

## THE IMPACT OF TOURISM DEVELOPMENT ON SOUTH SINAI

Saher Samir Saad\*

Urban planning department, Faculty of Engineering, Al-Azhar University, Nasr City, 11884, Cairo, Egypt,

\*Correspondence: [arcplans@gmail.com](mailto:arcplans@gmail.com).

### Citation:

S. S. Saad, "The Impact of Tourism Development on South Sinai", Journal of Al-Azhar University Engineering Sector, vol. 19, pp. 89 - 110, 2024.

Received: 03 December 2023

Revised: 04 March 2024

Accepted: 17 March 2024

DOI:10.21608/aej.2024.252805.1503

Copyright © 2024 by the authors. This article is an open-access article distributed under the terms and conditions of Creative Commons Attribution-Share Alike 4.0 International Public License (CC BY-SA 4.0)

### ABSTRACT

Tourism is a human phenomenon and an economic-social activity that plays a significant role in the lives of societies. It has become an essential aspect of both individual and national life. Like any other economic and human activity, tourism has positive and negative effects. Tourism development aims to achieve sustainable development in South Sinai and improve services and infrastructure. It serves as a main reason for urbanization, attracting activities, population, and creating job opportunities. The researcher aims to achieve the study's objectives by exploring the general characteristics of urban settlements in South Sinai and their relationship with tourism development. The study also examines the factors influencing this relationship to gain a better understanding of the interaction between different activities and places, leading to appropriate guidance. To achieve comprehensive tourism development, it is necessary to determine the capacity of tourist sites and promote and establish projects that provide income for the local population. It is also important to collaborate with all sectors related to tourism in order to ensure the success of tourism projects. A policy of distributing urban settlements aims to utilize existing urban settlement regardless of their type, making them the nucleus of comprehensive tourism and urban development. Additionally, strategic coastal locations can be exploited to establish communities that integrate tourism, urban development, agriculture, and industry, thereby achieving both developmental and security objectives. The idea of distributing settlements relies on regional integration with comprehensive development, considering the size and location of central or main settlement and their connection to proposed development road networks and development axes. Based on these criteria, urban settlements have been selected and classified. One of the most important results that were reached is the unique of the geographic location of South Sinai which represents a functional significance in affirming its tourism and heritage role. The relationship between tourism and urban elements is a direct relationship which has a significant impact on most tourist sites in South Sinai.

**KEYWORDS:** Tourism, Development strategy, urbanization, Urban Planning.

### أثر التنمية السياحية علي جنوب سيناء

ساهر سمير سعد\*

قسم التخطيط العمراني، كلية الهندسة، جامعة الأزهر، مدينة نصر، 11884، القاهرة، مصر.

\*البريد الإلكتروني للباحث الرئيسي: [arcplans@gmail.com](mailto:arcplans@gmail.com).

### الملخص

أن السياحة ظاهرة إنسانية ونشاط اقتصادي- اجتماعي يمثل قوى فاعلة ومؤثرة في حياة المجتمعات، حيث إنها أصبحت تحل حيزا لا يستهان به في حياة الأفراد والدولة ككل على حد سواء، وهي مثل أي نشاط اقتصادي وإنساني آخر لها آثارها ونتائجها الإيجابية والسلبية. ان التنمية السياحية هي تحقيق التنمية المستدامة بجنوب سيناء والارتقاء بالخدمات وشبكة الطرق وهي محرك رئيسي لنشر العمران وجذب الأنشطة والسكان وخلق فرص العمل. سوف يتبع الباحث في اعداد هذا البحث على تحقيق اهداف الدراسة للتعرف على الخصائص العامة للتجمعات العمراني في جنوب سيناء وعلاقتها بالتنمية السياحية ودراسة العوامل المؤثرة

فيها للتعرف على مدى التفاعل بين المكان والانشطة المختلفة ليتسنى الوصول الي توجيه مناسب لها. يجب اعتماد السياحة كصناعة استراتيجية ذات مردود اقتصادي والاهتمام والتركيز بهذا المجال الحيوي وإظهار ارتباطها الوثيق بالفروع الاقتصادية الإنتاجية والخدمية، ولاسيما النمو الحضري. ورسم خريطة العمران الذي تشكل أحد أهم مقومات التكامل مع السياحة واستغلال المقومات السياحية بأنواعها في توجيه التنمية العمرانية. لتحقيق التنمية السياحية الشاملة يجب تحديد القدرة الاستيعابية للمواقع السياحية وتشجيع اقامة المشاريع التي توفر دخول للسكان المحليين وتعاون كل القطاعات ذات العلاقة بالقطاع السياحي لإنجاح اقامة المشروعات السياحية. وتقوم سياسة توزيع التجمعات العمرانية على الاستفادة من مواقع التجمعات العمرانية القائمة أيا كان نوع هذا التجمع بحيث يكون نواة لعملية التنمية السياحية والعمرانية الشاملة مع استغلال المواقع الاستراتيجية في الساحل لإقامة مجتمعات (سياحة – عمرانية – زراعية – صناعية) تحقق الجانب التنموي والأمني. وتعتمد فكرة توزيع التجمعات على الارتباط الإقليمي بالتنمية الشاملة خلال أحجام ومواقع التجمعات المركزية أو الرئيسية وارتباطها بشبكات الطرق ومحاور التنمية المقترحة. وعلى هذا الأساس تم اختيار وتصنيف التجمعات العمرانية. ومن اهم النتائج التي تم الوصول اليها ان الموقع الجغرافي الفريد لجنوب سيناء يمثل أهمية وظيفية في تأكيد دورها السياحي والتراثي. وأن العلاقة بين عناصر (السياحة- العمران) في تأثيرهم على معظم المواقع السياحية بجنوب سيناء علاقة طردية فكما زادت المقومات الطبيعية والسياحية بالموقع كلما زادت عناصر التنمية العمرانية به.

**الكلمات المفتاحية :** السياحة، استراتيجية التنمية، التحضر، التخطيط الحضري..

### **Research importance.**

Highlighting the tourism assets in the South Sinai region, which is one of the most important tourist destinations in Egypt. It possesses natural, environmental, cultural, and infrastructural resources that constitute effective tourist attractions, with a strong impact on both the local and regional levels. Utilizing the various tourism assets can guide urban development in its diverse forms.

### **Research problem.**

can be summarized as the weakness in the tourism industry and the potential for its development to achieve the desired goals of the development plan. Despite the long history of tourism in the study area, there is still a noticeable lack of tourism services, which could stimulate tourism activity.

### **Research objectives.**

- Study the spatial distribution and identify the obstacles and problems facing the tourism services and facilities in South Sinai.
- Analyze and evaluate the current status of tourism services and facilities and utilize the natural tourism resources.
- Develop and enhance the current urban map and consider it as the primary structure for drawing the tourism development map.
- Outline a proposed tourism and urban development map.

### **Research hypotheses.**

Tourism resources play a central role in directing and shaping urban development, and the region's tourism resources play a role in activating domestic and international tourism, with developmental implications for the tourism sector.

## **1. Lesson Learned from previous Experiences in the Field of Tourism Development.**

The lessons learned from the experiences of countries in the field of tourism development are as follows:

- Identifying suitable sites and lands for tourism investment through regional planning studies of coastal areas, including both the shoreline and the hinterland.
- Dividing large coastal areas into spatially homogeneous sectors and studying the integrated investment in these sectors in line with approved tourism development plans (Egyptian experience, Turkish experience).
- The possibility of dividing a single spatial sector (according to its area) into large "zones" that constitute "integrated tourist centers," each of which includes numerous tourism, entertainment, and service projects (Egyptian experience, Turkish experience).
- The specifications of the hinterland, its functions, and land uses are determined according to the study's vision for coastal areas, following an examination of a range of natural, economic, and urban influences on the lands lying behind the coastal area.
- The adoption of integrated planning principles for the coastal area and the hinterland at the regional study level first, and then at the urban study level (general plans) in the later stages of the spatial tourism planning process for the two regions.
- The possibility of constructing new urban settlements (residential suburbs) in the hinterland, aiming to alleviate urban pressure on coastal cities and serve the coastal tourism area.
- The possibility of leveraging some urban settlements in the hinterland to serve as "towns or service villages" that functionally support the coastal area.

## **2. INTRODUCTION**

The issue of tourism development is considered one of the contemporary issues for many countries of the world because it aims to contribute to increasing real individual income, and thus it is considered one of the main sources of national income. It also includes cultural development in Egypt, including all natural, human, and material components. Tourism development is a means of economic development.

In recent years, Egypt's tourism development path has suffered from many crises, obstacles, and challenges, especially after the January 25th revolution in 2011 and the subsequent major events that changed the course of political, social, and economic life. These events had negative effects on tourism development.

This research aims to highlight the tourism assets of the South Sinai axis, which is considered one of the most important tourist areas in Egypt due to its natural, environmental, cultural, and infrastructural assets, which form effective tourist attractions with a strong impact on the local and regional levels. The research also aims to exploit tourism assets of all kinds to guide urban development in all its forms.

The research problem is summarized in the weakness of the tourism industry and the possibility of developing it to achieve the desired goals of the development plan. Despite the long history of tourism in the study area, it is noticeable that the area still suffers from a shortage of touristic services that would activate tourism activity

The research aims To study the spatial distribution and identify the obstacles and problems facing tourism services and facilities in South Sinai, To analyze and evaluate the current status of

tourism services and facilities and to benefit from natural tourism assets and finally To draw a map of the proposed tourism and urban development.

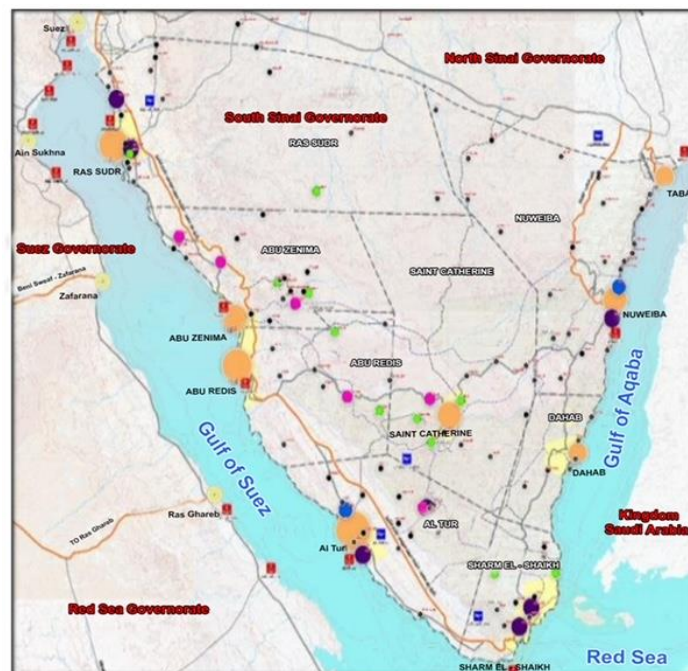
### 3. Analytical Studies.

#### 3.1. Location.

The region of South Sinai represents the eastern coast of the Gulf of Suez, which represents the western side of the inverted triangle, whose base extends from Taba east (which is located at the intersection of the eastern border with the Gulf of Aqaba) to Ras Masala on the Gulf of Suez. This line is about 55 km from Mount Shairah, 5 km south of Bir el-Nemr, and 7 km south of Nahal and Metla. As for the sides of this triangle, it is bordered by the Gulf of Aqaba to the east (Taba - Ras Mohammed) and the Gulf of Suez to the west (Ras Masala - Ras Mohammed).

The decision to divide Sinai and define it was issued in February 1989, and the area of South Sinai Governorate is about 31,272 km<sup>2</sup>. It is characterized by highlands and mountains, which are in the middle (Saint Catherine and the Wilderness Plateau, and extend to its northern borders, the northern slopes of the Wilderness Plateau), which slope in the direction of the north, east, and west. The most important cities of South Sinai Governorate are Ras Sudr, Abu Zenima, Abu Rudeis, Sharm El Sheikh, Dahab, Nuweiba, Saint Catherine, and Al-Tur, which is the capital of the governorate [1] **Fig. 1**.

However, the percentage of what was produced from this field did not exceed 5% of Egypt's total oil production. In 1955, the field of "Belayim land" was discovered. In 1957, the field of "Abu Rudeis" was discovered. In 1967, oil production jumped to 80% of Egypt's total oil production. The most important oil fields in Sinai are "Belayim land", "Belayim Sea" (under the Gulf of Suez), "Abu Rudeis", "Assal", "Matarma", and "Feran". All of them are located in the western sector of South Sinai, along the Gulf of Suez [10].



**Fig. 1.** South Sinai Governorate location. Source: Mohamed Siraj El-Din - Replanning Sinai and drawing its urban map in 2000 – PHD Thesis - Al-Azhar University - 1987.

### 3.2. Administrative divisions of South Sinai Governorate.

South Sinai Governorate is located in the southern part of the Sinai Peninsula, bordered by the Gulf of Aqaba to the east, starting from the village of Taba to the Red Sea, and the Gulf of Suez, starting from Ras Masala to the Red Sea to the south Figure no. 2. It is shaped like a triangle, bordered to the north by the southern border of North Sinai Governorate (Nakhl Center and City), and Al-Shati Center, which is currently affiliated with Suez Governorate. The capital of South Sinai Governorate is the city of El Tur, and it is characterized by its location on the Gulf of Suez and its healthy climate. The total area of South Sinai Governorate is approximately 31,272 km<sup>2</sup>, representing 3.1% of the total area of the Arab Republic of Egypt[7].

South Sinai Governorate is divided into eight sections: El Tur, Ras Sudr, Abu Rudeis, Abu Zenima, Saint Catherine, Sharm El Sheikh, Dahab, Nuweiba, and Taba. Each section includes a city, as well as a number of local village units and dependent villages. There are a total of 12 local village units in the governorate, and 146 Bedouin gatherings. The Bedouin gatherings are considered accounting units in the population census[9].

### 3.3. Population Studies of the South Sinai.

The population of South Sinai Governorate in 2017 was 102,000 people, representing 0.11% of the population of the Republic for the same year. According to the latest estimates of the Central Agency for Public Mobilization and Statistics in 2021, the population of the governorate reached approximately 108,000 people[9].

The number of urban residents of the governorate is about 59,000 people, representing 55%, while the number of rural residents of the governorate is about 49,000 people, representing 45%, according to estimates for 2021[9].

The Gulf of Suez sector accounts for 71% of the population, with an estimated size of 77,000 people, compared to 29% with an estimated size of 31,000 people for the Gulf of Aqaba sector of the total population of the governorate according to estimates for 2021[9].

At the level of urban residents, the Gulf of Suez sector accounts for a population of about 54,000 people, representing 92% of the residents of the urban governorate, compared to an estimated population of about 5,000 people for the Gulf of Aqaba sector, representing 8% of the residents of the urban governorate according to estimates for 2021[9].

At the level of rural residents, the population of the Gulf of Suez sector is estimated at 23,000 people, representing 47% of the rural population of the governorate, while the population of the Gulf of Aqaba sector is estimated at 26,000 people, representing 53% of the rural population of the governorate according to estimates for 2021[9].

### 3.4. Transportation Network.

#### 3.4.1. Road Network.

The total length of the paved road network in "Sinai region" is 5,556 km, while the length of the unpaved roads is 1,140 km. The paved network is divided administratively into a national network under the Ministry of Transport (General Authority for Roads and Bridges) and local networks under local authorities. Because most of the urban activity in the governorate is concentrated mainly in some tourist areas with the presence of some inland cities and villages, the main roads network in the region includes the following roads, **Fig. 2**[1].

Sharm El Sheikh Road, which starts from the Martyr Ahmed Hamdy Tunnel, passing through the cities of the Gulf of Suez and the capital of South Sinai, Tor Sinai, to Sharm El Sheikh with a length of 342 kilometers, does not take more than 4 hours from "Cairo-Sharm El Sheikh",

equipped with fuel stations to refuel cars, ambulance points, and flood culverts, in addition to the fact that two axes will be opened for it in Sharm El Sheikh, the Peace Road and the Ring Road, which allows access to Sharm El Sheikh Airport within minutes[13].

The Martyr Ahmed Hamdy Tunnel - Al-Shatt - Ras Sedr - Abu Zenima - Abu Risha - Al-Tur - Sharm El Sheikh - Dahab - Nuweiba - Taba road is about 580 kilometers long and is known as the coastal road. It passes through the plain or plateau areas between the mountains or above the coast, and many valleys intersect with it. The importance of this road is that it connects the coastal tourist cities with each other, and it also connects them to the Nile Valley via Al-Shatt and the Martyr Ahmed Hamdy Tunnel[13].

This road is considered a tourist road in the first degree, as it connects all the coastal cities located on the Gulf of Suez and Aqaba to the Nile Valley, as well as connecting them to each other. In addition, it connects the important mining centers (Abu Zenima - Abu Risha - Belayim) located on the Gulf of Suez to the rest of the Republic, and it also connects Saint Catherine to the rest of the tourist cities in South Sinai.

The road that intersects with Al-Tur / Saint Catherine, the intersection of Dahab and Nuweiba, is about 156 kilometers long and is known as the Saint Catherine road. It connects the tourist city of Saint Catherine with the rest of the cities of South Sinai, and it also connects it to the Nile Valley. It crosses many mountains and plateaus in the region[13].

The Nuweiba Ras Naqeb road is about 96 kilometers long and is known as the Wadi Weter road. It passes through parts of Wadi Weter and its tributaries. It is a flat road in most of its parts. Its importance lies in the fact that it connects Nuweiba Port to the Middle Road and the Nile Valley[13].

The Ras Naqeb - Al-Nmad - Nakhil - Al-Shatt road is about 126 kilometers long and is known as the Middle Road. It is the shortest road that connects Nuweiba Port to the Nile Valley via the Nuweiba - Ras Naqeb road[13].

The Taba - Ras Naqeb road is a new road that crosses a series of mountains at its intersection with the Taba - Nuweiba road. Its importance lies in connecting Taba with Ras Naqeb[13].

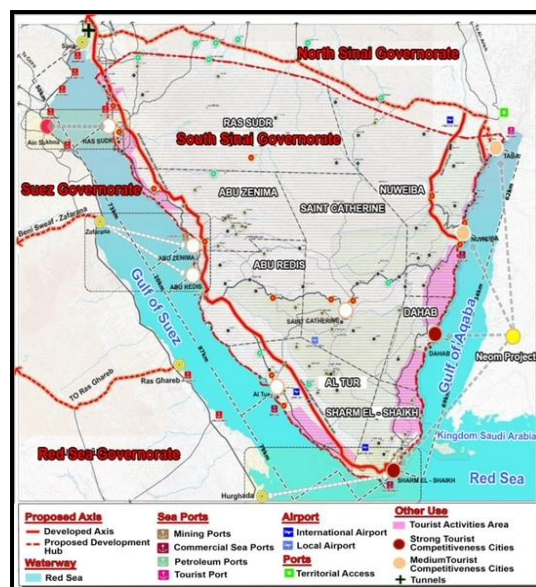


Fig. 2. Roads, Ports and Airports in South Sinai. Source: Mohamed Siraj El-Din - Replanning Sinai and drawing its urban map in 2000 – PHD Thesis - Al-Azhar University - 1987.

### 3.4.2. Airports

There are several airports in South Sinai Governorate in the cities of (El-Tor, Sharm El-Sheikh, Saint Catherine, and Ras Nasrani), in addition to runways for aircraft in oil extraction sites in the governorate **Fig. 2** [1].

Ras Naqb Airport: It is located north of Taba by about 26 km and consists of two runways and two auxiliary runways, each  $300 \times 45$  m long, capable of serving the northern end of the Gulf of Aqaba[16].

Sharm El-Sheikh International Airport: It is an international airport that serves the tourism and trade sectors[16].

Catherine Airport: It is located 85 km from the Gulf of Aqaba and has a runway 2000 meters long. It is located in the middle of the southern part of the Sinai Peninsula. A road extends from it to the city of Dahab, 80 km long, and another to Nuweiba, 90 km long. A road was also paved from Saint Catherine to Abu Rudeis, 130 km long[16].

El-Tor Airport: It has a surface of 1,630 acres and this port has been developed to become an international port to meet future expectations in the field of tourism and trade[16].

### 3.4.3. Seaports.

There are five seaports in South Sinai Governorate, namely: Sharm El-Sheikh Port, El-Tor Port, Abu Zenima Port, Nuweiba Port, and Ras Sudr Port. These ports play a significant role in the economic and social development of the governorate. which serve the sectors of trade, tourism, fishing, and oil. There are also a number of marinas on the eastern shore of the Gulf of Suez. The following is a brief description of each of these ports, as shown in **Fig. 2** [8].

Sharm El-Sheikh Port: Located on the western side of the Gulf of Aqaba, about 10 km from Ras Mohammed, Sharm El-Sheikh Port serves private sea transportation trips from Sharm El-Sheikh to Hurghada and Suez, as well as fishing activities. The bay is naturally protected from the north, east, and west[8].

El-Tor Port: Located on the eastern shore of the Gulf of Suez, about 250 km south of Suez, El-Tor Port was the main quarantine port for pilgrims in the past. It has a special pier for customs and is located in a bay that is naturally protected from the north and east[8].

Abu Zenima Port: Has a steel pier that was built by the Sinai Manganese Company and is currently used to ship its products[8].

## 3.5. Economic Studies of the South Sinai axis.

### 3.5.1. Tourism.

Sinai Governorate occupies a distinguished position on the map of areas with global tourism potential, which in its diversity and richness form many tourist resorts that can satisfy the needs and desires of a large number of tourist markets[2].

Beach tourism occupies the first economic importance in exploiting natural resources, whether it is recreational tourism, or water sports represented in diving or sailing. The nature of the beach of the Gulf of Aqaba and the Gulf of Suez and their distance from the population centers give them a special nature with an international character for those interested in diving and water sports and those looking for peace. The coastal area of the Gulf of Aqaba and the Gulf of Suez is characterized by clear waters, sandy beaches free of rocks and obstruction plants, and a soft sandy bottom free of marine plants and rocks. In addition to the rare coral reefs that the region enjoys,



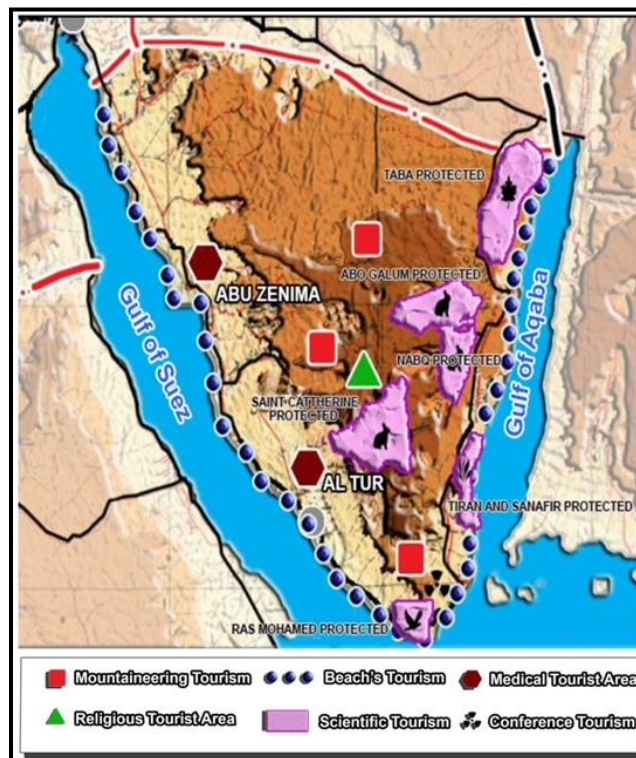
there are also hot springs, in addition to natural reserves, **Fig. 3**. The activities that the potential of South Sinai allows are as follows: Diving, sailing, yachting, winter recreation tourism, cultural and archaeological tourism, historical antiquities, religious antiquities, land antiquities, marine antiquities, and safaris[3,4].

**Spatial Distribution of Hotel Capacity in the Governorate.**

The largest percentage of hotels and hotel rooms are concentrated in Sharm El Sheikh, with a percentage of 48% and 78%, respectively, of all hotels and rooms in the governorate in 2019. Dahab is followed by 28% and 6%, respectively, which indicates the dominance and concentration of hotel establishments in Sharm El Sheikh over the rest of the cities. There is no hotel capacity in Abu Rudeis center and city, while there is only one hotel under the classification in Abu Zenima city. [5].

**Hotel Capacity in the Tourist Centers on the Gulf of Aqaba and Suez in the Governorate.**

The hotel capacity in the tourist centers on the Gulfs of Aqaba and Suez is owned by the General Authority for Tourism Development. The hotel capacity of the tourist centers is distributed on the coastal sectors of the Gulf of Aqaba and the Gulf of Suez. The Dahab-Sharm El Sheikh sector is the sector with the highest percentage of implemented hotel accommodation, with a percentage of 66% of the total sectors in South Sinai, followed by the Taba-Nuweiba sector with 19% and the Ras Sudr sector with 13%. Nabq, Montazah, Maksabah, and Ras Mlehat are considered the centers with the highest implementation rates compared to the implementation rates in the rest of the tourist centers in the governorate. As for tourist accommodation, it is concentrated in the Ras Sudr sector with a percentage of 88%, especially the Ras Mlehat center, followed by the Nabq center in the Dahab-Sharm El Sheikh sector. The following table shows data on hotel and tourist accommodation for tourist centers, whether implemented capacity or under construction in each sector in 2019[6].



**Fig. 3.** Tourist Areas in South Sinai. Source: General Authority for Tourism Development 2019.



Evolution of tourism demand in South Sinai Governorate.

Tourism demand in the governorate grew from 1.35 million tourists in 2000 to 2.5 million tourists in 2005, with a growth rate of 85% during that period. It continued to grow to 4.2 million tourists in 2010, with a growth rate of 70% during the period from (2005 to 2010). However, tourism demand declined to 3.86 million tourists in 2018, with a growth rate of -1.2% during the period from (2010 to 2018). This is due to the recent events that affected the growth of tourism demand during that period.

Distribution of Tourism Nights in the Main Tourist Settlement in 2018[6].

The city of Sharm El-Sheikh accounts for about 94% of the total tourist nights in the governorate in 2018. This indicates a severe concentration of tourism demand in the city and its weakness in the rest of the cities and tourist settlement. Therefore, it is necessary to focus on other cities and settlement that have unexploited tourism potentials. It is also noted that the percentage of tourist demand in five-star, four-star, and three-star hotels is high, which indicates the high level of tourism market segments in the city. In a statement issued by the Ministry of Tourism in 2017, the distribution of tourism demand on the main cities and tourist settlement is shown. Tourism demand in Sharm El-Sheikh reaches 62.4% of the total tourism demand in the governorate. It is followed by Nabq Center with 15.8%, then the Nuweiba/Taba sector with 11.7%. It decreases to 4.9% and 3.8% in Ras Sedr and Dahab, respectively. It decreases completely in St. Catherine and El-Tur, which is not in proportion to the tourism potentials in those cities[9].

### **3.5.2. Agriculture in South Sinai Governorate.**

Agriculture in South Sinai Governorate depends on groundwater, with a total of about 1,000 wells (governmental/private). Fruit tree cultivation prevails in the region, the most important of which are olives, palms, guava, figs, and pomegranates, in addition to some types of vegetables such as tomatoes, cantaloupe, and watermelon. Agriculture in South Sinai depends on irrigation with groundwater, and some areas are planted with wheat and barley depending on rainwater. The number of workers in agricultural activities in South Sinai is estimated to be around 1,545 agricultural workers. The Gulf of Aqaba region is not considered to be agriculturally productive in terms of economic viability, as the cultivated area represents 10% of the total area. Despite the availability of vast areas of land suitable for cultivation, the scarcity of water and its availability in the quality suitable for cultivation poses an obstacle to the expansion of horizontal agricultural development [14].

Protected agriculture is considered one of the most suitable methods of cultivation used in the region for growing vegetables and fruits, which depends on well water and floodwater. This was proven by the experience of Nuweiba Farm, which achieved great success thanks to the rational use of limited water resources, as well as the reuse of wastewater after treatment as one of the alternatives to water scarcity. Sharm El-Sheikh Farm (40 feddans) is also considered one of the successful experiences in this field[14].

Despite the limited water, the use of well water and the seasonal storage of floodwater in the ground, as well as the reuse of treated water, amounting to around 50,000 m<sup>3</sup>/day, will help expand agricultural activity, in addition to planting seedlings and shrubs resistant to salinity to create green spaces and landscape sites [14].

In 2014, the Egyptian government converted a number of Bedouin settlements into productive agricultural settlements by reclaiming 300 feddans in the first phase, with 20 feddans

for each settlement, and supplying 100 greenhouses, barley stands, and groups of sheep. Within the next six months, 2 cows will be distributed to each Bedouin settlement. The beginning will be in the Bedouin settlement of Abu Gharqad, affiliated to the city of Abu Rudeis, Wadi Tal Babozneima, Wadi Grandel in Ras Sudr, and Wadi Mayar in South Sinai, as they are the most needy valleys [14]. The total crop area for the year 2021/2022 was about 27,166 thousand feddans[14]. The total cultivated area for the year 2021/2022 was about 26,933 thousand feddans[14].

### **3.5.3. Animal Production.**

Livestock was one of the most important economic activities for the people of South Sinai. Their lives in this region were linked to the grazing of animals, especially sheep and goats. As a result, the people of this region were characterized by the trait of mobility and migration throughout the governorate in search of natural pastures and water sources. The economic conditions prevailing at that time were compatible with the occupation of grazing. The estimated number of heads of livestock and animals in 2021 was (89,592)[10].

### **3.5.4. Fishing and Fish wealth.**

Fishing is one of the basic activities for the people of South Sinai. At the end of 2017, about 768 fishermen were working in the governorate. There are also three fishermen's associations in the governorate: Ras Sudr Association, with 155 fishermen; the South Sinai Association, with 324 fishermen; and the Dahab Fishermen's Association, with 289 fishermen[11].

Despite the extension of the coasts of South Sinai and the Red Sea to more than 700 km, the production figures, the number of fishermen, and the fishing boats do not suggest that there is a significant fishing activity as one of the main economic activities. The region does not practice organized fishing due to the nature and topography of the region. The problems of the region include the suboptimal exploitation of all the fisheries available in the region, the primitiveness of fishing, preservation, transportation, and marketing, and the lack of services and facilities for organized fishing.

It is clear from the foregoing that South Sinai does not exist on the map of fish production in the Republic, and that the share of South Sinai is estimated at about 0.010% of the production of the Republic[11].

A fish farming project using the aquaponics method is underway on an area of 1,500 square meters for the first time in South Sinai in the Concorde Salam area in Sharm El Sheikh, as an experiment to generalize the aquaponics fish farming method to produce fish and vegetables. The idea of aquaponics depends on the maximum utilization of water by recycling it and using the water of the fish farm to irrigate crops in the area, and also using the excess water from crops in fish farming [11].

## **4. Urban Tourism Development Strategy for South Sinai Governorate.**

Within the framework of the Strategic Plan for Urban Development of South Sinai Governorate for the year 2020 (General Authority for Urban Planning - Ministry of Housing), which is the latest plan for the governorate under approval, we find that tourism development is the leading sector and the expected engine of development in the coming period in the governorate. The following is a brief explanation of the strategic plan for the Governorate.

### **4.1. National Guidelines for the Preparation of the Urban Development Plan for South Sinai Governorate**

Raise levels of tourism competitiveness through areas with competitive advantages and attract capital to invest in vital sectors of the national economy.

Develop the governorates that are least on the human development index compared to their distinctive development capacity.

Achieve stable economic and social development rates.

The demographic approach to national security for border governorates.

Exploitation of border areas to raise Egypt's degree of openness and reshape the national development map.

## **4.2. Development Centrality of the Governorate in achieving National Directions**

### **4.2.1. Competitiveness of the Tourism Sector in the Governorate**

The percentage of tourism demand in the governorate is about 18.5% of the total tourism demand at the national level.

The governorate accounts for 57.4% of domestic tourism in the governorate, indicating that the governorate attracts a large number of Egyptian tourists. It also accounts for 17.8% of Arab tourists and 24.8% of foreign tourists out of the total tourism demand.

### **4.2.2. Demographic Features of the Governorate**

The population of South Sinai Governorate was 102,000 in 2022, representing 0.102% of the total population of the Republic.

South Sinai Governorate is a desert governorate with an urban character, with urban areas accounting for 52.87% of the total population of the governorate, while the rural population accounted for 47.13% in 2017.

### **4.2.3. Global Accessibility (ports and airports)**

South Sinai Governorate is characterized by the presence of many international and domestic airports (3 international airports, 2 domestic airports).

The ports of the governorate are diverse, with (3 commercial, 1 mining, 3 oil, 1 tourist, 1 fishing) giving the governorate high connectivity and a competitive advantage.

## **4.3. Regional Goals**

Maximizing the utilization of the diverse natural resources with competitive value in the governorate.

Focusing on sustainability, especially environmental sustainability, in the economic and social development of the governorate and preserve its environmental balance.

Social cohesion between the local population and the targeted migrant population.

Exploitation of the competitive and cultural advantage of the Sinai region based on the social studies that have been conducted.

Enhancing the role of technology in managing regional resources and development management.

Applying the principles of sustainable agriculture in the governorate.

Reducing the economic leakage of the governorate by forming settlement of value-added chains in industry.

Focusing on global competitiveness in the development of the tourism sector.

Evaluating the risks of non-sustainability of project operation and attracting investments to the governorate.

Using different evaluation criteria to ensure the coherence and integration of development policies and proposals in the governorate.

Raising the level of urban infrastructure in the governorate's cities to encourage the attraction of different population groups.

Linking the developmental roles of cities with the orientations and vision of future development for the governorate.

#### **4.4. Driving Forces for Development in South Sinai.**

##### **4.4.1. Geographical Location Advantages**

Locational advantages of the governorate, ease of national and international connectivity, and spatial twinning.

##### **4.4.2. Resources.**

Natural Resources that Attract Competitive International Tourism Styles and Unique Mineral Resources that Can Be Employed in Industrial Development

##### **4.4.3. Population Component**

Weakness of social and economic capacities of the local community, however, the Governorate has urban economic components that need a population component commensurate with the economic components.

##### **4.4.4 Urbanization**

Decrease in the efficiency of urban development, especially in the levels of local services and infrastructure services, especially tourism-supporting and productive activities.

### **5. Urbanization in the South Sinai axis through the proposed development**

In the following analyses of the report, we will clarify (from the researcher's point of view) the outputs of this plan and its analyses in terms of the proposed projects and the expected job opportunities. Through this, we will focus on clarifying the expected population size of the governorate, the expected development poles in the governorate, and their future functional role.

The outputs of the strategic plan for the governorate, represented by the proposed development projects, are the main engine of the expected development in the governorate, as they provide job opportunities and investments, based on which large numbers of people are attracted and settled, which achieves the state's developmental vision of moving out of the valley and delta and spreading urbanization throughout the regions of the republic.

*The following will be reviewed: -*

The proposed projects and their distribution across different development sectors.

Job opportunities for the proposed projects and their distribution across different development sectors.

Expected urban absorption according to the proposed development of South Sinai Governorate.

Policy for distributing urban settlements.

#### **5.1. proposed projects and their distribution across different development sectors.**

##### **5.1.1 Tourism development sector (leading development sector).**

The axis of Abu Zenima center has acquired the largest share of projects due to the huge projects that will be implemented by the Tourism Development Authority within the Abu Zenima

center (not within the city, which is characterized by being an industrial city in the first place), including the tourist centers in both (Al-Naheela Center - Ras Maidan) and the therapeutic tourism center in the area of Hammam Faraun, the Wadi Al-Ghardnal tourist center and tourist services in both Wadi Feiran village and Sheikh Abu Talib village.

The center of Al-Tour comes in second place for proposed tourism projects due to the magnitude of the environmental, recreational, and therapeutic tourism center project in the Ras Knessa area.

The center of Ras Sudr comes in third place, taking into account that it represents a distinction due to the proposal of a tourist maritime line project that links the city of Ras Sudr with the center of Ain Sukhna.

The center of Sharm El-Sheikh came in fourth place, as the proposed projects are a completion of projects that are already in place and are being implemented.

Finally, the center of St. Catherine, taking into account that the development in this center is carried out by maintaining its sanctity and the values it represents globally, as it is a distinctive world heritage center.

**Table 1.** Expected job opportunities in the tourism development sector in South Sinai Governorate.

Town	Expected Job Opportunities	%
Ras Sudr	35135	12,4
Abu Zenima	111800	39,6
Abu Redis	120	0,0
Saint Catherine	745	0,3
Al Tur	111840	39,6
Sharm El-Sheikh	13485	4,8
Dahab	90	0,0
Taba & Nuweiba	9270	3,3
<b>Total Tourism development job opportunities</b>	<b>282485</b>	<b>100</b>

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.1.2. Industrial Development Sector.

The center of Abu Zenima has the largest proportion of projects due to the nature of the city, as the city is an important industrial area in South Sinai Governorate. The industrial area will be developed with mining industries.

Ras Sudr comes in second place, followed by Abu Rudeis.

The industrial development of the center and city of Al-Tour is distinguished by only one project, which is the planning and diversification of the Al-Tour industrial zone (environmental industries).

The industrial development in both (Sharm El-Sheikh – Dahab – Saint Catherine) will serve the tourism development, as these areas are characterized by a distinctive tourism activity. Therefore, the industrial development will be based on handicraft industries and Bedouin industries that serve and complement the proposed tourism development.

The area of (Nuweiba – Taba) is characterized by industrial development that serves those areas as a coastal outlet.

**Table 2.** Expected job opportunities in the industrial development sector in South Sinai Governorate.

Town	Expected Job Opportunities	%
Ras Sudr	1882	7,1
Abu Zenima	20689	78,2
Abu Redis	1100	4,2
Saint Catherine	248	0,9
Al Tur	500	1,9
Sharm El-Sheikh	1038	3,9
Dahab	456	1,7
Taba & Nuweiba	545	2,1
<b>Total Tourism development job opportunities</b>	<b>26458</b>	<b>100</b>

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.1.3. Agricultural Development Sector

Both Ras Sudr and Al-Tour centers account for the largest share of the proposed projects, taking into account that at the level of all the governorate's centers, agricultural greenhouse projects are proposed to provide vegetables and fruits in addition to livestock projects and pasture development, which provides self-sufficiency and at the same time works on the distinguished integration with the tourism development sector that serves the governorate and its development. The following table shows the proposed projects in the agricultural development sector according to the governorate's urban development plan.

**Table 3.** Expected job Opportunities in the agricultural development sector in South Sinai.

Town	Expected Job Opportunities	%
Ras Sudr	1000	38,2
Abu Zenima	110	2,1
Abu Redis	750	14,3
Saint Catherine	110	2,1
Al Tur	1245	23,8
Sharm El-Sheikh	410	7,8
Dahab	110	2,1
Taba & Nuweiba	500	9,6
<b>Total Tourism development job opportunities</b>	<b>5235</b>	<b>100</b>

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.1.4. Trade, Investment, and Logistics Sector

The (Nuweiba-Taba) sector accounts for the largest share of trade, investment, and logistics, as it is considered the main gateway to the coast through the Taba land crossing and the distinguished Nuweiba port.

We find that the major commercial activities and logistics projects are concentrated in the capital of the governorate, certainly considering that (El-Tor center) is considered a center for multiple economic activities and the main center, as well as for the Sharm El-Sheikh center, which is characterized by its global tourist fame. Therefore, the reliance on providing services that suit the levels of tourists arriving to Sharm El-Sheikh.

The following table illustrates the proposed projects for the trade, investments and logistics sector in accordance with the urban development plan applied in the Governorate.



**Table 4.** Expected job Opportunities in the trade, investment and logistic development sector in South Sinai.

Town	Expected Job Opportunities	%
Ras Sudr	0	0
Abu Zenima	0	0
Abu Redis	0	0
Saint Catherine	0	0
Al Tur	692	2,7
Sharm El-Sheikh	1087	4,2
Dahab	0	0
Taba & Nuweiba	24160	93,1
<b>Total Tourism development job opportunities</b>	<b>25939</b>	<b>100</b>

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.1.5. Infrastructure and Social Services Projects

El-Tor center and city has taken the major share of infrastructure and service projects as the governorate's main center and capital.

Ras Sudr city and center came in second place, followed by the Taba Nuweiba sector, and then Sharm El-Sheikh city and center.

The Abu Zenima and Abu Rudeis sector center came in fifth and sixth place, respectively, in terms of projects, due to the proximity of distance and the localization of projects.

Finally, the Dahab and Saint Catherine centers came in last place, due to the expected small population size for both, and the reliance of Dahab on Sharm El-Sheikh to a large extent.

**Table 5.** Expected job Opportunities in the infrastructure and social services development sector in South Sinai.

Town	Expected Job Opportunities	%
Ras Sudr	6430	22,0
Abu Zenima	2768	9,4
Abu Redis	2568	8,8
Saint Catherine	1652	5,6
Al Tur	7267	24,8
Sharm El-Sheikh	3203	10,9
Dahab	1756	6,0
Taba & Nuweiba	3649	12,5
<b>Total Tourism development job opportunities</b>	<b>29293</b>	<b>100</b>

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.2. Job opportunities for proposed projects and their distribution on different main development sectors.

Expected job opportunities are the cornerstone of development, given that the human element is the primary engine of development in any region. Providing distinguished job opportunities is an opportunity to attract and migrate the population from the valley and delta to the development areas of the Sinai axis. Through the analysis of what came in the urban development plan for South Sinai Governorate (as will be clear in the following table).

**5.2.1. Analysis of job opportunities according to the administrative division.**

The Abu Zenima center and city took first place in the total expected job opportunities at the governorate level, with a percentage of (36.6%), and the El-Tor center and city came in second place with a percentage of (32.9%).

The Ras Sudr center and city came in third place with a percentage of (12.3%) followed by the Taba Nuweiba sector with a percentage of (10.3%) in fourth place.

The Sharm El-Sheikh center and city ranked fifth with a percentage of (5.2%).

Finally, the centers of (Abu Rudeis - Dahab - Saint Catherine) with percentages of (1.2%, 0.7%, 0.7%, respectively).

**Table 6.** Shows the expected job Opportunities as an output from the development of South Sinai Governorate.

		Agricultural		Tourism		Industrial		trade, investment and logistic		infrastructure and social services		Total %
		Job opportunities	%	Job opportunities	%	Job opportunities	%	Job opportunities	%	Job opportunities	%	
Gulf of Aqaba	Taba & Nuweiba	500	1,3	9270	24,3	545	1,4	24160	63,4	3949	9,6	10,3
	Dahab	110	4,6	90	3,7	456	18,9	0	0,0	1756	72,8	0,7
	Sharm El-Sheikh	410	2,1	13485	70,2	1038	5,4	1087	5,7	3203	16,7	5,2
	Saint Catherine	110	4,0	745	27,0	248	9,0	0	0,0	1652	60,0	0,7
<b>Total Gulf of Aqaba Job Opportunities</b>		1130	1,8	23590	37,7	2287	3,7	25247	40,4	10260	16,4	17
Gulf of Suez	Ras Sudr	2000	4,4	35135	77,3	1882	4,1	0	0,0	6430	14,1	12,3
	Abu Zenima	110	0,1	111800	82,6	20689	15,3	0	0,0	2768	2,0	36,6
	Abu Redis	750	16,5	120	2,6	1100	24,2	0	0,0	2568	56,6	1,2
	Al Tur	1245	1,0	111840	92,0	500	0,4	692	0,6	7267	6,0	33
<b>Total Gulf of Suez Job Opportunities</b>		4105	1,3	258895	84,4	24171	7,9	692	0,2	19033	6,2	83
<b>Total</b>		5235	1,4	282485	76,5	26458	7,2	25939	7,0	9293	7,9	100

Source: Prepared by the researcher based on (the strategic plan for South Sinai Governorate in 2020 - the General Authority for Urban Planning - the Ministry of Housing).

### 5.2.2. Analysis of job opportunities according to the main development sectors

The tourism development sector in the governorate accounts for the largest share, as it accounts for approximately (76.5%) of the expected job opportunities.

The industrial development sector ranks second (7.2%) due to the existence of the Abu Zenima industrial zone and the planning and diversification of the industrial zone in El-Tor center, in addition to the industrial-tourism integration for the development of the governorate, which achieves a distinguished global position for it.

The trade and logistics sector represents 7% in third place, and is concentrated in (El-Tor - Sharm El-Sheikh - Nuweiba and Taba).

Finally, the agricultural development sector comes last, representing only a percentage of (1.4%), representing an agricultural-tourism integration that meets the needs of tourists and provides basic requirements and achieves self-sufficiency for the population.



Fig. 4. Distribution of expected job opportunities in South Sinai Governorate.

### 5.3. Expected urban absorption according to the proposed development of South Sinai Governorate.

As indicated in the previous table, a total of 369,400 job opportunities are expected to be provided.

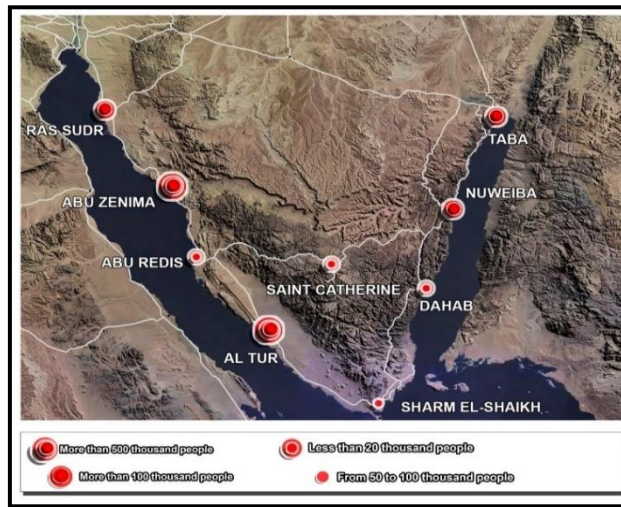
According to the latest estimates of the Central Agency for Public Mobilization and Statistics, the economic dependency rate of the governorate is approximately 4.28 individuals per worker.

The economic dependency rate (total population / workers) = (107,000 people / 25,000 workers) = 4.28 people / worker.

Therefore, the expected development of the governorate (represented by the job opportunities of the expected projects) will provide a new urban absorption estimated at approximately 1.581 million people (369,400 job opportunities x 4.28).

**Table 7.** shows the size of the proposed urban absorption according to the proposed development settlement in South Siani.

CITY		Population absorption according to expected job opportunities	Expected job opportunities for development sectors
Gulf of Aqaba	Taba & Nuweiba	38124	163171
	Dahab	2412	10323
	Sharm El-Sheikh	19223	82274
	Saint Catherine	2755	11791
Gulf of Aqaba Sector		62514	267560
Gulf of Suez	Ras Sudr	45447	194513
	Abu Zenima	135367	579371
	Abu Redis	4538	19423
	Al Tur	121544	520208
Gulf of Suez Sector		306896	1313515
<b>Total</b>		<b>369410</b>	<b>1581075</b>



**Fig. 5.** Levels of expected urban absorption for urban settlements in South Sinai governorate.



**Fig. 6.** Expected Job opportunities and urban absorption for urban settlements in South Sinai governorate.

#### 5.4. Elements constituting the proposed urban planning for South Sinai Governorate.

### 5.4.1 Specialized main urban settlement.

Six major urban settlement are proposed in the governorate, with a population ranging from 32 to 60 thousand people, with a total expected population of (273) thousand people.

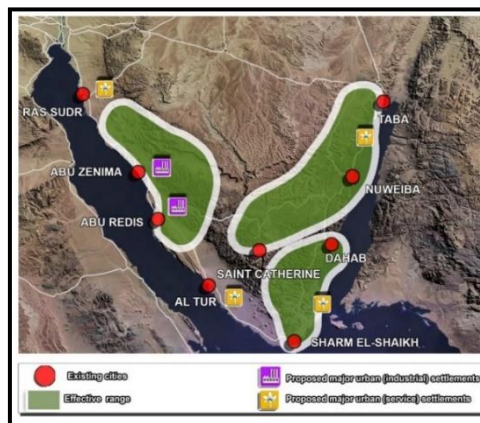
All the necessary basic economic activities, including commercial, service, agricultural, and fishing activities, are available in the settlement.

The proposed urban settlement are specialized according to their potential and basic characteristics (service settlement - industrial settlement).

The proposed urban cluster includes one or more cities in the governorate, and the spatial considerations and economic characteristics of the similar cities have been taken into account.

**Table 8.** Proposed major specialized urban settlement in South Sinai governorate.

S	Town	Special Features	The No. of proposed settlements.	Urban absorption (Thousand People)	Total urban absorption (Thousands People)
1	Al Tur	Service	1	42	42
2	Abu Zenima - Abu Redis	industrial	2	60	120
3	Ras Sudr	Service	1	44	44
4	Sharm El-Sheikh - Dahab	Service	1	35	35
5	Taba & Nuweiba - Saint Catherine	Service	2	32	32
<b>Total</b>			<b>6</b>	<b>—</b>	<b>273</b>



**Fig. 7.** Proposed major specialized urban settlement in South Sinai governorate.



**Fig. 8.** Proposed rural settlement in South Sinai governorate.

### 5.4.2. specialized tourist settlement.

Proposal for 25 specialized tourist settlement in the governorate, with a population ranging from 43 to 50 thousand, with a total expected population of (1.2) million.



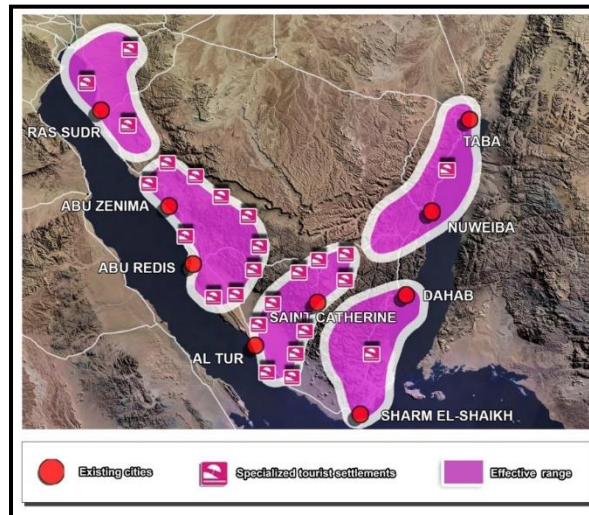
The proposed tourist settlement are characterized by specialization in light of the proposed tourist projects for each range of those settlement.

The proposed tourist cluster includes one or more cities in the governorate, and the spatial considerations of those cities have been taken into account.

The following table shows the number of proposed specialized tourist settlement, what each cluster includes, and the proposed urban capacity.

**Table 9.** Proposed specialized tourist settlement in South Sinai governorate.

S	Town	The No. of proposed settlements.	Urban absorption (Thousand People)	Total urban absorption (Thousands People)
1	Al Tur - Saint Catherine	10	47,9	479
2	Abu Zenima - Abu Redis	10	47,9	479
3	Ras Sudr	3	50	150
4	Sharm El-Sheikh - Dahab	1	58	58
5	Taba & Nuweiba	1	43	43
Total		25	—	1209



**Fig. 9.** Proposed specialized tourist settlement in South Sinai governorate.

### 5.4.3. Logistic centers.

Based on the previous analysis of projects and job opportunities, it is observed that the trade and logistics sector is dominated by the (Taba Nuweiba) sector, as they are considered land and sea ports for the governorate, where they account for 93% of the trade and logistics sector. Therefore, it has been proposed to locate (3) logistic centers near Taba Nuweiba to serve all the governorate's ranges (as will be shown in the table and map later).

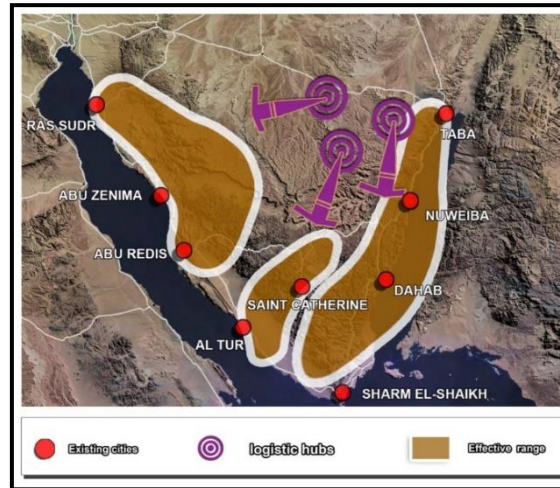
A proposal for 3 logistic centers with an average population of (34) thousand people per logistic center, with a total expected population of about (103) thousand people.

The impact of the proposed logistic center includes more than one city. Taking into account the lack of most of the governorate's cities in the logistics and trade sector, it was therefore located near Taba and Nuweiba, but its impact range includes more than one city (as will be shown in the following table).

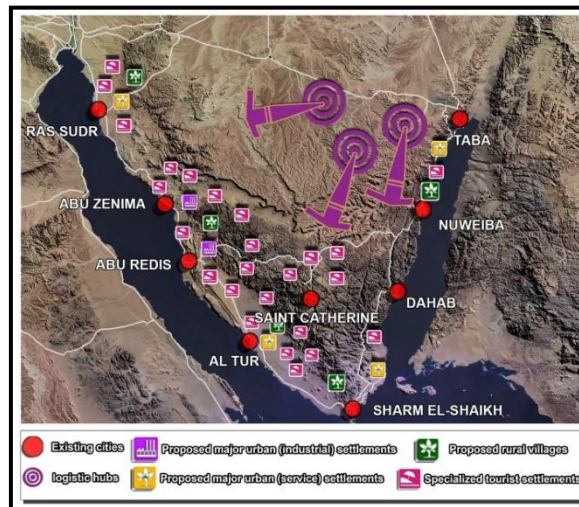


**Table 10.** Proposed Total trade, investment and logistic settlement in South Sinai governorate.

S	Town	The No. of proposed settlements.	Urban absorption (Thousand People)	Total urban absorption (Thousands People)
1	Taba - Nuweiba - Dahab	1	34	34
2	Ras Sidr - Abu Zenima - Abu Radis	1	34	34
3	Al Tor - Saint Catherine	1	34	34
	Total	3	—	102



**Fig. 10.** Proposed logistic settlement in South Sinai governorate.



**Fig. 11.** The proposed settlement along South Sinai governorate.

## Conclusions

Increased interest in tourist urban centers such as (Sharm El-Sheikh - Taba - Dahab).

Increasing interest in ports because of their importance for transporting passengers from Egypt to other countries, as well as products resulting from mineral, mining, agricultural and commercial resources.

The necessity of paying attention to small urban areas as the nucleus for large cities and establishing villages and cities in the central regions to develop and manufacture mineral resources and agricultural and irrigation areas.

Establishing villages, fishing towns, port areas, and tourist areas to accommodate the number of residents required to be attracted to Sinai within twenty years as an initial plan for Sinai's development.

Expanding the establishment of urban colonies that are established urgently and as the nucleus of cities

Establishing tourist colonies, including tourist villages, small hotels, places of rest and relaxation, and establishing therapeutic areas for recovery at sulfur springs such as Pharaoh's Bath, Musa's Eyes, and religious areas such as Wadi Al-Raha and St. Catherine Church, Mount Moses, and Mount Al-Tur

It is important to focus on the quality of services provided by tourism institutions of all types.

It is essential to promote domestic and foreign tourism for all tourist areas.

Work to reduce migration by providing opportunities for different investments in coastal areas to provide job opportunities for the people of these areas.

Reshape the population map of South Sinai in a way that achieves the required balance between population and resources.

Strengthen the regional roads that connect South Sinai and the proposed development areas.

Increase the capacity of ports and airports on South Sinai to meet the needs of the proposed development.

Provide an integrated system of high-efficiency logistics services at the ports located in the coastal range to keep pace with the development of global transportation systems.

## References

- [1] Tourism Studies Report - Strategic Plan for South Sinai Governorate in 2020 - General Authority for Urban Planning - Ministry of Housing.
- [2] Egyptian Tourism Activities: Egyptian Tourism Activities, Cairo 2014
- [3] Information Authority: Tourism in Egypt, Cairo 2015
- [4] Al-Mahdi Abdul Hassan Ashry Muhammad - Evaluating the impact of sustainable tourism development on achieving economic development in Egypt - March 2016.
- [5] Salah Zein El-Din - Studying the opportunities and challenges of sustainable tourism development in Egypt - April 2016.
- [6] Tourism police and city councils in 2019.
- [7] General Authority for Tourism Development 2019
- [8] South Sinai Governorate Statistical Guide 2018.
- [9] The official website of the Red Sea Ports Authority.
- [10] Central Agency for Mobilization and Statistics: Tourism Chapter 2022.
- [11] Central Agency for Mobilization and Statistics: Annual Bulletin of Livestock Statistics 2022.
- [12] The Central Agency for Public Mobilization and Statistics: Annual Bulletin of Fisheries Statistics in 2022.
- [13] Arab geographers website, <http://www.arabgeographer.net/vb/threads/33.arab5/>.
- [14] information, support and decision center, <https://www.youm7.com/story/2018/3/6>.
- [15] Central Agency for public mobilization & statistics, <http://www.southsinai.gov.eg/invest/elements/agricultural>.
- [16] Central Agency for public mobilization & statistics, <http://www.southsinai.gov.eg/invest/trans>.
- [17] The electronic portal for South Sinai Governorate, <http://www.civilaviation.gov.eg/airports/category/1>.