

Mainstreaming the Conservation and Sustainable Use of Biodiversity into the Tourism Development and Operations in Threatened Ecosystem in Egypt

Strategic Environmental Assessment for the Southern Red Sea Tourism Sector, Egypt (SEA Report)

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List of Acronyms

CAA	Competent Administrative Authority
CBD	Convention on Biological Diversity
CITES	Convention of the Trade of Endangered Species
CR	Critically Endangered
DD	Data Deficient
DPSIR	Driver Pressure State Impact Response
EACD	Environmental Affairs Central Directorate
EC	European Community
EEAA	Egyptian Environmental Affairs Agency
EIA	Environmental Impact Assessment
EN	Endangered
EU	European Union
GoE	Government of Egypt
HCL	Higher Committee of Licensing (Coastal Projects)
HS	High Speed
IBA	Important Bird Area
ICZM	Integrated Coastal Zone Management
IDC	Integrated Development Center
IEIA	Integrated Environmental Impact Assessment
IFC	International Finance Corporation
IUCN	International Union for Conserving Nature
KSA	Kingdom of Saudi Arabia
LAC	Limits of Acceptable Change
LAU	Limits of Acceptable Use
LMEs	Large Marine Ecosystems
LSC	Licensing Supreme Committee
MoM	Minutes of Meeting
MoT	Ministry of Tourism
MW	Megawatt
NCS	Nature Conservation Sector
NGO	Non-governmental Organization
NT	Near Threatened
PERSGA	The Regional organization for the Conservation of the Environment of the Red Sea and the Gulf of Aden
RBO	Regional Branch Office (of EEAA)
RSG	Red Sea Governorate
RSP	Red Sea Protectorates
SDS	Sustainable Development Strategy
SEA	Strategic Environmental Assessment
SPA	Shoreline Protection Authority
SRS	Southern Red Sea
TDA	Tourism Development Authority
TEV	Total Economic Value
UNEP	United Nations Environmental Program

UNWTO	World Tourism Organization, United Nations
USAID	United States Agency for International Development
VU	Vulnerable
WG	Working Group
WGHPA	Wadi El Gemal Hamata Protected Area

Executive Summary

Introduction

The Convention on Biological Diversity (CBD) Conference of Parties (COP13), held in Mexico in December 2016, adopted decision XIII/3, which calls the Parties to mainstream biodiversity in four development sectors including tourism. In response, the Government of Egypt has launched a national project “Mainstreaming the conservation and sustainable use of biodiversity into the tourism development and operations in threatened ecosystems in Egypt” (MBTD). The project aims to integrate biodiversity conservation into the tourism development and operation sectors at the national level.

One of the main concerns of the MBTD project is the tourism development cumulative impacts on biodiversity and environmental resources, which the EIA approach would be limited to address spatially and/or temporally. Thus, the MBTD project foresees a need to adopt a higher-level assessment tool such as strategic environmental assessment (SEA) to improve the policy planning quality, as well as to address external and cumulative impacts that are not directly captured using traditional EIA process.

This report outlines outputs of the SEA process carried out to assess the environmental, social and economic impacts of tourism development plans, which are located in the Southern Egyptian Red Sea. While this report is presented as a standalone document, comprehensive reports have been provided covering preparatory, scoping and sustainability assessment phases of the SEA.

Baseline Information

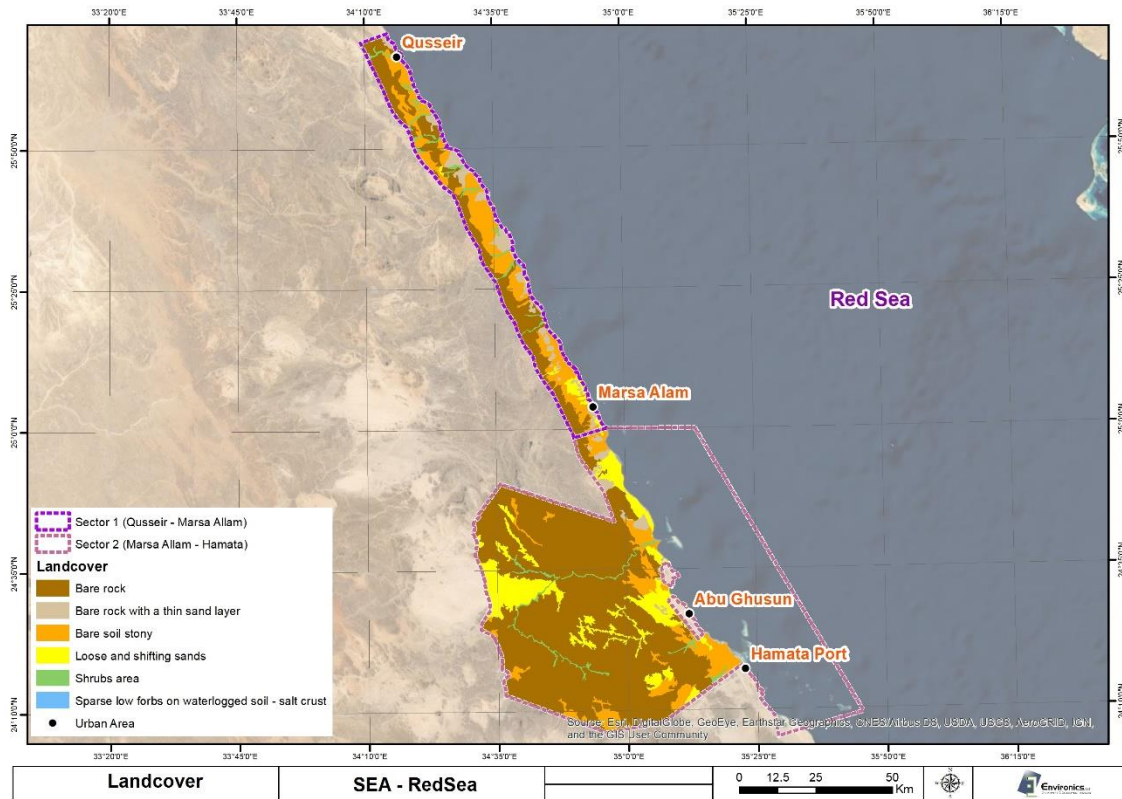
Baseline information has been studied relying mainly on literature reviews, and site visits conducted during the SEA phases, as well as experience of the SEA baseline team. The Red Sea coastal system has been divided into its components, ecological, physical, socioeconomic, and administrative subsystems.

Ecological Subsystem

The study area has been divided into two sectors including:

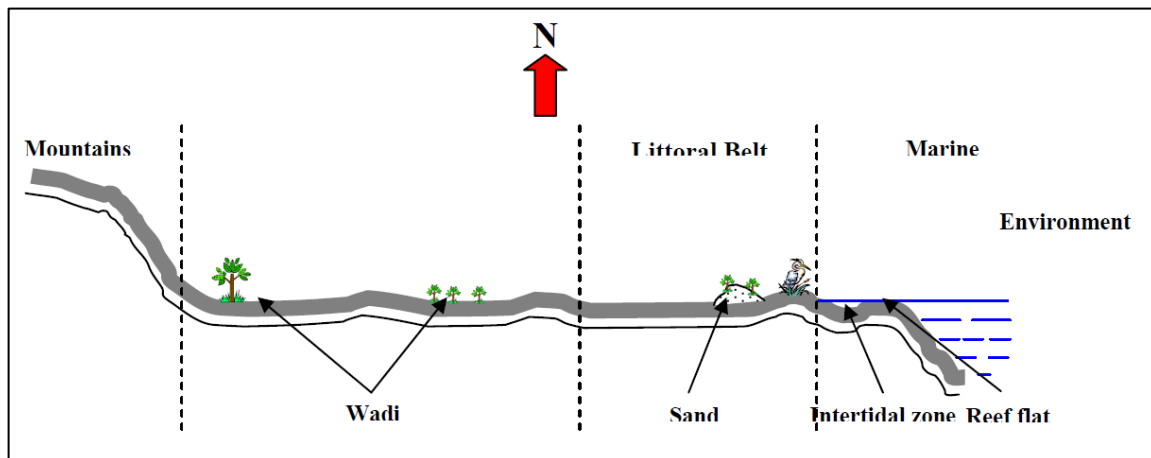
- Sector 1: El-Qusier - Wadi El Gemal, the Red Sea Coastal strip with a width of 10km from the sea from the South of Qusier City to the Northern Boundary of Wadi El Gemal-Hamata Protected Area
- Sector 2: Wadi El Gemal - Hamata (Wadi El Gemal Hamata Protected Area “WGHPA”), including the latest boundaries as per the Prime Minister Decree No. 1777/2020.

The following Figure 9 shows a map of the two sectors.



Delineation of the Project Area

Four main ecological zones for a typical watershed could be identified in the project area as presented in the following figure. The four zones are distinguished by the way in which the biotic and abiotic components of the environment interact to generate landscape heterogeneity.



Schematic representation of the ecological zones of the project area

Biodiversity in the project area has been inventoried, and classified into terrestrial and marine biodiversity. Major habitats in both sides have been described, and key species have been highlighted. Findings point out that the project area is rich in terms of habitat and

species biodiversity; the project area also hosts significant biodiversity hotspots. In addition, there are important sensitive habitats that support some key species, including island habitats and nesting habitats. For instance, in the terrestrial side, important sensitive areas include:

- Wadi El Gemal Important Plant Area (IPA)
- Wadi El Gemal Important Bird Area (IBA)
- Qualaan Islands (Hamata) Important Bird Area (IBA)
- Seyal/Siyul Island (Hamata/part of Qualaan islands)
- Shwareet Island (Hamata/part of Qualaan islands)
- Om El Sheikh/ Um Ladid Island (Hamata/part of Qualaan islands)
- Mahabis island (Hamata/part of Qualaan islands)
- Turtles nesting sites
- Balanites aegyptiaca forests
- Birds Migratory Routes

Major marine habitats have been studied including coral reef, mangrove and seagrasses where their ecosystem services have been underlined. In addition, relevant species relying on these ecosystems have been identified.

Social Subsystem

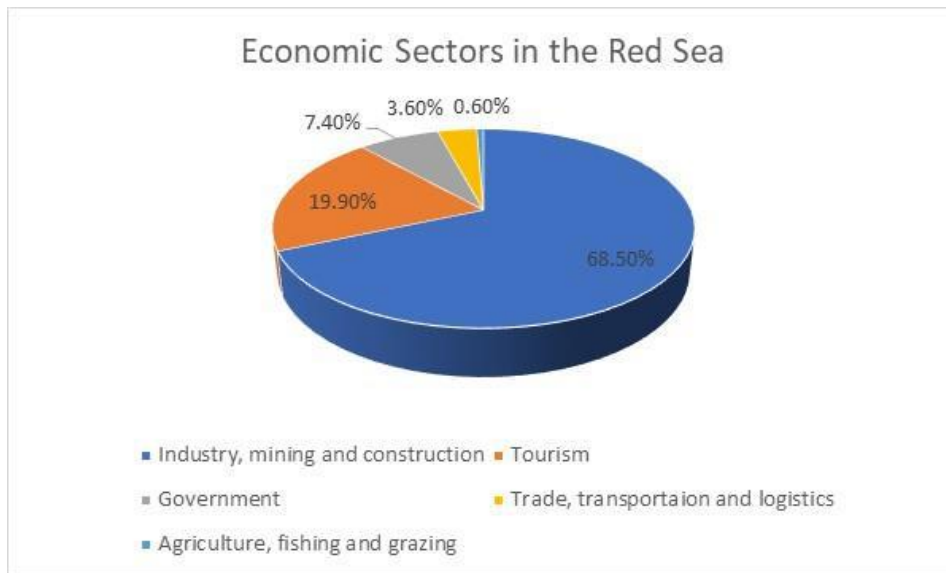
The project area includes four population centers: Qusier, Marsa Alam, Abu Ghosoun, and Hamata. The estimated population in Qusier and Marsa Alam cities was about 56,370 inhabitants, and is estimated to grow to about 250,000 by 2030.

The project area is internationally accessible through Marsa Alam International Airport, Port Ghalib International Marina, as well as Hurghada International Air Port. Road networks are well established and connect the project area with other Red Sea cities, to the Nile Delta and Valley, Suez and Cairo.

The Ababda is a local tribe known to occur and inhabit the southern part of the Eastern Desert for centuries from north of Shalatein to Qusier as far west as the Nile Valley, with small numbers found south to Sudan. The Ababda identity comes from their adaptability to live in extreme and harsh environments. Their culture has always been shaped by the environment and nature of the Eastern Desert and Wadi El-Gemal, as well as the Nomadic pastoral life. Besides governmental sector and mining, most Ababda works in camel grazing and fishing.

Economic Subsystem

The Red Sea Governorate contributes to the national GDP by about 3%. Industrial and mining activities, construction and oil extraction represent the main activity generating more than 68.5% of the total output. The contribution of the oil extraction sector alone represents about 90% of the total industrial and mining activities. In addition, the contribution of tourism sector is 20%. The share of economic sectors in the Red Sea is presented in the following figure.



Economic Sectors Share, Red Sea Governorate

On the other hand, the Project area supports a variety of economic activities including tourism development, mining and quarrying, fishing, herding, hand crafting, as well as other limited activities such as beekeeping.

Administrative Subsystem

Tourism development planning in the Red Sea falls mainly under the Tourism Development Authority (TDA) mandates. In addition, the Red Sea Governorate setup plans inside its municipal jurisdiction. Moreover, the land use of Wadi El Gemal Hamata Protected Area has been planned to have ecotourism zones, an initiative supported the TDA and EEAA in 2003.

The EEAA/Red Sea Protectorates (RSP) manage protected areas in the Red Sea, and monitor the development within the vicinity of protected areas. Furthermore, RSP may review EIAs for projects located in the coastal area.

The existing environmental legal framework addresses single coastal projects rather than plans. The law 9/2009 defines for the first-time coastal zones and the integrated coastal zone management concept. However, the coastal zone is not addressed in any other regulations.

The decision-making process on coastal projects involves a number of key institutions including TDA, EEAA and Shore Protection Authority (SPA). The Higher Committee for Licensing (HCL)¹ of Coastal Projects is the decision taking body, chaired by the Minister of Irrigation and Water Resources, and the Minister of Environment, in addition to members from the TDA, as well as Coastal Governorates.

¹ Please refer to subsection 5.4.6 for updates.

Tourism Development Plans

The current tourism development plans along the project area are inclusive of 27 tourist centres. Each tourism centre is divided into a number of single land parcels or projects. According to the latest information, there are 54,529 hotel rooms in full operation, whereas 395 projects are under construction occupying an area of 181,534,199 m².

The project area includes tourism development plans in the South of the Egyptian Red Sea coast belt (Red Sea Governorate) from Qusier to Southern borders of Wadi El Gemal PA. The geographical scope of the study includes the coastal plain in addition to Wadi El Gemal full area.

TDA Plans

TDA plans received in PowerPoint format include 13 tourist centers in the project area, namely: Baer Asil, El Sharm El Bahari, Wezr, Ras Trombi, Gebel El Gezira, Shauni, Marsa Maureen, Nabea Saghier, Shagara, Ras Dori, Sharm El Fakiri, North and South Abu Ghosoun, and Lahmi. Each tourist center is presented in two slides: layout and land uses, and Investment Opportunity plan for three phases (2018-2022), (2022-2026), and (2026-2030). The following table presents summary TDA plans.

Summary Tourism Development Plans

	Investment opportunity plan for years		
	2018-2022	2022-2026	2026-2030
Area (Km ²)	55.1585	47.39	762.918
Area (Feddan)	13133.7	11288.3	181661.21
% Overall change in area		85.92	1383.14
Target Accommodating Capacity	120990	104949	640135
Job Opportunities (Direct/indirect)	483956	419799	1280267
Indicators of minimum investment cost estimates in billion (L.E)	48.40	41.99	255.98
Cost of the proposed roads in million (L.E)	203	159.14	2736.41

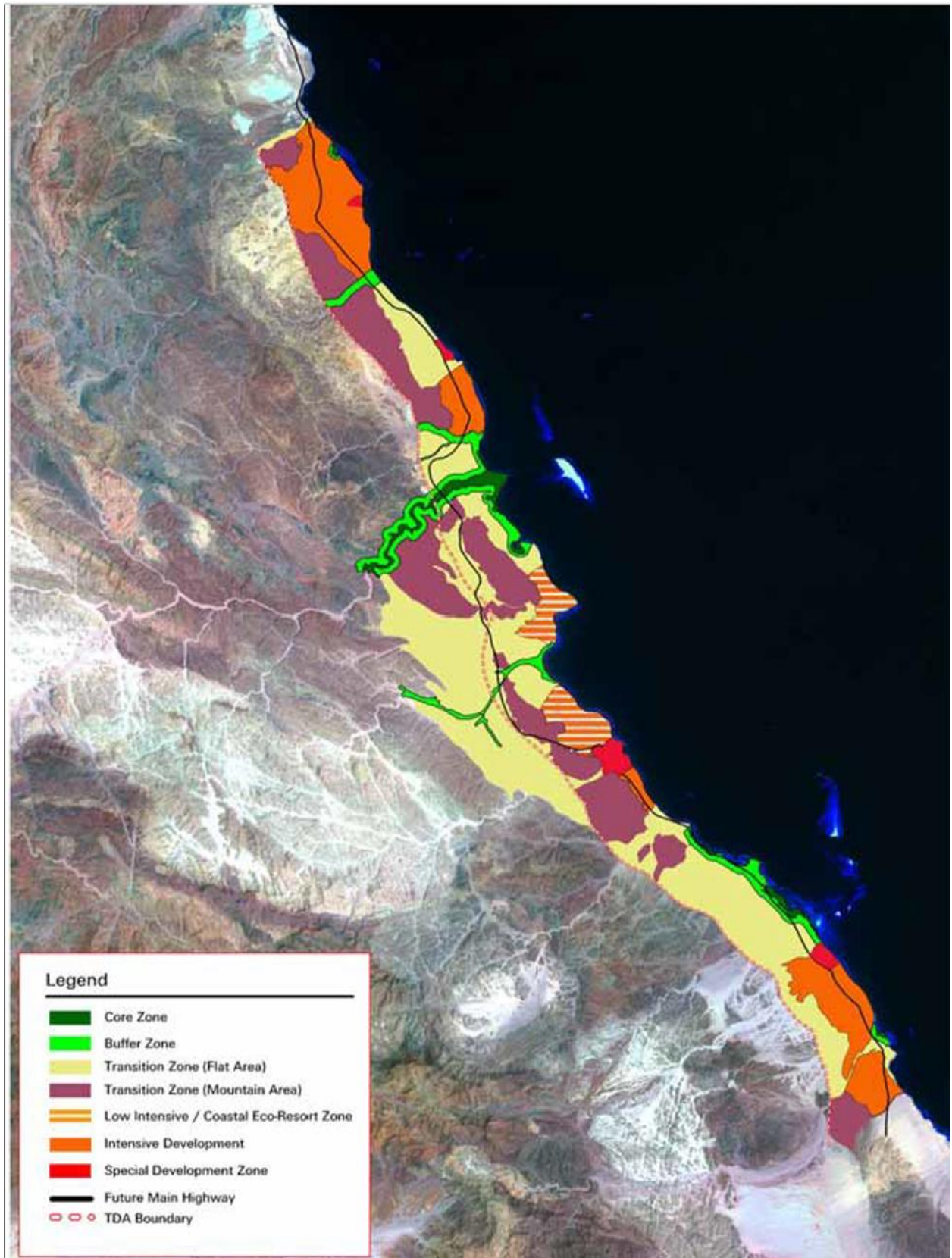
Wadi El Gemal Hamata Protected Area

Declared by PM Decree No. 143/2003 amended by PM Decree No. 1777/2020. In 2003, the Red Sea Sustainable Tourism Initiative (RSSTI) developed a “Land Use Management Plan (LUMP) South Marsa Alam, Red Sea Coast”.

The LUMP reflects a decision on the part of TDA to adopt a pattern of development in the area that preserves ecosystems of importance. It also presents broader national interests regarding the designation of Protected Areas and strategies to optimize sustainable tourism development.

In addition, a land use zoning system has been established to identify, evaluate, and classify the natural sub-zones according to sensitivity and suitable activities for each zone, such as traditional tourism, ecotourism, mining, nature conservation and research, etc. Each of the proposed management zones corresponds to a specific

management plan in accordance with administrative objectives of the natural and cultural ecosystems. The following figure presents the Land Use Zoning Plan illustrates the zones applied to specific areas (USAID/IRG/RSSTI 2003).



Southern Red Sea Land Use Management Plan (USAID/IRG/RSSTI 2003)

Within WGHPA, two zones are proposed for low intensive/coastal eco-resort, namely Ras Hankorab and South Marsa Umm Al Abas. The LUMP concludes that Tourism development in the Red Sea area south of Marsa Alam should be based on sustainability criteria that include:

- Long-term ecological viability.
- Long-term economic viability.
- Ethical use of resources.
- Equitability with local communities.
- Compliance with EEAA guidelines and Environmental Law 4/1994.

Red Sea Strategic Plan 2030

The Red Sea Strategic Plan 2030 provides two alternatives scenarios beside the business as usual (BaU). The BaU scenario considers sectoral development usual growth. While the first alternative assumes enhancing the industrial and mining sector, and the second alternative focuses on improving tourism, trade and logistics sectors.

Based on consultation with stakeholders, priority was given to tourism, transport and logistics sectors scenario, and desire to link them together by creating an industrial sector based on mining industries. Accordingly, a vision and mission statement for the Red Sea Governorate has been setup. The vision is “a tourist governorate with a diversified economy and a global role supporting tourism, trade and mining activities.” The Red Sea Strategic Plan concludes a number of projects in order to achieve the vision, mission and plan.

SEA Methodology

The overall SEA methodology has been described and discussed including the objectives, and conducted activities and outputs, SEA timeframe, as well as involvement of the Working Group 1. Moreover, assumptions and limitations of the SEA has been presented.

Furthermore, consultation and participation of stakeholder and interested groups has been reported, and a list of consultation events has been provided including physical and virtual meetings, workshops, as well as field visits.

It is worth mentioning that standard SEA achieves the best results if undertaken during the planning process, so it contributes to enhancing the planning process. This specific SEA has been carried out after the tourism development plans have been setup. Therefore, outputs of this SEA would require political attention and willingness to improve these existing tourism plans. Actions to improve the tourism development approach would rely on taking opportunities and overcoming constraints to achieve a win-win situation where the need for economic development and resource conservation is balanced.

Policy and Legal Framework

Analysis of the policy and legal framework has been described taking into account Egypt’s national, regional and international commitments. The legal basis for strategic

environmental assessment has been discussed, and recommendations to improve the existing legal system has been provided.

Egypt is a signatory body on a number of international treaties and/or conventions. Nature conservation, sustainable use of resources and coastal management related conventions are:

- Global Convention of Protection of Biological Diversity 1992
- RAMSAR Convention 1971
- Bonn Convention on the Conservation of Migratory Species (CMS)
- International Convention for the Prevention of Pollution from Ships
- The UN Law of the Sea
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- The Conservation of African-Eurasian Migratory Water birds (AEWA)
- The United Nations Framework Convention on Climate Change (UNFCCC)

Additionally, Egypt has joined a number of regional conventions, of which the most relevant are the following:

- The African Convention on the Conservation of Nature and Natural Resources
- Jeddah Convention

The national legal framework has been thoroughly analysed including the constitutions, national policies and strategies, laws and regulations, as well as national decrees. Furthermore, legal gap analysis has been undertaken and discussed. Recommendations to improve the legal framework has been also provided covering the following topics general, coastal development and management, the EIA System, and biodiversity conservation.

Assessment of Existing Tourism Development Plans

Assessment of the existing tourism development plans has been undertaken and reported, using the approach of BaU. The BaU analysis identifies the consequences of continuing current trends and changes in the system as a result of continuation of the BaU scenario.

Quantifying the Consequence of the BaU Scenario was a challenge because of lack of local updated data, shortage of available budget and time to acquire specific baseline information. Using a mix of methodologies, the assessment has relied on two major sets of criteria. The first set has considered the projected growth in land development, and the required utility and infrastructure. The second set has involved the key-issue trends in the project area, and the anticipated broad effects of the plans.

The current tourism development plans establish more than 430,000 hotel rooms which will result in up to 158 million tourist night a year by 2030. The proposed number of rooms in the project area only is more than the double of existing national tourist hotel capacity developed in more than thirty years. The following effects have been documented:

- The overall required total power demand in the project area until 2030 is more than 4 folds the exiting national power generation capacity.
- The overall required water is equivalent to 12% of the governmental plan which aims to produce 2.44 million m³ per day by year 2025.

- The overall required wastewater treatment facilities are equivalent to approximately 5% of the existing national capacity of 5 million cubic meter per day.
- The overall required beaches for the tourism plans is 216 km long. The existing overall length of the coastal strip comprising the tourism sector 1 is about 180 km. Therefore, the existing beaches are not anticipated to provide the required demand.
- The overall generated waste from the tourism plans is estimated at approximately 190,000 ton/year, or more than 500 ton/day, which requires almost triple of the existing management facility.
- The estimated arrivals from the tourism plans would require approximately 3 folds of the existing Red Sea airport capacity.
- The plans would result in severe environmental impacts in the terrestrial side including among others habitat modification and defragmentation, impacts on wildlife, species composition, ecosystem services.
- On the marine side, the estimated number of dives by 2030 is estimated at more than 47 million dive/year. This figure is high and extends beyond the carrying capacity of dive sites in the project area, which could support one million dive/year.
- While the above impacts have been quantified; other environmental impacts could not be quantified including for instance impacts on mangrove and seagrass ecosystems. However, description has been provided.
- Economic impacts have been provided including information from literature review. Moreover, a comparison between traditional versus ecotourism has been discussed and reported. It was concluded that roughly 27,000 ecoresort guests per year would produce the same level of direct spending, and significantly more local jobs and economic impacts than 180,000 traditional-market resort guests (2,000 rooms, 5 night stay).
- Other issues that were not listed during the identification of key-issues have been added and analysed. These include for instance, the regional competitiveness due to mega scale programs currently being undertaken on the other side of the Red Sea, in addition to impacts of climate change and sea level rise.

The assessment has concluded that the tourism development plans are anticipated to result in potential environmental impacts. Accordingly, developing feasible alternatives is necessary to reduce potential environmental impacts and threats, and maximize the social and economic benefits to the local community and economy. To develop these alternatives, the SEA has come up with a number of guiding principles, as well as policy measures that should be considered addressing main impacts.

Potential Plan Alternatives

During a standard SEA, plan alternatives are often provided by the plan authority based on the assessment of the early plan versions. However, in this case, the SEA team has proposes plan alternatives based on the requirement of MBTD project. A number of alternatives has been proposed, generated based on the following:

- Scenario planning exercise,
- Results of the assessment of the BaU scenario,
- Guiding principles proposed in the Sustainability Assessment Report

- Consultant's judgement and experience in the project area.

Potential alternatives have been divided into two groups, based on characteristics of the study area; group one of alternatives addresses sector one while group two focuses on sector two.

Sector one

Alternative one: Promoting Tourism Quality (Decrease quantity of hotel rooms)

Alternative one could be achieved through three options as shown in the following table:

Description of Alternative one and Related Options

Alternative		Emphasising on tourism quality
Option one	Description	Land use regulations allow low density and higher elevation
	Advantage	Save up to 80% of lands
	Disadvantage	No. of hotel rooms will be maintained, and accordingly impacts of BaU scenario continue.
Option two	Description	Land uses are regulated based on a zoning scheme, where 30% is allocated for tourism development, 30% for conservation, and 40% for other and future uses.
	Advantage	Reduce proposed hotel rooms to 30% as compared to BaU, while keeping the same room density in developed areas.
	Disadvantage	Requires highly level of coordination for setting up zoning regulations, and implementation follow up. While it reduces significantly land uptake, still the resultant no. of dives would be higher than the estimated carrying capacity.
Option three	Description	Land uses are organized based on land suitability and sensitivity scheme, where unsuitable land uses are avoided.
	Advantage	Coastal physiographic characters would be used to set different land uses and development criteria.
	Disadvantage	Requires coastal sensitivity studies to classify land use suitability based on environmental sensitivity.

Alternative one has been analysed based on the same criteria used for the analysis of the BaU scenario. The second option has been considered for assessment, because it assumes flat change in the baseline scenario and does not require further immediate studies. A reduction of 70% has been taken into account, based on the assumption that 30% of the land is allocated to tourism. The following shows the impacts of this alternative compared with the BaU:

Comparison of alternative one- second option and BaU

Criterion	BaU	Plan Alternative
Hotel rooms	433,037 rooms (more than double of current national hotel capacity), which could accommodate up to 158 million tourist night a year by the end of 2030.	129,911 rooms, which can accommodate about 47 million tourist night a year. The number of hotel rooms at the end of the year 2030 is equivalent to almost 65% of the existing national hotel capacity.
Overall minimum annual required energy by 2030	237,088 Mw equivalent to 400% of the existing national power generation capacity (55,000Mw).	7114 Mw, which is equivalent to 129% of the existing national power generation capacity (55,000Mw).
Overall minimum annual required water by 2030	110.64 Million m ³ , equivalent to 12% of the Egypt's Desalination plan 2025 (2.44 million m ³ /day).	16.60 Million m ³ , equivalent to 1.86% of the Egypt's Desalination plan 2025.
Overall minimum annual required wastewater treatment capacity at the by 2030.	88.51 Million m ³ , equivalent to approximately 5% of the existing capacity (1825 million m ³ /year).	13.28 Million m ³ , equivalent to approximately 1% of the existing capacity (1825 million m ³ /year).
Overall minimum required beach capacity by 2030	216 km long, more than existing beaches (180 km in sector 1) in the project area,.	65 km long, almost 50% of existing beaches in the project area, or equivalent to 100% of the suitable beaches.
Airport Capacity required by 2030	3 Folds of existing Red Sea airports.	Existing Red Sea airports.
Estimated No. of dives by 2030	47 million /year at a conservative ratio of 20% divers to arrivals. While the existing reef carrying capacity is 1 million dive/year, the estimated No. of dives associated with this alternative is extremely high.	15.6 million/year at a conservative ratio of 20% divers to arrivals. While the existing reef carrying capacity is 1 million dive/year, the estimated No. of dives associated with this alternative is still high.

Alternative two: Shifting away from traditional tourism products

Another alternative is shifting the tourism products from marine based tourism to other land and cultural-based ecotourism. The following Table 18 summarizes the aspects of this alternative.

Description of Alternative two

Description	Advantage	Disadvantage
Traditional mass marine-based tourism is diverted to include other ecotourism land based activities. It may include other types of tourism such as geo-tourism, wildlife/bird watching, cultural tourism, etc.	Decreases potential marine and coastal impacts. Provide opportunities to bring high quality wildlife watching tourism to the area.	Requires proper planning and management to avoid potential impacts on the terrestrial ecosystems of the Red Sea.

This alternative could have a number of options based on the percentage of existing plans diverted towards non-marine ecotourism.

The preferred alternative

While alternative one would result in significant reduction of utility demands and associated environmental impacts, some environmental effects would remain high particularly on the marine resources such as coral reefs. Therefore, this alternative alone may not be the best to reduce the tourism development impacts in the area. Additional measures and actions would be required to enhance the institutional and management capacity to handle anticipated consequences of the reduced development plans.

On the other hand, using a mix of alternative one and two would further reduce the anticipated impacts to become closer to acceptable levels. For instance, if the area receives a ratio of 10% of divers of the total arrival, the estimated No. of dives would be reduced to 50% (i.e. about 9 million). If this No. of divers is strictly managed through proper dive site management plans, the impacts could be significantly reduced.

A strategic framework to achieve the preferred alternative has been provided. Furthermore, applicability to developed and non-developed has been investigated and reported.

Sector two

The potential alternatives for Wadi El Gemal Hamata Protected Area include the following:

Conservation alternative

This alternative considers that WGHPA serves only conservation and resource sustainable use. Therefore, the protected area is open for tourist activities, but with minimal management physical interventions, i.e. only administrative offices, and visitors centers. The following Table 19table presents the proposed actions, responsibilities, and timeframe.

Advantages and Disadvantage of WGHPA Conservation Alternative

Advantages	Disadvantage
<ul style="list-style-type: none"> • It supports the conservation objectives of the area, • The ecological, inspirational, educational, cultural and recreational resources of WGHPA can support the tourism industry located in the north and south of its boundary. This takes into account the BaU scenario and the shortage of available management resources. • Activities may include a wide range of ecotourism, which have been explored in many studies such as Mindy Baha 2003: Tourism Potential and Management in Wadi El Gemal Hamata/USAID. The study identifies the key tourism assets as follow: <ul style="list-style-type: none"> ○ Spectacular natural landscapes and scenery. ○ Interesting geological formations. ○ Diverse habitats. ○ Fascinating and rare plants and animals. ○ A wealth of cultural heritage sites from prehistoric to modern times. ○ Colorful traditional communities. • The protected area can offer sandy beaches for the tourism centers that do not have access to the water or sandy beaches. • The protected area can create more opportunities for the local community to be engaged in ecotourism support. 	<ul style="list-style-type: none"> • Deprive the local community from socioeconomic benefits of ecotourism developments that could be developed in the protected area, • From economic point of view, the protected area natural resources will be left unused.

Business as Usual (LUMP) Alternative

The BaU Scenario considers the current management and development strategy of WGHPA including the development of two ecotourism zones proposed in 2003 by LUMP, in addition other two ecological zones proposed by Qualan Eco-model. The following **Error! Reference source not found.** table shows the advantage and disadvantages of this alternative.

Advantages and Disadvantage of WGHPA BaU Alternative

Advantages	Disadvantages
From environmental point of view, the BaU is not anticipated to create pressures	As demonstrated by TDA, the proposed development regulations of 2 room/Feddan

Advantages	Disadvantages
<p>on the natural resources, given the two facts:</p> <ul style="list-style-type: none"> • The proposed number of rooms is low compared with actual visitation in the last few years, • The anticipated monitoring by the protected area authority for the projects construction and operation is undertaken regularly. <p>Create ecotourism zones within the protected area will serve the local economy and community, Involve local community, and create local jobs,</p>	<p>is seen by tourism investors as not economically feasible.</p> <p>Requires additional human resources, well trained, to manage tourism projects.</p> <p>Requires additional institutional/legal instruments between TDA, EEAA, and Ministry of Tourism to follow-up construction and operation of the proposed eco-resorts.</p>

Sustainable Development of the protected area

This alternative explores the sustainable development of the WGHNP.

The LUMP provides an environmental sensitivity approach that could be used to develop ecotourism zones within the park. Building on that, WGHPA can support a number of small ecolodges that can be agreed between conservation and tourism authorities. These, however, shall be meet the following:

- Ecolodges should be established away from the protected area core zone, which includes the main Wadi and its tributaries, and coastal areas,
- Each one shall be allocated at enough distance from the other to avoid visual and cumulative impacts,
- Ecolodges shall be designed to be built in shelter areas, and away from being straight spotted,
- Local building materials shall be used to establish ecolodges to minimize visual impacts.

The following Table 23 presents the advantage and disadvantage of this alternative.

Advantages and Disadvantage of WGHPA Sustainable Development Alternative

Advantages	Disadvantages
<p>Create ecolodges within the protected area will serve the local economy and community.</p> <p>Involve local community, and create local jobs.</p> <p>Create revenues that could be invested back in park management.</p>	<p>Requires more detailed studies for site selection.</p> <p>Requires different type of marketing to attract nature lovers and wildlife watchers and researchers.</p> <p>Requires additional human resources, well trained, to manage tourism projects.</p> <p>Requires additional institutional/legal instruments between TDA, EEAA, and Ministry of Tourism to follow-up construction and operation of the proposed eco-resorts.</p>

Analysis of Alternatives and Preferred Alternative

The projection of the alternatives in terms of their environmental and socioeconomic consequences is difficult at this stage, because there is no measurable inputs of each alternatives. While the conservation alternative would help to achieve the protected area objectives, it could also offer unique nature-based, creational and cultural opportunities for protected area visitors. In addition, if the BaU scenario continues in Sector one, the protected area could also serve to reduce the pressure on the developed areas.

On the other hand in alternative two, the creation of 4 ecotourism zones, provides an opportunity to establish a provisional ecotourism model that could be studied during its lifetime to understand its environmental and socioeconomic impacts. However, the development of ecotourism zones as planned would require involving ecotourism investors that are able to promote the area for high quality ecotourism products. As concluded by the SEA, local community should be involved during the whole process, so that their local identity and culture is part of the ecotourism marketing strategy.

Furthermore, alternative three could also be explored where the protected area management would establish a number of ecolodges within the protected area based on actual carrying capacity in non-sensitive environmental areas overlooking areas of high environmental values. The EEAA would own these ecolodges through direct investment, donor project funding, or public private partnership. Accordingly, the EEAA would get revenues, which could be invested back in management. The protected area should setup compliance monitoring for theses ecolodges to be part of the overall monitoring plan. In addition, the EEAA may invite international hotel chain to undertake concession management at a percentage of the revenues.

Finally the selection of the most appropriate alternative should be decided based on a number of factors based on the consultant judgement, as follows:

- Selection of alternative for Sector one, and the fate of BaU.
- Agreement between the concerned authorities, namely EEAA and TDA.

Recommendations

The report has provides a number of conclusive recommendations, which have been classified by theme, as follow:

- Assessment of the Tourism Development Plans
- Assessment of WGHPA development
- Improving the Legal Framework
- Data Gaps

During this assignment, the SEA approach was proven successful in looking at environmental and social impacts that cannot be captured by a project EIA scale. Cumulative and regional impacts, for instance impacts on biodiversity at large including cumulative impacts on coral reef, impacts on the regional/national infrastructure, have been assessed. The SEA was found to be a helpful tool in informing

decision makers on the high level impacts a policy, plan or program on the environmental and socioeconomic aspects.

Preface

This report presents the overall results of the SEA process carried out for the tourism development in the Southern Red Sea Sector.

The consultant and the MBDT project would like to thank all parties and stakeholders that have been involved in the SEA process. We particularly thank all members of the working group 1 representing the Tourism Development Authority, the Egyptian Environmental Affairs Agency, the Red Sea Governorate, the Shore Protection Authority, and the National Center for Planning State Land Use. The report would not have been completed without the generous contribution and effort of the team including their sincere dedication and provision of relevant data and information.

The tourism development planning in Egypt is a collaborative process, where stakeholders are consulted to provide feedback during the planning course. In addition, all land use and spatial plans are subject to the endorsement of the Supreme Council of Planning and Urban Development. Therefore, though TDA is responsible for tourism planning within their spatial jurisdiction according to Presidential Decree No. 612/2013, where a number of other authorities participates in planning process.

Within the project area, tourism planning falls under the spatial jurisdiction of a number of authorities including the Tourism Development Authority (TDA), Red Sea Governorate, as well as the Nature Conservation Sector of the Egyptian Environmental Affairs Agency. Thus, wherever mentioned in this report, the tourism development plans do not necessarily mean the TDA plans.

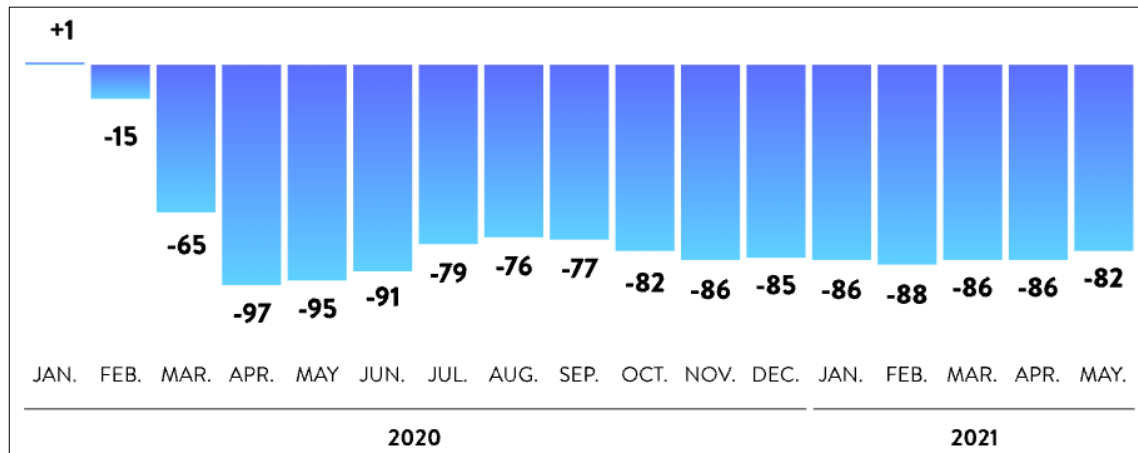
Having environmentally managed development projects does not mean that the overall strategic and cumulative impacts of a plan on the wider scale would be manageable. The SEA process is carried out to highlight the potential environmental and socioeconomic impacts that would arise from the tourism development plans. One of the SEA strengths is its ability to capture strategic and cumulative impacts that cannot be identified through conventional project-level EIA. In fact, while individual impacts may be insignificant by themselves, they accumulate over time and space, from one or more projects, and can result in significant degradation of important resources, such as biodiversity.

The SEA process is proven to be a successful assessment tool, which assess the *out puts* of a strategic or policy planning process. Accordingly, it does not aim to assess the practices of any single entity, such as a planning authority. The SEA is carried out to feedback and accordingly enhance the continuous tourism development planning in the project area. The consultant believes that while the natural resources in the study area are still in pristine conditions, lessons learnt from other Egyptian tourism destinations, e.g. Hurghada, should be understood and inspire planners to establish situations where nature is protected for the development benefits.

The development of the SEA process has faced some limitations, which are described in subsection 4.7 of this report. In addition, assumptions made during the process are explained in detail in subsection 4.7. One of the main assumptions used in the COVID circumstances which started in late 2019.

Some studies have investigated the impact of COVID 19 on the tourism sector. However, existing studies focus on the effects on tourism operation on the global level, not on the development of tourist facilities. On the other hand, country specific information is missing. Therefore, while the COVID 19 impacts on international tourism and travel could be highlighted, the impacts on the tourism development is still uncertain. The global economic consequences of COVID19 would potentially hinder the progress of the tourism development projects and plans as well. However, quantification of these consequences is a difficult task due to lack of specific data and information.

The UN World Tourism Organization provides some insights on the impacts of COVID19 on the world tourism. The following figure points out changes detected in the international tourism during 2020-2021, pointing out to an average change of -85%.



The UNWTO describes the risk of the pandemic as of the following:

- 1 billion fewer international tourist arrivals
- Loss of US\$ 1.3 trillion in total export revenues from international tourism
- 100 to 120 million direct tourism jobs at risk

Within the context of this SEA report, and due to lack of precise information, the SEA team has not considered COVID19 implications on the tourism development. It is understood,

though, that the COVID19 may have resulted in delays of some project implementation. The assumption is based on the fact that project delay will be compensated and accelerated after the end of the pandemic.

1. Introduction

This section of the SEA report provides an overview of the purpose, MBTD project, statement of the issue, and introduction of the SEA process.

Environics, Environment and Development Advisor, was selected by MBTD project and the Working Group 1 during a formal bidding process. Therefore, the MBTD project has commissioned, Environics to undertake the Strategic Environmental Assessment of the Tourism Development Plans along the Southern Egyptian Red Sea Coast.

1.1 Purpose of this Report

This report outlines outputs of the SEA process carried out to assess the environmental, social and economic impacts of tourism development plans, which are located in the Southern Egyptian Red Sea. The report compiles a summary of relevant information from other SEA reports carried out earlier during the SEA process namely: preparatory, scoping and sustainability reports. Detailed and comprehensive information can be found in the corresponding reports.

1.2 Overview of MBTD

Biodiversity supports the humankind for thousands of years. Healthy ecosystems support favorable conditions for human life on the earth by providing ecosystem valuable services (Pavlov and Bukvareva, 2007)². The economic values of ecosystem services still beyond accurate economic valuation.

The Ministry of Environment and Egyptian Environmental Affairs Agency (EEAA) have recognized earlier the role of biodiversity in the tourism industry. For instance, the Law of Protectorates No. 102 of 1983 was issued years before the Law of Environment 4 of 1994. Followed the Law of Protectorates, Ras Mohamed National Park was declared in 1983 to conserve and manage its unique marine resources, and provide tourists in South Sinai with superior dive destinations. In addition, during 1988-1992 Saint Katherine, Nabq and Abu Gallum were declared as protectorates.

Furthermore, in the last 3 decades, a number of tourism and conservation donor funded programs, projects and initiatives was carried out with the aim to conserve biodiversity to support responsible and sustainable tourism. These include for instance, but not limited to, the Gulf of Aqaba Protectorates Project (EU funded), Environmental Sustainable Tourism (USAID), Egyptian Environmental Policy Program (USAID), Red Sea Sustainable Tourism Initiatives (USAID), LIFE Red Sea 1 and 2 (USAID), etc.

² Pavlov, Dmitrii and Bukvareva, Elena (2007), Biodiversity and life support of humankind, Herald of the Russian Academy of Sciences 77(6):550–562

Moreover, the Convention on Biological Diversity (CBD) Conference of Parties (COP13), held in Mexico in December 2016, adopted decision XIII/3, which calls the CBD Parties to mainstream biodiversity in four development sectors including tourism.

In response, the Government of Egypt supported by the GEF has launched a national project entitled “Mainstreaming the conservation and sustainable use of biodiversity into the tourism development and operations in threatened ecosystems in Egypt (MBTD). The project aims to integrate biodiversity conservation into the tourism development and operation sectors at the national level. The MBTD project also targets ecologically sensitive areas exposed to tourism development pressures in the short to-medium term.

The MBTD project is implemented in line with the political willingness to reform the government institutions to achieve high accountability and to develop the economy in a way that tourism and resource biodiversity interaction can be managed. The project functions on two levels:

- The first level directly involves industry and government to fill gaps in the existing planning and regulatory framework using strategic tools, such as Strategic Environmental Assessment (SEA).
- The second level encourages the tourism industry to develop a Responsible Tourism Grading System.

1.3 Statement of the Issue

One of the main concerns of the MBTD project is the tourism development cumulative impacts on biodiversity and environmental resources. According to the current legal framework, each tourism project proponent is required to undertake an Environmental Impact Assessments (EIA), with the purpose to identify the project impacts and address these impacts through proper mitigation measures and environmental management plan. The EIA approach would be limited to address the external negative effects a single project may have on a wider spatial and/or temporal scale. The EIA may also underestimate or neglect cumulative impacts on biodiversity arising from several developments. Moreover, EIA is often undertaken after the planning process is completed; therefore, the EIA does not support high-level decisions that could be taken during the planning process.

Therefore, the MBTD project foresees a need to adopt a higher-level assessment tool to improve the policy planning quality, as well as to address external and cumulative impacts that are not directly captured using traditional EIA process.

The introduction of a higher-level assessment instrument to improve the quality of the decision-making on a policy, plan and program levels was recognized during early 2000's. Later, the European Community (EC) issued the Strategic Environmental Assessment (SEA) directive (No. 2001/42/EC) in 2001. The directive obligates member states to undertake SEA for certain sectors, including

agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town and country planning or land use.

The current national environmental legal framework does not require SEA or the need for a higher-level environmental assessment. However, the MBTD project adopts the SEA approach to integrate environmental and socioeconomic considerations, as well as biodiversity into the tourism development planning in a number of areas across Egypt.

2. Status of the Environmental Baseline

This section summarizes the baseline information in the project area. For the purpose of this report, the Red Sea coastal system is divided into its components, ecological, physical, socioeconomic, and administrative subsystems. Full and comprehensive baseline information is described in the sustainability report.

Note:

Information provided in this section relies mainly on comprehensive literature reviews, and site short visits conducted during the different phases of the SEA. The section also relies on relevant experience of the SEA baseline team, which consists mainly of terrestrial and marine scientists. The team has exerted great efforts to use available data to produce consistent information and level of details. Data gaps may have resulted in some inconsistency in presenting related information. A data gap analysis is provided under subsection (2.5) of this report.

2.1 Ecological Subsystem

The study area has been divided into two sectors as agreed during the scoping phase. These include:

- Sector 1: El-Qusier - Wadi El Gemal, the Red Sea Coastal strip with a width of 10km from the sea from the South of Qusier City to the Northern Boundary of Wadi El Gemal-Hamata Protected Area
- Sector 2: Wadi El Gemal - Hamata (Wadi El Gemal Hamata Protected Area “WGHPA”), including the latest boundaries as per the Prime Minister Decree No. 1777/2020.

The following Figure 9 shows a map showing the two sectors of the study area.

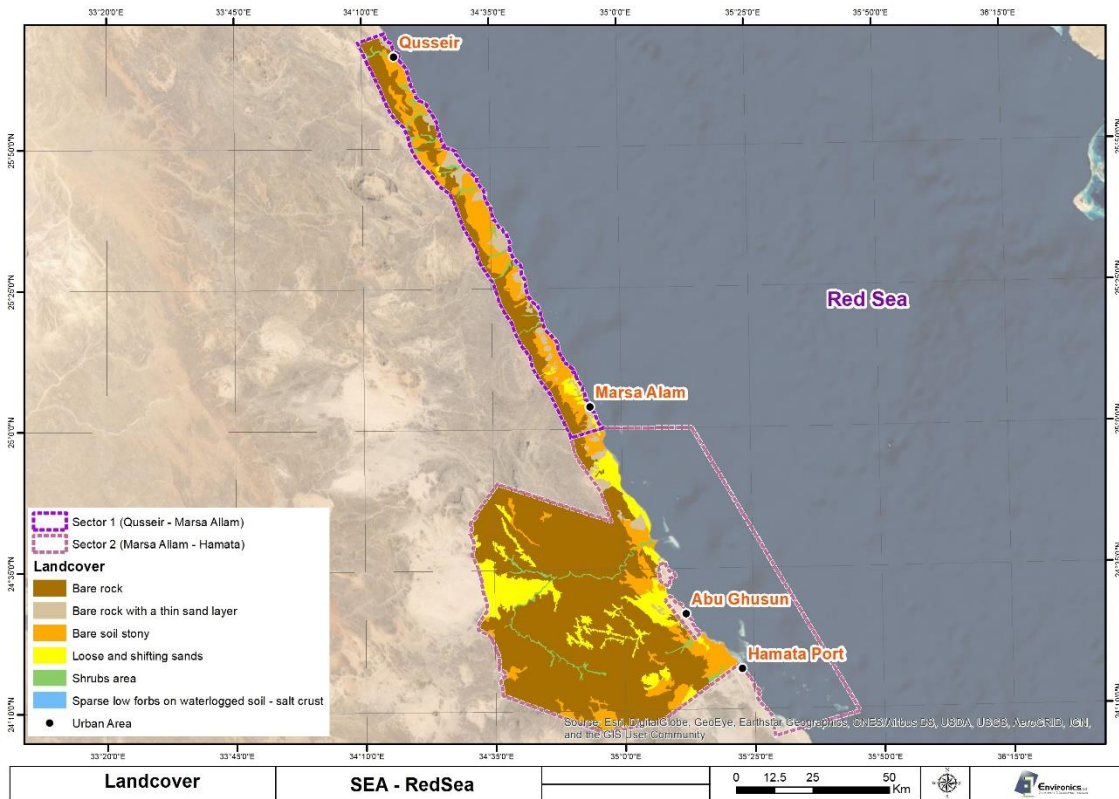


Figure 1: Delineation of the Project Area

Four main ecological zones for a typical watershed could be identified in the project area as shown in the following Figure 2. The four zones are distinguished by the way in which the biotic and abiotic components of the environment interact to generate landscape heterogeneity.

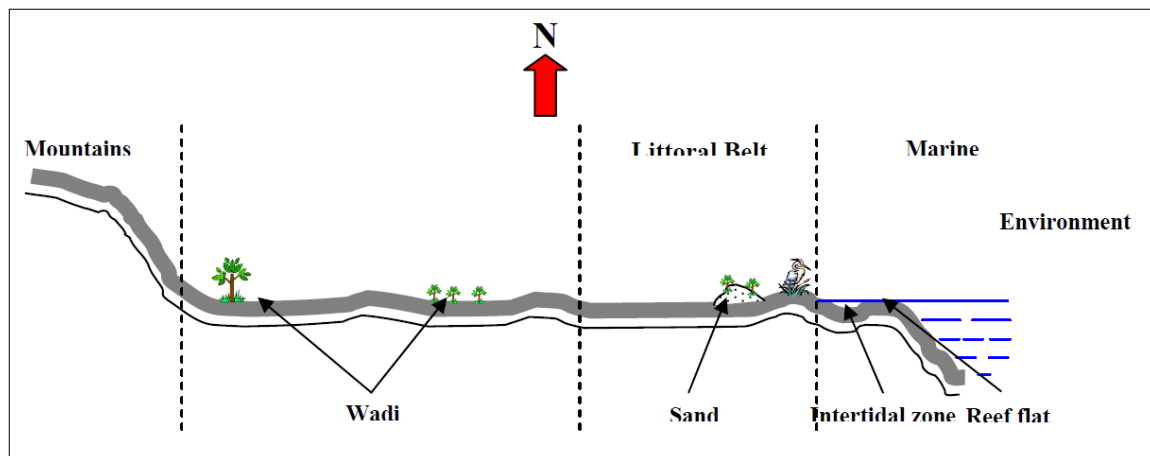


Figure 2: Schematic representation of the ecological zones of the project area

2.1.1 Terrestrial Biodiversity

2.1.1.1 Sector 1-Terrestrial biodiversity

Extending from coordinates 26° 10' 25.53" N - 34° 14' 28.10 "E to 24° 50' 25.89"N- 34° 59' 36.69" E, Sector I (Figure 3) is composed of rocky areas mostly at mountainous and hilly parts to the west with intersections of shrubs found in wadis. To the east and closer to the shoreline, habitats consist of rocky areas with thin sandy layers and stony soils with shrubs. Urban habitats are also present such as Qusier village, Marsa Alam and sparse Bedouin settlements.

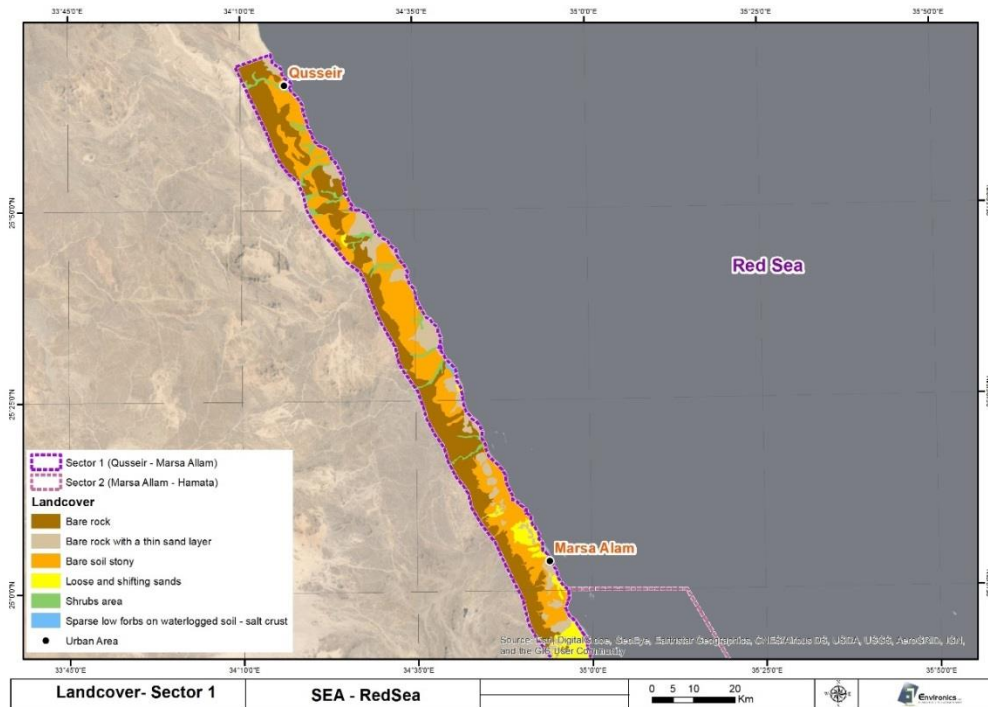


Figure 3: Habitats of sector 1 (Qusseir-Wadi El Gemal)

Flora

Based on Salama *et al.* (2016) the following vegetation groups are recorded in the study area including more than 80 species of flora.

- *Tamarix nilotica*-*Zygophyllum coccineum* (North of Qusseir – Safaga)
- *Zilla spinosa*-*Zygophyllum coccineum* group (south of Qusseir)
- *Zygophyllum album* group (Scattered in areas of the previous group)
- *Nitraria retusa*-*Tamarix aphylla* group (north of Marsa Alam)
- *Tamarix nilotica* group (around and south of Marsa Allam)
- *Limonium axillare* group (Around and South of Marsa Allam)

Fauna

The following summarises the main findings in the study area.

- *Reptiles and Amphibians*: the Central Eastern Desert has 27-28 species of reptiles (Milto, 2017; Milto et al. 2019). Possibly due to the presence of Wadi El Gemal National Park in Sector 2 which is also located within the Central Eastern Desert. There are no known amphibians in this region.

Birds

Sea Birds

Seabirds breed mainly on small islands and offshore bays, and divided into three main groups:

Widespread tropical species

This group includes the White-Eyed Gull (*Larus leucophthalmus*), endemic to the Arabian region, as well as the Sooty Gull (*Larus hemprichii*), and the White Cheeked Tern (*Sterna repressa*), which are restricted to the Red Sea and northern Indian Ocean.

Widespread species of both temperate and tropical latitudes

These include the Caspian Tern (*Hydroprogne caspia*) and other species of significance, as they are abundant and breed regularly in the region and include Osprey (*Pandion haliaetus*), Sooty Falcon (*Falco concolor*), and Spoonbill (*Platalea leucorodia*). Coastal wetlands support large numbers of resident and migrant waders, some of which are of global significance. These habitats are becoming at increasing risk from development activities.

Inland Birds

The majority of the resident species in the coastal plain are typical desert birds which are either insectivorous or carnivorous, a distinctive feature of desert birds, with very few species feeding on seeds or other plant material. The following species are among those recorded near or around Qusier.

- Crowned Sandgrouse (*Pterocles coronatus*)
- Crested Honey Buzzard (*Pernis ptilorhynchus*)
- Grey Hypocolius (*Hypocolius ampelinus*)

Mammals

A total of 12 species of mammals were recorded from El-Qusseir to Marsa Alam, with the most found in Wadi Umm Gheig Delta.

Among the recorded species in sector 1 (Qusseir-Wadi El Gemal), the Cape Hare (*Lepus capensis*), recorded at areas with thick vegetation feeding on *Acacia* sp., *Zygophyllum* sp and *Leptadenia pyrotechnica*, the Rock Hyrax (*Procavia capensis*) found in Rocky Mountains of the Eastern Desert groves.

Ruppell's Sand Fox (*Vulpes rueppelli*) is found in the eastern desert and recorded from all types including sandy, rocky, rocky wadis and semi-desert areas.

Small mammals include the Lessert Egyptian Gerbil (*Gerbillus gerbillus*) found in semi deserts without vegetation and sandy Wadi Floors. The Silky Jird (*Meriones crassus*) is also recorded in the south of Marsa Allam and found in wadis and *acacia* groves. The Bushy-tailed Jird (*Sekeetamys calurus*) is found in rocky deserts, cliffs, mountains and buildings.

Gazelles include the Dorcas Gazelle (*Gazella dorcas*) known as *G.d littoralis* from the Eastern Desert, mainly found in stony deserts and vegetated wadis. Its range has been drastically reduced due to hunting.

Other rare species may include the Nubian Ibex (*Capra nubiana*) and Barbary Sheep (*Ammotragus lervia*) restricted to Rocky Mountains and cliffs and wadis. The critically endangered or extinct Wild Ass (*Equus africanus*) was recorded from this region found in wadis and plains and in deserts and semi deserts as well as rugged areas.

Bats that may be present in the area include the Trident Leaf-nosed Bat (*Asellia tridens*) found in desert and semi-desert regions of the South Eastern desert of Egypt in caves and cliffs groves.

2.1.1.1 Sector 2-Terrestrial biodiversity

Extending between coordinates 24° 50' 25.89 "N -34° 59' 36.69" E to 24° 15' 36.44" N - 35° 24' 18.88" E, Sector 2 includes mainly Wadi El Gemal National Park (Figure 4), as well as Wadi El Gemal island and Qualaan Archipelago. The coastal area entails more sandy zones than Sector 1, and bare stony soil. Rocky substrates are found in the mountainous and hilly region to the west intersected by vegetated wadis that drain to the east. Urban areas are also present at Abu Ghosoun village and Hamata.

Sector 2 encompasses extensive Wadi systems and catchment areas. In total about 93-94 plants were recorded with 72 perennial plants and 21-22 ephemerals. Plants are found in many habitats and can be divided into two groups; downstream vegetation and wadis vegetation.

Coastal area

As per Barakat (2003), the following vegetation are found in the coastal area: Coastal salt marshes mostly include halophytes and often bordering mangroves; *Arthrocnemon/Salicornia*, *Atriplex halimus*, *Atriplex farinose*, and *Zygophyllum album*. Other species recorded in previous literature included *Tamarix nilotica*, *Aeluropus* sp., *Sueda monoica*, and *Nitraria retusa*.

Tamarix dominates mostly coastal sand dune on mounds or hillocks, followed by *Aeluropus brevifolius*, *Limonium axillare*, *Stipagrostis* sp. *Zygophyllum album*, *Zygophyllum coccineum*, *Tamarix aphylla* and *Tamarix nilotica*.

Brackish water Reed Swamps are often present at Wadi mouths. This type of habitat offers a zone for reed growth as well as halophytes and palm trees. Dominant reeds include *Phragmites communis*, *Cyperus* spp and *Scirpus* sp. Other plants include *Avicennia marina* (mangrove) *Hyphaene thebaica* (Dom palm) and *Phoenix dactylifera* (Date palm). Additionally, *Tamarix aphylla*, *Tamarix nilotica*, *Zygophyllum album*, *Zygophyllum coccineum* and *Limonium axillare* were recorded.

In inland coastal desert plains include the following semi-halophytic vegetation; *Tamarix aphylla*, *T. nilotica*, and shrubs of *Salvadora persica*, *Zilla spinosa* and *Pulicaria crispa* (Barakat, 2003).

Downstream littoral wadis vegetation

The downstream areas of the wadis include more halophytic and xerophytic plants encompassing the following; *Zygophyllum album*, *Z. coccineum*, *Z. berenicense*, *Tamarix aphylla*, *Tamarix nilotica*, and *Panicum turgidum*. To the western side of the downstream zone vegetation include the following; *Calotropis procera*, *Capparis spinosa*, *Leptadenia pyrotechnica* and *Pulicaria crispa*. The region ends with the growth of *Salvadora persica*, on sandy territory with *Tamarix aphylla*.

Wadis vegetation

The main areas of the Wadi are dominated by *Acacia tortilis* syn *Vachellia tortilis* and *Balanites aegyptiaca*. Associate vegetation include *Acacia ehrenbergiana* (occasionally swaps with *A. tortilis* or *A. raddiana*), *Panicum turgidum*, *Leptadenia pyrotechnica*, *Lycium shawii*, *Aerva javanica*, *Solenostemma argel*, *Citrullus colocynthis*, and *Ochradenus baccatus*. The wadis also include *Balanites aegyptiaca* forests.

At the eastern side of the core stream of Wadi el-Gemal about 5 km from the coast, *Salvadora persica* trees are found and associated with *Tamarix nilotica*, *T. aphylla*, *Pulicaria crispa*, *Z. coccineum*, *Zilla spinosa*, *Aerva javanica* and small *Balanites aegyptiaca* trees.

Chasmophytes including *Capparis decidua* and *C. spinosa* strive in rock cracks at Wadi sides, and are also found in the upstream areas of wadis such as in Wadi Um Lassaf.

In several wadis main stream areas the following were recorded; *Caylusea sp.*, *Chrozophora oblique*, *Citrullus colocynthis*, *Cleome Africana*, *Erodium sp.*, *Fagonia sp.*, *Heliotropium strigosum*, *Launaea spinose*, *Linaria arabica*, *Lindenbergia abyssinica*, *Lotus deserti*, *Pulicaria crispa*, *Pulicaria undulata*, *Senna alexandrina*, *Senna italica*, *Tephrosia cf. nubica*, *Trichodesma africana* var. *homotrichum*, *Zilla spinosa* *Zygophyllum berenicense* and *Zygophyllum coccineum* (Barakat, 2003; Milto et al, 2019).

Sandy Plateau

At sandy flat plateau areas, such as el Latch Plateau, perennials dominate and they include *Panicum turgidum*, in association with *Zilla spinosa* and *Pulicaria crispa*. Other observed species included *Stipagrostis sp.*, *Erodium sp.*, *Heliotropium cf. strigosum*, *Senna alexandrina*, *Cleome Africana*, *Ochradenus baccatus* and *Acacia tortilis* syn *Vachellia tortilis*.

Mountain areas

Moringa peregrina is found at mountain foots, while wadis passing through these mountains encompass the following dominant species: *Acacia tortilis* syn *Vachellia tortilis*, *A. ehrenbergiana*, *Balanite aegyptiaca*, *Leptadenia pyrotechnica*, *aerva persica* and *Salvadora persica*, and their associates including *Ochradenus baccatus*, *Lycium shawii*, *Maerua crassifolia*, *Capparis decidua* and *Ficus palmata*. The herbaceous vegetation included *Cleome droserifolia*, *Pulicaria crispa*, *Zilla spinosa*, *Fagonia* spp., *Solenostemma argel* and *farsetia longisiliqua*. In cool/shaded areas with higher moisture, *Lindenbergia abyssinica* and *Kickxia nubica* are found.

Gebel Hamata has more species richness than G. Nugrus, where not only species of trees, shrubs and herbs were noted there but numerous others were recorded including *Acacia mellifera*, *Rhus oxycantha*, and *Ficus salicifolia*.

Figure 4 shows the main habitat types in sector 2.

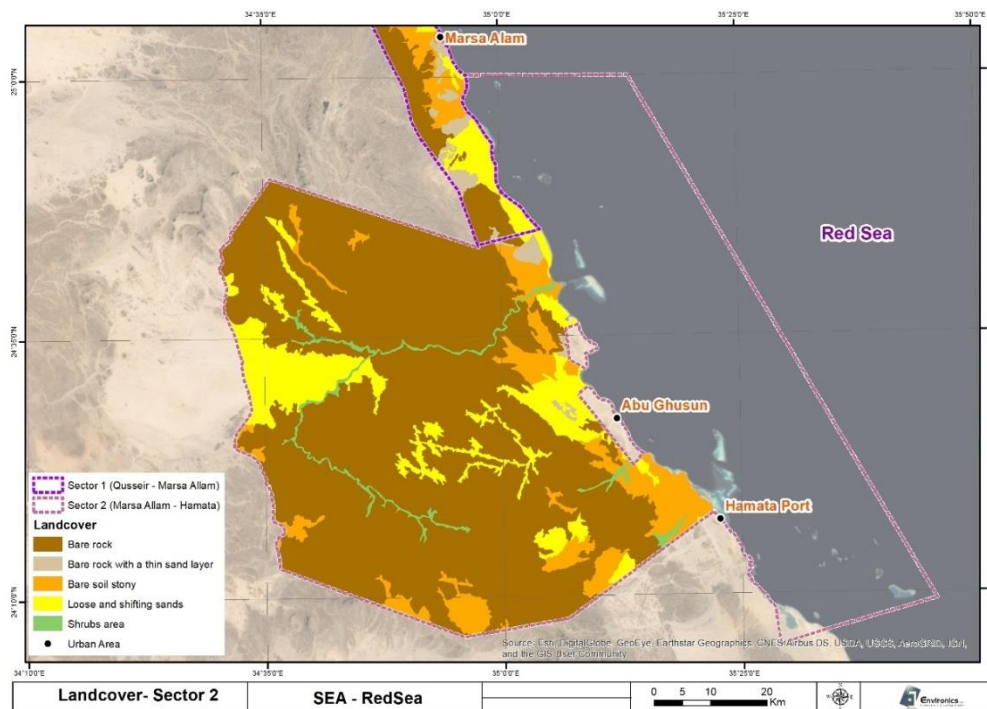


Figure 4: Habitats of sector 2 (Wadi El Gemal - Hamata Protected Area)

Reptiles

According to Milto et al, (2019) a total of 111 records of 20 reptile's species were noted. The Red Sea Gecko (*Hemidactylus robustus*) is found on buildings and under dense halophytic vegetation. The Semaphore Gecko (*Pristrulus flavipunctatus*) is found with *Acacia* trees, *Balanites aegyptiaca*, *Lycium* sp. *Tamarix aphylla* and *Tamarix nilotica* and recorded previously in Wadi El Gemal and Gebel Hamata areas. The Egyptian Fan-toed Gecko (*Ptyodactylus hasselquistii*) is present along the Red Sea Coasts, at buildings and on rocks and boulders of Wadis.

More species recorded include the Saharan Fan-toed Gecko (*Ptyodactylus siphonorhinus*), the Elegant Gecko (*Stenodactylus sthenodactylus*), the Bishari Pigmy Gecko (*Tropicolotes bisharicus*), the Steudner's Pigmy Gecko (*Tropicolotes steudneri*), the Spiny Agama (*Agama spinosa*), the Ocellated Dabb Lizard (*Uromastix ocellata*), *Pseudotrapelus chlodnickii*, Bosc's Lizard (*Acanthodactylus boskianus*), the Small Spotted Lizard (*Mesalina guttulata*), and the Red Spotted Lizard (*Mesalina rubropunctata*).

Larger reptiles include the Desert Monitor (*Varanus griseus*) which inhabits a wide variety of areas but mostly found in desert plains and large wadis with greeneries, can also be found in areas with no vegetation, and at coastal salt marshes.

Additionally the following species are also recorded from this region: the Diadem Snake (*Spalerosophis diadema*), the Saharan Sand Snake (*Psammophis aegyptius*) and the Horned Viper (*Cerastes cerastes*).

Birds

The resident avifauna of WGNP is composed of some 45 species. A much larger diversity of species visits the area as migrants and winter visitors; however, the breeding and resident species can be considered a permanent and integral component of the local ecosystem.

The Red Sea islands are extremely important for breeding water and sea birds. Most of the Red Sea seabirds breed exclusively on islands, which are few, highly accessible and vulnerable to disturbance. Water bird and sea bird species are known to breed on Wadi el-Gemal Island and the Hamata/Qualaan islands, because these islands hold internationally important numbers of breeding seabirds, particularly the Red Sea endemic White-eyed Gull (*Larus leucophthalmus*). They were designated as globally important bird areas (IBAs) by BirdLife International.

Sea Birds

There are 13 water and sea bird species associated. These are: Red-billed Tropicbird (*Phaethon aethereus*), Brown Booby (*Sula leucogaster*), Straited Heron (*Butorides striatus*), Reef Heron (*Egretta gularis*), Goliath Heron (*Ardea goliath*), Spoonbill (*Platalea leucorodia*), Osprey (*Pandion haliaetus*), Sooty Falcon (*Falco concolor*), Sooty Gull (*Larus hemprichii*), White-eyed Gull (*L. leucophthalmus*), Caspian Tern (*Hydroprogne caspia*), White-cheeked Tern (*Sterna repressa*), Lesser Crested Tern (*Sterna bengalensis*), Brideled Tern (*Onychoprion anaethetus*), and Kentish Plover (*Charadrius alexandrinus*). The Crab Plover (*Dromas ardeola*) probably also breeds sporadically. Juveniles and adults of this rare species were observed during summer on the Hamata islands (Baha El Din 2003).

Inland Birds

A considerable diversity of terrestrial birds occur in the desert habitats of the Hamata - Wadi El Gemal region, Characteristic birds of mountain and wadi desert include Sand Partridge (*Ammoperdix heyi*), Desert Lark (*Ammomanes deserti*), Trumpeter Finch (*Bucanetes githagineus*), Mourning Wheatear (*Oenanthe lugens*),

Hooded Wheatear (*Oenanthe monacha*), Crowned Sandgrouse (*Pterocles coronatus*) and Brown-necked Raven (*Corvus ruficollis*). Characteristic birds of desert plains include Spotted Sandgrouse (*Pterocles senegallus*), Bar-tailed Desert Lark (*Ammomanes cinctura*) and Hoopoe Lark (*Alaemon alaudipes*).

Crowned Sandgrouse (*Pterocles coronatus*) are best seen at or near waterholes. The best waterholes to see them in WGNP are Bir Wadi el-Gemal, Magal Um Sweih, Bir (Wadi Ghadeer), Bir Sartut, and Bir Hafafit.

Grey Hypocolius (*Hypocolius ampelinus*) is a nearly rare but regular winter visitor. This Middle Eastern endemic has been seen on a few occasions recently during winter in the Red Sea region at the Shams Alam Hotel (Baha El Din/LIFE/EEAA/TDA, 2019).

Mammals

Some 24 terrestrial mammal species are known from the Wadi el-Gemal – Hamata area. The mammal habitat of the wadi and plain includes the Ethiopian Hedgehog (*Paraechinus aethiopicus*), Dorcas Gazelle (*Gazella dorcas*), Lesser Egyptian Gerbil (*Gerbillus gerbillus*), Pygmy Gerbil (*Gerbillus henleyi*), Greater Gerbil (*Gerbillus pyramidum*) Lesser Egyptian Jerboa (*Jaculus jaculus*), Cape Hare (*Lepus capensis*), Sand Rüppell's Fox (*Vulpes rueppellii*), and Striped Hyena (*Hyaena hyaena*).

The mountain habitat is characterized by the presence of the Nubian Ibex (*Capra nubiana*), Rock Hyrax (*Procapra capensis*), Egyptian Spiny Mouse (*Acomys cahirinus*), and the Bushy Tailed Jird (*Sekeetamys calurus*).

The area was known to host one of the largest populations of Dorcas Gazelle (*Gazella dorcas*). Wadi el-Gemal represents an important refuge for gazelles particularly during drought years, when browsing are limited over much of the southern section of the Eastern Desert. However, now the Dorcas Gazelle's range has been drastically reduced and fragmented due to hunting pressures.

Small mammals occurring in the area include the Lesser Egyptian Gerbil (*Gerbillus gerbillus*) and the Bushy-tailed Jird (*Sekeetamys calurus*).

Carnivores are generally scarce, the most commonly seen being Sand Rüppell's Fox (*Vulpes rueppellii*) which is common in the area but lacks data. The Striped Hyena (*Hyaena hyaena*) may be present but in small numbers. The sand cat (*F. margarita*) and the Caracal (*Caracal Caracal*) are likely to occur rarely in the region.

Bats of the area include the Tomb Bat (*Taphozous perforatus*), Egyptian Sheath-tailed Bat (*Taphozous nudiventris*), Trident Leaf-nosed Bat (*Asselia tridens*), Hemprich's Long-eared Bat (*Otonycteris hemprichii*) and the Egyptian Free-tailed Bat (*Tadarida aegyptiaca*).

Sector 2-Important Sensitive Areas

Sector 2 encompasses a number of important and sensitive areas. These include:

- Wadi El-Gemal Protected Area
- Wadi El Gemal Important Plant Area (IPA)
- Wadi El Gemal Important Bird Area (IBA)
- Qualaan Islands (Hamata) Important Bird Area (IBA)
- Seyal/Siyul Island (Hamata/part of Qualaan islands)
- Shwareet Island (Hamata/part of Qualaan islands)
- Om El Sheikh/ Um Ladid Island (Hamata/part of Qualaan islands)
- Mahabis island (Hamata/part of Qualaan islands)
- Turtles nesting sites
- Balanites aegyptiaca forests
- Birds Migratory Routes

Besides, the area has a number of terrestrial flora, fauna and avifauna species of international concerns.

2.1.2 Marine Biodiversity

The Red Sea is one of Large Marine Ecosystems (LMEs), and one the most important areas for marine biodiversity in the world. Its unique physical and meteorological conditions have given rise to an extraordinary range of ecosystems and biodiversity, and create the most favorable conditions for the growth of coral reefs. The Red Sea marine habitats provide extraordinary ecosystem services to nature and human being. The following subsections describe the main marine habitats and key species in the study area.

2.1.1.2 Mangroves

Mangroves provide valuable ecosystem services contributing to human wellbeing. These comprise provisioning (e.g., timber, fuel wood, and charcoal), regulating (e.g., flood, storm and erosion control; prevention of salt water intrusion), habitat (e.g., breeding, spawning and nursery habitat for commercial fish species; biodiversity), and cultural services (e.g., recreation, aesthetic, non-use)³

In Egypt, Mangrove forests are estimated to cover approximately 700 hectares, most of which are located along the Red Sea west coast. On the other hand, all mangrove stands in the study area comprise of monospecific of *Avicennia marina*

Biotic communities recorded in Red Sea mangrove ecosystems include more than 22 fish species, 36 species of algae, 40 insect species, 82 Crustacea species, 65 Mollusca species and 17 Echinodermata species.

³ Luke M. Brander, Alfred J. Wagtendonk, Salman S. Hussain, Alistair McVittie, Peter H. Verburg, Rudolf S. de Groot, Sander van der Ploeg, 2012, Ecosystem service values for mangroves in Southeast Asia: A meta-analysis and value transfer application, Ecosystem Services, Volume 1, Issue 1, P 62-69.

2.1.1.3 Coral Reefs

Coral reef provides unique ecosystem services to coastal communities including provisioning (different types of sea food) habitat maintenance, regulating (shoreline protection and recreation (dive and snorkel)⁴.

Egypt's Red Sea coastline hosts significant coral reefs extending from the North in the Gulfs of Suez and Aqaba to Ras Hedarba in the South. While most coral reefs are situated along the coast, some are found surrounding off shore islands. According to the Egyptian Biodiversity Strategy and Action Plan, the total number of coral species recorded in the Egyptian Red Sea is 345 species including both soft and hard coral species.

2.1.1.4 Sea grass

Thirteen species of seagrasses are known from the western Indian Ocean with 12 species extending into the Red Sea. Seven species are known from the Gulf of Aqaba and five in the Gulf of Suez. The northern part of the Red Sea has up to eight species. The central Red Sea has the highest seagrass diversity.

2.1.1.5 Key species

Marine turtles

Five species of marine turtle occur in the Egyptian Red Sea. Three species are recognized by local fishermen: *Eretmochelys imbricata* (L.), *Chelonia mydas* (L.), and *Dermochelys coriacea* (L.). The last named is rarely sighted, and although the other two nest, only *Eretmochelys* is common; possibly 500 nest yearly, mainly on offshore islands.

According to EEAA 2004 nesting survey, a total of 91 nesting spots were recorded and 36 turtle tracks were observed.

Cetaceans

Red Sea cetaceans include a total of 16 species: three Mysticetes (Bryde's whale, *Balaenoptera edeni*; Omura's whale, *B. omurai*; and humpback whale, *Megaptera novaeangliae*) and 13 Odontocetes (dwarf sperm whale, *Kogia sima*; killer whale, *Orcinus orca*; false killer whale, *Pseudorca crassidens*; short-finned pilot whale, *Globicephala macrorhynchus*; Risso's dolphin, *Grampus griseus*; Indian Ocean humpback dolphin, *Sousa plumbea*; rough-toothed dolphin, *Steno bredanensis*; Indo-Pacific bottlenose dolphin, *Tursiops aduncus*; common bottlenose dolphin, *T. truncatus*; pantropical spotted dolphin, *Stenella attenuata*; spinner dolphin, *S. longirostris*; striped dolphin, *S. coeruleoalba*; Indo-Pacific common dolphin, *Delphinus delphis tropicalis*).

Dugongs

Dugongs are listed on the IUCN Red List as vulnerable. Reaching more than 2 meters in length, they are typically found grazing on sea grass beds. A total of 50

⁴ Carla I. Elliff, Ruy K.P. Kikuchi, 2017, Ecosystem services provided by coral reefs in a South-western Atlantic Archipelago, Ocean & Coastal Management, Volume 136, Pages 49-55.

Dugong were recorded in the project area. The largest number of dugong (17) was recorded during summer 2007. Recently several records of dugong took place along the stretched coastal area of the Red Sea from El- Qusier down to Shalateen.

2.2 Social Subsystem

The Red Sea governorate is divided into 8 administrative centers (Hurghada First, Hurghada Second, Ras Ghareb, Safaga, Al Qusier, Marsa Alam, Shalateen, and Halayeb). In addition, the Governorate includes 7 cities, 10 shyakhas, 12 villages and 14 corporate units. The project area includes four population centers: Qusier, Marsa Alam, Abu Ghosoun, and Hamata.

2.2.1 Population

In 2018, the total population of the Red Sea Governorate was about 360,000 capita representing 3.2% of the population of the southern Upper Egypt Region. The estimated population in Qusier and Marsa Alam cities was about 56,370 inhabitants, and is estimated to grow to about 250,000 by 2030.

2.2.2 Transport Network

The project area is internationally accessible through Marsa Alam International Airport, Port Ghalib International Marina, as well as Hurghada International Air Port. Road networks are well established and connect the project area with other Red Sea cities, to the Nile Delta and Valley, Suez and Cairo.

2.2.3 Local community

The Ababda is a local tribe known to occur and inhabit the southern part of the Eastern Desert for centuries. Their influence over the territory is mainly from north of Shalatein to Qusier as far west as the Nile Valley, with small numbers found south to Sudan.

The Ababda have been residents in the south-eastern desert of Egypt for at least several centuries. Their identity comes from their adaptability to live in extreme and harsh environments, and surviving in life-threatening conditions. The culture of the Ababda has always been shaped by the environment and nature of the Eastern Desert and Wadi El-Gemal, as well as the Nomadic pastoral life. Besides governmental sector and mining, most Ababda works in camel grazing and fishing.

Ababda still practice a traditional lifestyle in harmony with nature. They use traditional means for resource extraction to conserve resources, and they use plants for medicinal treatment. Their customary law addresses community offenses including conservation crimes.

2.3 Economic Subsystem

Because of its rich resources, the Project area supports a variety of economic activities including tourism development, mining and quarrying, fishing, herding, hand crafting, as well as other limited activities such as beekeeping. The Red Sea Strategic Plan describes the economic profile as follow:

- The Red Sea Governorate has a share of only 4% of the workforce in the Southern Upper Egypt (127,000 workers). It also accounts for only 7% of the total unemployment in the region.
- The Golden Triangle project is planned to employ 151, 600 with a population size of 661,100 people.
- The transportation and storage activity represents the main activity in the Red Sea Governorate employing about 18% of the total workforce in the governorate, followed by education, tourism, wholesale and retail trade, where each sector employs about 10% of the total workforce.
- The Governorate produces about (65%) of the national production of mining and Quarry materials.
- The Red Sea cultivated area in 2017 was estimated at about 1700 acres.

The Red Sea Governorate contributes to the national GDP by about 3%. Industrial and mining activities, construction and oil extraction represent the main activity generating more than 68.5% of the total output. The contribution of the oil extraction sector alone represents about 90% of the total industrial and mining activities. In addition, the contribution of tourism sector is 20%. The share of economic sectors in the Red Sea is presented in Figure 5 .

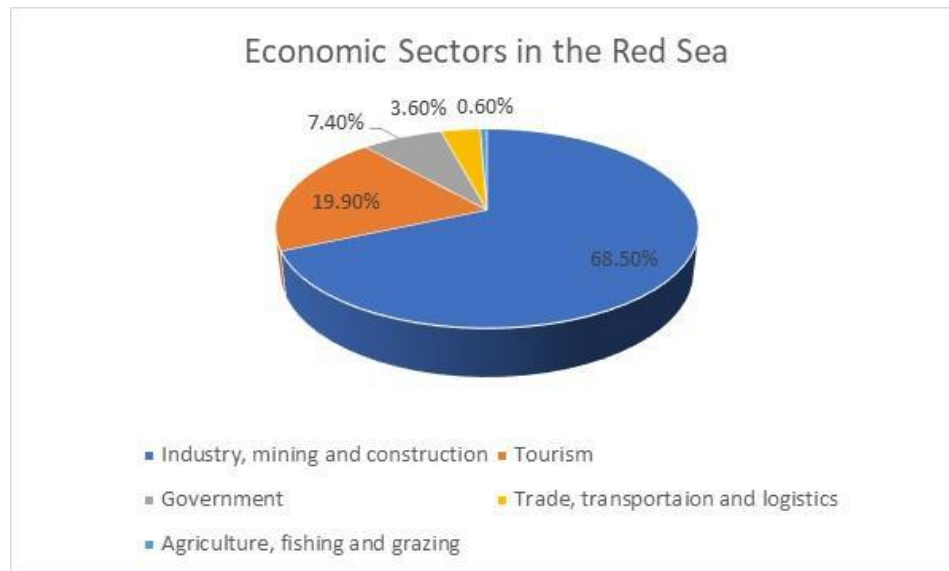


Figure 5: Economic Sectors Share, Red Sea Governorate

2.3.1 Industry

The following table shows is a very limited number of industrial facilities in the project area.

Table 1: Industrial Facilities in the project area (after Red Sea Strategic Plan 2017)

Cities	Metal products		Wood products		Recycling industries		Total	
	Facility	Worker	Facility	Worker	Facility	Worker	Facility	Worker
Qusier	10	13	16	36	31	43	57	92
Marsa Alam			7	10	8	26	15	36

2.3.2 Mining and Quarrying

Mining and quarrying have been practiced in the project area for many decades. Quarrying white, grey and black granite widely occurs around WGHPA, especially Gabal El Abayad along Wadi Shawab. The basic mines associated with basement rocks include iron (Ilmenite), copper, gold, vermiculite, nickel, manganese, asbestos, mica, quartz and feldspar.

Annex (I) of the Red Sea Strategic Plan points out that there are a number of ores and mineral resources in the governorate, of which the most important are Phosphates, Iron, Talc, Feldspar, Ilmenite and Gold.

2.3.3 Oil and Gas

Most of the oil production occurs in the Northern Red Sea; no current activities in the project area. The Government, however, announced an international bid round in 2019 including 10 blocks in the Red Sea. The bid map was overlaid the study area map, it was noted that 3 blocks (RSB 3, RSB4, and RSB 5) are located in the study area (about 9,000 km²), where Block 3 and 4 face Sector 1. In addition, Block 5 overlaps with WGHPA boundary with an intersected area of approximately 260 km².

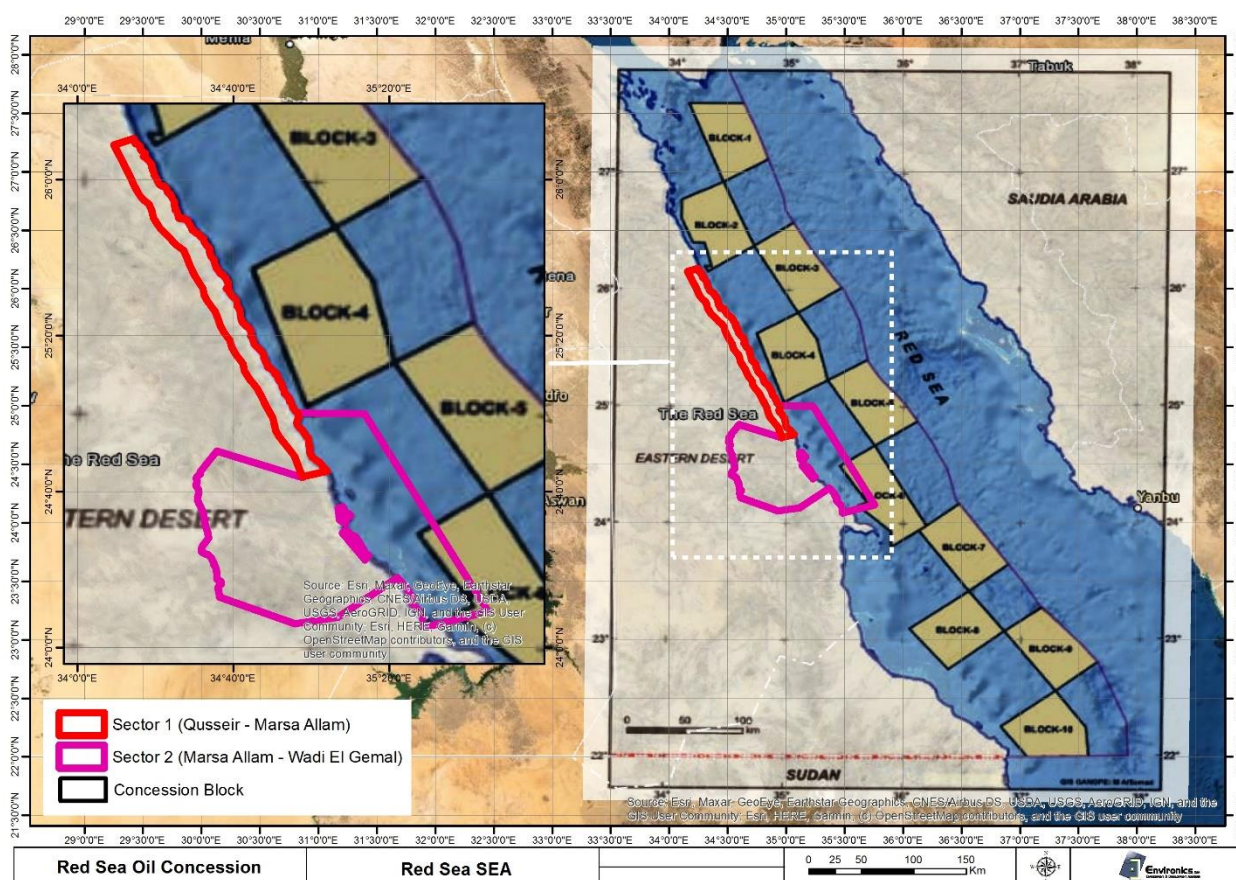


Figure 6: Red Sea offshore Blocks overlay the Study Area

2.1.2 Tourism

Tourism is one of the main economic activities in the project area including among others beach and marine based recreational tourism. The tourism status in 2017-2018 all over Red Sea is shown in the table below.

Table 2: Tourist facilities in Red Sea (2018)

City	Hotels	Rooms	Beds	Labor
Qusier	22	3689	7279	2179
Marsa Alam	46	11192	21264	8628
Occupancy % in 2017			55%	
Tourist arrivals			3,586,353	
Tourist nights			28,689,150	
Average length of stay			8 nights	

2.3.4 Diving industry

The diving industry is associated with the tourist resorts and hotels. The contribution of diving industry to the economy in the project area has not been documented. There are a few diving camps in the project area, which are classified as hotels, such as Red Sea Diving Safari in Marsa Shagara, Nikari and Lahmi.

Though diver percent of the total tourist arrivals varies based on a multiple of factors, in the project area 20% could be an average (fair) ratio. Therefore, building on information provided in the table above, the estimated number of divers was about 717,000 in 2017, with an estimated income of Euro 17,925,000, in addition to generating hundreds of jobs for local population.

2.3.5 Fishing

Fishing is one of the main economic sector in the project area, where 105 fishing boats are recorded. In the project area, a number of nursery ground are found including for instance: South Qusier Mangrove, Asil, Marsa Wzer, South Om Geish, Om el-Gurifat Lagoon, South Abo Dabbab, Morein Lagoon, Gabal el-Rosas, Sharm el-Loly, Qualaan Mangrove, and Hamata.

The total catch in the project area was reported in 2003 by 1800ton/year in Qusier and 500ton/year in the Southern Red Sea. During the period (2004-2013), it was found that fish production in the Red Sea has been declining (Figure 7**Error! Reference source not found.**), from 64 thousand tons in 2004 to about 44 thousand tons in 2013.

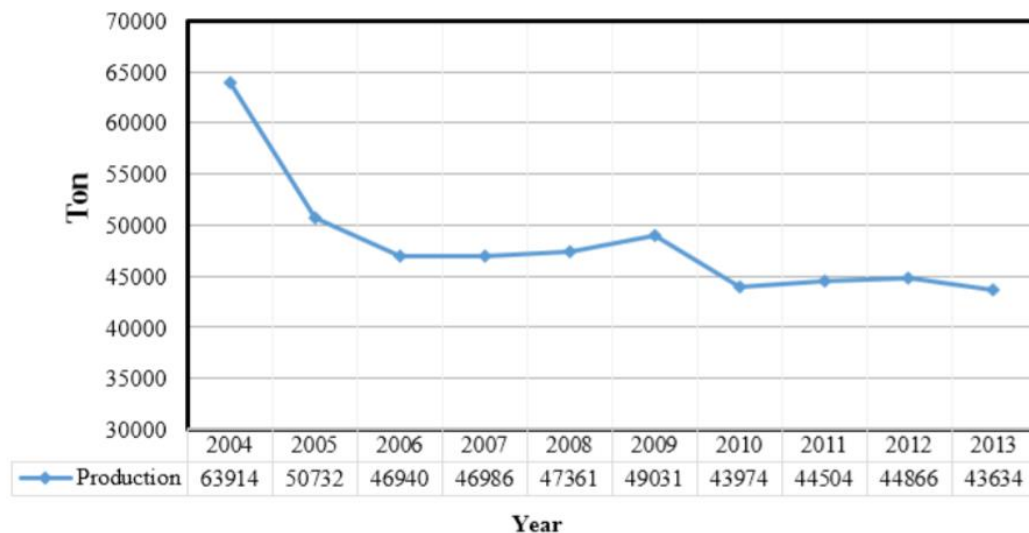


Figure 7: Fish Production in the Red Sea 2004-2013 (Source: Samy Abou Elenin et al 2016)

2.3.6 Grazing

Practiced mainly by Ababda younger people and women, grazing is one of the main economic activities of local community. While the Ababda have developed their

own measures to protect natural vegetation, camel grazing on mangrove as well as *Balanites aegyptiaca* is a major threat to plant communities in WGHPA.

2.4 Administrative Subsystem

Tourism development planning in the Red Sea falls mainly under the Tourism Development Authority (TDA) mandates. In addition, the Red Sea Governorate setup plans inside its municipal jurisdiction. Moreover, the land use of Wadi El Gemal Hamata Protected Area has been planned to have ecotourism zones, an initiative supported the TDA and EEAA in 2003.

The EEAA/Red Sea Protectorates (RSP) manage protected areas in the Red Sea, and monitor the development within the vicinity of protected areas. Furthermore, RSP may review EIAs for projects located in the coastal area.

The existing environmental legal framework addresses single coastal projects rather than plans. The law 9/2009 defines for the first time coastal zones and the integrated coastal zone management concept. However, the coastal zone is not addressed in any other regulations.

The decision making process on coastal projects involves a number of key institutions including TDA, EEAA and Shore Protection Authority (SPA). The Higher Committee for Licensing (HCL)⁵ of Coastal Projects is the decision taking body, chaired by the Minister of Irrigation and Water Resources, and the Minister of Environment, in addition to members from the TDA, as well as Coastal Governorates.

The procedure for coastal projects licensing is presented in the following Figure 8.

⁵ Please refer to subsection 5.4.6 for updates.

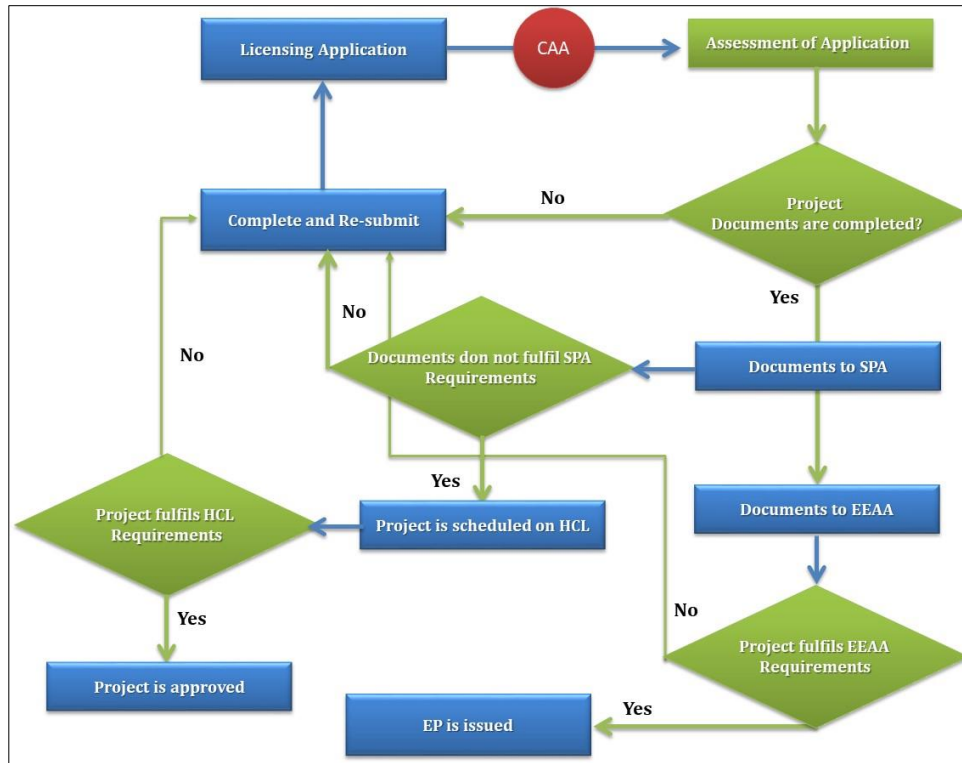


Figure 8: Coastal Projects Licensing

The flow chart shows that the CAA is the main driving body, which acts as the main communication hub between project proponent and regulators such as SPA and EEAA. This kind of communication delays project approval because of the time consumed in corresponding.

In monitoring project construction and implementation, a number of authorities are involved including EEAA/Regional Branch Office (RBO), RGS/Environmental Affairs Central Directorate (EACD), and Red Sea Protectorates (RSP).

An efficient system for monitoring the EIA implementation on the ground is significant to ensure mitigation measures proposed by the EIA are applied and impacts are minimized to acceptable levels.

2.5 Major Data Gaps

While there is a considerable amount of literature and reports focusing on the project area, recent and update information is missing. The Red Sea, particularly the southern sector was the focus of some donor projects, including mainly USAID funded during early 2000's. During the overall SEA process, the consultant has identified the following data gaps that could be addressed by concerned departments of the EEAA, in collaboration with the academic community:

- Mangroves and sensitive wadis surveys and delineation for boundaries and buffer zone mapping are missing, incomplete or inconsistent in different sources
- Roupheh (2003) and Shaltout *et al.* (2005) mangrove coordinates/places are inconsistent with PERSGA/GEF (2004) and GEF (1997). For instance, some mangroves areas have same names in the different references but not the same coordinates.
- Some mangroves coordinates are not clear if they are single points or stretches
- Causes of deterioration of Mangroves at Ras Baghdadi based on GEF (1997) are not known.
- Pollution sources are generic and not properly identified.
- Wadi Hamatah lacks information on length and area based on GEF (1997)
- Description of Sector 1 (not including Wadi Gemal Park) for reptiles, birds and mammals rely on +10 year old books and data. However, it is not expected that they will differ much since then.
- Wadi El Gemal National Park baseline information is old (acquired in 2003), which requires periodical monitoring and update.
- There is less information available in the Qusier area (in Sector 1) for biodiversity of fauna in comparison with Sector 2.
- Birds and their importance in this project area require more survey resources.
- Local status of birds and vegetation in sector 1 is missing.
- Nesting sites survey of sea turtles are only available for the Wadi Gemal area and missing in Sector 1. In addition available information is old (more than 5 years).
- There is no precise data on the population of local community in the project area.
- Cultural heritage and traditional knowledge of local community should be documented.

3. Tourism Development in the Red Sea

3.1 Overview

The development of tourism plans along the Red Sea coast falls mainly under the jurisdiction of the Tourism Development Authority (TDA) in coordination with other national authorities. The current tourism development plans along the project area are inclusive of 27 tourist centres. Each tourism centre is divided into a number of single land parcels or projects. According to the latest information, there are 54,529 hotel rooms in full operation, whereas 395 projects are under construction occupying an area of 181,534,199 m².

The Red Sea coastal area is rich in terms of biodiversity on both species and habitat levels. It also encompasses most of the tropical marine ecosystems, with spectacular fauna and flora. On the other hand, coastal lands are precious resources, which attract the attention of a multiple of users and authorities including, government (regulators, competent administrative authorities, ports, security forces, etc.), investors, scientific researchers, resource users, as well as the general public.

Physically, the Red Sea is a very salty waterbody (average 42ppt) compared to other seas and oceans (average 37ppt). This is because its geographic location and environmental conditions, lack of rainfalls and river outfalls, and limited water exchange with the Indian Ocean, which lead to high evaporation rates. Though these conditions are favourable for coral reef growth, they limit the Red Sea vulnerability to tolerate water quality issues caused by human impacts such as pollution caused by coastal discharges.

Environmental degradation as a result of coastal tourism development and operation along the Egyptian Red Sea is well documented in literature. Hawkins and Roberts 1996 stated that “tourist development has already caused substantial damage to inshore reefs near Hurghada from infilling, sedimentation and over fishing for marine curios.”⁶

Dredging and landfilling for resort construction depleting the reef flat around Hurghada city has been also documented. (El Asmar, et al, 2015)⁷ demonstrated serve damage to coastal environment at Hurghada, where shoreline changes due to dredging (erosion) of 2.67 km², landfilling (accretion) of 7.56km², as well as a loss of 5.34km² of the reef have been reported. (Mostafa Khaled, et al 2018)⁸ estimated

⁶ Julie P. Hawkins and Callum M. Roberts (1994), The Growth of Coastal Tourism in the Red Sea: Present and Future Effects on Coral Reefs, *Ambio*, Vol. 23, No. 8 (Dec., 1994), pp. 503-508

⁷ Hesham M. El-Asmar, Mahmoud H. Ahmed , Sameh B. El-Kafrawy, Ahmed H. Oubid-Allah, Turkya A. Mohamed, and Mostafa . A. Khaled (2015), Monitoring and Assessing the Coastal Ecosystem at Hurghada, Red Sea Coast, Egypt, *Journal of Environment and Earth Science*, Vol. 5, No. 6.

⁸ Mostafa Khaled, Frank Muller-Karger, Ahmad Obuid-Allah, Mahmoud Ahmed, and Sameh El-Kafrawy (2018), Using Landsat Data to Assess the Status of Coral Reefs Cover along the Red Sea Coast, Egypt, *International Journal of Ecotoxicology and Ecobiology*. Vol. 4, No. 1, 2019, pp. 17-31

total economic value (TEV) of coral reef habitats along the Red Sea, where the cost of degradation in terms of physical loss of coral reef area between 1973-2015 equals to about 18.63\$ Billion.

The major pollution source to the Red Sea is of sewage, which, treated or untreated, is usually discharged to, or just below, the intertidal zone via pipelines, and is thus mostly a coastal problem.

Physical damage to coral reefs caused by divers and snorkelers are reported in the Egyptian Red Sea. Hilmi, Nathalie 2012⁹ and Hannak, Judith et al 2011¹⁰ reported trampling, coral breaking by divers or snorkelers, damages from recreational boat anchoring and boat grounding are among direct impacts on corals. Not surprisingly, observed coral damage was most frequent within the first ten meters depth, which suggests that major threats on coral reefs occur as a result of inexperienced divers and snorkelers rather than by experienced divers who practise a more eco-friendly tourism.

Section 6.4.2 **Error! Reference source not found.** of this report summarizes the key-issues at the project target area.

3.2 Project Area

The project area has been identified by MBTD project, which includes tourism development plans in the South of the Egyptian Red Sea coast belt (Red Sea Governorate) from Qusier to Southern borders of Wadi El Gemal PA. The geographical scope of the study includes the coastal plain in addition to Wadi El Gemal full area.

To facilitate the provision of the baseline information and environmental assessment undertaking, the project area has been divided into two sectors; the Red Sea Coastal strip with a width of 10km starting from the shoreline and the Wadi El Gemal National Park. The two sectors are as follow:

- Sector 1: El-Qusier - Wadi El Gemal, with a width of 10 km
- Sector 2: Wadi El Gemal - Hamata (Wadi El Gemal Hamata Protected Area “WGHPA”)

The following Figure 9 shows a map showing the two sectors of the study area.

⁹ Hilmi, Nathalie; Safa, Alain; Reynaud, Stéphanie; Allemand, Denis (2012), Coral Reefs and Tourism in Egypt's Red Sea, Middle Eastern and African Economies Vol. 14.

¹⁰ Hannak, Judith S; Kompastcher, Sarah; Stachowitsch, Michael; Herler, Jürgen (2011), Snorkelling and trampling in shallow-water fringing reefs: Risk assessment and proposed management strategy, Journal of Environmental Management, Vol. 92, Issue 10

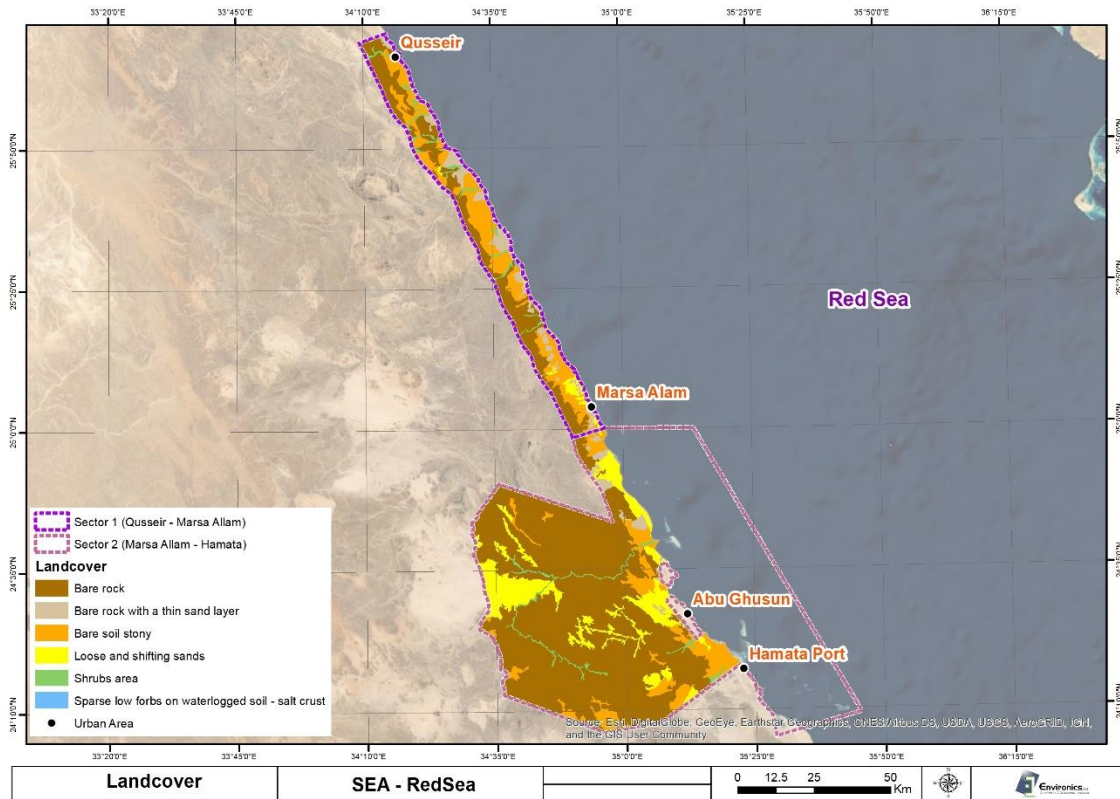


Figure 9: Delineation of the Project Area

3.3 Description of Tourism Development Plans

While tourism development planning along the Red Sea falls mainly under TDA mandates, within the Municipal jurisdiction, the Red Sea Governorate undertakes land use plans, which include tourism development. Furthermore, the protected areas land come under the jurisdiction of the EEAA. Therefore, the related plans in the project area of each entity are described in the following few subsections.

3.3.1 TDA Plans

TDA plans have been received in PowerPoint format for 13 tourist centers, which are in the project area, namely: Baer Asil, El Sharm El Bahari, Wezr, Ras Trombi, Gebel El Gezira, Shauni, Marsa Maureen, Nabea Saghier, Shagara, Ras Dori, Sharm El Fakiri, North and South Abu Ghosoun, and Lahmi. Each tourist center is presented in two slides: layout and land uses, and Investment Opportunity plan for three phases (2018-2022), (2022-2026), and (2026-2030). The following Figure 10 and Figure 11 show sample data of Sharm Al Bahari Tourist Center. In addition, Table 3 presents summary TDA plans.

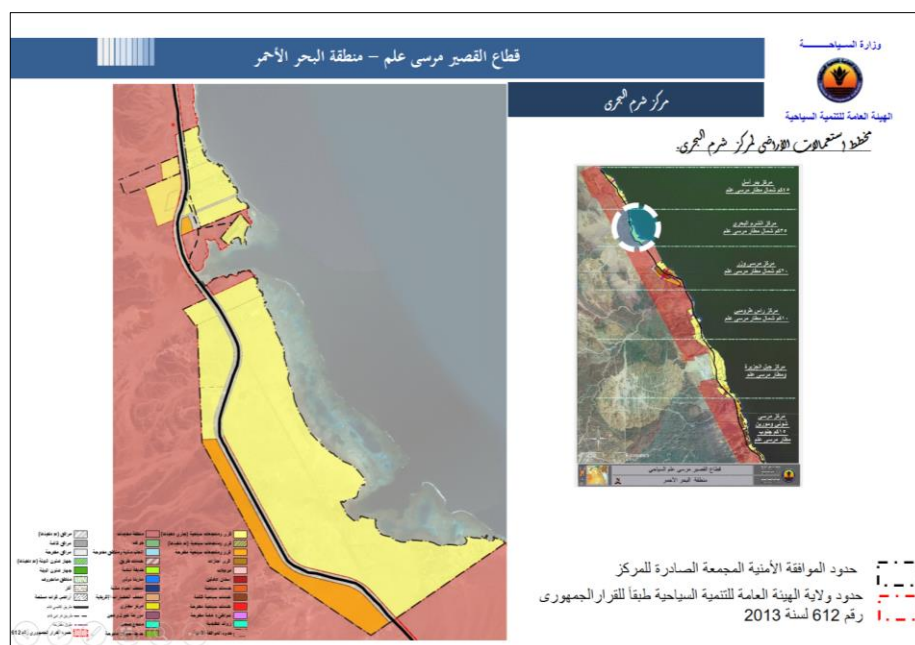


Figure 10: Layout and land use of El Sharm El Bahari

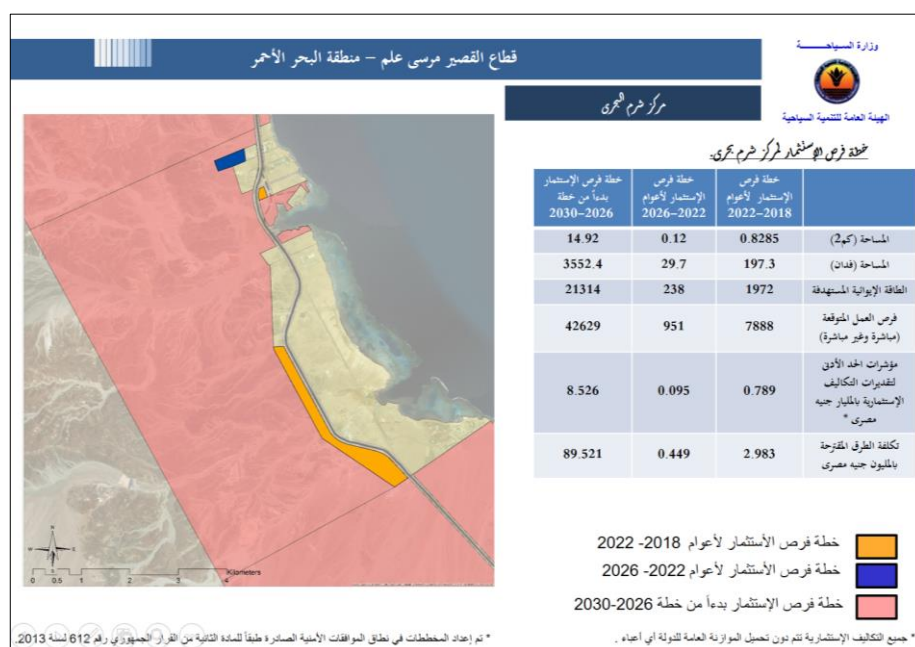


Figure 11: El Sharm El Bahari Investment Opportunity Plans

Table 3: Summary Tourism Development Plans

	Investment opportunity plan for years		
	2018-2022	2022-2026	2026-2030
Area (Km ²)	55.1585	47.39	762.918
Area (Feddan)	13133.7	11288.3	181661.21
% Overall change in area		85.92	1383.14

	Investment opportunity plan for years		
	2018-2022	2022-2026	2026-2030
Target Accommodating Capacity	120990	104949	640135
Job Opportunities (Direct/indirect)	483956	419799	1280267
Indicators of minimum investment cost estimates in billion (L.E)	48.40	41.99	255.98
Cost of the proposed roads in million (L.E)	203	159.14	2736.41

Update:

An updated version of the TDA in (ArcGIS) format was obtained in February-April 2022, where the updated TDA plans briefly indicate:

- The updated plans include an increase in areas, with a total tourism development area of 1173.63 km², compared with an area of 865.47 km² in the previous version of the plans. According to available information, the new areas include land plots in the back of tourist centres.
- The updated TDA plans include development data for each tourist centre, including the area of each centre, the area already developed to date, and the rate of development in the centre. Accordingly, the largest tourist center proposed is Wadi Lahmi with an area of 238 km². The current development rate in each center varies from 0% in the centers located in WGHPA, to a maximum of 60.17% in Sharm Bahrai Center (Table 4).

Table 4: Development Data for Tourist Centers in the Project Area

Name	Total Area (km ²)	Developed Area (km ²)	Development Ratio (%)
Baer Asel	83.1	1	0.01
Sharm Bahari	33.0	581	17.60
Marsa Wezr	103.3	289	2.80
Ras Trombi	90.7	744	8.20
Gebel El Gezira	87.7	3	0.03
Marsa Shauni	68.9	397	5.75
Marsa Mureen	26.0	235	9.05
Nabea Saghier	55.1	791	14.35
Marsa Shagraa	46.5	497	10.70
Ras Dori	59.6	499	8.37
Sharm El Faqiri	89.6	132	1.47
Hankourab and Wadi El Gemal	79.1	0	0.01
North and South Abu Ghosoun	57.2	0	0.00
Hamata	55.9	24	0.43
Wadi Lahmi	238.0	363	1.53

3.3.2 Wadi El Gimal-Hamata Protected Area (WGHPA)

WGHPA was declared as a protected area in 2003 by Ministerial Decree No. 143/2003. In 2020, the Prime Ministerial Decree No. 1777/2020 was issued amending Wadi El Gemal-Hamata boundaries to exclude some of the quarries at the south west area of WGHPA, and expand the marine side to include Samadai dolphin house.

The main management objectives of WGHPA are:

- To maintain the natural resources and conditions of the PA;
- To protect cultural heritage resources of the PA;
- To enhance the sustainable utilization of natural resources in the PA through the establishment of appropriate management systems;
- To promote WGHPA as a focal point for ecologically sensitive tourism, thus expanding and diversifying the economic activity base in the region;
- To enhance the environmental quality of the WGHPA;
- To optimize socio-economic benefits to the local population from the region's natural heritage;
- To promote public understanding and appreciation of Egypt's natural heritage.

WGHPA was declared where the TDA have had jurisdiction over designated lands located inside the protected area. The Red Sea Sustainable Tourism Initiative (RSSTI) has developed a "Land Use Management Plan South Marsa Alam, Red Sea Coast," to resolve potential conflict on land use.

3.1.1.1 Background

The Land Use Management Plan (LUMP) for the planning area—a 5-kilometer-deep stretch of coastal land extending from the southern boundary of Marsa Alam down to Wadi Lahmi—has been undertaken based on environmental sensitivity analysis and policy determinations. The LUMP reflects a decision on the part of the Tourism Development Authority (TDA) to adopt a pattern of development in the planning area that preserves ecosystems of importance. However, it also reflects broader national interests regarding the designation of Protected Areas and strategies to optimize sustainable tourism development.

Sustainable tourism development of the area requires a phased, gradual approach that takes into consideration the environmental impact of the development scheme to avoid the unnecessary loss of unique and diverse ecological resources. A rational approach balancing the environmental and developmental aspects of proposed tourism projects can minimize the alteration of natural habitats and biota of the unique and scientifically important areas in the Red Sea area south of Marsa Alam.

In preparation for the LUMP, an assessment of the economic and social characteristics of the planning area was conducted, in addition several studies on natural and cultural resources were also carried out. These included assessments of

climatic conditions, geology, geomorphology, soils, and surface hydrology, herpetofauna, avifauna, mammals, plants, and coastal and marine sites of the area.

Maps have been prepared using data from extensive environmental and ecological field surveys. The data yielded information indicating the presence of several flora, fauna, and associated habitats that are unique or important to protect on a global, national, or regional level. All of this information was then incorporated into a sensitivity analysis to determine the ecological sensitivity of each area. Based on their weighted scores from the sensitivity analysis, areas were rated as having Very High, High, Medium, or Low Sensitivity.

The general results were as follows:

1. Areas with Very High Sensitivity include Wadi El Gemal, mangroves, fringing reef, and the Marsa Naqari archeological site.
2. Areas with High Sensitivity entail main wadis, salt marshes, and seagrass beds.
3. Areas with Medium Sensitivity comprise medium-sized wadis, sea sand beds, and desert sand plains.
4. Areas with Low Sensitivity include small wadis, rugged lands, and gravel tablelands.

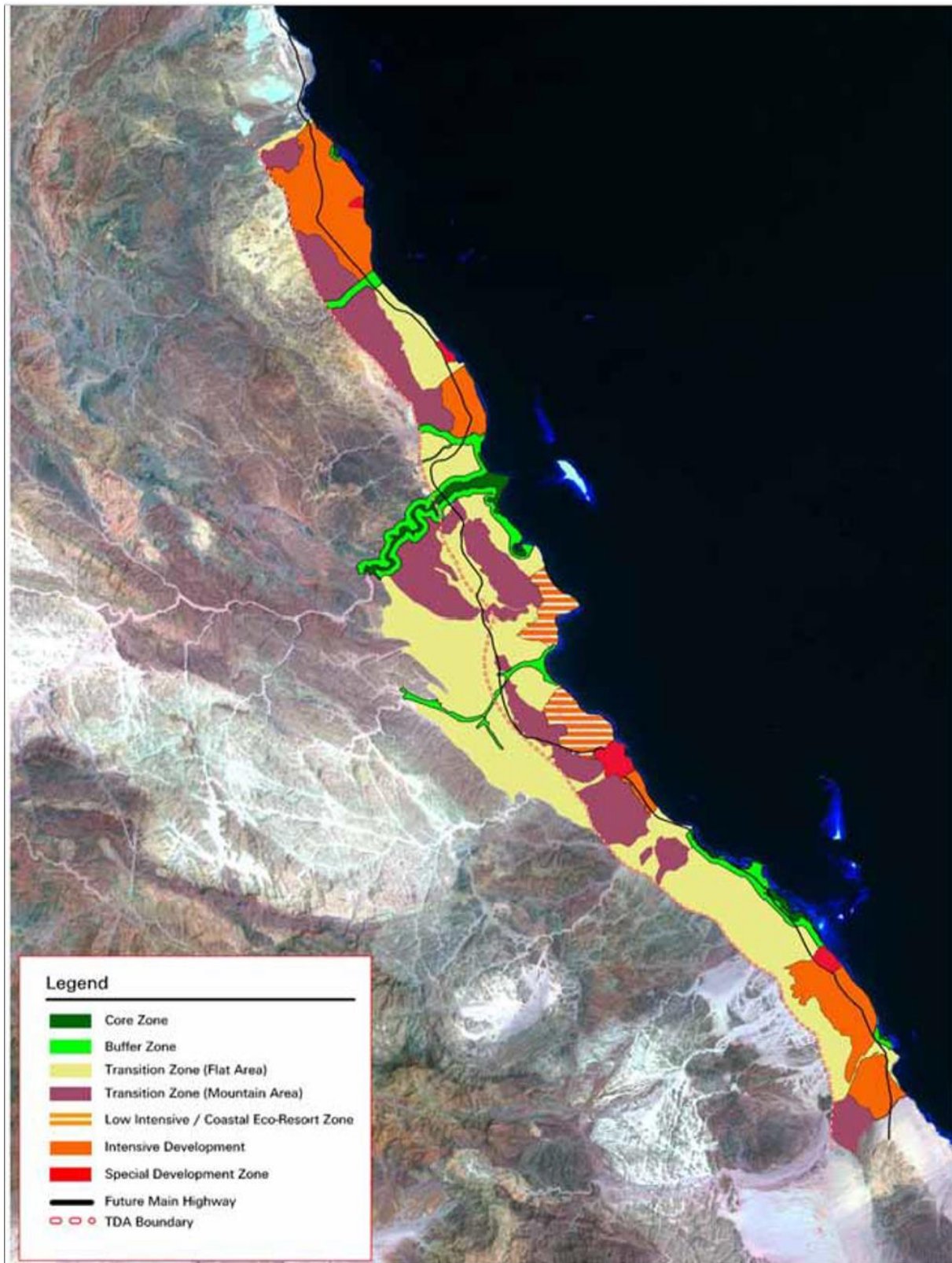
A zoning plan was then prepared, taking into account the following factors:

1. Sensitivity Rankings
2. Significant Resources and Area Attractions
3. Hazard Analysis
4. Development Opportunities and Constraints
5. Existing TDA land allocations

Six Management Zones are identified in the Land Use Management Plan.

1. Core Zone (Absolute Reserve Areas)
2. Buffer Zone (Restricted Wilderness Areas)
3. Transition Zone (Ecotourism Zone)
4. Low Intensive Development Zone (Coastal Eco-Resort Zone)
5. Moderate Intensive Development Zone
6. Special Development Zones

The following Figure 12 presents the Land Use Zoning Plan illustrates the zones applied to specific areas (USAID/IRG/RSSTI 2003). In addition, description of each zone and the accompanying regulations for each zone are summarized in the following Table 5(USAID/IRG/RSSTI 2003).



**Figure 12: Southern Red Sea Land Use Management Plan
(USAID/IRG/RSSTI 2003)**

Based on the zoning map, two zones have been allocated for low intensive/coastal eco-resort, which are located in WGHPA namely Ras Hankorab and South Marsa Umm Al Abas. The LUMP concludes that Tourism development in the Red Sea area south of Marsa Alam should be based on sustainability criteria that include:

- Long-term ecological viability.
- Long-term economic viability.
- Ethical use of resources.
- Equitability with local communities.
- Compliance with EEAA guidelines and Environmental Law 4/1994.

Table 5: LUMP Zoning Regulations

Zone	Core Zone (Absolute Reserve Areas)	Buffer Zone (Restricted Wilderness Areas)	Transition Zone / Flat & Mountain (Ecotourism Zone)	Low Intensive Development Zone (Coastal Eco-Resort Zone)	Moderate Intensive Development Zone	Special Development Zones
Description	<p>Very high sensitivity areas that could be easily disturbed such as:</p> <ul style="list-style-type: none"> • Wadi El Gemal. • All mangroves, and their salt flats (Ras Baghdadi, Sharm El Luli, Qulaan, Hamata, and Wadi Lahmi). • The archaeological site of Marsa Naqari. • The turtle nesting area of Marsa Umm Al Abbas • Offshore islands.. 	<p>Highly sensitive areas such as:</p> <ul style="list-style-type: none"> • The areas around the core zone with depth not less than 500 m. • The wadi floor of Wadi Umm El Abbas, Wadi Ereaar, Wadi Ghadir and Wadi Al Ringa. • The salt marsh of Marsa Umm El Abbas. • This zone would offer visitors a fairly structured experience with on site interpretation and education. 	<p>Moderately sensitive peripheral areas including:</p> <ul style="list-style-type: none"> • The watersheds of Wadi Ghadir, Wadi El Gemal, and Wadi Lahmi • All intermediate and small wadis. • The coastal plains near Sharm El Luli, Marsa Umm El Abbas, and the Hamata mangroves. • Enclosed sand plains (sahl). 	<p>Eco-resort development zones with low intensive development adjacent to Protected Areas including Ras Hankorab and south Marsa Umm El Abbas.</p>	<p>Moderately intensive resort development zones between the shoreline and the base of the coastal mountain range.</p>	<p>Development zones requiring special consideration such as Gebel Dorry, the nearby hills, the ridge north of Sharm El Foqiry, the municipalities of Abu Ghusun and Hamata, and the settlement of Qulaan..</p>

Permitted Uses	<ul style="list-style-type: none"> Scientific research. Low impact ecotourism visitation. Resource management facilities. 	<ul style="list-style-type: none"> Low impact ecotourism activities. Traditional uses of indigenous Bedouins. Primarily accommodates four-wheel drive experiences. Mobile camps. Hiking & nature walk trails. Emergency services. 	Resource management and ecotourism activities and facilities such as ecolodges, visitor centers, bird watching facilities, eco-stations, preexisting settlements, animal grazing, authorized mining.	One to two story environmentally friendly resorts, restaurants, dive centers, shops, theme parks, bird watching centers, handicraft centers, recreation facilities, and infrastructure.	-Hotels, multi-family and single-family residences, restaurants, dive centers, shops, theme parks, recreation facilities, and infrastructure. -Offices and community services, maintenance facilities, agriculture, and silva culture	As determined by specific plans.
Excluded Uses	All other activities and facilities including permanent lodging, mining, and animal grazing. Offtrail use of the park is prohibited.	All other activities and facilities including permanent lodging, mining, and animal grazing.	All other activities and facilities, new mining activities.	Heavy industry, mining.	Heavy industry, mining.	As determined by specific plans.
Net Density (Max Land Coverage / lot)	N/A	N/A	Ecolodges: 5% to 7%.	Hotels: maximum 10 %. Other: Per IDC master plan.	Hotels within 500 meters of sea: 12%. Other: Per IDC master plan.	As determined by specific plans.
Height Restrictions (Maximum)	N/A	N/A	1-2 floors.	1-2 floors.	1-3 floors.	As determined by specific plans.

Lot Size (Minimum)	N/A	N/A	200,000 square meters.	-Hotels: 250,000 square meters. -Other uses: per IDC master plan.	Per IDC master plan.	As determined by specific plans.
Other Restrictions	<ul style="list-style-type: none"> • Number of visitors is limited and monitored • -Visitation only with authorization, and accompanied by guide or park rangers. • The guide-to-group size ratio does not exceeds 1/10 - Authorized vehicles only. • Visitation subject to suspension, seasonal/temporary. • All authorizations by EEAA. • No new paved roads except the proposed road. 	<ul style="list-style-type: none"> • -No new paved roads accept the proposed road. • -All authorizations by EEAA. 	<ul style="list-style-type: none"> • -Visitation authorized by EEAA inside park boundaries, TDA outside park boundaries. • - Authorizations for activities, facilities, and ecolodges inside the park by EEAA and TDA, and by TDA outside park boundaries. 	<ul style="list-style-type: none"> • -All authorizations for land allocation and development control by TDA. 	As determined by specific plans prepared by TDA.	As determined by specific plans.

3.1.1.2 Assessment of the LUMP

The LUMP was carried out in 2003, including the southern sector of the Red Sea south of Marsa Alam to South of WGHPA. Technically the preparation of the LUMP has been relying on sound scientific analysis comprising a multidisciplinary assessment taken into account ecological, social and economic impacts of the land use. In addition, based on these assessments and analyses, a sensitivity index has been proposed through which land sensitivity has been ranked to denote areas of high sensitivity. Accordingly, land zones have been proposed based on a number of factors, most importantly sensitivity, important resources and attractions, as well as hazards.

Thus, the LUMP proposes a number of land use zones including Low Intensive Development Zone (Coastal Eco-Resort Zone). This would entail development adjacent to Protected Areas including Ras Hankorab and south Marsa Umm El Abbas. This zone is of concern to TDA as well as WGHPA, which is permitted for one to two story environmentally friendly resorts, restaurants, dive centers, shops, theme parks, bird watching centers, handicraft centers, recreation facilities, and infrastructure.

This zone area constitutes a proposed developed area of 250,000 m². Additionally, as per the proposed zoning regulations, development of this zone must adhere to a maximum of 10 % land cover, and a preparation of IDC master plan. As reported by TDA officials during consultation for this SEA, land use regulations have not been proven feasible by investors who have shown interest to develop in this area.

In conclusion, the consultant believes the following:

- The LUMP is well prepared following good practices in land use planning,
- It includes a zone for interest to both TDA and EEAA, namely Low Intensive Development Zone,
- It is understood that tourist developers consider the proposed land use regulations as not feasible; (10% land density) though TDA regulations for 5 star-hotels require a percentage of 12%,

The LUMP report and the scientific analysis included within it could be considered as a start point in case the need arises to develop some coastal areas in WGHPA. However, sensitivity of these areas and conservation objectives should be set as first priority.

3.3.3 Qualaan Eco-Model

Besides LUMP, Qualaan Eco-Model was prepared by a USAID report (2004)¹¹, issued after the declaration of Wadi El Gemal Hamata as a protected area in 2003.

Two sites are identified within the Southern Red Sea Region and Wadi El Gemal Hamata Protected Area - Qualaan and Sharm El Luli - as full-fledged ecotourism schemes including identified attractions, destinations points, circulation network of trails and motorway access, accommodation facilities (eco-lodges), guiding and control facilities, rescue and medical services, etc.

¹¹ USAID 2004, Conceptual Development Plan for Qulaan ecotourism Model Southern Red Sea Region

The report has been prepared to serve as a model for decision-makers, developers and planners to evaluate and analyse ecotourism sites, compile a project brief and conceptualize the most suitable development for the selected sites. The model calls to diversify the tourist products, and deviates the current products from marine-based tourism to other forms of tourism.

It was reported that the residents of Quala'an (Ababda) were interested in the possibility of an ecotourism facility, and keen to offer their skills. The report also discusses the site conceptual design procedure, and proposes a number of design objectives including:

- Climate: site selection and design to solve the problems posed by the high temperatures and aridity of the desert.
 - Environment: Ecotourism facilities should strive to have minimum impact on the environment, should blend with the surroundings and “not look man-made”.
 - Community involvement: the involvement of the local fisherman community.
- According to the report, an eco-model lodge facility was proposed including 30 bedrooms, shared open spaces and other tourist facilities.

3.3.4 Red Sea Strategic Plan 2030

3.1.1.3 Overview

The Red Sea Governorate is located in the Southern Upper Egypt region, with an area of 119099 km². In 2018, the total population of the governorate was about 360 thousand people in 2018, which represents 3.2% of the population of the southern Upper Egypt region.

The Red Sea Governorate is divided into 8 administrative centers (Hurghada First, Hurghada Second, Ras Ghareb, Safaga, Al Quseir, Marsa Alam, Shalateen, and Halayeb), 7 cities, 10 shyakhas, 12 villages and 14 corporate units.

The existing urban structure is highly urbanized, where most of the population is concentrated in a limited number of cities on a coastal strip of no more than a kilometer depth, while there is no back real developmental in desert depth. This is due in part to the nature of the mountain ranges that separate the coast from the desert, and the lack of water resources in the back.

The Red Sea Governorate with its natural resources, mineral wealth, tourist areas, ports, protected areas, archaeological sites, and environmental diversity is capable of participating to a large extent in achieving the vision of Egypt 2030 by exploiting the elements of development to accommodate all axes, the main vision and most strategic dimensions of it.

3.1.1.4 Development challenges

According to the Red Sea Strategic Plan, development challenges include the following:

Population and human development

Attracting the required labour force requires to double the existing job opportunities, raise the living standards, offer higher educational and health care services and facilities. In addition, labour working in some sector such as tourism and mining require high level of training and capacity building. In the same context, it is required to increase job opportunities by about 310,000 jobs until the target year (2030) to meet the expected increase in the target population

Water scarcity

Lack of freshwater resources is an issue in the Red Sea, due to high cost of transportation of Nile water and the operation of desalination plants, as well as limited groundwater resources.

Power supply

Though the Red Sea is blessed with renewable energy resources such as sun and wind, the cost of some renewable energy options such as PV is very high. Therefore, attracting foreign investment and managing the renewable energy efficiency can play a great role to mitigate this challenge.

Tough topography and narrow coastal strip

The developed area in the Red Sea does not exceed 2.35% of the overall governorate area. Though the coastal strip and the Red Sea Mountains constrain development, this represents unique natural settings that can support ecotourism.

Administration of the development

According to the Red Sea Strategic Plan 2030, the existing legal framework is old to support new ideas for development. In addition, the decision-making process is central, which becomes inappropriate for managing remote areas. Furthermore, there is a lack of competent personnel. Therefore, it is required to:

- Revision of the relevant laws, particularly the law of local administration.
- Rebuild the capacity of governmental employees, and improve knowledge transfer.
- Provide local administration units with trained employees capable of encouraging and managing development.
- Support strategic management, setting an appropriate vision, and working to achieve this vision.

3.1.1.5 Baseline Scenario of the Red Sea Strategic Plan 2030

The following figure demonstrates the baseline scenario analysis, where the growth of economic sectors is anticipated based on sectoral growth prediction as follow:

- Cultivated land grows annually in 1.25% until 2052, estimated according to the national agricultural plan.

- Agriculture suitable lands for will be reclaimed- target 560,000 acres.
- It is anticipated that the industry GDP share will grow in 6% annually, based on the industrial development authority strategy.
- On the other hand, labours have been estimated based on growth of GDP.
- For the tourism sector, trade, services growth is estimated based on 5.1% of the annual GDP, while the trade and services growth will increase to 9% annually.
- Governmental sector growth is estimated at 3% of the GDP annually.

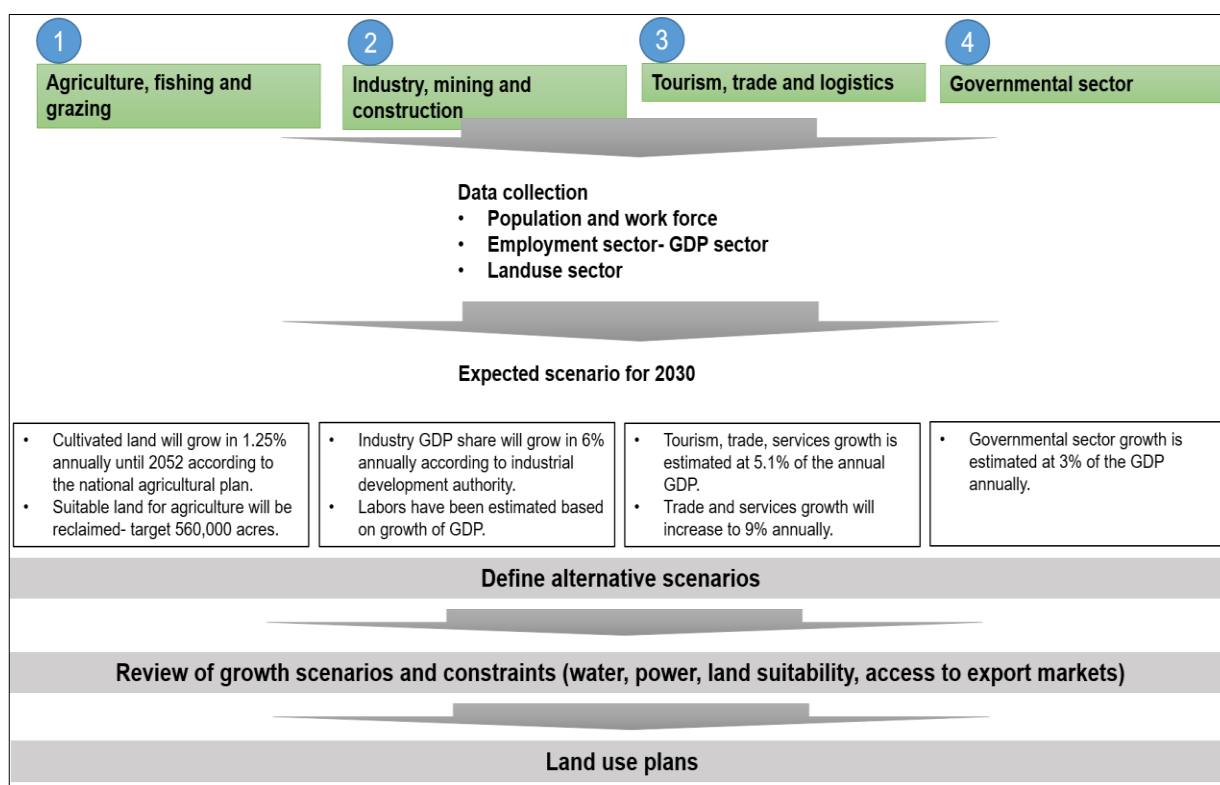


Figure 13: Analysis of business-as-usual scenario as per the Red Sea Strategic Plan 2030

3.1.1.6 Red Sea Strategic Plan Alternative Scenarios

The Red Sea Strategic Plan provides two alternatives' scenarios beside the business as usual. The first one assumes enhancing the industrial and mining sector, and the other focusing on improving tourism, trade and logistics sectors. The following table summarises the analysis of each scenario:

Table 6: Analysis of Alternative Scenarios (Red Sea Strategic Plan 2030)

Business as usual scenario	Industry and mining scenario	Tourism, trade and logistic scenario
Sectors growth is based on government plans and independent projections:	Targeting building materials industries, depending on the productivity of the Golden Triangle	Enhancing foreign exports and the domestic market for trade and services in lines with global trends - -

Business as usual scenario	Industry and mining scenario	Tourism, trade and logistic scenario
<ul style="list-style-type: none"> • Sectoral forecast is based on historical growth, as well as on-going planning trends. • Including maintaining the share of agriculture and government services in the GDP. • Strong growth is expected for the industry, according to previous efforts and investments. • Reliance on national projects in the Red Sea coast. • Enhancing coastal, environmental and historical tourism development on the Red Sea coast. 	<ul style="list-style-type: none"> • The main initiatives are related to exports, development of integrated communities, ... • Producing competitive commodities on a global level, while developing Egyptian assets • Targeting building materials industries (cement, iron,) and exporting them to COMESA countries and food industries to East Asia and Europe. • The tourism, trade and services sectors were positively affected by the growth of manufacturing, mining and exports. • Development of the technology of agriculture on salt water and the establishment of the biofuel industry on it. <p>In addition to the growth in grazing activity and livestock.</p>	<p>Promoting Egyptian assets: skilled labour, tourism and communication infrastructure and a huge domestic market - Sub-sectors include: tourism, internal trade and wireless communications</p> <ul style="list-style-type: none"> • It depends mainly on exporting services • Exploiting the Red Sea as a logistical commercial hub for the countries of the East and South. • Development of the port and airport of Berenice for international transport and trade representing <p>The most important export potentials of the governorate's products to Asian countries, Arab countries, as well as Africa and Europe.</p> <ul style="list-style-type: none"> • Developing a network of sea ports to encourage domestic trade and transport of crude.

Based on consultation with stakeholders, priority was given to tourism, transport and logistics sectors scenario, and desire to link them together by creating an industrial sector based on mining industries.

Accordingly, a vision and mission statement for the Red Sea Governorate has been setup. The vision is "a tourist governorate with a diversified economy and a global role supporting tourism, trade and mining activities." The Red Sea Strategic Plan concludes a number of projects in order to achieve the vision, mission and plan.

4. Methodology of the SEA

This chapter describes the method and approach undertaken during the SEA process.

4.1 Objectives of the SEA

Prior to conducting a SEA, its objectives are often agreed with the planning authority. Therefore, during the inception workshop carried out for this SEA on November 03, 2020, the objectives have been discussed and agreed with the stakeholders including the following:

- Establishing a coherent planning framework able to consider environmental impacts, and long-term sustainability of biodiversity
- Identifying and proposing potential measures to integrate biodiversity conservation into existing EIA guidelines applied to assess tourism investments
- Identify/classify natural resources based on status, i.e. areas damaged beyond recovery, areas suitable for tourism development under strict controls, and areas for tourism development with a minimal impact upon the environment.

Moreover, the SEA exercise was introduced as a means of capacity building for the WG1 to understand and appreciate benefits that the SEA can offer to improve the planning practices.

The SEA has also introduced the concept of analysis of the BaU scenario, where consequences of the BaU scenario continuation have been investigated based on practical indicators including the available natural resources, and required utilities, taking into account the agreed on key-issues in the project area.

4.2 Activities and Outputs

Strategic Environmental Assessment (SEA) is a formal and systematic approach, which is carried out to evaluate the likely significant environmental effects of a Policy, Plan, or Program (PPP). The SEA entry is best recognized during the preparation of the PPP, before an adoption decision is made.

For this specific SEA project, the SEA was initiated by the MBTD project with the purpose to mainstream biodiversity into tourism development plans.

The SEA process for this project has included the following activities:

- Reporting: a number of reports has been prepared based on the client's ToRs, and in line with the international best practices including:
 - Preparatory report, which describes the SEA process in details, the project's key-issues based on consultation with the project's Working Group 1 (WG1), environmental and social preliminary indicators, detailed methodology for data collection, and early identification of development plans. In addition, SEA risk register has also been included in the report.
 - Scoping Report: the SEA scoping report has been prepared with the aim to define the scope of the strategic assessment. The tourism plans under assessment have been introduced and described. In addition, the policy and

legal framework has been inventoried, analysed and discussed in details to define gaps and overlaps in the legal system, particularly the EIA regulations. Furthermore, the baseline information has been analysed in order to define data gaps and propose further measures to acquire missing information. Moreover, the key-issues have been detailed in consultation with WG1 to highlight significant issues to narrow down the need for baseline information as well as to focus the assessment scope.

- Sustainability assessment: the sustainability assessment report has been prepared with the objective to analyse the business as usual (BaU) scenario and relevant consequences on the environmental, as well as socioeconomic aspects at the project area. Based on the assessment criteria, a number of policy/planning measures has been proposed. The report has also presented the baseline information for the project area based on extensive literature and related report review, as well as short site visits and consultation with stakeholder. Moreover, the guiding principles to generate plan alternatives have been proposed.
- SEA Report: the final SEA report, submitted by this document has been prepared. The aim of the SEA report is to highlight the SEA process, summary of all previous deliverables. The report also provides summary of the findings of the scenario planning exercise undertaken in consultation with WG1, and potential alternatives. The tourism development alternatives have been analysed, and the likely significant environmental effects are identified and evaluated.

Standard SEA, as described above, is best recognised to be undertaken during the planning process, so that the SEA contributes to enhancing the planning process. However, this specific SEA has been carried out after the tourism development plans have been setup. Therefore, outputs of this SEA would require political attention and willingness to improve existing tourism development plans. In addition, required actions to improve the tourism development approach would rely on taking opportunities and overcoming constraints to achieve a win-win situation where the need for economic development and resource conservation is balanced.

4.3 Consultation and Participation

Stakeholder Consultation and active participation is important, particularly in planning and planning assessment. Therefore, consultation has been carried out with the key authorities involved directly and indirectly in tourism planning, and other interested groups, whenever need. For instance, local community in the project area has been met, where the SEA outputs have been discussed. Consultation has been carried out using a variety of tools, such as physical and online workshops, meetings, stakeholder questionnaires, etc. Outputs of consultation have been discussed in the relevant deliverables, and summarised in separate reports. The following table shows the main consultation events carried out during the SEA phases.

Table 7: Main Consultation Events

No.	Event	Outputs
1	The inception workshop was held on the 3rd of November 2020 in Holiday Inn Hotel, Maadi. The workshop was attended by MBTD WG1 and project team, and Environics SEA team.	WG1 was presented the SEA process and methodology. Key issues and Data collection questionnaires were distributed and explained to WG1. Discussion and clarification for some issues mainly including: <i>stakeholders engagement, planned and developed areas, elements to be considered in SEA, benefits and challenges of SEA, local community engagement, regional planning</i>
2	During the inception Worksop, WG1 was given and explained key issues and data collection questionnaires .	The project area's key-issues have been identified and prioritised, to focus the baseline information, as well as the assessment. The data at the holding authorities have been identified, to facilitate data acquisition through formal communication.
3	Site visits carried out on January 3-5, 2020	The SEA team visited the area to acquire some missing information as well as meet the local community
4	Site visits conducted February 2-5, 2020	The SEA local community visited the area to acquire fishing and boat data.
5	The SEA Scoping Workshop was held online on June 24, 2021.	The WG1 was given a presentation on the draft scoping report. Comments and feedback from the WG members have been discussed and taken into account for the final report version.
6	Field Visits with WG1 was undertaken during the period August 5-8, 2021	The WG1 was escorted in site visits covering from Port Ghalib, to Maras Alam to WGHPA, and then to the North to Hurghada. The site visits were designed to show developed areas, non-developed areas; mass and ecotourism development, different types of tourist impacts, meeting with local community, etc.
7	First Sustainability Assessment and Scenario Planning Workshop was conducted on August 9, 2021 in Jazz Aquamarine Hotel- Hurghada.	The draft sustainability report was presented to the WG1, and consequences of the BaU scenario were discussed among the group. A scenario planning exercise was undertaken to assess the key-issues by the WG1.
8	Second Sustainability Assessment and Scenario Planning Workshop was held on September 28, 2021 Holiday Inn Hotel, Maadi.	During the first session, the WG1 has been briefed on the SEA Sustainability Assessment, where they have raised their comments and feedback on the draft version of the report. During the second session of the workshop, the WG1 has participated in a detailed scenario planning exercise to assess the policy and planning measures produced by the SEA sustainability assessment report.

No.	Event	Outputs
9	SEA Closure Workshop was held on March 28-29, Holiday Inn Hotel, Maadi.	<p>During the closure workshop, the draft strategic environmental assessment report was discussed, the final report and comments on the draft report have been agreed, in addition to the following topics were discussed:</p> <ul style="list-style-type: none"> • Strategic environmental assessment process and the presentation of the results of the report • Recommendations of the strategic environmental assessment • Preparation of the institutional framework for strategic environmental assessment • Ambitious planning, ecosystem capacity, tourism quality, sustainability issue • Strategic environmental assessment methodology, consultation, challenges • ToRs for strategic environmental assessment for Siwa and the North Coast • Improving the current environmental legal framework • Conclusion and next steps

4.4 MBTD Working Groups

Stakeholder consultation is a key factor toward successful projects, particularly in areas where ecological, socioeconomic and institutional complicated systems occur. Therefore, MBTD project has created a number of working groups to engage stakeholder and encourage their active participation. The first Working Group, the key stakeholder for this SEA, was established to mainstream biodiversity into tourism planning. The objective of the Working Group is to align policies and practices for the mainstreaming of biodiversity into tourism planning and development

The WG1 is composed of the following entities:

- TDA
- NCS – EEAA
- EIA – EEAA
- National Centre for Planning State Land-uses
- Egyptian General Authority for Shores Protection
- Environment and Tourism Representatives from targeted Governorates
- Chamber of Hotels – Federation of Tourism Chambers

During the SEA process, a number of physical and online workshops has been held, attended by the project team, the consultant as well as the WG1. These have been undertaken as a means of communication and focused discussions. In addition, the WG1 has been participated in a number of questionnaires including key-issues, information, as well as scenario planning questionnaires.

4.5 Timeframe of the SEA

The SEA of the Tourism Development Plans along the Southern Egyptian Red Sea Coast started late October 2020. The planned timeframe has been proposed as 7-month period. However, during the course of SEA, a number of constraints has delayed the SEA task. Therefore, the SEA process may have taken one year to be accomplished.

4.6 SEA Assumptions

Prior to undertaking the SEA, the following have been assumed:

- Consequences of *COVID pandemic* are not considered in the assessment. However, the sustainability assessment report has provided some international projection.
- Based on TDA and RSG Governorate information, *Temporal horizon* for the assessment was considered for 2030. In addition, the base year was considered 2018.
- *The SEA Spatial assessment* considers two sectors including tourism plans located in the coastal strip (10km width) from South of Qusier City to the Northern border of WGHPA, as well as WGHPA.
- The scope of *Assessment* focuses mainly on key-issues identified earlier during the SEA Scoping Phase, discussed and agreed with WG1. During the process, a number of emerging issues have been added to the assessment list, including climate change and sea level rise as well as the regional tourism competitiveness.
- Utility demands (power, water, beach, etc.) as well as environmental aspects (such as wastewater and waste generation) have been estimated based on TDA regulations.

4.7 SEA Limitations

During the SEA process, the limitations have been faced:

- Difficulty to assess some local issues due to lack of site-specific data.
- Some findings have been based on or validated through personal communications.
- Some information is acquired through remote sensing, such as landuse/land cover changes.
- The assessment considers only traditional tourism, i.e. one typology of future tourism plans.

5. Policy and Regulatory Framework

This section summarizes the analysis of the policy and legal framework undertaken during the SEA scoping phase, including national, regional and international commitments. The legal basis for strategic environmental assessment will be discussed, and recommendations to improve the existing legal system will be provided.

5.1 International Context

Egypt is a signatory body on a number of international treaties and/or conventions, those in relation to nature conservation, sustainable use of resources and coastal management conventions are listed hereafter:

5.1.1 Global Convention of Protection of Biological Diversity 1992

Global Convention on the Protection of Biological Diversity, 1992 was founded in Rio and entered into force in December 1993. Egypt ratified the convention on 31 August 1994. The CBD comprises three main principles/objectives including conservation of biological diversity, access to genetic resources, sustainable use of the components of the biodiversity, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Obligations to contracting parties include a number of actions in each these principles. The most important action relevant to the MBTD project is the integration of conservation and sustainable use of biological resources into national decision-making and planning system.

5.1.2 RAMSAR Convention 1971

RAMSAR Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971. It was amended by the Paris protocol on 3 December 1982 and Regina Amendments on 28 May 1987. Egypt ratified the convention on 9 September 1988 and it was put into force on the same date. The agreement recognizes the inter-dependence of humans and the ecosystem. It also recognizes the importance of wetlands in regulating water flow as well as associated animals and plants such as waterfowl. It emphasizes as well the economic, social, recreational and scientific importance of wetlands. The agreement indicates that national and integrated international actions are necessary to preserve wetlands.

5.1.3 Bonn Convention on the Conservation of Migratory Species (CMS)

The Bonn Convention on the Conservation of Migratory Species of Wild Animals, 1979, aims to globally conserve aquatic, terrestrial and avian migratory animals recognizing their crucial role in the stability of the ecosystem. Egypt ratified the convention on 11 February 1982 and it was put into effect on 1 November 1983. The CMS recognizes that all boundaries where the species occur or pass through needs to be managed. Thus, it requires coordination in management between governments. The conventions were put into force on November 1983.

5.1.4 International Convention for the Prevention of Pollution from Ships

International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, (MARPOL 73/78). The MARPOL Convention is a combination of two treaties adopted in 1973 and 1978. It covers all technical aspects of pollution from ships, except the disposal of waste into the sea by dumping, and applies to ships of all types. The Convention has five annexes covering oil, chemicals, sewage, garbage, and harmful substances carried in packages, portable tanks, freight containers, etc. It aims to prevent pollution of the marine ecosystem from ships, caused by operational or accidental spilling. The MARPOL convention was ratified by Egypt on 7 August 1986 and was put into force on 7 November 1986.

5.1.5 The UN Law of the Sea

The Law of the Sea, 1982. The United Nations Convention on the Law of the Sea (UNCLOS), is also called the Law of the Sea Convention or the Law of the Sea treaty. The Law of the Sea Convention defines the rights and responsibilities of nations with respect to their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine resources. It also recognizes that marine problems are inter-related and emphasizes on the need for an integrated management. Under the United Nations Convention on the Law of the Sea, “States have the obligation to protect and preserve the marine environment” (Art. 192) taking measures “necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” (Art. 194, para. 5). Egypt was one of the first countries who ratified it on 26 August 1983.

5.1.6 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973, is an international agreement that aims to ensure that international species trade does not affect their survival. It recognizes the importance of international cooperation in controlling animal trade to avoid over-exploitation. It was put on effect on 1 July 1975. Egypt ratified the convention on 4 January 1978.

5.1.7 The Conservation of African-Eurasian Migratory Water birds (AEWA)

The Conservation of African-Eurasian Migratory Water birds (AEWA), 1995, is a regional agreement part of the Bonn convention, which aims to conserve migratory water birds and their habitats in Africa, Europe, the Middle East, Canadian Archipelago, Central Asia and Greenland but targets also international conservation efforts. It includes 225 birds that depend on wetlands. Egypt ratified the convention on 1 January 1999.

5.1.8 The United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) 1992, entered into force on 21 March 1994. It provides an intergovernmental framework

to face climate change issues. Egypt signed this convention on 9 June 1992 and ratified it on 5 December 1994. It entered into force on 5 March 1995.

5.2 The Regional Context

Egypt has joined a number of regional conventions, of which the most relevant are the following:

5.2.1 The African Convention on the Conservation of Nature and Natural Resources

The African Convention on the Conservation of Nature and Natural Resources is dated back in 1968. The convention calls State members to adopt the measures necessary to ensure the conservation, utilisation and development of soil, water, floral and faunal resources in accordance with scientific principles and with due regard to the best interests of the people.

5.2.2 Jeddah Convention

Jeddah Convention is a UNEP Regional Seas Convention for the Red Sea and the Gulf of Aden dated 1982. The convention sets out the terms of regional cooperation among the signatory parties in regards to marine and coastal environmental protection. Adopted in 1982 and entered into force in 1985, the convention is complemented by a number of protocols including:

- Protocol on Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency" was signed along with Jeddah Convention in February 1982.
- Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden (2005).
- Protocol Concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden (2005).
- Protocol Concerning Technical Cooperation to Borrow and Transfer Experts, Technicians, Equipment and Materials in Cases of Emergency (2009).

5.3 The Local Context

The Egyptian environmental legal framework provides the basic foundation and instruments that represent commitment towards environmental protection. Law 4/1994 of the environment is the main environmental legal framework for actions, but nevertheless there are other laws, Presidential Decrees, Prime Ministerial and Minister Decrees, national strategies that complement to the national legal framework.

5.3.1 Egyptian Constitution 2014

The Egyptian constitution has been reformed in 2014, including 2 main Articles addressing the environmental protection, Article 45 and 46. In addition, Article 93 addresses Egypt's commitment toward international conventions and agreements.

Article 45 on the protection of seas, beaches, lakes, waterway states that “The state commits to protecting its seas, beaches, lakes, waterways, groundwater, and natural reserves. It is prohibited to encroach upon, pollute, or use them in a manner that contradicts their nature. Every citizen has the right to enjoy them as regulated by law. The state also commits to the protection and development of green space in urban areas; the protection of plants, livestock and fisheries; the protection of endangered species; and the prevention of cruelty to animals. All the foregoing takes place as regulated by law.”

Article 46 on health environment states that “Every individual has the right to live in a healthy, sound and balanced environment. Its protection is a national duty. The state is committed to taking the necessary measures to preserve it, avoid harming it, rationally use its natural resources to ensure that sustainable development is achieved, and guarantee the rights of future generations thereto.”

Article 93 dictates that Egypt shall bound by all of the international conventions and agreements it has signed and ratified. This is the legal foreground for asserting Egypt’s responsibility to uphold its duties and obligations under international law.

5.3.2 National related polices and strategies

5.3.2.1 Sustainable development strategy-Egypt’s Vision 2030

Egypt’s sustainable development strategy (SDS) 2030 was launched in 2016. Developed though participatory approach, the strategy aims to achieve four main goals including economic development, citizen happiness, human development and market competitiveness. The strategy sets a number of pillars to achieve the vision including the environment. In addition, the SDS promotes improving the quality of life for the present generations to raise awareness on environmental protection, and reduce the impact of climate change in order to provide a clean, safe environment for the future generations.

The SDS adopts an integrated environmental approach that balances economic growth and environmental factors. This aims to prevent environmental degradation and maintain its balance, move towards more sustainable consumption and production patterns, and protect biodiversity. Moreover, the SDS aims to fulfil environmental international obligations, waste management based on governance concepts, and the promotion of recycling with a high environmental cognitive technical content.

5.3.2.2 National Strategic Development Plan - Vision 2052

In 2009, the General Organization for Urban Planning prepared the National Strategic Development Plan until 2052. The plan aims to make fateful transition from the current situation, where most of the population inhabits the Nile Delta to the desired new situation that achieves development and population distribution based on scientific approach and with sound planning. In achieving the visions and objectives of development, the plan practically aims to support the transition of Egypt from a developing country to an advanced country as well as the transition

from a "traditional" society to a contemporary "knowledge" society, whose members enjoy a high level of quality of life in a democratic atmosphere in which all are preserved.

5.3.2.3 ***National Strategy and Action Plan for Biodiversity Conservation (2015-2030)***

The National Strategy and Action Plan for Biodiversity Conservation aims to achieve the following:

- Ensuring maintenance of natural balances, protection of ecosystems against degradation and conservation of living biota.
- Development of Egyptian scientific and technological capabilities in the fields of biodiversity conservation and development of natural resources, and development of institutional and managerial capacities
- Mobilizing national capacities and resources to conserve biodiversity with its ecological, taxonomical and genetic elements; to ensure the sustainability and rational use of these elements.
- Setting programs of action to ensure the positive participation of public, as individuals and as organizations, in the implementation of biodiversity conservation programs, and the equitable shares of benefits.
- Establishment of legal instruments and economic and social incentives to support conservation and sustainable use of natural resources.
- National actions should complement regional and international actions in the fields of biodiversity conservation, exchange equitably available scientific and technological knowledge related to conservation of biodiversity resources including genetic resources.

5.3.2.4 ***The National Strategy on Wetlands***

The national wetland strategy has been ratified in 2004 with the following objectives:

- Conserve and wisely manage wetlands as integral elements of the National natural resources.
- Observe that management, rehabilitation or restoration of a wetland site is implemented with support from all stakeholders.
- Create and promote institutional arrangements required for effective implementation of planned actions.
- Ensure community recognition of wetlands as natural assets.
- Identify-on scientific basis- the wetlands ecological importance.
- Survey and inventory wetlands in Egypt.

5.3.2.5 ***National Oil Spill Contingency Plan***

The National Oil Spill Contingency Plan (NOSCP) was first prepared in 1986 by the petroleum sector. It was then updated by the Egyptian Environmental Affairs Agency (EEAA) in 1998. The NOSCP is the main national guiding principle for actions taken dealing with oil spill and pollution incidents. The EEAA is the principal agency in charge of implementing the NOSCP.

5.3.3 Law of Environment, No. 4/1994

Law 4/1994, the main legal environmental framework in Egypt, regulates development activities and sets actions to achieve environmental protection goals.

The following few subsections describe the main provisions that are relevant to the project. Subsections are divided into articles identifying EIA procedure, articles supporting biodiversity conservation, and articles protecting coastal areas.

5.3.3.1 *Articles identifying EIA procedure*

Articles 19-23 set out the national EIA procedure.

Article 19 requires that each juristic or natural person, whether private or public, to commit to submitting an Environmental Impact Assessment (EIA) concerning the establishment or the project to the competent administrative authority or the licensing authority before commencing with the implementation of the project. EIAs shall be prepared in accordance with the elements, designs, specifications, criteria and qualitative loads issued by the Egyptian Environmental Affairs Agency (EEAA) in agreement with the competent administrative authorities.

Article 20 obligates the competent administrative authorities or the licensing authority to send a copy of the environmental impact assessment (EIA) to the EEAA, to express its opinion and propose measures required to be taken in the field of preparations and systems in order to treat negative environmental effects. The said authorities shall verify the implementation of the EEAA's proposals. The EEAA is required to furnish the competent administrative authority or the licensing authority with its opinion on the assessment within a maximum of 30 days from receiving same, otherwise the assessment shall be deemed to have been accepted by the EEAA.

Article 21 obligates the competent administrative authority to notify the owner of the establishment of the result of the assessment by a registered letter with return receipt requested. The owner of the establishment may object to the result in writing within thirty days of notification before a committee to be formed by a decree of the Minister in charge of Environmental Affairs.

Article 22 obligates project proponents to keep an environmental register.

Article 23 requires that project renovations and extensions to be subject to the provisions of the above articles; i.e. are required to submit EIAs.

5.3.3.2 *Articles supporting biodiversity conservation*

Article 28 prohibits a number of acts with the aim to conserve biodiversity including:

- Hunting, killing, catching birds and wild animals or marine living organisms; as well as possessing, transporting, importing and exporting or offering to sell such birds and animals, either dead or alive, as a whole, in part or their

- derivatives, or practicing activities that tend to destroy their natural habitats or properties or damage their nests, eggs or their offspring.
- Cutting or damaging plants as well as , possessing, transporting, importing and exporting, or offering them to sell as a whole, in part or their derivatives and products thereof, practicing any activities that tend to destroy their natural habitats or change their natural properties or habitats.
 - Collecting, possessing, transporting, or offering to sell kinds of fauna and flora fossils or changing their features; as well as destroying their distinguished geological formations or environmental features or harming their aesthetic value in the Natural Protected Areas.
 - Trading in all endangered living organisms of fauna and flora species; their breeding or planting in sites other than their natural habitats without obtaining a license from Egyptian Environmental Affairs Agency (EEAA).
 - Article 23 of the Executive Regulations forbids causing harm to birds and animals, as well as possessing or selling them either dead or alive, as prescribed in Annex 4 (of Law 4/1994). The provisions of this article applies in all natural reserve areas and also in areas where animals and birds are threatened with extinction, and for which a decree by the Minister of Agriculture or by Governors has been issued in coordination with the EEAA.
 - Article 24 of the Executive Regulations specifies that it is forbidden to issue permits for the hunting of wild birds and animals prescribed in Annex 4 (of Law 4/1994) of the ER except for scientific research purposes or for overcoming the spread of an epidemic or for other purposes approved by the EEAA.

5.3.3.3 *Articles protecting coastal areas*

The project target area is located in the coastal zone strip, and accordingly articles regulating the coastal zone are applicable.

Law 9/2009 amended law 4/1994 introduces for the first time a definition for the coastal zone. **Item 39** defines the coastal zone as “the area extending from the coasts of Arab Republic of Egypt encompasses the territorial sea, exclusive economic zone and continental shelf, and extending landward to areas of active interactions with the marine environment for that not exceeding 30 km in the desert areas, unless major topographical features interrupt this stretch, while in Nile Delta would extend up and contour (+3 m)”.

The law also requests each of the coastal governorates to define their coastal zone according to its physical conditions and environmental resources, which should not in any case less be than “10 km” landward from shoreline.

Whereas **item 40** defines the integrated coastal zone management as “A method based on the participation of all relevant authorities to coordinate among each other to ensure the environment protection in coastal zones.

In addition, amendments of the Environmental Law No. 4 of 1994 by Law No. 9 of 2009 and its executive Regulations No. 1095 of 2011 requests to include integrated

coastal zone management protocol concepts through the addition of articles pertaining to the integrated management of coastal zones.

5.3.3.4 *Articles protecting the shoreline*

Article 73 regulates building setback distances. It states that “It is prohibited to construct any establishment within 200 meters of the Egyptian coast lines without the agreement of EEAA and the competent administrative authority. The executive regulations of this Law shall lay down the procedures and conditions to be followed in this connection”.

Article 74 states that “It is prohibited to take any measures that may affect the natural coast line or alter its configuration either inwards or outwards, without the agreement of EEAA and the competent authority. The executive regulations of this law shall regulate the procedures and conditions to be followed in this connection.

5.3.4 **Protected Areas Law No.102 of 1983**

Law 102 for natural protectorates issued in 1983 regulates the management of natural protected areas in Egypt for the protection of natural and cultural heritages. Within the project area, Wadi El Gemal Hamata national park is located that was declared in 2003.

5.3.5 **The Antiquities’ Protection Law No. 117 of 1983 Amended by Law No. 3 of 2010**

The law sets out the legal framework for the protection of the monuments and antiquities. It also points out the authority in charge of antiquities and its mandates.

The law contains four chapters: chapter one provides general regulations, chapter two presents the procedure of registration, preservation and discovery of antiquities, chapter three shows the penalties, and chapter four includes the final regulations.

Within the project area, there are a number of archaeological sites, of which those are well documented locate in Wadi El Gemal Hamata Protectorate. Therefore, this law and its executive regulations are applicable.

5.3.6 **Protection of the Nile River and Waterways from Pollution, Law No. 48/1982¹²**

Law No. 48/1982 has defined the waterways as spatial zone for application to include (Nile River, drains, lakes, ponds, ground water). In addition, Ministry of Water Resources and Irrigation is responsible to control the discharge of wastes and wastewater into the Nile and waterways and sets standards for the quality of these discharge effluents. The Law prohibits discharges to the Nile, canals, lakes, drains, and ground waters without a license issued by the Ministry.

¹² Please see subsection 5.4.6 for update.

5.3.7 Fishing, Aquaculture and Fish Farms, Law No. 124/1983

This law regulates fishing, aquatic organisms harvest and establishment of fish farms. Consequently and according to the law the official responsible governmental entity in charge for implementing this law is General Authority for Fish Resources Development "GAFRD" affiliated to Ministry of Agriculture and Land Reclamation. Article 15 of the Law dealing with the water pollution and fishing constraints clearly prohibits any actions that could pollute the water where it states "without prejudice, as required under any other law, it is not allowed to throw or discharge industrial waste and pesticides used in combating agricultural pests and similar toxic or radioactive materials in the Egyptian waters.

5.3.8 Local administration system, Law No. 43/1979

Egypt is divided into local administration units are (Governorates, Markaz, Cities, Districts, Villages) each of them working on provision and management of all public utilities within the framework of national policy. These exclude national facilities or special nature projects which establishment is by republican decree.

The governors are appointed by decree of the President of the Republic and represent the executive power to oversee the implementation of the national policy, provide services and utilities and ensure food security, and are responsible for raising agricultural and industrial productivity and have to take all procedures in these respects within the applicable laws and regulations

The Executive Council of Governorate, meeting on a monthly basis, is headed by the governor, and the membership of the secretary-general, aides of the governor, heads of Markaz, Cities and Districts, and the heads of public authorities. There are also executive councils at each Markaz, City and Village. These are the main vehicles to ensure coordinated actions at each of these administrative levels.

5.3.9 State property, Law 7 of 1991

Article 2 has established the Tourism Development authority (TDA) to undertake the responsibility of managing, exploiting and using lands allocated for tourism development. The articles of law No. 7 for the year 1991 focus mainly on assigning the development of desert areas outside the cities cordons (Tourism - Agriculture - Construction) to the aforementioned entities that own the technical base to take responsibility of planning, supervising, implementing, and monitoring development projects.

5.3.10 The Building Law 119 of 2008

This law aims at consolidating all the Egyptian planning and building laws into one comprehensive legislation. Article 3 establishes the Supreme Council for Planning and Urban Development which is tasked with several functions as listed under Article 3. The General Organization for Physical Planning (GOPP) is provided under Articles 5 and 6. In particular, GOPP is responsible for drawing the general policy for planning and sustainable urban development. This policy is then be used to prepare plans and programs of development at the national, regional and governorate levels. In addition, GOPP is tasked with the review, monitoring and execution of the general strategic plans for cities and

villages and their urban areas as well as assisting in the development of capabilities of local urban planning departments.

5.3.11 National Decrees

5.3.11.1 *Prime Ministerial Decree No. 1599/2006, regarding the protection of Egyptian seashores*

The seashores of the Arab Republic of Egypt at a distance of two hundred meters inwards from the shoreline are deemed vital areas of a special and specific nature in relation to the integrated management and protection and tourism development of seashores. The Egyptian General Shore Protection Authority shall, in coordination with EEAA, exert supervision over coastal areas.

5.3.11.2 *Prime Ministerial Decree 1777/2020, amending Wadi El Gemal-Hamata boundaries*

Prime Ministerial Decree No. 1777/2020 was issued to amend Wadi El Gemal-Hamata boundaries declared by Ministerial Decree No. 143/2003. It is understood that the new boundaries exclude some of the quarries at the south west area of Wadi El Gemal. However, the coastal area remains the same. In addition, the marine side has been expanded to include Samadai, dolphin house to the southeast of Masra Alam City.

5.3.11.3 *Tourism development regulations*

The Minister of tourism had issued the decree No. 80 of the year 1989 concerning standards, stipulations and the technical regulations for tourism development projects. The decree contains (8) articles which are considered the basis according to which the planning should be carried out when conceptualizing a detailed and comprehensive plan for any beach area.

5.4 Legal Gap Analysis

The following few subsections try to analyse the gaps in the environmental legal framework with the purpose to set applicable recommendations to inform the decision making, focusing mainly on impact assessment and biodiversity conservation.

5.4.1 The EIA System

Law 4/1994 sets out the EIA procedure, which involves the EEAA as the environmental regulator and the Competent Administrative Authorities as the licensing agencies. The EIA procedure provisions are specified in many articles throughout the law, particularly Articles 19-23. In 2009, the EEAA issued the EIA guidelines, which present much technical details on the EIA system and how it works.

The EIA system classifies the development projects into three categories relying on certain criteria including resource consumption, nature of the project and the change it may cause to the environment and its resources, nature of inputs and nature and

severity of aspects and pollution generated, and geographical extent of the project and its effects.

Accordingly, projects are classified into three categories: A, B and C, where C includes projects with the highest potential impacts. The criteria applied to the classification system do not include in the environmental sensitivity, however some geographic regions are classified as sensitive such as the Nile River and Coastal Areas. Accordingly, projects located in sensitive environmental areas are considered special cases where their classification would have a higher category. Nevertheless, there is no definition of environmental sensitivity in the law, nor there is criteria by which sensitivity could be identified.

The licensing procedure for coastal projects focuses on the protection of the shoreline, and the marine environment. The procedure involves Licensing Supreme Committee (LSC)¹³, which is considered a ministerial committee chaired by SPA, and represented a number of governmental authorities including EEAA, TDA and coastal governorates. The LSC reflects the duality of responsibilities between governmental agencies, EEAA and Shoreline Protection Authority (SPA).

An Important issue in this process is the confusion related to the sequence of decisions, as the representative of the EEAA is a member of the committee, while EEAA will not approve the submitted EIA unless the LSC expresses the primary approval on the project.

Bringing relevant parties in a single committee for collective decision making is a good approach to streamline the procedures. However, the confusion still exists as more than one document is required from the project proponent, an EIA and a shore line study, submitted to different entities, while the decision is in fact taken by a committee in which both are represented.

Moreover, the exceptions for special projects in the setback area permitted by the law are not adequately specified through transparent policies. The case is again a trial to resolve conflicts, and legitimate interests of different parties, through establishing a committee in which conflicts should be resolved. As is usually the case, the lack of policy guiding the decisions leads to the centralization of decisions at the highest possible level. It is expected that this is the process through which the level of the LSC has been raised to ministerial level.

5.4.2 The SEA in the Legal Context

The existing legal environmental framework does not require to undertake SEA for a PPP. However, a number of SEA studies has been carried out for specific national plans including for instance the ICZM Plan for Matrouh-Salum, and Renewable Energy Projects in the East Nile Area. In fact, the need for the SEA was requested by donor agencies supporting the preparation of these plans as requested by their own regulations. The SEA approach was proven successful in looking at environmental and social impacts that cannot be captured by a project EIA scale.

¹³ Please refer to subsection 5.4.6 for updates.

Accordingly, within the existing legal framework, planning authorities are not obligated to undertake SEA for PPPs. The TDA, however, applies a similar approach which is called integrated EIA (IEIA). The IEIA is applied to selected tourist centers, which entail a number of projects. The IEIA considers the infrastructure of a tourist center including the roads, utilities and amenities, and takes their cumulative impacts into account. The IEIA approach, however, still is not capable of considering issues that are investigated under SEA approach such as interaction with other development plans. The IEIA is generally undertaken after planning, which does not contribute to improving the plans. However, Environics has carried out the IEIA of Sahl Hasheesh International Resorts Community, which was conducted during the master planning process. The IEIA has resulted in significant reduction of the master plan's environmental footprints and impacts. The practice, though, relies on the willingness of investors to minimise their projects' environmental effects.

Therefore, there is a need to establish the SEA context into the planning process. This can be achieved on the following levels:

- Enhancing the **political willingness** to adopt SEA through an environmental policy that supports the SEA.
- **Legalizing** the SEA through a law amendment to include a new mandate of the EEAA (Article 5 of the law 4/1994 amended by the law 9/2009) including the revision of national policies, plans and programs that likely would have environmental consequences.
- **Institutionalize** of the SEA where the EEAA and MoE play the main roles in revision of PPPs. In addition, capacity building programs on SEA for EEAA, and planning authorities staff to undertake/review SEA studies are encouraged and required.
- **Introducing** the SEA context in the planning frameworks. The normal planning process entails establishing baseline, and identifying problems, where SEA can be introduced and improve the planning process.
- **Raise** the public awareness on the SEA and encourage public participation during planning.

Note:

The plans that may have potential impacts on the environment and accordingly trigger the SEA include according to the SEA EU Directive No. 2001/42/EC include agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town and country planning or land use.

5.4.3 Setback

Setback is defined in Law 4/1994 by 200m from the highest high water mark. The law agrees with law12/1984¹⁴ of shoreline protection. However, the later emphasizes on the Mediterranean only, not the Red Sea. In Egypt, shores are protected under Article 45 of 2014 constitution, where the government is committed to protecting seas and beaches, and shall prohibit any action that may pollute or use them in a manner that contradicting with their nature.

¹⁴ Please refer to subsection 5.4.6 for updates.

The setback is a state property and a public domain, which may not be sold. There are a number of court cases, which distinguish the nature of these lands for public uses. Most of these cases demonstrate that these land are public domain and should not be privately allocated.

5.4.4 Biodiversity Conservation

Article 28 of Law 4/1994 amended by Law 9/2009 is the main Article addressing biodiversity conservation. It prohibits a number of acts in order to conserve biodiversity. In addition, Article 84 sets the legal penalties of violating the previous article (28). Nevertheless, Law 4/1994 amended by Law 9/2009 does not set any other concepts regarding conservation of biodiversity, nor the need to integrate biodiversity into development policies and plans.

Furthermore, the law and its regulations do not include the integration of local communities in biodiversity conservation, particularly law enforcement efforts to reduce illegal hunting.

5.4.5 Coastal Zone

The protection and sustainable use of the coastal zone is enforced by the Egyptian regulatory framework, which refers to the coastal zone and the ICZM, and has clarified the concept and coordination requirements in the amendments of the Environmental law (Law 9/2009). It also specified the agency responsible for such coordination as the EEAA. However, the means and mechanisms for this coordination are left to practice rather than specified by regulations.

Laws referring to the coastal zone focus on the performance of specific projects, whether individual ones or related to land subdivisions. They impose specific studies and require the preparation of EIAs. They, however, do not impose the same level of scrutiny and verification on the higher level of planning and policies. Accordingly, the issue of planning for sustainability, including the rational allocation of land uses taking into account the specific nature of the coastal zone, is not regulated. This, together with the allocation of land areas on the coast for multiple agencies to manage, has created a situation where an over-arching planning framework responsive to the needs and constraints of the coastal zone becomes more critical.

The coordination mandate of EEAA and the longer expertise of SPA have created a situation where the two parties have been allocated a joint responsibility for the management of the shoreline and the setback area. This constrains the flow of the licensing procedures.

The complex and dynamic nature of the coastal zones require good governance and integration on the vertical and horizontal levels. Though the existing legal framework mandates the EEAA to prepare ICZM plans for both the Mediterranean and Red Sea, such plans have never been fully prepared or implemented. In the

Mediterranean, there has been a number of projects endeavouring to put ICZM plans. On the other hand, in the Red Sea there was a trial in 1998 undertaken by a GEF project, but the plan has never been enacted.

5.4.6 Update to the Gap Analysis

This update is not addressed in the scoping report, which was completed in May 2021. In October 2021, a new law was issued, Law of Water Resources, No. 147 of 2021. The new Law replaces the Law No. 12 of 1984 on the Irrigation and Drainage. The new Law also rules all other laws that violate its provisions. The executive regulations of the new Law have not been issued yet, which are anticipated to be issued prior to April 2022.

The important provisions of the Law relevant to the project entail the following:

Coastal Area

- Article (86) establishes a supreme committee, which role includes reviewing submitted applications for coastal projects involving activities in the setback zone. The committee representatives include concerned authorities, at least high ranking occupants. The Prime Minister will issue a decree including the composition of the committee and its system of work and defining its terms of reference. In addition, the committee shall submit its recommendations to the minister or Water Resources and Irrigation for endorsement and approval. Furthermore, the minister's approval of the committee's recommendations is considered binding to other administrative bodies. The executive regulations shall organize the procedures and requirements to be followed.
- Article (87) It is prohibited to set up any work on the state's maritime shoreline for 200 meters from the shoreline into the land unless approved by the Ministry (Ministry of Water Resources and Irrigation).
- Article (88) The ministry (Ministry of Water Resources and Irrigation) in coordination with the Ministry of Environment, shall set up the final prohibition line in light of undertaken studies. The line shall not be overtaken by any facilities or works. Article 87 of this law shall continue to be in force in areas where the prohibition line has not been specified by the ministry (Ministry of Water Resources and Irrigation) and the Ministry of Environment and notifying all concerned authorities to comply with.
- Article (89) Without prejudice to the provisions of the Environmental Law promulgated by Law No. 4 of 1994, if it appears to the competent engineer that there are acts in violation of the previous articles of this law, he has the right to take the necessary legal measures to stop the work and remove through the immediate administrative procedure, return the thing to its original condition, at the expense of the violator, and collect the value of costs by administrative means.
- Article (90) It is not allowed to construct special establishments or establishments for the public benefit within the prohibition area referred to in Articles (87 and 88) of this law, except in necessary cases, provided that the approval of the Ministry and the Ministry of Environment is obtained in advance, after the Higher Committee decision is endorsed by the Minister,

where it shall include defining the necessary protection work based on specialized studies from a consultative body approved by the Ministry without prejudice to the provisions of the Environmental Law promulgated by Law No. 4 of 1994. Protection works shall be carried out under the supervision of the Ministry, provided that the concerned party bears the costs. Studies, supervision and implementation of these works, and the executive regulations organize the procedures and conditions to be followed in this regard.

- Article (91) It is prohibited to carry out any action that affects the nature of the beach or alters its path by entering into the sea water or retreat from it, except after the approval of the Ministry and upon the recommendation of the Higher Committee. The executive regulations shall organize the procedures and conditions to be followed in this regard.

Floodways

- Article (93): It is prohibited to carry out any action that might affect the floodways and protection facilities except in cases of necessity as assessed by the Ministry, and after obtaining a license from it in accordance with the terms and conditions set out by the executive regulations.
- Article (94): Companies, individuals, entities and owners of tourist establishments or any establishments or other activities are obligated to carry out their own protection works, which are necessary for protection from flash flood and torrential rain risks at their expense, after obtaining the necessary licenses from the Ministry in accordance with the terms and conditions set by the executive regulations.
- Article (95): It is not permissible for any individual or entity, whether governmental or non-governmental, or any natural or legal person or natural establishment to construct any facility or work to seize rainwater in natural Wadis, which would drain or divert rainwater and streams from its natural path, except with a license from the Ministry, in accordance with the rules and conditions set out by the executive regulations.

5.5 Proposal to Improve the Legal Framework

There might be a need to revise and amend the legal framework (Law 4/1994 amended by Law 9/2009, specifically to address the following:

5.5.1 General

- Add new definitions such as environmental sensitivity, and set the proper criteria to assess such sensitivity.
- Integrate biodiversity into development plans.

5.5.2 Coastal Development and Management

- Simplify the licensing and permit procedures of coastal projects. This requires a faster, clear, and transparent mechanism. In addition, exceptions should also be stated by the law.

Note:

The new law of Water Resources described above may have a simpler instrument, where it is understood that the newly established Higher Committee is represented by high level positions from relevant authorities. The previous ministerial level higher committee is no longer exist according to the Law; however, the recommendations of the newly established Higher Committee shall be endorsed by the Minister of Water Resources and Irrigation. The endorsed recommendations obligate to all concerned authority. The new instrument may save time that would be consumed in the previous instrument.

- In the project area, the preparation of an ICZM plan for the long run sustainability will benefit both development and protection of the coastal and marine environments. The plan must be supervised by the EEAA, as the lead authority for ICZM, and involve all stakeholders including governmental authorities (central and local), local community, academic and research institutions, the private sector, as well as civil society. Lessons learnt from other Egyptian ICZM experiences must be realized and understood to avoid repeating the same mistakes.
- Most importantly, the ICZM plan must be complemented by an implementation strategy, and must be endorsed by the Ministry of Environment and Ministry of Finance. The implementation strategy must be practical and rely on good and simple governance allowing an easy decision making process. The strategy also should include an approved budget for implementation, and entail a monitoring and evaluation mechanism.

5.5.3 EIA System

It is recommended that during upcoming update the law of environment the following is considered:

- Identify the EEAA as the authority in charge of ensuring that the EIA approval requirements are implemented as proposed. In addition, the EEAA may be given the rule to issue environmental operational permits to be able to monitor projects during the operation phases.
- Add a definition for environmental sensitivity, which would allow proper application of the EIA system. Simple sensitivity criteria could also be provided in the law and detailed in the executive regulations, which must be consulted and agreed among stakeholders including EEAA and governmental authorities, consultants, practitioners, and academia.

5.5.4 Biodiversity Conservation

The exiting legal framework may be amended to address the following gaps:

- Integrating biodiversity conservation into urban and economic development polices and plans. This could be easily associated with a proper high level assessment tool of such policies and plans (such as SEA).
- Coordinating efforts among relevant administrative authorities to reduce degradation of biodiversity, and providing an institutional framework and mechanism for such coordination.

- Integrating of local communities into biodiversity conservation efforts through appropriate instruments.

6. Assessment of Existing Tourism Development Plans

This section outlines the tourism development plans in the project area, and provides a summary assessment of its sustainability. The section will also highlight potential policy mitigation as well as monitoring measures.

6.1 Business as Usual Scenario

The BaU scenario is a systematic approach describing a system and its existing conditions, and examining its evolution over time and space. The BaU analysis identifies the consequences of continuing current trends and changes in the system as a result of continuation of the BaU scenario.

The BaU scenario assumes that current land use, sectoral plans, governmental policies, and economic activities trends that affect the area development continue as planned during the assessment horizon.

In order to assess the sustainability of the tourism plans, the output of the analysis of the BaU scenario tries to quantify changes occur in the local natural and socioeconomic environments at the project area to predict the potential impacts of the proposed plans.

6.2 Outline Results

Quantifying the Consequence of the BaU Scenario was a challenging task because of the lack of local updated data, shortage of available budget and time to acquire specific baseline information. Therefore, a mix of methodologies has been employed to enable rational assessment. The assessment has relies on two major sets of criteria. The first has considered the projected growth in land development, and the required utility and infrastructure. To benchmark the plan needs, required utility and infrastructure has been compared with existing national or local capacity. The second set of criteria has involved the key-issue trends in the project area (define earlier during the scoping phase of the SEA), and the anticipated broad effects of the plans.

6.2.1 Growth per cent of land development

Change in area % has been estimated based on the planned area growth. The base year is assumed as the period 2018-2020. The change in area% in the period 2020-2026 was estimated by 85.9%, while that for the period 2026-2030 was 1383.1%. The following Figure 14 shows planned growth in land development.

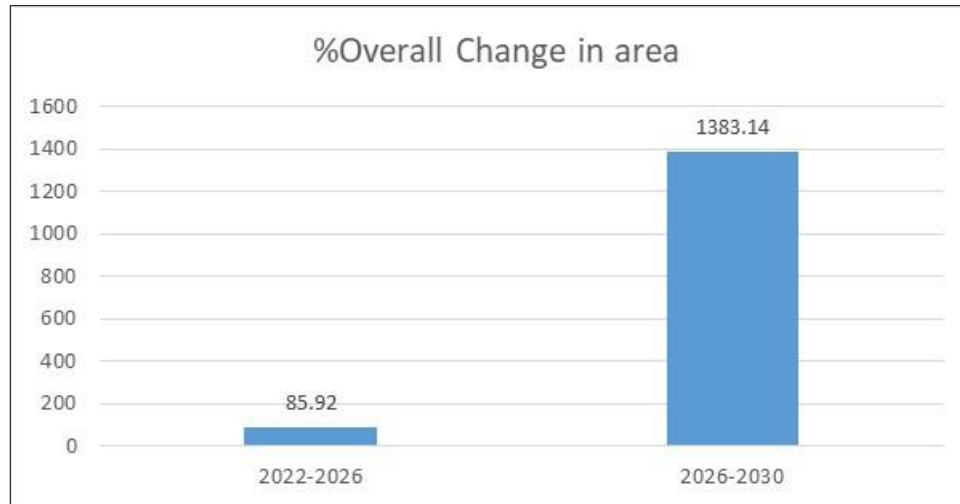


Figure 14: Percent Change in Planned Tourism Land Area

The projected number of rooms are shown in Figure 15 below, where the total planned number of new rooms during the planning horizon 2030 is 433,037 rooms.

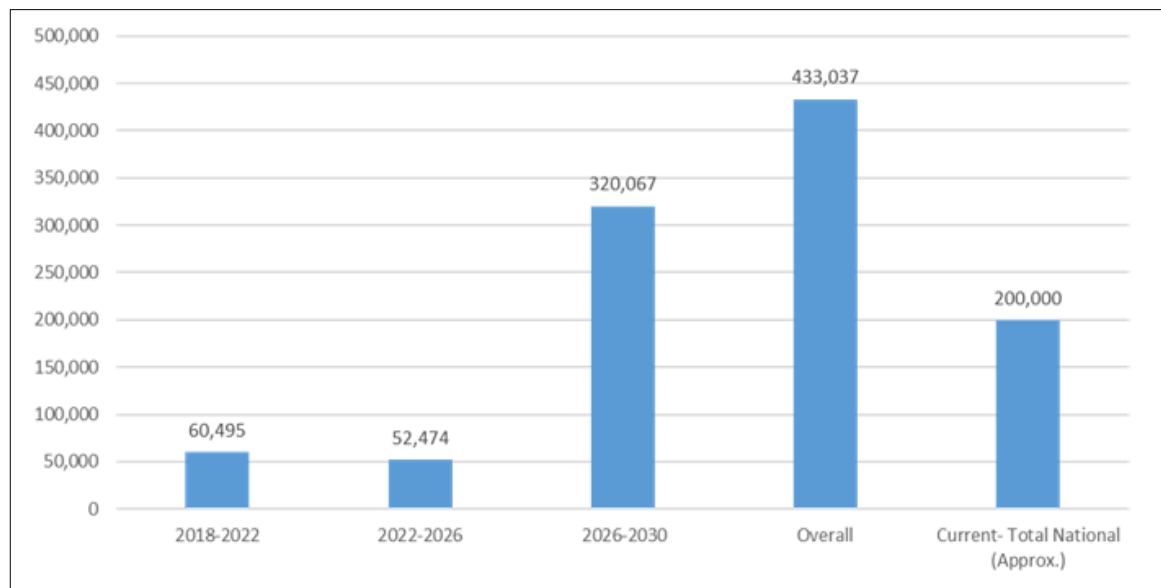


Figure 15: Growth of No. of rooms compared to current total

Existing hotel rooms are 200,000 rooms, covering all of Egypt, which have been developed in at least 3 decades. The proposed number of rooms in the project area only is more than the double of tourist hotel capacity developed all over Egypt in more than thirty years. During 2026-2030 period the number of proposed rooms are more than 150% of the currently existing number of hotel rooms in Egypt.

6.2.2 Estimated number of annual tourists

The proposed tourism plans will bring to the area about million 158 tourist night by 2030, or 26 million tourists annually, estimated based on 50% occupancy of the

targeted capacity, and an average stay of 6.1 night. The following Figure 16 presents the estimated number of visitors during the three planning periods. To put into context, Egypt received in 2018 about 11,350,000 tourists.

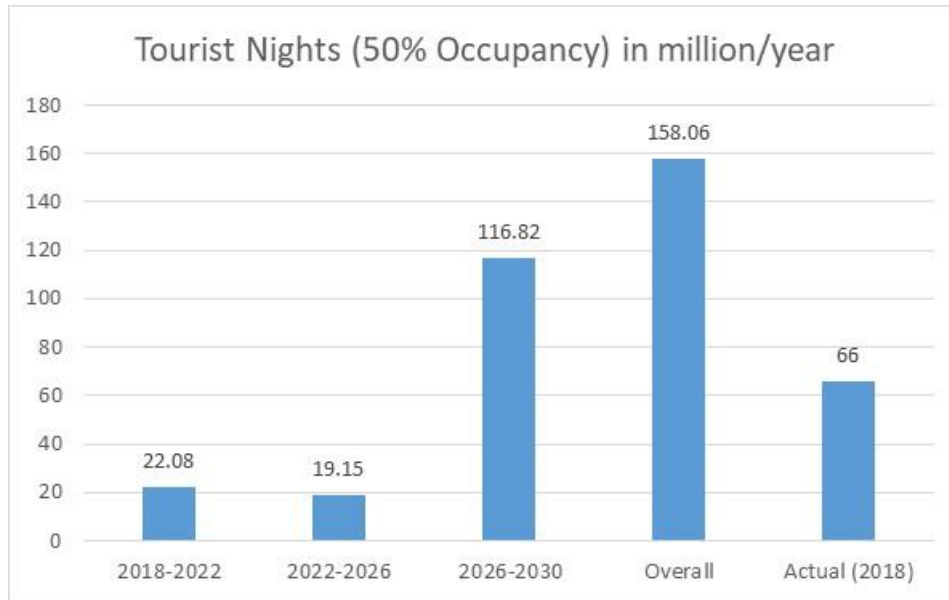


Figure 16: Estimated tourist nights compared to actual (2018)

6.2.3 Utility and infrastructure demands

6.1.1.1 Power demand

The following Figure 17 shows the power demand, compared with the current national capacity.

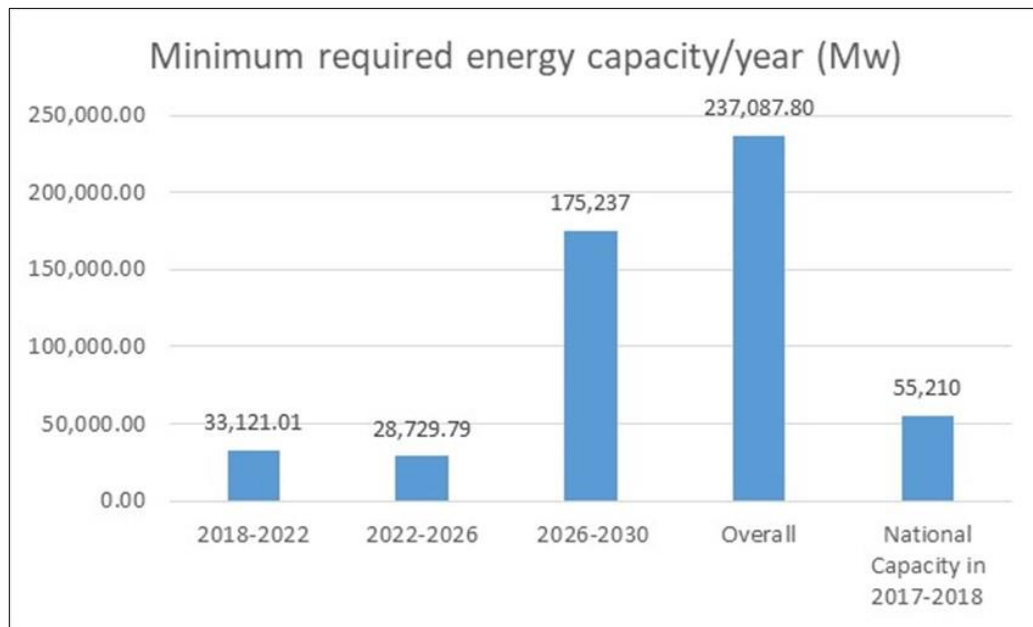


Figure 17: Estimated minimum required energy compared to national capacity (2017-2018)

The overall required total power demand in the project area until 2030 is more than 4 folds the exiting national power generation capacity.

6.1.1.2 Water demand

The following Figure 18 shows the minimum required water per year.

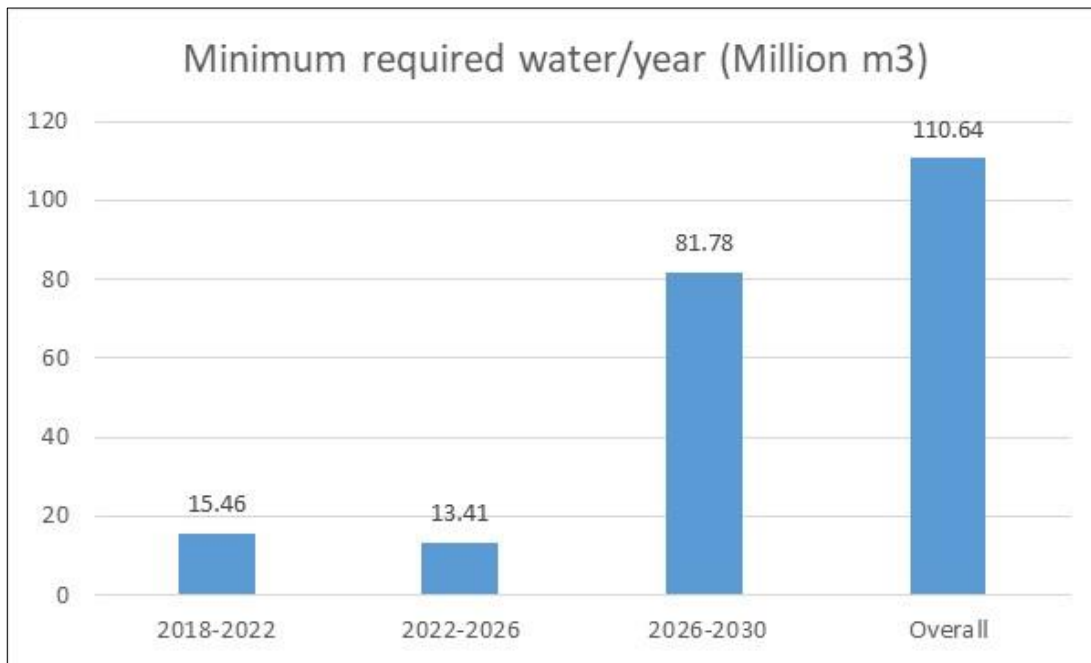


Figure 18: Estimated minimum required water

The Egyptian government set up a plan to build 47 mega desalinations facilities in a number of governorates including the Red Sea. The five-year plan aims to produce 2.44 million m³ per day by year 2025. The overall required water is equivalent to 12% of the governmental plan.

6.1.1.3 Wastewater management

The following Figure 19 presents the minimum required wastewater management capacity for the Tourism plans.

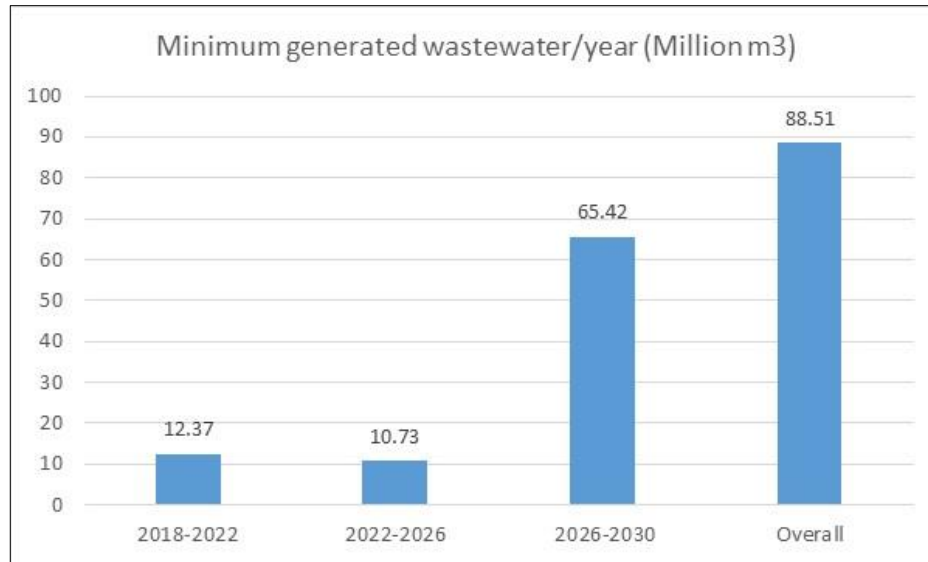


Figure 19: Estimated minimum generated wastewater

Egypt currently has 146 wastewater treatment plants, with a total daily capacity of 5 million cubic meter. The overall required wastewater treatment facilities are equivalent to approximately 5% of the existing capacity.

6.1.1.4 Beach Demand and Carrying Capacity

The following Figure 20 shows the estimated required beaches for the tourism plans.

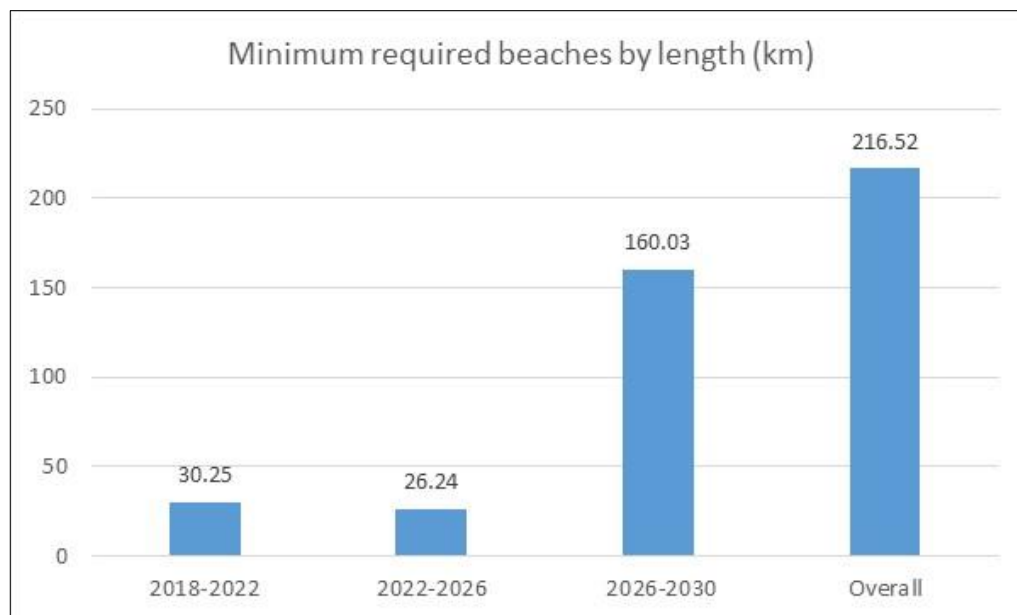


Figure 20: Estimated minimum required beaches

The overall required beaches for the tourism plans is 216 km long. The existing overall length of the coastal strip comprising the tourism sector 1 is about 180 km. Therefore, the existing beaches are not anticipated to provide the required demand.

6.1.1.5 Waste Generation and Management

The Figure 21 below shows average estimated solid waste generation from the tourism plans.

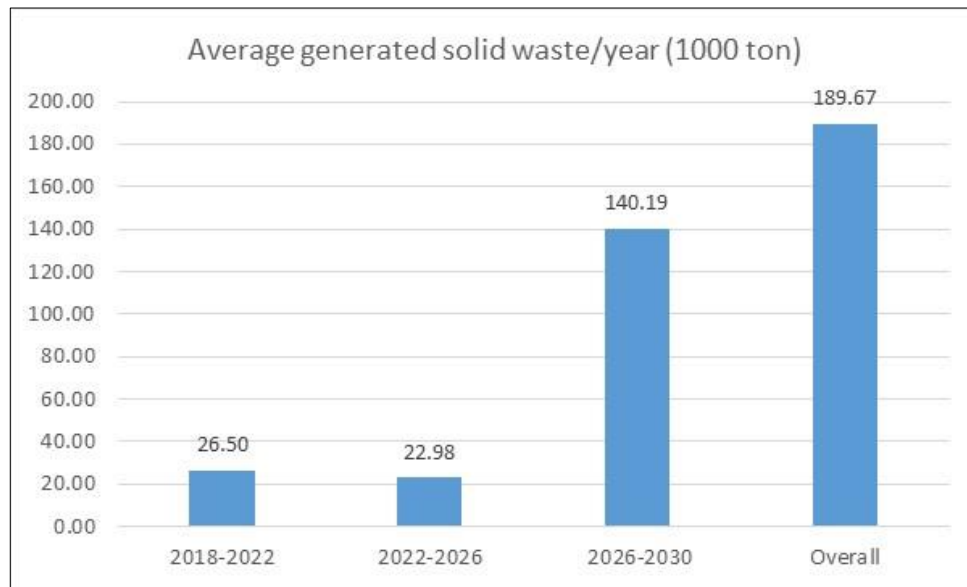


Figure 21: Estimated average generated solid waste

The overall generated waste from the tourism plans is estimated at approximately 189,670 ton/year, or more than 500 ton/day. The anticipated waste generation from tourism industry would require almost triple of the existing management facility.

6.1.1.6 Required Airports

The following Figure 22 shows anticipated tourist arrivals, current annual capacity of Marsa Alam International Airport, as well as the projected capacity of Marsa Alam International Airport in 2030.

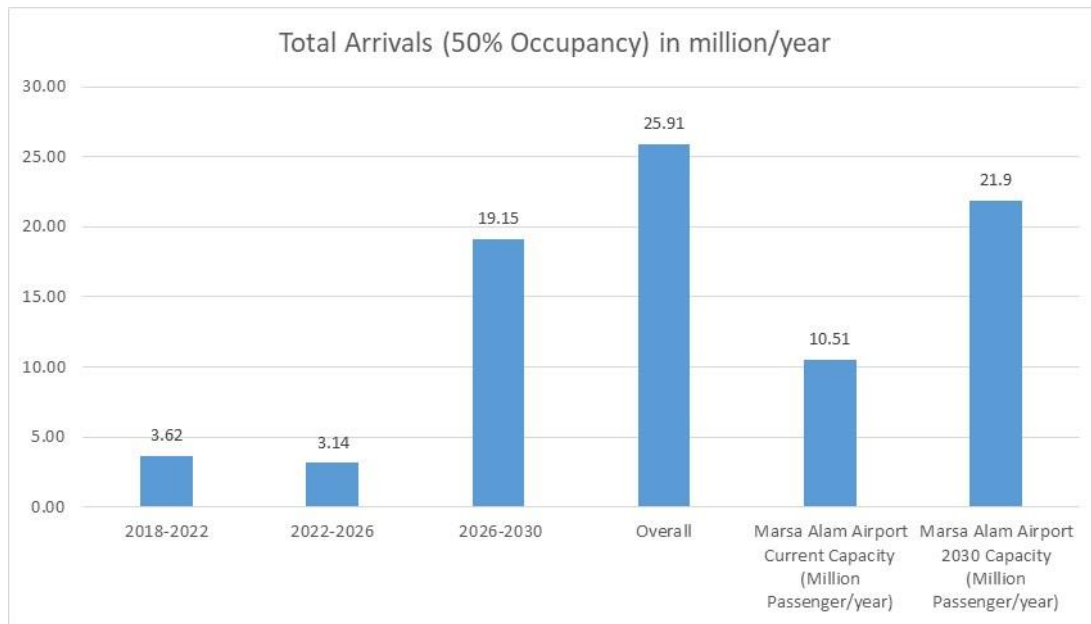


Figure 22: Estimated total arrival, existing and planned capacity of Marsa Alam International Airport

The estimated arrivals from the tourism plans would require approximately 3 folds of the existing Red Sea airport.

6.2.4 Key issues and trends

6.2.4.1 Ecological issues

Terrestrial Habitats

Habitat can be quantitatively or qualitatively destroyed or degraded. Quantitative loss involves a reduction in the amount of habitat area, while qualitative changes involve a change or degradation in the structure, function, or composition of the habitat.

The coast at Marsa Um El Abbas supports turtle nesting. Therefore if developed, damage to the fragile turtle nesting habitats along the shoreline is anticipated.

Hamata Archipelago Islands host mangroves, turtles and birds nesting sites. Threats on those habitats include increase in tourism activities and resorts.

The Islands of Wadi El Gemal and Qualaan are important nesting sites for some birds. The presence of tourists causes habitat loss and/or degradation if not properly managed.

Om El Sheikh Island hosts multiple nests of turtles and birds, where the presence of humans continuously disturbs these habitats.

Ras Hankorab, and Ras Baghdadi have nesting sites and tracks of sea turtles, where threats from tourist activities may be present.

Sharm El Luli, one of the few remaining undeveloped sharms, has mangroves, salt marshes and coral reefs. Threats on those mangroves may potentially arise from tourism visits and boats. Wadi Lahmi also has a mangrove stand and an ecotourism camp very close to the stand.

Habitat Modification

Land cover change detection has been undertaken using historical images. Landsat 8 images for the years 2014 and 2021 during the same month of January are shown in the following maps. The spatial accuracy of these images is 30 meters making it hard for scattered buildings to be detected. Therefore, Landcover maps were illustrated with the aim to detect changes on a generic/zoomed out level. The satellite image was classified into six main classes as follows:

- Developed areas including buildings, roads, and physical structures such as dams;
- Green area including natural shrubs and man-made landscape;
- Bare rock area;
- Bare soil (stony);
- Soil area or loose soil; and
- Surface water (Sea).

In general, no major changes were observed between 2014 and 2021 in Bare Rock, Bare Soil Stony, and Soil classes. Most of the changes happened in Qusier-Marsa Alam Sector in the developed and green areas as follows:

- Developed zones occupied approximately 29.8 km² in 2014 and increased to 33.8 km² in 2021 with a growth rate (+13.4%). Most of the development comprises new roads, new resorts and expansions of cities such as Qusier, or limited expansions of current resorts such as Port Ghalib area. Figure 24 shows noteworthy developments along the coast of the Qusier-Marsa Alam Sector and limited developments in the Marsa Alam-Wadi El Gemal Sector.
- Green areas occupied approximately 17 km² in 2014 and increased to 17.3 km² in 2021 with a very limited rate of increase (+0.3%). This change is concentrated in the landscape zones of developed areas. Figure 24 shows the occurrence of green areas in Qusier city at newly developed areas, as well as the occurrence of small vegetated zones in Marsa Alam-Wadi El Gemal Sector specifically at wadi areas which could have resulted by the probability of rain during wintertime.

The following Figure 23 show habitat maps produced from 2014 and 2021 satellite images, compared with the TDA plans.

To conclude, sector 1 has had more developed areas during the period 2014-2021, whereas sector 2 had very limited newly developed zones. Both sectors showed an increase in their green spaces. In sector 1, green spaces were surrounding newly developed zones and are assumed to be part of landscaping activities (modified habitats) whereas in sector 2 newly appearing green spaces in 2021 are present in

wadis at non occupied zones by humans and thus, are believed to be the result of rain (natural).

It was found that Sector 1 has had more developed areas during the period 2014-2021, whereas sector 2 had very limited newly developed zones. Both sectors showed an increase in their green spaces. In sector 1, green spaces were surrounding newly developed zones and are assumed to be part of landscaping activities (modified habitats) whereas in sector 2 newly appearing green spaces in 2021 are present in wadis at non occupied zones by humans and thus, are believed to be the result of rain (natural).

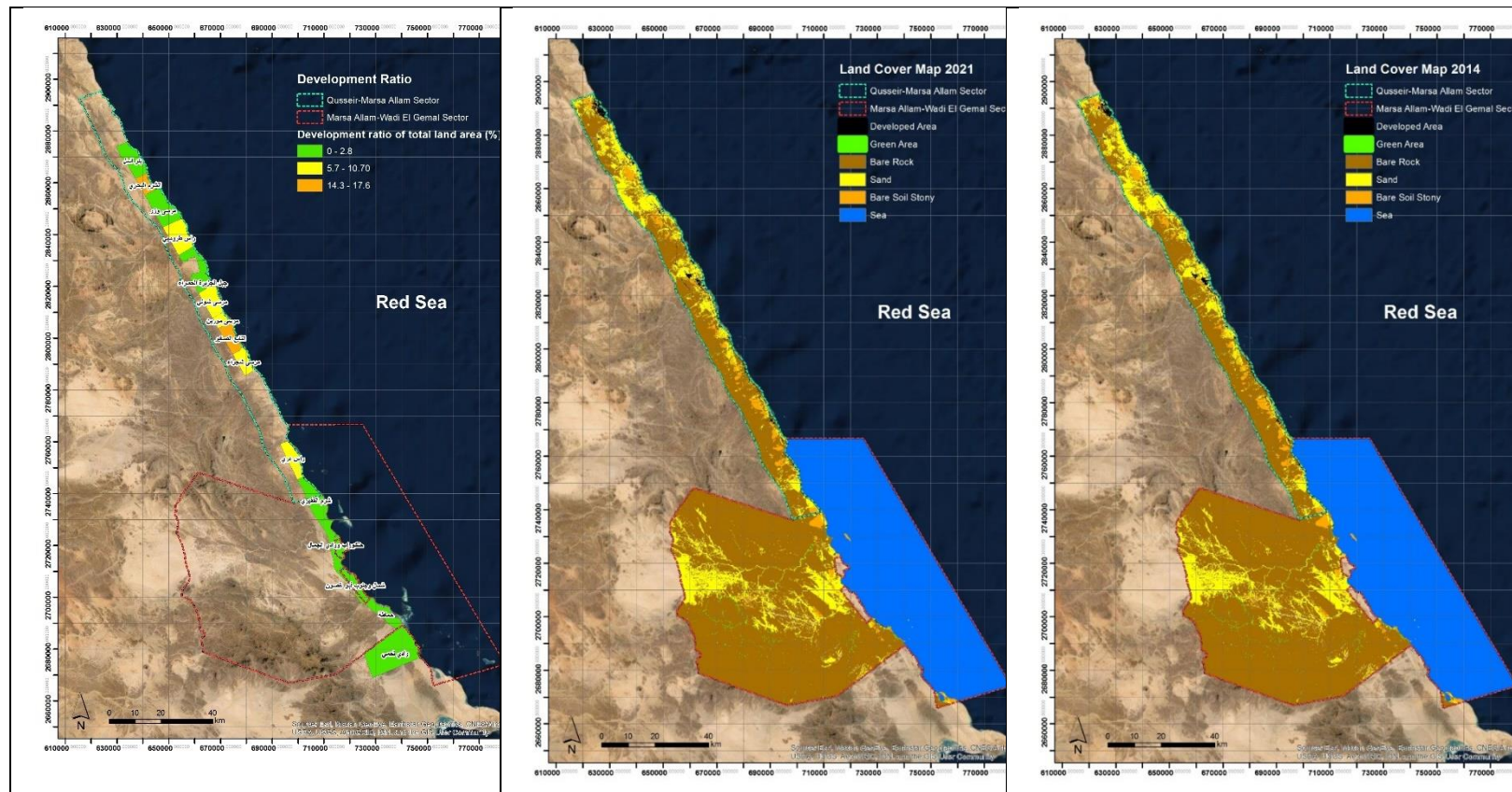


Figure 23: Habitat map for the study area for the two years; 2014 and 2021, compared with TDA plans

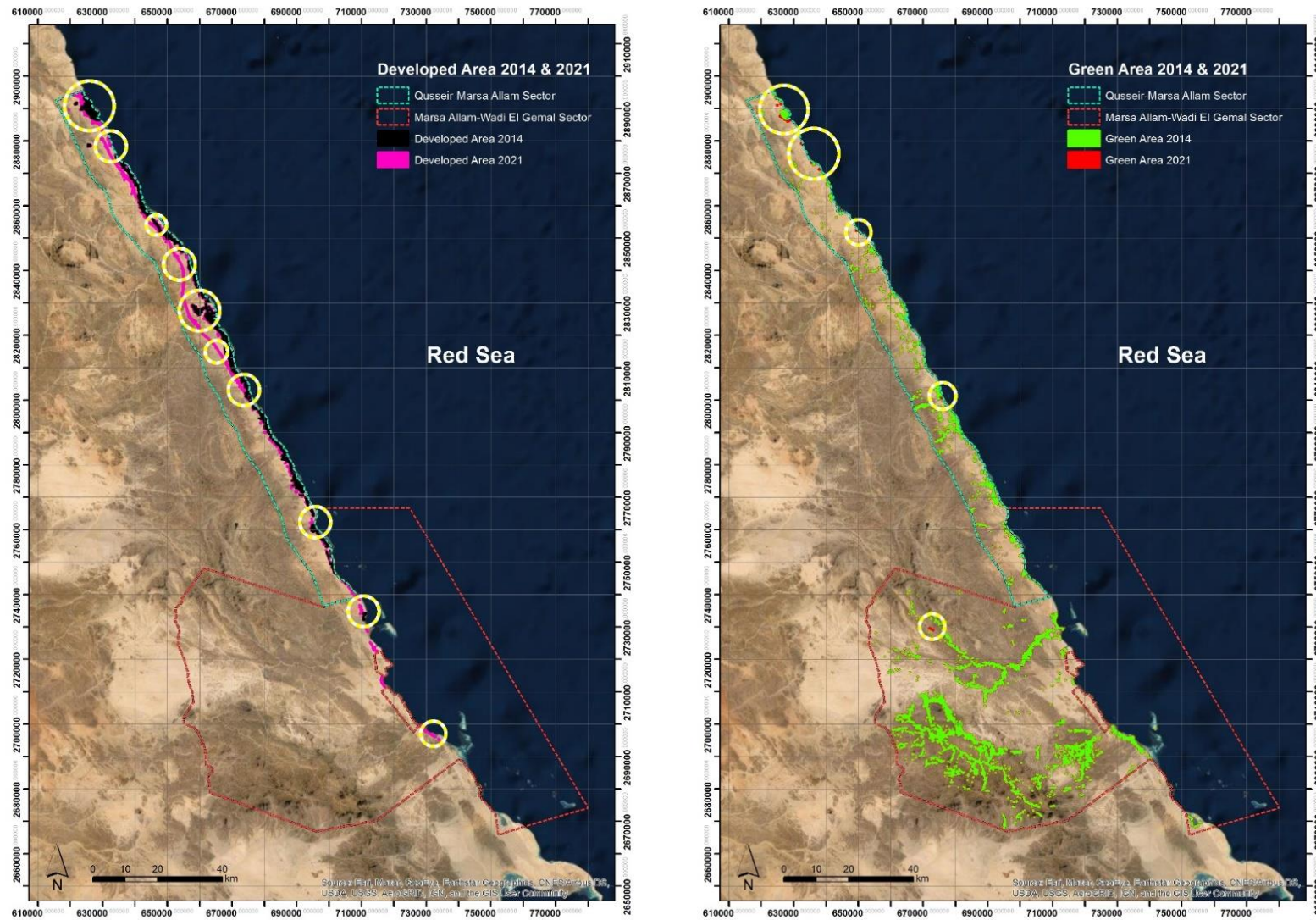


Figure 24: Habitat change including developed areas and green areas during the years of 2014 and 2021

Habitat Fragmentation

Habitat fragmentation may alter the distribution of populations, migration rates among populations, or the sizes of local populations. Additionally, the small habitat patches resulting from fragmentation often do not provide the food and cover resources for many species that attempt to use them. This can result in an increased risk of death by predation, if the animal has to venture beyond the cover of the patch to find new food resources, or starvation. The most severely affected animals by habitat fragmentation are those with large home ranges such as birds of prey and carnivores, as these species are expected to be entirely lost from small fragments.

Impacts on local wildlife

Air emissions, noise and vibrations and light emissions arising from resort facilities affect local wildlife, including species of conservation concern. Use of pesticides in landscaped areas indirectly affect non-targeted species.

Changes in Species Composition

Tourism resorts contribute to the expansion of opportunistic species such as birds, but also pest and alien species, as result of introduced vegetation, presence of water and solid waste and other human activities. The presence of introduced trees contribute to attracting alien fauna as they provide roosting and nesting opportunities to birds and other arboreal species. These modifications result in an increase in agro-biodiversity and commensal fauna, affecting native desert fauna.

Impacts on Ecosystem Services

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services include (i) provisioning, (ii) regulating, (iii) cultural and (iv) supporting services.

Plants in both sectors 1 and 2 have multiple ecological and economic importance including food, medical usage, fodder for animals, tools making characteristics, fuel source etc. Additionally many of them have ecological importance as well including acting as sand stabilizers, and offering shelter and shades for other organisms.

Many of those plants especially in sector 2 are used by locals, such as *Balanites* forests as medical usage. Unfortunately, *Balanites aegyptiaca* has multiple stressors; such as vehicles usage, tourist safaris and solid waste pollution.

Marine Biodiversity**Coral reef**

Most marine-based tourism relies on coral reef recreation. The percentage of divers and snorkelers varies; however, 85% of coral reef relative size benefits according to market based goods and services is driven from tourism.

Coral reef damage results from direct impact of divers and snorkelers, and indirect impacts caused by developing tourism facilities including landfill, dredging for artificial beaches, boat anchors and grounding, and sedimentation.

Globally, 36 percent of all reefs have been classified as threatened by overexploitation, 30

percent by coastal development, 22 percent by inland pollution and erosion, and 12 percent of marine Pollution [12].

There are a limited number of dive sites in the project area, including about 40-50 sites. CESAR 2003 points out that the percentage of divers and snorkelers varies from 30 to 100%. Dive operators in Marsa Alam points out that 20% represents a much conservative but fair figure.

The number of divers have been estimated based on the lowest assumption of 20% of total arrival. To estimate the total number of dives, a conservative figure of 1.5 dives/guest/day with an average stay of 6 days per diver has been applied. The following Table 8 shows the estimated number of divers and dives.

Table 8: Estimate Number of Divers and Dives

Estimates	Investment opportunity plan			Total
	2018-2022	2022-2026	2026-2030	
Total guests @50% Occupancy in million/year	3.62	3.14	19.15	25.91
No. of Divers @20% of Arrivals in million/year	0.724	0.628	3.83	5.128
No. of Dives @ 1.5 dives/day/guest for each arrival in million/year	8.83	7.66	46.73	47.42

Hawkins JP, Roberts CM (1997) suggests that a dive site can tolerate, to be a total of 6000 dives/site/year. In Hurghada while some dive sites experience more than 150,000 dive/year, the scientific and management community agrees that the carrying capacity of a dive site is roughly 20,000 dive/year.

The figures in the table above, though estimated based on very conservative assumptions, are high and extend beyond the carrying capacity of dive sites in the project area. These dive sites, assuming 50 dive sites, can support of up to one million dives a year (based on a carrying capacity of 20,000 dive//year/site). Otherwise, coral reef will undergo severe impacts, and could be degraded in a few years. The following Figure 25 shows the estimated number of dives as well as roughly estimated coral reef carrying capacity in the project area.

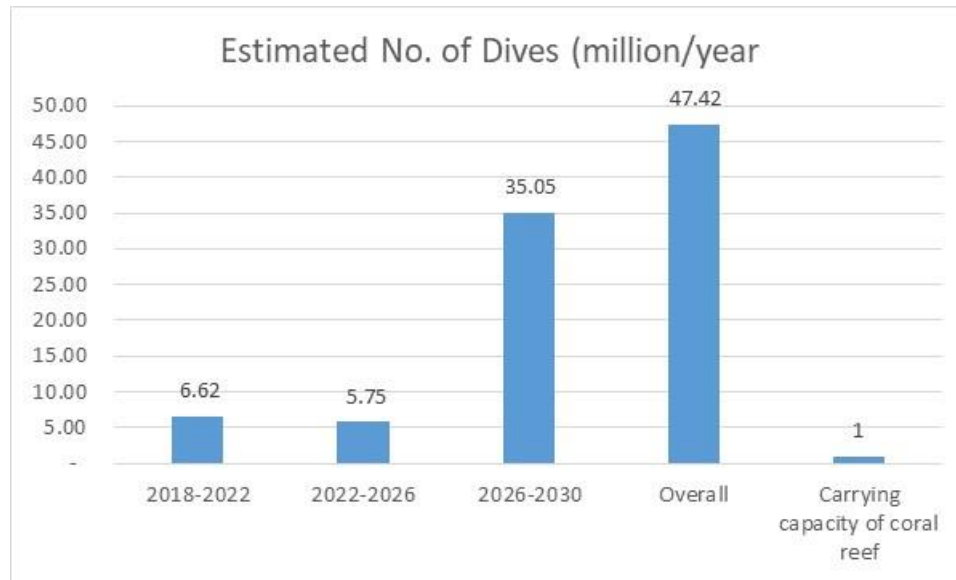


Figure 25: Estimated No. of dives compared to coral reef carrying capacity

Mangrove

Mangrove areas have been degraded along the Egyptian Red Sea coast due to coastal tourism development (Madkour 2015). The impacts on coastal mangrove may include oil pollution, sewage, municipal wastes, construction activities, dredging, sedimentation, touristic activities and watershed floods (Shaltout, and Al Banna 2005).

Several mangrove sites landward margins have been modified because of coastal tourist development. The deterioration of water quality in the mangroves due to the land-based garbage dumping is reported to reduce the nursery value of these populations. The rate of mangrove loss over the period 1990-2005 probably exceeds what could be replaced by any replanting program for many years to come (Shaltout, and Al Banna 2005).

Seagrass

Seagrass beds are vulnerable to change in water and sediment quality, which may result from coastal development pressures. Seagrass is very vulnerable to unplanned and unmanaged urban sprawl, industrial, tourism, and fishing activities, where they can be destroyed directly by dredging and landfilling (Madkour, 2015). Seagrass productivity is constrained by changes in water flow caused by coastal constructions, by excessive sediment in the water, and by the impacts of increased nutrients in the water. Impacts on seagrass beds affect the associated fauna, such as turtles, dugong, commercial fish and crustaceans and birds.

It was estimated that seagrass damaged in Hurghada is about to 19.6 Km² between 1987 and 2005 due to habitat clearance caused by landfill and dredging for coastal works (Madkour 2015).

Sharks

Shark diving tourism is a growing industry estimated to be worth more than \$25.5 million annually to Australia's regional economy. (Charlie Huveneers, et al 2017). While shark sighting is common in the project area, informal reports in the Red Sea point out that the economic value of a shark during its lifetime for diving is USD 300,000 (personal communication).

A study was undertaken from June-November 2008 (Shawky and Maddalena 2008) in the Southern Red Sea pointed out that the mean number of divers and the mean number of boats recorded at potential shark sighting sites are higher than other sites. However, in the last few years, it was realized that shark behaviour is changing in the Egyptian Red Sea with a number of recorded attacks. While some studies suggest that changes in the marine ecosystems due to human impacts may cause change in the shark behaviour, no specific studies have been conducted in the Red Sea yet. However, the Ministry of State for Environmental Affairs is currently undertaking a study to investigate behaviour of sharks and incidental attacks.

Dugong

Dugongs inhabit a number of shallow bays in the project area. Therefore, dugongs are affected by the different bay uses, from snorkeling, diving, fishing and boating. For instance in September 2020, a dead dugong was found on a beach south of Marsa Alam.

Thirty dugong sightings were recorded at the southern Egyptian Red Sea between December 2015 and October 2017 in 22 coastal area (Shawky, Ahmed, et al, 2019).

While the status of the Red Sea Dugong is partially known, conservation measures may not be properly applied especially outside marine protected areas. There is a need to identify, assess and evaluate the threats to dugong populations and develop appropriate management measures. This will also need to identify and map areas of important dugong habitat such as sea grass beds. Moreover, this will require establish education, awareness and information programs for the different users.

Fisheries Resources

While the project area currently hosts 105 fishing boats, more than 95% of these boats are operated by local community (Qusier and Ababda). These locals use artisanal fishing gears including hand lines and gull nets, cheap methods and reduce fishing effort. The Red Sea is not a fishing ground, where according to GORD annual fisheries statistics 2009 and other studies the contribution of the is about 4.4 % of the total national fish catch, respectively. Moreover, most of the Red Sea fishing occurs in the Gulf of Suez.

Currently recreational fishing is practiced by both tourists and the local population (Mehanna el at 2016). Recreational fishing usually involves the use of line fishing, and much rarely nets.

While commercial fish stock depletion in the project area may not be an issue, part of the catch is sold and consumed by tourist facilities in the Red Sea. For the larger Red Sea, depletion is rather related to catch efforts of commercial fishing fleets, overfishing, illegal fishing gears, and destruction of habitats such as mangroves. On the other hand, the number of boats involved in recreational fisheries has been growing very fast in the last few years. If this trend continues, the contribution of tourism to impact of fisheries will be more notable.

6.2.4.2 Physical Issues

Air Emissions

International travel is economically important and mostly associated with tourism. However international travel contributes to global warming, where global civil aviation emitted 815 Mt of CO₂ in 2016 (IEA, 2017).

To estimate the air emission from tourism, travel is divided into international and local travel according to the mode of transportation and related emission factors.

Travel Emission

The air emission of travel was estimated based on an emission factor of economic charter used by TUI GROUP and Thomas Cook Airlines. While estimated emissions that would result from international travel are 1.5, 1.3, and 7.9 million CO₂e Ton/year for the horizons 2022, 2026 and 2030, this may be a global policy concern to reduce the emissions and minimize its contribution to the climate change and global warming

Local travel

Local travel includes transfer from and to the airport, in addition to tourist excursions to the desert or local markets. A medium diesel car is assumed to undertake both the shuttle transfer as well as the local places and market visits.

Local travel has been estimated and is anticipated to generate 12850, 11147 and 76988 tons/ year for the 3 time horizons. The emission, however, is not comparable with the industrial sector emission according to available resources.

Note:

Estimation of air emission assumes that 100% of tourists are international. This is not the case, where there is a percent of local tourists, i.e. Egyptians. The was, however, difficult to estimate, because this percent varies from a tourist destination to the other, and from a season to the other.

Shoreline change

Tourism impacts on the shoreline change is evident in Hurghada and Safaga. For example, the construction of 14 hotels occupying Makadi Bay, North of Safag, have resulted in landscape destruction, landfills, shoreline change, dredging rocky tidal flat and brine water discharge as the main environmental impacts in that area (Madkour 2015).

Shoreline change detection for Hurghada from 1972 to 2011 shows landfilling of 7.56 Km² and dredging of 2.67 km², with a loss of 5.34 km² of the reef tracts. At the same period, the area has witnessed expansions in urban and road network by 16.47km² and 8.738km² respectively (Hesham El Asmar, et al, 2015).

Change of flood ways

Floods from the mountain areas of Red Sea and Sinai cause heavy damage to man-made features (EL Mostafa and Mohamed 2013). The area between Marsa Alam and Ras Banas was studied by M. Azab (2009). According to the study, 23 drainage basins with outlets to the Red Sea have been defined in the study area. These basins range in areas between small (11.52km²) and large (1476 km²). Wadi Ghadir and Wadi Radi have the highest values of relief and ruggedness number, which gives short time of concentration of runoff and accordingly they have very high probability of flash flooding.

Gohar (2016) defines tourism development within flood zones as one of the main issues of the tourism occurred along the Red Sea coast. Therefore, tourism development plans must take into account the natural floodways, and associated risks.

In the same context, according to national regulations, development located in floodways has to study the impact of that development on the natural ways of floods, and accordingly carry out the necessary hydrological studies to be endorsed by the Ministry of Water Resources and Irrigation, Groundwater Sector.

Change of floodways is an issue that does not only affect the environment, but it threatens the human life and property. It also affects the discharge of sediments to the sea, and accordingly makes beaches subject to erosion or accretion. It could also reduce the nutrient load which in turn affects marine life.

Change Water Quality

Coastal development may cause changes in the water quality due to dredging and landfill, and discharge from desalination plants, which increase the rate of sedimentation and affect the natural habitats, and may cause coral deaths. Boat operation near sensitive habitats may also change water quality and affect these habitats. The impact may vary on seagrass meadows including other limiting factors such as light, depth, and availability of natural nutrients.

Fahmy 2003 suggests that water quality in the Southern Red Sea is subject to an increasing human impact from recreational (swimming and diving), industrial (mainly phosphate shipping and industry) and fishing/harbor activities. However, the results of the study indicate that changes in water quality were not significant due to high oxygenated level in the water.

Available data denotes that water quality in the project area is still in a good natural state; however, the planned tourism plans will result in changing of water quality.

Deterioration of Soil Quality

Many factors may contribute to deterioration of soil quality including natural and manmade. Natural factors entail soil geology and weather; i.e. factors that control natural erosion. Manmade factors include clearance and grading of sites for development, soil replacement, artificial landscape, potential spills, use of chemicals (e.g. pesticides), mining and quarry, construction of roads, etc.

Beach soil is an important habitat and supports a variety of plants and animals including turtles (nesting) and crabs. Therefore, soil deterioration is anticipated to be an issue as a result of the proposed tourism development plans.

Freshwater Resource Scarcity

Freshwater resources in the project area is limited to groundwater, where Neogene aquifers are the only resource of concern. However, they are of economic importance only in specific areas including the Gulf of Suez, Qusier-Safaga, and Halayeb and Shalateen. A number of groundwater wells in the project area has been documented, such as Wadi Ghadir wells, which are used by local community, especially after rainfall and aquifer recharge and require attention.

Building on water demand for the tourism plans, it is anticipated that huge water quantity is required through desalination. Desalination plants will have impacts on marine resources and water quality.

Climate change and Sea Level Rise Impact on Coastal Tourism

Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011) states that in the Red Sea low-lying lands (0-+1 m) are prone to SLR.

Sharaan, et al (2020)¹⁵ investigated the impact of SLR on beach revenues in the Red Sea. Results show that the expected losses in revenue are 84,000, 220,000, and 546,000 USD/day period (representing 3%, 7%, and 18%) for 2030, 2050, and 2100, respectively, considering the lowest scenario representative concentration pathway (RCP2.6); for the worst case (RCP8.5 SLR), the expected losses are 142,000, 369,000, and 897,000 USD/day period (representing 5%, 12%, and 30%) for 2030, 2050, and 2100, respectively.

SLR will also impact natural habitats including the mangrove and coral reefs. Additionally, Marsall, et al 2009 point out that climate change has the potential to permanently alter the attraction and value of many tourism destinations and impact the tourism income streams and social benefits.

¹⁵ Sharaan, Mahmoud & Somphong, Chatuphorn & Udo, Keiko. (2020). Impact of SLR on Beach-Tourism Resort Revenue at Sahl Hasheesh and Makadi Bay, Red Sea, Egypt; A Hedonic Pricing Approach. *Journal of Marine Science and Engineering*. 8. 432. 10.3390/jmse8060432.

A few studies have been undertaken to characterize the climate change impacts on the Red Sea marine and coastal environment. Hereher (2015)¹⁶ studies Egyptian Red Sea coastal sensitivity to climate change. The study has developed a coastal sensitivity index (CSI) to assess the response of the Red Sea coast to climate change impacts, including sea level rise and global warming. Accordingly, 6 variables have been used, namely: coastal geomorphology, coastal slope, width of the coastal plain, shoreline exposure, fauna/flora and land use.

The study concludes that the Red Sea coast faces effects of climate change represented by sea level rise and increased seawater temperature and atmospheric CO₂ concentrations. Sea level rise will overwhelm coastal flats, estuaries and bays over which most of coastal cities, harbors and resort villages occur (Fig. 5). The most vulnerable location to the sea level rise is recorded for the bay extending between Ras Banas and Shalateen at the south. DEM data reveal that the slow rise in the sea level by 1 m will flood an area of 106 km², whereas any sudden rise of the water level by tsunami waves of 5 m height would inundate 724 km² of the coast. Biological resources, such as mangroves, which occur mainly at Safaga region are within the sensitive regions to sea level change as they are contingent to the intertidal zone. The raised terraces, which are mostly uninhabited are generally far from inundation by the slow sea level rise. However, they are not protected if any sudden tsunami waves occur.

On the other hand, the increased water temperature due to global warming will have a fatal impact on coral reef ecosystems losing algal symbiosis with coral organisms. The study reveals that the Hurghada–Marsa Alam coastal strip extending for 270 km is the most prone to changing seawater temperature, where coral reefs are prominent across the coast constituting the glorious marine scenery of the region.

The following Figure 26 presents a map of the Red Sea coast showing the different levels of coastal sensitivity to climate change.

¹⁶ Mohamed E. Hereher, 2015, Assessment of Egypt's Red Sea coastal sensitivity to climate change, *Environ Earth Sci*, 74:2831–2843

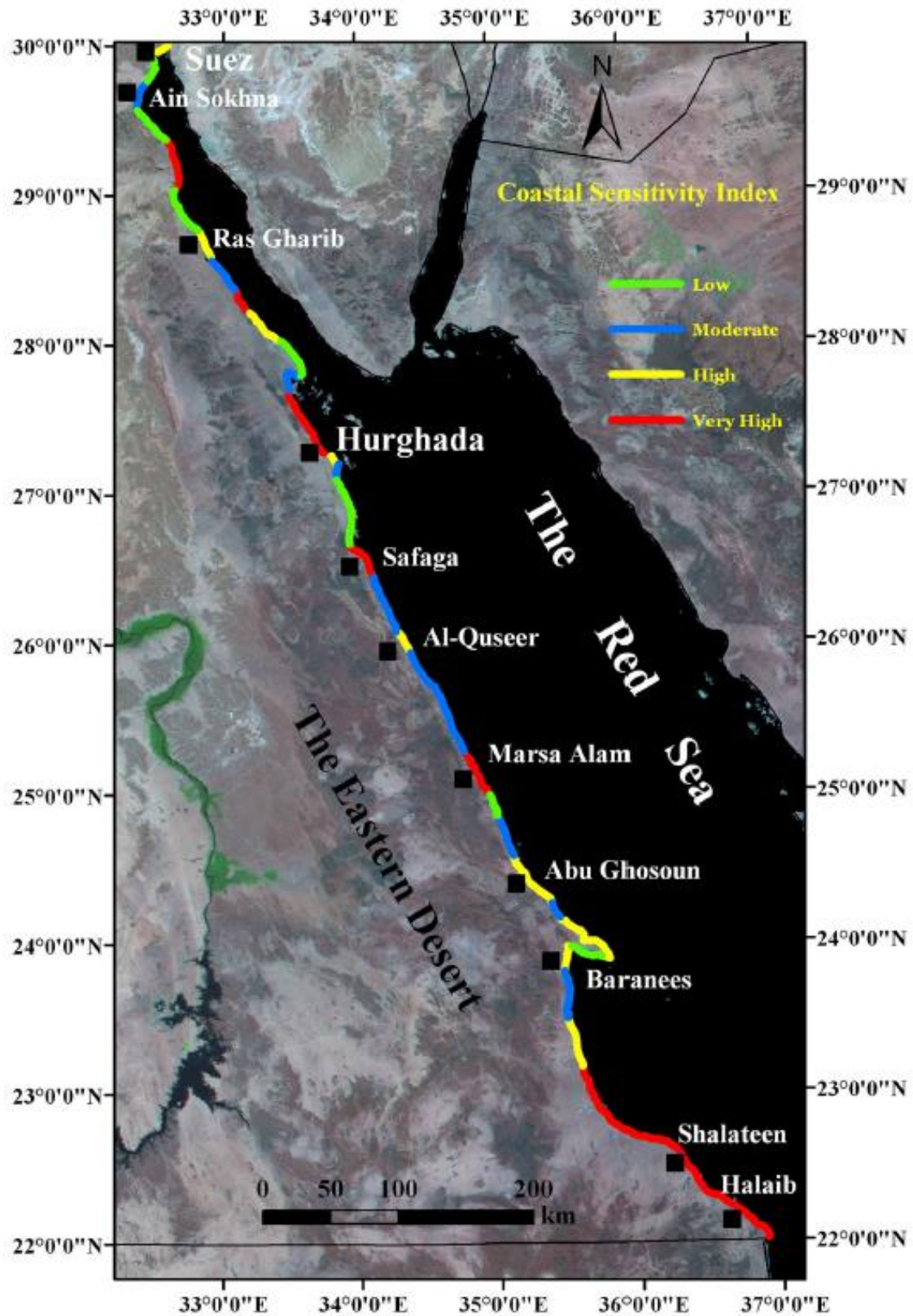


Figure 26: Red Sea Coastal Sensitivity Levels to Climate Change

6.2.4.3 Administrative Key-Issues

- Project implementation up to its EIA
- Poor monitoring and follow-up system

Though tourism development planning in the Red Sea falls mainly under the TDA mandates, in the project area, the Red Sea Governorate and Red Sea EEAA are involved in other tourism plans inside municipal jurisdiction, and WGHPA boundaries respectively.

The governance system in the Red Sea is complicated and comprises of a multitude of controlling agencies, because of the nature of the complex coastal system that supports multiple economic and administrative sectors.

The decision making process on coastal projects as per the current legal framework is complicated and involves a number of key institutions including TDA, EEAA, SPA, and RSG. Chaired by the Minister of Irrigation and Water Resources, the Higher Committee for Licensing (HCL) of Coastal Projects is the decision taking body, which includes also among its members the Minister of Environment and Tourism Development Authority.

Root cause analysis concluded in the scoping phase shows that the efficiency of the EIA system does not only depend on strict legislations, but also effective enforcement.

The BaU scenario will add pressure the WGHPA resources and management and will require EEAA to take necessary actions to meet the challenges.

The existing administrative system may be sufficient for managing the current projects and associated impacts in the project area, however, the ambitious tourism plans will require additional trained and competent staff for monitoring and follow-up.

6.2.4.4 Socioeconomic Key-Issues

- Marginalization of local communities
- Land acquisition/ expropriation

Marginalization of local communities

Marginalization of local communities was defined as a key-issue during the scoping exercise with the WG1; however, a few literature resources describe the issue in the project area. Wadi El Gemal Management Plan does not identify this as an issue, though, it calls for engaging local community and entitle them to share tangible benefits

During the SEA Scoping phase, the team has met a group of local community representatives at Abo Ghosoun Village, who express their interests to be part of the development.

Involving local community in tourism planning and operation will provide the community with self-trust and with mutual benefits to tourism industry.

Land acquisition/ expropriation

Land acquisition/ expropriation is a process by which land ownership is taken out, and was also identified as a key-issue. This, though, is a legal issue that would trigger relative governmental policies to compensate landownership.

Land acquisition/ expropriation in the project area is not well-documented in literature; however, involving local community in tourism planning and operation will provide the community with self-trust and with mutual benefits to tourism industry.

Social impacts

While traditional tourism may have negative impacts on local community, some positive impacts are realized including job creation, income generation as well as food and material supply.

Positive social effects of tourism may include improvements in social services, transportation and recreation facilities, cross-cultural communication, and quality of life. On the contrary, tourism development may adversely affect the host community by affecting the identity of tribal groups, the way of life, their community structure, family relationships, etc.

The population of Qusier and Marsa Alam cities is reported as 47,817 and 8,553 capita (2016 Census), while the projected population in 2030 would be 711,000 for the Northern central zone including Hurghada, Safaga and Qusier and 101, 000 capita for the Southern central zone including Marsa Alam.

The required number of workers as per the tourism plan is 483956, 419799, and 1280267 for the periods 2018-2022, 2022-2026 and 2026-2030 respectively.

The current percent of labor force employed in Red Sea tourism is 30%. If it is maintained until 2030, the local population could provide about 75,000 of the required jobs (only 5.87%). Therefore, the majority of the required labor by 2030 will be non-local, who would require appropriate housing and related infrastructure, utility and services

Economic impacts

The tourism industry is a major contributor to Egypt's GDP as well as a main source for foreign currency. The following Figure 27 shows total number of tourists and the financial revenues in Egypt during the period 2004-2018.



Figure 27: Total number of tourists and revenues in Egypt during 2004-2018
(Source UNWTO in El Naggar and Derbali (2020))

The estimated economic impacts of traditional mass-market resort development versus environmentally, community-focused, up-market development (Ecoresorts) in the Southern Red Sea Region (SRSR) was undertaken by The USAID/LIFE.

Using economic model, the study concluded the following:

The current traditional-market resort development model has very little positive economic impact on Red Sea communities. Hotels in the region operate on very thin profit margins, and a significant share of profits are retained in source markets, by the foreign tour operators.

Ecotourism alternative model can promote local economic development that will require much less significant investment in infrastructure and help the Red Sea region and Egypt retain more of the benefits of tourism investment and spending.

The study shows that roughly 27,000 ecoresort guests per year would produce the same level of direct spending, and significantly more local jobs and economic impacts than 180,000 traditional-market resort guests (2,000 rooms, 5 night stay).

6.2.4.5 Other Issues

Local competitiveness

In Hurghada, deterioration of natural resources over the last two decades has resulted in not only reduced environmental quality, but also as reduced tourist price packages.

Reducing the environmental quality as a result of quantity tourism is anticipated in the project area, and should be carefully planned for during the formal revision of the tourism plans.

Regional competitiveness

Currently, KSA VISION 2030 and associated programs put great resources to develop coastal tourism, among others, along the Saudi Red Sea. Three mega development programs have been initiated accordingly, NEOM, Red Sea Development as well as AMAALA, which comprise a few hundred kilometres length of the Saudi Red Sea coast.

The development models of the three programs might be different from the Egyptian Red Sea tourism model. There is not enough information to understand the impacts of these three mega projects on our Red Sea tourism development model. It is recommended, therefore, to study these programs to identify impacts on our tourism planning strategy.

6.2.5 Impact on Wadi El Gemal Hamata Protected Area

WGHPA has a unique identity, and represents untouched terrestrial and marine habitats and ecosystems of the Eastern Desert and Red Sea. Given the limited resources in the project area, such as beaches and dive sites, it is anticipated that the BaU scenario will result on additional pressures on WGHPA where there are a number of coastal attraction sites open for visitors including Qualaan and Ras Hankorab.

The number of visitors estimated in 2030 would be more than million 158, accordingly beaches in Sector 1 may not be able to satisfy the need of the tourists. Thus, tour and hotel operators would seek alternatives and non-developed lands to offer opportunities to tourists. This ideally could be WGHPA, which would provide beaches and dive sites to compensate the shortage in Sector 1.

The WGHPA business plan estimates that the protected area visitors (terrestrial and marine sides of the protected area) in 2008 as 125,000 with a growth rate of 7.25% reaching about 170,000 visitors in 2013. The number of visitors in 2013, thus, was less than 500 a day that is still manageable.

The proposed development zones in WGHPA according to the LUMP comprises a land plot of 250,000 m² with a development footprint of 10% only, and hotel rooms as of approximately 120 rooms at the two designated eco-zones. The proposed development in WGHPA, per se, is not anticipated to create pressures on the natural resources, under effective management from PA staff.

6.2.6 Summary of Proposed Policy Measures

According to the assessment of the BaU scenario, summary potential impacts of the tourism development plans have been provided, as well as possible policy and management measures. The sustainability assessment report includes comprehensive discussion.

As concluded by the BaU scenario assessment, the tourism development plans continuation is anticipated to result in potential environmental impacts. Therefore,

it is necessary to develop feasible alternatives to the tourism development current plans with the aim to reduce potential environmental impacts and threats, and maximize the social and economic benefits to the local community and economy.

6.1.1.7 Proposed Policy Measures

The following policy/planning measures are followed during the development of plan alternatives:

- Alternatives shall be considered to reduce impacts of the tourism plans through proper planning. Impacts are minimized through by reducing the planned tourist quantity. *Beach and dive site carrying capacity, and Utility demand could be used indicators, with acceptable growth rates.*
- Land-use plans are carried out based on sound scientific analysis, and accordingly classification of land-use suitability is established based on e.
- The revised tourism development plan alternatives to include coastal and building setbacks. Marine interventions are planned by each IDC to minimise cumulative impacts and avoid individual project impacts.
- Environmental sensitive areas as well as risk zones are excluded from tourism development plan alternatives. Examples include turtle and bird nesting areas, Wadis and floodways, dunes and mangrove. In addition, physical buffers for these sensitive areas are identified and applied.
- Local community is involved during tourism planning and operation to reduce the social impacts and maximise economic benefits.
- Establish new urban communities to ensure sustainability. The new settlements attract other non-tourism labor to provide commodities and services to tourism labor and family population.
- The legal basis for the EIA system is revised to include concrete measures ensuring proper follow up, and implementation up to the EIA's.
- Enhance the institutional capacity to meet the planning and management requirements.
- Investigate the area vulnerability to SLR, and set out appropriate adaptation measures. For examples, low-laying areas (0-1m) may be avoided as a precautionary measure.
- Study and quantify the impact of regional tourism development along the other sides of the Red Sea, and revise the tourism plans in the project area to avoid potential conflicts with regional plans.

7. Potential Plan Alternatives

It should be mentioned that developing plan alternatives is not often part of the SEA process. The plan alternatives are prepared by the planning authorities in the light of plan revision iterations. However, for this specific SEA, the MBTD project requests to provide plan alternatives.

Therefore, this section outlines plan potential alternatives, and highlights the methodology to identify them. Thus, whenever the word “alternative” is mentioned, it refers to a framework of thinking to inform decision making process. Accordingly, further development detailing these alternatives and methodology to fully develop them will require to be undertaken under another assignment.

The proposed plan alternatives are also assessed using the same criteria applied to the business as usual scenario. Accordingly, this section discusses and proposes the best alternative, and recommends the strategy for its development.

The generation of alternatives collectively relies on the following:

- Scenario planning exercise,
- Results of the assessment of the BaU scenario,
- Guiding principles proposed in the Sustainability Assessment Report
- Consultant’s judgement and experience in the project area.

7.1 Scenario Planning

While scenario planning is a tool for strategic analysis, it can capture a wide range of possibilities with specific details and inputs. By identifying some fundamental trends, a series of scenarios could be identified and evaluated to support decision-making.

MBTD project has undertaken a scenario planning exercise in consultation with the Working Group 1 (WG1). The aim of the scenario planning exercise was to assess the policy/planning measures (Table 9) proposed by the SEA team to address the consequences of the business-as-usual scenario that would arise from the existing tourism development plans in the project area.

Table 9: Proposed Policy/Planning Measures (PM)

PM No.	Proposed Policy/Planning Measures (PM)
1	Reduce impacts of tourism plans through proper alternatives planning
2	Impacts of the tourism plans are reduced through proper alternatives planning to reduce the planned tourist quantity.
3	
4	The revised tourism plans to include coastal and building setbacks. Marine interventions are planned by each IDC to minimize cumulative impacts and avoid individual project impacts.

PM No.	Proposed Policy/Planning Measures (PM)
5	Revised tourism plans to exclude areas of floodways, dunes and mangrove. Physical buffers for these sensitive areas are applied.
6	Land-use plans are established based on sound scientific analysis, and accordingly classification of land-use suitability. Areas known as turtle nesting are excluded from development. Coastal and building setbacks are applied according to the national laws.
7	N/A
8	N/A
9	Local community is involved during tourism planning and operation to reduce the issue impacts.
10	
11	Establish new urban communities to ensure sustainability. The new settlements attract other non-tourism labor to provide commodities and services to tourism labor and family population.
12	The legal basis for the EIA system is revised to include concrete measures ensuring proper follow up, and implementation up to the EIA's.
	The administrative system needs improvements to increase its capacity to meet the planning and management requirements
13	Investigate the project area vulnerability to SLR, and set out appropriate adaptation measures. During the plan revise, low-laying areas (0-1m) may be avoided as a precautionary measure.
14	Quantify the impact of regional tourism development along the other sides of the Red Sea, and revise the tourism plans in the project area to avoid potential conflicts with regional plans.

7.1.1 Summary methodology

The scenario planning has considered two main evaluation criteria, namely importance, and difficulty in implementation. The evaluation system is simple, where the importance takes into account ecological, social and economic aspects. On the other hand, the difficulty of implementation addresses institutional aspects. Scenario planning has been carried out in the following sequence:

- WG1 members have been divided into 2 groups (first and second) to participate in the scenario planning process.
- The two groups have been asked to fill in a questionnaire to assess the policy/planning measures proposed in the draft sustainability assessment report in terms of the importance and difficulty of implementation on a scale of 1-10.
- Analysis of the most important and less difficult actions (high degree of uncertainty) was undertaken.
- Different scenarios for the area in cases of ability to implement/not implement the proposed policy/planning measures of high uncertainty were proposed.
- The output scenarios were analysed, and strategies to address the scenarios were suggested by the two groups.

The following Table 10 shows the summary evaluation results of the policy/planning measures (PM). This table where black and red texts refer to the first group and second group inputs, respectively is modified from the original report shown in Annex I.

Table 10: Results of Evaluation of Policy/Planning Measures (PM)

Importance												
1	Not important/easy											Not important/difficult
2												
3						PM10						
4												
5						PM9			PM1			
6	Important/easy											Important/difficult
7						PM14						
8					PM5, PM11	PM6, PM12			PM1, PM2, PM3			
9				PM4, PM5	PM10, PM11	PM6, PM12	PM3	PM14	PM13	PM2		
10						PM4	PM9	PM13				
Difficulty		١	٢	٣	٤	٥	٦	٧	٨	٩	١٠	

7.1.2 Analysis of the results of the scenario planning

It has been realized that while some policy/planning measures address more than one key-issue such as PM 7&8, and 8&10 (please see Table 9), the same policy/planning measure has been evaluated two times, which resulted in double evaluation of the same measure with different scores.

As shown in Table 10, feasibility of the PMs could be divided into four categories as follow:

1. Not important and difficult to implement,
2. Not important and easy to implement,
3. Important and difficult to implement, and
4. Important and easy to implement.

Therefore, based on the evaluation, policy/planning measures fall within case 1, 2 and 3 may not be considered priority, either because they are not important or because they are difficult to be implemented.

Accordingly, the policy/planning measures that are priority and implementable fall within case 4 because they are important and easy to implement. The policy/planning measures fall within this case are measures number 4, 5, 6, 10, 11, 12 and 14. These policy/planning measures are highlighted in green in Table 9.

It should be noted, however, that while the two groups have agreed on the categorization of almost all policy/planning measures mentioned above, the measure number 14 was evaluated by the second working group as important and easy to implement, while first working group has evaluated the same measure as important but difficult to implement.

Moreover, the working groups have been asked to provide the reasons for difficulty in implementing some policy/planning measures, which have been mentioned separately in the scenario planning report.

In general, the exercise reflected a good understanding of the policy/planning measures. However, while measures No. 1 and 2 were classified as important and difficult to implement, measures 4 and 5 were classified as important and easy to implement. Measure No. 1 and No. 2 call explicitly to setup plan alternatives; measures 4 and 5 imply the same meaning where the setup alternatives should include or exclude some forms of land uses.

Furthermore, two key issues have been identified earlier in the SEA process namely marginalization of local communities, and land acquisition. These two key-issues have been addressed though the following proposed policy: **"Local community is involved during tourism planning and operation to reduce the issue impacts"**. The two groups have provided different assessment on the proposed policy measures.

7.1.3 Recommendations of the scenario planning

7.1.3.1 General recommendations

The scenario planning exercise report provides the following general recommendations, proposed by the two participated groups:

- Study the introduction of alternatives to current tourism plans.
- Study the possibility of overcoming the difficulty of presenting to the Supreme Council of Planning to highlight the importance and risk of the negative effects of current tourism plans, especially with regard to reducing tourist numbers to address impacts on biodiversity and change in water quality.
- Conduct specialized studies on climate change and sea level rise addressing their impacts, and overcome difficulty in participation on the international level.
- Conduct necessary studies to address market competition and maintain leadership.

7.1.3.2 Proposed Strategic and Actions

In addition, based on the proposed four scenarios, the first group has proposed a number of strategies, besides additional actions, as presented in the following Table 11.

Table 11: First Group Proposed Strategies and Additional Actions for Each Scenario

Scenario	Proposed Strategies	Additional Actions
A The situation of the area in case of overcoming: difficulty in presenting to the Supreme Council of Planning (biodiversity - water quality - freshwater scarcity)& the causes of competitive threats]	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • take the necessary measures to overcome the difficulty of presenting to the Supreme Planning Council of Planning. • Provision of a highly competitive tourism product. 	<ul style="list-style-type: none"> • Take action to mitigate the negative effects on biodiversity • Work to create jobs and involve local community in planning • Conduct specialized studies on climate change and address its potential impacts.
B The situation of the area in case of overcoming: difficulty in presenting to the Supreme Council of Planning (biodiversity - water quality - freshwater scarcity)	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • Take the necessary measures to overcome the difficulty of presenting to the Supreme Planning Council of Planning. 	<ul style="list-style-type: none"> • Work to create jobs and involve local community in planning • Conduct specialized studies on climate change and address its potential impacts. • Take the necessary measures to achieve competitiveness by marketing an environmentally friendly tourism product.
C The situation of the area in case of overcoming competitive threats: (High number of hotel rooms reduces rarity factors and reduces prices)	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • Take the necessary measures to achieve competitiveness by marketing a partially environmentally friendly tourism product. 	<ul style="list-style-type: none"> • Take the necessary measures to overcome the difficulty of presenting to the Supreme Planning Council of Planning. • Work to create jobs and involve local community in planning. • Conduct specialized studies on climate change and address its potential impacts.
D The situation of the area in case of overcoming:	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult 	<ul style="list-style-type: none"> • Take the necessary measures to overcome the difficulty of presenting to the Supreme

Scenario	Proposed Strategies	Additional Actions
difficulty in presenting to the Supreme Council of Planning and the causes of competitive threats (High number of hotel rooms reduces rarity factors and reduces prices)	policy/planning measures.	Planning Council of Planning. <ul style="list-style-type: none"> • Establish the necessary measures/requirements to maintain current water quality status. • Compliance with regulations of the Ministry of Health and Population for fresh water quality. • Implementation of the decisions of the High Committee for Licensing for shoreline. • Implement EIA mitigation measures for each project. • Work to create jobs and involve local community in planning. • Conduct specialized studies on climate change and address its potential impacts. • Take action to achieve market competitiveness in compliance with current policies.

Furthermore, the following Table 12 shows the second group proposed strategies and additional actions for each scenario.

Table 12: Second Group Proposed Strategies and Additional Actions for Each Scenario

Scenario	Proposed Strategies	Additional Actions
A	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • Take necessary actions to overcome the reasons of deteriorating seawater quality, provide fresh water and reduce the number of new desalination plants as much as possible. • Conduct specialized studies on climate change and address its potential impacts. 	<ul style="list-style-type: none"> • Take necessary actions to mitigate the negative effects on biodiversity. • Act to create jobs and involve local community in planning. • Take actions to achieve market competitiveness in compliance with current policies.

Scenario	Proposed Strategies	Additional Actions
B	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • Take necessary actions to overcome the reasons of deteriorating seawater quality, provide fresh water and reduce the number of new desalination plants as much as possible. 	<ul style="list-style-type: none"> • Take necessary actions to mitigate the negative effects on biodiversity. • Act to create jobs and involve local community in planning. • Conduct specialized studies on climate change and address its potential impacts. • Take actions to achieve market competitiveness in compliance with current policies.
C	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. • Conduct specialized studies on climate change and address its potential impacts. 	<ul style="list-style-type: none"> • Take necessary actions to mitigate the negative effects on biodiversity. • Act to create jobs and involve local community in planning. • Conduct specialized studies on climate change and address its potential impacts. • Take actions to achieve market competitiveness in compliance with current policies.
D	<ul style="list-style-type: none"> • Implementation of procedures for non-difficult policy/planning measures. 	<ul style="list-style-type: none"> • Take necessary actions to mitigate the negative effects on biodiversity. • Take necessary actions to overcome the reasons of deteriorating water quality • Provide fresh water and reduce the number of new desalination plants as much as possible. • Act to create jobs and involve local community in planning. • Conduct specialized studies on climate change and address its potential impacts. • Take actions to achieve market competitiveness in compliance with current policies.

7.1.4 Alignment of scenario planning with SEA context

Within the urban planning field, the use of the terms scenario and alternative depends on the context. Alternatives are options that aim to achieve an objective or a number of objectives, whereas scenarios are exploration of potential ramifications/reflections/reactions to a specific change or intervention. The following cases are documented in literature:

- An alternative could be studied through a number of scenarios, which makes sense as different scenarios would be comparable to different actions.
- A scenario is studied to generate a number of alternatives.

Based on the findings of the scenario planning exercise, and recommendations made by the two groups, the SEA team takes the general recommendations provided in subsection (7.1.3.1), as well as those provided in Table 11 and Table 12 into account to provide alternatives to the current tourism development plans.

General recommendations include, among others, the introduction of alternative plans. The specific recommendations entail proposed strategic and actions, which call to take the necessary actions to overcome the difficulty in presenting plan alternative to the Supreme Council of Planning.

According to the SEA task ToRs, the following subsection (7.2), plan alternatives are discussed.

7.2 Plan Alternatives

The assessment of the tourism development sustainability concludes that the project area will face considerable challenges if the tourism plans are carried out and the business-as-usual scenario goes on. The project area is planned to have more than 430,000 hotel rooms, which is more than double of the existing national hotel capacity. The anticipated multimillion tourist nights would contribute to the national economy, despite the environmental and socioeconomic impacts they would cause, in addition to increased biodiversity loss. The mass tourism impact is a subject of many researches from different perspectives, such as impact on locals, destination image, tourist experience, socioeconomic aspects, etc. For instance, while over 400 million people globally are employed in the tourism sector, many tourism services are of little value to the local community¹⁷. Furthermore, mass tourism markets are realized for not being able to tolerate major financial crises, notably, in the case of Mexico and Brazil. Medeiros, et al 2021 call for alternative tourism that contributes to conservation, values the environment and recipient cultures with minimal impact in Brazilian Amazonia. There is also a large amount of literature that studies strategies of shifting the mass tourism towards much sustainable and responsible forms of tourism.

¹⁷ <https://www.bbc.co.uk/bitesize/levels/z98jmp3>

Anticipated challenges of the existing tourism plans include deterioration of natural resources, pressures on utilities and infrastructure, as well as reduction of socioeconomic benefits that could be arisen from the mass tourism scheme.

Therefore, there is a need to propose plan alternatives that would take into account the fragile terrestrial and marine ecosystems in the Red Sea, the capacity of the national utility and infrastructure to support the tourism sector, and the benefits to local economy and community.

The sustainability assessment report proposes a number of guiding principles that are summarized below, and shall be considered along with the policy/planning measures described in subsection (6.2.6) of this report, and detailed in the sustainability report.

7.2.1 Respecting Coastal Integrity

The proposed tourism development area is located in the coastal zone, which contains rich and healthy coastal ecosystems. Coastal ecosystems are significant resources, and provide valuable ecological, physical and recreational ecosystem services. These ecosystems are interconnected, and interact to maintain life not only in coastal areas, but also beyond them. Therefore, interruption, disturbance, defragmentation and/or degradation of this integrity will have severe short, medium, and long-term impacts; and should be avoided.

7.2.2 Allowing Physical Coastal Processes

Physical coastal processes are natural phenomena through which sediment is transported by currents and wave actions. In natural and pristine areas, sediment transport takes place without any interruption, so beaches and dunes are formed and naturally maintained, and the system is said to be in a dynamic equilibrium. If natural coastal process is disturbed by artificial interventions, sediment transport will be blocked, and the natural cycle will be altered.

Natural floods during extreme rainfalls bring freshwater and nutrients to the marine environment, and thus play vital ecological and physical roles. Sediments brought by the floods to the coastal area also help to elevate the low lands, and may contribute to enhancing the natural defense against wave actions and potential impacts of climate change and sea level rise.

7.2.3 Sustainable Use of Coastal Resources

Resource protection is the process of “preservation without permitting any kind of uses”; an example is a protected area under higher protection level, e.g. Category I IUCN. This is usually called “Strict nature reserve, where specific activities are allowed under supervision, such as research that would not lead to resource deterioration.

On the other hand, conservation means to maintain resources, so that they are used and regulated to achieve specific conservation objectives. Each country sets out

each conservation strategy that entails permitted uses, protection zones, seasonal closure zones, no-take zone, etc.

Furthermore, sustainable use means that resources are used within its sustainable yield. As a minimum requirement, coastal development projects should follow the principles of sustainable use of resources. In order to identify and understand the sustainable use of resources, many tools could be used. However, for the purpose of the SEA, a focus is made on two main tools: sustainable yield and carrying capacity.

7.2.4 Maximise benefits to local community

The local community, a key element in sustainable development, is still out of active participation in the tourism development in the Red Sea region (Gouda 2015).

Involving local community in tourism has a multitude of environmental, social and economic benefits. For instance through tourism, local communities can be directly involved in providing authentic experiences about the region, and sharing traditional knowledge. In addition, tourism projects engaging local communities directly in their planning and implementation are much likely to be successful in delivering local benefits and to be sustained over time. Furthermore, local community basic needs can be met by proper sustainable tourism development.

7.3 Potential Alternatives

Potential alternatives have been divided into two groups, based on characteristics of the study area as summarised in section 5 of this report and detailed in sustainability assessment report. Therefore, group one of alternatives addresses sector one while group two focuses on sector two.

7.3.1 Sector one

Extensive literature review has been undertaken to highlight potential approaches to tourism plan alternatives, especially in the Red Sea region.

Assessment of key issue trends because of the BaU scenario (summarised in section 6.2.4 of this report) shows that the proposed tourism plans would result in impacts and threats to the natural and cultural resources in the project area. This would mainly result because of extensive land use. In addition, the current tourism plans mostly promote traditional beach and water-based tourism.

Therefore, potential alternatives would include the following:

- Alternative 1: Decrease quantity of tourist hotel rooms and adopt enhanced end product, and
- Alternative 2: Divert traditional marine water-based tourism to other land based ecotourism forms such as (Medical, scientific, geo-tourism, cultural and community-based, nature-based or ecotourism, desert, etc.)

It is noted that only alternative development plans are considered. Obviously, environmental management of tourist activities and impacts will need to be enforced to further reduce related impacts.

7.3.1.1 *Alternative one:*

Promoting Tourism Quality (Decrease quantity of hotel rooms)

Decreasing the quantity of hotel rooms could be an opportunity to enhance the tourism quality by setting up appropriate marketing strategy. Reducing the number of tourist rooms could be achieved by reducing the land uses using a number of options. For example, in establishing a coastal zone management for the city of Marsa Alam, three possible land use options have been proposed, as a strategy for land use and conservation in the City of Marsa Alam (Afifi 2001¹⁸), which could be applicable to the project area.

The first option: Control of building density through land use regulations

The TDA regulations require a building density of 12 percent for a 5 stars hotel, 15 percent for 4 stars hotel, and 20 percent for 3 stars hotel (Decree 80/1989). The elevation requirement for buildings within 100 m¹⁹ from the high water mark is less than 6 m. In addition, buildings located at a distance of more than 100 m from the high water mark should have an elevation of less than 9 m. The maximum carrying capacity for the land use is 150 m² for each person in a five stars hotel. For four star and three star hotels, the maximum carrying capacities are 120 m², and 100 m² respectively. The option reduces the building density and allows higher elevation and accordingly much open spaces. For instance, if a resort is planned to have 350 dwelling units on 17,500 m², based on a two stories building on an average area of 100 m² each, two towers only could be built on an average area of 1000 m² each. This is obviously an extreme example only taken to clarify the idea.

Though this option could save more than 80 percent of the land area, it would keep the same number of hotel rooms and accordingly the BaU will continue.

The second option: Develop Land Use Zones

Phase I: Establishing Rationales for Zoning. Coastal land zoning could be used as an option to reduce proposed current land uses. Therefore, rationales for zoning should be established. These may include intensive analysis of environmental and socioeconomic layers. While zones could be as much as needed, a simple zoning system of three zones is recognized internationally in resolving land use and conservation conflicts. For instance, the first zone may include (30%) of land allocated for conservation. This may include environmentally sensitive areas such

¹⁸ Afifi, Ayman 2001: Coastal Management Plan for the City of Marsa Alam, a Master Thesis submitted to Faculty of Engineering, Flo2rida Institute of Technology as a partial fulfilment of M.Sc. Degree; abstract published at the first Egyptian International Protected Area and Sustainable development Conference, Sharm El Sheik. 2002

¹⁹ These regulations might conflict with new law was issued, Law of Water Resources, No. 147 of 202. Please refer to legal update presented in subsection 5.4.6.

embayments and floodways. In addition, it may include areas with natural constraints such as wide reef flats where water accessibility is difficult. The second zone would include tourist development at 30 % of the coastal lands, with areas where water access and beaches are convenient. The third zone would include (40%) of the lands allocated for future land use.

Note:

The percentage of zones has been proposed as an indicative only, not predetermined according to land characteristics analysis. The actual percent shall require further data and investigation, and be undergone further discussion and negotiation between concerned land use management authorities.

Phase II Integrating Environmental Sensitivity into Development Zones

The Red Sea Coastal characteristics could be used to identify different land uses, as an alternative for the traditional land use planning. For instance, reef flat classification and development feasibility proposed by Afifi 2001, shown in the table below, may be used. Each coastal physiographic character would be used to set different development criteria. For instance, if a certain element is known to have problems, like cliffs and wide reef flats without lagoons, restrictions could be applied on development.

According to Afifi 2001, the reef flat width is classified into narrow (<50m), moderate (50-150m), and wide reef flat (>150m). In addition, each of the three categories is classified based on existence of natural lagoons. This classification was based on the fact that the wide reef flat areas constitute constraints to coastal development because of difficult and unsafe water accessibility. The wider the reef flat is, the less development feasibility. In addition, the more natural lagoon is found in the reef flat, the much development feasibility.

The following Table 13 shows reef flat classification and corresponding development feasibility. This is provided in this report for guiding only. Details studies would be required if is option is selected. While there is a number of sensitivity surveys undertaken in the project area, the latest detailed study of coastal sensitivity was undertaken in 2011²⁰.

Table 13: Classification of Reef Flat and Development Feasibility

Type of Reef	Development Feasibility
Wide with no lagoons	Low
Wide with lagoons	Medium
Moderate with no lagoons	Medium
Moderate with lagoons	High

²⁰ Hanafy, Mahmoud, Abdel Monsef, Hesham, and Ismail, Mohamed (2011), Construction of Sensitivity Ranking Maps, Southern coast of the Egyptian Red Sea.

Type of Reef	Development Feasibility
Narrow with no lagoons	Medium
Narrow with lagoons	High

Based on the guidelines discussed above the following Table 14 summarizes alternative one and the possible options, and compares advantages and disadvantages of each option.

Table 14: Description of Alternative one and Related Options

Alternative one		Emphasising on tourism quality
Option one	Description	Land use regulations allow smaller footprint density and higher elevation
	Advantage	Save up to 80% of lands
	Disadvantage	No. of hotel rooms will be maintained, and accordingly impacts of BaU scenario continue.
Option two: Phase I	Description	Land uses are regulated based on a zoning scheme, where for instance 30% is allocated for tourism development, 30% for conservation, and 40% for other and future uses.
	Advantage	Reduce total proposed hotel rooms to 30% as compared to BaU, while keeping the same room density in developed areas.
	Disadvantage	Requires highly level of coordination for setting up zoning regulations, and implementation follow up. While it reduces significantly land uptake, still the resultant no. of dives would be higher than the estimated carrying capacity..
Option three: Phase II	Description	Land uses are organized based on land suitability and sensitivity scheme, where unsuitable land uses are avoided.
	Advantage	Coastal physiographic characters would be used to set different land uses and development criteria.
	Disadvantage	Requires coastal sensitivity studies to classify land use suitability based on environmental sensitivity.

Alternative one has been analysed based on the same criteria used for the analysis of the BaU scenario. However, the criteria have been classified according to their applicability as shown in the following table.

Table 15: Criteria used for analysis of alternatives of tourism plans

Criterion	Class
Development area growth	Not applicable, because the flat reduction will result in the same ratio.
Hotel rooms growth	Applicable
Power generation capacity	Applicable
Water demand	Applicable
Wastewater capacity	Applicable
Beach demand	Applicable
Soil waste management	Applicable
Airport capacity	Applicable
Coral reef CC	Applicable
Air emission	Not considered, because impact weight was irrelevant in the BaU scenario.
Water quality	Not considered. However, it requires appropriate management measures (Annex II).
Soil quality	Not considered. However it requires appropriate management measures (Annex II).
Freshwater resources	Not considered. However it requires appropriate management measures (Annex II).
Shoreline	Not considered. However PM No. 4 and 5 is applicable.
Floodways	Not considered. However PM No. 4 and 5 is applicable.
Climate change and SLR	Not considered. However PM No. 13 is applicable.
Regional Competitiveness	Not considered. However PM No. 14 is applicable.

To undertake quantification assessment of alternative one, the second option (phase I assumption) has been considered, because it assumes flat change in the BaU Scenario and does not require further immediate studies. A reduction of 70% has been taken into account, based on the assumption that 30% of the land is allocated for tourism development.

The following Table 16 summarise the foreseen effects on the criteria described in

Table 16: Analysis of alternative one, second option

Assessment Criteria	2018-2022	2022-2026	2026-2030	Overall
No. of rooms	18,149	15,742	96,020	129,911
Total tourist nights @50% Occupancy in million/year	6.62	5.75	35	47.42
Minimum required energy/year (Mw)@50% Occupancy	9,94	8,62	52,57	71,13

Minimum required water/year (Million m ³)* @50% Occupancy	2.32	2.01	12.27	16.60
Minimum generated wastewater/year (Million m ³) @50% Occupancy	1.85	1.61	9.81	13.28
Minimum required beaches by length (km) estimated for 100% Occupancy	9.08	7.87	48	64.96

The following Table 17 shows the impacts of this alternative compared with the BaU:

Table 17: Comparison of alternative one- second option and BaU

Criterion	BaU	Plan Alternative
Hotel rooms	433,037 rooms (more than double of current national hotel capacity), which could accommodate up to 158 million visitor a year by the end of 2030.	129,911 rooms, which can accommodate about 47 million visitor a year. The number of hotel rooms at the end of the year 2030 is equivalent to almost 65% of the existing national hotel capacity.
Overall minimum annual required energy by 2030	237,088 Mw equivalent to 400% of the existing national power generation capacity (55,000Mw).	7114 Mw, which is equivalent to 129% of the existing national power generation capacity (55,000Mw).
Overall minimum annual required water by 2030	110.64 Million m ³ , equivalent to 12% of the Egypt's Desalination plan 2025 (2.44 million m ³ /day).	16.60 Million m ³ , equivalent to 1.86% of the Egypt's Desalination plan 2025.
Overall minimum annual required wastewater treatment capacity at the by 2030.	88.51Million m ³ , equivalent to approximately 5% of the existing capacity (1825 million m ³ /year).	13.28 Million m ³ , equivalent to approximately 1% of the existing capacity (1825 million m ³ /year).
Overall minimum required beach capacity by 2030	216 km long, more than existing beaches (180 km in sector 1) in the project area,	65 km long, almost 50% of existing beaches in the project area, or equivalent to 100% of the suitable beaches .
Airport Capacity required by 2030	10 Folds of Marsa Alam Airport 2030 Capacity (21.9 million/year)	More than Folds of Marsa Alam Airport 2030 Capacity (21.9 million/year)
Estimated No. of dives by 2030	47.42 million /year at a conservative ratio of 20% divers to arrivals. While the existing reef carrying capacity is 1 million dive/year, the estimated No. of dives associated with this alternative is extremely high.	14.23 million/year at a 20% divers to arrival, 1.5 dive/day/diver and an average stay of 6 days per diver. While the existing reef carrying capacity is 1 million dive/year, the estimated No.

Criterion	BaU	Plan Alternative
		of dives associated with this alternative is still high.

7.3.1.2 Alternative two: Shifting away from traditional tourism products

The second alternative is shifting the tourism products from marine based tourism to other land and cultural-based sustainable tourism. This should be undertaken with due respect and involvement of local community and guides to achieve ecotourism principles. The following Table 18 summarizes the aspects of this alternative.

Table 18: Description of Alternative two

	Description	Advantage	Disadvantage
Shifting tourist products	Traditional mass marine-based tourism is diverted to include other ecotourism land based activities. It may include other types of tourism such as geo-tourism, wildlife/bird watching, cultural tourism, etc.	Decreases potential marine and coastal impacts. Provide opportunities to bring high quality wildlife watching tourism to the area.	Requires proper planning and management to avoid potential impacts on the terrestrial ecosystems of the Red Sea.

This alternative could have a number of options based on the percentage of existing plans diverted towards non-marine ecotourism.

7.3.1.3 The preferred formulated alternative

While alternative one would result in significant reduction of utility demands and associated environmental impacts, some environmental effects would remain high particularly on the marine resources such as coral reefs. Therefore, alternative one alone may not be the best to reduce the tourism development impacts in the area. Additional measures and actions would be required to enhance the institutional and management capacity to handle anticipated consequences of the reduced development plans. These actions and measures include building the national and local capacity of land use planning, maritime and shoreline, and marine conservation authorities.

On the other hand, using a mix of alternative one and two would further reduce the anticipated impacts, which may become closer to acceptable levels. For instance, if the area receives a ratio of 10% of divers of the total arrival, the estimated No. of dives would be reduced to 50% (i.e. about 9 million). If this No. of divers is strictly

managed through proper dive site management plans, the impacts could be significantly reduced.

7.3.1.4 Proposed actions to implement the preferred alternative

The proposed actions shall achieve the following targets by 2023:

- Reduction of land allocated to tourism development by 70%,
- Transfer tourism products to other non-marine ecotourism forms, and
- Building the national capacity to plan and manage the tourism development.

The following Table 19 presents the proposed actions, responsibilities, and timeframe in quarters.

Table 19: Proposed Actions to implement the preferred alternative

No.	Actions	Responsibility	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	The SEA is presented to the Council of Ministers	EEAA								
2	The plan alternative is presented to the supreme Council of Planning	TDA (lead)-EEAA								
3	Tourism marketing strategy is revised to include the non-marine ecotourism considering competitive market, and shift to high quality tourism.	Ministry of Tourism (lead)								
4	New tourism marketing strategy is endorsed by appropriate legal body (Ministry of Tourism and/or Prime Minister).	Ministry of Tourism (lead)								
5	Gradual marketing change.	Ministry of Tourism (lead)-TDA-EEAA								
6	Amending relevant regulations to mainstream biodiversity into development plans, and introduce the SEA for assessing plans, policies and programs that would have significant environmental impacts.	EEAA (lead)								
7	Hire and train appropriate staff at the concerned authorities.	TDA-EEAA-RSG-SPA-Donor Projects								

Action 5 comprising the gradual marketing change is anticipated to continue beyond the timeframe presented in the table above, which would rely on the cooperation and willingness of the governmental authority and the private sector to implement the marketing shift.

7.3.1.5 Plan Alternative applicability to developed and non-developed

The developed versus undeveloped lands is an issue, where the BaU assessment has been conducted on the investment opportunity plans that do not identify the actual developed and non-developed land parcels.. Therefore, the implementation of the preferred alternative in ideal circumstances is applicable to non-developed and non-allocated tourist land plots. On the other hand, allocated and non-developed lands are subject to design measures whereas the developed lands are subject to management measures. The following shows a summary for immediate applicable measure according to development situation. It should be noted that immediate measures represent urgent actions, while some other measures could be applicable at a later stage of the development life. For instance, design and management measures could be applied to non-allocated lands during their design and operation stages. Annex II shows the proposed design and management framework measures.

Table 20: Classification of Development and Applicable Measures

Classification of tourist land plots	Definition	Applicable Measures (immediate)
Developed Land	Developed, and in partial or full operation	Management measures
Allocated Non-developed Land	Allocated lands, but not developed	Design measures
Non-allocated Land	Vacant Land, not allocated	Policy measures

7.3.2 Sector two

The potential alternatives for Wadi El Gemal Hamata Protected Area (WGHPA), Sector two, include the following:

7.3.1.6 Business as Usual (LUMP) Alternative

The BaU Scenario considers the current development strategy of WGHPA. The development of two ecotourism zones in the coastal area of WGHPA was proposed in 2003 by LUMP, in addition other ecological zones that are proposed for other types of development elsewhere in the protected area have been suggested by Qualan Eco-model Study including Qualan and Sharm El Luli. Nevertheless, these proposed zones within the protected area up to date have never been developed.

The following Table 21 shows the advantage and disadvantages/obstacles of this alternative.

Table 21: Advantages and Disadvantage of WGHPA BaU Alternative

Alternative	Advantages	Disadvantages/obstacles
BaU (LUMP)	<ul style="list-style-type: none"> • From an environmental point of view, the BaU is not anticipated to create pressures on the natural resources, given two facts: <ul style="list-style-type: none"> ○ The proposed number of rooms is low compared with actual visitation in the last few years, ○ The anticipated monitoring by the protected area authority for the projects construction and operation is undertaken regularly. • Create ecotourism zones within the protected area will serve the local economy and community, • Involve local community, and create local jobs. 	<ul style="list-style-type: none"> • As demonstrated by TDA, the proposed development regulations of 2 room/Feddan is seen by tourism investors as not economically feasible. • Requires additional human resources, well trained, to manage tourism projects. • Requires additional institutional/legal instruments between TDA, EEAA, and Ministry of Tourism to follow-up construction and operation of the proposed eco-resorts.

7.3.1.7 Conservation alternative

This alternative considers that WGHPA serves only conservation and resource sustainable use. Therefore, the protected area is open for tourist activities, but with minimal management physical interventions, i.e. only administrative offices, and visitors centers. It also considers that WGHPA has been declared to meet the IUCN Category II National Park. This Category is defined as “Large natural sites that are dedicated towards protecting ecological and biological systems and species. Visitor use is managed in these areas for inspirational, educational, cultural and recreational purposes so that no significant environmental degradation is done”.

The following Table 22 presents advantages and disadvantages of this alternative.

Table 22: Advantages and Disadvantage of WGHPA Conservation Alternative

Alternative	Advantages	Disadvantage
Conservation	<ul style="list-style-type: none"> ○ It supports the conservation objectives of the area, ○ The ecological, inspirational, educational, cultural and recreational resources of WGHNP can support the tourism industry located in the north and south of its boundary. This takes into account the BaU scenario and the shortage of available management resources. ○ Activities may include a wide range of ecotourism, which have been explored in many studies such as Mindy Baha 2003: Tourism Potential and Management in Wadi El Gemal Hamata/USAID. The study identifies the key tourism assets as follow: <ul style="list-style-type: none"> ○ Spectacular natural landscapes and scenery. ○ Interesting geological formations. ○ Diverse habitats. ○ Fascinating and rare plants and animals. ○ A wealth of cultural heritage sites from prehistoric to modern times. ○ Colorful traditional communities. ○ The protected area can offer sandy beaches for the tourism centers that do not 	<ul style="list-style-type: none"> ○ May deprive the local community from socioeconomic benefits, such as permanent jobs, of ecotourism developments that could be established in the protected area, ○ From economic point of view, the protected area natural resources may be left unused because of lack of innovative initiatives to establish ecotourism activities. ○

Alternative	Advantages	Disadvantage
	<ul style="list-style-type: none"> have access to the water or sandy beaches. ○ The protected area can create more opportunities for the local community to be engaged in ecotourism support. 	

Another example of studies is the “Wadi El Gemal National Park Integrated Development Plan” produced by Gabriel Mikhail/ Image House in 2012. The plan proposes a conceptual design for number of ecotourism interventions within the protected area to maximize visitor experience.

Further studies are listed in Rady Tawfik 2015²¹ including 16 scientific and planning studies that have aimed to assess the ecotourism best management practices relevant to the development of tourism products, services and infrastructure throughout the WGNP.

7.3.1.8 Sustainable Development of the protected area alternative

This alternative explores the sustainable development of the WGNP. Extensive literature reviews have been undertaken to define global trends in sustainable development in protected areas, specifically IUCN Category II, i.e. National Parks. Consultation with local community carried out during the SEA scoping phase has also be taken into account.

Hector Ceballos Lascurian of Mexico in 1987 (Sharma 2000)²² defines ecotourism as “travelling to relatively undisturbed or uncontaminated natural areas with the specific objectives of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas”.

But the definition of ecotourism, over the last few decades, has gone through sea-change particularly after the addition of new aspects which includes conservation, minimization of pollution and apportionment of socio-economic benefits to the local people. These new added concepts can be inferred from the definition given by the World Conservation Union as “environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and present) that promotes conservation, has low visitor negative impact and

²¹ Rady Talaat Tawfik (2015), Sustainable Business and Management Model for Wadi El Gemal National Park Visitor Center, Red Sea Egypt, The Sustainable Ecotourism Development in Wadi el Gemal Project Gorgonia Beach Resort (Veronaland Co.) and DEG-KFW
(http://www.nbsapforum.net/sites/default/files/Wadi%20el%20Gemal%20Business%20Model_Egypt.pdf)

²² Sharma, J.K. (2000): Tourism and Development-Design for Ecological Sustainability, Kanishika Publishers & Distributors, New Delhi.

provides for beneficially active socio-economic involvement of local populations”.

However, the definition of ecotourism, over the last few decades has gone through many changes particularly after the addition of new aspects including conservation, minimization of pollution and socio-economic benefits to the local community. These new added concepts can be inferred from the definition given by the World Conservation Union. The definition is “environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and present) that promotes conservation, has low visitor negative impact and provides for beneficially active socio-economic involvement of local populations”.²³

While historically some national parks have been developed for luxurious hotel tourism, movement towards ecotourism and nature-based tourism has been established to replace traditional massive tourism with live with nature approaches. An example, around 1900, the beginning of Gesäuse park management (Austria) in Banff, development was entirely oriented towards the development of luxurious tourism centres trying to attract the upper class of the Canadian population. However, currently the park management in Gesäuse prohibits the construction of any form of hotel buildings within the nature zone of the national park. In other words, the national park law of Gesäuse arranges that no single construction project will be placed inside the national park’s nature zone²⁴.

However, it is not uncommon to find ecolodges within the boundaries of protected areas. These ecolodges offer lodging services to protected area visitors to maximise their experiment in the wilderness. For instance, nine lodges are found in Yellowstone National Park. Inclusive of 2000 rooms, these lodges can accommodate up to 4,000 persons (on double occupancy). These lodges are managed under the Yellowstone National Park Lodges, and are highly demanded all over the year.

²³ Abdur Rashid Ahmed, Ahmed And, and Sujata Choudhury (2019), Ecotourism, Growth and Environmental Sustainability, ResearchGate:
https://www.researchgate.net/publication/334362169_ECOTOURISM_GROWTH_AND_ENVIRONMENTAL_SUSTAINABILITY

²⁴ Ecotourism – Sustainable Tourism in National Parks and Protected Areas, Banff National Park in Canada and Nationalpark Gesäuse in Austria – a Comparison
(https://bsc.smebg.net/ecotourguide/best_practices/articles/files/National_Parks.pdf)

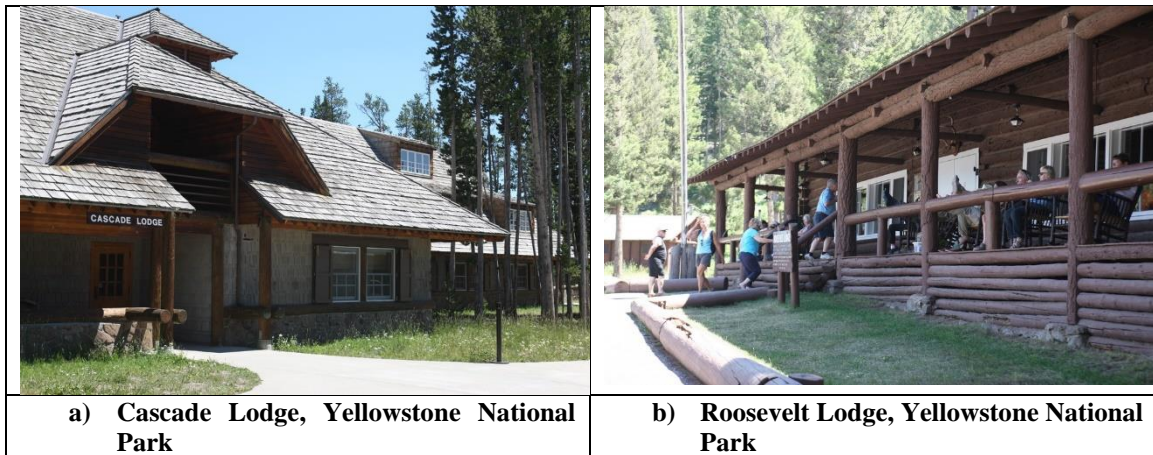


Figure 28: Examples of Lodges in Yellowstone National Park (a, and b)

The LUMP, indeed, provides an environmental sensitivity approach that could be used to develop ecotourism zones within the park. Building on that, WGHPA can support a number of small ecolodges that can be agreed between conservation and tourism authorities. These, however, shall be meet the following:

- Ecolodges should be established away from the protected area core zone, which includes the main Wadi and its tributaries, and coastal areas,
- Each one shall be allocated at enough distance from the other to avoid visual and cumulative impacts,
- Ecolodges shall be designed to be built in shelter areas, and away from being straight spotted,
- Local building materials shall be used to establish ecolodges to minimize visual impacts.

The following Table 23 presents the advantage and disadvantage of this alternative.

Table 23: Advantages and Disadvantage of WGHPA Sustainable Development Alternative

Alternative	Advantages	Disadvantages/obstacles
Sustainable development alternative	<p>Create ecolodges within the protected area will serve the local economy and community.</p> <p>Involve local community, and create local jobs.</p> <p>Create revenues that could be invested back in park management.</p>	<p>Requires more detailed studies for site selection.</p> <p>Requires different type of marketing to attract nature lovers and wildlife watchers and researchers.</p> <p>Requires additional human resources, well trained, to manage tourism projects.</p> <p>Requires additional institutional/legal instruments between TDA, EEAA, and Ministry of</p>

Alternative	Advantages	Disadvantages/obstacles
		Tourism to follow-up construction and operation of the proposed eco-resorts.

7.3.1.9 Analysis of Alternatives and Preferred Alternative

The expected results of the alternatives in terms of their environmental and socioeconomic consequences is difficult at this stage, because there is no measurable inputs of each alternatives. While the conservation alternative would help to achieve the protected area objectives, it could also offer unique nature-based, creational and cultural opportunities for protected area visitors. In addition, if the BaU scenario continues in Sector one, the protected area could also provide additional recreational areas to reduce the pressure on the developed areas in Sector one.

On the other hand, the BaU alternative, the creation of 4 ecotourism zones, provides an opportunity to establish a provisional ecotourism model that could be studied during its lifetime to understand its environmental and socioeconomic impacts. However, the development of ecotourism zones as planned would require involving ecotourism investors that are able to promote the area for high quality ecotourism products. As concluded throughout the SEA process, local community should be involved and considered during the whole development planning process, so that their local identity and culture is part of the ecotourism marketing strategy.

Furthermore, the sustainable development alternative could also be explored where the protected area management would establish a number of ecolodges within the protected area based on actual carrying capacity in non-sensitive environmental areas overlooking areas of high environmental values. The EEAA would own these ecolodges, which could be built through a number of tools subject to further studies including for instance direct investment, donor project funding, public private partnership, build-operate-transfer (BOT), etc. Accordingly, the EEAA would get revenues, which could be invested back in management of the protected area. In addition, compliance monitoring plan for theses ecolodges should be developed, to be part of the overall protected area monitoring plan. Moreover, the EEAA may invite international hotel chain to undertake concession management at a percentage of the revenues.

Finally the selection of the most appropriate alternative should be decided based on a number of factors based on the consultant judgement, as follows:

- Provision of data gaps relevant to WGHPA.
- Selection of alternative for Sector one, and the fate of BaU.
- Agreement between the concerned authorities, namely EEAA and TDA.

It should be noted that the final preferred alternative may be composed of one or more of the three alternatives discussed above. Selection of the preferred alternative relies on information that is not currently available .alternative

following presents WGHPA layout demonstrating the three alternatives described above.

To conclude this chapter of the SEA the following shows a summary of the proposed alternatives for both sector one and sector two.

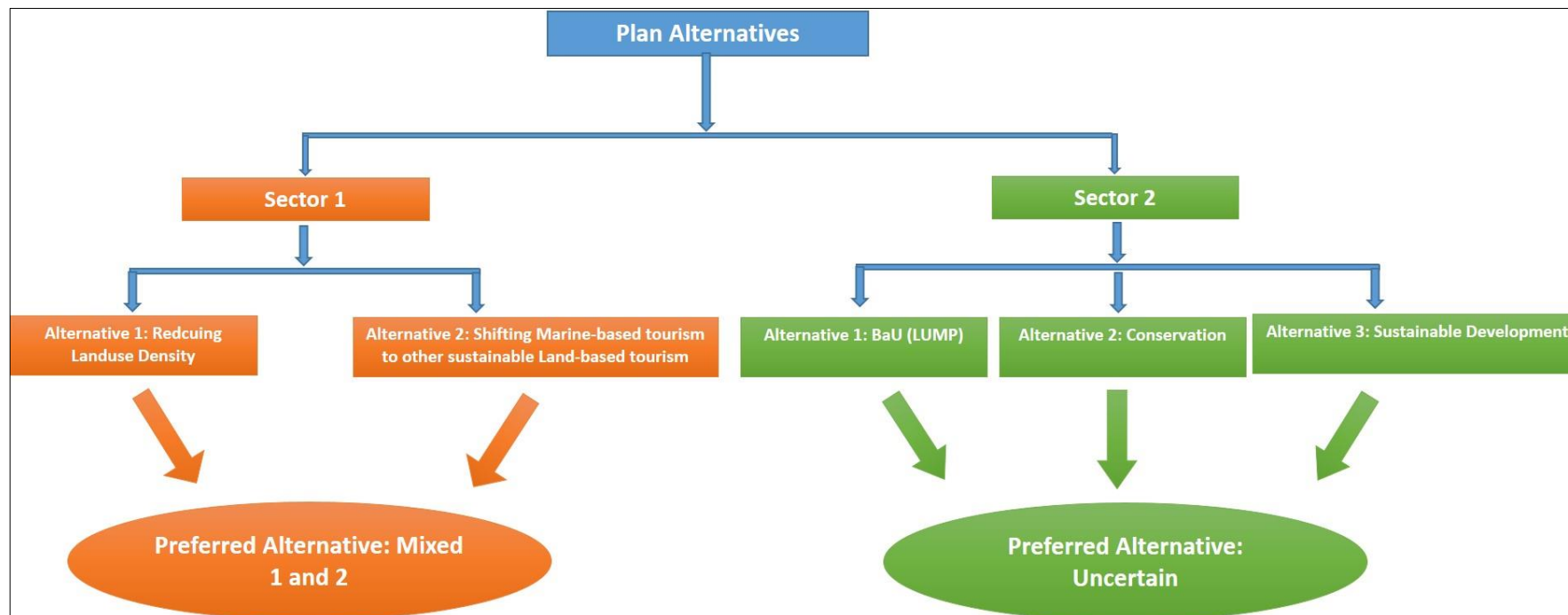


Figure 29: Summary Plan Alternatives

8. Overall SEA Recommendations

This section outlines the recommendations presented in the previous sections and detailed in previous SEA phase reports. Accordingly, recommendations are classified by theme, as presented in the following subsections.

8.1 Assessment of the Tourism Development Plans (Sector one)

The BaU scenario assessment concludes that the tourism development plans continuation is anticipated to result in potential environmental impacts. Therefore, it is necessary to develop feasible alternatives to the tourism development current plans with the aim to reduce potential environmental impacts and threats, and maximize the social and economic benefits to the local community and economy.

Accordingly, the following policy/planning measures are recommended:

- Alternatives shall be considered to reduce impacts of the tourism plans through proper planning. Impacts are minimized by reducing the planned tourist quantity. *Beach and dive site carrying capacity, and Utility demand could be used indicators, with acceptable growth rates.*
- Land-use plans are carried out based on sound scientific analysis, and accordingly classification of land-use suitability is established based on the following.
 - The revised tourism development plan alternatives to include coastal and building setbacks. Marine interventions are planned by each IDC to minimise cumulative impacts and avoid individual project impacts.
 - Environmental sensitive areas as well as risk zones are excluded from tourism development plan alternatives. Examples include turtle and bird nesting areas, Wadis and floodways, dunes and mangrove. In addition, physical buffers for these sensitive areas are identified and applied.
- Local community is involved during tourism planning and operation to reduce the social impacts and maximise economic benefits.
- Establish new urban communities to ensure sustainability. The new settlements attract other non-tourism labor to provide commodities and services to tourism labor and family population.
- The legal basis for the EIA system is revised to include concrete measures ensuring proper follow up, and implementation up to the EIA's.
- Enhance the institutional capacity to meet the planning and management requirements.
- Investigate the area vulnerability to SLR, and set out appropriate adaptation measures. For examples, low-laying areas (0-1m) may be avoided as a precautionary measure.
- Study and quantify the impact of regional tourism development along the other sides of the Red Sea, and revise the tourism plans in the project area to avoid potential conflicts with regional plans.

8.2 Assessment of WGHPA Development (Sector two)

Three different alternatives have been analysed. However, anticipated alternative environmental and socioeconomic consequences is difficult at this stage, because there is no measurable inputs of each alternatives. While the conservation alternative would help to achieve the protected area objectives, it could also offer unique nature-based, recreational and cultural opportunities for protected area visitors. In addition, if the BaU scenario continues in Sector one, the protected area could also serve to reduce the pressure on the developed areas.

On the other hand in alternative two, the creation of 4 ecotourism zones, provides an opportunity to establish a provisional ecotourism model that could be studied during its lifetime to understand its environmental and socioeconomic impacts. However, the development of ecotourism zones as planned would require involving ecotourism investors that are able to promote the area for high quality ecotourism products. As concluded by the SEA, local community should be involved during the whole process, so that their local identity and culture is part of the ecotourism marketing strategy.

Furthermore, alternative three could also be explored where the protected area management would establish a number of ecolodges within the protected area based on actual carrying capacity in non-sensitive environmental areas overlooking areas of high environmental values. The EEAA would own these ecolodges through direct investment, donor project funding, or public private partnership. Accordingly, the EEAA would get revenues, which could be invested back in management. The protected area should setup compliance monitoring for these ecolodges to be part of the overall monitoring plan. In addition, the EEAA may invite international hotel chain to undertake concession management at a percentage of the revenues.

The selection of the most appropriate alternative should be collaboratively decided based on a number of inputs based on the consultant judgement, as follows:

- Selection of alternative for Sector one, and the fate of BaU,
- Political willingness and support,
- Agreement between the concerned authorities, namely EEAA and TDA, and
- Covering data gaps, especially for WGHPA.

The following figure presents a layout of WGHPA showing the potential development alternatives.

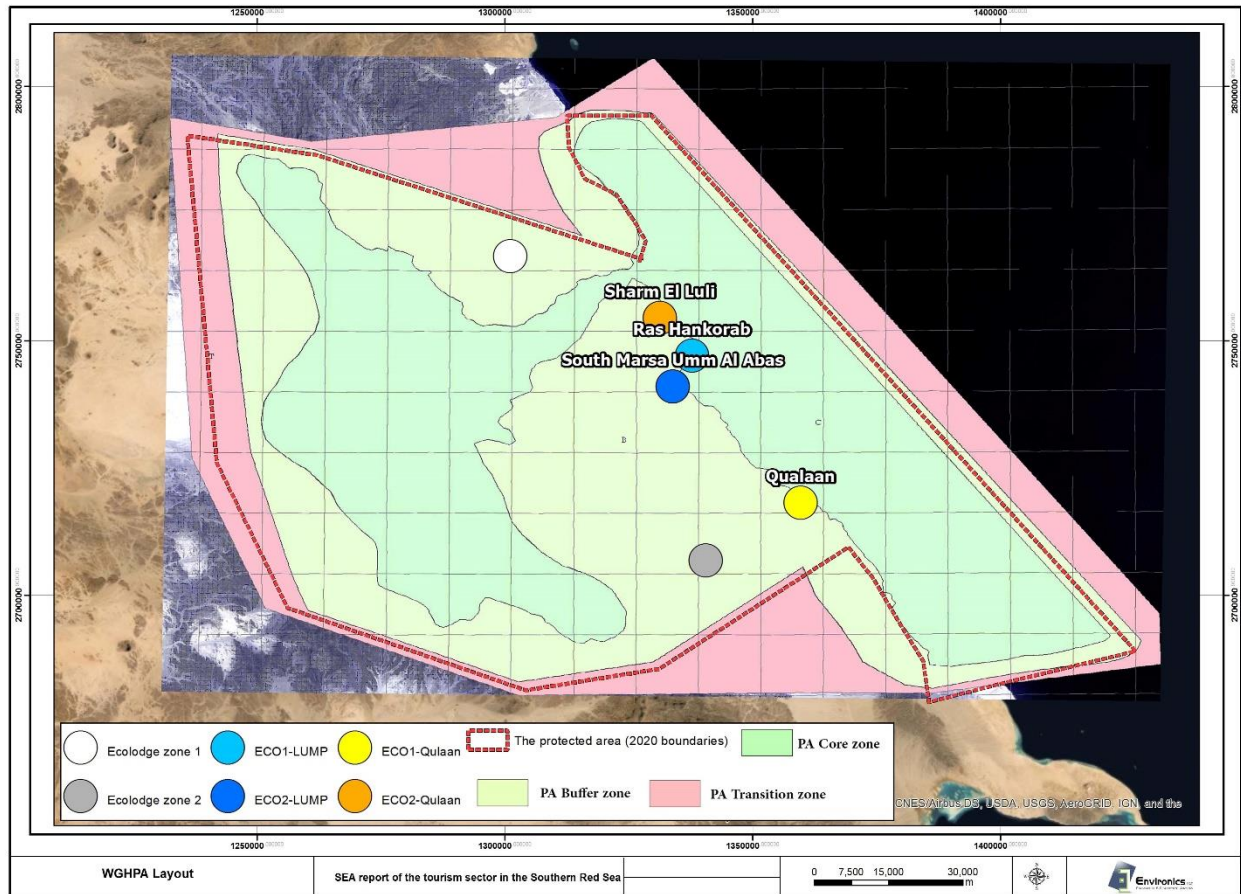


Figure 30: Potential Development Alternatives of WGHPA

8.3 Improving the Legal Framework

There might be a need to revise and amend the legal framework (Law 4/1994 amended by Law 9/2009, specifically to address the following:

8.3.1 General

- Add new definitions such as environmental sensitivity, and set the proper criteria to assess such sensitivity.
- Integrate biodiversity into development plans.

8.3.2 Coastal Development and Management

- Simplify the licensing and permit procedures of coastal projects. This requires a faster, clear, and transparent mechanism. In addition, exceptions should also be stated by the law.

Note:

The new law of Water Resources described in subsection (5.4.6) may have a simpler instrument, where it is understood that the newly established Higher Committee is represented by high level positions from relevant authorities. The

previous ministerial level higher committee is no longer exist according to the Law; however, the recommendations of the newly established Higher Committee shall be endorsed by the Minister of Water Resources and Irrigation. The endorsed recommendations obligate to all concerned authority. The new instrument may save time that would be consumed in the previous instrument.

- In the project area, the preparation of an ICZM plan for the long run sustainability will benefit both development and protection of the coastal and marine environments. The plan must be supervised by the EEAA, as the lead authority for ICZM, and involve all stakeholders including governmental authorities (central and local), local community, academic and research institutions, the private sector, as well as civil society. Lessons learnt from other Egyptian ICZM experiences must be realized and understood to avoid repeating the same mistakes. Most importantly, the ICZM plan must be complemented by an implementation strategy, and must be endorsed by the Ministry of Environment and Ministry of Finance. The implementation strategy must be practical and rely on good and simple governance allowing an easy decision making process. The strategy also should include an approved budget for implementation, and entail a monitoring and evaluation mechanism.

8.3.3 EIA System

It is recommended that during upcoming update the law of environment the following is considered:

- Identify the EEAA as the authority in charge of ensuring that the EIA approval requirements are implemented as proposed. In addition, the EEAA may be given the rule to issue environmental operational permits to be able to monitor projects during the operation phases.
- Add a definition for environmental sensitivity, which would allow proper application of the EIA system. Simple sensitivity criteria could also be provided in the law and detailed in the executive regulations, which must be consulted and agreed among stakeholders including EEAA and governmental authorities, consultants, practitioners, and academia.
- Update the existing environmental law to address the following:
 - The current EIA revision period should be consistent with the time frame of the HLC working time.
 - Set out the necessary procedures to ensure the integration of the Department of Environmental Impact Assessment and other entities responsible for monitoring and follow-up within the EEAA.
 - Raising the level of coordination with the Shore Protection Authority and other relevant entities (outside the Environmental Affairs Authority).
 - Adoption of SEA approach for plans (if any) as a key reference for the project level included in these plans.
- Update existing EIA guidelines to develop the following:
 - Specific definition/ criteria of environmental sensitivity
 - Ensure the quality of biodiversity-related content
 - Specific criteria for assessing social impacts
 - community participation/public consultation of all projects (not listed c)
 - Improving the EIA Scoping process

- Improving the process of identifying negative impact mitigation measures in the EIA
- Update the EEAA information system to allow the integration of information circulation related to the decision-making process (payment of EIA revision expenses, relevant protected area and legal affairs opinion, etc.)

8.3.4 Strategic Environmental Assessment

The existing legal environmental framework does not require to undertake SEA for a PPP. However, a number of SEA studies has been carried out for specific national plans including for instance the ICZM Plan for Matrouh-Salum, and Renewable Energy Projects in the East Nile Area. In fact, the need for the SEA was requested by donor agencies supporting the preparation of these plans as requested by their own regulations.

Accordingly, within the existing legal framework, planning authorities are not obligated to undertake SEA for PPPs. The TDA, however, applies a similar approach which is called integrated EIA (IEIA). The IEIA is applied to selected tourist centers which entail a number of projects. The IEIA considers the infrastructure of a tourist center including the roads, utilities and amenities, and takes their cumulative impacts into account. The IEIA approach, however, still is not capable of considering issues that are investigated under SEA approach such as interaction with other development plans. The IEIA is also undertaken after planning, which does not contribute to improving the plans.

During this assignment, the SEA approach was proven successful in looking at environmental and social impacts that cannot be captured by a project-level EIA. Cumulative and regional impacts, for instance impacts on biodiversity at large including cumulative impacts on coral reef, impacts on the regional/national infrastructure, have been assessed. This would be helpful in informing decision makers on the high level impacts a policy, plan or program on the environmental and socioeconomic aspects.

Therefore, there is a need to establish the SEA context into the planning and legal context. This can be achieved on the following levels:

- Enhancing the **political willingness** to adopt SEA through an environmental policy that supports the SEA.
- **Legalizing** the SEA through a law amendment to include a new mandate of the EEAA (Article 5 of the law 4/1994 amended by the law 9/2009) including the revision of national policies, plans and programs that likely would have environmental consequences.
- **Institutionalize** of the SEA where the EEAA and MoE play the main roles in revision of PPPs. In addition, provide capacity building programs on SEA for EEAA, and planning authorities staff to undertake/review SEA studies.

- **Introducing** the SEA context in the planning frameworks. The normal planning process entails establishing baseline, and identifying problems, where SEA can be introduced and improve the planning process.
- **Raise** the public awareness on the SEA and encourage public participation during planning.

Note:

The plans that may have potential impacts on the environment and accordingly trigger the SEA include according to the SEA EU Directive No. 2001/42/EC agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town and country planning or land use.

8.3.5 Biodiversity Conservation

The exiting legal framework may be amended to address the following gaps:

- Integrating biodiversity conservation into urban and economic development polices and plans. This could be easily associated with a proper high level assessment tool of such policies and plans (such as SEA).
- Coordinating efforts among relevant administrative authorities to reduce degradation of biodiversity, and providing an institutional framework and mechanism for such coordination.
- Integrating of local communities into biodiversity conservation efforts through appropriate instruments.

8.4 Data Gaps

There is a considerable amount of literature and reports focusing on the project area, however, recent and updated information is missing. The following data gaps have been identified during the SEA process, which could be addressed by concerned departments of the EEAA, in collaboration with the academic community:

- Mangroves and sensitive wadis surveys and delineation for boundaries and buffer zone mapping are missing, incomplete or inconsistent in different sources. For instance,
- Roupheh (2003) and Shaltout *et al.* (2005) mangrove coordinates/places are inconsistent with PERSGA/GEF (2004) and GEF (1997). Another example, some mangrove areas have same names in the different references but not the same coordinates. In addition, some mangroves coordinates are not clear if they are single points or stretches
- Causes of deterioration of Mangroves at Ras Baghdadi based on GEF (1997) are not known.
- Pollution sources are generic and not properly identified.
- Wadi Hamatah lacks information on length and area based on GEF (1997)
- Description of Sector 1 (not including Wadi Gemal Park) for reptiles, birds and mammals rely on +10 year old books and data. However, it is not expected that they will differ much since then.
- Wadi El Gemal National Park baseline information is old (acquired in 2003), which requires periodical monitoring and update.

- There is less information available in the Qusier area (in Sector 1) for biodiversity of fauna in comparison with Sector 2.
- Birds and their importance in this project area require more survey resources.
- Local status of birds and vegetation in sector 1 is missing.
- Nesting sites survey of sea turtles are only available for the Wadi Gemal area and missing in Sector 1. In addition available information is old (more than 5 years).
- There is no precise data on the population of local community in the project area.
- Cultural heritage and traditional knowledge of local community should be documented.
- No information resources or studies on Climate change impacts in terms of sea level rise, increased seawater temperature, CO2 concentration, as well as increase seawater acidity.
- There is insufficient information about the coastal development programs on other sides of the Red Sea outside Egypt.

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