JAUES

Journal of Al Azhar University Engineering Sector

Vol. 1, No. 3, June, 2008,

SUSTAINABLE TOURISM FRAMEWORK FOR INTEGRATED REGIONAL CONSERVATION OF PROTECTED AREAS, SINAI PENINSULA, EGYPT

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ABSTRACT
The main concern of this paper is outlining a stainable tourism framework for integrated regional conservation of protected areas in Sinai Peninsula, Egypt. Sinai's valuable and endangered resources are mainly originated in its protected areas; which faces intensive tourism demand. This demand would negatively impact Sinai's resources. Meanwhile, the national strategy for conservation of biodiversity in Egypt lacks explanation to conservation of protected areas at the level of Sinai because its regional concerns focus on the Egyptian contribution worldwide. It is only concerned with the conservation of biodiversity at the national and local levels of Egypt, while the magnitude of conducted local conservation, currently, is quite limited. This analysis, thus, supports the need for enhancing appropriate sustainable policy for regional tourism development in Sinai because sustainability is capable enough to manage tourism and protect Sinai's resources all together. Sustainable tourism approach is also investigated to define its capabilities in creating tourism development and conserving resources at the local and regional levels of Sinai. Moreover, previous development policies applied to Sinai Peninsula and the Third Region of Egypt are also assessed to define their role in conserving Sinai's biodiversity. Finally, the paper defines objectives and criteria, and outlines the sustainable tourism framework for integrated regional conservation of protected areas in Sinai Peninsula.

KEY WORDS: Sustainable Tourism, Integrated, Regional, Conservation, Protected Areas, Sinai Peninsula, Egypt

1- INTRODUCTION

Sinai Peninsula is located at the northeast part of Egypt. It is surrounded by the Mediterranean, Red Sea, Suez and Aqaba Gulfs, and Suez Canal waterway, Figures 1 and 3. It is officially subdivided into two governorates, South and North Sinai. This location is also reflected on the characteristics of Sinai. Sinai is an ecological entity with distinctive characteristics, which are the basis of Sinai attraction for tourism. The peninsula also supplies natural resources and a pleasant climate for living. These resources are all valued nationally and internationally. Therefore, policies have been initiated for developing Sinai, with objectives of achieving socio-economic prosperity; integrating Sinai into Egypt mainland and attract Egyptians to Sinai. Other development plans also applied to local areas without indications to conserving Sinai's resources, e.g., settlements, industrial, land reclamation, infrastructure and tourism. Now, the implementation of these policies is being intensively ongoing.

Sinai contains sensitive, endangered and valuable wild species; eco-zones and large number of habitats that make their preservation crucial. Therefore, eight protected areas were officially declared in Sinai, Figures 2 and 4, which constitute about 23.5 % of the total number of protected areas in Egypt, with

special types of valuable landscape; and cultural, archeological, heritage and religious resources.

Consequently, nature-based tourism has become one of the largest economic activities, which plays a critical role in Sinai because it depends and has a direct impact on its resources. Egypt received 8.1 and 8.6 m tourists in 2004 and 2005. The size of tourists interested in nature, in Egypt, is expected to reach 1.5 to 2 m in the coming years, with Sinai share of approx 35-45%. Many tourism facilities and services have been established, mainly along Sinai's coasts. The size of tourist facilities has also increased by 35%.

The additional impact of development in Sinai is the potential conflict between different land-uses and resources; spatial development; and populations characterized of local culture. This would result in ecological and socio-cultural impacts in Sinai. The consideration of these wider factors, their application to the local situation, and their integration into national and regional strategies is essential for the conservation of Sinai's resources. The implementation of these policies may also conflict with each other and always have implications for Sinai, which can negatively affect its resources.

Sinai, at the same time, suffers from lack of regional environmental conservation planning and management. The goal of the national strategy for conservation of biodiversity is to set the bases for sustainable development of Egypt's national resources. National actions complement regional and international actions in the field of biodiversity conservation. Regional actions, within this process, mean Egypt global responsibility of sharing in major ecological systems such as: the Red Sea and Mediterranean. Egypt is committed to sharing in the international endeavors as a signatory of several international conventions concerned with biodiversity conservation. The implementation of the national policy, moreover, would be achieved through different program of actions, which cover a local area or one type of biodiversity such as wetlands or marine. The national strategy does not include coordination programs between the different types of biodiversity or local areas and, thus, does not provide explanation to the integration and interrelationship between the different types of Sinai's biodiversity.

The national strategy for conservation of biodiversity does not also consider the spatial dimension, which plays a major role in development and can hinder integration between different conservation methods. It is also essential to consider local spatial dimensions and their wider impact on regional biodiversity because ongoing activity in one location can impact on others, in close proximity or further. There are also externalities, which represent the effect of many marginal increments of one activity and over a broad spatial area. Tourism development in Sinai's protected areas, e.g., interacts with other land uses locally and regionally. Considering that tourism development within biodiversity conservation, thus, should have both internal and external dimensions.

The current situation of implementing the national strategy for conservation of biodiversity, moreover, could be concluded as partial progress. This is because the magnitude of conducted conservation actions includes only data collection; defining management teams; implementing management and monitoring activities; and held periodical meetings with local parties; which applied to few protected areas in Sinai. No land use plans developed that can consider all local and regional development constraints and potentials of the protected areas.

To achieve an efficient conservation of biodiversity in Sinai, thus, regional actions and considerations should represent a major part of the national strategy for conservation of biodiversity of Egypt. This will also require harmonization and maximum coordination between conservation measures and the national and regional strategies for development in the various economic sectors.

At this juncture and since tourism is the largest and fastest growing economic activity between biodiversities in Sinai, wider planning and management is essential to control tourism, and conserve Sinai's biodiversity such as sustainable development. Thus, an appropriate approach is required for achieving regional sustainable development of protected areas in Sinai. It is believed that an integrated approach to tourism planning and management could be appropriate to achieve regional sustainable development of protected areas in Sinai. Dealing predominantly with such serious issues, sustainable

tourism is practical, as it is all about conserving resources, valuing the local culture and tradition, and contributing largely in economy.

Figure 1: Location Map of Egypt and Sinai Peninsula

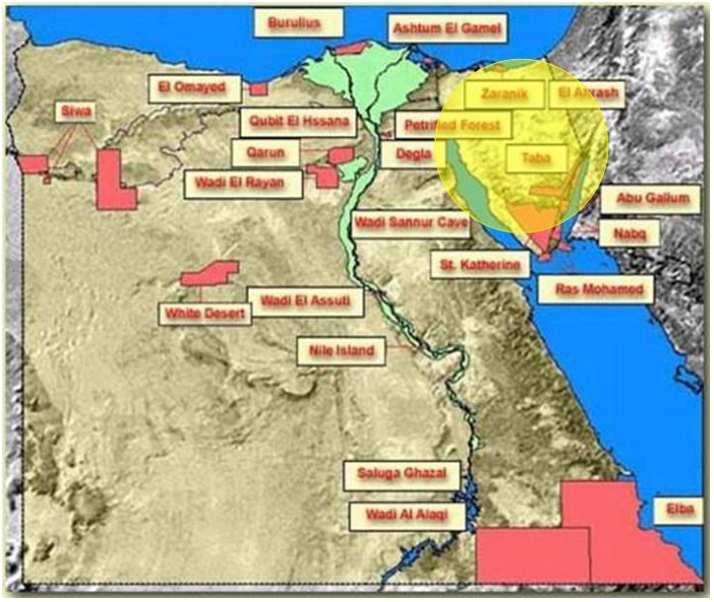


Figure 2: Distribution of Protected Areas in Sinai and Egypt

1.1. PURPOSE AND METHODOLOGY

The purpose of this paper is outlining a sustainable tourism framework for integrated regional conservation of protected areas in Sinai, Egypt. To achieve this purpose, the following methodology is employed. 1) Investigate the capabilities and potentials of sustainable tourism as an approach for promoting tourism development and integrating conservation in Sinai's protected areas. The definitions of protected areas, sustainability and biodiversity are also investigated to cover all backgrounds of conservation; 2) Analyze the importance of integrating conservation of protected areas regionally by addressing the resources; investigating natural features of the protected areas; and defining impacts of these features on tourism attractions in Sinai. Development policies, particularly tourism, applied for Sinai Peninsula are also assessed to define environmental and planning issues would perceive by the implementation of these policies; and 3) Propose guidelines for conserving and developing protected areas in Sinai through defining objectives and criteria; and outlining the sustainable tourism framework for integrated regional conservation of protected areas in Sinai Peninsula.

2. BACKGROUND AND DEFINITIONS

Before proceeding in discussion of adapting an integrated sustainable tourism framework for regional conservation of protected areas in Sinai, it is useful to have a clear perceptive of what sustainable tourism is and why it is appropriate for integrated regional conservation of Sinai's protected areas.

2.1. Sustainable Development

The World Commission on Environment and Development, in 1987, defined sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*."

Sustainable development is also a strategy, by which communities seek economic development approaches that benefit the local environment and quality of life. It provides a framework, under which communities can use resources efficiently, create efficient infrastructures, protect and enhance quality of life, and create new businesses to strengthen their economies.

2.2. Sustainable Tourism and Tourism

The importance of addressing tourism's impacts worldwide cannot be understated. By some estimates, tourism in 2000 is the world's largest industry. It generated an estimated $3.6 trillion in economic activity and accounted for one in every 12 jobs worldwide. Tourism is especially important in the developing world. It is the only economic area where developing countries consistently run a trade surplus. But the industry's rapid growth has placed a heavy burden on local economies, cultures, and environments. Uncontrolled tourism development stresses many of the planet's most sensitive areas. Thus, the 1992 Rio Earth Summit (Agenda 21) made reference to the environmental and social impacts of tourism. Since Rio, sustainability global concern of tourism has grown. International and nongovernmental organizations have identified wide range declarations, including tourism and sustainable development, social impact of tourism, tourism and biodiversity; and tourism and ethics.

In 2004, the World Tourism Organization defined the conceptual definition of sustainable tourism development: *"Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee long-term sustainability*".

The UN Environment Program on tourism definition includes "*Sustainable tourism development meets the needs of the present tourists and host regions while protecting and enhancing the opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled, while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems*".

2. 2. 1. Relationship between Ecotourism and Sustainable Tourism: Ecotourism basically deals with nature based tourism, and is aimed *"to conserve the environment and improves the well-being of local people"*. On the other hand, sustainable tourism includes all segments of tourism, and has same function to perform as of ecotourism, to conserve the resources and increase the local cultural and traditional value. Though the goals of ecotourism and sustainable tourism are much similar, but the latter is broader and conceals within itself very many aspects and categories of tourism.

2. 3. Protected Areas

The World Conservation Union (IUCN) in 1994 defines a Protected Area as: "*An area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means*".

IUCN divided protected areas into six types, managed mainly for: 1) science or wilderness protection (Strict Nature Reserve/ Wilderness Area); 2) ecosystem protection and recreation (national park); 3) conservation of specific natural features (natural monument); 4) conservation through management intervention; 5) landscape/seascape conservation and recreation (protected landscape/seascape); and 6) sustainable use of natural ecosystems (managed resource protected area).

Protected areas can also provide opportunity for rural development and rational use of marginal lands, for research and monitoring, for conservation, education and for recreation and tourism. Consequently, many nations accept the desirability of protecting outstanding examples of their natural heritage and acknowledge as a contribution to protect living resources and conserve biological diversity. The protected-area network now covers about 11 per cent of Earth's land surface.

2. 4. Biodiversity and Ecosystems:

Biodiversity is the variety of plant and animal life together genetic diversity and assemblages of organisms. Biodiversity is much more than numbers of plants and animals. It is what underpins human life and well-being. The concept of biodiversity is so broad that it reflects the linkages between genes, species and ecosystems. The significance of biodiversity is seen particularly well at species level. Species provide the food we eat, plants from which much of the world's medicine comes, the clothes we wear, the trees that re-oxygenate the air we breathe and many more benefits. Gene provides the variations that make the system strong. For thousands of years man has recognized the importance of genetics in adapting plants to grow in such a way as to increase their yield and of crossing domestic animals to encourage the development of healthy animals with plenty of meat for human consumption. **Ecosystems** provide the habitats in which biodiversity can thrive. Coastal wetlands and the plants that live there, form spawning grounds for fish and crustaceans. Forest ecosystems help to regulate water runoff into rivers and to prevent flooding. The Amazon rainforest influences global climate while the presence or absence of vegetation can influence climate locally. The list is almost endless.

3- IMPORTANCE OF INTEGRATING CONSERVATION OF PROTECTED AREAS IN SINAI PENINSULA

The importance of enhancing integrated regional sustainable tourism in Sinai's protected areas can be described by analyzing the peninsula's resources; development requirements, magnitude of ongoing tourism and economic development; and development tourism policies provided in Sinai.

Sinai Peninsula is a part of the third region, which defined by the National Urban Policy Study (NUPS, 1982). Sinai Peninsula consists of two sub-regions: Suez Canal zone and Sinai peninsula. Sinai Peninsula extends over an area of approx 61,000 km^2, about 6% of Egypt's land. Sinai Peninsula is officially subdivided into two governorates North and South Sinai. Partial of Sinai Peninsula (west part) relates to the governorates of Suez Canal Zone (Port-Said, Ismaliah and Suez), Figure 4. Sinai Peninsula has been separated from the mainland of Egypt by the Suez Canal waterway since 1789.

The population of Sinai was 170,000 in 1976. By 1986 it had risen to 200,000. Since then it has increased to 265,000 in 1993 and to 307000 in 1996. The annual rate of growth is almost 3%. The majority of this population is located along the coast of the Mediterranean. The average population density of Sinai (1.88/km^2) is generally very low compared to the national density (60/km^2) in 1993. The population is estimated to increase to reach 1.5 million in the year 2015. This growth depends mainly on Egyptians migration from the Delta and Nile Valley.

3. 1. Resources of Sinai Peninsula

The resources of Sinai Peninsula could be described through the habitats conditions and types: flora and fauna, landscape, soils and climate. The climate in Sinai, generally speaking, is characterized by extreme aridity, long hot rainless summer periods and mild winters, in which storms rarely occur. During winter, some areas experience short periods of brief but heavy rainfalls that may cause overflow of Wadi beds. The average amount of rainfall is 12 mils/year. Maximum winter temperature ranges from a high of 21°c at Gulf of Suez coast to less than 10°c at St. Catherine. Average monthly temperatures in summer, July, range from near 20°c at St. Catherine to more than 35°c at the coast of Suez Gulf. The climate is also characterized by khmaseen storms (sandstorm), when violent winds blow occasionally over a period of about 50 days during February and March.

The major types of landscape pattern recognized in Sinai Peninsula cover five different areas: Mediterranean, El-Tih plateau, Suez Gulf, Aqabah Gulf and mountains areas, Figure 3. The Mediterranean area extends along north Sinai, which is mostly sand with gentle slopes and flat landscape. The El-Tih plateau is located in the middle of Sinai. It is typed with gently dipping landscape developed on limestone and sandstone, which occupies about 40 % of the peninsula. The Suez Gulf extends to the west of Sinai. It is described by steep slopes and high relief inland; and

moderate to gentle slopes and flat or slightly undulating relief are typical along the coast. The famous part of this province is Al-Qaa plain. Aqaba Gulf is a narrow strip that goes to the east of Sinai. Steep slopes mark the Aqaba inland; and moderate to gentle slopes and flats along the coast. The mountain area represents the structured core of Sinai Peninsula, which is illustrated by steep, rugged slopes and high relief terrain. Almost one-quarter of this province is over 1000 meter in elevation, Figure 3.

The soils of the site consist mainly of unconsolidated deposits formed from alluvial, aeolin, or lacustrine deposits and developed primarily under arid conditions. Soils erode easily by run-off and are further cut by wind. In some mountain areas, large alluvial fans stretch away from eroded angular peaks of more resistant rock and form wide and sometimes deep expanses of debris in Wadis. Near the cost, the slopes level off to low basins that receive rain winter.

The vegetation of Sinai has distribution characteristics, in which the individual plants are thinly catered and large bare areas are found between individual plants and groups of plants. Vegetation is only present in or adjacent to the Wadi beds and in some coastal plains. The five major vegetative types adapted to the conditions of Sinai are semiarid vegetation with Mediterranean tendency; hot desert vegetation; coastal sand dunes; high mountain dwarf shrubs; and mangrove swamps.

About 16,400 km^2 identified as most likely to have soils suitable for agriculture. 60% of those soils can actually be irrigated. 2,885 km^2 (704,000 feddans) also were identified as most promising for further investigation. Water resources will not support even 15,000 feddans of permanent irrigated land in accessible locations. A much larger development of irrigated agriculture, however, is possible by using water imported from the Nile of about 189,000 feddans.

Sinai, moreover, has numerous areas of known mineral potential. The petroleum sector is the most productive in Sinai. Its wealth has much more impact on the national than on the regional economy. Among the better prospects are Kaolin, manganese, copper, high silica glass sand, turquoise historically mined, gold and tin-tantalum-niobium, salt, coal, iron and gypsum.

Sinai also is reach with marine fisheries. The length of Sinai's coasts is about 700 km, about 29% of total length of Egypt coasts. This coast length is additional to coasts of two lakes, Bardawil and Mallaha. Lake Bardawil is about 186,000 feddans, with approx length of 85 km, width of 2-20 km, and depth of 4 m. However, the coastal area of Sinai, from Port-Said to El-Arish, is estimated to produce annually 10,000 to 20,000 tons of fish. The permanent amount of catch at Lake Bardawil is estimated at 2,200 tons annually. A large portion is of high-value fish that can be profitably sold abroad.

To describe the biodiversity of different ecosystems in Sinai; it is preferred to be investigated as a part of the analysis of its protected areas. Eight deferent protected areas are officially announced in Sinai, including: Zaraniq and Sabkheh Bardawil, and Ahrash and Qosimah in North Sinai; and St. Catherine, Abu Galoum, Nabq, Taba and Ras Mohammed in South Sinai, Figures 4 and 5.

3. 1. 1. Protected Areas in Sinai Peninsula

Sabkheh El Bardwaeel and Zaraniq protected Area**,** 1985, is mainly a wetland and a natural restricted area for birds, with total area of 230 km2. Zaranik is the first stop for migrating birds from Europe and Asia to Africa. Over 270 species of birds have been recorded in the area, representing 14 classes and including most important birds recorded, Figure 5.

Ahrash protectorate (Rafah), 1985, is characterized by the sand dunes, with an area of 8 km2 and height of approx 60 m above the sea level, which are covered by a high density of trees, bushes, grass, pastoral and fodder plants. This vegetation types make the area a good resource of pastures, timber and a shelter for animals and wild birds. They help stabilize sand dunes and warbers located within the framework of protection.

Ras Mohamed protected area, including Tyran and Sanafir islands, announced in 1983 of total area of 850 km2. It is categorized as a World Heritage protected area because it is typed by underwater coral

reefs; colored fish and sea turtles; rare sea animals; and many important birds and animals, Figure 5.

Nabq protected Area is announced in 1992 with an of area 600 km2. It is categorized as a multipurpose protected area because it is characterized by a number of important environmental systems like: coral reefs, sea and land creatures, large dense mangrove woods. It includes environmental systems of desert, mountains and valleys; animals. The area is a center for tourist attraction for diving, safari and bird watching, Figure 5.

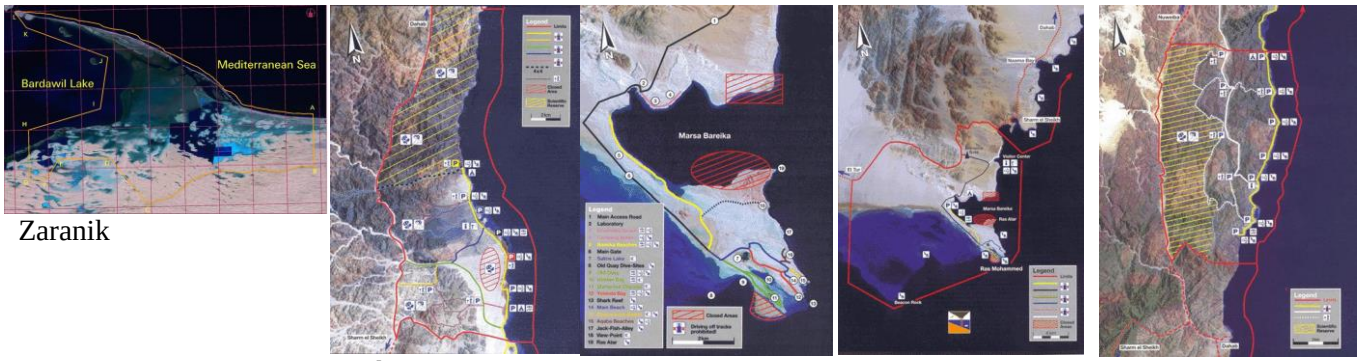
Abu Gallum protected area, 1992, is categorized as landscape protected area of an area of 500 km2. Abu Gallum importance based mainly on its special natural features of topography and seashore, which include mountains close to its beaches, various environmental systems of coral reefs, sea creatures, sea herbs, lagoons; and mountain and desert environmental systems; which are rich of wild animals, birds and plants; comprising about 165 species of plants, 44 of which exist only in this area. This makes Abu Gallum a tourist attraction for diving, safari, and bird and animal watching, Figure 5.

Saint Catherine protected, 1988, is categorized as a world cultural and natural heritage protected area, with an area of 5750 Km2. It is a tourism attraction worldwide because it is characterized by abundant of natural and cultural heritage resources, including: 1) wild life of mammals; 2) plant life of 22-28 species exist only in Sinai; 3) ancient heritage of churches and monasteries like St. Catherine monastery, Byzantine, Pharos and Islamic ruins; and 4) scenery of high mountains: St.Catherine, Serbal, Moussa, Um Shomer and Thabet; and oases around water springs and wells.

Taba protected Area, 1998, is categorized as a desert and natural heritage protected area, with an area of 3595 km2. It is characterized by its distinguished geological formations and monument sites; rare wild life and nice scenery and traditional heritage of nomads, which support wild life. Taba also includes important plant communities like acacia, 72 species of plants of Ba'ataran, Ratam and Rimth and 480 species of big group of plants; group of hills over 1000 m in height; habitat of animals; wild birds; and distinguished water springs.

Figure 3: Landscape Pattern of Sinai Peninsula

Figure 4**:** Protected Areas in Sinai



Zaranik Nabq Ras Mohamed Abu Galum

Figure 5: Protected in Sinai Peninsula

3. 2. Development and Conservation Policies Provided for Protect Areas in Sinai Peninsula

In addition to the national strategy for conservation of biodiversity in Egypt, several development policies have been also applied for Sinai Peninsula such as NUPS (1982), Sinai Development Study (1985), the International Road, Regional Plan for developing the Third Region (1995), Comprehensive Development Plan for Sinai Peninsula (1983-2000), and the Comprehensive Development Plan for Sinai Peninsula (1994-2017). The policies main objectives are achieving socio-economic development in sub-regions and attracting national migrants to Sinai, targeting population size of about 2.0 m persons in 2017; and enhancing tourism development along Sinai shores and in St. Catherine based on Sinai resources for attracting international tourists.

The investigation of development policies provided for Sinai shows that recommended policies are based on achieving tourism development in each governorate separately. They based their policies on dividing the peninsula into seven different development axes for utilizing the resources of each axis. These policies, therefore, lack of integration and management coordination between different types of protected areas in Sinai to assure fully conservation of their resources, particularly during development implementation, Figure 6.

A conceptual tourism development proposal for each axis is also developed without any indication to coordination and integration with other development axes, in terms of physical development in the protected areas. e.g., the Tourism Development Strategy for the east coast of the Aqaba Gulf, is conceptually developed to define an integrated tourism development axis along the gulf coast. It proposes connecting 5 groups of tourism centers, without integrating them with other development axes in Sinai. The policy is based only on achieving specific tourism development needs of each governorate and local area. It also neglects the integration between the protected areas at the governorate and Sinai levels to facilitate regional conservation of Sinai's resources, Figure 7.

Moreover, proposed projects include tourism facilities and services. The Comprehensive Development Plan (1994-2017) estimates about 38,000 hotel rooms during the period of 1994 to 2017. This level of development, particularly tourism, generates directly or indirectly threats to biodiversity in Sinai. These threats include excessive hunting and cutting, habitat destruction for development purposes and all types of pollution with disposals from tourism services and facilities.

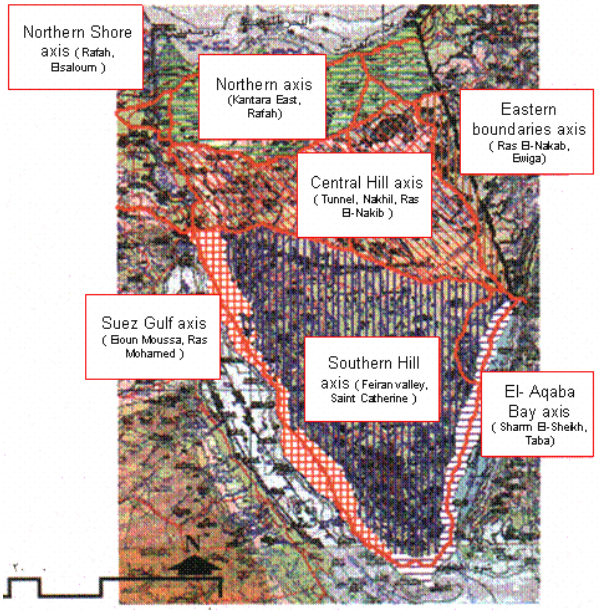


Figure 6: Development Axes in Sinai Peninsula

Figure 7**:** Tourism Development Strategy for the East Coast of Aqaba Gulf, Sinai (1994-2017)

4. PROPOSED SUSTAINABLE TOURISM FRAMEWORK

4.1. Issues of Development and Absence of Integrated Regional Conservation on Protected Areas in Sinai

Before proposing the sustainable tourism framework, it is found important to define the issues of development and absence of integrated regional conservation of protected areas in Sinai Peninsula. The above mentioned level of development, particularly tourism, generates directly or indirectly threats to natural resources in Sinai. These threats include land-use conflict, excessive hunting and cutting, habitat destruction for development purposes and all types of pollution with disposals from tourism services and facilities.

4. 1. 1. Related Tourism Activities in Sinai Peninsula

The natural resources of Sinai have dramatically increased the national and international tourists demands as a result of initiating a wide range of tourism activities such as: aesthetic, cultural, historical, archaeology, military, nature, recreation and religious tourism activities, which could be described as follows: 1) Aesthetic such as brilliant blues and tans of Ras Mohammed, or the unexpected green of the lush vegetation in the Ferian Oasis contrasted with the surrounding pink and black granites. 2) Archaeological includes Pharos burial grounds or ancient settlements such as Ain El Fogeiya, oldest settlement in Sinai; and Ancient inscriptions at numerous archeological sites, such as Sarabit El Khadim. 3) Cultural includes old cemeteries reflecting tribal burial beliefs and practices, and Bedouin villages and markaz market places where local handicrafts can be purchased. 4) Historical include ancient roads, such as the Darb El Haj, Cairo- Taba; old mining villages and mines such as Umm Bugma; old citadels such as those at El Arish, Qalat El Gindi, and Gezira Faraun. 5) Military generally reflect war remains such as burned-pass and Abu Aweigila. 6) Nature has much in common with aesthetic sites. The major difference is that sites selected for enjoyment of nature, whether focusing on geology, geomorphology, flora, or fauna, emphasize a particular feature or unique environmental role. 7) Recreational emphasizes swimming, diving or hiking. 8) Religious includes sheikhs' tombs, St. Catherine Monastery, other old monasteries, and ancient religious routes. Several biblical or religious sites are listed, including Gebel Musa, Ain El Quseima, Tell El Mahmadia (or Baal-Zephon), and Ayun Musa.

4. 1. 2. Land-use Conflict

In Sinai, there are deifferent locations of potential land-use conflict. The list of potential land-use conflict, e.g., encompasses areas of potential conflict between natural, cultural and heritage resources; and tourism, agriculture, industry and urban development as of the following.

First, to face the situation of inadequate housing and for the sake of the economic development policy, several housing and infrastructure development have been established. Such development was criticized for having an overly strong environmental bias that conflicted with the main objectives of the natural resources of the area. These policies inadequately addressed the landscape characteristics of the area, the desert culture of the Bedouins and the need to conserve water. In fact, there is a tendency of the government to plan housing development around the western concept of garden cities, particularly grid pattern, with emphasis on automobile transportation and large open spaces. This housing pattern can conflict with the environment of the area, in terms of spatial, social and climatic.

Second, the problem of uncertainty applies to livestock grazing on natural vegetation. Only nomadic or transhumant grazing is possible. There is evidence from satellite photography that Sinai, as a whole region, has experienced desertification in recent decades. Desertification is difficult to document precisely, but in so far as it is occurring, overgrazing is the probable cause. Therefore, the prospects for further development of the livestock-grazing sector are quite limited without new measures for range management which protect and enhance the natural vegetation.

Third, although hunting and catching are prohibited in protected areas in Sinai, such activities do exist in the protected areas in Sinai such as quail netting and falcon trapping are common activities of North Sinai Bedouins. In 1989, 20500 quails were captured during the catching season of 45 days along the shore of North Sinai, 179 km in length, which dramatically decreased in recent years. Other kinds of birds are being caught such as peregrine falcons, kestrels and red-footed falcons, which sold to dealers from the Arab Gulf Countries, particularly peregrines.

Fourth, in the Suez Gulf threats to be considered to the coral reef include: fishing, oil pollution from off shore oil fields, ships in the gulf and tourism related pollution, even vandalism. The coast of Suez Gulf poses tourism resources, several outstanding warm water swimming beaches and spectacular coral reef formations. The mineral works and industry form a major part of the natural resource base in the area. It can contribute significantly to industrialization and sound economic development.

Fifth, the most suitable lands for reclamation are El-Qaa Plain (4,000 feddans: 4,150 acres), Wadis in the mountain province, Northeast wadis and Northern province (20,000 feddans: 20,750 acres). At El-Tor, conversely, the groundwater supplies could be depleted use by reclamation of saline soils of the El-Qaa Plain.

Sixth, the conflicts arise in the mountains areas because of coincidence of mineral rich qualities of St. Catherine area with many years of human history evidenced in their landscape. Some mineral activities are found in the mountain province such as marble and granite quarrying. Tourism is also found in the central mountains area surrounding St. Catherine, which forms a focus for cultural and sightseeing tourism. St. Catherine, indeed, is a world-class cultural, sightseeing resource with its famous monastery, Gebel Musa, sheikhs' tombs, other old monasteries, and ancient religious routes. Tourism, in addition, is attracted by nearby complementary resources. These areas include unexpected green of the lush vegetation in the Ferian Oasis contrasted with the surrounding pink and black granites, ancient inscriptions such as Sarabit El Khadim, Bedouin villages and markaz market places where local handicrafts can be purchased. All of the above activities in these places left uncontrolled, in terms of number of visitors and cars, and magnitude of quarrying.

Finally, other constraint on the natural resources and landscape of the study area, which could have adverse impact, is pollution. Pollution has resulted from the implementation of economic development policy in South Sinai. The pollution sources include: 1) The water disposal system, particularly in the mountains province. The water disposal system pollutes the surface and groundwater. The main constraint so far upon realization of this potential increase is the lack of sewage disposal system. Most of the main settlements suffer from a lack of sewage disposal systems. Permanent Bedouin settlements, particularly in the mountain province, have a modified form of pit latrine for extra disposal. The latrine generally consists of a rectangular hole placed close to the building in the yard or the street. The bottom of the pit is left unsealed and the walls are mainly constructed of dry brick or stone to permit some seepage. 2) Other services and facilities have likewise not kept pace with the

expected rate of population and housing growth. The St. Catherine area receives domestic water supplies only from wells through tank-barrel trucks. Much of the well water is unsuitable for human consumption because these wells are polluted by the existing sewage system. 3) Wastes from industry and tourism are likely to result in the contamination of surface water or groundwater, air, land and environment. Solid waste, in most of the main settlements of Sinai, is collected by garbage trucks and donkey carts. Recyclable materials are not usually extracted. Mostly, the garbage is either burned or dumped at an excavated land fills. In nearly all of the smaller communities, solid waste is not collected, but simply buried in shallow sand near the house or thrown onto the ground. Presently, the general impression is that solid waste disposal is a serious problem in smaller settlements such as St. Catherine, Dahab, Nuweiba, Abu-Zenima and Abu-Rudeis. This is due to intensification of land-use, particularly tourism, and increases in the standard of living.

4. 2. Objectives of the Proposed Sustainable Tourism Framework

Sinai Peninsula enjoys a special collection of resources; which faces economic interests, particularly tourism. Although eight protected areas were officially announced in Sinai, their management system still concerned with conservation at the local level. The regional conservation, within this process, is mainly concerned with the international contribution of Egypt for each type of protected areas: marine, wetland, etc. While Sinai's resources face significant tourism demands, in terms of size of tourists and tourism physical assets; there is a management lack for these resources at the level of Sinai that provides a perspective of integration between the different types of protected areas and their region, and conserves their biodiversity and facilitating tourism interests simultaneously. Thus, it is found that integrated regional conservation management for the protected areas is crucial.

On the other hand, tourism has become inevitable fastest emergent economic activity targeting Sinai's resources, mainly biodiversity. Given all kinds of possible conflicts, a key challenge is sustainability because by which protected areas can be managed efficiently for tourism while protecting their natural values. Ensuring that tourism follows a sustainable path requires promoting a planning approach for managing tourism in Sinai's protected areas. Wider planning and management is essential to control tourism and to conserve Sinai biodiversity. Dealing mainly with such serious issues, sustainable tourism is found practical because it is mainly concerned with conserving resources, valuing the local culture and tradition, and contributing fundamentally to economy.

Therefore, the objectives of enhancing regional conservation of biodiversity at Sinai level are ensuring that Sinai's protected areas contribute effectively to sustainable development while conserving their biodiversity; and supporting the establishment and maintenance of efficiently managed, and ecologically representative local and regional systems of protected areas in Sinai. This could be achieved through enhancing the development of Sinai's protected areas within an integrated sustainable tourism management framework. This framework is capable to manage them complementary to Sinai's landscape as multiple-uses with maximum conservation; integrate conservation of Sinai's resources with environmentally friend economic activities; incorporate the integrated conservation management framework for the protected areas at Sinai level within the national conservation strategy of biodiversity in Egypt; and provide a formal management framework for a broad spectrum of human activities to control impacts of ongoing adverse activities in the protected areas.

4. 3. Criteria for the Proposed Sustainable Tourism Framework

According to the development objectives of conserving Sinai's protected areas, the integrated regional conservation of protected areas in Sinai would require a planning development framework that ensures a sustainable path of tourism and conserve their biodiversity. This framework should be based on achieving a group of criteria as follows:

4. 3. 1. General

* The sustainable tourism framework is primary framework for action. Its application should help to reach a balance between the objectives; apply the multiple-use protected areas in a sustainable manner;

and incorporate the relationship of protected areas to the wider landscape of Sinai.

* Within the regional context, tourism physical development in Sinai's protected areas should be integrated with the general land use plan of the region; and existence legal, institutional, technical and socio-economic frameworks which promote and guarantee sustainable management and conservation of their resources.

* Tourism development in protected areas of Sinai should be based on criteria of sustainability, which means that it must be ecologically manageable in the long term, as well as economically viable, and ethically and socially equitable for local communities. A requirement of sound management of tourism is that the sustainability of the resources on which it depends must be guaranteed.

* Tourism should be integrated with the natural, cultural and human environment at the local, regional and national levels. Recognition of the local factors and support for identity, culture and interests of the local community must, constantly, play a central role in the formulation of tourism development policies in Sinai Peninsula. It must also respect the fragile balances that characterize most of protected areas in Sinai, in particular small islands of Ras Mohamed and environmental sensitive resources.

* Tourism should ensure an acceptable evolution as regards its influence on natural resources, biodiversity and the capacity for incorporation of any impacts and residues produced.

* The sustainable tourism framework, in implementation, should consider the social, economic and environmental costs and benefits of various options of tourism development and conservation of the protected areas in Sinai. It should consider the use of appropriate technologies, source of finance and technical cooperation.

* This framework should avoid unnecessary duplication with existing thematic work program and other ongoing initiatives of tourism development and conservation of the protected areas in Sinai.

4. 3. 2. Development of Sustainable Tourism: (Role of Planning)
The sustainable tourism framework should:
* Ensure that tourism development in Sinai remains within national, regional and local plans for both tourism and other types of activities; and support the establishment of effective sub-regional, regional and national strategies and scientific and technical institutional support for management.

* Conserve the environment, maintain the quality of visitor experience, and provide benefits for local communities by ensuring that tourism planning is undertaken as part of overall development plans of Sinai, and that plans for the short-, medium-, and long-term encompass these objectives.

* Predict environmental impacts by undertaking comprehensive Environmental Impact Assessment (EIAs) for all tourism development programs in Sinai and each protected area, taking into account cumulative effects from multiple development activities of all types; and implementing effective carrying capacity programs, planning controls and management in the protected areas.

4. 3. 3. Integration of Tourism into Overall Policy for Sustainability:
The sustainable tourism framework should:
* Ensure that tourism is balanced with broader economic, social and environmental objectives at all levels by integrating the regional objectives of tourism development in the national tourism strategy for the conservation of biodiversity of Egypt; which should be based on the knowledge of local detailed environmental and biodiversity resources in the protected areas, and integrated in the national and regional sustainable development plans.

* Improve the management and development of tourism by ensuring coordination and cooperation between the different agencies, authorities and organizations concerned at all levels, and that their

jurisdictions and responsibilities are clearly defined and complement each other.

* Coordinate the allocation of land uses, and regulate inappropriate activities that damage ecosystems, by strengthening or developing integrated policies and management covering all activities, including integrated all types of biodiversities, wetlands, coastal, desert, etc.

4. 3. 4. Legislation and Standards: The sustainable tourism framework should:
* Support implementation of sustainable tourism through an effective legislative framework that establishes standards for land use in tourism development, facilities, management and investment; and during all phases of development, planning, implementing and running at the local level of the protected areas and regional level of Sinai.

* Protect the environment by setting clear ambient environmental quality standards, along with targets for reducing pollution from all sectors, including tourism, to achieve these standards, and by preventing development in areas where it would be inappropriate.

* Ensure that the environment and tourism are mutually supportive at a regional level through cooperation and coordination between the local authorities of the protected areas to establish common approaches to incentives, environmental policies, and integrated tourism development planning.

4. 3. 5. Management of Tourism: The sustainable tourism framework should:
* Ensure long-term commitments and improvements to develop and promote sustainable tourism, through partnerships and voluntary initiatives by all sectors and stakeholders, including initiatives to give local communities of the protected areas a share in the ownership and benefits of tourism.

* Ensure consistent monitoring and review of tourism activities in each protected area to detect problems at early stages and enable actions to prevent the possibility of more serious damage.

* Minimize resource utilization and, in turn, generation of pollution and wastes by using and promoting environmentally-sound technologies (ESTs) for tourism and associated infrastructure locally and regionally.

* Ensure compliance with development plans, planning conditions, standards and targets for sustainable tourism by providing incentives, monitoring compliance, and enforcement activities where necessary.

4. 4. Outlines and Recommendations for the Proposed Sustainable Tourism Framework

The following recommendations and guidelines are based on the findings of the above analysis and conservation objectives of the protected areas in Sinai; and concept and capabilities of the sustainable tourism approach. They also integrate the policy and planning framework, and outline a set of actions to achieve the objectives of the integrated sustainable tourism for the conservation of the protected areas in Sinai. The principal features of an adaptive management process for proper management of sustainable tourism are: development of sustainable tourism; integration of tourism into overall framework for sustainability; legislation and standards; and management of tourism.

4. 4. 1. General
* Each protected area in Sinai needs a plan that describes how tourism and associated development will be managed in relation to sustainable aspects. The plan represents the desired future state or condition of the protected area and the most efficient and equitable path to that future; details the specific goals and objectives mandated for the area in its founding legislation, decree or government policy; and describes tourism development objectives, and specifies the management actions, budgeting, financing and zoning needed for protected areas to achieve those goals.

* Integrate developing a protected area tourism plan with other plans for the protected area, such as wildlife, fire and vegetation management plans. The issue of tourism in protected areas should be addressed in the policies relating to tourism and recreation within the management plan. Managing tourism plans for protected areas should maximize the benefits of tourism and minimize its costs.

* Planning should occur within, and acknowledge, the regional context of each protected area in Sinai. This means that tourism types afforded in protected areas should be inventoried as part of the planning process; and tourism planning within a protected area should take account of tourism demands and provision in other protected areas in Sinai Peninsula.

* Considering impact of different policy statements on the conservation of protected areas and tourism development in Sinai such as national of Egypt, regional of Sinai and the Third Region, Comprehensive Plan, et; these policies should essentially be incorporated in the planning process of the protected areas.

* Level of details in protected area tourism plans, will depend upon the complexity of issues to be considered. This plan may detail specific tourism management practices to be deployed: facility locations, policies to guide tourism operations, level of fees charged to tourism operatives etc.

* In designing a planning process it is important to adopt an understandable procedure and defensible, where decisions can be traced and where the value judgments inherent in protected areas planning are made explicit.

* The management plan outlines the main elements of management, guides all developments and defines the objectives of the protected areas in the wider region by addressing: resource management and protection; human use, including tourism; research and monitoring and administration.

4. 4. 2. Development of Sustainable Tourism: (Role of Planning and Land-use)
* Integrate all protected areas with the general land use plan for Sinai. The conservation of protected areas requires a master plan, as a detailed part of the master plan of developing Sinai Peninsula, incorporating environmental considerations into each of the development sectors (environment, tourism, transport, industry etc.). The objectives of conservation of the biodiversity of the protected areas must be reflected on the regional master plan.

- Interactig all community services (transportation, tourism and commercial development) within the physical planning and design of the protected areas; then into the regional context, including other land-use activities of the different kinds of protected areas.

- Considering all spatial development such as tourism, urban, industrial, infrastructure, etc; including internal and external dimensions of their wider impact on regional ecosystems of Sinai.

* Defining site plans to explain the guidelines for development of tourist facilities in protected areas. Specific site plans should include detailed guidelines for development of tourist and park facilities such as manmade structures and infrastructure.

- Reviewing existing policy, legal and institutional frameworks for developing and managing Sinai and the Third Region of Egypt; and undertaking a comparative analysis of national frameworks to identify existing weaknesses and strengths of existing policy, legislation and institutional measures for establishment and management of the protected areas in Sinai.

- Identifying land use conflicts in the protected areas; solving options to harmonize development of resources; and tourist interaction with the local culture.

- Determining objectives through discussion and negotiation directly with concerned, beneficiaries, decision makers, end users, etc.

- Defining construction guide and procedure for design and execution methods and materials to minimize impact on the environment.

- Defining conflict between protected areas and adjacent, especially community growth resulted in response to tourist development.

* Promoting sustained natural resource use in accordance with the socio-economic development of Sinai, while including considerable participation of protected areas civil society; and ensuring response of project proposals to regional development plans and guidelines for sustainable development.

* To avoid the isolation of tourism planning, incorporate tourism planning with planning for all sectors and development objectives to ensure that the needs of all protected areas are addressed.

* Exchange information and experiences between each and different types of protected areas in Sinai; including training manpower programs in fields of conservation of biodiversity.

* Adopt or amend legislation to ensure that Environmental Impact Assessment (EIAs) and planning process examine factors of Sinai, the protected areas and their adjacent.

4. 4. 3. Integration of Tourism into Overall Policy for Sustainability: (National Strategies)
* Incorporate local and regional framework of sustaining tourism in Sinai's protected areas in the national conservation strategy of biodiversity of Egypt in a form of a master plan for tourism development and management; which would be updated periodically.

* Enhance economic development and employment prospects while protecting the environment by: adopting development guidelines for sustainable use of Sinai resources in all plans; providing support via policy development and commitment to promote sustainability in tourism and related activities; strengthening a tourism coordination policy, planning development and management at all levels; and maintaining a balance with other economic activities and natural resource uses in Sinai.

* Maximize economic, social and environmental benefits from tourism and minimize its adverse effects, through effective coordination and management of development; focus on complement of different interests with each other in a balanced sustainable development program; and carry out restoration programs effectively in damaged or degraded protected areas.

* Identify and resolve potential or existing land use conflicts at early stages, especially between tourism and other activities within each protected area. Involve all relevant stakeholders in the development of sound management plans, and provide the organization, facilities and enforcement capacity required for effective implementation of those management plans for each protected area.

4. 4. 4. Legislation and Standards
* Introduce new or amended planning or related legislation where necessary to each or all types of protected areas in Sinai as appropriate.

* Strengthen institutional frameworks for enforcement of legislation to improve their effectiveness where necessary.

* Standardize legislation and simplify regulations and regulatory structures to improve clarity and remove inconsistencies.

* Provide a flexible legal framework for tourism destinations to develop their own set of rules and regulations applicable within their boundaries to suit the specific circumstances of their local socio-economic and environmental situations, while maintaining consistency with overall national and regional objectives and minimum standards.

* Promote a better understanding between stakeholders of their differentiated roles and their shared responsibility to make tourism sustainable.

* Adopt regional frameworks for Sinai within which protected areas set their own targets, incentive and environmental policies, standards and regulations, to maximize benefits and avoid environmental deterioration from tourism activities.

4. 4. 5. Management of Tourism

* Highlight suitable approaches for enhancing establishment and management of the protected areas in Sinai through improved policy, legal and institutional arrangements at both national and regional levels; incorporate specific detailed recommendations regarding the development of harmonized policy, legislation and institutional arrangements in support of establishment and management of the protected areas within the region; and prepare a management plan for protected areas, which should be coordinated and integrated with other agencies, local government, and sectoral plans for the area; including a zoning plan of appropriate activities in each zone; and based on objectives, infrastructure and standards for tourism developments (style, location of structures, waste treatment, impact on resources, preservation of open spaces, and public use of and access to resources).

* Consider regional collaboration for integrated tourism development planning in the protected areas; and develop regional strategies to address trans-boundary environmental issues.

* Ensure involvement of all stakeholders, including government agencies and local planning authorities in the development and implementation of tourism; enable coordination between different beneficiaries of tourism industry, local communities, organizations and institutions; and strengthen the role of local authorities in the management and control of tourism.

* Apply visitor management techniques to understand the factors that lead to incident (e.g. lack of experience, or willingness of visitors to take risks). The prevention of public safety incidents, and when necessary the delivery of public safety, and of search and rescue services, should be a shared responsibility between protected area managers, tourism operators, stakeholders, visitors and users.

* Define a built-in monitoring system for the conservation parameters of the protected areas as of: impact on the natural environment, resolution of conflicts over resources, implementation of master plan, regional cooperation, institutional and staff capacity, water supply and quality, impact and quality of construction activities, and control of pollution. A specific procedure and monitoring schedule for the parameters should be designed.

* Monitor the implementation of environmental protection and related measures set out in EIAs, and their effectiveness, taking into account the effectiveness of any ongoing management requirements for the effective operation and maintenance of those measures for protection of the protected areas where tourism activities take place.

* Promote utilizing Environmentally Sound Technologies (ESTs) by tourism enterprises and public authorities dealing with tourism or related infrastructures, as appropriate, including the use of renewable energy and ESTs for sanitation, water supply, and minimization of the production of wastes generated by tourism facilities.

* Provide sufficient resources for maintaining compliance, including increasing the number of trained staff; monitoring environmental conditions and compliance with legislation, regulations, and consent conditions; and detecting problems at an early stage and enabling action to be taken to prevent possibilities of more serious damage.

4. 4. 6. Conditions for Success:

* Increase the long-term success of tourism projects by involving all primary stakeholders, including the local community, the tourism industry, and the government, in the development and implementation of tourism plans at all levels.

* Raise awareness of sustainable tourism and its implementation by promoting exchange of information between governments and all stakeholders, and establishment of networks for dialogue; and promoting broad understanding and awareness to strengthen attitudes, values and actions that are compatible with sustainable development.

* Ensure effective implementation of sustainable tourism through capacity building programs to develop and strengthen human resources and institutional capacities in government at national, regional and local levels, and amongst local communities; and integrate environmental and human ecological considerations at all levels.

5. CONCLUSION

The paper explored the sustainable tourism as a promising approach to outline the guideline framework for integrated regional conservation of protected areas in Sinai Peninsula, Egypt. The study has also demonstrated the use of a framework that designates specific planning and management land-use for protected areas and, in turn, adapts integrated conservation at the level of Sinai Peninsula. The analysis outcomes show that the resources of Sinai's protected areas are facing intensive socio-economic development, particularly tourism. These resources are sensitive to development because they include rare, endangered or valuable wild species, which has led to establishing eight protected areas in Sinai. At the same time, the national strategy for conservation of biodiversity in Egypt does not provide clarification to environmental conservation of protected areas at the level of Sinai. Its regional concerns concentrate only on the worldwide contribution of Egypt. It focuses only on the national and local actions, while the size of conducted local conservation, now, still inadequate.

The paper concerns, thus, are not just the conservation of the protected areas, but also the integration and coordination of conservation with development and between the protected areas at the level of Sinai Peninsula, since the regional integration of conservation and development facilitates the effective and efficient use of Sinai's protected areas and their resources.

The paper also focuses on the nature of the appropriate conservation approach for Sinai's protected areas. The argument of the protected areas arises from a collision of tourism as a development constraint, the protection of the resources and the need for economic development. Considering all types of related conflicts, the key challenge is sustainability because it is capable enough to manage efficiently tourism and preserve the protected areas simultaneously. Wider planning and management is also significant to control tourism, and to conserve Sinai's resources. Dealing with such planning issues, sustainable tourism is found practical because it is not restricted to the quality of data or level of analysis. It makes optimal use of environmental resources utilized in tourism; maintains essential ecological processes by supporting conservation of natural heritage and biodiversity; respects the socio-cultural faithfulness of host communities through conserving their built and living cultural heritage and traditional values, and contributing to inter-cultural understanding and tolerance; and ensures practical and long-term economic operations by providing socio-economic benefits to all stakeholders. Thus, it is agreed that the sustainable tourism framework will be the basic practical technique to achieve the integration of use of land resources of the protected areas in Sinai Peninsula.

To facilitate adapting sustainable tourism for integrating regional conservation of Sinai's protected areas, a conceptual framework is developed, including conservation objectives, criteria and guidelines of proposed procedure for implementing the framework. The procedure developed could have a relative application to regional conservation of other protected areas in Egypt, such as the ones in the Greater Cairo Region, Eastern Desert and Red Sea Coast, North-west Coast, etc. Each zone, to some extent, contains similar landscape and land-use practices on different areas. Their resources also have

been facing pressure due to recreational and economic interests.

The paper also insists that the national strategy for conservation of biodiversity in Egypt, at the same time, should be adapted to define explanation to conservation at the regional level of Egypt. It should also be coordinated with the national and regional economic development policies to avoid unexpected future land use conflicts. The findings of this study, therefore, could be directly applicable in the adaptation of this strategy.

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