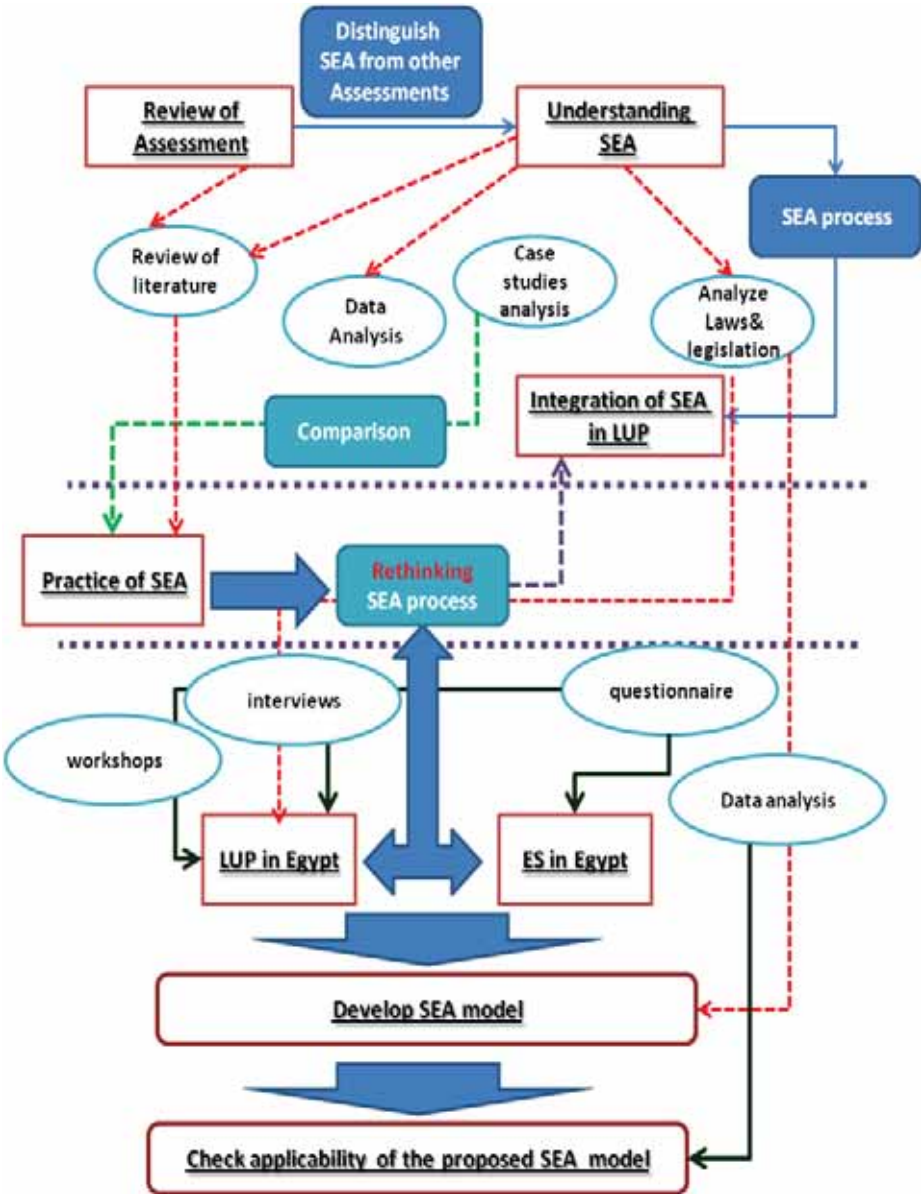

Figure (4) Research methods

1-4-3-1 Literature Review

Mainly, the data were analyzed based on the documents such as journals, articles, EU SEA Directive, Turkish SEA Guideline, Governmental reports, OECD reports, courses that the researcher attended in the field of SEA and

books. The analyzed data were transformed and compiled into part two of the thesis, which contains Chapter 2, Chapter 3 and Chapter 4.

1-4-3-2 Cases Comparison & Analysis:

In chapter 5 the researcher analyzed four case studies represent implementation of SEA in land use planning, the criteria of selection the four cases were:

- The study should cover the policies, plans or programs of land use planning that have been put through some of the bodies or organizations with administrative responsibility, "the government or associations," and the selected case study must cover a broad geographic scale, or specific areas defined by the planning authority (regional or national).
- The case is following a formal SEA process built on scientific method, published and known; like EU SEA Directive or other relevant systems.
- The study is a complete SEA study and all SEA steps are applied even if, they applied in different hierarchy or contents.
- The study concludes with a clear set of conclusions and recommendations which are closely linked to what has been addressed in the study.
- The study must be a recent study.

According to the previous criteria, four case studies were selected as follows;

1- Wales special plan update.
2- Duplin Docklands area Draft master plan.
3- Fiji's tourism development plan.
4- Amaterra resort development.

1-4-3-3Questionnaires

The "new dictionary of social work" (1995) defines questionnaire as a "set of questions on a form which is completed by the respondent in respect of a research project".

The questionnaire is used in chapter six to explore the current EA in Egypt, the objective of this questionnaire is to collect a data of selected focus group

(representative from EEAA- Representative from GOPP- EIA Experts- EIA review department in EEAA) concerning the current condition of the EA in Egypt in the project level, and the need for implementing SEA in Egypt, and how it will be implemented.

The questionnaire was designed to have a multiple choice format in order to control the answers, the questionnaires were made face to face with the participants of the EIA & SEA courses in the HBRC as they are represented of EEAA, GOPP, Environmental departments in local administrations, a summary of this questionnaire is in appendix (1).

1-4-3-4 Semi- Structured Interviews

In order to have a detailed understanding of land use planning process in Egypt, interview sessions were carried out to gather data and information. The list of the interviewees is attached in appendix (2).
Part of the interview was designed and the other parts were left as an open discussion.
The selection of interviewees was based on the type of data needed but generally there were three types;

- Representative from competent authorities responsible of land use planning (GOPP – HUUD).
- Representative of private experts in the field of land use planning (number of staff in department of urban planning – Ain shams university)
- Representative of some of state land authorities like; new urban communities' authority, the general authority for tourism development and local administrations.

1-4-3-5 Consultation with Experts

This method was held in non structured interviews and the main aim was to discuss the proposed SEA model and the Egyptian case study.

Sometimes this consultation was done with one expert or with more than one expert, especially in courses and conferences.

1-4-3-6Workshops

The researcher used the discussions that were made in the workshops that the researcher attended in the field of SEA, to describe the current planning process in Egypt and the role of EA in it. One of these workshops was the

SEA work shop that was held in Boku University, under the umbrella of the tempus project (CEIAC), the list of attendees this workshop are listed in appendix 5.

1-4-3-7 Application on an Egyptian Case Study:

To examine the Egyptian SEA model that was constructed, the researcher examined it in an Egyptian case study.

The aim of applying this SEA model is to follow the SEA process step by step and to check if there will be any constraints that could change the composition of the model, with respecting to time length of the study and the fact that it is a pilot study done by the researcher not with all supposed experts that cover some environmental fields. The aim was to apply the SEA model that on an existing case study to test how the SEA can work as a parallel process to land use planning process, and how it will be implemented.

Data were collected from numerous sources like; gathering data from governmental bodies, environmental reports of EEAA, environmental description of governorates from EEAA, site visit, photo analysis, maps, document analysis and meeting with experts.

The selection of the case study was selected based on the following criteria;

The case 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.

Also natural resources there provide a substantial economic support for the region. We can say that Suez Gulf west coast is one of the coasts that have special economic importance. It provides potential for establishing multiple activities: industry, harbor and tourism.

Beside all that, this area is still under development and still there a major projects in both tourism and industry under process.

1-5 Summary of Chapter 1

In Chapter 1; the researcher discussed the research methods that used in the research in order to achieve research goal and objectives. The research methods are varied between literature review, questionnaire, interviews, workshops and expert interviews.

The aim of the research is to construct a SEA model appropriate to the Egyptian context build on literature review, cases comparison and surveying current Egyptian condition and apply it on an Egyptian case study.

2-Chapter two: Review on Environmental Assessment

Introduction:

In the last century environment has faced a lot of dangers that caused a lot of environmental problems; Environment deterioration, loss of biological diversity and climate change. As a response to all this environmental problems; environment conservation became a great demand in the last fifty years. EA is one of the most efficient tools that were used all over the world to achieve environmental sustainability.
The development and consequent adoption of EA procedures have gained momentum in recent years all EIA, which is initiated in 1969 to other assessments which appear in the world to solve the limitation of EIA; like Social Impact Assessment, Cumulative Impact Assessment and Strategic Environmental Assessment (SEA).
This chapter reviews the EA definitions, with a strong focus on SEA.

2-1Definition of Environmental Assessment (EA)

EA is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made.

EA is a systematic process of evaluating and documenting information on the potentials, capacities, and functions of natural systems and resources in order to facilitate Sustainable Development planning and decision making in general, and to anticipate and manage the adverse effects and consequences of proposed undertakings in particular (De.Groot, 1995).
In general, EA is a process to predict the environmental effects of proposed initiatives before they are carried out.

An EA must:

- Identifies possible environmental effects.
- Proposes measures to mitigate adverse effects.
- Predicts whether there will be significant adverse environmental effects, even after the mitigation is implemented.

2-1-1The Substantive Purpose of EA:

The environment matters more than ever before. Human activities are altering natural cycles and systems on an unprecedented scale. We live in a greenhouse world of ozone holes and vanishing species. Many reputable scientists consider that the impact of human activities on the biosphere is reaching critical thresholds, with the consequent threat of ecological breakdown and social conflicts.

EA is more important than ever before. This approach provides a basis for designing policies and plans that take account of environmental potentials and constraints, and for managing the impacts and risks of development projects and activities.

Consequently there are two main purposes of EA:

The First purpose:

The first and immediate purpose is to facilitate sound and integrated decision making in which environmental considerations are explicitly included. The EA process does so by providing clear, well organized information on the environmental effects, risks, and consequences of development options and proposals.

The Second purpose:

The EA process is usually (but not always) directed toward achieving or supporting ultimate goals of environmental protection and sustainable development. These references or end goals are variously phrased and framed in EA laws and policies, as are the specific objectives to be met by the process.

2-2 Introduction to Strategic Environmental Assessment

SEA is widely considered a member of the large and diverse EA family (Goodland and Mercier, 1999) .It is viewed as an evolution of EIA, which was first institutionalized in the later 1960s. The US National Environmental Policy Act (NEPA) of 1969 was the first legislation to include a request for an assessment prior to certain human activities that could have significant

impacts on the environment and is thus acknowledged as the creator of the concept of EA and of the EIA instrument.

SEA is a combination of all detailed types of assessment, it is the early step of all this assessments, as decisions are taken before carrying out, and integration of environment aspect then comes in later stages (projects).

Thus, most scholars and practitioners framed SEA as a new assessment instrument that would apply the concept of EIA beyond the confines of the project level.

2-2-1 Why we Need SEA:

Briffett (1999) suggested that despite the existence of good EIA guidelines and legislation, environmental degradation continues to be a major concern in developing countries. EIA has not been able to provide Sustainability Assurance (SA)' for these countries (Salder, 1999). Originally, SEA was conceived to identify and communicate the potential environmental consequences of higher-order planning and policy decisions to decision-makers. It came to solve a lot of limitations in project-level EIA, such as the late timing of analysis and the failure to consider the cumulative impact of projects.

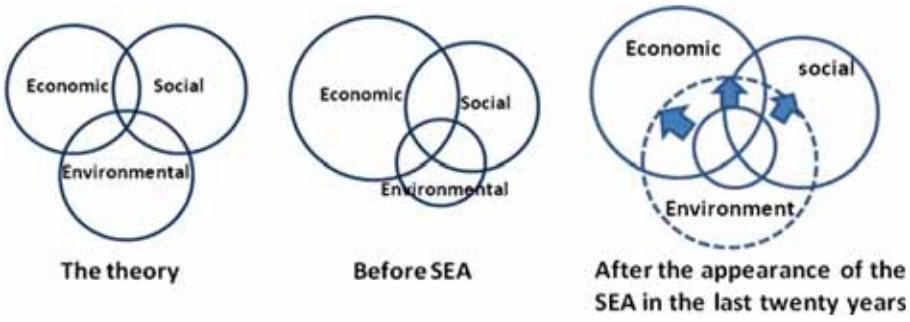

Figure (5): The Three pillars of sustainable development, from left to right, the theory, the reality and the change needed to better balance the model.
Source: ***(IUCN, 2005)***

A lot of debates are raised to discuss the need of SEA; however, the general perception is that EIA is conducted only because it is required by the government legislation not to ensure sustainability of projects or to develop

better management plans. In many cases, EIA is a tool to justify projects rather than using it as a mean to derive the best decision (Momtaz, 2002).

These short comings threat the environment and make many authors and researchers think again about environment. As how we manage the environment will affect the long-term success of development and play a significant part in our progress towards the Millennium Development Goals (MDGs) ((OECD), 2006).

So In the last two decades, it was realized that the change needed is to involve EA in early stages of decision making process. As shown in figure (5) this is the change in the perception of pillars of sustainable development by that we can integrate the principles of sustainable development to be a part of our policies and programs.

We must consider the environment when making decisions, just as we consider economic and social issues. SEA is the most promising way to make this happen. SEA helps decision makers reach a better understanding of how environmental, social and economic considerations fit together. Without that understanding, we risk turning today's development successes into tomorrow's environmental challenges. In short, SEA helps decision makers think through the consequences of their actions ((OECD), 2006).

2-2-2 Brief Overview of SEA:

SEA is defined as; " A systematic process in which environmental, economic and social consequences of proposed policies, plans and programs are evaluated at the earliest appropriate stage of decision-making" (Therivel *et al.*, 1992, Wood and Djeddour, 1992, Sadler and Verheem, 1996a, Lee and Walsh, 1997, Partidario and Clark, 2000, Ficher, 2007).

Moreover, it is often considered as a complement to project-based EIA so that EA is conducted at all levels of decision-making; from policy / plan / program (PPP) formulation to project management and implementation as shown in figure (6).

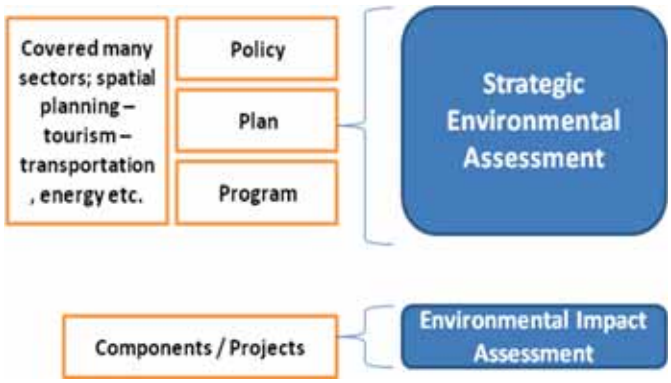

Figure (6): Location of SEA as a part of EA.

2-3Distinguish SEA from other Assessments:

2-3-1 Appearance of Other Types of Assessments in the World:

In the early stages of EIA, only the biophysical impacts of proposals were considered (such as effects on air, water quality, flora, fauna, noise levels, climate and hydrological systems). Increasingly EIA processes are used to analyze a range of impact types within a single framework. These include social, health, and economic aspects.

However, this trend toward integrated assessment for decision-making is by no means universal or uniform. Even in EIA systems where this trend is well established, the degree and extent of integration varied with legal requirements and accepted practice. In some countries, social impacts are not assessed or are given only limited consideration. In other countries, EIA is supplemented by related, but separate studies of social and health impacts.

Despite a lack of internationally consistent practice, integrated impact assessment, linking biophysical and socio-economic effects, is identified as

an important priority in Agenda 21(7). As a widely adopted process that already covers other impacts, EIA is recognized as one of the best available mechanisms for implementing an integrated approach. In practice, achieving this approach will require greater attention to be given to the identification of social, health and other impacts in the EIA process.

It must be mentioned that review of the field includes a dozen forms of Impact Assessment. These are: EIA, Social Impact Assessment, Technology Assessment, Policy Assessment, Economic and Fiscal Assessment, Demographic Impact Assessment, Health Impact Assessment, Climate Impact Assessment, Development Impact Assessment, Environmental Auditing and Environmental Sustainability (Vanclay and Bronstein, 1995).

Other forms of assessment also discussed in the international association for impact assessment's (IAIA's) Directory include: Gender Impact Assessment, Psychological Impact Assessment and Noise Impact Assessment.

2-3-2 Evolution of Other Types of Assessment

To date, EIA has been applied primarily at the project-level. This 'first generation' process is now complemented by SEA of policies, plans and programs, and both EIA and SEA are being adapted to bring a greater measure of ESA to development decision making. These trends have brought new perspectives on what constitutes EIA good practice and effective performance.

Moreover, it is often considered as a complement to project-based EIA so that EA are conducted at all levels of decision-making; from PPP formulation to project management and implementation.

In light of the evolving nature of EA, SEA is currently perceived as a second-generation paradigm moving EIA principles upstream in the decision-making process (Table 1).

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(7) Agenda 21 is a program run by the United Nations (UN) related to sustainable development. It is a comprehensive blueprint of action to be taken globally, nationally and locally by organizations of the UN, governments, and major groups in every area in which human's impact on the Environment. The number *21* refers to the 21st century.

Table (1) The evolving paradigm—from EIA to SEA and toward ESA
Source: (Salder, 2003)

1st Generation	**Project EIA** Includes social, health and other impacts, cumulative effects and biodiversity.
2nd Generation	**SEA** Applies to PPP and legislation.
3rd Generation	**Towards environmental Use of EIA and SEA** to safeguard critical resource and SA ecological functions and offset residual damage; plus environmental accounting and auditing of natural capital loss and change.

2-3-3 Other Forms of Impact Assessment

As mentioned before, there are various forms of IA such as Health Impact Assessment (HIA) and Social Impact Assessment (SIA) that are used to assess the health and social consequences of development so that they are taken into consideration along with the EA.

It is important to note that SEA is not a substitute for EIA, SIA or CIA, but complements them. They are all integral parts of a Comprehensive EA tool box.

This has important implications in developing countries where EIA and SIA systems may still be in the process of being established. SEA application should not distract or complicate this process. Developing countries are frequently constrained by lack of resources to carry out project EIA. SEA can, in fact, help to speed up EIA procedures and streamline their scope (and costs) by ensuring that project proposals are set within a policy framework that has already been subject to environmental scrutiny. This higher-level assessment process can consider and agree the most conducive strategy to enhance developmental outcomes and reduce negative impacts ((OECD), 2006).

The different types of assessment cover three major aspect; social aspect, economic aspect, and environmental aspect. Each assessment covers one aspect, or more than one aspect.

In SEA environmental aspect and some social aspect are taking into account, while SIA measure social aspect only, also for the cost effectiveness

assessment which is measure economic aspect only. While sustainability appraisal; (which will discussed in detail later) covers social, environmental and social aspects.

The following figure presents relation between economic, environmental and social aspect and type of assessment that carried for each aspect.

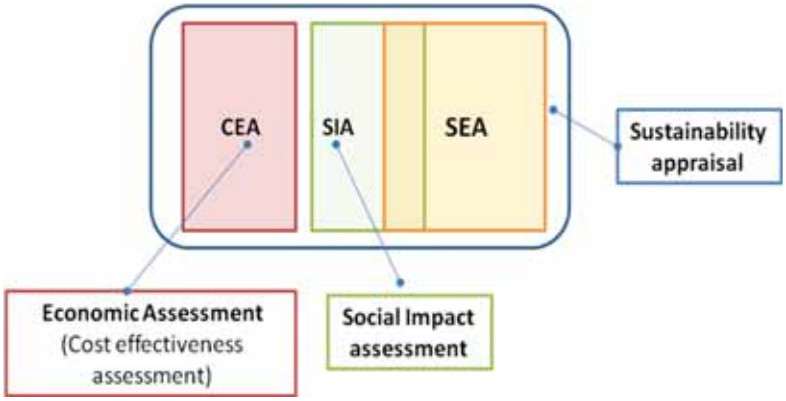


Figure (7): The relationship between economic, social and environmental assessments. Source (researcher, 2009)

2-3-4 Economic Assessment:

Optimizing use of limited resources is one of the biggest challenges facing any decision-maker. Economic assessment is therefore a vital tool. It can enumerate the potential costs and value the anticipated benefits of a proposed program, policy or regulatory initiative, and reflect trade-offs inherent in alternatives.

There is increasing recognition that environment and health impacts often require valuation in economic terms in order to receive adequate consideration in policy. An integrated economic analysis of such impacts can capture the hidden costs and benefits of policy options, as well as the synergies and institutional economies of scale that may be achieved through complementary policies that support sustainable development.

For instance, the economic benefits to be derived from sustainable practices may be considerable when impacts are analyzed as part of a comprehensive policy package; this would relate not only to issues of employment and

poverty reduction, but also to the long-term environmental and economic impacts ((WHO), 2009).

2-3-4-1Cost – Effectiveness Analysis:

One of the economic assessments is the cost effectiveness analysis which is; a method for assessing the gains in health relative to the costs of different health interventions. It is not the only criterion for deciding how to allocate resources, but it is an important one, because it directly relates the financial and scientific implications of different interventions ((DCPP), 2009).

2-3-4-2 Health Impact Assessment

A (HIA) can be defined as:

'The estimation of the effects of a specified action on the health of a defined population' (Bambra *et al.*, 2005).

HIA has been endorsed by central government as the appropriate tool to be used by local decision makers to assess the impact of major new policies, programs and projects on health. HIA is based on a holistic, social model which defines health as a state of complete physical, mental and social well-being and not merely an absence of disease.

2-3-5 Social Assessments:

2-3-5-1 Social Impact Assessment (SIA)

Introduction

In the development context "social" must be one of the hardest words to define, because it has such a broad range of meanings that it is often used in a rather fuzzy way. Development is by its nature social, because its means are social processes and institutions, its ends embody social values, and its costs and benefits are distributed across communities, social groups, and organizations (Pisani and Sandham, 2006).

The emphasis of early EIAs was on biophysical concerns (in more recent years, EIA practice has interpreted the environment' more holistically). As a result, SIA emerged as a technique to give explicit attention to the social dimensions in project assessment. It has been used either as a stand-alone approach or in a more integrated application as EIA and SIA. This is

particularly important in development co-operation where the interrelationships between poverty/development and environment have been well articulated.

Definitions

Social impacts are; "those impacts, stemming from a specific action, which alter the day-to-day way in which people live, work, play, relate to one another, and organize to meet their needs and generally cope as members of society" ((IOCGPSIA), 1994)

SIA refers to the effort to assess, in advance, the social consequences, whether intended or unintended, positive or negative, which is likely to follow from specific actions, projects, policies and programs (Vanclay, 2006).

Its purpose is to answer the following question: "Will there be a measurable difference in the quality of life in the community as a result of the proposed action?" (Barrow, 2000).

SIA is used to assess how the costs and benefits of impacts are distributed among different stakeholders and over time. It is particularly relevant for understanding the quality of impact on different groups (world-bank, 2003). SIA has a hybrid nature, because it is linked to both scientific research and political policy and decision making processes (Freudenburg, 1986).

Importance

There is no doubt that the assessment of social impacts is important, in some cases even more important, than the assessment of biophysical and economic impacts of development projects. "Putting people first" is the first principle of the Rio Declaration, is at the heart of Agenda 21, and is regarded, in the broader social science community, as a non-negotiable imperative of development programs (Cernea, 1995).

2-3-6 Sustainability Appraisal:

Sustainability appraisal (SA) is a tool for integrating the concept of sustainable development into planning decision making.

It is a process that looks at the extent to which plans contribute to the achievement of a set of objectives that cover environmental, social and economic considerations, as shown in next figure.

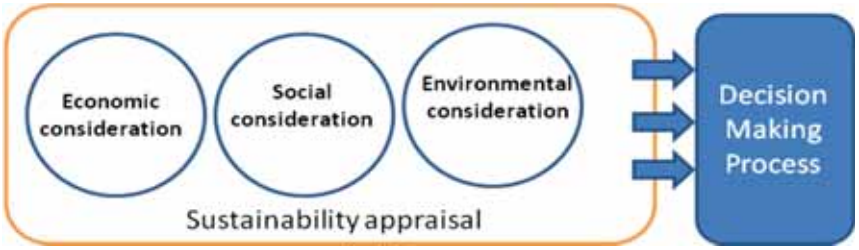


Figure (8): Compounds of sustainability appraisal
Source: (Harridge *et al.*, 2002).

SA is the process by which the likely significant environmental, social and economic effects of a plan can be identified and reported. It is a continuous process that informs firstly the evidence gathering stage of the plan's preparation, and subsequently the formulation of alternative options and the preparation of the preferred strategy. It enables potential adverse impacts to be identified at an early stage and where possible avoided, or the impacts reduced via mitigation. The primary purpose of sustainability appraisal is to promote sustainable development through the better integration of sustainability considerations into the preparation and adoption of plans (Harridge *et al.*, 2002).

In the UK the process generally involves assessing the relationship with a defined set of sustainable development objectives. The closest to an official definition of sustainability appraisal is the following:

'A systematic and interactive process undertaken during the preparation of a plan or strategy, which identifies and reports on the extent to which the implementation of the plan or strategy would achieve environmental, economic and social objectives by which sustainable development can be defined, in order that the performance of the strategy and policies is improved' (ODPM 2000)

There is a clear overlap between the techniques of sustainability appraisal and those used for other forms of strategic and project level assessment. In a planning context the strongest link is likely to be with the emerging

techniques for SEA, as both seek to help inform decision-making by providing information on the potential implications of policies, plans or programs.

History and legal framework of sustainability appraisal:

Sustainable development is the core principal underpinning the reformed planning system. The integrated treatment of social, environmental and economic considerations is a key part of the UK Government's Sustainable Development Strategy and planning authorities are required to have regard to these considerations when preparing their Local Development Framework.

The purpose of SA is to promote sustainable development in the preparation of new or revised Local Development Documents. It is mandatory under Section 39 (2) of the Planning and Compulsory Purchase Act 2004. SA assesses the extent to which emerging plans and policies help to achieve relevant social, environmental and economic objectives, whilst providing an opportunity to identify and address any significant effects that draft plans and policies may have.

Why undertake sustainability appraisal:

Sustainability appraisals help to ensure that plans, strategies and proposals take into account the principles of sustainable development. The process permits a qualitative assessment of a plan, strategy, or proposal against independent sustainable development objectives. However, the objective of sustainability appraisal should not be to 'score' performance, but rather to work closely with policy makers, project designers and decision makers to help improve sustainability performance and to make explicit the nature of any trade-offs that may be required.

SA appraisal team:

There are two teams normally involved in a SA, they are:

<u>The plan development team</u>

This team is responsible for developing the plan, strategy or proposal that is to be appraised. Development team members should be closely involved in

the appraisal process to inform the process, and to ensure that they understand and can make use of the appraisal findings.

The appraisal team

This team is responsible for conducting the appraisal and should be independent of the plan, strategy or proposal being appraised. The team should have some knowledge of the plan, strategy or proposal being considered, and expertise in a broad range of sustainable development issues. Ideally, the team would comprise individuals from a range of specialist backgrounds.

Differences between sustainability appraisal and SEA:

As indicated above, there is an overlap between the techniques of SA and other forms of EA.

The major differences between the two processes are in their scope and depth of coverage of environmental issues.

Sustainability appraisal has a wide scope, covering social, economic and environmental topics. SEA, in contrast, is primarily focused on environmental issues, which it covers in greater depth.

2-3-7 Environmental Assessment

2-3-7-1 Environmental Risk Assessment (ERA)

Definition of ERA

Environmental Risk Assessment (ERA) involves the examination of risks resulting from natural events (flooding, extreme weather events, etc.), technology, practices, processes, products, agents (chemical, biological, radiological, etc.) and industrial activities that may pose threats to ecosystems, animals and people. Environmental Health Risk Assessment addresses human health concerns and Ecological Risk Assessment addresses environmental media and organisms. ERA is predominantly a scientific activity and involves a critical review of available data for the purpose of identifying and possibly quantifying the risks associated with a potential threat (Klochko, 2009).

2-3-7-2Cumulative Impact Assessment (CIA)

Introduction

EIA of a specific project proposal may fail to consider its potential aggregate, incremental and synergistic impacts with other projects in an area-wide program of developments. CIA is a developing sub-set of EA that has evolved as a way to capture these wider implications in project assessment. These implications may change the conclusions of an assessment of an individual project.

A project considered to have few or insignificant impacts when considered on its own way, instead, be judged to have potential impacts of great significance when viewed as a part of a more complex set of developments.

Definitions

CIA is the analysis of all effects on an area from one or more activities as they accumulate over time and space. Cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other action.

Elements

1. Cumulative effects can result from an accumulation of effects from numerous activities.
2. Cumulative effects can result from a combination of effects from one activity.

In either case, cumulative effects can be different in nature (e.g. synergistic), larger in magnitude, greater in significance, more long-lasting, and/or greater in spatial extent than is the case with individual effects.

Cumulative Impact Assessment (CIA) is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

2-4Conclusion

Based on the previous literature, the researcher concludes the following points:

SEA is an evolution of the project level EA but it includes a strong consideration of cumulative impacts and interrelationship between the several environmental issues. There are a dozen of impact assessment carried mainly in three major fields; environmental assessments, economic assessments and social assessments.

EA is conducted at all levels of decision-making; from policy / plan / program formulation to project management and implementation. EIA is the project level assessment but in this thesis we are focusing on high level of environmental assessment (SEA).

SA is the process by which the likely significant environmental, social and economic effects of a plan can be identified and reported, and it is differentiate of SEA in scope and depth of coverage of environmental issues. SA has a wide scope, covering social, economic and environmental topics. SEA, in contrast, is primarily focused on environmental issues, which it covers in greater depth.

The following table distinguished SEA from other types of assessment.

Table (2): Distinguish SEA from other type of assessments

	Level					scope		
Type of Assessment	Policy	Plan	Program	Project	Natural events	Social Aspect	Economic Aspect	Environmental aspect
Sustainability appraisal								
Strategic Environmental Assessment (SEA)								
Environmental Impact Assessment (EIA)								
Environmental Risk Assessment (ERA)								
Cumulative Impact Assessment CIA				one or more activities				
Social Impact Assessment SIA	Assess the social consequences only							
Cost effectiveness analysis								
HIA								

3-Chapter Three: SEA in action

Introduction

SEA is becoming an accepted and widely used instrument for integrating environmental issues into the formulation of PPP throughout the world.

Therefore, some principles for SEA systems have been developed in several countries. Although there is no agreement on the universal definition and procedure of the SEA, this chapter highlights on the different definitions of SEA and analyzes process of SEA in different countries.

Also this chapter will study SEA from two main phases; theory and legislation. The first part discusses all literature concerning SEA from its glance as its beginning concept that appeared in the world from 20 years ago. The Second part discusses laws and legislations that are done by governments or institution bodies to govern the process of SEA.

3-1 What is meant by the Term Strategic?

The dictionary defines strategic as; a plan of action designed to achieve a particular goal.

3-1-1 Defining Policy, Plan & Program:

Policy, plan and program are one of the strategic actions that are taken to set a decision making and there are a hierarchy of this decisions starting from putting objectives and policies till achieving detailed projects. Definition of PPP are differentiate from author to another but generally PPP are the milestones of the decision making process and they are complete each others. They start from putting one or more objectives based on specific policy that will be achieved by putting one or more plans, these plans cannot be applied in real world without putting programs, and each program contains one or more project to achieve.

This process is called the decision making process and the PPP are the strategic actions that are taken to achieve certain objectives. The EA that is carried on the strategic action (PPP) is SEA, and project level assessment that is carried on the selected projects that achieve the aims of PPP is EIA.

According to Salder & Verhem 1996, PPP can be defined as;

Policy: A general course of action or proposed overall direction that a government is or will be pursuing and that guides ongoing decision making.

Plan: A purposeful forward looking strategy or design, often with co ordinate priorities, options and measures that elaborate and implement policy.

Program: A coherent, organized agenda or schedule of commitments, proposals, instruments and/or activities that elaborate and implement policy (Sadler and Verheem, 1996a).

The following table presents the definition of PPP by Wood and Djeddour, 1991.

Table (3) Definitions and examples of Strategic action
Adopted from (Wood and Djeddour, 1992)

Definitions and Examples of PPP		
Strategic action	Wood and Djeddour definition	Examples
policy	Inspiration and guidance for action	whether or not to promote the development of nuclear power in country A
plan	Set of coordinated and timed objectives for the implementation of the policy.	how much nuclear power to produce by 2025
program	Set of projects in a particular area	four new nuclear power stations with X capacity in area Y by 2025

3-1-2Concept of Tiering:

The concept of tiering can be defined as: distinguishing different levels of planning; policy, plans, programs that are prepared consecutively and influence each other European ((EC), 1999). Tiering is about how the different levels of planning relate to each other.

What is clear from the previous definitions is that some ("higher-tier" or strategic) decisions influence and set the context for other ("lower-tier" or more detailed) decisions. This is called tiering. Normally, policies set the context for plans, and plans in turn set the context for programs and then

projects. National-level PPP often set the context for, in turn, regional and local-level PPP. The figure below illustrates this concept of tiering.

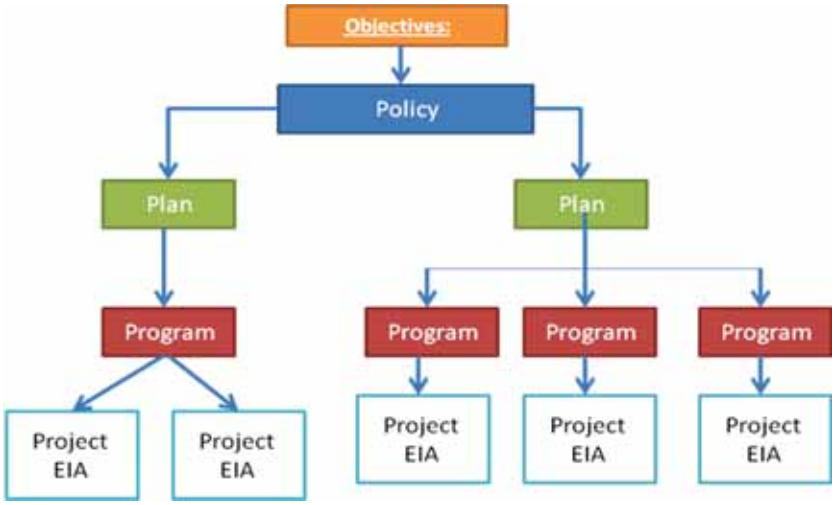


Figure (9): Concept of tiering in strategic actions (PPP)
(Wood and Djeddour, 1992)

3-1-2-1Types of Tiering:

There are various types of tiering that can be distinguished depending on the dimension chosen (planning, administrative, geographical, sectoral):

a- Vertical tiering, (tiering between hierarchies of levels):

- Planning levels (mentioned before): policies, plans, programs, projects (e.g. national transport and traffic plan, national program for infrastructure and transport, national road development projects);

- Administrative, government levels: supranational, national state, provincial, municipal (e.g. national spatial planning report, provincial spatial plan, municipal land-use plan);

- Geographical levels: global, continental, national, regional, local (e.g. national waste management plan, regional waste management plan, local waste management plan).

b- Horizontal tiering, at the same (administrative) level, e.g.:

- Tiering across sectors (e.g. housing, transport, water management, waste management, spatial planning etc.);

- Tiering of certain sector plans between different government bodies at the same administrative level (e.g. coordination of policy plans and environmental assessments of adjacent municipalities).

c- Diagonal tiering, a combination of vertical and horizontal tiering,

- E.g. a national spatial policy influencing local transport plans (Arts *et al.*, 2005)

3-1-3Positioing SEA in the Decision Making Process

There is a hierarchy of levels in decision making comprising projects and PPP as shown in figure (10). Logically, policies shape the subsequent plans, programs and projects that put those policies into practice. Policies are at the top of the decision-making hierarchy. As one moves down the hierarchy from policies to projects, the nature of decision-making changes, as does the nature of EA needed. Policy-level Assessment tends to deal with more flexible proposals and a wider range of scenarios. Project-level Assessment usually has well defined and prescribed specifications((OECD), 2006).

Figure (10): Positioning SEA in the Decision Making Process
Adapted from((OECD), 2006) .

3-2 Definitions of SEA

There is no universal definition for SEA; however SEA is becoming an accepted and widely used instrument for integrating environmental issues into the formulation of PPP throughout the world. This part is discussing different definitions of SEA in some international organizations beside review on some literature of different authors' definitions, and then concludes a final definition in the end of this part.

3-2-1 SEA in Financial and Development Assistance Organization

There are several initiatives by international financial institutions and cooperation organizations that have devise SEA-type instruments and requirements in order to enhance environmentally sound lending and development initiatives. The following section focus on the SEA definition in some of these institutions. Appendix 3 represent a brief of the effort that done by a lot of international bodies in the field of SEA.

3-2-1-1 SEA in World Bank

SEA was first used by the World Bank in the context of its safeguard policies. These are its policies both related to environment, social, as well as fiduciary aspects, to try to assure that no harm is done in the context of a particular project with respect to these issues.

The use of SEA as a tool beyond impact analysis was recognized in the World Bank's first environment strategy which was approved by the Bank's Board in 2001. In that environment strategy, SEA was highlighted as a crucial tool to integrate environmental considerations into sectoral PPP (Kulsum, 2009).

The World Bank describes SEA as: “A participatory approach for up streaming environmental and social issues to influence development planning, decision making and implementation process at the strategic level. Implicitly included in this description is the importance of analytical work to support the decision making process (Kulsum *et al.*, 2005).

3-2-1-2Organization for Economic Co-operation and Development OECD (2006)

Organization for Economic Co-operation and Development (OECD) was part of European Economic Cooperation (EEC), and it took over from EEC in 1961. Since then this organization uses its wealth of information on a broad range of topics to help government's foster prosperity and fight poverty through economic growth and financial stability. They help ensure the environmental implications of economic and social development are taken into account.

"Analytical and participatory approaches that aim to integrate environmental consideration into PPP and evaluate the inter linkages with economic and social considerations"((OECD), 2006).

3-2-1-3 International Association for Impact Assessment (IAIA)

IAIA is the International Association for Impact Assessment Organized in 1980 to bring together researchers, practitioners, and users of various types of IA from all parts of the world.

“SEA is used to inform planners, decision-makers and affected public on the sustainability of strategic decisions, facilitates the search for the best alternative and ensures a democratic decision making process. This enhances the credibility of decisions and leads to more cost- and time-effective EA at the project level”((IAIA), 2002).

3-2-1-4 US National Environmental Policy Act (NEPA)

US NEPA came into existence following increased appreciation for the environment; the 1969 Santa Barbara oil spill was perhaps the leading catalyst.

NEPA is a United States Environmental Law that was signed into law on January 1, 1970 by U.S. President Richard Nixon. NEPA's most significant effect was to set up procedural requirements for all federal government agencies to prepare EAs and EISs.

For US NEPA; the concept of EIA was therefore intended to be applicable to all tiers of decision-making and, accordingly, NEPA led to Programmatic Environmental Assessments, which differed progressively from project-EIA in terms of the geographical scale and methods of analysis (Singh, 2007).

For NEPA there is no special definition for SEA as EIA as mentioned before is applicable to all decision making processes.

3-2-1-5The European Union Definition:

The EU Directive (8) defines SEA as;

a. Preparing an environmental report on the likely significant effects of the draft plan or program.
b. Carrying out consultation on the draft plan or program and the accompanying environmental report.
c. Taking into account the environmental report and the results of the consultation in decision-making.
d. Providing information when the draft plan or programmes is adopted showing how the results of the environmental assessment have been taken into account ((EU), 2001).

3-2-2 SEA in Theories

There are many literatures done by a lot of authors concerning the definition of SEA. The following part illustrates a review on those definitions.

" The formalized, systematic and comprehensive process of evaluating the environmental effects of a PPP and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making" (Glasson *et al.*, 1994).

"SEA is a structured, proactive process to strengthen the role of environmental issues in strategic decision making"(Verheem and Tonk, 2000).

"SEA is a decision-aiding process that can be and should be applied flexibly to the decision cycle, recognizing that these terms mean different things and often cover different types of decision-making processes. In all cases, the approach taken should be consistent with EIA principles. What does not

(5) Directive 2001/42/EC of the European Parliament and of the council of the assessment of the effects of certain plans and programs on the Environment.

automatically follow from this definition is the requirement to use EIA procedures and methods in SEA, though their use and adaptation for this purpose is widespread" (Sadler and Verheem, 1996a).

" A systematic process in which environmental, economic and social consequences of proposed policies, plans and programs are evaluated at the earliest appropriate stage of decision-making" (Therivel *et al.*, 1992, Wood and Djeddour, 1992, Sadler and Verheem, 1996b, Lee and Walsh, 1999, Partidario and Clark, 2000, Ficher, 2007)

3-2-3 Concluded Definition

Based on the previous definitions we can define SEA as; a part of decision making process helps decision makers to consider environmental issues in a high level of decision making process starting from policy level and before reaching project level assessment.

SEA is a tool to make that happen by;

- Involving the public and government in the preparation of policies, plans and programs.
- Assessing environmental impacts of proposed PPP on the environment.
- Ensuring that the results of the assessment are taken into account during decision making and implementation.

3-3 Origin & History of SEA

Since 1969, when the US became the first country to pass legislation on EIA, over 100 other countries have followed suit and stipulated that environmental consequences have to be considered prior to developments (Wood, 2003).

Although, some practitioners feel that it has failed to live up to its potential and have criticized it for not coping with uncertainty and cumulative effects, for failing to adequately consider alternatives, and for ultimately failing to affect decision-making Also, traditional EIA is project-based and does not consider options at the policy or planning level, which reduces its effectiveness as a tool for obtaining sustainability (Cooper and Sheate, 2002, Benson, 2003)

3-3-1 History of Beginning

At first glance, the history of SEA appears simple and linear: increasingly evident shortcomings of EIA since the 1970s led scholars and practitioners to seek alternative approaches and tools, eventually resulting in the practice now known as SEA (Glasson *et al.*, 1994, Sadler and Verheem, 1996b) .

According to (Ficher, 2007), the term SEA was coined in 1989 and was initially envisaged as being based on the same procedural principles as EIA, only operating at a higher level (PPP).

Proposals for the introduction of SEA started in the early 1990s, and in 2000 SEA guidance was published. In terms of SEA practice, research shows that SEA has been widely undertaken voluntarily since the mid 1990s, with more than 50 SEAs identified(Retief, 2005).

In Rio de Janeiro 1992 there was a calling explicitly for an extension of the principles of EIA to PPP in the United Nations Conference on Environment and Development (UNCED).

Chapters 8 and 10 (amongst others) of Agenda 21 advocate a number of improvements in decision making, information for decision-makers, and assessment and planning tools, and place the integration theme at the centre of the SEA debate in 1990((UNCED), 1992).

An approach upheld in the Plan of Implementation following the 2002 World Summit on Sustainable Development (Wood, 2003).

In the European context, 1992 is a crucial year for the promotion of SEA. The United Nations' Economic Commission for Europe (UNECE 1992) calls for EA of PPP as a mean of anticipating and highlighting potential environmental problems, preventing delays and assisting in long-term planning, as well as preventing or reducing litigation cases. It recommends that the results of such EA be considered on a par with social and economic factors in the development of PPP.

In June 2001, the EU Directive 2001/42/EC on the assessment of the effects of certain plans and programs on the environment was adopted.

Member states are obliged to implement the directive within 3 years

(Dalkmann *et al.*, 2003).

Table (4): The Evolution of SEA
Adapted from (Mustafa, 2003)

Year	Description
1969	Appearance of EA in the world, it was appeared first in USA by the NEPA.
1978	Start in thinking of programmatic assessment by United States Council for Environmental Quality (CEQ).
1990	First proposal for a Directive on the Environmental Assessment of policies, plans and programs in European Economic Community.
1991	Start of thinking of application of EIA for policies, plans and programs by United Nations Economic Commission for Europe (UNECE).
1991	Specific arrangements for analyzing and monitoring environmental impacts for program assistance by OECD.
1992	UNECE Published its report on SEA state of knowledge and experience.
1997	European Commission made Proposal for a Council Directive on the assessment of the effects of certain plans and programs on the environment.
2001	EU Directive is enforced on the assessment of the effects of certain plans and programs on the environment.
2003	UNECE proposed SEA protocol to the signature of the parties.

3-3-2 Evolution of SEA in Developed Countries

SEA practice has been expanding internationally at a rapid rate, both within developed as well as developing country contexts (Dalal-Clayton and Sadler, 2005, Schmidt *et al.*, 2005)

Key landmark events such as EU SEA directive in 2001 and the World Summit on Sustainable Development in 2002 promoted the concept further and facilitated wide adoption. Years of debate at the IAIA culminated into international criteria for quality SEA processes.

Different SEA processes are being used in several countries today. Nations already seek considerable interests in the SEA. For instance, Canada, Netherlands, New Zealand, US, Denmark and Sweden have introduced some forms of SEA system. In addition to this, the European Parliament and Council of European Union already introduced Directive 2001/42/EC the

assessment of the effects of certain plans and programs on the environment (Altunbas and Palabiyik, 2003).

3-3-3 Evolution of SEA in Developing Countries

Poverty is the first priority in developing countries and the government policies do not always support the success of the EA. When we add the low awareness level and capacity in the environmental field, the situation seems to be worse.

Therefore, "how will we integrate SEA with our decision making system" is a special question that should be discussed based on the situation in developing countries. A unique approach for these countries should be developed according to their own needs and priorities.

We can say that large number of developing countries is aware of EIA and have their own legislated structure related with EIA. However, a little number of developing countries has a legal arrangement related with SEA and only a few of them are working on preparing one.

Somehow, all of them have an institutional structure and responsible bodies for EIA practices but, still have a considerable amount of insufficiency for a proper EA procedure. The lack of proper EA probably will affect the future implementations of SEA (Mustafa, 2003).

Table (5): Evolution of SEA in developing countries

Adapted from (Mustafa, 2003)

Country	SEA Legislation	SEA case study/project	Awareness (Expert level)
Palestine	-	-	Low
Jordan	-	In private sector (water sector policy).	Average
Iran	-	Initiative for executing with UNDP.	High
Turkey	Draft SEA regulation	One for Land Use plans. One for Draft SEA Regulation.	High
Lebanon	A Draft is being prepared	One for draft regulation. One for Gasoline policy.	High
Yemen	-	-	Average
Albania	-	-	Low
Syria	-	-	Low
Algeria	-	-	Low

Libya	-	-	Low
Morocco	-	-	Low
Croatia	-	-	Average
Egypt	-	-	Low
Tunisia	ELA for plans and programs	One in near future.	High

3-4 SEA in Legislations and laws

3-4-1 International SEA systems

There are two legal documents that specifically set the international regulatory framework for SEA, namely, **the European SEA Directive** and **the Kiev SEA Protocol**.

The European SEA Directive 2001/42 was adopted on the 27th of June 2001. It establishes a basic framework for assessing the effects of certain plans and programs on the environment (the research will discuss it in detail in part 3-6 of this chapter).

The Kiev SEA Protocol (UNECE Protocol) The SEA Protocol was developed to supplement the Convention on EIA in a Transboundary Context (also known as the 1991 Espoo Convention). Once ratified, the Protocol requires the Parties to evaluate the environmental and health impacts of their draft plans and programs; it also addresses policies and legislation proposals. Its scope and requirements are quite similar to those of the European SEA directive except for the emphasis placed on the consideration of health impacts, which reflects the active participation of the World Health Organization (WHO) (Chaker *et al.*, 2006).

3-5 SEA on scope

3-5-1 the Purpose of SEA

SEA's purpose reflected a renewed emphasis on the need to take environmental factors into account in the design of planning and development proposals. Together with the growing appeal of environmental integration and sustainable development discourses in the 1980s and early 1990s, this renewed emphasis imparted unprecedented prominence on SEA amongst assessment instruments (Jordan, 2001).

The Reasons SEA is needed generally comprise two main dimensions:

(1) SEA counteracts some of the limitations of project level (EIA)

In the early 1990s, researchers were studying the limitations of project-level EIA. Their findings called for the introduction of something other than project-level EIA to encompass environmental considerations.

The limitations stated by (Glasson *et al.*, 1994, Lee and Walsh, 1997) can be summarized as follows:

- Project EIA reacts to development proposals rather than anticipate them, so they cannot steer development towards environmentally "robust'' areas or away from environmentally sensitive sites.
- Project EIA do not adequately consider the cumulative impacts caused by several projects or even by one project's subcomponents or ancillary developments.
- Some small individual activities are harmless, but the impact of those activities can be significant, which cannot addressed by project EIA.
- Before preparation of the EIA, a project can be planned quite specifically, with irreversible decisions taken.
- Project EIA cannot address the impacts of potentially damaging actions that are not regulated through the approval of specific projects.
- Project EIA often have to be carried out in a very short period of time because of financial constraints and the timing of planning applications.
- Assessing impacts from ancillary developments, difficulties can arise in evaluating the environmental impacts, which may result from indirect and induced activities stemming from a major development.
- Foreclosure of alternatives, typically, by the project assessment stage, a number of options, which have potentially different environmental consequences from the chosen one, have been eliminated by decisions taken at earlier stages in the planning process, at which no satisfactory environmental assessment may have taken place (Alshuwaikhat, 2005).

(2) <u>SEA effectively promotes sustainable development</u>

SEA is also needed as a way of implementing the concept of sustainability. Sustainability goes beyond weighing up impacts or preventing environmental damage of individual project, or even PPP. It has been defined as;

The environment should be protected in such a condition and to such a degree that environmental capacities are maintained over time: at least at

levels sufficient to avoid future catastrophe, and at most at levels which give future generations the opportunity to enjoy an equal measure of environmental consumption (Glasson *et al.*, 1994)

Sustainability would need to be made an intrinsic part of all policies, and then trickled down through plans, programs and ultimately to projects. SEA can also play a significant role in enhancing the integration of environmental concerns into policy and planning processes, thereby helping to implement sustainable development.

3-5-2 Benefits of SEA

If applied in the right way, a range of benefits may result from SEA application. Actually, SEA does not only aim at supporting an environmentally sound and sustainable development, it also attempts to strengthen strategic processes, improving good governance and building public trust and confidence in strategic decision making.

SEA's benefits are:

a) SEA plays as a pro-active tool and can thus be used to support the formulation of strategic action for sustainable development.
b) SEA can increase the efficiency of tiered decision-making (including strengthening of Project EIA).
c) SEA allows for a systematic and effective consideration of the environment at higher tiers of decision-making.
d) SEA entails more consultation and participation of the public (Ficher, 2007).

3-5-3 Timing of SEA

SEA is an integrated process. EA process and planning process operate at the same time. SEA should be applied, at the earliest stage of PPP that may have environmental consequences. Planners should preferably start a dialogue with environmental experts as soon as it is decided a new PPP (or major change of an existing plan) is to be prepared.

SEA report should be presented to the decision makers at the same time (or as part of) as the proposed plans and programs.

The SEA Directive notes that SEA “shall be carried out during the preparation of a plan or program and before its adoption” ((EU), 2001).

3-5-4 who should do SEA?

The EU Directive does not prescribe who is to carry out an SEA, but normally it is the task of the Responsible Authority, i.e. the body which prepares and/or adopts the plan or program.

The competent authority (planning authority) is responsible for the preparation of a SEA report for their plans and programs and it should seek collaboration with the environmental authorities. The planning authority is the best positioned to reduce impacts while achieving the plan objectives. This should collaborate with environmental authorities, who are aware of environmental objectives and sensitivities ((EU), 2001).

3-5-5 Levels of Details in SEA

SEA does not need to be done in any more detail, or using any more resources, than is useful for its purpose. The EU Directive requires consideration of the significant environmental effects of the plan or program, and of reasonable alternatives that take into account the objectives and the geographical scope of the plan or program.

Article 5 of the Directive lists factors to be considered in deciding what information to include in the Environmental Report:

• Information that may reasonably be required, taking into account current knowledge and methods of assessment.

• The contents and level of detail of the plan or program.

• The objectives and geographical scope of the plan or program.

• The stage reached in the decision making process.

• The extent to which it would be more appropriate to assess certain matters elsewhere in the decision-making process ((EU), 2001).

3-5-6 Public Participation in SEA

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.

Public participation is an essential part in the SEA process, there are many methods to involve public; the following part highlights on number of methods of public participation.

The main types of public consultation and participation(9) are:

- Informing affected groups.
- Printed materials (brochures, displays, exhibits, and direct mail).
- Use of the media (newspapers, news conferences, newspapers, radio and TV).
- Public information sessions (open houses, site visits, and field offices).
- Use of the Internet (web site describing the SEA).
- Listening to the opinions of the public.
- Surveys (interviews with key people, polls and questionnaires).
- Large meetings (public meetings, public hearings, and conferences).
- Direct participation of the public (or agencies).
- Small meetings (public seminars, and focus groups).
- Advisory groups (e.g. task forces).
- Problem solving techniques (e.g. brainstorming and simulation games).

consensus building techniques (Glasson *et al.*, 1994)

(9**) Public participation** is differentiate from country to another; participation in European countries is essential and present a real pressure in any development plan proposal. The case in developing countries is different, participation is still in its beginning, as in Egypt for example; participation in planning process started from 10 years ago, and till now faces a lot of problems due to lake of awareness of public and other political aspects.

3-6 SEA Process

The development and consequent adoption of SEA procedures have gained momentum in recent years. Not only more countries revised their approaches towards the integration of EA at different tiers of the decision-making process, but the international arena has also played a vital role in re-emphasizing the importance of SEA through the endorsement of two important legal documents which is mentioned in part 3-4, namely, the European SEA Directive (2001/42/EC) and the United Nations Economic Commission for Europe (UNECE) 2003 SEA Protocol.

Moreover, international financing institutions and cooperation organizations are introducing more and more their own SEA procedures and requiring beneficiary countries to adopt and potentially mainstream these procedures into their planning and decision-making processes (Chaker *et al.*, 2006).

The next part will discuss SEA process according to three different guidelines:

1- EU Directive for SEA which is applicable in all EU countries.
2- SEA in non European country (Turkish guideline).
3- SEA in international financial institutions such as Organization for Economic Co-operation and Development (OECD).

3-6-1 SEA process in the EU directive:

The SEA Directive 2001/42/EC entered into force in July. Art. 13 of the Directive oblige the Member States to implement the contents of the Directive by July 21st 2004. In practice this means that the SEA Directive should be applied to plans and program whose formal preparation begins after 21 July 2004 and also to those which were already in preparation by that date but were not to be adopted or submitted to a legislative procedure before 21 July 2006. The first Commission's report on the application and the effectiveness of the SEA Directive was submitted to the European Parliament and the Council in 21 July 2006 ((EU), 2001).

3-6-1-2 SEA Process according to the EU Directive:

The SEA process includes five main stages consist of 8 steps (article 4-10, SEA Directive) as shown in figure 11:

Stage A: Sitting the context and objectives, establishing the baseline and deciding on the scope:

This step consists of the following two steps;

1. **Screening:** determination of the scope of the SEA Directive.
2. **Scoping:** determination of the range of the environmental analysis and assessment including aspects of contents, methods, time and space of the appraisals, etc.

Stage B: Developing and refining alternative and assessing effects.

3. **Appraisal of alternative:**

   Development, appraisal and assessment of reasonable alternatives.

Stage C: preparing the environmental.

4. Environmental report: documentation of the assessment of the environmental impacts of the plan or program taking into account the framework for the contents according to annex1 of SEA Directive.

Stage D: consulting on the draft plan or program (step 5, 6, 7).

5. **Consultations:** giving the partners of the consultation the possibility to express their opinion about the environmental report and the draft plan or program during the planning and SEA process. Partners for the consultation are:
   - Environmental authorities who, by reason of their specific responsibilities, are likely to be affected by the environmental effects of implementation the plan or program.

Figure (11) the key steps of the SEA process.
adapted from ((EU), 2001).

- The public, including the public affected or likely to be affected by, or having an interest in the decision.
- Making of the plan or program, comprising relevant non-governmental organizations, such as those promoting environmental protection and other organizations concerned.
- Member states, which are likely to be significantly, affected by the environmental impacts of the plan or program, as far as the member states request transboundary consultations.

6. **Decision Making:** The environmental report and results of the consultations shall be taken into account during the preparation of the plan or program, before its adoption or submission to the legislative procedure. That means that the decision makers are not bound by the result of the SEA.
7. **Information on the decision:** All participants involved the SEA process, the environmental authorities, the public shall be informed about the adopted plan or program and shall be given access to a statement, summarizing how environmental considerations have been integrated into the plan or program, and how the result of the SEA process have been taken into account in the decisions as well as the monitoring measures decided upon.

Stage E: Monitoring the significant effects of implementing the plan or program as shown in table (6).

8. **Monitoring:** of the significant environmental effects of the plan or program implementation in order, to identify unforeseen adverse effects, and to be able to undertake appropriate remedial action. (EU Directive, 2007).

Table (6): stages of SEA process in the EU directive.
Source: ((EU), 2001).

SEA stages and tasks	purpose
Stage A, Sitting the context and objectives, establishing the baseline and deciding on the scope (step 1 –step2)	
Identifying other relevant plans, programs and environmental protection objectives.	To establish how the plan and program is affected by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives.
Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects and monitoring ; to help the development of SEA objectives
Identify environmental problems	To help focus the SEA and stream line the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Developing SEA objectives	To provide means by which the environmental performance of the plan or the program and alternatives can be assessed
Consulting on the scope of SEA	To ensure that the SEA covers the likely significant effects of the plan or program.
Stage B, Developing and refining alternative and assessing effects (step 3)	
Testing the plan or program objective against the SEA objective	To identify potential synergies or inconsistencies between the objective of the plan or program and the SEA objective and help in developing alternatives.
Developing strategic alternatives	To develop and refine strategic alternatives.
Predicting the effect of the plan or program including the alternatives	To predict the significant environmental effects of the plan or programs and alternatives
Evaluation the effect of the plan or program including the alternatives	To evaluate the predict effect of the plan or program on the environment and its alternative and assists in the refinement of the plan and program
Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered
Proposing measures to monitor the environmental effects of plan or program implementation	To detail the means by which the environmental performance of the plan or program can be assessed
Stage C, preparing the environmental report (step 4)	
Preparing the environmental report	To present the predicted environmental effects of the plan or program including alternatives in a form suitable for public consultation and use by decision makers.
Stage D, consulting on the draft plan or program (step 5,6,7)	

Consulting the public and consultation bodies on the draft plan or program and environmental report	To give the public and consultation bodies an opportunity to express their opinion on the finding of the environmental report and to use it as a references point in commenting on the plan or program. To gather more information through the opinion and concern of the public.
Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or program at this stage are assessed and taken into account.
Making decision and providing information	To provide information on how the environmental report and consultees' opinion were taken into account in deciding the final form of plan or program to be adopted.
Stage E, Monitoring the significant effects of implementing the plan or program (step 8)	
Developing aims and methods for monitoring	To track the environmental effects of the plan or program to show whether they are as predicted to help identify adverse effects.
Responding to adverse effects	To prepare for appropriate response where adverse effects are identified.

3-6-2 SEA Process in Turkey

Turkey has already prepared a draft SEA Regulation and still searching the best way of implementation. Plans and programs are in the scope of Turkish draft SEA Regulation. After the enforcement of this regulation; it will be obligatory for several plans and programs to be integrated with SEA procedure (Mustafa, 2003)

The following steps are the major steps in the SEA process in turkey as shown in figure (12).

1- Screening

At this stage we define the type and level of the EA; whether a SEA is necessary. If a SEA is not to be required the Planning Authority should prove that the plan or program does not have a major negative impact on the environment.

2- Scoping

Scoping is an initial stage in the SEA where possible impacts are listed. These are then analyzed to see which need further study and at what level.

Activities Involved in Scoping:

The scoping exercise should:

-Determine the area of search.

-Identify which data are available.

Figure (12): SEA Process in Turkey.
adopted from (Mustafa, 2003)

-Identify the surveys, which would be required to fill data gaps and the cost effectiveness of these.

The scoping stage of the SEA process may involve the following activities:

-Describing the type of plan, the planning authority envisages and its objectives.

-Consulting external parties, including the public on the issues to be assessed.

-Publishing a decision about the scope of the SEA, and selecting indicators (if possible with target values) that serve as evaluation criteria for the plan or program.

Defining environmental objectives, indicators and targets

After collecting environmental baseline data for the plan or program, defining environmental objectives, indicators and targets are necessary. An objective is an expression of the desirable state or development of an impact.

Defined objectives, indicators and targets according to the characteristic of the plan or program, will ensure to evaluate the effectiveness of environmental considerations that had been taken into account for the plan or program.

3-Impact Assessment and SEA Report

Impact Assessment

Impacts may include descriptions of potential resource depletion/waste, climate change, acidification, local air pollution, photochemical smog, impact on biodiversity, visual and other impacts on landscape, noise, land take/proximity, impacts on water, and accidents. As well as, direct, indirect, secondary, cumulative and synergistic impacts should be considered.

Impact predictions should be clearly linked to the key issues identified during the scoping stage and should relate with the environmental conditions of the affected area. The level of details to be assessed in which a plan or program to be assessed are lower than a project. In many cases only a very few indication of the type and level of future impacts will be needed.

The assessments of the impacts are realized by some kind of methods in the SEA. The most common ones are “check lists” or “environmental matrices”.

SEA Report

The Environmental Report is a key output of the SEA process, and should describe the whole process and its results. Coming to this phase, initially the question of why do I need a SEA is answered in screening phase, what will I do question is answered in scoping phase by preparing a framework for the future study and where will I develop question will be answered at this stage.

This means the planning alternatives should be ready at this stage and with their assessment by the environment criteria.

4-Review

The review of SEA reports provides an invaluable check on their quality, especially where such checks have not been applied earlier in the SEA process.

It is at the review stage that the environmental authorities, other bodies with environmental responsibilities, expertise, and the public are able to comment on the SEA report and the action it describes.

5-Decision Making

Integration of environmental impacts into decision-making occurs at many stages of the planning process. It should take place every time; when an informal decision is made about which plan options are to be developed further and which options are to be rejected. These intermediate decisions are incorporated in the final proposed plan or program, which is submitted for formal decision-making. For decision-makers to make their choice, the results of the SEA need to be integrated.

The SEA report, and its draft versions, should form part of the general assessment documentation. This documentation should explain the trading-off of different impacts and the rejection of alternative plan options.

The final decision about the plan will be based on the general assessment documentation, but it will also incorporate political considerations. In order

to ensure that environmental considerations are not ignored during decision-making it is useful if a record of decision is prepared.

6-Monitoring

Monitoring the plan or program has several aims. It tests whether the plan or program is achieving its objectives and targets. It identifies any negative impacts requiring remediation. It helps to ensure that mitigation measures proposed in the SEA are implemented. It gives feedback to assist in impact predictions for future SEA's.

7- Consultation and Participation

The aim of SEA is to take early account of the environment. This can only be achieved if the views of affected groups are fully taken into consideration at the various stages of the SEA process.

3-6-3 SEA Process According to Financial and Development Assistance Organization:

Organization for Economic Co-operation and Development OECD is one of the financial and development organizations that adopt the SEA as one of its tools in implementing their work all over the world. The following part is discussed the steps of SEA process in OECD.

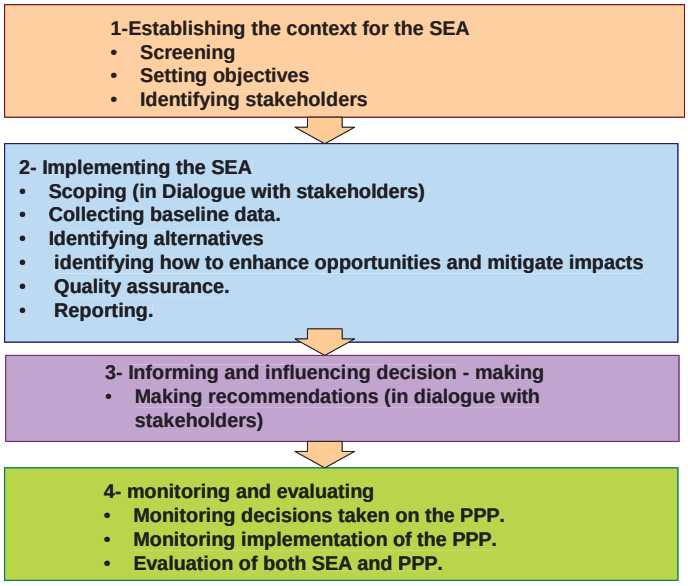


Figure (13): SEA process according to OECD.
Adapted from (OECD, 2006)

3-7-3-1Stage 1: Establishing the Context for the SEA Review the Need for the SEA, and Initiate Preparatory Tasks

An early step in the SEA process is "**screening**" to decide whether an SEA is appropriate and relevant in relation to the development of a PPP in the area under consideration. Integral to this will be **establishing the objectives** of the SEA: how does it intend to improve the planning process; what is its role?

Identify Interested and Affected Stakeholders and Plan their Involvement

SEA is a participatory process. It allows civil society, including the private sector and relevant stakeholders that will be affected by the proposed PPP, to

contribute inputs to strategic decision making. Therefore, screening should include careful stakeholder analysis to identify stakeholders and prepare a communication plan to be used throughout the SEA.

If the public is not used to being engaged, particularly at the strategic level, and if there are no precedents, it is critical to include an education component in the public engagement process. Active public engagement should take place from Stage 2 onwards to the review of the draft SEA report.

3-7-3-2 Stage 2: Implementing the SEA

Determine the Scope of the SEA

A **scoping** process should establish the content of the SEA, the relevant criteria for assessment.

Establish participatory approaches to bring in relevant stakeholders

(As part of the Scoping process)

As noted above, effective and sustained public engagement is vital for effective SEA. Understanding the power relations between different stakeholders, and how they interact with each other and the environment, are essential for good analysis and process management.

Collect baseline information

SEA needs to be based on a thorough understanding of the potentially affected environment and social systems. This must involve more than a mere inventory, e.g. listing flora, fauna, landscape and urban environments. Particular attention should be paid to important ecological systems and services, their resilience and vulnerability, and significance for human well-being. Existing environmental protection measures and/or objectives set out in international, national or regional legislative instruments should also be reviewed.

Analyze the potential effects of the proposals and any alternatives

Identifying the potential direct and indirect or unintended effects of policy proposals and decision-making processes, as well as options for, and

alternatives to PPP is naturally more difficult than in the case of specific projects. The range of options or variables under consideration is often harder to define with certainty because the transmission channels through which effects may be experienced may be very complex, involving many aspects which are difficult to predict and analyze. This makes the indirect effects of paramount importance in the assessment.

Identify measures to enhance opportunities and mitigate adverse impacts

It is important to focus on realizing the positive opportunities of the planned activities and minimizing any negative risks. A mitigation hierarchy should be followed for identified negative impacts: first avoiding; second reduction; and third balance adverse impacts by using appropriate measures. Caution should be exercised if the analysis indicates a potential for major, irreversible or negative impacts on the environment. Often this may suggest selecting less risky alternatives. Once mitigation has been taken into account, the significance of residual adverse impacts can be evaluated. This is an important measure of the environmental acceptability of the proposal; it is usually carried out against selected environmental objectives and criteria.

Draft report on the findings of the SEA

Once the technical analysis is completed, the results and rationale for conclusions need to be reported. While a technical report may be necessary, it must be presented in an understandable format and appropriate language(s).

Provide an independent evaluation/review (quality control check) on the SEA

Designing an SEA to include the steps and practices outlined in Stages 1- 3 will provide a basic level of process quality. However, specific measures of quality control assurance might be warranted, e.g. to ensure the credibility of the assessment in the eyes of all stakeholders.

Public engagement in reviewing the draft SEA report

While public engagement should have been included at all appropriate stages, the draft SEA report is a key stage and should be publicly available for a period of time agreed during the scoping stage.

Prepare final SEA report

Typically, this would include sections/chapters on:

- The key impacts for each alternative.
- Stakeholder concerns including areas of agreement, disagreement, and recommendations for keeping stakeholders informed about implementation of recommendations.
- The enhancement and mitigation measures proposed.
- The rationale for suggesting any preferred option and accepting any significant trade-offs.
- The proposed plan for implementation (including monitoring).
- The benefits that are anticipated and any outstanding issues that needs to be resolved.
- Guidance to focus and streamline any required subsequent SEA or EIA process for subsidiary, more specific undertakings such as local plans, more specific programs and particular projects.

3-7-3-3 Stage 3: Informing and influencing decision making

Making recommendations to decision makers

Presentation of the draft and final reports are important to influence key decisions.

A clear, understandable and concise Briefing Note or Issues Paper can help to ensure that decision makers are fully aware of key environmental issues linked to the PPP. From the outset, through steering committees, other structures and public engagement mechanisms, decision makers and stakeholders have opportunities to shape the outcome of the SEA.

Decision makers need to know the options open to them, what the likely effects of choices are, and what the consequences would be if they failed to

reach a decision. This information should be clearly set out in the advice given by the SEA team.

3-7-3-4 Stage 4: Monitoring and evaluation

Monitoring decisions taken on the PPP and the results of their implementation

It is important to monitor the extent to which environmental objectives or recommendations made in the SEA report or the PPP are being met. Information tracking systems can be used to monitor and check progress of the PPP.

Evaluation of monitoring results and feed back in PPP renewal

At some point a formal evaluation of the monitoring results should take place as part of the revision or renewal of the PPP.

3-6-4 Comparison between Different SEA Processes:

The following table compares between process of SEA in the EU Directive (Legislation of European countries), Turkish SEA guidelines (non –Europe country) and the OECD Guidelines (one of the development assistance organizations).

	EU Directive **Legislation of EU Countries**	**Turkish Guidelines** **Country outside EU Union**	**OECD's SEA process** **one of the development assistance organizations**
Number of steps	It consists of 5main stages; each stage divided to secondary steps and the total number of these steps for all the process is 8 steps.	7 major steps.	4 major steps each step contains secondary steps.
SEA Process	the 5 stages are: **Stage A:** describing the context and objective, establishing the baseline and deciding on the scope. (step 1 & step2) **Stage B:** Developing and refining alternative and assessing effects. (step 3) **Stage C:** Preparing the environmental report. (step 4) **Stage D:** consulting on the draft plan or program (steps 4,5,6) **Stage E:** monitoring the significant effects of implementing the plan or program (step 8)	SEA process according to the Turkish guidelines consists of 7 steps: 1. screening 2. scoping 3. impact assessment and SEA report 4. Review 5. Decision making. 6. monitoring 7. Consultation and participation.	SEA process according to the OECD is: **Stage 1:** Establishing the context for the SEA 1- Screening 2- Setting objectives 3- Identifying stakeholders. **Stage 2:** Implementing the SEA 1. Scoping 2. Collecting baseline data. 3. Identifying alternatives. 4. Identifying how to enhance opportunities and mitigate impacts. 5. Quality assurance. 6. Reporting. **Stage 3:** informing and influencing decision making 1- Making recommendation in dialogue with stakeholders. **Stage 4:** monitoring and evaluating 1- Monitoring decisions taken on the PPP. 2- Monitoring the implementation of the PPP. 3- Evaluation of both SEA and PPP.
Screening step	It is the first step in the first stage of SEA process; **describing the context and objectives, establishing baseline and deciding on the scope.**	It is the first step of the process.	It is a part of the first step **(Establishing the Context of SEA)** and it came as the first subtitle step under this step.
Scoping	It is the second step in the first stage of SEA process; **describing the context and objectives, establishing baseline and deciding on the scope.**	It is the second step of the process.	It is a part of the second step **(Implementing the SEA)** and it came as the first subtitle step under this step and it happened with dialogue with stakeholders.
Public	Public participation happens according to	Public participation came as an important	According to OECD, public participation is an

participation & consultation	directive twice, the first time during the scoping and second time during the review of the Proposed report and PPP. So public participation came as supporting tool for the second step (scoping), and separate step (step 5) after making the environmental report. Or comes in stage A & stage D; consulting on the draft plan or program.	part of the scoping stage (second stage), as they must consult interested parties on the issues to be assessed. It coming also in the review step (4th step) of the SEA Process. But the Turkish guidelines also mentioned participation as the final step (step 7) and highlight on the importance of it in all stages.	essential part from step 2 onwards to the review of the draft SEA report. Stage 2: the second part of it (establish participatory approach to bring in relevant stakeholders) is contain public participation. Stage 3: part one of this step (making recommendations to decision makers) highlights on the importance of make the decision fully aware of the draft report and PPP with the help of public.
The development of alternatives	It happens according to the directive in the third step (appraisal of alternatives) or in the second stage (Developing and refining alternative and assessing effects)	There is no mention for sitting the alternatives as a separate step in the Turkish guidelines.	Identifying the alternatives come in part three (identifying alternatives) of stage two (Implementing the SEA)
Environmental Report	It comes according to the directive in stage c Preparing the environmental report.	According to Turkish guidelines, it came on the third step (impact assessment and SEA report)	The reporting comes as an ending step in stage two (implementing the SEA).
Decision Making	It comes according to the directive in in stage D; consulting on the draft plan or program.	According to Turkish guidelines, it came on the 5th step (Decision Making)	It comes in stage 3; informing and influencing decision making.
Monitoring	It comes in stage E; monitoring the significant effects of implementing the plan or program.	According to Turkish guidelines, it came on the 6th step (Monitoring)	It comes in stage 4; monitoring and evaluating. Both environmental report and PPP are monitored and evaluated.
Major SEA Process	This take steps from 1 to 6) or from stage a till stage c. Almost take 75% from the whole process.	It takes place from stage 1 till stage 4. Almost take 60% from the whole process	It takes place in the first and second stage, and the rest stages are for decision making and monitoring. Almost take 50% from the whole process.
Decision making & monitoring	Happened in stage 7 and 8 or in stage D & E. Almost take 25% from the whole process.	Takes place from step 5 to 7. Almost take 40% from the whole process.	It takes place in the third and fourth stage. Almost take 50% from the whole process.

Table (7): Comparison between SEA process in; EU Directive, Turkish SEA Guidelines and OECD.
Source: researcher based on ((EU), 2001) (Mustafa, 2003) (OECD, 2006)

3-7 Conclusion of chapter 3:

- SEA is a part of decision making process which helps decision makers to consider environmental issues in a high level of decision making process starting from policy level and before reaching project level assessment.

- SEA Process can be summarized in the following steps:

A- Screening:

Screening exercise is undertaken to answer the following threshold question: should the SEA be conducted for the subject proposal (i.e., a particular policy, plan or program).

B- Scoping

A scoping exercise is conducted to ensure that all high priority issues relevant to the decision being made are addressed and included in the SEA.

1- Defining stakeholder

All "stakeholders"- i.e., parties potentially affected by (or otherwise interested in) the proposal – should be given an opportunity to participate in the scoping exercise. While consultation with stakeholders takes place at various points in proposal development, it is particularly important during scoping.

2- Defining Scope of work:

The scoping stage determines the likely extent (geographic, temporal and thematic) and level of detail of the assessment, the information to be included in the SEA and the environmental report.

3- Base line information:

In this context, baseline information and data needs have to be established. Existing sources and gaps are to be identified and environmental problems and protection objectives are to be described. In order to be able to draw a realistic picture of the situation, it is important not only to consider the bio-physical environment, but also to take economic and social development objectives into account.

4- Sitting the objectives:

Objectives are relating to the policies, plans and programs. It is in all emphasis on sustainable development or other environmental strategies.

5- Sitting different alternatives :

At the scoping stage, different development alternatives should be identified that may be available for meeting environmental, economic and social objectives.

Furthermore, suitable methods and techniques for the assessment, as well as potential stakeholders/actors, need to be identified. Finally, at the scoping stage, consultation and participation should be conducted.

C. Impact assessment and report

1-Assessment:

This stage is at the heart of the SEA process. The analysis needs to be sufficient and transparent to convince stakeholders and the public that the results are state-of-the art and as reliable as possible.

The impacts assessment includes all type of assessment including; direct and indirect (or "secondary") effects or any other types of assessment.

2-Report

The SEA report documents are the final product of the assessment process, it includes the findings of the assessment of the various proposed alternatives and the predicted impacts upon the environment.

It usually acts as a main base for the consultation and public participation stage.

3-Public participation

Public participation are the supporting step in the decision making process, the role of stakeholders and public participation appears in all SEA process, but the major involvement of these participation appears in scoping step and assessment step.

4- Monitoring & mitigation measures:

The SEA should include a plan for monitoring environmental effects so that mitigation measures can be implemented if unforeseen effects

occur. In addition the SEA should include a plan for ensuring that agreed upon mitigation measures are actually carried out.

Finally, the SEA report should provide for some recommendations to decision makers in terms of preferred options and alternatives and regarding possible measures for avoiding, minimizing, mitigating and compensating any potential remaining impacts.

D. Review & decision making approval:

At the review stage, all the environmental information collected during the SEA process and presented in the SEA report is supposed to be checked.

This step is also called the decision making step as in this step we weighed economic and social matters against the environmental considerations brought forward by SEA. Within decision making, consideration to the environment should be given and the decision maker should explain how a decision was reached and what information was used. The European SEA Directive asks decision makers to justify their decisions in the light of the findings of the SEA report and the consultations conducted. Effective integration of SEA into decision making is very important, if SEA is to be meaningful and beneficial.

- Relation between SEA & Planning Process:

The main concern of the SEA is to strengthen the role of environmental issues in strategic decision-making. So generally SEA process is a parallel process to the decision making process which is happened in different levels starting from policy, plan and specific program.

SEA is applied in different development sectors and the next chapter will studying SEA process in one of this development sectors; land use planning.

The following figure summarized the relation between SEA process and planning process in any development sector.

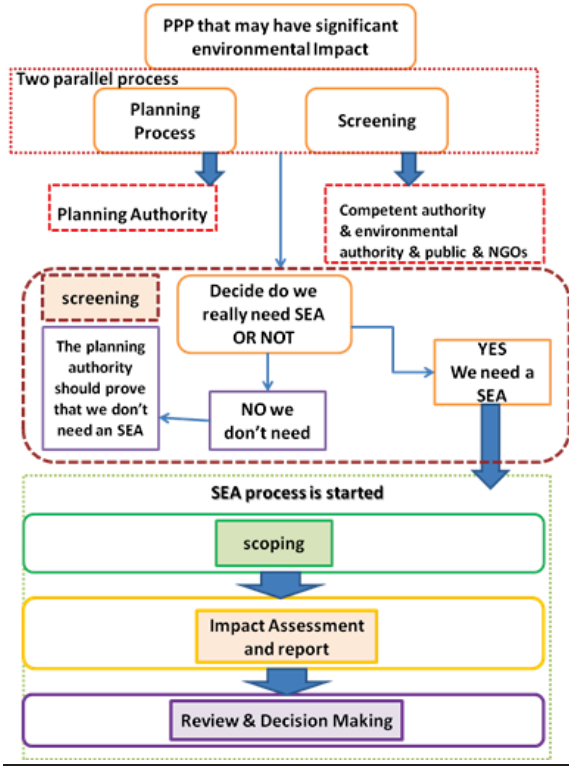


Figure (14): Relation between SEA process and planning process.
Source: Researcher

4-Chapter Four: Integrating SEA in Land Use Planning

Introduction

Article three of SEA EU directive stipulates that; plans and programs "...Which are prepared for agriculture, forestry, fisheries, energy, industry, water management, telecommunication, tourism, and country planning which set the framework for future development will be subjected to SEA.

Thus there is no question that regional planning and land use planning will be subjected to an SEA. In this chapter, the focus will be in studying process of Implementing SEA in land use planning.

4-1SEA in Spatial Planning & Land Use Planning

It is widely recognized that spatial planning and SEA are prerequisites for achieving acceptable forms of development and that the combination of the two processes can greatly assist decision- makers in working towards sustainable development. However, there is a continuing debate over the precise role and purpose of each activity (Belcáková, 2002)

Spatial planning integrates environmental, social and economic aspects of the spatial development. Taking into account the integration of these aspects is not a new requirement in spatial planning. The innovation of this principle lies in a new vision of integrity in a context of sustainability. It is first of all their mutual influence in the final synergetic quality and not in additive integration.

Different countries have evolved their own approaches towards integrating spatial planning and SEA, reflecting their cultures, history and political structures. An element of standardization has been introduced in Europe through the introduction of the SEA Directive (2001/42/ EC), but it is left to each Member State to determine the precise methods to be used.

4-2Overview of Land Use Planning

Land use planning (LUP) may be defined as a systematic process for the arrangements and allocation of land resources among period of time and space in accordance with the principle of sustainable land-use.

"LUP is the systematic assessment of land and water potential, alternative patterns of land use and other physical, social and economic conditions, for the purpose of selecting and adopting land use options that are most beneficial to land users without degrading the resources or the environment, together with the selection of measures most likely to encourage such land use " (Leslie and Ratukalou, 2000)

4-2-1 General Process of Land Use Planning:

LUP process is a flexible process; its step can change from country to another based on governmental legislations framework, beside institutions, and governmental bodies involved in the planning process, the following part illustrates generic steps in conducting land use planning. The process can be divided into five steps as shown in the following figure:

Figure (16): General process of Land Use Planning.
Adopted from (Tao *et al.*, 2007, (FAO), 2008)

Step (1): Preparation and Organization of Work:

The planning effort is launched by discussions between those who want the plan (land users and government) and the planners. This crucial first step should be a mutual exchange of ideas and information (FAO), 2008).

This step is the beginning work necessary for the formulating the plan. This includes defining task descriptions, selecting the planning team, and drawing up a schedule of activities and objectives. The technical basis, goals and

targets, as well as the all procedural methods to be used should be identified in this step(Tao *et al.*, 2007)

Step (2): Information & Data Collection.

To get started, the planning team will need some basic information about the land, the people, the organization of administration and services. All these required information include regional baseline data such as the population, local socioeconomic development goals, land resources and land-use data.

Step (3): Preparation of the Draft Plan.

Analysis of land-use status and evaluation of land suitability for any particular land-use master plan is necessary to identify and analyze potential problems and conflicts in existing land-use patterns. Investigate existing site conditions, identify existing unreasonable land use practices, try to understand their causes and identify potential constraints to proposed changes. For each potential land-use category, it is necessary to establish specific, detailed land requirements of any proposed projects and match these with the actual, existing properties of a specific parcel of land to determine its actual physical land suitability. The primary objective is to identify and draft a design suitable for a range of land-use types that can achieve the goals of the plan.

Step 4: Compilation of Plan Document:

Based on the overall scheme of the draft plan, the documents are compiled, organized and presented to facilitate the successful attainment of the goals stated in the plan. They include the various reports and drawings that have been developed.

Step 5: Acceptance of the Draft Plan:

The draft version of land-use master plan is then presented to the local government by the department of land administration. The draft plans reviewed by the local government are presented to the level of government directly above them, until the authority undertaken the right of examination and approval (Tao *et al.*, 2007) .

4-2-2 Levels of Land Use Planning:

LUP can be applied at three broad levels: national, district and local. These are not necessarily sequential but correspond to the levels of government at which decisions about land use are taken.

Different kinds of decision are taken at each level, where the methods of planning and kinds of plan also differ. However, at each level there is need for a land-use strategy, policies that indicate planning priorities, projects that tackle these priorities and operational planning to get the work done.

There must be an interaction between the three levels of planning with emphasis on the flow of information in both directions (Figure 13).

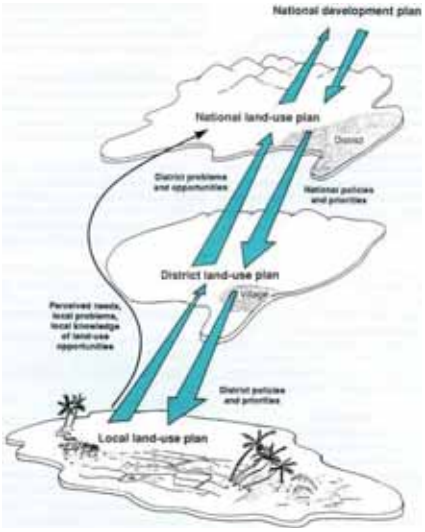


Figure (15): levels of land use planning. ((FAO), 1993)

4-2-1-1National Level

At the national level, planning is concerned with national goals and the allocation of resources. In many cases, national land-use planning does not involve the actual allocation of land for different uses, but the establishment of priorities for district-level projects. A national land-use plan may cover:

- Land-use policy: balancing the competing demands for land among different sectors of the economy food production, export crops, tourism, wildlife conservation, housing, public amenities, roads and industry.
- National development plans and budget: project identification and the allocation of resources for development.
- Co-ordination of sectoral agencies involved in land use.
- Legislation on such subjects as land tenure, forest clearance and water rights.

National goals are complex while policy decisions, legislation and physical measures affect many people and wide areas.

4-2-1-2District Level

District level refers not necessarily to administrative districts but also to land areas that fall between national and local levels. Development projects are often at this level, where planning first comes to grips with the diversity of the land and its suitability to meet project goals. When planning is initiated nationally, national priorities have to be translated into local plans. Conflicts between national and local interests will have to be resolved. The kinds of issues tackled at this stage include:

- The sitting of developments such as new settlements, forest plantations and irrigation schemes.
- The need for improved infrastructure such as water supply, roads and marketing facilities.
- The development of management guidelines for improved kinds of land use on each type of land ((FAO), 2005).

Appendix (4) discusses levels of land use planning in different countries.

4-2-1-3Local Level

The local planning unit may be the village, a group of villages or a small water catchment, or even small areas.

At this level, it is easiest to fit the plan to the people, making use of local people's knowledge and contributions. Where planning is initiated at the district level, the program of work to implement changes in land use or management has to be carried out locally. Local-level planning is about getting things done on particular areas of land - what shall be done, where, when and who will be responsible ((FAO), 2008).

4-3 Integrating SEA in the Land Use Planning Process:

As mentioned before, according to the EU directive the LUP is one of the fields that SEA is essential to apply on it.

4-3-1 Why SEA in Land use Planning?

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.

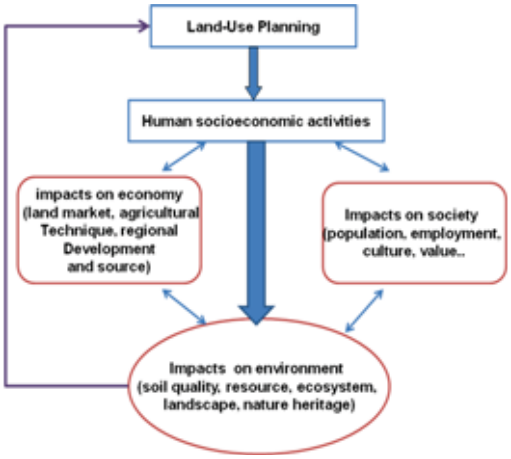


Figure (17): impacts of land use planning in economy, society and environment.
adapted from (Tao *et al.*, 2007)

4-3-2 Timing of SEA in Land Use Planning:

According to the EU directive, land-use master planning SEA should be conducted "during the preparation of a plan". EU Directive does not indicate explicitly the timing of SEA integration into the planning process, considering the diversity of the planning process in different planning authorities. So, when will SEA be started, at the beginning of the land-use master planning preparation process, or just before the submission of this plan to the planning examination and approval authorities?

In fact, it is difficult to present a standard mode in terms of the integration. SEA should be a study that having the characteristics of continuity, flexibility and variability (Say and Yucel, 2006).When the general phases of land-use master planning are considered, it could be found that the SEA process has different timing approaches to the planning process. Nevertheless, the choice regarding the timing issue can play an important role in the quality of the SEA process.

4-3-3 Key Roles and Responsibilities of SEA in Land-use Planning

In this section, the key actors within the process of developing the SEA on land-use planning and their roles and responsibilities are identified.

4-3-3-1 Institution Responsible for the Development of Land-use Master Planning (Proponent Authority).

The functions of the institution responsible for the development of the land-use master plan mainly are:

- Organize the SEA team, including choice of a technical agency to conduct SEA, submitting the plan draft and SEA chapter or report.
- In charge of emending the plan draft.
- Organize the follow-up SEA.

4-3-3-2 Organizations Responsible for Carrying SEA (Assessment Team)

EU Directive doesn't prescribe who have obligation to carry out the SEA, but it will be the responsibility of the environmental service agency.

4-3-3-3 Institution for Review and Appraisal of the Proposed Draft Plan and SEA Document

The institution in charge of review and appraisal of the proposed draft land-use master plan is the higher authority that plays the role of final decision maker of the assessed plan. The SEA document must be submitted as an integral part of the draft plans to the plan review and approval authorities. The findings and conclusions of the submitted statement shall be the legal basis for integrating environmental consideration into the decision-making of land-use master planning.

4-3-3-4 Public Concerns

Public concerns are a key consideration for any EA, especially for SEA on land-use planning. Making preliminary information available often facilitates public understanding of the proposed initiative and leads to more constructive input. Although, confidentiality of some aspects of plan may preclude full public consultation, any effort to understand public opinions

will improve the quality and credibility of the SEA and the plan itself (Tao *et al.*, 2005).

4-4 Integrating SEA Process in Land Use Planning:

SEA is considered a parallel step to the preparation of land use plan; the major differences to the existing planning procedures are the following key issues (figure 17):

- Set clear targets and objectives (especially environmental targets).
- Develop different alternative scenarios and assess them according to the targets.
- Implement a tiered (public) participation approach.

The main steps of SEA are starting from answering one main question; does this plan need an SEA or not, answer of this question is what we call screening.

In the second step start, we build the environmental base line data and understanding the proposed plan and its objectives.

Prepare the different alternatives is the next step, and now the assessment process is now ready to begin.

In all these previous steps public participation is critical starting from the base line collecting data.

After preparing the final draft of SEA report, the review authority is the one responsible of acceptance, rejection or modification of this plan based on recommendation from public hearing and environmental authorities.

Figure (18): Integration of SEA process in the land use planning process.
Source: adapted from (Tao *et al.*, 2005).

These integrated process involved different governmental bodies and decision making authorities with the assistance of stakeholders and public participation from day one of screening step, the process starts from deciding of arranging this type of land use planning on any level from policy, regional to detailed level accordingly the SEA step starts from the same point in answering the question of is really this land use planning have any significant impacts on environment if the answer was yes, the SEA process is started from this point**.**

Acceptance of SEA is the key step of accepting the proposed land use planning, if the decision making authority decide to accept it then the plan will be accordingly implemented, or it can reject it so the process will start again and the proponent authority will propose another land use planning, the last act is to modify the proposed plan based on the recommendation of the SEA assessment team, then the proponent authority must modify its proposed land use plan.

This means that based on the decision making response on the proposed SEA report and land use plan the proponent authority will act one of this steps as (figure 19):

1- Re-propose another land use plan if the review authority refused the Land use planning based on the results of SEA report.
2- Modify the proposed land use planning based on the recommendation of the review authority.
3- Implement the land use planning and organize for the monitoring step.

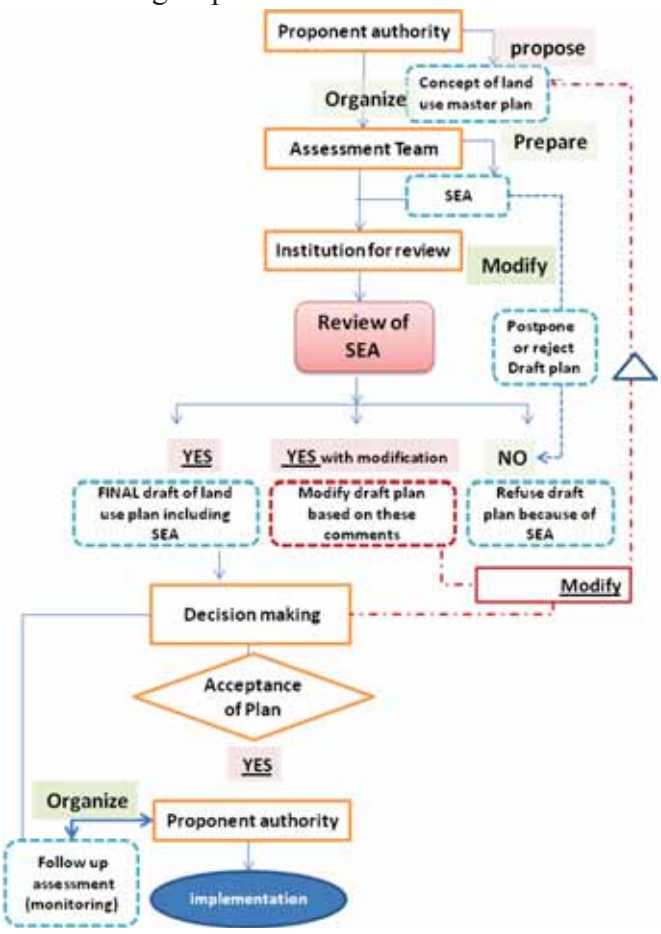


Figure (19): Integration of SEA process in the land use planning process.

Source: adapted from(Tao et al., 2005).

4-5Criteria of Conducting SEA in the Land Use Planning:

4-5-1 Screening Step:

In conducting this step there are two main types of criteria for determining whether the proposed plan would be likely to have significant environmental effects:

(1) Characteristics of the Plan:

For example, the scale of development likely to take place over the life of the plan, or the degree to which it promotes sustainable development.

Does the plan set out environmentally-friendly objectives?

What environmental problems are of particular relevance to the plan?

(2) Characteristics of the effects and of the Area likely to be affected:

For example; the magnitude, cumulative nature and reversibility of the effects, or the value and vulnerability of the area likely to be affected by implementation of the plan.

How many people are likely to be affected by the plan?

Are there areas of conservation sensitivity (such as natural habitats) within or adjacent to the area covered by the plan?

How intensive is the nature of the proposed land use?

4-5-2 Scoping Step:

Scoping step is very important step in the whole process, in which the criteria of assessment are drawn based on sitting objectives, different alternatives and collecting all base line concerning the proposed area.

The following table illustrates the major tasks in the scoping step and its content, and why we carry each part of this scoping process.

Scoping component	This should include	Why should this be included?
1- Set the context for proposed land use planning	A brief outline of the main objective and contents of the Proposed land use planning.	To allow the Consultation Authorities to understand the nature and content of the PPS.
	A summary of relationship with other relevant PPP. Which may affect or influence the PPP being assessed? This should include in the planning hierarchy.	To allow the consultation Authorities to understand the policy context in which the land use planning PPP site. Particularly where other PPP may have a significant influence on content and implementation. This is also a requirement of the Environmental Report.
2- Establish the relevant baseline information. (Environmental issues)	Brief summary of the environmental characteristics of those geographic areas that are likely to be significantly affected by the PPP. This should include identification of the relevant environmental data/data sets to be used and possible data gaps. The level of baseline detail intended to be used in the Environmental Report should be indicated.	Baseline information plays an important role in informing planners, decision makers and the public about the nature and scale of current problems and is an essential reference point against which to predict and monitor environmental change. To allow the key environmental characteristics of the area covered by the PPP and of the issues being experienced to be understood in order that the Consultation Authorities can effectively advise on the scope and level of detail of the assessment.
	Brief summary of environmental problems / issues experienced in the area which may affect or be affected by the PPP.	
	The Responsible Authority should include the proposed SEA objective, where are to be used, and indicators, of known.	
3-If available, identifying reasonable alternatives	If known at the point, a brief description of the type and range of reasonable alternatives that may be assessed should be provided.	To allow the consultation authorities early sight of the potential alternatives that may be assessed. The act requires consideration of "reasonable" alternatives. Not all alternatives can be viable, so consideration of what ones to reject and why would also be helpful at this stage.
	A suitable means to measure the effects of alternative approaches should be separately identified if the Responsible authority intends to use a different method to the assessment method used for the proposed land use planning.	
4-Intended approach to assessment	The Responsible Authority should include in the Scoping Report a brief summary of its proposed assessment technique and the level of detail of the assessment.	To allow the Consultation Authorities to get an idea of the intended approach to the assessment in order to inform their comments on the scope and level of detail. The techniques selected have to be able to cover the range of environmental issues scoped in to the assessment.
	The Responsible Authority should include the proposed SEA objectives, where are to be used, and indicators, of known.	

Table (8): Basic Parts in Scoping Process.

Adapted from (Glasson *et al.*, 1994, (SE), 2006)

4-5-2-1 Environmental Issues:

Environmental issues can be classified into three categories, according to local environmental condition (e.g. nature sight, cultural heritage, public health, noise, and transportation), nature resources (e.g. water, air, soil, animals, plants, mine, energy, and solid wastes), global environment (e.g. climate, and biodiversity). However, each country can classify environmental issues based on its compatibility to country nature and local issues. The following table gives an example for a list of environmental issues (Appendix5 – SEA work shop in Vienna).

Table (9) Example of Environmental Issues.

Based on SEA work shop in SEA training course, Vienna, 2008.

Environmental impact on	**Content**	**Existing sources**	**Additionally required data**
Climate and air hygiene	Emissions, Fresh air-supply, Emergence of cold temperature conditions	Car count from the road construction office, Land use and landscape plans	
Soil	Structure, Any limitations for use as a building site, Economical use of the property, Degree of sealing, Prior contamination	Geological map, Building site registry, Land use plan	Soil analysis
Groundwater and surface water	Measuring head difference (surface to groundwater) Impact on surface water, Regeneration of groundwater	Landscape plan	Green structures plan, Soil analysis
Wildlife and plants (biodiversity)	Impact on the habitat and biotope	Nature conservation act to protect species and their biotopes, Biotope maps	Green structures plan
Landscape	Damage to the natural scenery		Green structures plan
Human population - Noise - Recreational potential	Noise pollutiondue to neighboring roads, Pollution overlap, Impact on existing pathways and infrastructure	Land use and landscape plans	Environmental noise assessment
Heritage sites and material goods	Impact on heritage sites and material goods	List and description of monuments	

4-5-2-2 Development of Alternatives

Identifying and comparing alternatives is a widely recognized component of SEA. At the strategic level, the development of alternatives requires a range of information about prevailing environmental and socio-economic conditions.

A preferred alternative is commonly selected by comparing the relative impacts of each alternative. In many studies, the preferred alternative will be the most closely examined and may be the only alternative to be considered in detail. However, it is not uncommon for several alternatives to be investigated at the same level of detail before selecting from among them.

Under a best practice approach, the alternatives considered should include a 'Do nothing' option (Sadler and Dalal-Clayton, 2005) .

4-5-3 Assessment step

Assessment is the backbone of the SEA process. Typically, it includes two main stages: impact prediction and impact evaluation.

4-5-3-1 Impacts scale:

Impact scale varies according to its magnitude from positive to slight negative impacts according to the following table.

Table (10): The impact scale and the description of each level.

Adapted from (Glasson *et al.*, 1994, (SE), 2006)

Positive impacts	Positive impacts on the environmental issue likely expected.
No significant impacts	No relevancy concerning the respective environmental issue.
High negative impacts	High significant impacts on the environmental issue, no mitigation measures available.
Medium negative impacts	High significant impacts on the environmental issue, but effective mitigation measures available. Medium significant impacts on the environmental issue, no mitigation measures available.
Slight negative impacts	Medium significant impacts on the environmental issue. But effective mitigation measures available. Low impact on the environmental issue.

4-5-3-2 Methods and Tools Used in SEA

SEA methods can be classified into two major categories;

Quantitative methods: Cost-benefit analysis (CBA), Multi-criteria analysis (MCA), Computer modelling and Geographic Information Systems (GIS).

Qualitative methods: Checklists, Matrices, Workshops and Surveys.

4-5-3-3 Categorized SEA methods according to SEA process

The following table describes methods that used in SEA according to the step of SEA, as tools that used in scoping are for example different than tools that used in impact analysis step

Table (11): SEA methods in each SEA phase.
Adapted from (Glasson *et al.*, 1994, (SE), 2006)

Phase/ Category	Methods
Screening scoping, definition of objectives	Checklists.
	Case comparison.
	Literature survey.
	Model mapping.
	Consultation of experts.
	Formal procedures.
Impact analysis	Impact prediction. - As in the screening. - Scenario development. - Computer modeling. - Geographic info. Systems. - Project EIA as case study.

4-5-4 Environmental Report

The Environmental Report is a key output of the SEA process, and should describe the whole process and its results (Appendix 4).

4-6 Review of Integration SEA in land use planning in some Europe countries:

As the EU directive put the guideline of the SEA to all EU members, it is the task of each member state to put her own guideline compatible to local conditions.

For example in Germany and France screening step is excluded and the SEA process starts from scoping step, this may cost a lot of money as all spatial planning must subject to SEA.

Also the concept of tiering is obvious here, as SEA is applied in a tiering system start from federal plans to land use plans (appendix 4).

In all this levels it is obligatory to carry out SEA, in the other hand in other European countries like Austria the concept of tiering is different and even if there is a hierarchy in spatial planning is the same but the SEA is carried in one higher level and the other is bylaws and then another SEA in the lower level and then bylaws in the lower scale.

Table (12): Tiering between EIA & SEA in land –use planning, waste management and transport planning in Germany (Siedentop, 2010) .

Level of government	Land-use planning	Waste management	Transport planning
Federal	(not existing)	(not existing)	National transportation plan
State/regional	State development plan Regional development plan	State waste management plan	Five-year road building program
Local	Land use plan (masterplan)	Construction of a waste disposal facility	Construction of motorway section
	Regulatory plan		

EIA required *SEA required*

4-7Conclusion of Chapter Four:

Land use planning is one of the development fields that subject to SEA according to the EU SEA directive. SEA is applied in all levels of Land use planning from regional to local land use planning.

Land use planning varies from country to another based on its institutional frame work and legislations. for example; in UK land use planning is carried in five levels starting from national level and cascade down till the local level planning.

The land use planning process contains five main steps; first preparation and organization of work, secondly data collection, third preparation of the draft plan, fourth is the compilation of plan document and finally the acceptance of the draft plan.

SEA is a parallel process to the land use planning process, as it happens in the same time of carrying out the proposed plan. Its first step start with the first step of the land use planning and all steps walk parallel to each others.

After submitted the SEA Report for review, the review authority will have the authority of acceptance, rejection, modification in the proposed plan. Accordingly the Planning Authority (Proponent Authority) will act based on this report whether; proposes new draft plan, or modifies the proposed plan , or implements the plan and develops the monitoring plan for it.

In the SEA process a lot of methods of assessment are used to facilitate the whole process. These methods are varies from checklists, matrices, Case comparison etc.

Environmental issues are major compounds of SEA process and they also vary from country to another, but the EU directive propose some major issues like; biodiversity, air, climate, soil, water, cultural heritage, and material assets.

5-Chapter Five: SEA in International Experience

Introduction

After studying SEA process in the previous chapters, this chapter will study some foreign examples in the field of SEA in land use planning to examine the extent of implementation of SEA process and guideline experiences.
This help in the creation of the Egyptian model which will be created as a product of the literature review, case studies experience and studying the Egyptian condition to create a model compatible to the Egyptian condition.

5-1 Criteria of Selection of Case Studies:

In the selection of the international cases the following levels were applied:

- The study covers any level of PPP in land use planning, that organizes through some of the bodies or organizations with administrative responsibility; "the government or associations" and the selected case study covers a broad geographic scale, or specific areas define by the planning authority (regional or national).
- The case follows a formal SEA process which is built on scientific method, published and known; like EU SEA Directive or other relevant systems.
- The study is a complete SEA study and all SEA steps are applied even applied in different hierarchy or contents.
- The study concludes with a clear set of conclusions and recommendations are closely linked to what has been addressed in the study.
- The study is a recent study.

According to the previous criteria, four case studies were selected as follows;

1- Wales special plan update.
2- Duplin Docklands area Draft master plan.
3- Fiji's tourism development plan.
4- Amaterra resort development.

5-2Case Studies Analysis

In the analysis of the selected case studies, the researcher used structured steps for studying these cases to facilitate comparison between them.
The points that will be discussed in each example are the following:

1- Brief on the Plan under review.
2- Assessment Team & timing.
3- SEA Guideline.
4- SEA Process.
5- Finding of the SEA Report.
6- Evaluation of SEA process.

5-2-1 Wales Spatial Plan SEA Update:

Wales is a country that is part of the United Kingdom, bordered by England from east, and the Atlantic Ocean and Irish Sea from west (figure 20). Wales has a population estimated at three millions (The National Assembly for Wales, 2008).

Figure (20): Location of Wales.
Source: (The National Assembly for Wales, 2008).

5-2-1-1 Plan under Review

The Wales Spatial Plan Update (WSPU) builds on the "Wales Spatial Plan – People, Places, and Futures" which was adopted by the National Assembly for Wales in November 2004. The Update brings the Wales Spatial Plan into line with One Wales, and gives status to the Area work which has developed over the last two years. The WSPU includes national and area frameworks levels.
The themes of National level are:

- Building Sustainable Communities
- Promoting a Sustainable Economy.
- Valuing our Environment.
- Achieving Sustainable Accessibility.
- Respecting Distinctiveness.

The spatial vision of the Wales Spatial Plan in the area level divides Wales into six areas which due to their particular socio-economic characteristics

have been recognized as requiring their own distinct response to delivering the National Vision. These areas have "fuzzy" boundaries, some merging with neighboring areas of England. The six areas are:

- North West Wales.
- South East Wales: The Capital Network.
- North East Wales: Border and Coast.
- Swansea Bay: Waterfront and Western Valleys.
- Central Wales.
- Pembrokeshire: The Haven, as shown in figure (20).

5-2-1-2 Assessment Team

The SEA of the WSPU was coordinated by the Centre for Sustainability (C4S), with other consultants and Spatial Plan Area groups undertaking SEA activities (center four sustainability, 2009).

5-2-1-3 SEA Guideline:

United Kingdom and the Wales country follow the EU union, and consequently they follow any EU laws and directives, so the EU directive on SEA is applicable here. And according to the SEA directive each country must make an SEA study for all development projects, and have its own SEA guidelines.

The assessment was carried based on the Practical Guide to the SEA Directive of Wales.

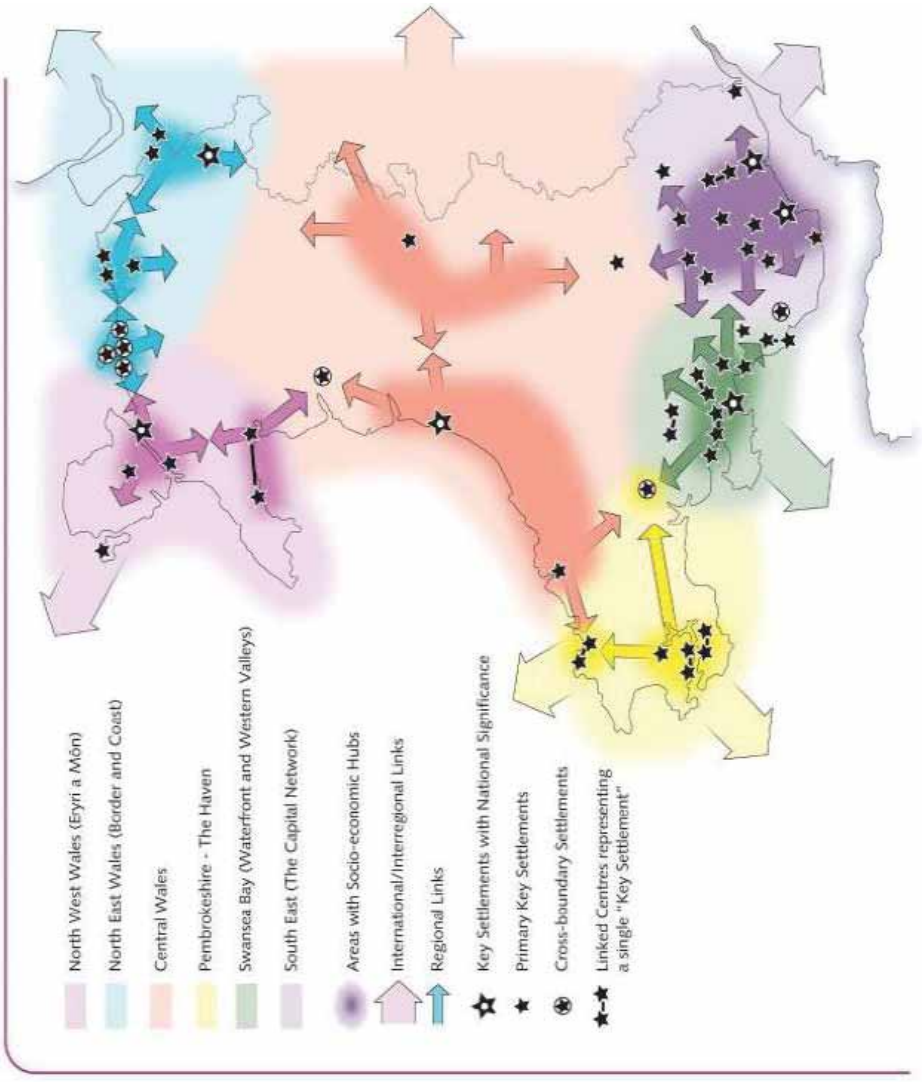


Figure (21): The national level concept of the WSPU.
(The National Assembly for Wales, 2008)

5-2-1-4 SEA Process:

SEA process was carried in two levels, national level and regional (area strategies) level. And accordingly the assessment step was also carried in the two levels.

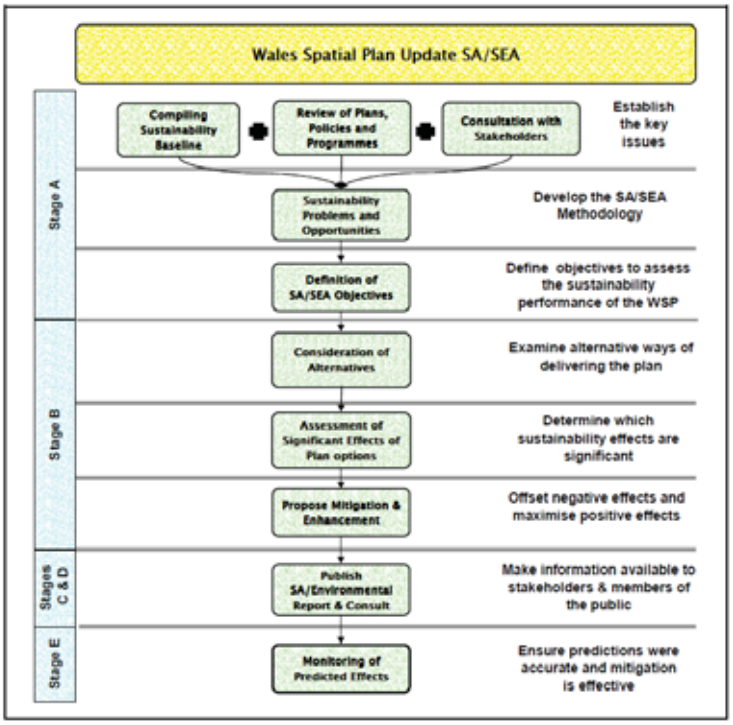


Figure (22): Components of SEA process.
(center four sustainability, 2009)

1- **Stage** A:

After documenting the environmental characteristics of the area and identifying the policy context of the WSPU, from the out puts of this step two major steps are identified; key environmental issues and opportunities that exist in Wales were identified, on which the assessment should focus. A series of SEA Objectives were developed to concentrate the subsequent assessment process on these key issues.

Consultation is obligatory starting from stage A with council, environment agency and they must confirm on the acceptance of the founding of the initial stage.

Key Environmental Issues:

The SEA Regulations require that the following topics are investigated: Air; Biodiversity; Climatic factors; Cultural heritage; Human health; Landscape;

Material assets; Population; Soil; Water; and the interrelationship between these factors. Beside that SEA has widened the scope of the assessment to include the other topics of; Sustainable Development; Education; Economy; and Social Fabric.

SEA Objectives:

The set of objectives identified for this SEA include broad objectives for each topic that are supported by a series of more detailed sub-objectives which focus on specific issues. For example a broad objective to 'Value, conserve and enhance Wales' landscape' is supported by a sub-objective relating to minimizing loss of tranquility and reducing light pollution. SEA work at the Area level has also generated some sub-objectives related to the specific issues faced in that Area.

2- Stage B & C (Alternatives, assessment & mitigation):

Alternatives are created in this step beside results of all assessment activities that have been undertaken by the lead consultants (C4S) and the other SEA consultants who have contributed to the process at the Area level.

Alternatives:

For each Spatial Plan Area Framework; a range of alternatives have been considered. The alternatives were each assessed to see how they would perform against the SEA objectives – i.e. would the alternative help to achieve the objectives or would it have the opposite effect.

The assessments of the alternatives were then used to inform the plan makers as to the likely environmental/sustainability effects of each alternative to help them decide which of these should be taken forward as the 'Preferred Option'.

Mitigation:

Due to the strategic and procedural nature of the WSP there was considerable **uncertainty** in the assessment of effects, as to whether significant effects are likely to result. As a result it will be necessary to develop a monitoring framework which can track these uncertainties to determine whether significant effects will arise. This is particularly the case for those effects which are more likely to be negative.

3- Stage D (Consultation)

Consultation on the Environmental Report.

4- Stage E (Monitoring)

Once the Update is implemented, its effects on the environment are to be monitored to allow action to be taken to reduce and/or offset any significant effects, where possible SEA monitoring will make use of existing arrangements. A monitoring framework will be developed prior to the adoption of the WSP Update. This monitoring framework will aim to ensure that a coordinated approach is taken to monitoring the wide range of effects at the different geographical scales of the WSP.

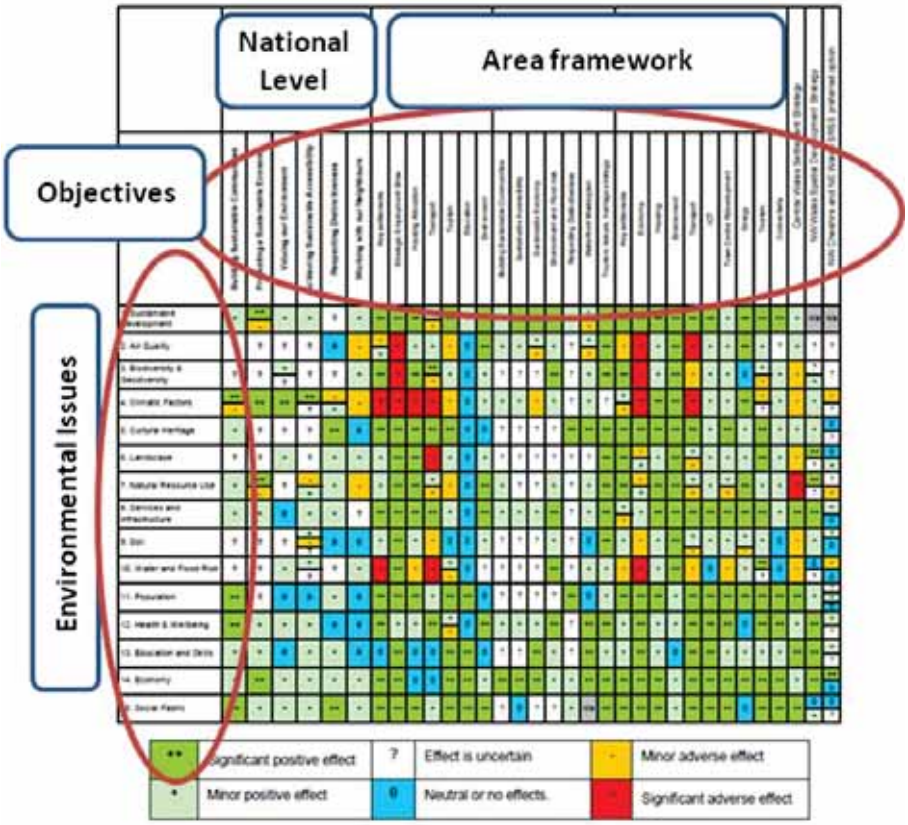


Figure (23): Concluded Assessment of National and Area Level Assessment.
(center four sustainability, 2009)

5-2-1-5 Finding of the SEA Report:

National Level:

No **significant adverse effects** were identified at the national level.

Area Frameworks

The SEA was undertaken at the Area level also identified a variety of significant effects and further uncertainties. The majority of the significant effects predicted were positive however some significant negative effects were identified.

5-2-2 Amaterra Resort Development (December 2005):

Amaterra resort is located in Jamaica which is an island nation of the Greater Antilles 11,100 km2. It is situated in the Caribbean Sea, about 145 kilometers south of Cuba, and 190 kilometers west of Hispaniola, the island harboring the nation-states Haiti and the Dominican Republic (figure 24).

Amaterra Jamaica Limited proposes to develop 850 acres of beachfront land in the Duncans area of Trelawny as a resort community, likely to be called named "Ocean Pointe".

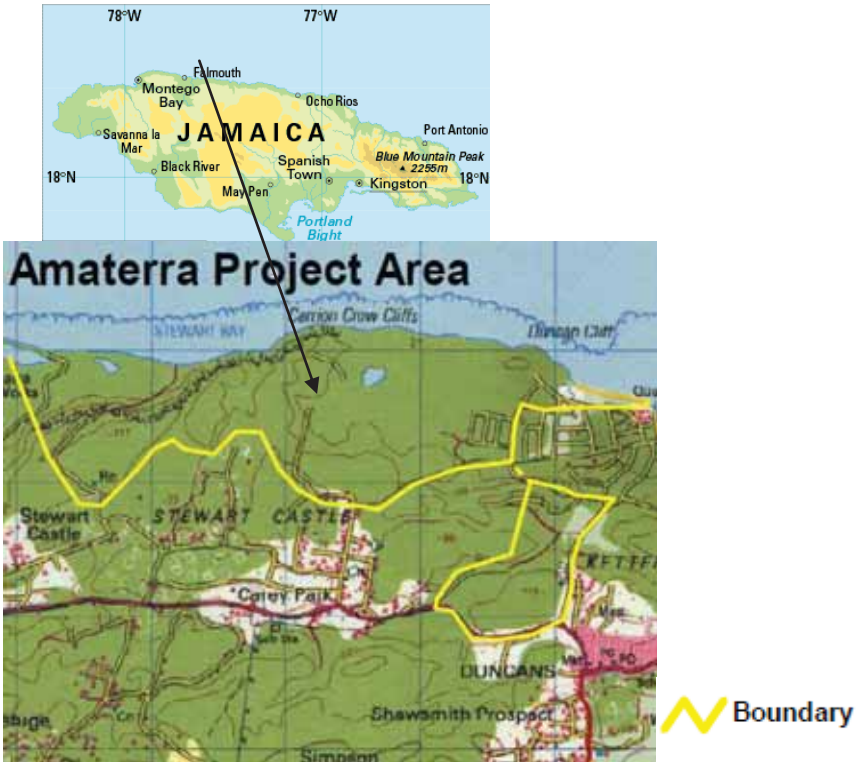


Figure (24): Amattera resort location in Jamaica.
Source: ((TEMN), 2005).

5-2-2-1 Plan under Review

The plan under review is Amattera resort (Ocean Pointe Resort), This resort will contain number of villas, condominiums, and hotels; when this resort is completed it will contain approximately 2,000 hotel rooms (Five hotels planned), 2,200 villa lots, and an eighteen hole golf course. There will also be a "Town Centre Village" with provisions for a business park with commercial units and public amenities including a fire station, police station, health and other services. The resort community will also include a water park, an equestrian centre a conference centre and amphitheatre ((TEMN), 2005). (Figure 25)

A series of lined ponds and lakes will collect all the effluent from the sewage plants, as well as the storm water from the drainage system. These lakes and ponds will be incorporated in the golf course design and will provide a source of water for the fairways and greens thus reducing fertilizer requirement for the golf course. The plan phases are discussed in appendix 6.

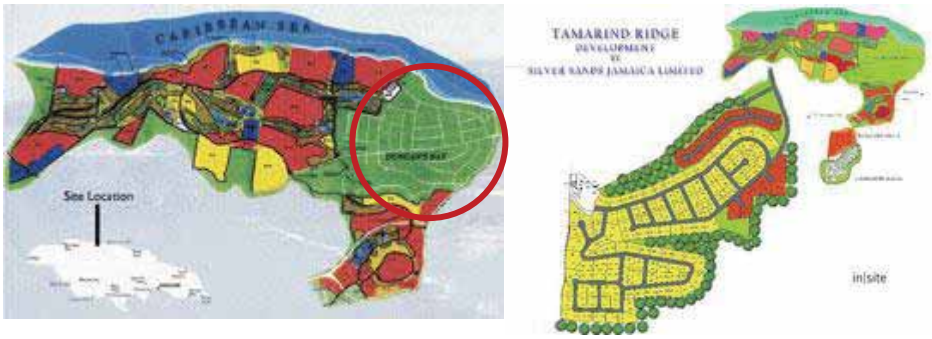


Figure (25): Master plan of Amateera resort, and detailed master plan for villas area.

Source: ((TEMN), 2005).

5-2-2-2 Assessment Team

SEA was carried out by the Technological and Environmental Management Network (TEMN) team and employed skills in biological and environmental sciences, environmental chemistry, hydrogeology, socioeconomics and project management. A comprehensive evaluation of the study area was done. This final report details the activities executed pursuant to fulfilling the abovementioned Terms of Reference, analysis the data and making conclusions and recommendations. This document provides an Impact

Statement, Impact Matrix, mitigation strategies to address negative impacts and a program for monitoring the development.

5-2-2-3 SEA Guideline:

The property is located between the Duncans-Coral Springs main road south and west of the Silver Sands property. SEA is a requirement of the NEPA in exercising their powers under the NRCA Act 1991 2-1-1 Plan under Review.

5-2-2-4 SEA Process:

All components of this SEA required that the following tasks be performed as shown in figure (26):

1- Scope of work (SOW). Methods used for this step are;
- Review of Literature.
- Site Visits.
- Data Collection and Sample Analysis.

2- Stakeholder and public consultation.
3- Environmental assessment of proposed plan.
4- Assessment to alternatives of the prlan.
5- Recommended mitigation and monitoring.

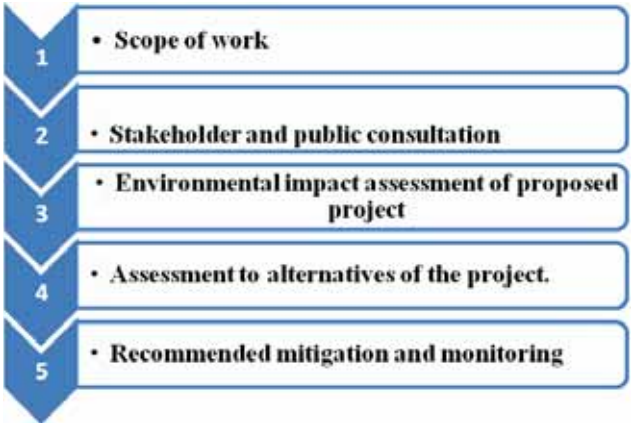


Figure (26): Steps of SEA process in Amaterra resort. Adapted from((TEMN), 2005).

5-2-2-4-a Scope of Work (SOW):

In this phase the environmental issues are created based on the following criteria;

- Environmental chemistry.
  1- Water quality.
  2- Air quality.
  3- Noise.

- Ecology.
- Socioeconomic.
- Hydrology
- Geology.
- Soil.

5-2-2-4-b Stakeholder and Public Consultation:

Discussions were held with an identified list of stakeholders. These included: the Member of Parliament for the area, the Custos of Trelawny, the president of the Chamber of Commerce, members of the management of the Parish Council, the NEPA representative for the area, a representative of the Beach Control Authority, and representatives of the Fisherman's Cooperative in the area. The Stakeholders consultations also covered the socio-economic survey of the residents (a purposive sample of 40 residents) of the adjoining communities.

5-3-2-4-c Environmental Impact Assessment:

1- **Environmental chemistry Impact:**

Present Impacts:

From baseline data collected; field observations, coastal water quality as well as air quality in the vicinity of the proposed project site were good.

Future Impacts from plan under review:

The proposed development will involve activities that could lead to changes in coastal water quality as well as air quality.

Changes to local air quality issues could be associated mainly with the movement of heavy duty equipment in the area and earth moving activities. As with all land conversion operations there could be significant generation of fugitive dust/particulate matter. The generation of noxious gases from traffic is expected to be minimal especially in the given location.

Changes to coastal water quality could be associated with changes in the runoff characteristics of the area and the use of fertilizers to maintain landscaped areas. Changes could also be due to the possible discharge of treated/untreated sewage. Increased fresh water runoff as well as increased nutrient input could lead to disturbing of the ecological balance and deterioration in conditions necessary for coral

reef growth. This could lead to the proliferation of nuisance species of marine organisms at the expense of coral growth.

Factor	Indicator	Type	Extent	Magnitude	Mitigative Measures	Comments	Weight
Ecological - during construction	Loss of terrestrial habitat for resident, migratory and endemic bird species as well as endemic species of plants and insects which presently serve as food for the birds	Negative, Direct	Long Term	Significant	Relocation of, or building around larger trees Replanting useful or fruit bearing vegetation as buffer zone around area to replenish lost nests and increase local biodiversity Access roads should be paved and routed as far away from existing tree lines as possible	Habitat being lost would be important ecologically since existing vegetation is relatively sparse on the existing limestone substrate. Carry out additional bird / habitat studies to better identify specific areas favoured by resident, migratory or nesting birds.	- 3
	Departure of birds that would normally feed or nest in area due to increased noise, dust & fuel emission levels from human activity, transportation	Negative, Direct	Short Term	Significant	Temporary berms used to contain any rainwater forming during this period	Proper vehicle maintenance would also minimize dust & fuel emissions problem	- 2
	Loss of vegetation from construction activities facilitating soil erosion during heavy rain on unprotected, excavated or compacted areas	Negative, Indirect	Short Term	Insignificant	Rapid replanting of defoliated areas as appropriate Increase the size of green / natural forest areas with appropriate siting so as to be as close as possible to existing areas favoured by current avifauna.	Runoff to be directed to holding ponds for later use as irrigation water	- 1
- post construction	Loss of vegetation alters natural drainage patterns facilitating unwanted flora & fauna	Negative, Direct	Short Term	Very Significant	Careful monitoring and maintenance of drains especially during heavy rain events		- 3
	Contamination of ground surface water bodies or local flora & fauna by spillage of waste petrochemicals or hazardous wastes	Negative, Direct	Long Term	Significant	Record existing drainage pattern prior to start of construction. Use of temporary berms to prevent excess runoff entering or leaving immediate vicinity of ground surface water bodies	Development of emergency plan to contain or remove excess water during heavy rain events – as appropriate Possibility of impact to local hydrologic regime	- 4

Figure (27): Examples of impact matrix of assessment of key environmental issues. Source: ((TEMN), 2005).

4-2-2-4-d Assessment of Alternatives:

Alternative 1: Without Project Scenario:

The without project scenario from a socioeconomic perspective would mean that the use of the site continues in a marginal manner with substantial underutilization of resources. This alternative was the least favorable.

Alternative 2: With Project Scenario:

The with project scenario contributes toward a national goal to expand the opportunities for Tourism Development, add to housing stock, provide for a diversified recreational product with heritage components, and a foreign exchange earner. The Development Order also identified and documented a large number of historic sites, historic buildings and national monuments in the general area including the site for the Amaterra development project.

The project is located about midway between the two major tourist/resort centers (Montego Bay and Ocho Rios) on the north coast, the Amaterra property can be said to lie in the heart of the tourism belt.

The discussion of alternative options for the development of this property is based on the Economic and Social Survey of Jamaica (ESSJ), 2004. This

document identifies the major productive sectors in the Jamaican economy as:

• Agriculture.
• Mining and Quarrying.
• Manufacturing.
• Construction and Installation.
• Miscellaneous Services under which the tourism sub-sector falls.

The "Construction and Installation" and "Miscellaneous Services" sectors are both involved in the "With Project" Alternative; hence subsequent discussion will be based on the alternatives of Agriculture, Mining, Quarrying and Manufacturing.

Alternative 3: Agriculture:

The size of the Amaterra Development property (some 870 acres) would suggest agriculture as a logical option for the development of this property. However, the land capability, the soils and the climate of the area are not suited to the development of viable agricultural enterprises. The area suffers from low rainfall while its physical characteristics in terms of soil types and land capability classifications are serious constraints to agricultural production. Agriculture is therefore not considered to be a viable development option for this property.

Alternative 4: Mining and Quarrying:

The land-use information show that the site consists mainly of limestone shrub forest with limited opportunity for mining and quarrying. In addition, the areas zoned for Bauxite and Conservation (BC) under the parish of Trelawny Development Order, 1980, falls outside the site for development under the Amaterra Development Project. For these main reasons, Mining and Quarrying are not options that could be considered for this site.

Alternative 5: Manufacturing

Manufacturing is not a strong competitor for the Amaterra Development site for the following main reasons:

- Small and medium scales manufacturing which are typical of the Jamaican economy are intensive activities requiring much less land that which is being proposed for the Amaterra development.

- The area is not readily accessible to cheap sources of raw material and labour which are the main prerequisites for viable and competitive manufacturing businesses.

From the foregoing discussion, it can be seen that alternatives to the proposed Amaterra Development are constrained not only by the Trelawny Development Order but by the geographic location, the climate (especially rainfall), land capability and soil type.

5-2-2-4-E Recommended Mitigation and Monitoring:

The recommended mitigation measures which were proposed for previous environmental issues; environmental chemistry, ecology, socioeconomic and hydrology. The main mitigation costs would be in the area of mitigating of air quality, water quality and ecological impacts ((TEMN), 2005).

5-2-2-5 Finding of the Report:

The study finds the second alternative (with project scenario) is the most suitable alternative, with some recommended mitigation for any future impacts and monitoring plan.

5-2-3 Duplin Docklands Area Draft Master Plan (2003):

Dublin the city is the largest city and capital of Ireland. It is located near the midpoint of Ireland's east coast, at the mouth of the River Liffey and at the centre of the Dublin Region. Dublin is a historical and contemporary cultural centre for the island of Ireland as well as a modern centre of education, arts, administrative function, economy and industry.

Dublin Docklands is part of the city of Dublin, Ireland, on both sides of the River Liffey, roughly from Talbot Memorial Bridge eastwards to (Dublin). It is currently undergoing a large amount of development.

Figure (28) location of Duplin city. Source: ((DDDA), 2003)

5-2-3-1 Plan under Review

The Dublin Docklands Area Master Plan Review, prepared by the Authority following public consultation outlines a strategy for "The sustainable social and economic regeneration of the Area, with improvements to the physical area being a vital ingredient".

The Review represents an updating of the 1997 Master Plan for the Area, which is generally recognized as a robust, integrated and comprehensive document.

The Review seeks to integrate the social, economic and physical development of the area, consistent with the objectives of the Dublin Docklands Development, the duty of the Authority to secure:

(i) The social and economic regeneration of the Dublin Docklands Area, on a sustainable basis.

(ii) Improvements in the physical environment of the Dublin Docklands Area.

(iii) The continued development in the Custom House Docks Area of services of, for and in support of, or ancillary to, the financial sector of the economy ((DDDA), 2003).

Figure (29): Master plan of Duplin dockland area
Source: ((DDDA), 2003).

5-2-3-2 SEA Guideline:

The methodology devised to carry out the SEA of the Master Plan Review reflected the requirements of the SEA Directive while drawing on UK experience of environmental appraisal of Development Plans. The recently published UK Draft Guidance on SEA formed a useful input in the devising of the methodology employed.

5-2-3-3 SEA Process:

The main steps taken in the SEA process are the following;

1- Scoping.
2- Baseline study.
3- Consideration of alternatives.
4- Environmental assessment of the master plan review.

a- Scoping:

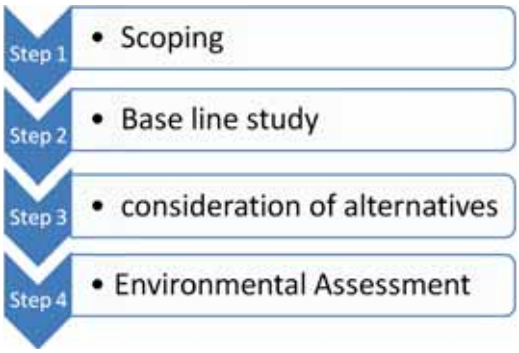


Figure (30): Steps of SEA process in Duplin dockland area. Source: ((DDDA), 2003).

Scoping for the SEA process involved three stages.

(i) Relevant plans and guidance documents at national, regional and local levels were identified and their relationship with the Master Plan Review

identified and described. The Master Plan Review was assessed for compatibility with the plans/guidance.
(ii) Various organizations/government departments/statutory agencies were consulted in order to determine their opinion on the issues which the SEA should cover. Details were also sought on any information held by the relevant organization which would be of use in the assessment of such issues.
(iii) As part of the Master Plan Review, Mercator Marketing Research, in association with Kelleher Associates, were engaged by the Authority to conduct a consultation exercise with residents of the Docklands. The outcome of the research conducted by Mercator Marketing Research/Kelleher Associates formed an important input into the drawing up of Sustainability Criteria which formed the basis of the SEA assessment process.

b- Base Line Study:

The characteristics of the existing environment are described under the following headings:

- Biodiversity/Flora and Fauna.
- Population.
- Soil.
- Water.
- Air.
- Climate.
- Material Assets/Cultural Heritage.

1- <u>Biodiversity / Flora and Fauna:</u>

The Docklands Area possesses areas of diverse characters including existing built up areas, former industrial/port lands, water bodies, formally laid out open space areas and wildlife areas. Much of the Docklands Area is not of significance in terms of biodiversity of flora and fauna. In contrast the adjoining South Dublin Bay is one of significance in this regard.

2- <u>Population:</u>

The Docklands Area has traditionally been made up of five residential communities as shown in figure (31), centered loosely in villages within the area, three on the north side and two on the south side. These are East Wall, North Strand, Sheriff Street/North Wall, City Quay/ Westland Row and Ring send/Irishtown.

Figure (31): The five villages in Duplin docklands area. Source: ((DDDA), 2003).

3- Soil:

Much of the Docklands Area is made up of reclaimed land. The geology underneath the layers of fill comprise alluvial deposits including interbedded silts, sands and gravels underlain with glacially deposited boulder clay with sands and gravels over a limestone bedrock.

4- Water:

Water bodies play an important role in defining the unique character of the Docklands Area, the major water bodies in the project area;

- River Liffey.
- River Dodder.
- Grand Canal basin / Grand Canal.

5- Air Quality:

Dublin City Council maintains one fixed monitoring station for pollutants (smoke & sulphur dioxide) in the Docklands Area, which is located at Ringsend. The air quality standards currently are based on EC Directive 80/779/EEC.

6- Climatic Factor:

The climate and micro-climate of the Area is characteristic of a site adjacent to a river. The effect of the coastal breeze (on-shore during the day, off-shore at night time) is particularly significant at the mouth of the River Liffey, resulting in a low level easterly wind during the day, especially during the summer months. In addition, light on-shore winds along the Liffey Valley may also develop during the daytime on relatively calm winter days.

7- Noise:

No independent data on noise levels in the Docklands Area is available at national or local level.

8- Material Assets/ Cultural Heritage:

The waterside location of the Docklands Area, in close proximity to the city centre provides an area of unique character and opportunity.
The material assets/cultural heritage of the Area are outlined under the categories detailed below:

- Archaeology.
- Protected Structures/Conservation Areas.
- Water bodies.
- Open spaces.
- Views.

c- Consideration of Alternatives:

Two alternative options were considered to be available for assessment as part of the SEA process:

• The 'do-nothing' option.
• The option of not reviewing the existing Master Plan 1997.

Under the 'do nothing' option, the Area would maintain its current physical and socio-economic characteristics. Development would be market dependant and would occur at a slower pace and in a less co-ordinated manner. Investment by the Authority would be absent.
The second alternative is not to review the Master Plan 1997.
The Master Plan catered for the redevelopment/regeneration for the Area for a 15 year timescale to 2012. The Master Plan has a wide level of acceptance and recognition, and not conducting a review of the Plan would be a viable alternative. However, whereas the broad thrust of the Master Plan is as valid today as in 1997, background circumstances have in some instances changed. It is considered necessary to reflect these changing circumstances, which can result in a shift in policy focus or emphasis. Thus the alternative of not reviewing the Master Plan 1997 is likewise not considered an appropriate option ((DOELG), 2003).

d- EA of the Master Plan Review

The first step in the assessment is to define sustainability criteria, for each environmental issue the report puts a set of sustainability objective as shown in the next table.

Environmental issue		Sustainability Objective
Bio diversity/Flora and Fauna	B1	Safeguard designated areas/ areas of nature conservation importance while increasing potential for wildlife/flora and fauna, where appropriate.
Population	P1	Promote the creation of a safe, healthy and high quality environment in which to live and work.
	P2	Promote the strengthening and diversification of the local economy.
	P3	Promote local employment opportunities.
	P4	Promote access to education and training.
	P5	Promote the meeting of local housing needs.
	P6	Involve local communities in the redevelopment/renewal of the Area.
	P7	Promote community cohesion.
Soil	S1	Promote decontamination to international standards of contaminated soil.
Water	W 1	Ensure adequate good quality water supply.
	W 2	Ensure adequate good quality water supply.
AIR/ Climate/noise	C1	Maintain/promote improvement of air quality.
	C2	Promote minimization of greenhouse gas emissions to the atmosphere.
	C3	Reduce trip generation, trip length and the need for motorized transport.
	C4	Promote public transport and attraction of walking/cycling.
	C5	promote sustainable energy use/generation
	C6	Minimize noise pollution.
Cultural heritage / material assets	H 1	Safeguard Protected Structures and sites of archaeological value and maintain environmental quality of Conservation Areas.
	H 2	Enhance townscape and general landscape/environmental quality.
	H 3	Ensure adequate provision of open space/maintain and improve access to open space areas.

Table (13): Sustainability criteria for each environmental issue.

Source: ((DDDA), 2003).

The assessment involved testing for the following:

(i) The internal compatibility of the Strategic Objectives of the Master Plan Review was tested against each other, in order to ensure that no tensions existed between the objectives that could give rise to conflict.
(ii) The Sustainability Criteria which had been devised were also tested for compatibility.
(iii) The Strategic Objectives of the Master Plan Review were tested for compatibility against the Sustainability Criteria.

(iv)Selected policies of the Master Plan Review were tested against the Sustainability Criteria.

STRATEGIC OBJECTIVES

	Sustainability Criteria																			
	B1	P1	P2	P3	P4	P5	P6	P7	S1	W1	W2	C1	C2	C3	C4	C5	C6	H1	H2	H3
A. The development of a wide range of sustainable employment opportunities in the Area.	0	✓	✓	✓	✓	0	✓	✓	✓	✓	0	✓	X	✓	✓	✓	✓	0	✓	0
B. The development of increased opportunities for local employment in existing and new enterprises in the Area.	0	✓	✓	✓	✓	0	✓	✓	✓	✓	0	✓	X	✓	✓	?	?	0	0	0
C. The development of an environment which will attract increased investment and employment into the Area.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
D. The continued development and expansion of the International Financial Services Centre (IFSC) in Docklands.	0	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓	X	✓	✓	?	✓	0	✓	✓
E. The development of sustainable neighbourhoods with sufficient 'critical mass' which will support services such as quality public transport, improved retail facilities and other new amenities.	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	✓	✓
F. The provision of a wide range of new housing in the Area in order to achieve a good social mix.	0	✓	✓	0	0	✓	✓	✓	✓	0	0	0	0	✓	0	0	0	0	0	0
G. The integration of new residential communities with existing local communities in the Area.	0	✓	✓	✓	✓	✓	✓	✓	0	0	0	0	0	0	✓	0	0	0	0	✓
H. The development of sustainable transportation for the Area, the promotion of public transport, walking and cycling (as alternatives to the private car) and improved circulation within the Area.	0	✓	✓	✓	0	0	✓	✓	0	0	0	✓	✓	✓	✓	✓	✓	0	0	0
I. The improvement of the infrastructure and amenities in the Area concurrently with or in advance of residential, commercial and industrial development.	✓	✓	✓	✓	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓
J. The development of the amenity, tourism and employment potential of the water bodies in the Area.	✓	✓	✓	✓	0	0	✓	0	0	0	✓	✓	0	0	0	0	0	✓	✓	✓
K. The identification and development of anchor activities and landmark developments which would assist in the regeneration of the Area over the period of the Master Plan.	0	✓	✓	✓	0	0	✓	✓	0	0	✓	✓	0	0	0	0	0	0	✓	✓
L. The promotion of increased access to education and training for all residents in the Area.	0	✓	✓	✓	✓	0	✓	✓	0	0	0	0	0	0	0	0	0	0	0	0
M. The realisation of the potential of Docklands youth.	0	✓	✓	✓	✓	0	✓	✓	0	0	0	0	0	0	0	0	0	0	0	✓
N. The renewal of Dublin city as a whole by linking the city centre to Dublin Bay and, in turn, connecting the Docklands Area to the life of the city.	0	✓	✓	✓	0	0	0	✓	0	0	✓	0	0	✓	✓	0	0	0	0	0

KEY 0 No Significant Effect ? Uncertainty of prediction or knowledge
✓ Beneficial Effect/Likely Beneficial Effect X Some deterioration in environmental quality

Figure (32): Assessment of strategic objectives against the sustinability criteria for the proposed plan. Source: ((DDDA), 2003).

e- Mitigation

The report mentioned twelve steps of mitigation measures to mitigate proposed impact from the master plan.

f- Monitoring

According to SEA directive it requires to monitor the significant impacts of the implementation of plans and programs in order to identify at an early stage unforeseen adverse effects, and to able to undertake appropriate remedial action.

5-2-3-4 Finding of the SEA Report:

It is clear from the assessment of the Strategic Objectives and Policies of the Master Plan Review that the Review has a strong sustainable thrust and focus. Almost all objectives and policies were found to be either compatible or not in conflict with the Sustainability Criteria devised for the assessment exercise. No conflicting objectives or policies were evident. The exercise confirms that the Master Plan Review is a robust, focused and clearly thought out document that will continue to provide a positive strategic framework for the development of the Docklands Area.

5-2-4 Fiji's Tourism Development Plan (TDP):

The 300 Fiji islands are in the South Pacific approximately 1500km from New Zealand. They are ideal tropical getaways for Australian and New Zealanders as it is both close and affordable.

Fiji covers a total area of some 194,000 square kilometers of which around 10% is land.

Figure (33): Location of Fiji islands in the world map.

Fiji consists of 322 islands (of which 106 are inhabited) and 522 smaller islets. The two most important islands are Viti Levu and Vanua Levu. The islands are mountainous, with peaks up to 1,300 metres, and covered with thick tropical forests. Viti Levu hosts the capital city of Suva, and is home to nearly three quarters of the population. Other important towns include Nadi (the location of the international airport), and the second city -Lautoka (the location of a large sugar mill and a seaport).

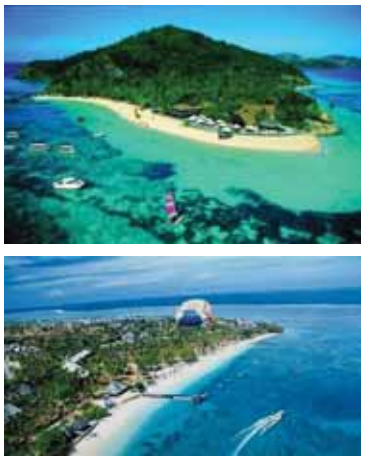


Figure (34): Fiji's islands.

5-2-4-1 Plan under Review

The plan under review is Fiji's Tourism Development Plan. This calls 'step change' growth in tourism. The strategy argues that Fiji must move away from 'bumbling along' much as before with a modest increase in the accommodation stock to a large-scale growth in its tourist industry. This growth is viewed as critical to compensate for losses in the ailing sugar industry. The plan suggests a number of policies to assist Fiji in achieving this change.

The strategy poses a choice between **'bumbling along** . . . much as before, with some new development leading to a modest increase in accommodation stock, while the remaining product becomes steadily more tired and less competitive internationally . . . and a modest growth in ecotourism, community and adventure based holidays' and a **'step change'** which would achieve a total of 500,000 to 600,000 visitors by 2005, an additional F$325 million in foreign exchange (implying a total of F$775M) up to 2,500 new rooms, and up to 22,000 new jobs for Fiji.

Step Change Strategy:

The strategy argues strongly that the 'step change' is needed to achieve the critical mass to:

- Pay for the level of renewal, upgrading and reconfiguring of provision needed to remain internationally competitive.
- Provide the extra foreign exchange necessary to offset sugar industry contraction.
- Anchor the existing air services more securely, and if possible support a wider range, thus reducing vulnerability to problems with any one of them.

Main Policies of the TDP

To implement this, the strategy prescribes the following main policies:

- The numbers are the section numbers in the strategy where each main policy starts; these are used to refer to these policies later in this appraisal:
- An overall planning policy differentiating three classes of areas:
    - 'Type A' areas - in fact only one area: the south and west coast of Viti Levu (from Lautoka to Suva) and part of the Mamanucas – where 'physical planning policy should provide for the improvement and expansion of the existing main tourism areas

including the provision of appropriate infrastructure, encouraging the range of activities and attractions in the terrestrial hinterland'.

- 'Type B' areas - the north coast of Viti Levu (from Ba to Korovou) with Ovalau, and the south of Vanua Levu with Taveuni, for selective development 'conserving the character and environment'.
- 'Type C' - everywhere else, that is, including all the more remote islands, most of Vanua Levu and inland Viti Levu - where 'only small developments of quality' should be allowed, and 'development control procedures should be applied to ensure that tourism developments are in a suitable location'.

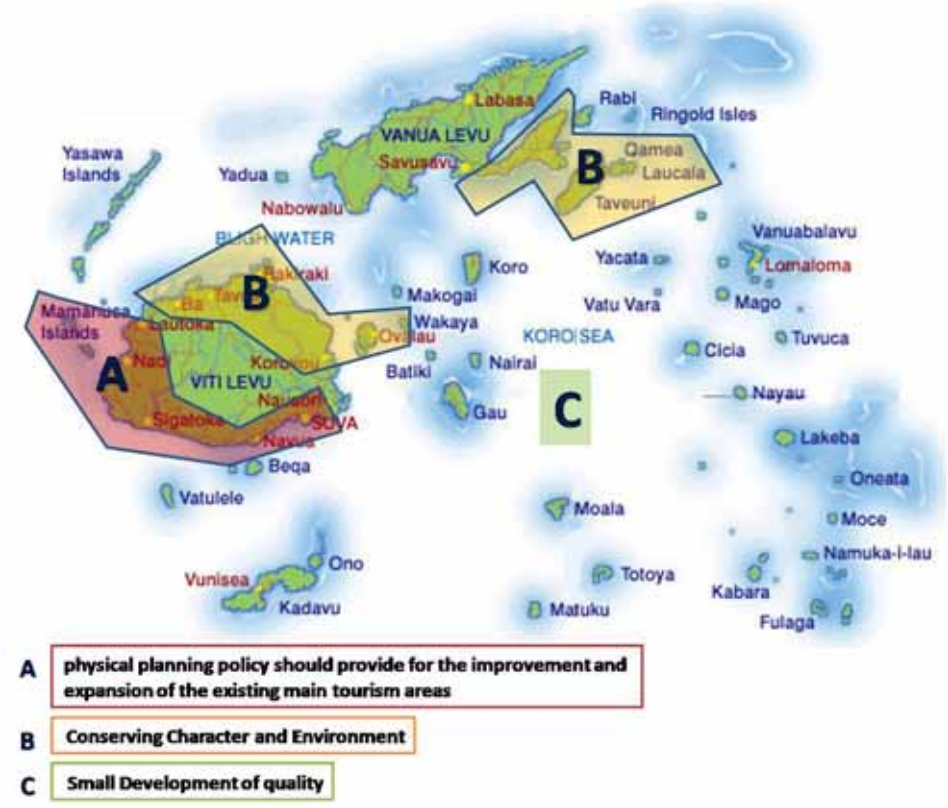


Figure (35): Overall planning policy of Fiji's TDP.
adapted from((MOT), 1998)

5-2-4-2 Assessment Team:

The World Wide Fund for Nature - South Pacific Program (WWF-SPP) and The Asian Development Bank (ADB) formed a partnership agreement to carry out a SEA of Fiji's Tourism Development Plan'. This case s6tudy was

chosen because tourism is the fastest growing industry in Fiji with potentially significant impacts on its natural and social environment.
The WWF-SPP formed a project team consisting of a team leader and SEA expert, a socioeconomist and a tourism specialist. This team carried out the assessment in March and April 2003 over a seven-week period. A consultation strategy was devised to ensure full stakeholder participation. As a first step a Memorandum of Understanding was agreed between WWF-SPP and the Ministry of Tourism. The two parties agreed the SEA would provide the environmental and social elements of the mid-term review. An Advisory group, made up of the key players within tourism in Fiji, was formed to help guide the process (Levett and McNally, 2003).

5-2-4-3 SEA Guideline:

The SEA study is built on the EU Directive; of course this Directive has no legal force in Fiji. It has been taken as the basis for the Fiji project because:

- It provides an explicit codification of what SEA is and how it should be done;
- It is written in a much generalized way that should be suitable for plans and strategies for a wide range of topics anywhere in the world;
- As the first standard adopted and given statutory force by a large and influential group of nations, it is likely to become a de facto world standard or benchmark. (It has already been applied or adopted in many countries outside the EU, and some non-EU members are using it as the basis for their own SEA standards);
- It will be the tool familiar to and expected by European investors and aid partners.

5-2-4-4 SEA Process:

The following table illustrates the SEA process steps that used to assess Fiji's Tourism Development Plan (TDP)

SEA / SA Stage	What to decide	What to record	
A. Identify relevant plans and programmers and their relation to the plan	What other plans and programmers influence the plan in question	In the scoping report (linked to issues & options report)	List of relevant plans and programmers and their requirements
B. Devise draft SEA objectives , indicators and targets: collect baseline data, including data on likely future trends: issues and constraints	What are the sustainability objectives , targets and / or indicators to test the plan options and policies against : what sustainability issues and constraints to consider during plan-making		List of SEA objectives , and indicators and targets where relevant : data on baseline environment : list of relevant sustainability issues and constraints
C. Identify (more sustainable) options for dealing with the plan issues	What options to consider for each issue identified		List of options for each plan issue
D. Prepare scoping report: consult	What to include in the scoping report		Results of stages A-C : agreed written statement of how to proceed with stages E-H
E. Assess the plan options effect on the SEA objectives, and their consistency with relevant other plans and programmers : choose preferred options: propose mitigation measures	What are the preferred (mitigated) options from stage C, using the objectives , indicators and targets developed in stage B	In the environmental report (linked to draft plan)	List of preferred (mitigated) options: explanation of why these are preferred: effects of these options: mitigation measures proposed
F. Screen the plan policies and proposals: assess their effect on the SEA objectives: propose mitigation measures including links to EIA	What policies and proposals to assess: what the effects of those policies and proposals are on the sustainability : how effects can be minim used / enhanced		Summary of effects of plan policies and proposals: mitigation measures proposed, including links to EIA and lower-level plans and programmers
G .Propose SEA monitoring	How to measure actual effects of plan on sustainability		Proposed monitoring measures
H. Prepare the Environmental report to accompany the draft plan: consult	How to present the data from stages A-G: how to consult the environmental and other authorities and the public		Prepare the Environmental report : amend if necessary in response to consultation
I. Take consultation results into account	How to respond to consultation results		How consultation results were addressed

Table (14): SEA Process in the Assessment of TDP.
Adapted from (levett-therivel, 2002)

Step A: Identify relevant Plans and Programs

The first step of the SEA process is to identify the main points of the plan under assessment. Related plans and strategies, which may have a bearing on the one under review and its achievement of sustainable development, must also be examined.

Step B: Sitting objectives, Indicators and Targets

The next step of the assessment is to draft sustainability objectives, indicators and targets. These are used to assess whether or not the TDP is sustainable.

Objectives of the proposed TDP

- Maintain and enhance FIJI'S environmental quality**.**
- Keep Fiji beautiful.
- Develop within environmental resource carrying capacities.
- Improve the quality of life of Fijians.
- Make decisions in ways that reconcile different needs and demands.

Step C: Environmental, Social and Economic Baseline

In order to assess the likely impacts of the TDP it is first necessary to look at the current environmental, social and economic baseline.

1-State of the Environment (SOE)

According to the study, The State of the Environment report by Watling and Chape (1992) is still the most thorough statement of environmental states and problems in Fiji.

While emphasizing caution and gaps in data, nevertheless it points to series of major issues:

- Loss and degradation of important and characteristic ecosystems, especially
- Mangroves and forests.
- Coral reefs under multiple pressures.
- Species populations under threat.
- Fresh water shortage / management.
- Climate change vulnerability.

2-Biotic & A biotic factors:

a- <u>Mangroves and forests:</u>

Mangroves provide natural protection against storms, tides, cyclones and storm surges. The cutting back of them is likely to lead to reduced resilience to sea-level rise and wave surges and affect the traditional uses of mangroves for wood, building materials and medicine. They also regulate nutrients and act as filters against introduction of pests. The estimated value of mangroves in Fiji is FJD 100.88M

b- <u>Coral Reefs:</u>

With ocean temperatures that never dip below 20 degrees Celsius and only reach up to 30 degrees Celsius on hot summer days, the South Pacific Ocean above the Fiji Plateau is the perfect location for coral reefs. Reefs ring nearly all of the country's approximately 840 islands, and Matangi Island is of no exception. In this Ikonos image, underwater reefs form a hazy blue-green halo around the island (Appendix 7 represents a summary of mangrove and coral reef description in Fiji Island).

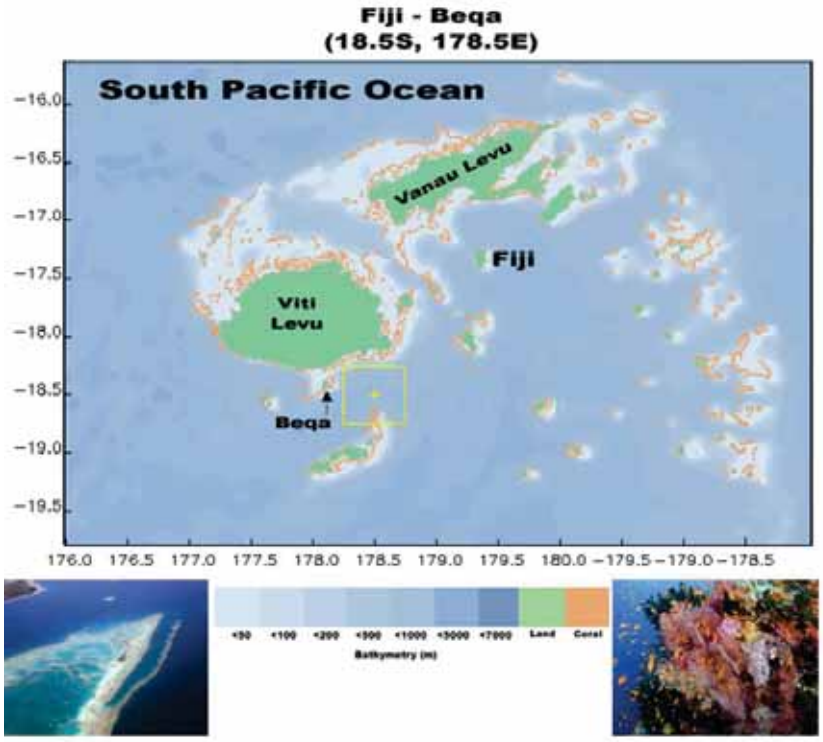


Figure (36): location of coral reefs in Fiji islands.
Adapted from (levett-therivel, 2002)

c- Species Populations under Threat

The tourist industry in Fiji relies on an abundant marine environment, as visitors come to see species such as turtles, a large variety of fish, as well as Fiji's birds and plants which are endemic to the islands.

This development might disturb such species due to a lack of adequate environmental planning and management. For example, by cutting back mangroves, which serve as an important habitat and breeding grounds for fish.

Step D: Environmental Impacts of Tourism Development

Aggregated Impacts

There is evidence at the aggregate level that economic development is damaging environmental carrying capacities. Tourism is not solely responsible, but tourism related development is intensive in many of the most serious pressures: damage to coastal ecosystems (especially coral reefs and mangroves), consumption of fresh water, aggregates, high quality (low, flat, stable, fertile) land and production of non-biodegradable solid waste.

Individual Impacts

There is evidence from some specific locations that tourism related development is a major contributor to breaches or near breaches of carrying capacity limits. Studies have focused on the Coral Coast of Viti Levu because it has the largest concentration of tourism related impacts. This is not necessarily typical of other islands or the less developed parts of Viti Levu. However, such evidence as is available suggests that smaller ecosystems may be even more vulnerable to change.

Fiji's environment still looks beautiful and for the most part healthy. But the research reviewed for this report suggests that margins of environmental resilience and security - that is, the environment's reserves of ability to absorb change - have already been breached in some places, are generally dangerously thin, and will be further eroded and potentially be breached if subject to more pressures.

Indeed, because of the gaps in the coverage, it is more likely that there are further serious problems that have not yet been identified because the relevant research has not been done. This again highlights the utmost need for a careful and precautionary approach to be taken in the encouragement and planning of further tourism development in Fiji.

Socio-economic Trends and Pressures

The Social Impacts:

On the positive side, tourism creates employment and Government revenues which can be reinvested into public services. The considerable improvements in the basic facilities in villages along the Coral Coast are testimony to this. On the negative side, there has been social stress caused by conflicts between tourist developers and local communities.

Other Socio-cultural Problems

If tourism is allowed to develop unchecked it can cause profound social and cultural changes. A push for large-scale tourism development, as proposed under the TDP could be the catalyst to such negative changes. The large-scale growth of tourism will necessarily be good for the host country is not true. The evidence indicates the contrary, that mass tourism can have significant negative social impacts on local communities.

Land Conflicts

Land issues are a central part of Fijian life. Native lands, owned by communities can be leased but not sold to foreign investors. Uncertainties surrounding the renewal of leases are a cause for concern to tenants. Even with the security of tenure purportedly being provided for under the terms of the lease, people leasing native land are still insecure in so far as their occupation and use of these lands are concerned. The increasing number of illegal takeover of these lands, including tourist resorts by the native landowners is testimony of this fact.

Such conflicts tend to be as a result of one of the following factors

1) Terms of lease are not clear to both parties (landowners and investors).

2) Landowners are not permitted to be stakeholders in the new development.

3) Whole landowner clans are miss-informed by the investors.

4) The investors try to speed-up the process by informing certain landowners leaving the remainder in the dark.

5) Both parties (landowners and investors) do not involve or formally inform Government agencies or ministries that deal with tourism.
6) Decisions are made about the use of land by persons unauthorized to do so.
7) Return and benefits from agreed use of land are not received by all who are entitled to receive them.
8) Leases do not provide avenues for landowners to seek review and fair remuneration within the lease period.
9) Disputes between custom chiefs, which have implications for the management and use of land.

Step F:Assessing the Impact of the Tourism Development Plan

Based on scoping phase (SOE) study, it is now easy to assess the likely social and environmental impacts of the TDP and compare them against the sustainability objectives. This decides whether or not the plan is sustainable.

Objective	Score	Comments
1 Maintain and enhance Fiji's environmental quality		
1.1 Protect, enhance and restore special ecosystems especially mangroves, coral reefs and forests;	--	Further development (concentrated in areas already developed) will tend to increase pressure on these ecosystems, especially reefs and mangroves.
1.2 Maintain and where possible increase populations of species under threat;	--	Further development will tend to increase disturbance of these species and their habitats.
1.3 Protect archaeological, historical and cultural assets;	-	Higher visitor pressures will hasten erosion.
1.4Protect sites of geological interest.	-	Higher visitor pressures will hasten erosion.
2 Keep Fiji beautiful		
2.1 Maintain tranquil unspoilt areas;	0/-	Concentration of development in already-developed areas will generally protect currently tranquil areas, though proposals for more secondary attractions may encroach.
2.2 Avoid visual, aesthetic, noise pollution;	-	Development likely to add to intrusion (although damage will be limited because it will be concentrated in areas already developed).
2.3 Minimise traffic and congestion;	-	Development will generate more visitor traffic, concentrated on corridors (especially Nadi-Suva) which already has relatively high traffic.
2.4 Avoid overdevelopment;	-	Concentration of development in already-developed areas risks overheating them.
2.5 Sensitive, high quality, distinctive design;	?	Unclear whether developers will see this as necessary for attractiveness, or an unnecessary extra cost.
2.6 Unobtrusive infrastructure;	-	Emphasis on high capacity infrastructure likely to cause damage (e.g. Natadola road).
2.7 Avoid litter, dumping.	-	More development will generate more waste. Currently much of this will be littered and/or

5-2-4-5 Finding of the SEA Report:

The main findings of the report are:

There are particular areas where tourism developments are causing serious environmental degradation. Here the situation is extremely precarious.

Many environmental pressures, for example on coral reefs, are close to levels at which irreversible damage could occur. Further pressures could tip the balance resulting in long term environment damage.

Tourism is currently providing considerable economic benefits to Fiji.

However, these economic benefits are far smaller than what the gross tourist spend figures suggest - some estimates indicate that more than 60% of the money coming in leaks back out of the country. Also, the loss of earnings from other sectors, especially the sugar industry, leaves Fiji's economy highly dependent on the tourism sector.

While a lot of tourist developers and operators are following good practice, Fiji lacks the frameworks to ensure such practices are adopted across the industry. Much of the policy, legislation and regulation needed to ensure good practice already exist on paper. However, much of the necessary legislation has not been enacted; or has not been implemented or enforced.

Therefore the "step-change" growth in tourism, advocated under the TDP would tip the balance. This type of development is highly demanding on the natural environment in terms of resource use and the pollution generated. In fact seeking ‘step change’ in tourism development is likely to cause problems for a number of sustainability objectives; in particular it is likely to lead to growing tensions between tourist developers, landowners and the local communities.

5-3Comparison between Case Studies:

The following part analyzes the four previous case studies in order to draw a guideline in building the model of the research.

Item		Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fiji's tourism development plan
Brief of plan under review	Location	Wales country	Jamaica which is situated in the Caribbean Sea	Dublin the city is the largest city and capital of Ireland.	The 300 Fiji islands are in the South Pacific approximately 1500km from New Zealand.
	Title	Wales's spatial planning update (WSPU), based on original Wales plan in 2004.	Amaterra Resort Development- (Ocean Pointe Resort)	Duplin Dockland area master plan 2003, updating of 1997 master plan.	Fiji's tourism development plan
	Competent Authority	National Assembly for Wales	National Environment and Planning Agency	Duplin Dockland development Authority	The World Wide Fund for Nature - South Pacific Program (WWF-SPP) and ADB formed a partnership agreement to carry out a (SEA) of Fiji's Tourism Development Plan'.
	Date	2008	2005	2003	2002
	Scale	National level	-----	---------	National level
		Area frame work level	Area frame work level	Area frame work level	
	Plan theme or objective	**<u>The themes of National level are:</u>** o Building Sustainable Communities o Promoting a Sustainable Economy. o Valuing our Environment. o Achieving Sustainable Accessibility. o Respecting Distinctiveness.	No objective were assessed	**<u>1-Strategic objectives of master plan:</u>** Main theme is "the sustainable social and economic regeneration of the Area, with improvements to the Physical area being a vital ingredient". **2-Detailed polices of the master plan.** **3-Sustainability criteria for each environmental issue.**	**Step Change Strategy:** 1. Maintain and enhance Fiji's environmental quality 2. Keep Fiji beautiful 3. Develop within environmental resource carrying capacities 4. 4 Improve the quality of life of Fijians 5. 5 Make decisions in ways that reconcile **6.** different needs and demands
		The spatial vision of the Wales Spatial Plan in the area level divides Wales into six areas: o North West Wales o South East Wales: The Capital Network o North East Wales o Swansea Bay o Central Wales. o Pembrokeshire			

Item		Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan
	Assessment team	The Centre for Sustainability (C4S), with other consultants and Spatial Plan Area groups undertaking SEA activities.	The Technological and Environmental Management Network (TEMN) team and employed skills in biological and environmental sciences, environmental chemistry, hydrogeology, socioeconomics and project management.	The Department of the Environment and Local Government considers the Docklands Area to be an appropriate area to pilot test SEA	WWF-SPP formed a project team consisting of a team leader and SEA expert, a socio economist and a tourism specialist.
SEA Process	SEA guideline	EU Directive & based on practical guide to SEA directive of Wales.	SEA is a requirement of the National Environment and Planning Agency (NEPA) in exercising their powers under the NRCA Act 1991.	EU Directive, this case is a pilot test SEA case.	EU Directive, even it is not an EU country
	SEA Process	Stage A: - Key issues. - Sitting objectives (broad & detailed objectives) Stage B: **-consideration of alternatives:** - Current WSP approach (WSP November 2004); - Alternative 1: Focus on promoting a sustainable economy; - Alternative 2: Focus on Building Sustainable Communities; and Stage B: - Alternative 3: Focus on Valuing our Environment. - **Assessment & mitigation.**	1-Scope of work (SOW) o Review of Literature o Site Visits o Data Collection and Sample Analyses 2-Stakeholder and public consultation. 3-Environmental impact assessment of proposed project 4-Assessment to alternatives of the project. 5-Recommended mitigation and monitoring.	Scoping. Relation with other plans and programs. Baseline study: -sitting key environmental issues - Non implementation of master plan. Consideration of alternatives: o The 'do nothing' option. o The option of not reviewing the Master Plan 1997. Environmental assessment of the master plan review objectives and policies. Formulation of mitigation and monitoring measures.	o Identify relevant plans and programmers and their relation to the plan o Devise draft SEA objectives , indicators and targets: collect baseline data, including data on likely future trends: issues and constraints o Identify (more sustainable) options for dealing with the plan issues o Prepare scoping report: consult o Assess the plan options effect on the SEA objectives and their consistency with relevant other plans and programmers: choose preferred options: propose mitigation measures.
		Stage C& D: -public participation. Publishing SEA report.			o Screen the plan policies and proposals: assess their effect on the SEA objectives: propose mitigation measures including links to EIA. o Propose SEA monitoring o Prepare the Environmental report to accompany the draft plan: consult o Take consultation results into account.
		Stage E: Monitoring			

Item		Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan
SEA Process	Timing of SEA	Parallel with the development of WSPU from 2006-2008	Parallel with the development plan	Parallel with the development plan	Separate study
	Result	**National Level:** No **significant adverse effects** were identified at the national level. **Area Frameworks** The SEAs undertaken at the Area level also identified a variety of significant effects and further uncertainties. The majority of the significant effects predicted were positive however some significant negative effects were identified	The project scenario contributes toward a national goal to expand the opportunities for Tourism Development, add to housing stock, provide for a diversified recreational product with heritage components, and a foreign exchange earner.	The Review has a strong sustainable thrust and focus. Almost all objectives and policies were found to be either compatible or not in conflict with the Sustainability Criteria	Therefore the "step-change" growth in tourism, advocated under the TDP would tip the balance. This type of development is highly demanding on the natural environment in terms of resource use and the pollution generated. In fact seeking 'step change' in tourism development is likely to cause problems for a number of sustainability objectives; in particular it is likely to lead to growing tensions between tourist developers, landowners and the local communities.
	Review authority	Wales consultation bodies State of environment	National Environment and Planning Agency	The Department of the Environment	Study project under ABB
	Monitoring	Monitoring matrices: Monitoring significant effects	Monitoring plan for each of the environmental issue	the Authority to: undertake appropriate survey work and collection of data to ensure effective ongoing monitoring of the implementation of the Plan	----------

Table (16) Comparison between four case studies.

5-4 Findings of the cases comparison:

The following table presents a comparison between the four cases.

Item		Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan	evaluation
Type of PPP	Policy					0
	Plan	√		√	√	3
	program	√	√			2
SEA System	Obligatory by law	√	√	Test SEA		2
	Not obligatory				√	1
Location	EU country	√		√		2
	Non EU country		√		√	2
Time framing	6months				√	1
	1 year			√		1
	2 years	√	√			2
	more					
SEA Review	Specialized review authority				√	1
	Environmental authority	√	√	√		3

item		Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan	evaluation
SEA Process	Screening					0
	Scoping	√	√	√	√	4
	Sitting alternatives	√	√	√		3
	Sitting objectives	√	--	√	√	3
	Environmental issues	√	√	√	√	4
	Assessment of proposed	√	√	√	√	4
	Assessment of alternatives	√	√	√	√	4
	Mitigation	√	√	√	√	4
	monitoring	√	√	√	√	4
Finding of Report	Rejection					0
	Acceptance with some mitigations	√	√	√	√	4
	Acceptance without mitigations					0
Public participation	Screening					0
	Scoping	√	√	√	√	4
	Assessment	√	√	√	√	4
	review	√				0

item			Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan	evaluation
Impact prediction methods	Quantitative methods	Multi criteria analysis	√	√	√	√	4
		Cost benefit analysis		√			1
		System modeling		√			1
		GIS			√		1
	Qualitative methods	Experts workshops	√	√	√	√	4
		Matrices	√	√	√	√	4
		Checklists	√	√	√	√	4
		Public participation	√	√	√	√	4
Other type of impacts	Cumulative impacts		√				1
	Trans-boundary impacts						0
SEA report	Non technical summary		√	√	√	√	4
	Mentioned Relation with other plans			√	√	√	3
	Appendices		√	√	√	√	4

item			Wales Spatial plan	Amattera resort	Duplin dockland area draft master plan	Fuji's tourism development plan	evaluation
Engagement with stakeholder	**Target stakeholders**	authorities	√	√	√	√	4
		Academic groups	√	√	√	√	4
		NGOs			√		1
		public	√	√	√	√	4
		Formal bodies	√	√	√	√	4
	tools	Interviews & surveys		√			1
		workshops	√	√	√	√	4
		internet	√		√	√	3
		Advisory committees					0
publishing	Publishing on internet		√		√		2
	Report was sent to the statutory consultees		√	√	√	√	4
	other						0

0: not mention in any case – 1: done in one case -2: done in 2 cases – 3: done in three cases – 4: done in all cases

Table (17) Evaluation table for the four case studies.

5-5 Conclusion of Chapter 5:

Based on the previous analysis of case studies the following points are concluded after giving a load for each item of comparison reach the findings of the comparison:

- SEA process is a parallel process to the land use planning and it assesses the proposed plan and the alternatives that put in plans or made by cooperation between assessment team and planning authority.

- Generally SEA process in all this cases consists of three major steps even if its title or arrangement change from case to another, these are:

    - Scoping and State of Environment study (identifying stakeholders- key environmental issues-objectives of the proposed plan – alternatives of the proposed plan).

    - Assessment (assess proposed plan compatibility with key environmental issues and sustainability objectives. Assess possible impacts from proposed impacts with all environmental key issues and objectives).

    - Selecting most appropriate proposal based on previous assessment and put mitigation masseurs and monitoring plan for it.

- Defining key environmental issues is the first step in the scoping step and even if the process is varied from case to another, key environmental issues is a milestone in the SEA process.

- Through the four cases public participation is essential to ensure full public involvement and apply concept of transparency, this participation can be through many methods but the most familiar methods are internet, questionnaire and meetings.

- Time framing of the SEA is varied based on nature of plan under review, but generally it takes time not less than 6 weeks.

- As discussed before in chapter 4; there are four bodies involved in the SEA process. The first is the planning team that responsible of putting plan, the second is the SEA team that are responsible of

developing SEA report with cooperation of the first team in putting alternatives and objectives, third is the review authority which is responsible of reviewing SEA study and based on that it accept or declined the proposed plan and the fourth is the public participation. Cooperation between previous bodies is critical to ensure a flexible SEA process without any duplication of work in putting the plan and then prepare the SEA study.

- Main findings of this chapter is; the rethinking in the SEA process, as based on previous literature and cases comparison, the researcher now reach to a final SEA process which can help in constructing the Egyptian SEA model. In the next chapter the researcher will explore current Egyptian condition to help in constructing SEA model build on international experience and compatible to the Egyptian context.

6-Chapter Six: Investigating SEA & Land Use planning process in Egypt

Introduction:

In Egypt EIA increases rapidly in the last few years, also environmental Awareness is grown recently between public. As a result of this public Awareness a lot of projects had been stopped before implementation as a response of the public pressure.

This chapter explores the EA studies and the land use planning process in Egypt, identifying governmental bodies responsible of putting PPP in the field of land use planning, besides survey current EA studies that done in Egypt. In order to help in constructing the Egyptian SEA model after identifying current Egyptian context.

6-1 Chapter Methodology:

As discussed before in chapter one, the data were collected by numerous methods like; questionnaire, semi –structured interviews, consulting with experts, workshops, analyzing the Egyptian Laws (new physical planning law no. 119 of 2009, new Egyptian environmental law 9 of 2009), collecting data from site visit of some of the concerned governmental bodies and analyzing organization charts and scope of work of number of involved ministries and authorities.

Appendices (1&2) represent a detailed description of the list of interviews, questionnaire form and summary of workshops.

6-2 Planning Process in Egypt:

The planning levels in Egypt (10)start at the National Development Plan (Five-Year Development Plan) then it cascades down to the rest of development plans as shown in the figure (37). Egypt inaugurated its first five-year development program in 1960, but due to wars this development

(10**)** The focus of the study is the land use planning process, but at real any development plan must start with financial programs or policies or plans that drive the development sources in all different fields like land use planning.

plans stopped and replaced with annual plans. Starting from 1982 Egyptian government started to make the five–year development plans again.

These plans are mandatory for public investments and guiding principles for private investments. They have a quality which guides and sets objectives for other plans in the country. Therefore, they can be evaluated as the main reasons of successes and failures of sectoral investments or the problems that they cause directly or indirectly.

After National Development Plan, other programs and development plans start in all fields including urban development and planning sector. These plans follow the instructions and guidelines set in the five year plan. And accordingly each Ministry and administrative body will have its own plans and programs.

Figure (37): Planning Process in Egypt from the National Development plan till detailed urban planning.

6-3 The Administrative Bodies Responsible of the Planning Process in Egypt *(11)*:

In 2006 the Ministry of Planning was abolished and new Ministries were established; Ministry of economic development and Ministry of local development. The aim of establishing these two Ministries; is to achieve a balance between central planning to be undertaken by the Ministry of Economic Development and Regional Planning is to be conducted by the

(11**)** Planning process here refers to the economic and financial planning which happens on high level of decision making process to define the development strategies in each field and then the concern ministry develops their own policies, plans and programs that follow the national vision and development policies.

Ministry of local development so that its role is directly between the needs of provincial plans and development programs. The role of Ministry of Finance is to raise the necessary funds to do so.

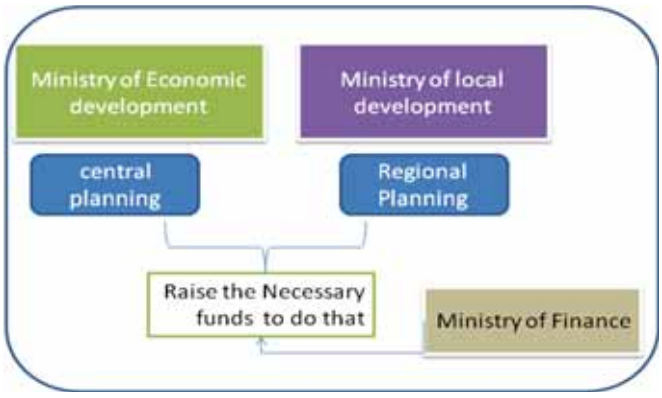


Figure (38): Functions of Ministries of Economic Development, Ministry of Local Development and Ministry of Finance.

6-3-1 Ministry of Economic Development:

The Ministry of Economic Development was established based on the presidential decree No. 308 of 2006 consequently; the Ministry of planning was abolished.

6-3-1-1Functions of the Ministry:

- The Ministry of Economic Development main task is to prepare a plan of socio economic development and follow-up its implementation. And the preparation, promotion and development of investment in Egypt, whether local, Arab or foreign. The competent Ministry in order to achieve this goal shall make the following :

  - Receives proposals by Ministries of production and services sectors and governorates on the preparation of a comprehensive plan for socio-economic development.
  - Proposes a number of alternatives for development strategies capable of achieving long-term national goals to select one of them according to the current and excepted conditions.
  - Puts medium-term plan - in the framework of the set chosen strategy or five year socio economic development plan - based on clear goals.

- Prepares annual plans, which take into account the situation of the economic structure existing at the time prepared, and in light of the Medium Term Plan.
- Monitors the implementation of annual plans for investment and production periodically on the dates specified by the Minister of economic development and at the end of each financial year and assess what has been achieved and what has happened and what deviations from the back of the problem.
- Works to develop methods of planning and data planning and follow-up with the latest scientific methods.
- Conduct research and studies of the planning process((MED), 2006).

A- Institute of National Planning:

Established under the Law No. 231 of 1960, as a public institution with independent legal personality, with a view to promoting research and development studies and planning related to the numbers of the national plans and means of implementation and study of principles and methods of scientific, technical, economic and social development of national planning and to apply them in order to achieve national goals.

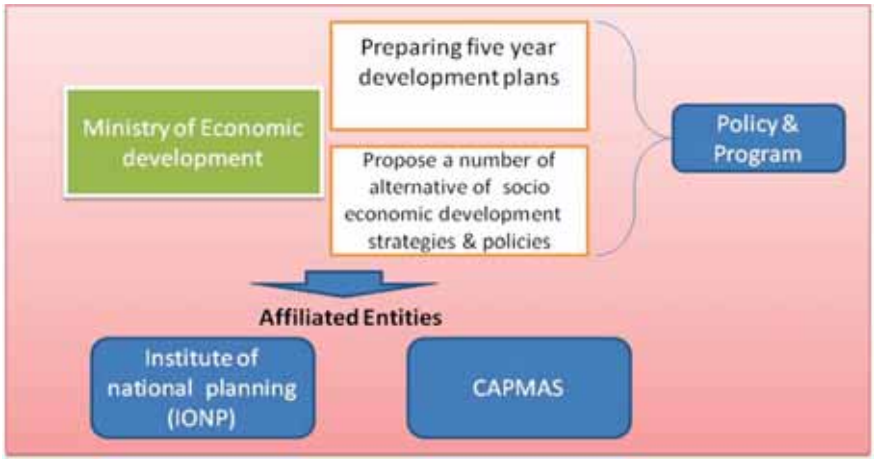


Figure (39): Ministry of Economic Development main task and its affiliated entities.

B- Central Agency for Public Mobilization and Statistics (CAPMAS):

According to the Decree No.2915 of 1964, **Central Agency for Public Mobilization and Statistics (CAPMAS)** is considered as the official source for providing all the state bodies, organizations, universities, research centers and in development and evaluation processes with the information that can help them to make informed decisions.

6-3-2Ministry of Local Development:

The Ministry of local development was established according to President's decree No. 380 of 1999. One of the objectives of the Ministry is to contribute to socio economic development plan with co operation with governorates.

6-3-2-1Responsibilities of the Ministry

1- Planning or participating in planning strategies and programs and follow-up implementation of this programs.
2- Achieve coordination and integration between the efforts of the governorates in attracting investment and implementation of service projects, and choose the best approach to management.
3- Achieve the national goal to control the population growth
4- Participate with the governorates as follows:

- Recording current economic and social development of villages, slums and squatter areas.
- Formulation of projects needed to improve services in the areas referred to (drinking water - sewage - Electricity - Roads - Schools - health units - general cleaning).
- Determine the objective to be achieved for population growth at the level of each village, slums and squatter areas and the formulation of programs of cooperation in achieving this goal.

5. Participate with the Ministry of Agriculture in the preparation of maps and documentation of specific side cities and villages, and follow-up commitment to these maps after its adoption.
6. Participate with the provinces and the Ministry of Youth in the preparation and implementation of youth welfare projects in these areas.
7. The establishment of a centralized database on the villages and hamlets and slums and squatter areas (comprising demographic situation - social status and Services - Natural Resources - the

problems and challenges) this is the base of the data recorded in the databases in the villages and regions.

8. Recommendation for distribution of funds allocated to local development projects to the governorates according to the standards that are agreed upon and specific development priorities and the priorities of the regions.
9. Conducting studies and research on local development and the development of existing slums and reducing the frequency they appear to strengthen the chances of success with the cooperation of stakeholders and experts.
10. Raising awareness in the districts and villages of the importance of popular participation in development projects and the maintenance of public utilities.
11. Support and development of craft industries and organizations, including productive cooperation coincides modern techniques.
12. Participate with the provinces and Environmental Affairs Agency in setting priorities for environmental protection projects and provide resources for these projects and follow up their implementation.
13. Propose legislation, regulations and decisions necessary to advance the local development and production cooperation ((MED), 2006).

6-4Physical 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 is the administrative body responsible of make all strategic plan and planning strategies for all parts in Egypt .

6-4-1 the Administrative Bodies Responsible of the Land use Planning Process in Egypt:

6-4-1-1 Ministry of Housing:

Ministry of Housing, Utilities and Urban development (HUUD) is one of the state sectors, concerned with the Arab Republic of Egypt's comprehensive development, including urban, communal and economic one. Comprehensive development is usually initiated by the study of ARE built up area and its available capabilities. Accordingly, comprehensive and structural plans of development are developed and translated into detailed plans of infrastructure networks including roads, bridges potable water and sewerage plants through the appropriate domicile and different relevant services for development success and sustainability ((HUUD), 2009).

According to Decree 164/1996 for the organization of HUUD is responsible of the following:-

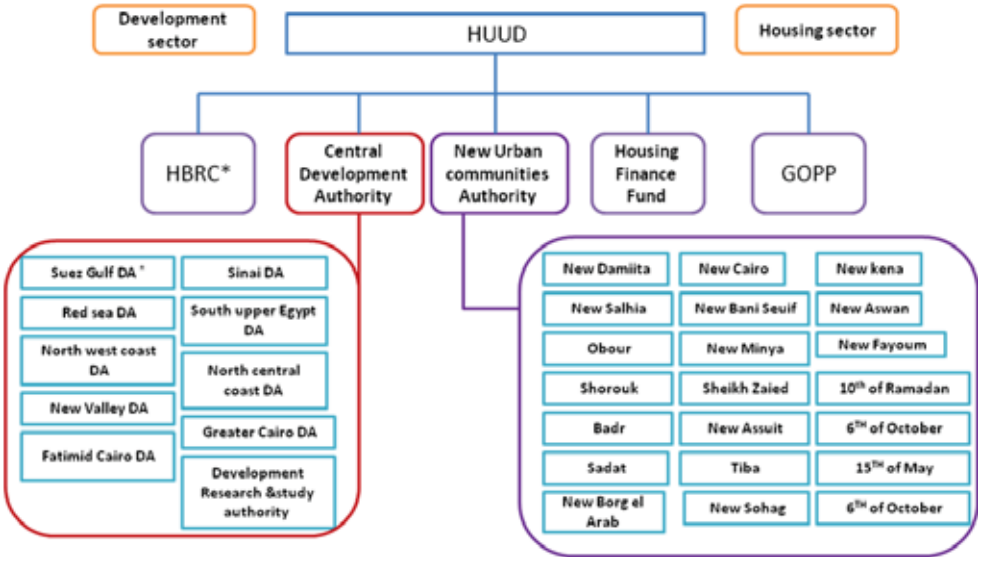
- Drawing HUUD policy, study and preparation of urban development and programs, inter co-ordination with production and service programs in the framework of the state national plan, as well as the control of metropolitan and rural planning projects and different types of Housing.
- Designing and execution of the different types and levels of construction and building projects whether for private or public housing as the construction of public buildings housing and utilities building major structures, different types of factories and setting relevant specifications standards, models and rates , subject to the state general policy.
- Studying, preparation, designing, setting rules, standards and technical specifications, control of execution and follow up of the design / execution / operation / management of potable water and sanitary drainage plans, projects and executive programs.
- Studying, preparation of the regional and comprehensive planning of the economic & community priority areas, subject to the cabinet decided projects in this planning.
- Study and preparation of the urban development plans of cities, villages, new communities and deserts to guarantee the full use of the capabilities of the geographical location and environment, follow up

and working out any material or technical obstacles and evaluation of accomplishments to ensure the realization of the set goals.

- Preparation of the technical and applied researches, pertinent to the Ministry activities to keep pace with the scientific promotion in Housing, utilities, urban communities and development of executive programs as well as Provision of necessary capabilities.
- Setting standards, models and rates of Housing field, bases of design and executive rules of structural and building works, according to the respective laws and decrees, and their updating in terms of the scientific progress of this field.
- Design, control of execution and proposal of public and housing buildings and proposal of the general policy of public buildings maintenance field.
- Undertaking relevant studies for the investment of Arab and foreign capital in the field of the Ministry activity, subject to the relevant regulations.
- Provision in cooperation with the competent Ministries organizations and authorities of basic building supplies and requirements of construction and utility sectors.
- Inter- organization and co-ordination with the authorities' public organizations, working in the fields of HUUD.
- Development of the relevant training programs for the Provision of technical staff in different categories for raising their productive efficiency.
- Participation in relevant local and international conferences, meetings and workshops.
- Drawing the general policy of the cooperative sectors activation, development and upgrading for the fulfillment of the set goals in the Housing and Urban communities Activity and provision of assistance and control of Housing cooperative societies.
- provision of technical assistance and follow up of local administration areas- control and technical inspection of planning and organization works- direction, upgrading and encouraging the public sector activity in the Housing different fields, whether in local areas or the urban communities, in the framework of the realization of the Ministry goals and policies ((HUUD), 2009).

6-4-1-2 Affiliated Entities of HUUD:

According to the organization chart of HUUD there are number of administrative bodies are working under the umbrella of the HUUD and play a vital role in the planning process in Egypt, Figure (40) presents the organization chart of the HUUD.



DA* (Development Authority)

HBRC *(Housing and building research center)

Figure (40): Organization structure of HUUD Ministry.

Adopted from ((HUUD), 2009)

1- GOPP:

General Organization for Physical Planning (GOPP) is according to law 119 (2009) of physical planning is the state authority, responsible for drawing the physical planning general policy, preparation of physical development plans and programs, and their co-ordination with production and public services plans and programs as well as the verification of applying such plans ((GOPP), 2009). Figure (41) present the organization chart of the GOPP.

Establishment Decree

According to Republican decree 1093 / 1973 the GOPP is responsible on the following:

- Proposal and development of physical development legislations.

- Fixing the planning rates, conditions and indicators for the national and regional urban organization.
- Preparation and approval of urban development plans, on all (national – regional – local) levels.
- Approval of urban and rural built up areas.
- Preparation of physical, environmental, economic, communal, demographic researches and studies.
- Upgrading the skills of workers in GOPP and local authorities.
- Exchange of information, conclusion of agreements, participation and organization of international competition.
- Preparation and organization of international and local scientific conferences of urban development.
- Preparation and approval of geotechnical and infrastructure studies ((GOPP), 2009).

GOPP manages two types of development; the first one is dividing Egypt into planning regions and each region represents one or more governorates that locate adjacent to each others, and the other type is the development corridors; which is carried to specific regional roads. The GOPP starts with the development of the Cairo – Ismailia main road and then the western northern coast main road and the last one is the eastern northern coast main road.

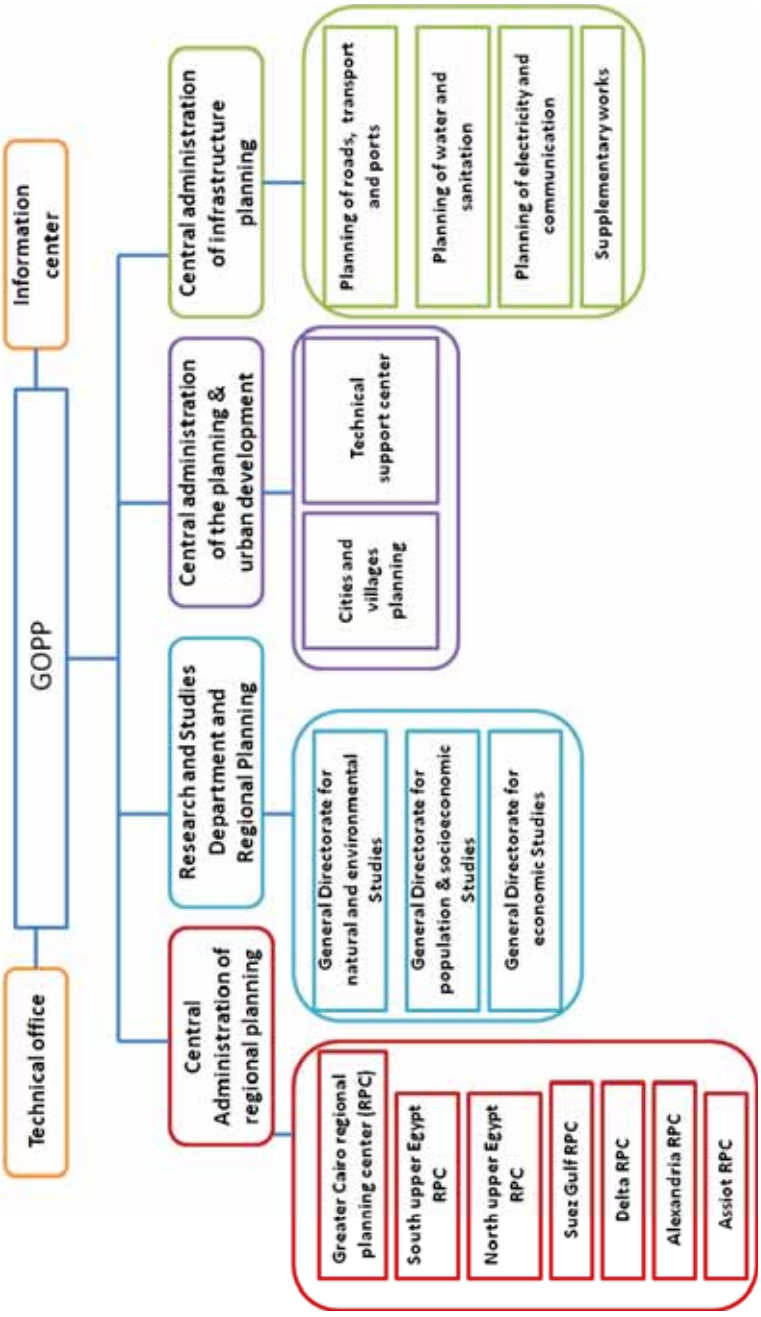


Figure (41) Organization chart of GOPP.
adapted from ((GOPP), 2009)

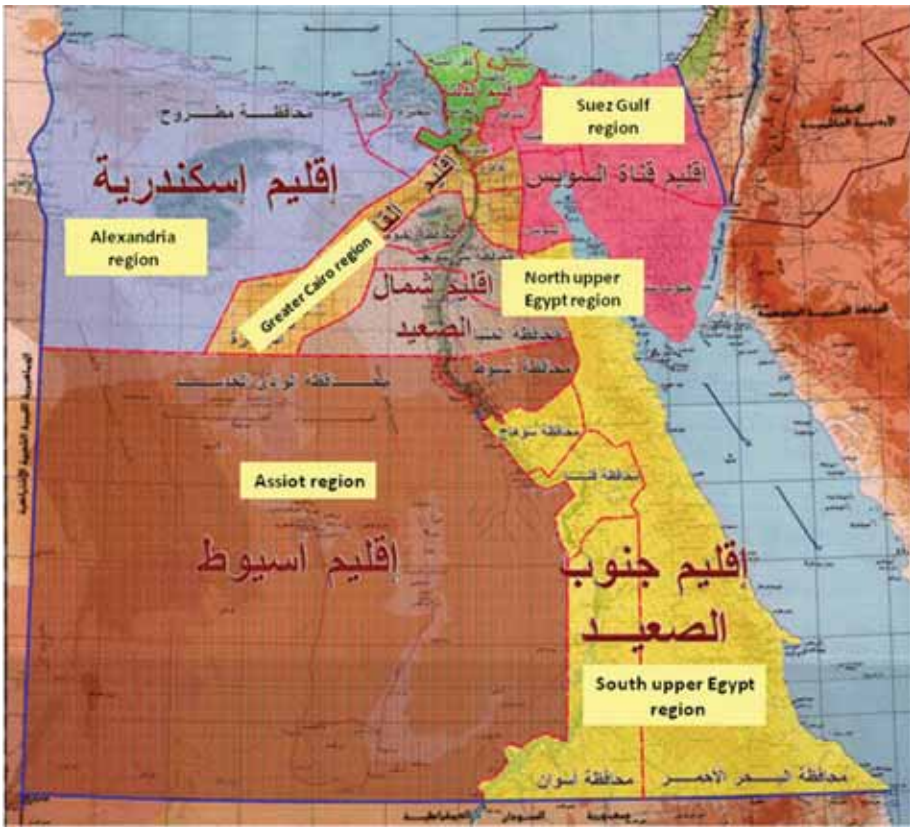


Figure (42): planning regions in Egypt.
((GOPP), 2009)

2- The Housing and Building National Research Center (HBRC):

The Housing and Building National Research Center (HBRC) of Cairo is an independent governmental research establishment which has a board of directors and a Chairman working under the supervision of the HUUD. The organization is very largely financed through the annual governmental fund and substantial resources are also drawn from, the construction industry for work done at the organization. Another source of finance is the joint research work done with foreign agencies such as UNESCO, and domestic research agencies such as the Egyptian Academy for Scientific Research and Technology. This research center act as the research institute for the planning in Egypt and it is involved with the GOPP in a lot of projects and development plans ((HBRC), 2009).

3- New Urban Communities Authority:

New Urban Communities Authority was established according to law 59/1979.

Objectives:

- Creation of new civilized centers for achieving community stability and economic prosperity.
- Redistribution of inhabitants far from the narrow strip of the Nile valley.
- Development of new attraction areas beyond the existing cities and villages.
- Extension of urban spines to the desert and remote areas.
- Curbing the urban infringement upon agricultural areas.
- Achieving the goals of urban development strategy (new urban communities authority, 2009).

6-4-2 Other Administration Bodies Responsible for Planning Process outside HUUD:

6-4-2-1 Tourism Development Authority:

Tourism Development Authority (TDA) takes over the responsibility for planning tourist areas in Egypt and allocation of land and assigned to investors. This authority, acting under the umbrella of the Ministry of Tourism to achieve the goals of the revitalization of tourism and increase the number of tourism projects in Egypt.

TDA is a newly established, as it is established from 18 years and during the period from 1993 to 1995 many studies were conducted in cooperation with the Ministry of tourism and the offices of international studies to formulate a plan of priorities for the movement of tourism development in the Nile and the Red Sea and Sinai, and those studies completed to that there are two types of development should be followed, namely:

Type I: Integrated development of big lands.

Type II: Development of limited land that is not greater than 500 thousand square meters.

The number of companies that are implementing the integrated development are relatively low, which is; in Orascom for Tourism Development, the Kharafi Group Company and Sahl Hasheesh. There are 51 tourist centers in whole Egypt are distributed as follows: 24 centers in the Red Sea, and 12 tourist center in Aqaba, and 7 centers in Al Ain Sukhna, 7 the other in Ras Sidr, and one center in the northern coast (TDA, 2006).

Figure (43): Major touristic regions in Egypt
Source: (TDA, 2008)

6-4-3 State Land Authorities:

Major problem in Egypt is competent authorities responsible of the planning process is not state land authority, other state land authorities are owned Egyptian lands and by law they can make land uses and develop projects in their owned land. It is obvious in many sites in Egypt as there always a conflict between governmental authorities and other private stakeholder and investors.

Accordingly The National Center for Planning State Land Uses has been established to guarantee the complete coordination between the state authorities to achieve the maximum possible exploitation of the state lands.

Also based on law No.119 of 2009, the GOPP is responsible of putting all urban planning programs and review all urban land use plans that developed by any other authorities. Accordingly it is obligatory by law to get approval

of the GOPP on any new land use planning in Egypt. Figure 40 presents authorities responsible of managing uses and allocating them in Egypt.

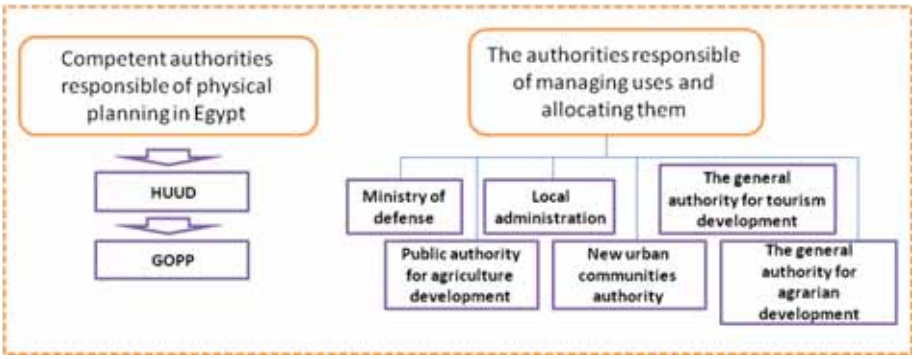


Figure (44): Competent authorities responsible of land use planning and state land authorities.

6-4-3-1The National Center for Planning State Land Uses

This center (NCPSLU) was established under The Prime Minister's decree No. 46 of 2004; it is headed by director of the center. Figure (41) presents Coordination between the Center and the other state land authorities and next table represents the membership of representative of ministries and other authorities in the NCPSLU.

Table (18): The membership of representatives of ministries and other authorities from selected by ministers or heads. ((NCPSLU), 2009)

1-Director of the Center	2. A representative of the Ministry of Defense.
3. Representative of the Ministry of Interior.	4. A representative of the Ministry of Agriculture and Land Reclamation.
5. A representative of the Ministry of Housing, Utilities and Urban Communities.	6. A representative of the Ministry of Awqaf.
7. A representative of the Ministry of Civil Aviation.	8. A representative of the Ministry of Transport.
9. Representative of the Ministry of Culture.	10. A representative of the Ministry of Communications.
11. A representative of the Ministry of Electricity and Energy.	12. A representative of the Ministry of Local Development.
13. A representative of the New Urban Communities Authority.	14. Representative of the Assembly of the reconstruction projects and agricultural development.
15. A representative of the General Authority for Tourism Development.	

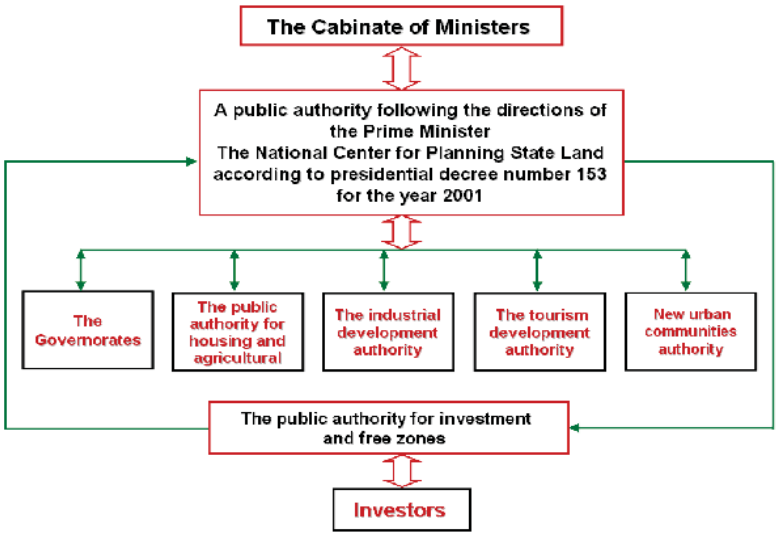


Figure (45) Coordination between the Center and the other state land authorities.
((NCPSLU), 2009)

6-5 Laws for Physical Planning:

The planning law No. 3 of 1983 was emended by the new law of planning no119 of year 2009. Also there are many laws concerned of physical and urban planning and housing like Law 14/1981 of Housing cooperatives and its regulations, for more details see appendix (7)

6-5-1Hierarchy of Physical Planning Process According to Law No. 119 of 2009:

According to Law No. 119 of 2009 and based on interviews with key persons in GOPP, levels of land use planning in Egypt can be divided into:

Figure (46): Hierarchy of land use planning in Egypt.

National Strategic Plan:

This level concerns with defining policies and programs for urban development on the national level. Furthermore it identifies national projects, stages of implementations and the role of different sectors in the implementation process.

Regional Strategic Plan:

In this stage the objectives and development policies and programs of the urban economic regions are defined, besides putting regional projects that will be implemented, and define the implementation stages and the role of the public and private sectors in this implementation within the framework of the National Strategic Plan.

Strategic Plan for the Governorates:

In this level the objectives, policies and programs of urban development in each governorate are defined, also implementation phases, and the role of the public and private sectors in this implementation.

Strategic Plan of Cities and Villages:

Strategic plan of the city or village, which shows the future needs of urban expansion , development projects and plans of economic, social, environmental and construction necessary to achieve sustainable development at the local level within the framework of the future vision of the strategic plan.

Detailed Urban Design:

This stage is carried out on specific areas of city or village and it deals with preparation of the detailed planning projects in this areas. Besides developing infrastructure plans that work with the outline of the General Strategic Plan.

6-5-2 Institutional Framework for Physical Planning 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.

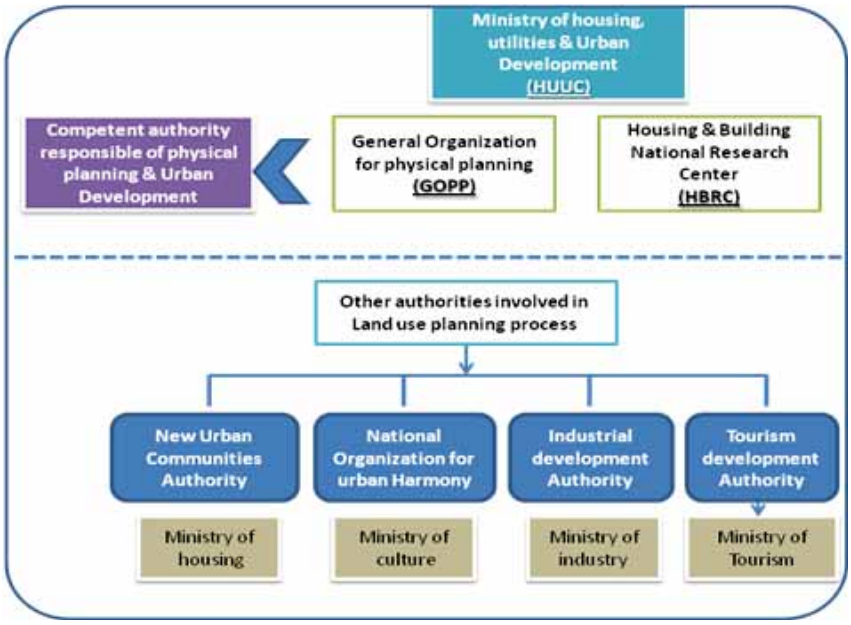


Figure (47) the hierarchy of the planning process based on Law 119 of 2008.

6-5-3Environmental Studies in the Planning Law:

According to physical planning law No. 119 of 2008:

- There is no mention of SEA in the whole articles of the law.
- According to the executive regulation of law No. 119 of 2008 article 13, in the city background phase the competent authority must collect data of current activities in the city or village and its impact on environment and residents of the area, and there is no mention for any EA study that must prepare and send to EEAA to get approvals.

6-6 Environmental Studies in Egypt

Preoccupation with environmental protection in Egypt is concurrent with a corresponding world interest in this field. Several achievements have been made in this respect with the object of addressing environment issues. One of the most important of these achievements was the enactment of the Law on Environment no. 4 of 1994. This law represents a leap forward for Egypt and a new pattern of addressing environmental problems. It reflects the State's commitment to the principle of environmental protection as a basic approach to development. The State development policy and plans focus on the necessary, close association of development, environment and technology issues, which should be all correlated to Egypt's concerns.

6-6-1 the Administrative Bodies Responsible on Environment in Egypt:

6-6-1-1Ministry of State for Environmental Affairs (MSEA) and Egyptian Environmental Affairs Agency (EEAA):

In June 1997, the responsibility of Egypt's first full time Minister of State for Environmental Affairs was assigned as stated in the Presidential Decree no.275/1997. From this date, the new Ministry has focused, in close collaboration with the national and international development partners, on defining environmental policies, setting priorities and implementing initiatives within a context of sustainable development.

According to the Law 4/1994 for the Protection of the Environment, the Egyptian Environmental Affairs Agency (EEAA) was restructured with the new mandate to substitute the institution initially established in 1982. At the central level, EEAA represents the executive arm of the Ministry.

The Principal Functions of the Agency Include:

- Formulating environmental policies.
- Preparing the necessary plans for Environmental protection and Environmental development projects, following up their implementation, and undertaking Pilot Projects.
- The Agency is the National Authority in charge of promoting environmental relations between Egypt and other States, as well as Regional and International Organizations ((EEAA), 2009).

For the Agency to realize its aims it has to undertake the following tasks:

- Preparing draft legislation and decrees related to the fulfillment of its objectives.
- Preparing state of the environment studies and formulating the national plan for environmental protection and related projects.
- Setting the standards and conditions to which applicants for construction projects must adhere before working on the site and throughout operations.
- Setting the rates and proportions required for the permissible limits of pollutants.

- Periodically collecting national and international data on the actual state of the environment and recording possible changes.
- Setting the principles and procedures for mandatory Environmental Impact Assessment (EIA) of projects.
- Preparing Environmental Contingency Plans and supervising their implementation.
- Participating in the preparation and implementation of the national and international Environmental
- Monitoring Programs and employing data and information.
- Establishing Public Environmental Education Programs and assisting in their implementation.
- Coordinating with other authorities for the control and safe handling of dangerous substances.
- Managing and supervising the natural reserves of Specially Protected Areas.
- Following up the implementation stages of International Conventions concerned with the environment.
- Suggesting an economic mechanism, this encourages the observation of pollution prevention procedures.
- Implementing pilot projects for the preservation of natural resources and the protection of the environment against pollution.
- Listing of national establishments and institutions, as well as experts qualified to participate in the preparation and implementation of environmental protection programs, and coordinating measures with the Ministry in charge of international Cooperation to ensure that projects funded by donor organizations and states are compatible with environmental safety.
- Participating in the preparation of an integrated national plan for the coastal zone management of the Mediterranean and the Red Sea areas.
- Participating in the preparation of a plan to prevent illegal entry into the country of dangerous and polluting substances and waste.
- Preparing an annual report on the state of the environment to be submitted to the President and the Cabinet of Ministers ((EEAA), 2009)

6-6-2 Laws and Legislations Concerning Environment and Environmental Protection Egypt

Law 4/1994 was amended by law 9/ 2009; this law has a greater role with respect to all governmental sectors as a whole. The law has been designated as the highest coordinating body in the field of the environment that will formulate the general policy and prepare the necessary plans for the protection and promotion of the environment. It will also follow-up the implementation of such plans with competent administrative authorities.

The laws and regulations covering the governmental sector that can be grouped according to the pollutant emissions from various activities ((EEAA), 2009).

6-6-3 Investigating EA in Egyptian Environmental Law:

- Although of the mention of EIA in law 4 from Article 19 to article 23, but there is no mention for SEA, and the law is focused only on EIA which is carried on buildings or extension of existing buildings.
- Also in the executive regulation there is no mention for SEA and the focus is only in EIA in articles from 10 to 17.
- There is no mention for any co-operation on the strategic level between EEAA and competent authorities concerned of planning in Egypt like GOPP.
- Annex 2 of the environmental law illustrate the establishments that must have EIA study as following:

These establishments are classified according to the following criteria:

- First: Type of activity.
- Second: Extent of depletion of natural resources, especially water, agricultural land and mineral wealth.
- Third: Location
- Fourth: Type of energy used in operating the establishment. For more details see appendix 8.

6-6-3-1 EIA in Egypt:

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 theses 8 development sectors. Urban development is one of these development sectors, but what is carried in the real is making a general SOE

to the environment and description of the 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.

The following table presents development sectors that EIA is applied on it;

Table (19): 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

6-6-4Review on the Environmental Studies in the Planning Process in Egypt

Environmental studies in Egypt had a long history, almost all the physical planning of a lot of project came with the environmental studies. But this study was only carried to make an inventory of the natural environment of the site and description of the natural characteristics of the site; like description of wind direction, temperature, north direction, contour of the land and other related natural data.

Lately after the emergence of the environmental law No. 4 in 1982 the environmental studies in Egypt take another shape, as from then the awareness of the environmental impact are begun.

From 1982 till now this EIA at the project level is carried on all establishments or projects and for expansions or renovations of existing establishments according to the Environmental law (Law no. 4 of 1994) and this operation is govern by the EEAA.

The purpose of EIA is to ensure the protection and conservation of the environment and natural resources including human health aspects against uncontrolled development. The long-term objective is to ensure a sustainable

economic development that meets present needs without compromising future generations' ability to meet their own needs. Guidelines for EIA are currently available on eight sectors assessments of urban development is one of them.

There is also a specific EIA guideline for Urban Development project, and this assessment is carried on the following levels of projects;

• The change in the existing use of an establishment within the urban area and the introduction of new activities.

• The new cities established outside the existing urban boundaries.

• Tourist zones in areas of special nature.

• Extensions of existing areas ((EEAA), 2009).

6-6-5Evaluation of Environmental Studies in Egypt

The ongoing development in Egypt threat the safety of many of the natural resources, these ongoing conflicts between aims of development and aims of preserving the environment in Egypt raises many questions about the feasibility of current EA at the level of projects and the importance to begin environmental studies from the strategic level.

Egypt is undergoing rapid industrialization, urbanization and population growth, thus environmental problems are on the increase. Although EIA has been applied to individual investments in Egypt since 1993, natural environment has continued to be affected because of human activities. Today, parallel to the developments in the world, it has been discussed that it is necessary to strengthen EIA and to practice SEA.

But till now there is no mention to the EA at the high level (plans, programs and policy) in Egypt.

Based on interviews with key persons in GOPP, EEAA, besides conclusion of questionnaire, now many of these specialists think that is time now to start thinking in SEA, and legal framework for implementing it. It is must now to make bond and link between GOPP and EEAA not in meeting only, but in establishing the institutional framework of implementing SEA in land use planning in Egypt. However, because SEA approach is very new concept in Egypt, it will take time to answer the questions about how and in what fields to practice.

It demands that we make the principles of sustainable development an integral part of our PPP. We must consider the environment when making decisions, just as we consider economic and social issues. SEA is the most efficient way to make this happen. SEA helps decision makers reach a better understanding of how environmental, social and economic considerations fit together. Without that understanding, we risk turning today's development successes into tomorrow's environmental challenges. In short, SEA helps decision makers think through the consequences of their actions.

Generally, There are many driving forces govern the development process in Egypt through the PPP, environmental issue is not one of this driving forces until now, also there is a neglecting of the role of public hearing and participation through many part of this decision making process.

Lack of transparency and public participation and other political forces helped in ongoing deterioration of Egyptian environment as despite all the environmental efforts many projects in Egypt are established even they harm the environment because a lot of political and other driving forces shown in the next figure. And because projects are come in a later stage after important decisions were taken without any SEA are carried out on the policy level so the environment deterioration in Egypt is continued.

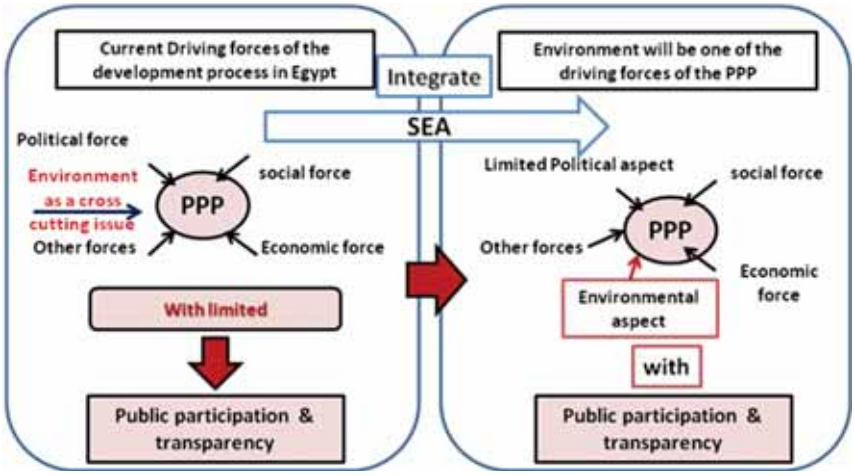


Figure (48): Expected changes in the decision making process after integrating SEA in it.

6-7 Analysis of the Current Environmental Studies in the Planning Process in Egypt:

Environmental studies are carried from the socio economic plan (five years plans) till the project level study. But these environmental studies varied from the high level scale till the project scale. The full EIA according to law is carried on the project level and no EA is conducted in upper scale. But we cannot neglect the other environmental studies which carried from five years plans till master planning process, this environmental studies is varied from general goals and recommendations in the five –years development plan and environmental inventory to the current environment status in the other levels of planning.

According to ((GOPP), 2008) in the strategic plan of cities and villages; environmental issue is one of the cross cutting issue (environment, governance and vulnerability are additional cross cutting issues) that interact the three main substantive areas, i.e. shelter, basic urban services and local economic development. The environmental study in this strategic urban planning TOR focused on applying a detailed study of this environmental issues by describe the state of environment of the city, pollution and other environmental problems. But the missing part is in the assessment of the proposed plan, the TOR doesn't oblige the planner to assess the environmental impact of his strategic plan proposal while there are supposed number of alternatives that made and the SEA can implemented to guide the decision maker of what is the best alternative from environmental perspective.

The following table shows the different level of the planning process in Egypt and the role of the environmental studies in it.

Planning type	Type	Frame	Environmental studies
Socio – economic plans, national	development plan (five – year development plan)	Written statements (economic targets, sectoral aims, social development	General description of the current environment and future determinations and recommendations
			These Plans are done by Ministry of economic development and no assessment is carried on it to assess its impact on environment and no involvements from EEAA in accept or refuse it.
Physical plans	National Level	whole country or more than one region	General description of the current environment and future determinations and recommendations, besides put environmental objectives at national level.
			No environmental assessment, no involvements from EEAA in accept or refuse it.
	Regional level	regions (like; greater Cairo region)	Environmental inventory & general recommendations for protecting the environment.
			No environmental assessment, no involvements from EEAA in accept or refuse it.
	strategic plan for governorates	governorates	Environmental inventory & general environmental objectives.
			No environmental assessment, no involvements from EEAA in accept or refuse it.
	strategic plan for cities & villages	cities - villages	Environmental inventory, Environmental studies is a cross cutting issue in all major issues (shelter – economic-services).
			No environmental assessment, no involvements from EEAA in accept or refuse it.
	Detailed urban plans	detailed plans	environmental inventory and detailed proposed projects
			No environmental assessment, no involvements from EEAA in accept or refuse it.
Project level	Full design for all buildings	Design scale	EIA studies (the developer must make the study according to law and have the approval from EEAA)
			The EEAA have the right to refuse any projects

Table (20): Role of Environmental studies in the planning process in Egypt.

From the previous table we can conclude the following; Major conflict in the planning process in Egypt that there 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 studied playing as 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.

6-8Conclusion of Chapter 6:

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 0f 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.

7-Chapter Seven: Developing Egyptian SEA model

Introduction

This chapter represents the results of the work that was done in the previous chapters, as the aim of this chapter is to construct the Egyptian SEA model in the field of LUP. In the previous chapters a lot of research methods were used in order to collect and analyze the collected data. The research methods of this chapter include consultation of some experts especially in the field of environment and land use planning, besides analyzing data that collected from questionnaire and workshops to help in building this model from real work and experience.

7-1 Summary and Findings from Previous Chapters

In order to construct the SEA model, data were collected and analyzed in part one; the literature review in order to conclude the final SEA steps in LUP. SEA process is a parallel process to land use planning not a separate process; this process is a product of cooperation between numbers of experts, competent authority and assessment team. Competent authority is the one responsible of putting PPP, constructing the assessment team, facilitating the data and cooperates with them in scoping and sitting alternatives. These alternatives must be a product of intensive meetings between competent authority and assessment team in order not to duplicate the work, and carry out the assessment as a parallel process to the LUP process.

7-2Finding of Questionnaire and Interviews:

As discussed before in chapter 1 the questionnaires were made face to face with the participants of the EIA and SEA courses in the HBRC as they are represented of EEAA, GOPP, Environmental departments in local administrations, the total number of the selected sample was 45 people. They all answer this questionnaire within the training course. A summary of this questionnaire is in appendix (1).

The other sample is the attendees of CEIAC workshops and events from 2008 till 1-2010, and this sample divided into the following types;

- 11 people answered the questionnaire and the result of it added to the rest of results.

- 10 people are the total interviewees, and the interview was unstructured and generally discussed the environmental situation in Egypt and possibility of applying SEA.

- 5 People attended the SEA training course in Vienna (2008), under the umbrella of CEIAC project, and all discussions and sessions results used in constructing the model.

- The total number of the selected sample for questionnaire is 55 people from different authorities and administrative bodies.

Questionnaires results:

- 90% of the participants' emphasis on the importance of implementing SEA in the planning process in Egypt. They mentioned that it is the appropriate time now to implement it to solve the current limitation of the EIA practice in Egypt; especially EIA studies are conducted in Egypt without any prior assessment.

- 81% of sample thinks that the implantation of SEA will not stop the EIA process in Egypt, but the two processes will work in a comprehensive way; by applying assessment in different tiers of decision making process.

- Also 77% of sample think that in order to implement SEA in the decision making process in Egypt two main concepts must be developed; first transparency and second public participation, as they mentioned that one of the problems in the decision making process in Egypt that it is done without announcing the public of what decisions are taken from the beginning.

- The opinions were differentiate concerning their expectation of whether the implementation of SEA will success or not, 60% of them thinks it will failed due to current situation of less transparency and limited public participation, and 40% thinks that we must try first before putting judgments.

- 90% of the sample thinks that a lot of changes must be done in legislations and laws, beside creating an authority or committee for SEA and upgrade capacity building of experts in the field of EA to make us capable of integrating SEA in the planning process.

Interviews & workshops results:

- The scope of these interviews was to describe current environmental situation in the field of LUP and EA.
- The workshops helped in discussing potentials for applying SEA in Egypt, and current environmental studies.
- Most of the data concerning hierarchy of LUP process were collected from interviews.

7-3 Constructing the Model:

The model was constructed based on the findings of literature review, questionnaire, interviews and comparison between case studies as shown in the next figure.

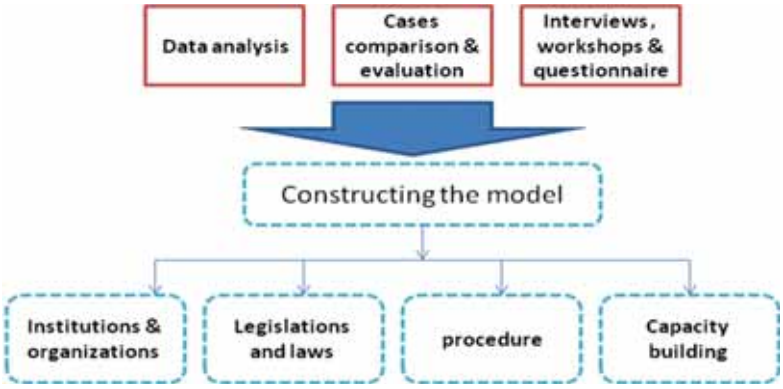


Figure (49): The SEA model based on literature, questionnaire, workshops and cases comparison.

7-3-1Institutional and Organizational Framework for the Egyptian SEA Model;

Identification of the key roles and responsibilities of governmental bodies that will be involved in the SEA process is the first step before constructing the model.

7-3-1-1Competent Authority Responsible of the Development of LUP (Competent Authority):

Based on Law no. 119 of 2008, the GOPP is the competent authority responsible of reviewing all land use planning in Egypt and develop all

planning strategies. Therefore the GOPP or its regional branches can be the competent authorities responsible of putting Land Use Plans.

7-3-1-2 Assessment Team:

It is better to compose assessment team from environmental authorities and planning authorities. Based on this, it is better to establish a committee its members are representative of different authorities; GOPP, EEAA, Tourism Development Authority, representative from nongovernmental organizations other environmental and urban planning experts to be responsible in conducting assessment step.

7-3-1-3 Institution for Review:

To insure that the SEA is conducted with maximum transparency; it is recommended to make a review authority that follow the Council for Planning and Urban Development, to act as a higher authority.

This review authority work under the umbrella of this Council and its responsibility to make decisions concerning proposed land use planning based on the finding of the SEA report. Currently this institution does not exist, and it is one of the changes that must be done to complete the SEA process.

7-3-1-4 Public Concerned:

As mentioned before, the public participation is very important and the key of success of any EA in Egypt. This public participation can be conducted by many means varied from meetings, questionnaires or other tools. Non-governmental organizations in Egypt can play a major role in this issue.

7-3-2 Legislation and Laws:

In order to implement EA in the high level of decision making process in Egypt; some changes must be done in both Egyptian environmental law and physical planning law.

The physical planning law must include an article state that it is obligatory by law to carry out SEA for LUP for new or upgrading areas. Also this article must describe the SEA process in detail and the responsibility of governmental and non-governmental authorities.

Screening step is the first step of the SEA process, and screening concept must be discussed in the law in detail. If the PPP passes this step without any recommendation from the screening team, then no SEA will be conducted. If

not; then the PPP must complete the SEA process and get approval of the review authority in it after preparing a parallel SEA study.

As currently there is no mention of SEA in the law; so changes must be done in the law and its executive regulation to ensure that SEA becomes a part of the LUP in Egypt.

Also the environmental law must mention SEA as an obligatory step in preparing PPP in Egypt especially in LUP. And the executive regulation must explain the process, how it will be conducted, and the role of the EEAA in it.

7-3-3 the Technical SEA Procedure;

One of the major steps in constructing the model is defining the SEA technical procedure, and because it will be a parallel process to land use planning process in Egypt, we must understand the steps of preparing plan or program in the field of LUP in Egypt.

7-3-3-1 Physical Planning Process in Egypt:

GOPP is responsible of preparing all land use planning in Egypt based on law no.119 of 2008 it is obligatory by law to get approval of the GOPP on all new or upgrading of land use planning in Egypt.

Land use planning process in Egypt consists of the following next steps:

Data collection:

GOPP has the authority to request all the necessary information related to its tasks directly from all the public institutions and other natural and legal persons. They have to provide the required information on time.

This work can be done by the GOPP or assigned to private offices or special expertise upon a request from GOPP, and the work is reviewed by the GOPP in all steps.

Figure (50): The planning procedure as per the GOPP practice.

Determination of the plan strategies:

In the second phase of the process, the plan strategies are prepared depending on the government targets and policies. This document is clarified parallel to the feedback from the government. It includes the aims, technical, political basis and targets, also the methods to be used.

Public participation:

In the preparing of plans or programs public participation is neglected in all steps, but in making the strategic planning for existing cities or rural areas, public participation and city consultation are essential parts of the planning process according to the term of references of the strategic plan of cities and villages.

Preparation of the draft plan:

Preparation of the draft of plans or strategic planning is done by the different network of expertise in all fields, environment expert is one of this experts. This draft plan is done with the public participation in case of preparing a strategic plan for an existing city or rural area, but new compounds or cities don't include any public participation.

Acceptance of the draft plan:

After many reviews steps the draft plan is now accepted from the GOPP and other detailed planning can be done from now.

7-3-3-2 Technical Procedure of SEA for Land Use Planning:

A proposed technical procedure of the SEA model consists of three stages; the first step is the preparation, the second step is the assessment step, and the third step is the review step as shown in the next figure.

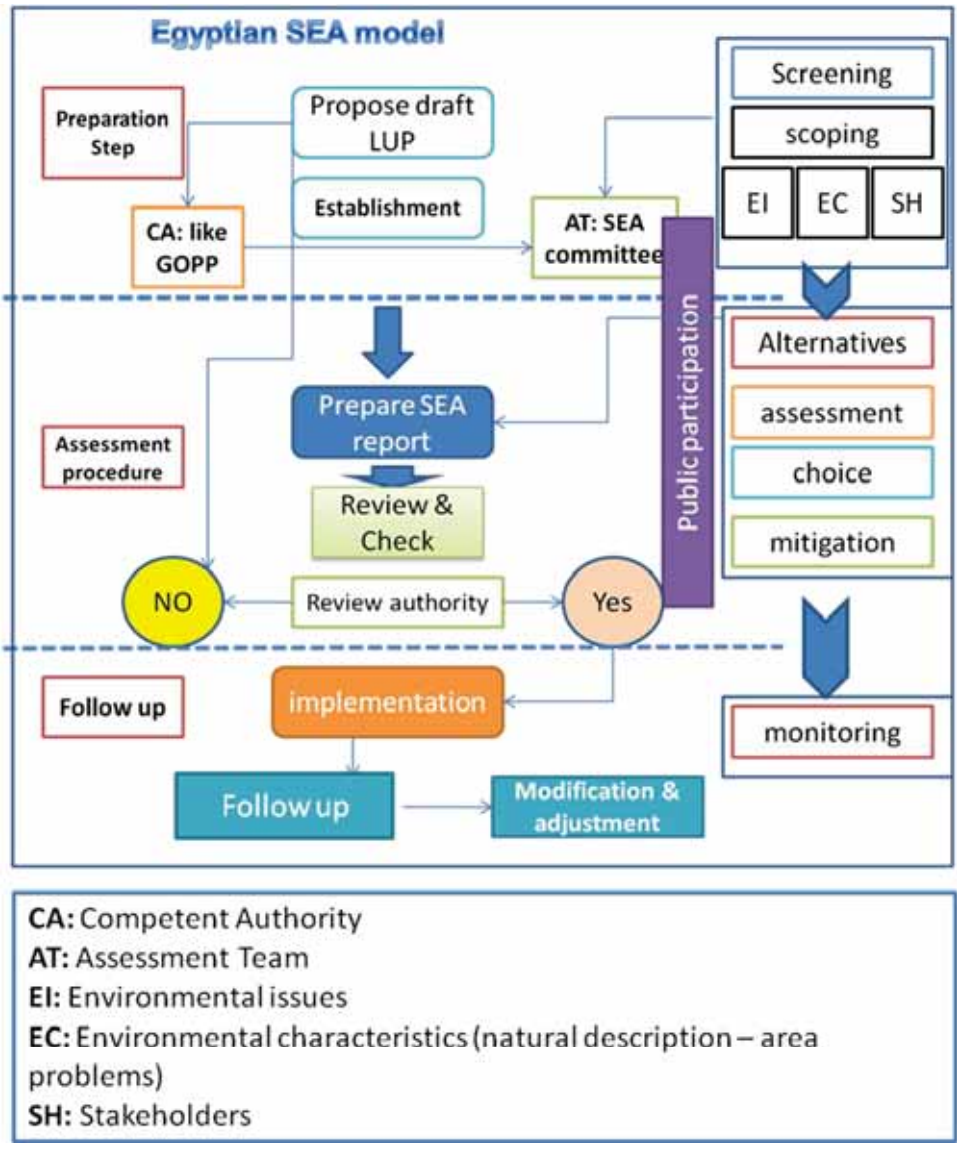


Figure (51): The Egyptian SEA model.

a- Preparation step:

This step is a parallel step to the preparation step of land use planning. It will be conducted by the assessment team with the help of the competent authority (GOPP).

At the beginning of this step, screening is fundamental to determine whether the SEA is needed for the proposed LUP or not, and secondly scoping to determine the scope of SEA.

Scoping is an important step to determine the scope of base line data that will be reviewed in the SEA report.

b- Assessment step:

This step is the heart of the whole process. In this step, the work of assessment team will start and also public participation will be a necessary. In addition in this step, cooperation must be done with competent authority and assessment team to put alternatives of the proposed plan. The role of the assessment team is to test its impacts on the environment based on approved key environmental issues, beside test sustainability of proposed plan objectives and its compatibility with approved environmental issues.

In the end of this step the SEA report is now ready to be reviewed by the review authority.

Involving public participation:

At present, the involvement of public participation in the planning process is limited in the upgrading of existing areas, but there is no public participation in new PPP or future development. In the assessment step; the public participation is an essential part; as Effective public participation will increase the accountability and transparency of decision-making process. To achieve effective public participation the public must have access to environmental information, data and knowledge.

On the other hand, it is technically not possible to expect participation from people in all statues since the subjects are political, economical, technical and wide-ranging ones. Also, it is difficult to take into consideration for such participation. With regard to this, the representative group for all involved parties is requested to share their

point of views on plan targets. In this phase, non-governmental organizations and public institutes will have an important role.

The representative group can be:

a. Universities, research centers, institutes, . . .
b. Local governments,
c. Occupational organizations,
d. Media (printed press, etc.),
e. Non-governmental organizations.

In addition, the Internet is one of the most important technological opportunities, that should be used to have an access to the draft version of documents and these documents should be presented to the public to express their point of views.

Establishment of the SEA committee:
This committee is the responsible for the assessment step of SEA, and to make SEA steps parallel to the planning process, and the experts in this committee will be from governmental organization and nongovernmental organizations.

By other words; this committee is the assessment team responsible of carrying out assessment on the PPP in cooperation with competent authorities and parallel to their work.

c- Implementation and Follow up:

This step is the decision making step. In this step, the review authority will either accept the plan with modifications or reject it. Then, implementing of plan will be started after design a monitoring plan to follow up any future impacts. This follow up is very important, as from survey and questionnaire with key persons in EEAA; our study discovered that one of the major problems of project level assessment in Egypt is the follow up and monitoring. This weakness leads to more environmental deterioration in the Egyptian environment, so the follow up step must be an important step in the Egyptian SEA model.

The next table describes proposed SEA model steps in detail.

Table (21):The Egyptian SEA model steps.

	Land Use Planning process	SEA Stage		Responsible bodies	Summary
Preparation step	Put first draft. Defining	**Screening**		Competent authority – EEAA – Environmental experts	Decide Whether PPP need SEA or not.
	Define of objectives of LUP in line with key environmental issues. Define relation with other relevant plans and programs.	**Scoping:** Sitting key environmental issues.	Public participation	Competent authority (planning team – environmental experts – EEAA – Public –NGOs – other stakeholders.	Describe state of environment based on selected key environmental issues (water – air-soil-…..). This description including current natural environment and existing problems and pressures. Defining stakeholders is the major step in validating full public participation in the SEA process.
		Scoping: Description of current environmental characteristics (natural description & problems identification).			
		Scoping: Defining stakeholders.			
Assessment step	Identifying environmental impacts. Establishing environmental targets and assessment indicators. Analysis and evaluation of the environmental impacts.	Putting alternatives for the proposed PPP.		Assessment team (SEA committee) – competent authority – EEAA – public.	Forecast and evaluate the impacts that different plan schemes, including alternatives, have on environmental targets, environmental quality and sustainability. Environmental impacts evaluated include direct ones and indirect ones, especially those that are cumulative. According to the results of predications and evaluations, plan schemes are ranked according to both plan purposes and environmental targets. Significant environmental impacts of all schemes are summarized, and environmental protection countermeasures are proposed. Then the decision is made regarding which proposal is environmentally feasible. The selected proposal must be subject to mitigation step if there is any un certainty or negative impacts from the proposed plan.
		Define sustainability objectives of each alternative.			
		Assessment methodology.			
		Assessment of each alternative			
		Selection of the best alternative			
		Mitigation plan			
Review & Follow up	Based on the response of the review authority; the competent authority will implement or update the proposed PPP, or design new one if the review authority refused it.	Writing SEA report.		SEA committee – competent authority – EEAA – environmental experts	Based on the previous steps the SEA report must be prepared and conclude all previous points.
		Review		Review authority	Take decision concerning PPP based on the recommendation of the SEA report.
		Monitoring plan		Review authority – SEA committee.	For those plans that might cause significant environmental impacts, environmental monitoring and follow-up assessment programs should be specified in the SEA report

7-3-4 Capacity Building for the Key Responsibilities Bodies:

As SEA will be implemented for first time in Egypt, a lot of work must be done to insure that the experts and the members of the assessment team are qualified to make this assessment. A program of capacity building must be worked parallel to the legislation update. This program must contain intensive training courses, lectures and workshops.

Searching for specialists in SEA in Egypt will be the base in selecting the team, and a plan of work of enhancement experts in both EEAA and GOPP must be prepared.

The participation of research institutions is very important; as some of them give now training courses and workshops for SEA like; HBRC for example.

Enhancing the capacity building of the review team and the EIA review team in EEAA is very important too. Also enhancement of the capacity building of monitoring team and researchers in EEAA is in the same importance.

7-4 Answering Fundamental Questions in Implementing SEA in Egypt:

How Screening will be done?

In this step assessment team decide whether the PPP need an SEA or not, as discussed in chapter 4 that some countries in the world exclude this step and consequently the SEA is obligatory to all land use plans. In this model the researcher think that this step is essential, and to protect it from any other forces the following criteria can define the screening step;

1- The location of the land use plan is in new lands or it is in inhabitants land, however all new land use planning in vacant lands must subject to SEA if the following points are present;

- The area contains any natural life from fauna or fauna even in desert land where the ground cover can be rare but we cannot neglect it.
- The area is adjacent by any natural water sources.
- The area is near to any protected areas or sensitive areas.
- The area contains any culture heritage features or it is near to one of this site.

- The proposed land use plan contains more than one proposed land use, even if the second use is services.
- The pollutant rates in the site are higher than regular level.

And accordingly; if the land doesn't include any of the previous items, then the CA must prove to the screening team that the SEA is not necessary there.

2- If the land use planning is upgrading to existing area, then if the proposed plan contains industrial areas, electrical plants, sewage networks or sanitary landfill, road network, any establishments near to water bodies, any uses near to cultivated lands or cultural heritage sites or protected areas, then the master plan must subject to SEA to choose the most appropriate solution with respect to the environment.

In which level of land use planning the SEA will be implemented?

As discussed in the previous chapter the land use plans in Egypt are divided into five types based on level and area of coverage.

The major problem in implementing SEA in Egypt is to define in which level it will be implemented. To answer this question we must know that the aim of implementing SEA in Egypt is to help decision makers in taking better decisions that respect the environment and achieve concept of sustainability. So, SEA can be applied in specific tires (levels) and in other tires it will not be needed in order to avoid duplication in work.

In the LUP level where the SEA will not implemented; the planning authority must prepare a checklist, aim of this checklist to insure that the PPP is following the recommendations of the SEA report that was carried in the higher level of LUP.

For example in the upgrading of existing areas and make strategic plans for cities and villages, SEA will be applied in the city level and local units if it needed in the screening step, but villages level will not subject to SEA but it must follow the recommendations of the SEA that done in the higher tiers (cities or local units).

But regional and governorate level must subject to SEA. This because of; the difference in the scale, as in the regional level; each region can cover one or more governorates so the scope of PPP is huge comparing to city level.

Figure (52): Implementation of SEA in different tires of LUP in Egypt.

Any other types of LUP that fall between any major step will subject to SEA based on the recommendation of the screening step, if the land use plan is situated in sensitive area or contain more than one use then it will be subject to SEA. The development corridors is one of the new strategies of the GOPP, and because it covers huge areas and number of governorates then, it can be subject to SEA even it is not one of the LUP types that illustrates before.

7-5 The Expected Difficulties of Implementing SEA in Egypt:

There are two main expected difficulties related to the practice of SEA in land use planning in Egypt.

- Its relation with current project level assessment, and how they can work in a comprehensive way.
- Lack of experience in the SEA methods and tools.
- Implementation of SEA in the LUP levels, and how the concept of tiering will be implemented without repetition or duplication of work.

In order to implement SEA in Egypt, it is essential to establish environmental data base especially by the Ministry of Environment and EEAA. Currently this data base is available but need to develop with the SEA requirements.

Some suggestions are given below for that purpose;

– EEAA: should be prepared and updated about natural and cultural values in Egypt. To exemplify, data, documents and maps related to the legally

protected areas, natural flora, soil, topographic structure, historical and cultural values should be prepared and shared with everyone, and this data must be available and updated.

– The pollution in the country: air, soil, water, noise pollution should be measured in all over the country and mapped.

– Training: in order to raise awareness about the technical procedure of the SEA; institutions, organizations and other non-governmental organizations should be informed and trained on the SEA process.

– Collaboration among institutions: a unit from GOPP, HUUD and EEAA should be set up in the Ministry of the Environment. In addition, there should be collaboration between this unit and SEA committee. Also a specialized staff should be organized between them.

7-6 Conclusion of Chapter 7

SEA is designed to explore and evaluate suitable alternatives. The sooner the SEA is introduced to policy formulation and plan-making, the greater the chances are to identify opportunities and influence outcomes.

SEA can be considered as a supporting tool for land use planning process in Egypt and can enhance decision making.

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; TDA.

In order to establish a framework for implementing SEA in Egypt a lot of changes must be made in the land use planning process in Egypt.

First, at the legislation level SEA must mentioned to be an obligatory by law and it must be conducted as a parallel process to the land use planning process.

Secondly, cooperation between authorities and organizations is critical to make that happen by emphasis on the importance of having three main parties; these parties are responsible of the SEA process from its beginning.

The first one is the Proponent authority which is responsible of the land use planning (GOPP), the second one is the assessment team which is a

combination of experts and key persons from GOPP, EEAA and other administrative bodies, and the third one is the review authority which will follow the higher council of planning and have the authority to reject or accept the proposed plan or program based on the SEA document.

In all the SEA process public participation is essential to make sure that people will take their own decisions, and transparency which is millstone in this process; this can happen in Egypt by involvement of NGOs as they play a great role in the public awareness in Egypt.

Beside all that, we must focus on building capacity of experts and land use planners to enhance the whole process.

8- Chapter 8: Apply SEA Model on an Egyptian Case Study

Introduction

In This chapter the SEA model will be applied on an Egyptian case study. The main aim of this chapter is to check the applicability of the SEA guidelines that were created in the previous chapters, in order to examine this guideline and its success in integrating environmental aspects in land use planning process in Egypt.

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.

8-1 Defining the Study Area:

8-1-1 Location

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.

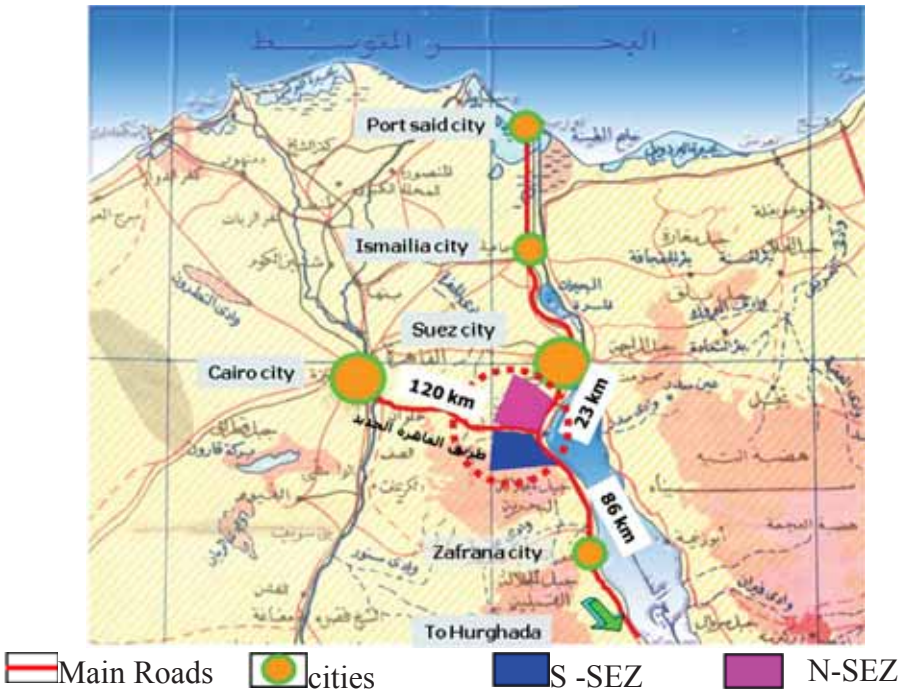


Figure (53): The location of the case study in the north west coast of Gulf Suez.

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 (53); 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).

8-1-2 Development History of the Selected Area

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 (Hassan, 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 - Ain Sokhna 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.

8-1-3 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.

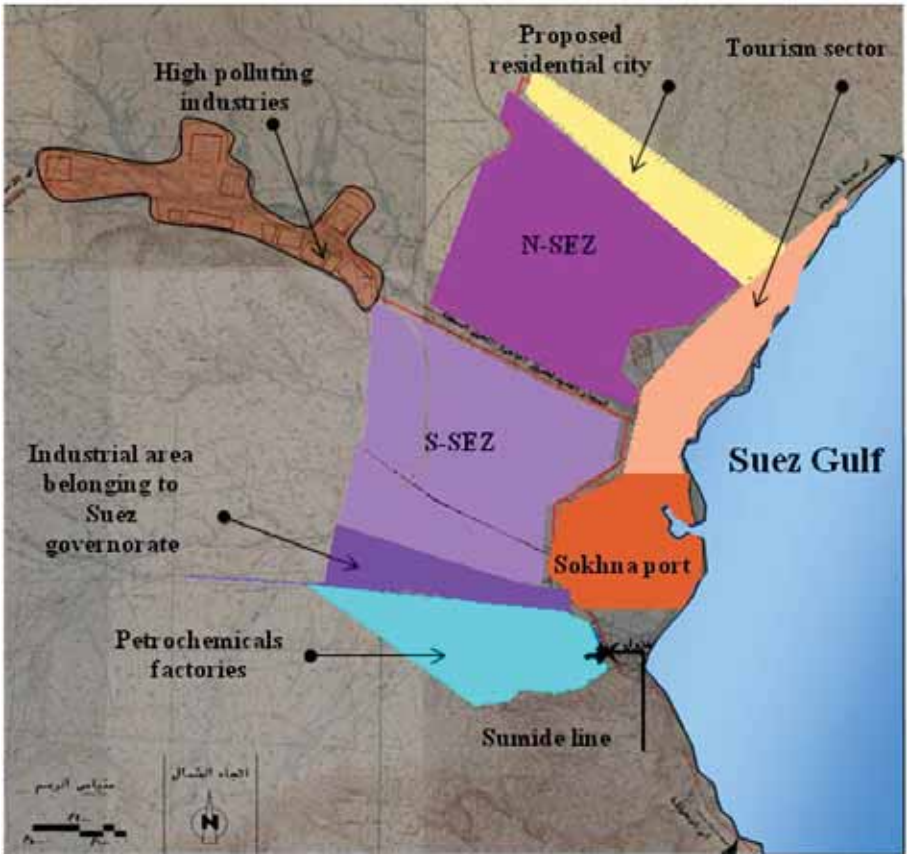


Figure (54): Land uses in the case study area (GOPP, 2010)

The current and proposed 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):

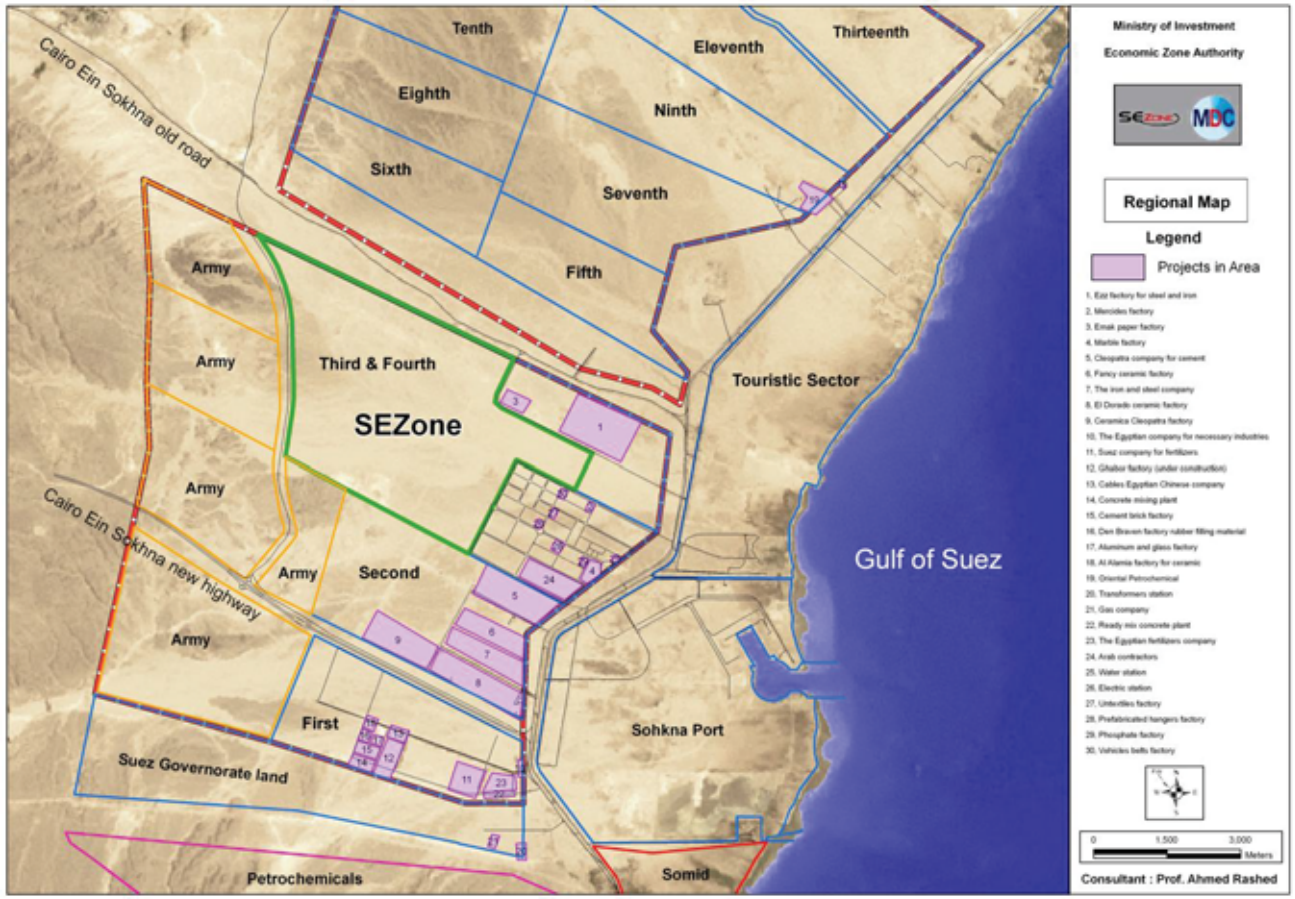
Decree No. 35 of 2003 establishing the General Organization for Economic Zone in the North West Gulf of Suez, as the first special economic zone in the country. The estimated area of this area in the first stage will be 90.2 square kilometers.

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 (55): photos of existing factories in S-SEZ

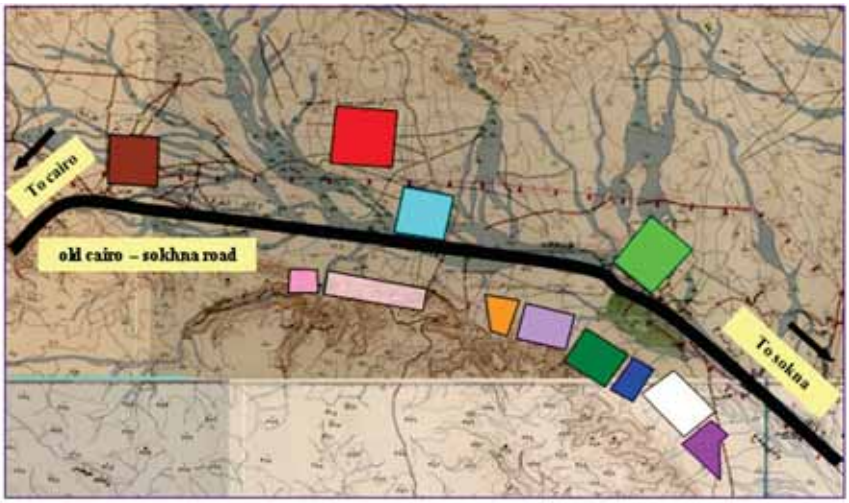
Figure (56): Existing Factories in S-SEZ.
(Salheen, 2008)



c. 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 / Ain Sukhna 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
166.2	pharos for cement	231	Egyptian cement
177.5	EGY for cement	327	Arabian company
88.6	EGY for iron	222	Cleopatra cement
222.9	El swidy for cement	61.7	el mahgar
120	Gulf cement	222	El Minnya cement
238	Suez cement	86	international cement

Figure (57): Existing factories in the high polluting industrial area.
(GOPP, 2010)

d. 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.

e. 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.

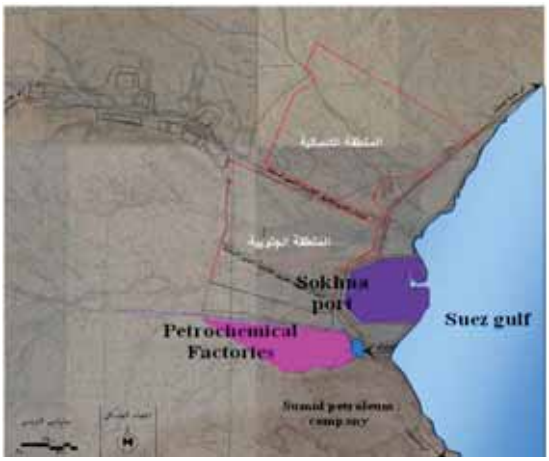


Figure (58): Petrochemicals industries and Sokhna port. (GOPP, 2010)

f. **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.

g. **Tourism sector (Al Ain Al Sokhna):**

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 km 2. This area includes a number of villages and hotel accommodation; the number of hotel rooms reaches 2000 rooms (TDA, 2010).

Figure (59): Photos from existing touristic area

8-1-4 Accessibility to the area:

The area is well connected with Cairo, Suez and Hurghada by major regional roads represented in the next figure.

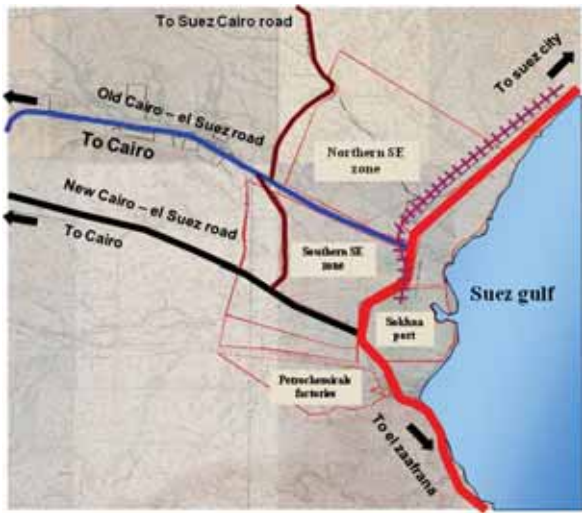


Figure (60): Existing roads in the site. (GOPP,2010)

The Suez / Zafranna Road: It is the main entrance to the area. It is located on the eastern side of the area; it is a two-way road with island in the middle with approximately width of 10 meter to each direction.

The Cairo / Ain Sukhna old road:

This road is located south of the northern region and represents the northern entrance of the S-SEZ.

The Cairo / Ain Sukhna New road:

This road is located south to the S-SEZ; it is a double two-way road with island in the middle.

Railway:

This Railway line is parallel to Suez –Zafrrana, and come from the rail way of Cairo / Suez.

8-1-5 Maritime and Ports:

The Governorate of Suez accommodates a number of ports for various purposes along the western coast of the Gulf of Suez, as shown in the next figure. Therefore, many numbers of possible sources of oil pollution exist, like oil loading / unloading facilities, oil pipelines and storage facilities ((JAICA), 2008).

Figure (61): Ports and harbors in the study area.

8-1-6 Surrounding Area:

The case study area is located in the desert hinter land of governorate of Suez, from the right it is surrounded by Suez gulf. From the north it is

adjacent to Suez city, agriculture land, reclamation lands and Attaqa Mountain. From the west; it is adjacent to the desert areas, some hills and mountain. From the south; it is surrounded by El Galala Mountain as shown in figure (62).

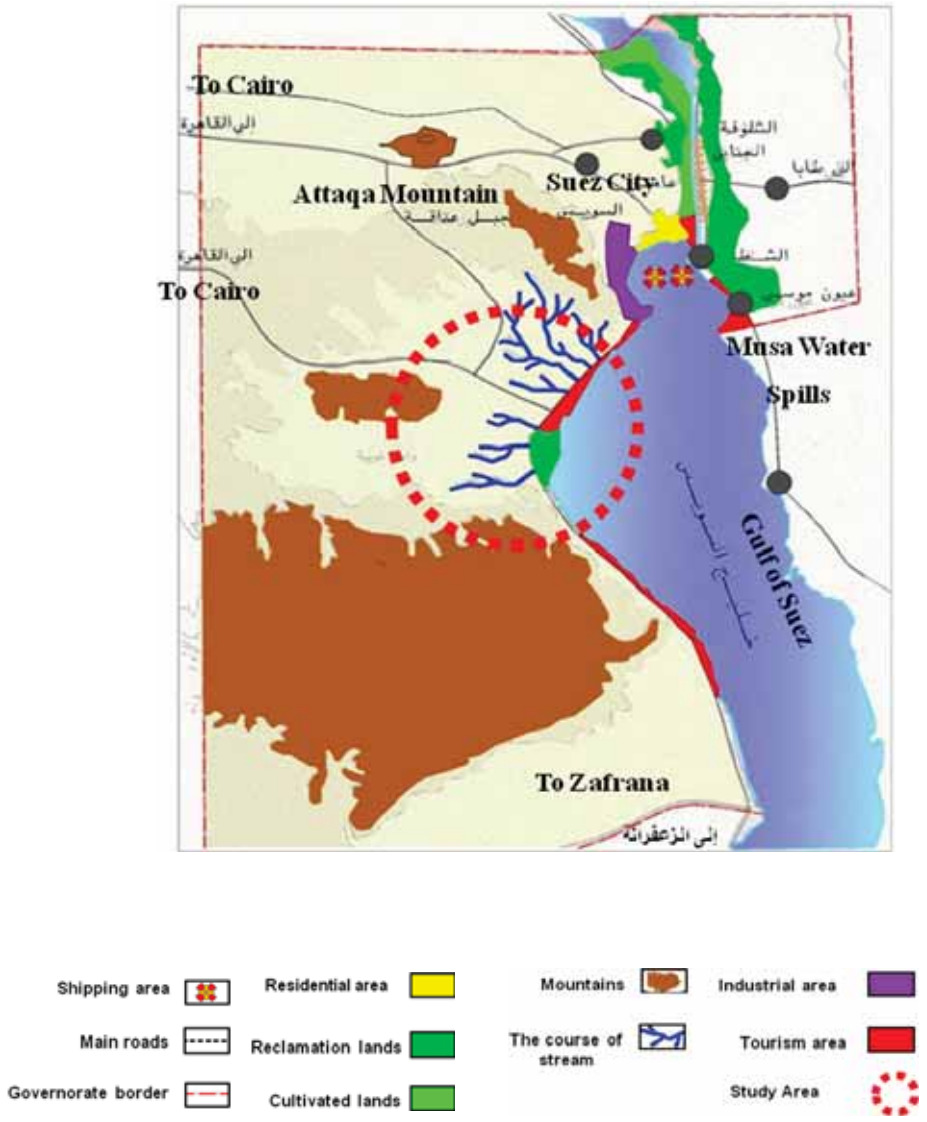


Figure (62): Surrounding area of the case study.
(GOPP, 2010)

8-2 Applying the SEA model on the case study:

As discussed in the previous chapter, the proposed SEA model is divided into three main steps; Preparation step, assessment step and review step. Each step is divided into secondary steps, and consequently methods and

tools are differentiating from step to another. Table (22) illustrates the SEA steps that will be implanted in the case study.

Table (22): Contents of the SEA process based on the constructed SEA model.

Preparation Step	
Screening	To answer one main question; Does this development plan need an SEA or not?
Scoping: Sitting Key environmental issues.	Sitting key environmental issues is fundamental step in this process, as based on it, other steps are implemented.
Scoping: Defining stake-holders	Defining list of stakeholders is a major step in preparing public participation and public involvement in the SEA process.
Scoping: Description of current environment	The description of the current environmental characteristics, problems and pressures must be done in line with environmental issues.
Assessment step	
Describing the plan under review and putting its alternatives.	The plan under review must be described to define the scope of the study, and also its relation with related plans must mention. Also the proposed alternatives must be described too.
Sitting objectives of the plan under review and its alternatives.	The plan and its alternatives will be described in line with its objectives to assess it is computability from sustainability approach.
Assessment of the proposed plan and its alternatives	The proposed plan and its alternatives will subject to assessment to assess the impacts of each alternative on the environment.
Selection of the most appropriate alternative	Based on the comparison of the assessment conclusion of each alternative; the most appropriate alternative will be selected.
Mitigation measures	Any negative impacts in the selected alternative must subject to mitigation measures to decrease their impacts.
Review step	
Monitoring plan	The CA must prepare a monitoring plan to check any future impacts from the plan on the environment.

8-2-1 preparation step

8-2-1-1 Screening:

As mentioned in previous chapter, the answer of this question is made based on the type of the plan under review from one hand, and the nature of the environment in the area from the other hand.

As this case is located in Suez Gulf, and according to ((EEAA), 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 confliction 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.

8-2-1-2 scoping

a- Sitting key environmental issues

As the environment of the selected area is containing marine life, flora and fauna, this marine life can described in a separate key environmental issue.

The environmental issues for this area are; soil, water, air, flora, fauna & biodiversity, marine life, human health/population, landscape and material assets/ cultural heritage.

b- Defining Stakeholders:

I. Governmental bodies

Suez Governorate:

As the case study is located in Suez governorate, as the old industrial areas are under its authority so it is one of the benefiters.

Ministry of Water Resources and Irrigation (MWRI)

The main task of MWRI in water issues is to enforce the Law No. 48/1982 to protect the fresh water of the Nile River and its related waterways.

Maritime Transport Sector

The Maritime Transport Sector in Egypt under the jurisdiction of the Ministry of Transport comprises numbers of authorities over diverse fields associated with coastal and marine transportation. Among them are Alexandria Port General Authority, Port Said Port General Authority, Red Sea Port Authority (RSPA), Damietta Port Authority, and Egyptian Authority for Navigation Safety (EANS) and others.

SE Zone:

The North West Suez Special Economic Zone is the first special economic zone created under the Law 83 of 2002, and will serve as a model for the future development of other SEZs in Egypt.

II. Private sector (investors)

The private sector has various opportunities to improve its production processes into one that is sensitive to the environment and responsive to the needs of the local community.

Petroleum Sector

Petroleum companies engaged in oil-related activities like oil exploitation, transportation, refineries, processing and so on are called the oil sector and they forms geographical committees by the regions ((JAICA), 2008)

Fisheries:

Fishing in Gulf of Suez is one of the economic bases in the area.

Mining investors:

The area is famous in mining especially petroleum in Suez gulf and mining in desert areas.

III. Research and Academic Institutions

Arab Academy for Science, Technology and Maritime Transport (AASTMT)

The Arab Academy for Maritime Transport was established by virtue of the international agreement among Arab countries with headquarters in Alexandria City in 1974. In 1997, the member states signed a new agreement by virtue of which the Academy was amended to the Arab Academy for Science, technology and Maritime Transport (AASTMT).

National Research Center (NRC)

The National Research Centre (NRC) was established under the jurisdiction of the Ministry of State for Scientific Research in 1956. It is the largest multidisciplinary research and development center in Egypt and devoted to basic and applied research within the major fields of interest. The major aim of NRC is to foster basic and applied scientific research, particularly in industry, agriculture, public health and others.

Egyptian Petroleum Research Institute (EPRI)

The Egyptian Petroleum Research Institute (EPRI) established in 1974 is a research and development institute for petroleum under the jurisdiction of the Ministry of State for Scientific Research. It has been engaged in research, development, evaluation, analysis, etc. for petroleum including natural gas.

Suez Canal University and National Institute of Oceanography and Fisheries

In the Gulf Region, the Suez Canal University and the National Institute of Oceanography and Fisheries represent the academic

institutions capable of identifying and quantifying the magnitude and extent of oil pollution incidents. Both institutes have experience in working in cooperation with the EEAA as external laboratories for oil analysis. The Faculty of Petroleum in Suez Canal University has small scale equipment for control and mitigation of oil spills for the educational purposes.

IV. NGOs

Almost all NGOs of Suez serve the environmental cause through projects to serve and develop the community. The most prominent non-governmental entity in Suez is the Local Council whose members are elected directly by the members of the community.

Non-Governmental Organizations in Suez are in need of efforts for capacity development and building. Very few NGOs in Suez are able to put together proper proposals to raise funds for their cause. Most NGOs are in need for strategic planning to identify their strengths, weaknesses, threats and opportunities. They need support to be organized to better serve their constituents ((EEAA), 2004).

V. Labor Unions

Workers are often on the front lines where environment and economy cross. Acting as workers representatives, labor unions are vital in facilitating better environmental management due, in part, to their experience in addressing industrial change, protecting the workplace and related natural environment, and promoting socially responsible economic development.

c- Description of the Current Environment:

Overview:

The Red sea, the Gulf of Suez and the Gulf of Aqaba, are endowed with high biodiversity. They represent a lot of different environmental ecosystem with more than 10 thousands sea organisms. Among them are fishes of over 1,000 species, hard coral of over 250 species, soft coral of 100 species, birds of over 300 species, mammals of about 300 species,

algae of over 500 species, sea grasses of 11 species, mangrove of 2 species and sea turtles of 4 species.

1-Air

a. Air Temperature

Suez is a dry zone. The recorded rainfall during winter and fall are not significant. Temperature during the fall and winter are ideal for tourism activities, while temperatures in the summer are considered high, and might not be tolerable for international tourists. Humidity is considerably high, probably because of the continuous sun shine and evaporation processes. Most of the wind blows from the North-Northwest direction. The speed of the wind is not considered high. The metrological situation of Suez does not help in dispersing air pollutants. Slow wind coupled with high temperature and humidity means that emissions are prone to stay suspended. Humidity added to sulphur oxides and nitrogen oxides resulting from manufacturing activities could easily contribute to acid rains, and probably smoke and fog (SMOG) episodes.

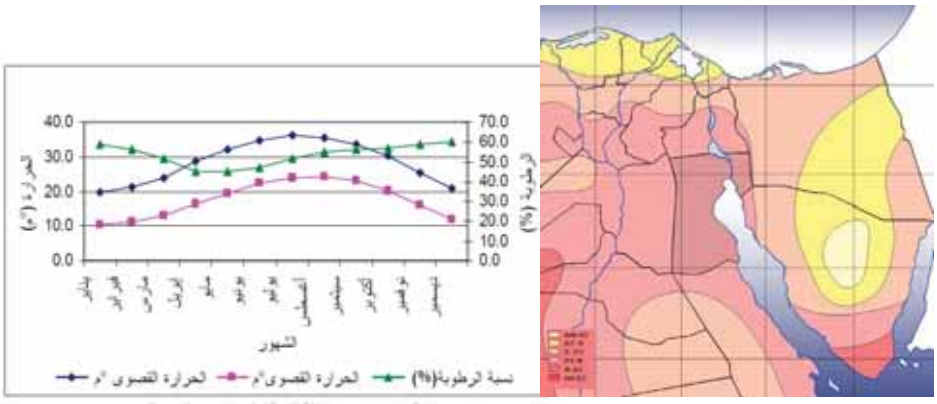


Figure (63): Monthly rates for temperature.
((EEAA), 2004)

b. Air quality:

According to the environmental information and monitoring program (EIMP) Annual Report 2002 on Air Quality in Egypt, concentrations of SO2 and NO2 in Suez are 22 and 60 microgram per cubic meter, respectively, which are within the permissible limits. In the mean time, the Total Suspended Particulate (TSP) was found to be 206 microgram per cubic meter, which is above the permissible limits.

The results of the EEAA-RBO contradict the findings of EIMP. SO2 concentration, according to RBO monitoring results, exceeded the permissible levels at the Hospital of Petroleum and Arbeen district during summer and spring, respectively. NO2 concentrations in Suez are below the permissible limits. Except of Amigo village, Particulate Matter less than 10 microns, (PM10) exceeded the permissible level, which is 70 microgram per cubic meter. All monitoring sites, except of Amigo, exceeded the permissible limits for Total Suspended Particulates. Air-borne pollution particles may contain several toxic and carcinogenic chemicals. Combined with other pollutants, they can cause serious lung diseases.

c. Current air problems:

2-Water:

a- Surface water

The Suez Gulf

The major point sources for polluting the Gulf of Suez are the power stations, manufacturing plants, and wastewater effluent from the wastewater treatment plant and the agricultural drain, which receives untreated municipal wastewater. The three ports, including wastewater discharged from tankers and tourism, besides the oil rigs and petroleum fields, are other sources of water pollution.

Fresh Water

The sole source of fresh water for the Governorate of Suez is the Suez Fresh Water Canal, which is 45 km long. Quantities of fresh water used to irrigate agricultural land in Suez have declined from 1998-2000. In 2001 the amount of water increased, then declined once more in 2002. The increased in 2001 was due, in part, to the flood at the origins of the Nile River that was above average that year.

b- Groundwater

The groundwater levels are very dependent on the tidal range in the sea level, because the materials underlying the supra tidal zone are very permeable. In summer, evaporation causes the water level to sink a maximum of 10 cm, and more seawater is supplied. In winter, with decreasing evaporation less seawater is supplied even though the winter tides run much higher than the summer tides. It has been observed that the water level rise in winter occurs rather quickly (within a few days). This is due to a sudden rise in tidal levels all along the Red Sea and the Gulf of Aqaba in fall. This phenomenon is not related to the tides themselves, but to the climatic responses (e.g. monsoons) to the movement of the sun around the equinox.

c- Water Temperature

The water temperature is lower in the northern parts than in the southern part of the Red Sea. Sometimes, sudden changes of temperature occur from one area to another, especially in the central part of the area. This change may reflect the natural barriers that prevent free mixing of waters in the area and thus inhabiting regular changes. The Gulf of Suez water affects the northern and western side of the Red Sea down to 200 m in depth. Surface temperature declines slightly towards the entrance of the gulfs, owing to the influx of cooler water from the Gulf of Aqaba, and there is also a gradual decrease of temperature in the northerly direction. The mean annual maximum and minimum water temperatures of the coast of the Gulf of Aqaba are higher than those of the Gulf of Suez.

d- Current water sources problems:

Irreversible decision making process caused a conflict in the allocation of industries adjacent to the tourism sector, beside modifications in the shoreline by touristic resorts caused a lot of pressures on current natural resources. Water pollution is the major problems that threaten the ecosystem and human life in the area. Figure (73) describes water pollutions.

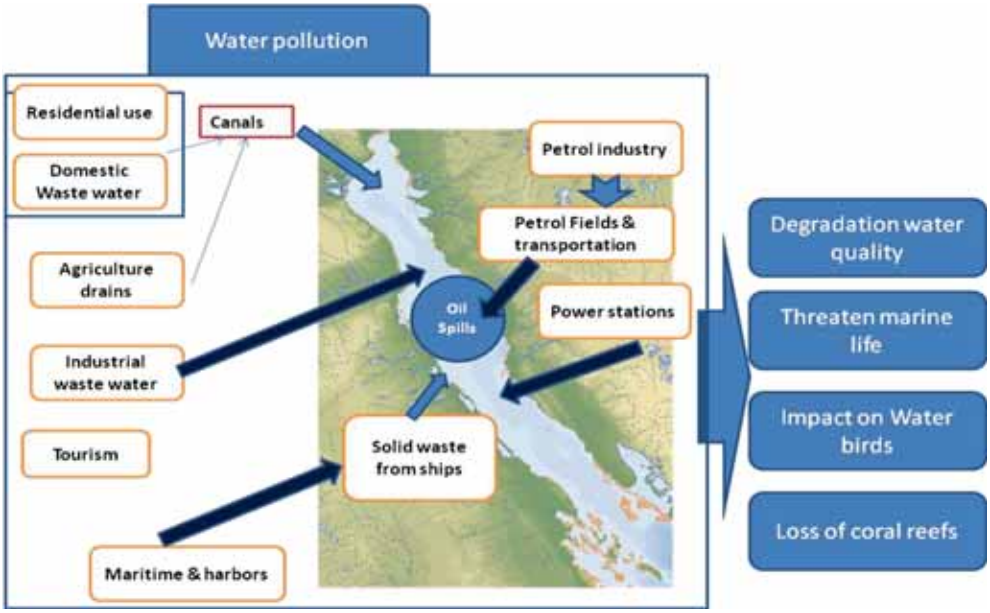


Figure (64): Sources of water pollution in Suez gulf zone.

Major water bodies problems;

Petroleum Pollution

The Ain Sukhna area in the Gulf of Suez suffers from extensive petroleum pollution inputs, as it is evident in the locality of the SUMED pipeline company terminals, which include both floating and land-based receiving terminals. Beside mining and petrochemical factories these caused both air and water pollution to the area. Also oil spills is one of the accidents that happened in the area.

Influential activities in Water Environment;

Tourism

Negative impacts include physical destruction of coastal habitats by construction works, dredging, and pollution from wastewater discharge from coastal resorts. The lack of proper land-use planning, including effective zoning and environmental review procedures in the coastal zone, particularly with regards to urban development and tourism expansion, is a growing problem in many parts of the region. Development often proceeds without the benefit of adequate planning or evaluation of potential environmental impacts.

Ship-Based Activities

One of the main sources of marine pollution in the Gulf of Suez is from ship-based sources. Transport of oil continues to play a critical role in marine pollution in the northern Gulf of Suez and the Suez Canal.

Power Generation

Power generation is among the basic economic sectors of the Governorate. The produced energy is not consumed in Suez, but also is consumed in Egypt and abroad. A significant portion of the produced electricity is exported through the unified electric network that includes Egypt as a member.

The power plants in Suez are thermal. Mazot and natural gas are used as fuel for generating electricity. CO2 produced from the three power plants raises the per capita share of CO2 in Suez to be higher than that of the national average in Egypt.

The thermal power station at Ataqa is one of the largest one in Egypt designed to generate 900 MW/hour of electric power. Cooling water of 200 m3/h is taken from the Suez Bay via an open canal extending over a half kilometer into the sea. A water temperature rise of about 10 ºC due to the thermal effect of the effluent is recorded in the near shore waters, providing possible influences to the surrounding ecosystem.

Fishing

Improper resource management, in conjunction with a lack of law enforcement, is a hindrance to sustainable development of the marine resources in the Gulf of Suez.

Ultimately, this poses a serious threat to its biological diversity and productivity, and puts at risk the livelihood of people engaged in fisheries and aquaculture. The resources status for fisheries is unknown because of a lack of stock assessment and incomplete and unreliable fisheries statistics. The present situation is going to destructive fishing practices with excessive exploitation beyond maximum sustainable yield, the absence of fisheries management plans, and a lack of surveillance and enforcement of existing regulations.

Industries discharge in water

Releasing industrial wastewater is the problem. Egyptian laws and regulations govern the quality of the industrial effluent released to the sewer network and water bodies based on the quality of the effluent at the end of the pipeline. Despite abiding by the regulations, pollutants reach the Gulf. The industrial effluents of many establishments are within the standards defined by the regulations; but by computation and calculation, the Gulf receives each day tons pollutants.

Maritime transportation

The environmental problems associated with marine transport emerge from land based sources of pollution, such as industrial activities, or water-based sources of pollution, such as oil spills.

The construction of ports and other berthing facilities have impact on the quality of water, and usually are the site of solid waste disposal. There are plans to expand these facilities. Unfortunately, if the planned expansions are not implemented abiding with environmental standards, the problems that associate with marine and inland water transport will intensify.

3-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.

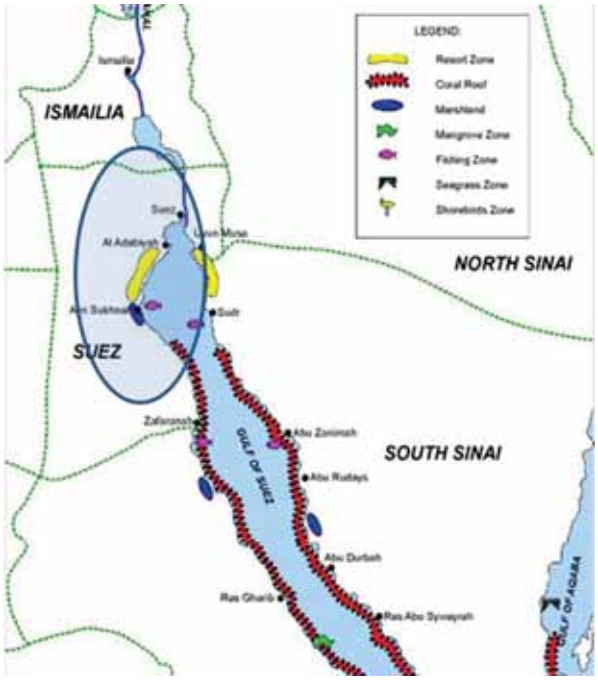


Figure (65): Environmental characteristics of North west of Suez gulf.
((JAICA), 2008)

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

b- 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.

c- 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.

d- 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.

e- 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.

Figure (67) types of marine life in the red sea.

f- 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.

5-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.

The migrating birds pass a number of internationally important bottlenecks along the Mediterranean and Red Sea Coast (Zaranik, Ras Mohammed, Suez, Ain Sukhna 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.

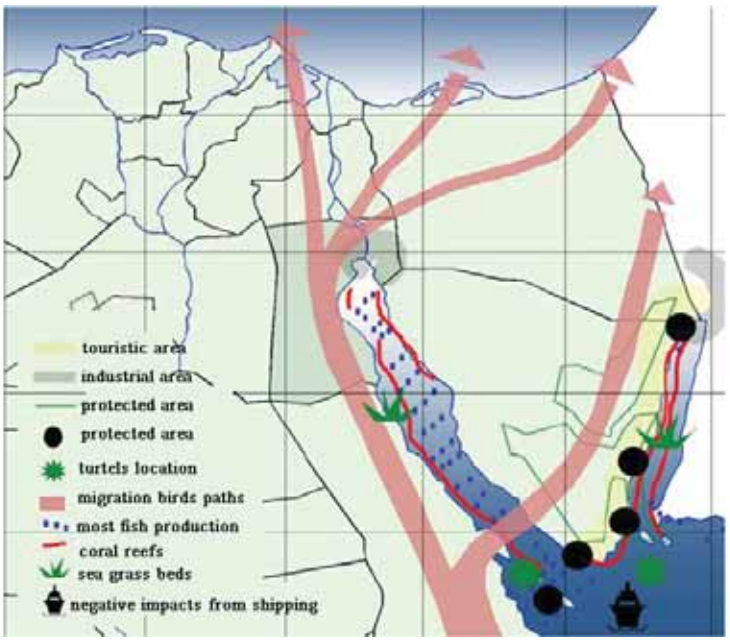


Figure (68) Migrating birds paths which is passing through the case study area.
((EEAA), 2004)

6-soil:

a- Topography

Suez is located in an area with soil terrain. The town of Suez and the most economic institutions between Attaqa Mount and El Galala Mountain on the west side and the highlands of Sinai from the east, and wide valleys are separating the two mountains as shown in figure (70).

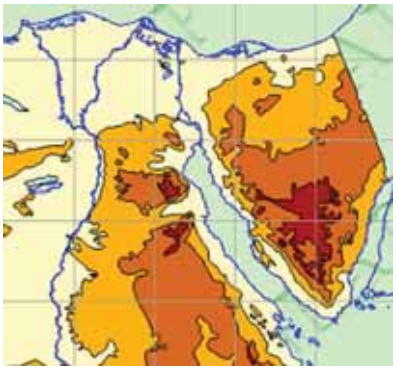


Figure (69) Topography of the case study area.

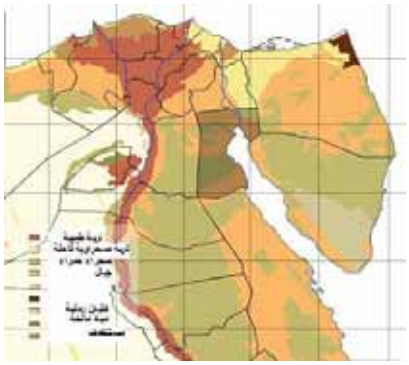


Figure (70) type of soil.

Source: ((EEAA), 2004)

b- Soil type

The soil is classified as a red soil. This soil of such properties are not suitable for the cultivation of traditional crops known in the valley and the Nile Delta, especially in the absence of fresh water, while agriculture feeders rainwater cannot be sustained consideration of the lack of continuity in the rainy season, as is the case in the northern coast.

7-Human Health and Population:

There are no measures for the people exposed to constant noise, caused especially by public and individual traffic in the area.
The decrease of harmful impacts on human health caused by noise is a demand by the Egyptian Environmental Law. Also the industrial emissions have very bad impacts on human health and life but there is no measures of that illness percentages caused by these emissions.
But generally Reduction of traffic and industry related emissions as well as air pollution caused by other sources must be one of the objectives of the proposed plan.

8-Landscape:

The landscape definition here is different from green landscape, as the area is part of the Egyptian Eastern desert, then the landscape there is the desert plants and palms which is situated in valleys or near to shore line. Some of this desert plants are medical plants and it creates the land cover of the area which is integrated with mountains, hills, deserts and small desert plants everywhere.

Figure (71): Types of desert plants which composed the land cover of the area.

9-Material Assets and Cultural Heritage:

The area contains number of ancient monuments from castles, churches and old mosques. Also Miriam and Jesus pass this land in their trip to Cairo and there are a lot of remains of this holy trip there.

Tourism affects Egypt's cultural heritage as the sites are damaged by the overuse for tourists. The carrying capacity of fragile areas is necessarily limited. The level of infrastructure support which is currently available at most sites is not adequate to the level of visitation. However, excessive density of tourist traffic is a sensitive issue due, in part, to the conflicting needs of conservation and income generation.

8-2-2 Assessment Step

8-*2-2-1* Sitting alternatives and Sustainability Objectives

Alternative 1: proposed land use plan

The aim of the proposed plan is to create a balance between current uses and future expansion needs for the development of the area.

The proposed development plan will contain the following uses presented in the figure (62), and the following is the description of the proposed development plan by the GOPP:

1- Separate the high polluting industrial zone in the old road of Cairo – Sokhna by adding a condensed buffer zone around it.

2- As the S-SEZ now is well developed and a lot of investments were done to develop this area; no modification will be done to existing or proposed factories in this area.

3- The N–SEZ is still vacant land, so the northern part will be a residential city to accommodate the workers in the factories in both N-SEZ and S-SEZ. The centralized area will be the proposed airport, and the rest area will remain an industrial zones.

4- The area of this residential area will be 47.5 km2, area of the airport is will be 27km2, and the area of industrial area will be 27.7 km2.

5- The touristic area will remain as it is with no modification or development.

6- Also the petrochemicals factories and industrial area belonging to Suez Governorate will remain as it is.

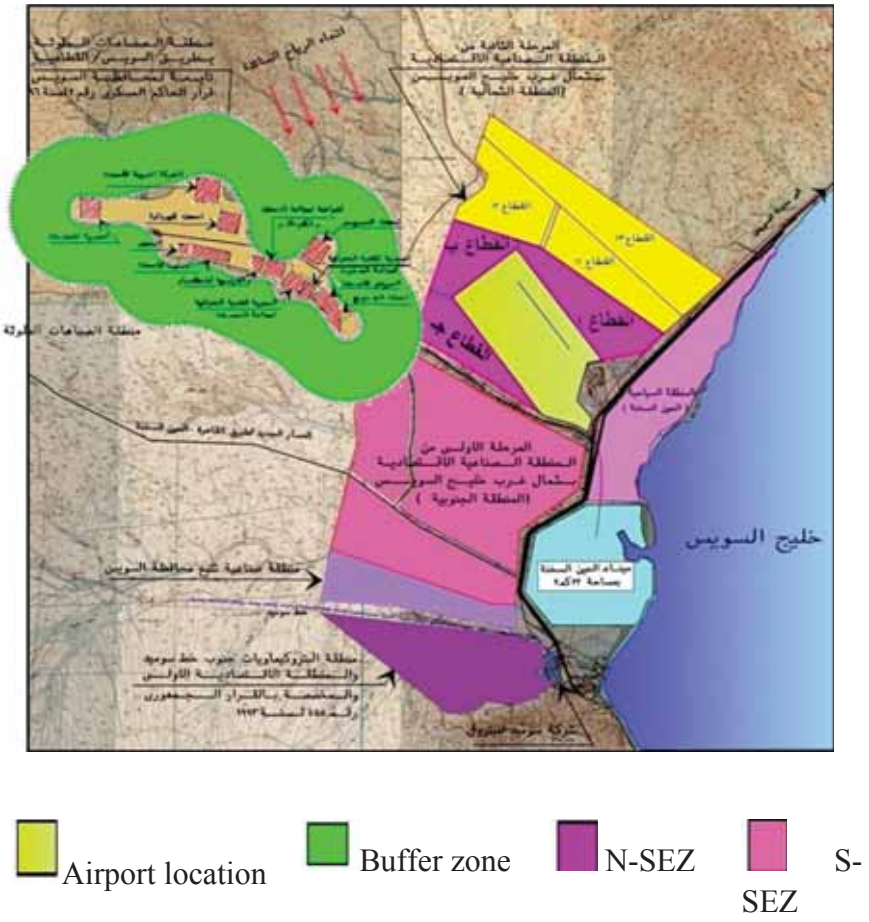


Figure (72): proposed land use plan for the case study.
(GOPP-2010)

Alternative 2: Without land use plan

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

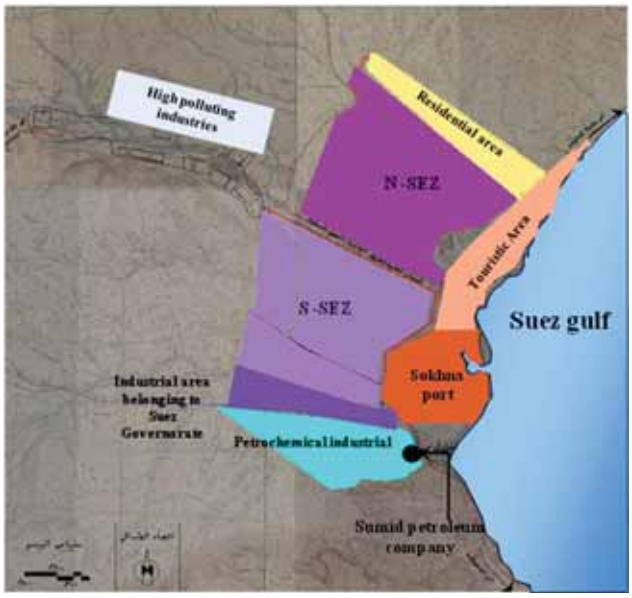


Figure (73): Alternative 2 (without land use plan)

Alternative 3 :(Separation Alternative)

This alternative is called the separation alternative, the aim of this alternative can be illustrated in the following points;

- Separation of heavy polluting industries with a very condensed buffer zone around it.
- The N-SEZ & the S-SEZ will be surrounded also with buffer zones, and selection of industries must be for small and medium industries only.
- The residential zone for the worker accommodation will be in the north of the N-SEZ and will be separated by a buffer too.
- Cairo / El Zafrana road from Sokhna port to the end of the tourism area will be a touristic promenade and it will serve the tourism area only.
- The connection road between old Cairo –Al Ain Sokhna road and the new Cairo –Al Ain Sokhna road will be the main industrial

road and the gates for the two special economic zones must be located in it.

- As the industrial zone which is belonging to Suez governorate is still a vacant land , this land use plan propose that this land will be a green forest irrigated from the grey water of the industries in the site.

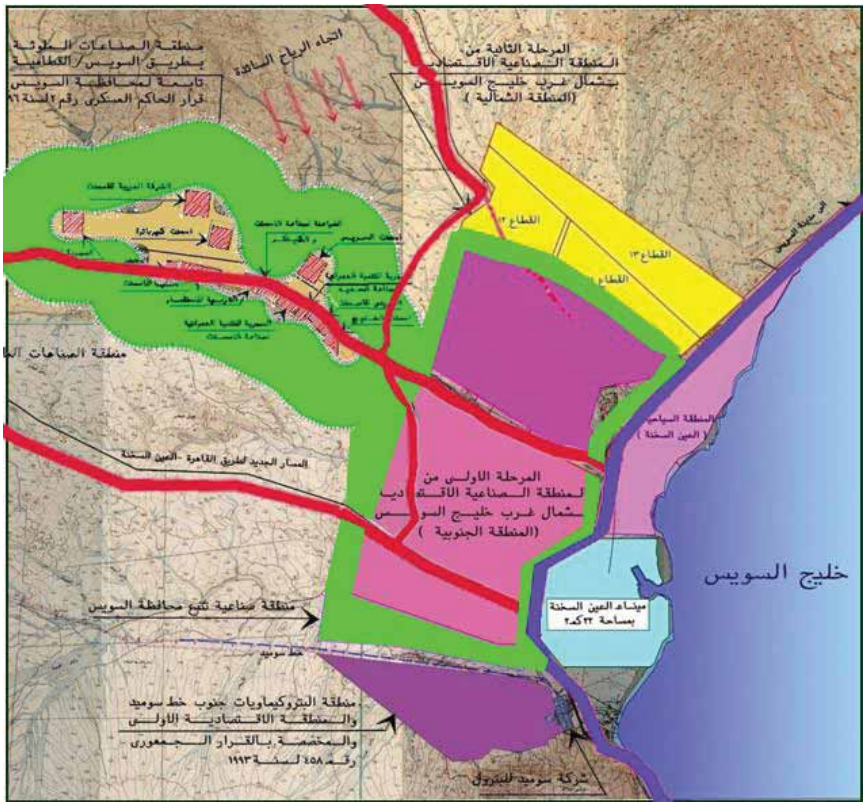


Figure (74): alternative three (separation concept)

8-2-2-2 Method of the Assessment

The primary focus of the SEA for the proposed land use plan is to choose the most compatible proposal with sustainability. Such as decreasing of air pollution and water pollution of the site, also decrease the supposed cumulative impacts from the proposed uses.

The assessment of environmental impacts is based on discussing this alternatives with key persons like; some environmental & land use planning experts. The argumentation is formalized in assessment tables. The assessment is structured as follows:

1- Discuss each alternative.
2-The assessment table includes environmental issues, the possible impacts from each alternative.
3- Discuss objectives of each alternative and their impacts on environmental issues.

4- Comparison between findings of the three alternatives and then selection of the most appropriate alternative.

The possible impacts are classified into negative impacts, positive impacts, and no impacts. An environmental impact is detected for any environmental issue. The following table discusses different impacts and their indicators for each of the environmental issues.

Table (23) possible impacts on environmental issues

Environmental Issues	impact	indicator
Soil	Contamination Soil degradation	Build more industrial areas and buildings
Water	Deterioration of ground water Impact on surface water Deterioration of water quality	Salinity Dissolved oxygen
Climate/Air	emissions Deterioration of air quality	Co2 No2
Marine Life	Lose of marine life. Degradation of coral reefs.	Oil spills Water pollution
Fauna - Biodiversity	Loss of habitats and species. Deterioration habitats of endangered species. Lose of migration birds	Change of nature and make it more urbanized
Flora	Deterioration of land cover Loss of mangroves	Intensive urbanization
Landscape	Deterioration of natural and cultural landscapes	Intensive urbanization
Human Health/Population	Impact on People health Annoying people by noise Emission related diseases	Heavy traffic CO2 NO2 other emissions
Material Assets/Cultural Heritage	Loss of monuments or negative impacts on it	Un organized tourism tours

The negative impacts are differentiated into high, medium and slight categories according to the following classification rules:

- An impact is classified as high negative significant if the expected impacts on the environmental issues are huge and cannot be minimized by any mitigation measures.
- An impact is classified as medium significant if the expected impacts on the environmental issues are moderate and can minimized by mitigation measures.
- An impact is classified as slight negative if its impact is very slight and need slight mitigation measures only to minimize it.

Table (24) Assessment table criteria

Positive impacts	Positive impacts on the environmental issue are expected
No significant impacts	No impact on the environmental issues.
High negative impacts	High significant impacts on the environmental issues, with no available mitigation measures.
Medium negative impacts	High significant impacts on the environmental issues, but the mitigation measures available can help in decrease it.
Slight negative impacts	Low impact on the environmental issues.

8-2-2-3 Assessment of alternatives:

Assessment of Alternative 1:

Each alternative was asses in relation to each environmental issues based on the assessment criteria that was discussed in previous section.

Objectives of Alternative 1:

The objectives of alternative one (proposed from GOPP to update land use plan and add residential city for workers and air port):

1- Connect the area with all parts of the world.

2- Attract more investments to the site.

3- Provide more employments to both Egyptian and foreign workers.

4- Compete with other industrial zones in the world.

Assessment of objectives in relation with key environmental issues:

Assessment of objective 1:

Table (25): Assessment of objective 1 of alternative 1.

Alternative 1: Objective 1: connect the area with all parts of the world (Via airport – Sokhna port)		
Environmental issue	Possible impact	Explanation
soil	medium negative impact	Build an air port may cause impacts on soil in construction phase, beside expected increasing in traffic cause emissions and have impacts on the soil.
air	medium negative impact	Expected increase in traffic will produce more emissions and consequently impact on air quality. Increase in using trucks to deliver products to and from the port also cause emissions.
water	Medium negative impact	Cargo and shipping will have impacts on surface water, besides expected oil spills from oil tankers.
flora	Slight negative impact	Construction of air port terminals and run ways will have impact on land cover especially desert plants.
fauna	Slight negative impact	Loss of habitat or habitat fragmentation can be a result from construction and building, especially if the building are done near to bird's sites and habitats.
Marine life	High negative impact	Water pollution that may cause from oil spills consequently will impact on the quality of water and threaten the marine life. Beside damage that can happen in coral reefs from shipping near to it.
Population & human health	High negative impact	Noise is expected from airport especially because of its location close to the proposed residential city, beside impacts from emissions caused from traffic.
landscape	Slight negative impact	Urbanization of the area will change the nature scene, even with the rarely in plantation. But desert plants and palm trees with desert contour draw the scene of the area.
Material assets & culture heritage	medium negative impact	Increase in visitors of the area due to this well connectivity may cause; more unplanned visits to current monuments and consequently impact negatively on it.

Assessment of objective 2:

Table (26): Assessment of objective 2 of alternative 1.

Alternative 1: Objective 2: Attract more investments to the site		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	high negative impact	Attract more investments means more industrial development, this will cause additional impacts to soils. Especially in industries which produce solid waste which can cause soil degradation.
air	High negative impact	Build more industries means have more emissions especially if we don't put any regulation for the type of industries and put more constrains in the mitigation methods.
water	High negative impact	Expected waste water from factories are subjected to raw water treatment and it finally throw in the Gulf of Suez. So water pollution is expected due to the increase in pollutants in the water.
flora	Medium negative impact	Attracting investments means building more factories and facilities, this may combine with additional changing in the land cover.
fauna	Medium negative impact	Intensive building due to increase in investments will cause additional impacts on habitats and consequently impacts on wild life.
Marine life	High negative impact	Pollution expected in water due to waste water that is thrown on it and of course marine life will be directly affected.
Population & human health	Medium negative impact	Population can be affected from increase in emissions and noise from traffic and industries, but the positivity is the increasing of employment chances in the area.
landscape	slight negative impact	Changing landform and current land cover can impact in the whole landscape of the area.
Material assets	no impact	No expected impacts.

Assessment of objective 3:

Table (27): Assessment of objective 3 of alternative 1.

Alternative 1: Objective 3: provide more employments to both Egyptian and foreign workers.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	High negative impact	Provide more employments means building more factories and consequently cause impacts on soil like sealing. Increase in investments will cause increase in emissions and solid waste which may pollute the soil.
air	High negative impact	Increase in investment in industrial development will cause more emissions, beside emissions from traffic.
water	High negative impact	Waste water from factories; if it not treated and only subjected to row treatment, it will consequently affect the water bodies which at the end receive all this pollutants.
flora	Medium negative impact	Building and construction work will cause more plantation lose.
fauna	Medium negative impact	Building and construction work will cause more habitat lose or fragmentation.
Marine life	High negative impact	Polluting surface water will have great impact on the marine life there.
Population & human health	Positive impact	Increases in jobs opportunity will help in solve unemployment problems for the youth.
landscape	Slight negative impact	Offering more employments means building more factories and changing current land cover and landscape features.
Material assets & culture heritage	No impact	No expected impacts.

Assessment of objective 4:

Table (28): Assessment of objective 4 of alternative 1.

Alternative 1: Objective 4: compete with others industrial areas in the world by supply a comprehensive industrial city.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	High negative impact	Building of factories and other facilities will impact negatively impact on the soil.
air	High negative impact	To compete with others the government may think in putting limited restrictions on type of industries and type of mitigation for expected emissions of the industries that of course will affect negatively on the air.
water	High negative impact	Putting also fewer restrictions on the waste water treatment to attract more investments to the site, also may impact negatively on the water bodies.
flora	Medium negative impact	Building and construction work will cause more plantation lose.
fauna	Medium negative impact	Building and construction work will cause more habitat lose or fragmentation.
Marine life	High negative impact	Marine life will deteriorate due to the expected pollution of the water from shipping, oil spills and waste water.
Population & human health	Positive impact	Increasing in job opportunities will help in solve unemployment problems for the youth.
landscape	slight negative impact	Changing landform and current land cover can impact in current landscape of the site.
Material assets & culture heritage	No impact	No expected impacts

Conclusion of Assessment of Alternative1:

Table (29): Assessment of alternative 1.

Environmental issue	Alternative 1: (make a comprehensive industrial city by providing a residential city & Air port)			
	Objective 1	Objective 2	Objective 3	Objective 4
soil	Medium negative impact	High negative impact	High negative impact	High negative impact
air	Medium negative impact	High negative impact	High negative impact	High negative impact
water	Medium negative impact	High negative impact	High negative impact	High negative impact
flora	Slight negative impact	Medium negative impact	Medium negative impact	Medium negative impact
fauna	Slight negative impact	Medium negative impact	Medium negative impact	Medium negative impact
Marine life	High negative impact	High negative impact	High negative impact	High negative impact
Population & human health	High negative impact	Medium negative impact	Positive impact	Positive impact
landscape	Slight negative impact	Slight negative impact	Slight negative impact	Slight negative impact
Material assets & culture heritage	Medium negative impact	No significant impact	No significant impact	No significant impact

Assessment of alternative 2:

Objectives of alternative 2:

To keep the area as it is was no change in land use plan; means strengthen importance of SEZ and decrease importance of tourism development. The objectives 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.

4-Connectivity with Asia and Europe; through developing Sokhna port.

Assessment of objectives in relation with key environmental issues:

Assessment of objective 1:

Table (30): Assessment of objective 1 of alternative 2.

Alternative 2: Objective 1: develop an international economic zone to compete with other areas in the world.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	High negative impact	To compete with others the government will attract investors to build and invest in the area, which means more construction work and more impacts on the soil.
air	High negative impact	To compete with others the government may put limited restrictions on the type of industries. Currently most of existing industries are heavy industries and high polluting, so it will impact on the air through the increase in the emissions especially so2, no2 and increase in traffic.
water	High negative impact	Putting less constrains on the quality of treated water will cause more water pollution.
flora	Medium negative impact	Building and construction work will cause more plantation lose.
fauna	Medium negative impact	Building and construction work will cause more habitat lose.
Marine life	High negative impact	Marine life may deteriorate due to the expected pollution of the water from shipping, oil spills and waste water.
Population & human health	High negative impact	Population will affected from increase in emissions and noise caused from factories and traffic.
landscape	Medium negative impact	Urbanization of the area will change the nature scene, even with the rarely in plantation.
Material assets & culture heritage	No impact	No significant impacts.

Assessment of objective 2:

Table (31): Assessment of objective 2 of alternative 2.

Alternative 2: Objective 2: Provide more employments chances.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	High negative impact	Provide more employments means building more industries and consequently cause impacts on soil like sealing. Increase in investments will cause increase in emissions and solid waste causing pollution for the soil.
air	High negative impact	Increase in investment in industrial development will cause more emissions, beside emissions from traffic.
water	High negative impact	Waste water from factories if it not treated and only subjected to row treatment it may affect the water bodies which at the end receive all these pollutants.
flora	medium negative impact	Building and construction work will cause more plantation lose.
fauna	medium negative impact	Building and construction work will cause more habitat lose or fragmentation.
Marine life	High negative impact	Polluting surface water will have severe impacts on the marine life there.
Population & human health	positive impact	Increases in job opportunities will help in solve unemployment problems for the youth.
landscape	Medium negative impact	Offering more employments means building more factories and Changing landform and current land cover.
Material assets	No impact	No expected impacts

Assessment of objective 3:

Table (32): Assessment of objective 3 of alternative 2.

Alternative 2: Objective 3: Attract investors to invest in the site.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	High negative impact	Attract more investments means; more industrial development, this will very likely cause additional impacts to soils. Especially in industries which produce solid waste which can cause soil degradation.
air	High negative impact	Building more industries means; have more emissions especially if we don't put any regulation for the type of industries and constrains in its mitigation methods.
water	High negative impact	Expected waste water from factories are subjected to raw water treatment and it finally throw in the Gulf of Suez. So water pollution is expected due to the increase in pollutants in the water.
flora	medium negative impact	Attracting investments will combine with building more factories and facilities, this means additional changing in the land cover.
fauna	medium negative impact	Intensive building due to increase in investments will cause additional impacts on habitats and consequently impacts on wild life.
Marine life	High negative impact	Pollution expected in water due to raw water treatment for the water that thrown on it and of course marine life will be directly affected.
Population & human health	High negative impact	Population can be affected from increase in emissions and noise from traffic and industries, but the positivity is the increasing of employment chances.
landscape	Medium negative impact	Changing landform and current land cover can change the current landscape.
culture heritage	No impact	No expected impacts

Assessment of objective 4:

Table (33): Assessment of objective 4 of alternative 2.

Alternative 2: Objective 4: connectivity with Asia and Europe through ports		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	slight negative impact	As there will be small construction work on the land then the expected impacts is slight.
air	Medium negative impact	Increase in using trucks to deliver products to the port will cause emissions.
water	High negative impact	Cargo and shipping will have impacts on surface water, besides expected oil spills from ships fuel and oil tankers.
flora	slight negative impact	Construction work are limited but it may impact on plantation lose.
fauna	slight negative impact	Loss of habitat or habitat fragmentation can be a result from construction and building, but it will be slight impact because of small construction work.
Marine life	High negative impact	Water pollution that may happen from oil spills consequently will impact on the quality of water, and threaten the marine life. Besides damage that can happen in coral reefs from shipping near to it.
Population & human health	positive impact	Increase in employment opportunities is one of the positive impacts.
landscape	Slight negative impact	Mangroves and wetland plantation may be affected from the water pollution and change the overall scene.
Material assets & culture heritage	No impact	No significant impacts

Conclusion of Assessment of Alternative2:

Table (34): Assessment of alternative 2.

Environmental issue	Alternative 1			
	Objective 1	Objective 2	Objective 3	Objective 4
soil	high negative impact	High negative impact	High negative impact	slight negative impact
air	high negative impact	High negative impact	High negative impact	Medium negative impact
water	high negative impact	High negative impact	High negative impact	High negative impact
flora	Medium negative impact	Medium negative impact	Medium negative impact	Slight negative impact
fauna	Medium negative impact	Medium negative impact	Medium negative impact	Slight negative impact
Marine life	High negative impact	High negative impact	High negative impact	High negative impact
Population & human health	High negative impact	positive impact	High negative impact	positive impact
landscape	medium negative impact	Medium negative impact	Medium negative impact	Slight negative impact
Material assets & culture heritage	No significant impact	No significant impact	No significant impact	No significant impact

Assessment of alternative 3:

Objectives of alternative 3:

1- Attract more investors to the site to invest in environmental projects.

2- Separate the industrial zone from other zones.

3- Achieve waste water treatment and use grey water in plantation.

4- Enhance tourism area and facilities.

Assessment of objectives in relation with key environmental issues:

Assessment of objective 1:

Table (35): Assessment of objective 1 of alternative 3.

Alternative 3: Separation concept Objective 1: Attract more investors to the site to invest in environmental projects		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	medium negative impact	Building more factories will have impacts on soil but thinking in environmental methods for waste management will decrease a lot of impacts on the soil, but other impacts like sealing no mitigation measures for it.
air	medium negative impact	Attract investors to invest in environmental project will make them think in more reduction in emissions, and let them think in more alternatives for enhancement public transportation, use gas instead of fuel for cars, use wind energy to produce electricity and power for their factories and of course all of these will decrease emissions.
water	medium negative impact	A lot of constraints will be put in the quality of water treatment and consequently there will be improvement in water quality of the surface water.
flora	slight negative impact	Construction work may affect current plantation but making buffers will decrease the impact.
fauna	slight negative impact	Change in the natural plantation may cause lose of habitats.
Marine life	medium negative impact	Improvement of treated water will improve water quality and then the improvement of marine life is expected.
Population & human health	positive impact	Offer employments are one of the positive impacts.
landscape	slight negative impact	Expected change in land cover may change the natural landscape.
Material assets & culture heritage	No impact	No significant impact

Assessment of objective 2:

Table (36): Assessment of objective 2 of alternative 3.

Alternative 3: separation concept Objective 2: Separation of industrial area		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	No significant impact	No expected impact from that.
air	positive impact	Making buffer zone around industrial area will make a barrier for the polluting area to reach residential city and tourism area.
water	No significant impact	No significant impact.
flora	slight negative impact	Increase in plantation will increase flora and plants in the site, but construction work cause lose of natural plantation. So the cultivated buffer must be compatible to the natural plantation in the site.
fauna	slight negative impact	Construction work destroy habitat of animals and reptiles but this new buffers can offer new habitats for them,
Marine life	No significant impact	No significant impact
Population & human health	positive impact	Making this buffer will provide noise insulations beside good scenery and healthy environment for the residents and tourists.
landscape	Slight negative impact	Addition of new feature to the site will change the previous desert feature and change the identity of the area.
Material assets & culture heritage	No impact	No significant impacts.

Assessment of objective 3:

Table (37): Assessment of objective 3 of alternative 3.

Alternative 3: separation concept - Objective 3: Waste Water treatment and usage of grey water.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	No significant impact	No significant impact
air	No significant impact	No significant impact
water	Positive impact	Intensive water treatment will improve water quality and decrease pollutants that are thrown daily on it.
flora	Positive impact	Treated water will help in increasing ground cover plantation.
fauna	Positive impact	Increasing in plantation will help in offer new habitats.
Marine life	Positive impact	Improvement in the water quality will have positive impacts on the marine life there.
Population & human health	Positive impact	Improvement of water quality will improves quality of fish and offer more healthy foods to the residents.
landscape	No significant impact	No significant impacts.
Material assets & culture heritage	No significant impact	No significant impacts.

Assessment of objective 4:

Table (38): Assessment of objective 4 of alternative 3.

Alternative 3: separation concept - Objective 4: Enhance tourism industry and improve its facilities.		
Environmental issue	Possible impact	**Explanation and possible mitigation measures**
soil	slight negative impact	Construction more hotels and tourism facilities will have impacts on the soil.
air	Slight negative impact	Expected increase in traffic will cause more emissions.
water	High negative impact	Tourism activities in the water, besides constructing marinas and cut and fill works will have negative impacts on water.
flora	medium negative impact	Construction more hotels and tourism facilities may cause more plantation lose.
fauna	medium negative impact	Constructions more hotels and tourism facilities may cause more loss of habitat.
Marine life	High negative impact	Tourism activities in the water, besides constructing marinas and tourism attitude may cause high negative impacts on the marine life.
Population & human health	positive impact	Increase in employments is one of the benefits.
landscape	Medium negative impact	Change in the natural landscape may be caused because of urbanization and construction work.
Material assets & culture heritage	Medium negative impact	Increase in visitors of the area may cause more unplanned visits to current monuments and consequently impact negatively on it.

Conclusion of Assessment of Alternative3:

Table (39): Assessment of alternative 3.

Environmental issue	Alternative 1: separation concept			
	Objective 1	Objective 2	Objective 3	Objective 4
soil	Medium negative impact	No significant impact	No significant impact	slight negative impact
air	Medium negative impact	positive impact	No significant impact	slight negative impact
water	Medium negative impact	No significant impact	positive impact	High negative impact
flora	slight negative impact	slight negative impact	positive impact	Medium negative impact
fauna	slight negative impact	slight negative impact	positive impact	Medium negative impact
Marine life	Medium negative impact	No significant impact	positive impact	High negative impact
Population & human health	positive impact	positive impact	positive impact	positive impact
landscape	slight negative impact	No significant impact	No significant impact	Medium negative impact
Material assets & culture heritage	No significant impact	No significant impact	No significant impact	Medium negative impact

8-2-2-4Assessment Result

Based on the analysis of the assessment table, alternative three is the most favorable alternative as it contains less number of negative impacts.

It contains some medium negative impacts which must be subject to mitigation measures to decrease the impact.

The following table represents the comparison between the three alternatives and from it the most appropriate one is the third alternative.

Table (40): comparison between alternatives.

EI	Alternative 1				Alternative 2				Alternative 3			
	Ob1	Ob2	Ob3	Ob4	Ob1	Ob2	Ob3	Ob4	Ob1	Ob2	Ob3	Ob4
s	M -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	S -VE	M -VE	No	No	S -VE
A	M -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	M -VE	M -VE	+VE	No	S -VE
W	M -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	M -VE	NO	+VE	H -VE
Fl	S -VE	M -VE	M -VE	M -VE	M -VE	M -VE	M -VE	S -VE	S -VE	S -VE	+VE	M -VE
Fa	S -VE	M -VE	M -VE	M -VE	M -VE	M -VE	M -VE	S -VE	S -VE	S -VE	+VE	M -VE
ML	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	H -VE	M -VE	NO	+VE	H -VE
P	H -VE	M -VE	+VE	+VE	H -VE	+VE	H -VE	+VE	+VE	+VE	+VE	+VE
L	S -VE	S -VE	S -VE	S -VE	M -VE	M -VE	M -VE	S -VE	S -VE	NO	NO	M -VE
CH	M -VE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	M -VE

S: soil – A: Air – W: Water – Fl: Flora – Fa: Fauna – ML: Marine life – P: population – L: landscape –CH: Cultural heritage.
S –ve: slight negative impact, M –VE: Medium negative impact, H-VE: High negative impact, +ve: positive impact, NO: no impact.

8-2-2-4 Mitigation measures:

Some objectives of the selected alternative are likely to have negative effects on the environmental issues; mitigation measures must be applied in order to reduce the negative impacts. There are several types of possible measures, depended on the cause and type of the disturbance.

In most cases the reduction of negative impacts can be achieved through enforce land use planning legal frameworks and nature conservation policies.

Additional measures must be developed within the context of the objective.

8-2-3 Review step

8-3-3-1 Monitoring:

The goal of the monitoring is to investigate the effects of the implementation of land use plan on the current environmental issues. The monitoring shall enable the land use plan authorities to take immediate action when unexpected environmental effects occur.
Specifically the tasks of the monitoring are in detail:

- To expose unexpected significant environmental effects,
- To check the validity of the environmental assessment documented in this report,
- To check the effectiveness of mitigation measures.

8-3 Conclusion of Chapter 8:

The aim of the example that discussed in this chapter was to examine the SEA model in a real case not to find solutions for the area problems, based on this; the proposed plan was the land use plan that proposed from GOPP to make new residential city and airport for the area, the second alternative is the do nothing alternative (as it is one of the basic alternatives in any assessments), and the third one is proposed by the researcher after discussion with number of planning and environmental experts.

All the model steps were implemented but with the assumption that all involved parties are qualified to do their roles.

To implement this model in Egypt a lot of actions must be done to enhance capacity building of the governmental authorities, and also increase awareness of public and nongovernmental organizations.

Implementing SEA as a parallel step to LUP process will help decision makers to select appropriate alternative with more environmental considerations, this consequently will improve Egyptian environment and achieve sustainability concepts.

9-Chapter 9: Conclusion and Recommendations:

9-1 Conclusion:

There are different types of assessments which are designed to measure one or more aspect, for example EA family is conducted to measure environmental consequences from proposed project or strategic action.

EA is conducted at all levels of decision-making; from PPP formulation to project management and implementation.

Other assessments like; SIA is conducted to identify possible social impacts. Also there are kinds of assessments which deal with economic aspect only like; CEA which deal with economic aspect. SA is one of the assessment that has a special case as it deals with these entire aspects; environmental, social and economic aspect.

The focus of this research was to study SEA as a tool of measuring proposed impact from strategic actions (PPP).

SEA is a part of decision making process which helps decision makers to consider environmental issues in a high level of decision making process starting from policy level and before reaching project level assessment.

The major differences between the two processes are in their scope and depth of coverage of environmental issues.

SA has a wide scope, covering social, economic and environmental topics. SEA, in contrast, is primarily focused on environmental issues, which it covers in greater depth.

Based on literature review in previous chapters, SEA can be defined as;

SEA is a part of decision making process helps decision makers to consider environmental issues in a high level of decision making process starting from policy level and before reaching project level assessment.

SEA is a tool to achieve this through the following steps;

- Involving the public and government in the preparation of policies, plans and programs.
- Assessing environmental impacts of proposed PPP on the environment.
- Ensuring that the results of the assessment are taken into account during decision making and implementation.

SEA was known worldwide since 1990 to solve limitation of project level assessment from one hand, and to achieve concept of sustainability from other hand.

From that date, the developed world established many SEA systems, the most well-known and famous SEA systems are; European SEA Directive and the Kiev SEA Protocol.

After that SEA studies have increasingly become quite common in developed countries, few SEA studies have been conducting in developing countries to date. The few cases that are from developing countries or newly industrialized countries can be found from China, Turkey, Vietnam, Hong Kong, Malaysia, the Philippines and Sri Lanka.

One of the objectives of this research is to understand the SEA process, and in order to do that the researcher studied the SEA process in three different guidelines.

The first one is the EU SEA Directive; which is applicable in all European countries, the second one is the Turkish guideline; which present a guideline for non-European country, and the third one is the OECD 'S guideline; which is an institution applies SEA process in all fields of its work all over the world.

From the comparison that carried in chapter three between the three guidelines, the researcher concluded the following;

- SEA is a part of decision making process which helps decision makers to consider environmental issues in a high level of

decision making process starting from policy level and before reaching project level assessment.

- SEA process is a parallel process to the decision making process which is happened in different levels starting from policy, plan and specific program.

- Public participation are the supporting step in the decision making process, the role of stakeholders and public participation appears in all SEA process, but the major involvement of these participation appears in scoping step and assessment step.

- Generally SEA process must contain the following steps, which may be changed in order or merged together sometimes. These steps are;

A- Screening:

Screening is undertaken to answer the following threshold question: should the SEA be conducted for PPP.

B- Scoping

Scoping is a major step in the process and it contains the following;

- Defining stakeholder

All "stakeholders should be given an opportunity to participate in the scoping exercise.

- Defining Scope of work:

The scoping stage determines the likely extent (geographic, temporal and thematic) and level of detail of the assessment, the information to be included in the SEA and the environmental report.

- Base line information:

In this context, baseline information and data needs have to be established in line with key environmental issues.

- Sitting the objectives:

Objectives are relating to the PPP. It is in all emphasis on sustainable development or other environmental strategies.

- Sitting different alternatives :

At the scoping stage, different development alternatives should be identified that may be available for meeting environmental, economic and social objectives.

C- Impact assessment and report

- Assessment:

This stage is at the heart of the SEA process. The analysis needs to be sufficient and transparent to convince stakeholders and the public that the results are state-of-the art and as reliable as possible.

- Report

The SEA report documents are the final product of the assessment process, it includes the findings of the assessment of the various proposed alternatives and the predicted impacts upon the environment.

- Monitoring and mitigation measures:

The SEA should include a plan for monitoring environmental effects so that mitigation measures can be implemented if unforeseen effects occur. Finally, the SEA report should provide for some recommendations to decision makers in terms of preferred options and alternatives and regarding possible measures for

avoiding, minimizing, mitigating and compensating any potential remaining impacts.

D- Review and decision making approval:

At the review stage, all the environmental information collected during the SEA process and presented in the SEA report is supposed to be checked, and decision are taken based on the findings of the report.

SEA is applied in a lot of development sectors like; agriculture, forestry, fisheries, energy, industry, water management, telecommunication, tourism, and country planning. So LUP is one of the development sectors that SEA is applied on it.

To understand how the SEA is integrated in LUP process; the research in this section was divided into two parts; the first part is the theoretical study for the integration of SEA in LUP process, and it was built on literature review and analyzing collecting data and this was in chapter four. And the second part is practical study; which reviewed four cases in which SEA was integrated in LUP process, in order to understand how the process was implemented in these cases and this was discussed in chapter five.

The aim of these two parts was to understand the following;

- Understanding SEA process in detail and How the SEA is integrated in LUP process.
- Review SEA methods and tools which are varied from step to another, as the methods that is used in screening or scoping are different from those who used in assessment step which use impact prediction tools.
- Understand key roles responsibilities in integrating SEA in LUP process, and based on this study the research assigned four main parties involved in the process;

1- Competent authority (planning authority):

   Authority that is responsible of putting PPP, arrange SEA team and follow up their work.

2- Assessment team:

   This team is responsible of carrying out assessment with the help of the planning authority.

3- Review Authority:

   This authority is responsible of reviewing Draft master plan and SEA which is submitted as an integrate part of the draft plan.

4- Public concerned:

   All other benefiters like; other governmental bodies, NGOs, Private sector and public.

- Also one of the aims of these parts is to understand key environmental issues which are an essential compounds in the SEA process, also understand other concepts like; impact scale and SEA report contents.
- Studying and analyzing SEA process in different cases in the field of land use planning, these cases are;

  1- Wales special plan update (2008).
  2- Duplin Docklands area Draft master plan (2003).
  3- Fiji's tourism development plan (2002).
  4- Amaterra resort development (2005).

Findings of this part:

- Land use planning is varied from country to another based on its institutional frame work and legislations; consequently, the land

use planning process also is differentiating from one country to another.

- SEA is a parallel process to the land use planning process, as it happens in the same time of carrying out the proposed plan.
- Generally SEA process in all this cases consists of three major steps even if its title or arrangement change from case to another, these are:
  - Scoping
  - Assessment
  - Selecting most appropriate proposal based on previous assessment and put mitigation masseurs and monitoring plan for it.

- Through the four cases, public participation is essential to ensure full public involvement and apply concept of transparency.

Investigate current Egyptian condition:

The research aim was to develop a tool for enhancement decision making process in the field of LUP in Egypt, to put the environmental consideration parallel with other economic and social considerations. Beside help decision makers in the field of LUP to give more attention to environment and consequently take decisions enough loaded with environmental considerations.

To construct this model compatible with the Egyptian context, the Egyptian situation was discussed in detail in chapter six.

The focus of this chapter was to investigate LUP process in Egypt starting from socio economic plans till detailed planning.

The study was carried in two directions; the first one was to understand key responsibilities of LUP process in Egypt, and the second one was to investigate current environmental studies that are carried in LUP process.

The main research methods that were used in this part were questionnaires, meetings, interviews and workshops.

The Findings of this part are;

- The time now is suitable to start thinking in the integration of environmental consideration in LUP, to save the environment from dangers that caused from irreversible decisions. The concept of taking decisions behind closed doors must be changed and replaced with taking decision with full public participation and transparency.
- The implementation of SEA needs first to implement these two concepts, as they are the backbone of the SEA process. As SEA is not an individual work it is the product of the work and experience of experts, stakeholders, public and governmental authorities. If one of this parties are excluded then the whole process is conducted in wrong way and the result will not help much in the enhancement of the decision making process.
- 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.
- By reviewing new physical planning law no.119 of 2008, and the new environmental law 19 0f 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.

Developing Egyptian SEA model

The model was constructed based on the findings of the literature review beside findings of investigating Egyptian context. The model consist of four parts; the first one is defining of key responsibilities of institutions and organizations, the second one is the recommended modification in

legislations and laws, the third one is the proposed technical procedure and the fourth one is the enhancement of capacity building of involved governmental bodies.

In order to establish this model the research passed through the following steps;

Step 1: understanding the concept of SEA and studying its procedure in different guidelines; this was conducted in chapter three, as the aim of this chapter was to review literature concerning SEA and understanding SEA process in three different guidelines.

Step 2: Inspecting EA in Egypt in order to analyze the current condition of the EA; this was conducting in chapter six, where the aim of the chapter is to investigate current environmental studies and LUP in Egypt. The survey was done through different research methods from; data collection, questionnaire, interviews and workshops.

Step 3: Investigate planning process in Egypt starting from socio economic plans till other plans and programs, especially in the field of LUP; this also was conducted in chapter six too, and all competent authorities of PPP were discussed and analyzed.

Step 4: Studying SEA examples to compare SEA process in each one in order to establish an Egyptian SEA model; this was conducted in chapter five where; four case studies were studied, analyzed and compared with each others. The selection of the cases was based on proposed criteria that were discussed in detail in the same chapter; the aim of this chapter is to study SEA process in practice and compare it with the theoretical process that was concluded for literature review.

Step 5: Developing Egyptian SEA guideline/framework (Egyptian SEA model) appropriate with the Egyptian context based on previous five steps; this was conducted in chapter seven as the first chapter in the application part where the SEA model was created and then tested in chapter eight, where it was applied in an Egyptian case study.

Application:

In order to test the applicability of the proposed model the researcher examined it on an Egyptian case study; this was applied in chapter eight where the SEA model was implemented in North West Zone of the Suez Gulf. Selection of this case was; because of its special natural characteristics and current environmental problems and pressures.

And from this application the researcher concluded the following;

- 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 recommended 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.

9-2 Recommendations:

In order to integrate SEA in LUP, the researcher 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 present current situation of parties' involvement in each step of SEA process, as discussed in previous chapters the role of each authority or stakeholder is changing from step to another for example; the team who work in the assessment are not the same team for review.

This analysis describes current situation of the man power in each governmental or non governmental authority, and their current capability of doing their role and responsibilities in each step of SEA process with availability of suitable financial resources.

With highlighting on the key responsibilities that are involved in the sample process that was discussed in the previous chapter (North West zone of Suez Gulf).

Table (41): key responsibilities role in the preparation step of the SEA model

steps		Stakeholder	Human Resources	Capability	Financial resources	North west of Suez gulf area
Preparation step	Screening	EEAA	√	√	√	√
		GOPP	√	×	√	√
		RBO	√	√	√	√
		Governorate	×	×	√	√
	Sitting key environmental issues	EEAA	√	×	×	√
		GOPP	×	×	×	√
		RBO	×	×	×	√
		Public & NGO	×	×	×	√
	Sitting alternatives	EEAA	√	×	×	√
		GOPP	√	√	√	√
		RBO	√	×	√	√
		Public & NGO	√	√	√	√
	Description of natural environment	EEAA	√	√	√	√
		RBO	√	√	√	√
		Directorate of ES in GOPP	√	×	√	√
	Description of environmental problems	EEAA	√	√	√	√
		RBO	√	√	√	√
		Directorate of ES in GOPP	√	√	√	√
	Description of PPP	GOPP	√	√	√	√

Table (42): key responsibilities role in the assessment step of the SEA model

steps		Stakeholder	Human Resources	Capability	Financial resources	Sample process
Assessment step	Putting assessment criteria	EEAA	√	×	×	√
		RBO	√	×	×	√
		GOPP	√	×	×	√
	Select assessment method	EEAA	√	×	×	√
		RBO	√	×	×	√
		GOPP	√	×	×	√
	Assess proposed plan	EEAA	√	×	×	√
		RBO	√	×	×	√
		GOPP	√	×	×	√
		Public	×	×	×	√
		NGO	×	×	×	√
	Assess alternatives	EEAA	√	×	×	√
		RBO	√	×	×	√
		GOPP	√	×	×	√
		Public	×	×	×	√
		NGO	×	×	×	√
	Selection of appropriate alternative	EEAA	√	×	×	√
		RBO	√	×	×	√
		GOPP	√	×	×	√
		Public	×	×	×	√
		NGO	×	×	×	√

Table (43): key responsibilities role in the review step of the SEA model

steps		Stakeholder	Human Resources	Capability	Financial resources	Sample process
Review step	Assign mitigation	EEAA	√	×	×	√
		RBO	√	×	×	√
	Review SEA report	E. Review Authority	×	×	×	√
	Acceptance of SEA report	E. Review Authority	×	×	×	√
	Review of PPP	M.E.D	√	√	√	
		HUUD	√	√	√	√
	Take decision	M.E.D	√	√	√	
		HUUD	√	√	√	√
	monitoring	EEAA	√	√	×	√
		RBO	√	√	×	√
		Governorates (EMU)	×	×	×	√

Table (44): recommended actions to enhance capacity building of involved stakeholders.

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.
RBO	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.
Governorate	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.
Directorate of ES in GOPP	1- Cooperation with EEAA to make the SEA committee with the assistance of experts.
	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.
E. 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.

Appendices

Appendix 1

(Questionnaire – Arabic version)

التخصص	تخطيط عمراني	رصد بيئي	تقييم أثر بيئي للمشروعات	مراقبة بيئية	إدارة بيئية	متابعة بيئية	باحث	غير
الخبرة في مجال البيئة	أكثر من 20 عام	20-15 عام	15 -10 عام	10-5 عام	أقل من 5 أعوام	عام على الأقل	لا يوجد	
الخبرة في مجال تقييم الأثر البيئي	القيام بدراسة تقييم الأثر البيئي	مراجعة دراسة تقييم الأثر البيئي	الأعتماد والموافقة على التقرير	خبرة نظرية	لا يوجد خبرة	أخرى		
الإلمام بقانون البيئة المصري وتعديلاته	على دراية كاملة	تم الأطلاع عليه فقط	تم الأطلاع عليه بدون أي من تعديلاته	يوجد معرفة به بدون الإطلاع عليه	لا يوجد معرفة به			
الخبرة والمعرفة البيئة تم اكتسابها من	الدراسة الجامعية	دراسات عليا	دورات تدريبية	معرفة واجتهاد فردي				
ما هو تقييمك لعلية تقييم الأثر البيئي و طريقة تطبيقها في مصر								

من الناحية الفنية و جودة التقارير المقدمة	ممتاز	جيد جدا	جيد	متوسط المستوى	سئ أو دون المستوى			

من ناحية اجراءات مراجعة التقارير	الإجراءات كافية	غير كافية	لا تحتاج إلى تعديل	تحتاج إلى تعديل				
من ناحية الكوادر والمتخصصين في إعداد التقارير	خبرة ممتازة	جيدة	متوسطة	محدودة				
من ناحية الكوادر والمتخصصين في مراجعة التقارير	محدودة	خبرة ممتازة	جيدة	متوسطة				
ما مدى تقييمك لنجاح تطبيق تقييم الأثر البيئي للمشروعات	ناجحة	غير ناجحة	تحتاج لبعض التعديلات	يحتاج لتغيير بعض الخطوات	يحتاج لإستحداث بعض الخطوات	لا يحتاج أي تعديل		
ما مدى الأحتياج لتطبيق تقييم البيئي على المستوى الإستراتيجي	في حاجة للبدء بتفعيله	الوقت الآن مناسب	الوقت ما زال مبكرا للتفكير في تطبيقه	البدء بتجربته مبدئيا على بعض البرامج أو الخطط				

هل يحتاج قانون البيئة لتعديل ليتم تفعيل تطبيق تقييم الأثر البيئي الأستراتيجي	نعم بحاجة	ليس بحاجة						
من وجهة نظرك هل سيحل تطبيق الأثر البيئي الأستراتيجي محل التقييم على مستوى المشروعات	نعم سيحل محله	لا	سيكون مكمل لعملية التقييم	سيعمل كل مهم بطريقة منفصلة	سئ أو دون المستوى			

هل سيناسب تقييم الأثر البيئي الأستراتيجي منظومة اتخاذ القرار في مصر	نعم	لا	لا أعرف					
من وجهة نظرك هل سيتم تفعيل مبادئ الشفافية والمشاركة الشعبية عند تطبيق تقييم الأثر البيئي	نعم	لا	لا أعرف	بشكل محدود	بشكل غير فعال			

للمشروعات أم لا								
حدد نسبة النجاح المتوقعة من قبلك عند تطبيق تقييم الأثر البيئي الأستراتيجي في مصر	كبيرة	متوسطة	محدودة	لا أعرف				
ما هي القطاعات التي من الممكن البدء بالتطبيق تقييم الأثر البيئي الأستراتيجي عليها	العمران	السياحة	الطرق والمواصلات	المرافق والبنية التحتية	الخطط القومية والخمسية			
ما هو الدور المتوقع أن يلعبه جهاز شئون البيئة بعد تفعيل تطبيق الأثر البيئي الأستراتيجي	الإشراف على الدراسة	المراجعة على الدراسة	التعاون مع جهات أخرى في الأشراف على الدراسة	التعاون مع جهات أخرى في تقييم الدراسة	لا يوجد دور	لا أعرف		

Appendix 2

List of interviewees

Dr. Ghada Farouk Hassan	Head of technical office -GOPP
Dr. Ayman El Hefnawy	Vice chairman of the GOPP
Dr. Moustafa Madbouly	Chairman of the GOPP
Dr. Doaa El Sherief	HBRC
E/ Mohamed Mahmoud Hassanen	TDA
E. Amira Mohamed Moustafa	Environmental department -GOPP
Dr. Assem El Gazar	Cairo University
E/ Sahar El Shahat	HBRC
Madany Ahmed	Assiout governorate
Khaled Abou El Hagag	The environmental management – red sea governorate
Eimad Hamdy	Environemtal department - GOPP
Mohamed ezzat	The Environmental Management – Nagga Ammady
Dr. Abd allah eliwa	The Environmental Management – el zagazig

Nour Ell Deen Mo7'tar	EL Bihara City council

Appendix 3

List of international organizations & bodies

EUROPEAN COMISSEION	Maastricht Treaty: Article 130 r: ‘‘Environmental protection requirements must be integrated into the definition and implementation of other Community policies.’’ · SEA included in the 5th Environmental Action Program and various other policy papers – draft proposal for SEA Directive; – Habitats and Bird Directive; – SEA provisions in the Structural and Cohesion funds. · Internal communication on Commission procedures: environmental assessment of Commission actions and legislative proposals · Research program on EIA and SEA (DG XI) · Practice: – SEA of the trans-European transport networks (DG VII); -Impact of the 5th Environment Action Plan.
UNECE	Task force to consider the extent to which EIA can be applied to PPPs. The work included an overview of case studies in various countries (1990). · Convention on environmental impact assessment in a trans-boundary context (1991): ‘‘the parties shall endeavour to apply the principles of EIA to policies, plans and programs.’’
OECD	A report on Environmental impact assessment of roads includes a chapter on SEA with recommendations for a possible structure of SEA for the road transport sector. · A Methodology for Environmental and Trade

	Reviews has been developed.
EBRD	Guidelines on EIA (1992) address the need for SEA for developments plans, sector-wide programs, and multiple projects.
EUROPEAN ENVIRONMENT AGENCY (EEA)	A Program of Integrated Environmental Assessment (IEA) is underway, defined as ‘‘the interdisciplinary process of identification, analysis and appraisal of all relevant natural and human processes and their interactions which determine both the current and future state of environmental quality and resources on appropriate spatial and temporal scales, thus facilitating the framing and implementation of policies and strategies’’. - The program focuses on the following issues: domains on which to apply IEA; analysis of driving forces, pressures and state of the environment; impacts on the environment of policy measures; costs of environmental policy measures. - Practice: review of 5th EU Environmental Action Program.
WORLD BANK	The World Bank’s Environmental Assessment Sourcebook discusses the need for SEA and distinguishes between regional and sectoral assessments. Preparation of a number of SEAs.
IAIA	International study of the effectiveness of environmental assessment.
Nato	Pilot study: methodology, focalization, evaluation and scope of environmental impact assessment.

Appendix 4

Levels of land use planning in different countries.

1- Spatial Planning System in Germany:

- (National) Federal plans at „Länderebene“
- Regional plans
- Local land use planning:
  - Spatial development concept
  - Land use plan
  - Construction plan

Table (45): Spatial planning system in Germany.
Source: (European-communities, 1999)

Spatial plans produced at each level	National: The Bund (federation), in close co-operation with the Lander (state), employs very general regulations to guide spatial development policy. A detailed report is carried out every few years that address spatial planning and related policy issues within Germany.
	Regional: The Lander (state) employs spatial plans at two levels. State Development Programs and State Development Plans are exercised across the State. Regional Plans are then prepared to address the regions within the State. The Municipalities are involved in the preparation of these regional documents, and public consultation is employed.

	Local: Local land use plans are developed at this level. The Flachennutzungsplan (preparatory land use plan) controls development within their whole administrative area. The Bebauungsplan (binding land use plan) is used to determine individual building proposals or projects. The Gemeinden are provided with a wide range of planning instruments which allow them to operate strict controls on development within the area. The content of the local land use plans are the responsibility of the Gemeinden yet they must abide by the law.

2- Hierarchy of Land Use Planning in Turkey:

- National land –use plan
- Regional land –use plan
- Sub-regional land –use plan
- Local land –use plan

Table (46): hierarchy of land use planning in turkey.

Source:

Planning Type		**Frame - scale**	**Scope**
Physical plans	National development plan	Written statement - country plan	
	Regional plan	Regional	superior physical plans or high level physical plans
	Master plan	Metropolitan	
	environmental plan	Sub regional	
	Master Plan	Local land use plan	Special aimed plans
	implementation		

	plan		
	tourism development plan		
	reclamation development plan		
	rural development plan		

3- Land Use Planning in UK

Land use planning in the United Kingdom is taking place at several administrative levels of decision making, and it starts with the national level. At the national level, planning policy guidance is prepared by central government. This is followed by the regional level, and at the regional level, regional planning guidance or RPG is being prepared.

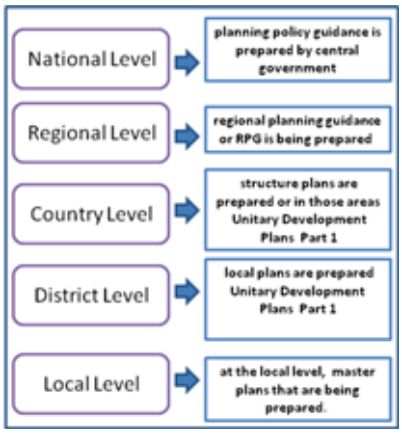


Figure (75): Hierarchy of land use planning in UK.
Source: (Ficher, 2007)

Then the county level, and in it structure plans are prepared or in those areas, usually metropolitan areas, that are not administered by a county., in this level Unitary Development Plans part one are equivalent to the structure plans is .

Then the municipal or the district level came. At that level of decision making, local plans are prepared. And this level also called Unitary Development Plans Part 2. And finally the local level in it master plans are being prepared.

Appendix5

SEA work shop in Vienna – Boku Institute

Location: BOKU INSTITUTE Vienna, Austria

Date: 8-2008

Attendees:

Dr. Mohammed Salheen (CEIAC coordinator)

Dr. Moustafa Madbouly (chairman of the GOPP)

Dr. ayman El Hefnawy (Vice chairman of the GOPP)

Dr. Doaa El Sherief (HBRC)

Dr. Youhansen Eid (Head of Urban planning department – Ain Shams University)

Dr. Marwa Abou El Foutouh (Lecturer at Urban planning department – Ain Shams University)

Arch. Samah El Khateeb (assistant lecturer at urban planning department – Ain Shams University)

Trainers: Proff. Dr. Urlike Probstle

Topic: work shop on SEA funded by the EU under the umbrella of the tempus project "CEIAC".

Appendix (6)

Contents of the SEA Report:

1. An outline of the contents and main objectives of proposed land use planning, and of its relationship (if any) with other qualifying plans and programs.
2. The relevant aspects of the current state of the environment and the likely evolution there without implementation of the plan or program.
3. The environmental characteristics of areas likely to be significantly affected.
4. Any existing environmental problems which are relevant to the land use planning.
5. The likely significant effects on the environment, including issues such as:

   (i)biodiversity; (ii) population; (iii) human health; (iv) fauna; (v) flora; (vi) soil; (vii) water; (viii) air; (ix) climatic factors; (x) material assets; (xi) cultural heritage, including architectural and archaeological heritage; (xii) landscape; and (xiii) the inter-relationship between the issues.

   The issues from (i) to (xii) can have impacts measured by; short, medium and long-term effects; permanent and temporary effects; positive and negative effects; and secondary, cumulative and synergistic effects.

6. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or program.
7. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of expertise) encountered in compiling the required information.

8. A description of the measures envisaged concerning monitoring.
9. A non-technical summary of the information provided under paragraphs 1 to 9 ((SE), 2006, Ficher, 2007).

	Current status	Importance	Causes	impacts
Mangroves and Forests  **Suva Mangrove**	It was estimated in 1992 that approximately 42 000 ha remain of an original source of about 45 000ha. The state of mangroves is seen as a significant environmental issue in Fiji (Watling & Chape 1992). Although no recent nationwide surveys have been carried out there is evidence to suggest that land reclamation and infrastructure development associated with tourism is having a negative impact on mangroves in Fiji. However, there are also examples of hotels, working in partnership with local groups, establishing mangrove nurseries.	Mangroves provide natural protection against storms, tides, cyclones and storm surges. The cutting back of them is likely to lead to reduced resilience to sea-level rise and wave surges and affect the traditional uses of mangroves for wood, building materials and medicine. They also regulate nutrients and act as filters against introduction of pests. The estimated value of mangroves in Fiji is FJD 100.88M (Sisto 1997).	The creation of artificial coastal 'buffer zones' by resorts and hotels such as sea walls adds to environmental problems as walls do not absorb wave energy and can lead to the degrading of beaches. Tourism has so far had little impact on forests. However, with the promotion of adventure tourism such as trekking and whitewater rafting into the interior of Viti Levu, tourism is likely to have a growing influence on the state of the forests in Fiji.	Deforestation can lead to the built up of sediment in rivers affecting freshwater supplies, habitats and the aesthetic environment. In one case upland erosion, as a result of poor logging practices in the catchment along the Coral Coast lead to the siltation of a resort's water supplies. It also diminished secondary tourism opportunities such as bushwalking and freshwater swimming in the rainforest (Watling & Chape 1992). This highlights the need for integrated management of resources in such areas.

	Current status	pollutants	Causes	impacts
Coral Reefs 	The current coral reefs are endangered; they are dying out due to water pollution and over-development of the islands. But local people and businesses are trying to clean up the water in an attempt to save their unique reefs.	Nutrient (nitrate and phosphate levels potentially damaging to coral reefs have been detected at several sites along the Coral Coast of Viti Levu, Fiji. Coastal erosion along the Coral Coast is likely to increase as the reefs are broken down by wave action and not regenerated'.	- Nutrient levels were highest at sites located near hotels and other populated sites. - some of the highest levels of nitrate were found at sites . . . located in one of the most intensively developed areas on the coast with one very large resort, several smaller resorts and guest houses, a couple of local villages and a number of private dwellings'.	1-increased nutrient levels have led to a 'phase shift' to algal dominated reefs in the Coral Coast area. 2- The elevated nutrient levels in the coastal water are of concern given the importance of the Coral Coast for the local communities and as a tourist destination. If the reef ecosystems and biodiversity contained there are degraded further the income and image of the resorts will suffer. The local villagers will also be affected as tourism is the major source of employment in this part of Fiji, and many still rely on fish caught from the reefs for their daily food.

Appendix 6

Amaterra Resort Development Plan

Description of the project:

The Development

Plans call for the development of villas, condominiums, and hotels; and when completed would total approximately 2,000 hotel rooms (Five hotels planned), 2,200 villa lots, and an eighteen hole golf course. There will also be a "Town Centre Village" with provisions for a business park with commercial units and public amenities including a fire station, police station, health and other services. The resort community will also include a water park, an equestrian centre a conference centre and amphitheatre.

A series of lined ponds and lakes will collect all the effluent from the sewage plants, as well as the storm water from the drainage system. These lakes and ponds will be incorporated in the golf course design and will provide a source of water for the fairways and greens thus reducing fertiliser requirement for the golf course. The fairways and greens will also be lined with geotextile materials to prevent intrusion of the irrigation waters and return flow as well as leachate to the aquifers. All the storm water runoff from the development will be collected in the drainage system for reuse. The development is proposed to be carried out on a phased basis with the completion of most of the infrastructure scheduled to be ready by the end of 2008. The infrastructural construction will begin in 2006 and should be complete within thirty months. This construction will involve the provision of roads, adequate drainage, sewage treatment facilities, and a golf course.

Construction of the first building is scheduled to begin in late 2006 with "Oceanfront GolfVillas" and the "Highway Commercial Centre" (See map E in Appendix 6.). This is to be followed in 2007 by a beach hotel at H4, the Conference Centre (A6) and several villas "manors" and commercial buildings. Construction of the resort is scheduled to continue until 2013.

The Coastline

The coastline of the property is characterized by protruding bedrock extending into the near shore areas. This has been the main obstacle to development in the past, as any attempt to create a suitable profile for beach-use must effectively deal with this.

Offshore, a shallow shelf up to 1.5 m deep runs to a barrier reef some 300 m outside. This reef extends to the west where it deepens and then re-surfaces in the vicinity of the Stewart Castle property.

The developers propose to create usable recreational areas to serve the needs of the overall proposed development, and at the same time minimize adverse

impacts to the marine environment. As a result the main type of proposed development of the coastline will take the form of coves excavated from the bedrock.

Proposed shoreline modifications (starting from the eastern boundary) are as follows :

ix) Four coves – 30m diameter & 1.5m depth

x) Two 10m wide channels perpendicular to shore

xi) Two excavated bays utilizing existing indentations ion the shoreline; depth 0.75m

xii) A sea pool – 30m x 15m

xiii) One pier – dimensions & purpose unknown

xiv) One groyne 75m long x 3m wide

xv) Submerged nearshore area 150m x 50m excavated to 1m depth

xvi) One groyne 100m long x 3m wide

Sewage Treatment

Three secondary Sewage treatment plants are proposed, the first of which would be built will be at the "Village" or Town Centre near to the North Coast Highway. The next would be at the area designated "M2" (See map E in Appendix 6) and will serve Duncans Bay and the hotels and villas to the north east. Both these plants discharge into lined lagoons which will serve as water sources for the golf course. The third plant will be to the west of the property near to "H1" , and the effluent from that plant will be pumped up to the golf course for irrigation. The quality of the sewage effluent would be checked daily for compliance with NRCA/NEPA Standards, and to provide a basis the adjusting use of fertilisers according to the level of nutrients in the "grey water" discharged to the ponds and lakes.

The Sewage treatment plants proposed are "package plants" utilising activated sludge and fixed film processes. It is expected that all the NRCA standards for Sewage effluent will be met by these plants and no effluent will be discharged to the sea. The plans for these plants have been submitted to the Environmental Health Division of the Ministry of Health for their approval.

Bibliography

(Dcpp), D.C.P.P., 2009. *What is Cost-Effectiveness Analysis?* [online]. http://www.dcp2.org/pubs/PIH/3/Section/96 [Accessed Access Date 2009].

(Ddda), D.D.D.A., 2003. *duplin dockland area master plan review*.

(Doelg), T.D.O.T.E.A.L.G., 2003. *Strategic environmetal assessment of the draft master plan of duplin dockland area.* Duplin dockland.

(Ec), E.C., 1999. *Manual on Strategic Environmental Assessment of Transport Infrastructure Plans.* Brussels.

(Eeaa), E.E.A.A., 2004. *The Environmental Profile of The Governorate of Suez*.

(Eeaa), E.E.A.A., 2009. [online]. http://www.eeaa.gov.eg/English/main/about.asp [Accessed Access Date 2009].

(Eu), E.U., 2001. *Directive 2001/42/EC of the European parliament and of the council on the assessment of the effects of certain plans and programmes on the environment*.

(Fao), T.F.A.A.O.O.T.U.N., 1993. *Guidelines for land-use planning*.

(Fao), T.F.A.A.O.O.T.U.N., 2005. *Introduction in Land Use Planning*: spring

(Fao), T.F.A.A.O.O.T.U.N., 2008. *Guidelines for land-use planning* [online]. FAO. Available from: http://www.fao.org/docrep/t0715e/t0715e04.htm [Accessed Access Date

(Gopp), G.O.F.P.P., 2008. *term of refrences for strategic urban plan of egyptian cities.* cairo.

(Gopp), G.O.F.P.P., 2009. [online]. http://www.gopp.gov.eg/ [Accessed Access Date 2009].

(Hbrc), T.H.A.B.N.R.C., 2009. [online]. www.hbrc.edu.egy [Accessed Access Date 2009].

(Huud), M.O.H.U.A.U.D., 2009. [online]. www.moh.gov.eg/ [Accessed Access Date 2009].

(Iaia), I.A.F.I.A., 2002. Strategic Environmental Assessment Performance Criteria. IAIA publications.

(Iocgpsia), T.I.O.C.O.G.A.P.F.S.I.A., 1994. *Guidelines and Principles for Social Impact Assessment*.

(Jaica), J.I.C.A., 2008. *State of oil pollution and management in Suez gulf region*.

(Med), M.O.E.D., 2006. [online]. www.mop.gov.eg/eng [Accessed Access Date

(Mot), M.O.T., 1998. *Fiji Tourism Development Plan 1998 - 2005*. suva.

(Ncpslu), T.N.C.F.P.S.L.U., 2009. [online]. www.ncpslu.gov.eg [Accessed Access Date 2009].

(Oecd), O.F.E.C.-O.A.D., 2006. *Applying Strategic Environmental Assessment*: OECD publication.

(Se), S.E., 2006. *Strategic environmetal assessment tool kit* [online]. Crown. Available from: www.scotland.gov.uk [Accessed Access Date 2008].

(Temn), T.E.M.N., 2005. *strategic environmental assessment of Amaterra resort development, duncans trelawny*. amaterra.

(Unced), U.N.C.O.E.A.D., Year. Agenda 21ed.^eds. *United Nations General Assembly*

New York.

(Who), W.H.O., 2009. *Economic assessment* [online]. http://www.who.int/heli/economics/en/ [Accessed Access Date

Alshuwaikhat, H., 2005. Strategic Environmental Assessment can help solve environmental impact assessment failures in developing countries. *Environmental Impact Assessment Review,* 25**,** 307-317.

Altunbas, D. & Palabiyik, H., Year. A Strategic Environmental Assessment View in kanakkaleed.^eds. *the Mediterranean Coastal Environment*, Ravenna, Italy: Medcoast, 603-609.

Arts, J., Tomlinson, P. & Voogd, H., 2005. EIA and SEA tiering: the missing link? *International experience and perspectives in SEA.*

Bambra, C., Fox, D. & Scott-Samuel, A., 2005. towards a politics of health. *health promotion international,* 20**,** 187-193.

Barrow, C.J., 2000. *Social Impact Assessment An Introduction* London: Arnlond.

Belcáková, I., 2002. *SEA in spatial planning* [online]. www.iaia.org [Accessed Access Date

Benson, J., 2003. What Is the Alternative? Impact Assessment Tools and Sustainable Planning. *Impact Assessment and Project Appraisal,* 21**,** 261-265.

Center Four Sustainability, 2009. *wales spatial plan update SEA statement.* wales.

Cernea, M., 1995. *Putting People First: Sociological Variables in Rural Development,* 2nd ed. New York: Oxford University Press for the World Bank.

Chaker, A., El-Fadl, K., Chamas, L. & Hatjian, B., 2006. review of strategic environmental assessment in 12 selected countries. *Environmental Impact Assessment Review,* 26**,** 15-56.

Cooper, L.M. & Sheate, W., 2002. Cumulative Effects Assessment: A review of UK Environmental Impact Statements. *Environmental Impact Assessment Review,* 22**,** 415-439.

Dalal-Clayton, B. & Sadler, B., 2005. *Strategic Environmental Assessment A Sourcebook and Reference Guide to International Experience* London: Earthscan

Dalkmann, H., Herrera, R. & Bongardt, D., 2003. Analytical strategic environmental assessment (ANSEA) developing a new approach to SEA *environmental Impact Assessment Review,* 24**,** 385-402.

De.Groot, A., 1995. the functioning and sustainability of village crop protection brigades in Niger. *International Journal of Pest management,* 41**,** 243 - 248.

European-Communities, 1999. *The EU Compendium of Spatial Planning Systems and Policies: Germany (Regional Development Studies* Brussels, Belgium: amazon.

Farouk, G., 2005. The Conflicts Between Tourist & Industrial Activities Along The Suez Gulf N-West Coast. Faculty of engineering, Ain Shams University.

Ficher, T., 2007. *The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach* london: amazon.CO.UK.

Fischer, T., 2007. *The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach* london: amazon.CO.UK.

Freudenburg, W., 1986. Social Impact Assessment. *Annual Review of Sociology,* 12**,** 451-487.

Gay, L.R., 1996. *Educational Research: Competencies for Analysis and Application*: Merrill.

Glasson, J., R., T. & C., C., 1994a. *Introduction to environmental impact assessment* LONDON: UCL Press.

Glasson, J., Therivel, R. & Chadwick, C., 1994b. *Introduction to environmental impact assessment* LONDON: UCL Press.

Goodland, R. & Mercier, J., 1999. *the Evolution of Environmental Assessment in the World Bank: from "Approval" to Results.* Washington D.C.

Goodson, I. & Walker, R., 1991. *biography, identify & schooling*: The falmer press.

Harridge, C., Mactavish, A., Mcallister, I. & Nicholson, S., 2002. *Guide to sustinability appraisal.* london.

Hassan, G., 2006. The Conflicts Between Tourist & Industrial Activities Along The Suez Gulf N-West Coast. Urban Planning Department, Faculty of Engineering , Ain Shams University.

Jordan, A., 2001. *Efficient hardware and light green software: environmental policy integration in the UK* london: Earthscan.

Klochko, A., 2009. *Addressing Global Environmental Security Through Innovative Educational Curricula , Risk Assessment In Ukrainian Environmental High Education* Springer Netherlands.

Kulsum, A., 2009. Strategic Environmental Assessment in the World Bank: An Overview.

Kulsum, A., Mercier, J. & Verheem, R., 2005. *Strategic Environmental Assessment - Concept and Practice* Washington, D.C.: the World Bank, Environment Department.

Lee, N. & Walsh, F., 1997. *Strategic environmental assessment: an overview*.

Lee, N. & Walsh, F., 1999. *Strategic Environmental Assessment: an overview*.

Leslie, D. & Ratukalou, I., 2000. *Review of Rural Land Use in Fiji: Opportunities for the new millennium.* Noumea.

Levett, R. & Mcnally, R., 2003. *A Strategic Environmental Assessment of Fiji's Tourism Development Plan.* Fiji.

Mann, C., 2003. *generating data online: ethical concerns and challenges for C21 researcher* norway: NTNU University press.

Momtaz, S., 2002. Environmental Impact Assessment in Bangladesh: a critical review. *Environmental Impact Assessment Review* 22**,** 163-179.

Mr Partidario & R, C., 2000. *Perspectives on strategic Environmental Assessment* Washington: Lewis Publishers.

Mustafa, A., 2003. Strategic environmetal assessment and a prototype approch for the integration of SEA with strategic level planning in Turkey. the middle east technical university.

Neuman, L., 1997. *social research methods: qualitative and quantitative approches*: allyn and Bacon (Boston)

New Urban Communities Authority, 2009. [online]. [Accessed Access Date 2009].

Partidario, M. & Clark, R., 2000. *Perspectives on strategic Environmental Assessment* Washington: Lewis Publishers.

Pisani, J. & Sandham, L., 2006. Assessing the performance of SIA in the EIA context: A case study of South Africa. *Environmental Impact Assessment Review,* 26**,** 707-724.

R Therivel , E. Wilson, Thompson S., D., H. & Pritchard, A.D., 1992. *Strategic Environmental Assessment* london: Earthscan.

Retief, F., 2005. Quality and effectiveness of strategic environmental assessment (SEA) as a tool for water management within the South African context. *Water SA,* 378.

Sadler, B., 1996. *Environmental Assessment in a changing world: Evaluating Practice to Improve Performance*.

Sadler, B. & Dalal-Clayton, B., 2005. *Strategic Environmental Assessment: A Sourcebook & Reference Guide To International Experience* london.

Sadler, B. & Verheem, R., 1996a. *Strategic Environmental Assessment : Status, Challenges and Future Directions*.

Sadler, B. & Verheem, R., 1996b. *Strategic Environmental Assessment: key issues emerging from recent practice*.

Salder, B., 1999. *a framework for environmental, sustainability assessment and assurance*: Oxford: Blackwell.

Say, N. & Yucel, M., 2006. Strategic environmental assessment and national development plans in Turkey: towards legal framework and

operational procedure. *Environmental Impact Assessment Review,* 29**,** 301-316.

Schmidt, M., Joao, E. & Albrecht, E., 2005. *Implementing Strategic Environmental Assessment* london: Springer.

Siedentop, S., 2010. Strategic Environmental Assessment (SEA) – why expanding EIA-principles to decisions at strategic levels? : Institute of Regional Development Planning Universität Stuttgart.

Singh, G., 2007. To Study the Inception and Evolution of Environmental Impact Assessment in the World and in India and to Analyze and Comment upon the Environmental Clearance Process in the Country. University of Delhi.

Tang Tao, Zhu Tan & , X.H., 2005. Strategic Environmental Assessment of Land-Use Planning in China. *Environmental Informatics Archive,* 3**,** 41-51.

Tang Tao, Zhu Tan & , X.H., 2007. Integrating environment into land-use planning through strategic environmental assessment in China: Towards legal frameworks and operational procedures. *Environmental Impact Assessment Review,* 27**,** 243-265.

Tao, T., Tan, Z. & He, X., 2007. Integrating environment into land-use planning through strategic environmental assessment in China: Towards legal frameworks and operational procedures. *Environmental Impact Assessment Review,* 27**,** 243-265.

The National Assembly for Wales, 2008. *The wales spatial plan update.* wales.

Therivel, R., Wilson, E., Thompson, S., Heany, D. & Pritchard, D., 1992. *Strategic Environmental Assessment* london: Earthscan publications Ltd.

Vanclay, F., 2006. Principles for Social Impact Assessment: A critical comparison between the international and US documents. *Environmental Impact Assessment Review,* 26**,** 3-14.

Vanclay, F. & Bronstein, D., 1995. *Environment and Social lmpacf Assessments* London: John Wiley.

Verheem, R. & Tonk, J., 2000. *Strategic Environmental Assessment: one concept, multiple forms. Impact Assessment and Project Appraisal*.

Wood, C., 2003. *Environmental Impact Assessment: a comparative review,* 2nd

ed. England: prentice Hall: Pearson education.

Wood, C. & Djeddour, M., 1992. Strategic Environmental Assessment: EA of policies, plans and programs. *Impact Assessment Bulletin,* 10**,** 3-22.

World-Bank, 2003. *A User's Guide to Poverty and Social Impact Assessment* [online]. World bank. Available from: www.worldbank.org/poverty [Accessed Access Date

11-Arabic References:

- وزارة الإسكان والمرافق والتنمية العمرانية (2009) قانون البناء الموحد رقم 119 لسنة 2009.الوقائع المصرية ملحق للجريدة المصرية.
- وزارة البيئة (جهاز شئون البيئة) (1992) قانون البيئة رقم لسنة . الوقائع المصرية ملحق للجريدة المصرية.
- وزارة البيئة (جهاز شئون البيئة)(1962) قانون رقم 48 لسنة 1982 في شأن حماية نهر النيل والمجاري المائية.
- وزارة الإسكان والمرافق والتنمية العمرانية (1982) قانون التخطيط العمراني رقم 3 لسنة 1982.الوقائع المصرية ملحق للجريدة المصرية.
- الهيئة العامة للتخطيط العمراني (2004) الدليل المرجعي لأعداد المخطط الأستراتيجي العام والتفصيلي للمدينة المصرية.
- الهيئة العامة للتخطيط العمراني (2003) الدليل المرجعي لأعداد المخطط الأستراتيجي العام والتفصيلي للقرية المصرية.
- عاصم الجزار (2008) العلاقة بين أساليب و أدوات التقييم البيئي, كلية التخطيط العمراني, جامعة القاهرة.

11-Arabic Abstract:

مقدمة:

هناك الكثير من العلاقات المتبادلة ما بين الإنسان والبيئة بحيث يؤثر فيها وتؤثر فيه. وكنتيجة لأنشطة الإنسان الصناعية و الأجتماعية والترفيهية , وصلت البيئة إلي حدود التدهور البيئي وفقدت العديد من مصادرها ومقوماتها البيئية الفريدة.

ويتعرض البحث لأحد القضايا الهامة وهي ضرورة ادخال الدراسات البيئية في كافة مستويات التخطيط العمراني, وتطبيق هذه الدراسات على السياسات والخطط والمخططات العمرانية حتى الوصول إلى المشروعات العمراية.

و تسمى اعداد الدراسات البيئية للمشروعات العمرانية بدراسات تقييم الأثر البيئي, أما الدراسات البيئية على المستوى القومي والإستراتيجي فتسمى الدراسات البيئية الإستراتيجية .

و قد ظهر مفهوم دراسات تقييم الأثر البيئي في العالم المتقدم مذ عام 1969, وقد حدث تطور سريع في مفهوم هذه الدراسات البيئية ليظهر مفهوم جديد منذ بداية الثمانينات وهو مفهوم الدراسات البيئية الإستراتيجية.

و في مصر بدأت دراسات تقييم الأثر البيئي في الأنتشار منذ صدور قانون البيئة في عام 1983 والذي ينص على ضرورة تقديم دراسة تقييم الأثر البيئي لأنماط بعينها من المشروعات العمرانية قبل الحصول على أية تراخيص بالبناء.

وبالرغم من ذلك فإن البيئة الطبيعية في مصرتتعرض لكافة أشكال التدهور و الجور وقد يكون من أسباب ذلك هو عدم أخذ الدراسات البيئة في الأعتبار منذ إعداد الخطط والمخططات العمرانية, والقصور في تطبيق الدراسات البيئة الإستراتيجية والتي يجب أن تأتي في مرحلة سابقة لمرحلة تقييم الأثر البيئي للمشروعات العمرانية. حيث أن الدراسات البيئية يجب أن تتدرج من الدراسات البيئية الإستراتيجية وحتى الدراسات البيئة المتخصصة على مستوى المشروعات العمرانية (دراسات تقييم الأثر البيئي للمشروعات العمرانية).

المشكلة البحثية:

تتعرض البيئة الطبيعية في مصر لكافة أنواع التعدي والجور والذي أسفر عن فقدان العديد من المكونات البيئية الفريدة أو تغيرها بفعل النمو العمراني المتزايد والذي لا يضع للبيئة الطبيعية أية حسابات. لهذا السبب هناك حاجة ماسة لتسليط الضوء على أهمية اجراء الدراسات البيئة ليس فقط على مستوى المشروعات العمرانية (دراسات تقييم الأثر البيئي للمشروعات) ولكن البدء من الخطط والإستراتجيات والمخططات على مستوى الدولة (الدراسات البيئية الإستراتيجية).

ويلقي البحث الضوء على المشكلات البيئية الناتجة عن اغفال الدراسات البيئية على مستوى الخطط والإستراتيجيات وحتى المشروعات العمرانيةفي مصز.

الفرضية البحثية:

يفترض البحث حدوث تأثيرات بيئية خطيرة على البيئة في مصر نتيجة لإغفال الدراسات الإستراتيجية في مصر والأهتمام فقط بدراسات تقييم الأثر البيئي للمشروعات العمرانية, وما أسفر ذلك عن فقدان العديد من المقومات البيئية النادرة أو زيادة الحمل البيئي عليها والتغير في خصائصها. فتأتي القرارات الإستراتيجية بمنأى عن اجراء الدراسات البيئية الإستراتيجية, ومن أهم مزايا الدراسات البيئية الإستراتيجية هو أنها تعطي فكرة عن محصلة التأثير البيئي من كافة المشروعات على البيئة ولا تكون الرؤية منحصرة على مشروع واحد بعينه, ومعرفة هذه المحصلة هامة لأنها قد تكون مدمرة إذا تم أخذها في الأعتبار بهذا الشكل, أما إذا تم التعامل مع كل مشروع على حدا فإنه لا يوجد محصلة للتأثير البيئي وبالتالي تكون الدراسة البيئية غير مكتملة لأنها لم تتدرج من المستوى القومي وحتى التفصيلي على مستوى المشروعات.

المنهجية البحثية:

يعتمد منهج العمل في اختبار الفرضية البحثية علي ثلاثة محاور رئيسية:

أولا:(الدراسة الظرية)

و فيها سوف تتم دراسة مفهوم الدراسات البيئية الإستراتيجية والتعرض لخطواتها ومكوناتها ومراحلها بالتفصيل.

ثانيا: (الدراسة التحليلية)

وهي تنقسم إلى قسمين:

القسم الأول: التعرض لأحد الأمثلة الأجنبية في مجال تقييم الأثر البيئي على المستوى الإستراتيجي وتحليلها.

القسم الثاني: تحليل الوضع الراهن لدراسات تقييم الأثر البيئي في مصر على مستوى المشروعات العمرانية وعلى المستوى الإستراتيجي.

ثالثا: (الدراسة التطبيقية)

تطبيق مفهوم الدراسة البيئية الإستراتيجية على أحد الأمثلة المصرية (منطقة شمال غرب خليج السويس)

(Dcpp), D.C.P.P., 2009. *What is Cost-Effectiveness Analysis?* [online]. http://www.dcp2.org/pubs/PIH/3/Section/96 [Accessed Access Date 2009].
(Ddda), D.D.D.A., 2003. *duplin dockland area master plan review*.
(Doelg), T.D.O.T.E.A.L.G., 2003. *Strategic environmetal assessment of the draft master plan of duplin dockland area.* Duplin dockland.
(Ec), E.C., 1999. *Manual on Strategic Environmental Assessment of Transport Infrastructure Plans.* Brussels.
(Eeaa), E.E.A.A., 2004. *The Environmental Profile of The Governorate of Suez*.
(Eeaa), E.E.A.A., 2009. [online]. http://www.eeaa.gov.eg/English/main/about.asp [Accessed Access Date 2009].
(Eu), E.U., 2001. *Directive 2001/42/EC of the European parliament and of the council on the assessment of the effects of certain plans and programmes on the environment*.
(Fao), T.F.A.A.O.O.T.U.N., 1993. *Guidelines for land-use planning*.
(Fao), T.F.A.A.O.O.T.U.N., 2005. *Introduction in Land Use Planning*: spring

(Fao), T.F.A.A.O.O.T.U.N., 2008. *Guidelines for land-use planning* [online]. FAO. Available from: http://www.fao.org/docrep/t0715e/t0715e04.htm [Accessed Access Date
(Gopp), G.O.F.P.P., 2008. *term of refrences for strategic urban plan of egyptian cities.* cairo.
(Gopp), G.O.F.P.P., 2009. [online]. http://www.gopp.gov.eg/ [Accessed Access Date 2009].
(Hbrc), T.H.A.B.N.R.C., 2009. [online]. www.hbrc.edu.egy [Accessed Access Date 2009].
(Huud), M.O.H.U.A.U.D., 2009. [online]. www.moh.gov.eg/ [Accessed Access Date 2009].
(Iaia), I.A.F.I.A., 2002. Strategic Environmental Assessment Performance Criteria. IAIA publications.
(Iocgpsia), T.I.O.C.O.G.A.P.F.S.I.A., 1994. *Guidelines and Principles for Social Impact Assessment*.
(Jaica), J.I.C.A., 2008. *State of oil pollution and management in Suez gulf region*.
(Med), M.O.E.D., 2006. [online]. www.mop.gov.eg/eng [Accessed Access Date

(Mot), M.O.T., 1998. *Fiji Tourism Development Plan 1998 - 2005*. suva.
(Ncpslu), T.N.C.F.P.S.L.U., 2009. [online]. www.ncpslu.gov.eg [Accessed Access Date 2009].
(Oecd), O.F.E.C.□O.A.D., 2006. *Applying Strategic Environmental Assessment*: OECD publication.
(Se), S.E., 2006. *Strategic environmetal assessment tool kit* [online]. Crown. Available from: www.scotland.gov.uk [Accessed Access Date 2008].
(Temn), T.E.M.N., 2005. *strategic environmental assessment of Amaterra resort development, duncans trelawny*. amaterra.
(Unced), U.N.C.O.E.A.D., □ear. Agenda 21ed.□eds. *United Nations General Assembly*
New □ork.
(□ ho), □ .H.O., 2009. *Economic assessment* [online]. http://www.who.int/heli/economics/en/ [Accessed Access Date
Alshuwaikhat, H., 2005. Strategic Environmental Assessment can help solve environmental impact assessment failures in developing countries. *Environmental Impact Assessment Review,* 25**,** 307□317.
Altunbas, D. □ Palabiyik, H., □ear. A Strategic Environmental Assessment □iew in kanakkaleed.□eds. *the Mediterranean Coastal Environment*, Ravenna, Italy: Medcoast, 603□609.
Arts, J., Tomlinson, P. □ □oogd, H., 2005. EIA and SEA tiering: the missing link□*International experience and perspectives in SEA*.
Bambra, C., Fo□, D. □ Scott□Samuel, A., 2005. towards a politics of health. *health promotion international,* 20**,** 187□193.
Barrow, C.J., 2000. *Social Impact Assessment An Introduction* London: Arnlond.
Belc□kov□, I., 2002. *SEA in spatial planning* [online]. www.iaia.org [Accessed Access Date
Benson, J., 2003. □hat Is the Alternative□ Impact Assessment Tools and Sustainable Planning. *Impact Assessment and Project Appraisal,* 21**,** 261□265.
Center Four Sustainability, 2009. *wales spatial plan update SEA statement*. wales.
Cernea, M., 1995. *Putting People First: Sociological Variables in Rural Development,* 2nd ed. New □ork: O□ford University Press for the □ orld Bank.
Chaker, A., El□Fadl, □., Chamas, L. □ Hat□ian, B., 2006. review of strategic environmental assessment in 12 selected countries. *Environmental Impact Assessment Review,* 26**,** 15□56.
Cooper, L.M. □ Sheate, □ ., 2002. Cumulative Effects Assessment: A review of U□ Environmental Impact Statements. *Environmental Impact Assessment Review,* 22**,** 415□439.

Dalal Clayton, B. Sadler, B., 2005. *Strategic Environmental Assessment A Sourcebook and Reference Guide to International Experience* London: Earthscan

Dalkmann, H., Herrera, R. Bongardt, D., 2003. Analytical strategic environmental assessment (ANSEA) developing a new approach to SEA *environmental Impact Assessment Review,* 24**,** 385 402.

De.Groot, A., 1995. the functioning and sustainability of village crop protection brigades in Niger. *International Journal of Pest management,* 41**,** 243 248.

European Communities, 1999. *The EU Compendium of Spatial Planning Systems and Policies: Germany (Regional Development Studies* Brussels, Belgium: ama on.

Farouk, G., 2005. The Conflicts Between Tourist Industrial Activities Along The Sue Gulf N est Coast. Faculty of engineering, Ain Shams University.

Ficher, T., 2007. *The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach* london: ama on.CO.U .

Freudenburg, ., 1986. Social Impact Assessment. *Annual Review of Sociology,* 12**,** 451 487.

Gay, L.R., 1996. *Educational Research: Competencies for Analysis and Application*: Merrill.

Glasson, J., Therivel, R. Chadwick, C., 1994. *Introduction to environmental impact assessment* LONDON: UCL Press.

Goodland, R. Mercier, J., 1999. *the Evolution of Environmental Assessment in the World Bank: from "Approval" to Results.* ashington D.C.

Goodson, I. alker, R., 1991. *biography, identify & schooling*: The falmer press.

Harridge, C., Mactavish, A., Mcallister, I. Nicholson, S., 2002. *Guide to sustinability appraisal.* london.

Hassan, G., 2006. The Conflicts Between Tourist Industrial Activities Along The Sue Gulf N est Coast. Urban Planning Department, Faculty of Engineering , Ain Shams University.

Jordan, A., 2001. *Efficient hardware and light green software: environmental policy integration in the UK* london: Earthscan.

lochko, A., 2009. *Addressing Global Environmental Security Through Innovative Educational Curricula , Risk Assessment In Ukrainian Environmental High Education* Springer Netherlands.

ulsum, A., 2009. Strategic Environmental Assessment in the orld Bank: An Overview.

□ulsum, A., Mercier, J. □ □erheem, R., 2005. *Strategic Environmental Assessment - Concept and Practice* □ashington, D.C.: the □orld Bank, Environment Department.

Lee, N. □ □alsh, F., 1997. *Strategic environmental assessment: an overview*.

Lee, N. □ □alsh, F., 1999. *Strategic Environmental Assessment: an overview*.

Leslie, D. □ Ratukalou, I., 2000. *Review of Rural Land Use in Fiji: Opportunities for the new millennium.* Noumea.

Levett, R. □ Mcnally, R., 2003. *A Strategic Environmental Assessment of Fiji's Tourism Development Plan.* Fi□i.

Mann, C., 2003. *generating data online: ethical concerns and challenges for C21 researcher* norway: NTNU University press.

Momta□, S., 2002. Environmental Impact Assessment in Bangladesh: a critical review. *Environmental Impact Assessment Review* 22**,** 163□179.

Mustafa, A., 2003. Strategic environmetal assessment and a prototype approch for the integration of SEA with strategic level planning in Turkey. the middle east technical university.

Neuman, L., 1997. *social research methods: qualitative and quantitative approches*: allyn and Bacon (Boston)

New Urban Communities Authority, 2009. [online]. [Accessed Access Date 2009].

Partidario, M. □ Clark, R., 2000. *Perspectives on strategic Environmental Assessment* □ashington: Lewis Publishers.

Pisani, J. □ Sandham, L., 2006. Assessing the performance of SIA in the EIA conte□t: A case study of South Africa. *Environmental Impact Assessment Review,* 26**,** 707□724.

Retief, F., 2005. □uality and effectiveness of strategic environmental assessment (SEA) as a tool for water management within the South African conte□t. *Water SA,* 378.

Sadler, B., 1996. *Environmental Assessment in a changing world: Evaluating Practice to Improve Performance*.

Sadler, B. □ Dalal□Clayton, B., 2005. *Strategic Environmental Assessment: A Sourcebook & Reference Guide To International Experience* london.

Sadler, B. □ □erheem, R., 1996a. *Strategic Environmental Assessment : Status, Challenges and Future Directions*.

Sadler, B. □ □erheem, R., 1996b. *Strategic Environmental Assessment: key issues emerging from recent practice*.

Salder, B., 1999. *a framework for environmental, sustainability assessment and assurance*: O□ford: Blackwell.

Say, N. □ □ucel, M., 2006. Strategic environmental assessment and national development plans in Turkey: towards legal framework and operational procedure. *Environmental Impact Assessment Review,* 29**,** 301□316.

Schmidt, M., Joao, E. □ Albrecht, E., 2005. *Implementing Strategic Environmental Assessment* london: Springer.

Siedentop, S., 2010. Strategic Environmental Assessment (SEA) – why e□panding EIA □principles to decisions at strategic levels□: Institute of Regional Development Planning Universit□t Stuttgart.

Singh, G., 2007. To Study the Inception and Evolution of Environmental Impact Assessment in the □orld and in India and to Analy□e and Comment upon the Environmental Clearance Process in the Country. University of Delhi.

Tao, T., Tan, □. □ He, □., 2007. Integrating environment into land□use planning through strategic environmental assessment in China: Towards legal frameworks and operational procedures. *Environmental Impact Assessment Review,* 27**,** 243□265.

Tao, T., Tan, □., He, □. □ Jing, □ ., 2005. Strategic Environmental Assessment of Land□Use Planning in China. *Environmental Informatics Archive,* 3**,** 41□51.

The National Assembly for □ ales, 2008. *The wales spatial plan update.* wales.

Therivel, R., □ ilson, E., Thompson, S., Heany, D. □ Pritchard, D., 1992. *Strategic Environmental Assessment* london: Earthscan publications Ltd.

□anclay, F., 2006. Principles for Social Impact Assessment: A critical comparison between the international and US documents. *Environmental Impact Assessment Review,* 26**,** 3□14.

□anclay, F. □ Bronstein, D., 1995. *Environment and Social lmpacf Assessments* London: John □ iley.

□erheem, R. □ Tonk, J., 2000. *Strategic Environmental Assessment: one concept, multiple forms. Impact Assessment and Project Appraisal*.

□ ood, C., 2003. *Environmental Impact Assessment: a comparative review,* 2nd

ed. England: prentice Hall: Pearson education.

□ ood, C. □ D□eddour, M., 1992. Strategic Environmental Assessment: EA of policies, plans and programs. *Impact Assessment Bulletin,* 10**,** 3□22.

□ orld□Bank, 2003. *A User's Guide to Poverty and Social Impact Assessment* [online]. □ orld bank. Available from: www.worldbank.org/poverty [Accessed Access Date