



# The International Maritime Transport and Logistics Conference

## “MARLOG 12”

**Sustainable & Innovative  
Technologies**  
Towards a Resilient Future  
12 - 14 March, 2023 Alexandria - EGYPT





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**IMPLEMENTING SUSTIANABILITY IN  
THE INTERNATIONAL AIRPORT OF  
SHARM EL-SHAIKH**



# Introduction

- Sustainability concept became important as it aims at improving the quality of people' lives, protecting the ecosystem and preserving natural resources for future



# Introduction

## **The airports have a huge negative effect on the environment**

Some of the major issues raised with regard to airport operations such as

- ✓ Emissions from aircraft
- ✓ Noise from aircraft during takeoff and landing
- ✓ Climate change
- ✓ Land use
- ✓ Waste disposal
- ✓ Energy consumption and,
- ✓ Effects on the social structures of local communities, demand the attention of the regulatory authorities .

# Research problem

- Increase in CO(2) emissions, especially those coming from the airport.
- Noise from the airport on residential areas.
- Getting rid of the waste that comes out of the airport is very much.

# Research objectives

This study seeks to achieve the following objectives

- To study the impact of sustainable development on reducing air pollution.
- To assess the environmental sustainability management system in airport.

# Methodology

- This research paper followed the qualitative approach through field visits and conducting structured and unstructured interviews.
- This research used Sharm El-Sheikh International Airport as a case study to see the impact of applying sustainability practices in the airport.
- Interviews conducted also with the head of the engineering sector of the Egyptian Company for Airports, the general manager of the technical office, the chairman of the company's board of directors, the director of Sharm El-Sheikh International Airport, and other different department in the airport.

# SHARM EL-SHEIKH INTERNATIONAL AIRPORT

- Egypt's South Sinai Governorate is home to the well-known Red Sea resort city of Sharm El-Sheikh. Due to its advantageous location at the confined entrance to the Gulf of Aqaba, the city has drawn considerable attention. Also, it has grown in importance as a travel destination due to the Red Sea's distinctive biodiversity of marine life. The airport in Sharm El-Sheikh is where the majority of tourists arrive. Accordingly, the Ministry of Aviation in Egypt began to adopt the concept of sustainable development for the United Nations Sustainable Development Goals (SDGs) policies released in 2015.



# SHARM EL-SHEIKH INTERNATIONAL AIRPORT

- The Sharm El-Sheikh International Airport was developed to accommodate travellers and promote tourism.
- The hall's capacity has been increased from 2.5 million passengers to 5 million people.
- The passenger terminal 2 has been developed.



# SHARM EL-SHEIKH INTERNATIONAL AIRPORT

## DEVELOPMENT AREAS

Rebuilding 40 administrative offices and a new clinic, increasing international arrival counters from 6 to 22 counters, and making counters for tourism offices and banks.

1. In addition to expanding the entrance to local travel.
2. Inspection gates and travel gates increased from 9 to 12 gates, to include 3 local gates, a transit hall gate, and 8 international travel gates.
3. Expansion of the passport counters area, passport counters from 6 to 14 passport counters.



# SHARM EL-SHEIKH INTERNATIONAL AIRPORT

## DEVELOPMENT AREAS...cont.

4. Tarmac 2 and 3 were expanded at the airport, and a new one was established. A result, the airport can accommodate 67 planes instead of 46 planes.
5. Constructing an entry gate with only 4 lanes.
6. Establishing a civilized exit gate from the airport with 4 lanes.
7. Developing air production with a total area of 105,000 square meters.
8. A car parking area has been established and umbrellas have been set up with an area of 10,000 square meters.



# RESEARCH DISCUSSION

- The conducted interviews at Sharm El-Sheikh Airport show that there were different efforts applied to achieve the concept of environmental sustainability.





# First: Energy Governance

## ➤ Sources of electrical energy at the airport

The main power source:

- Power line from the main network "Nabq Station" with a capacity of (15 megawatts).
- Power line from the main network "Al-Salam Station" with a capacity of (5 megawatts).

Backup power source: Emergency indoor stations with a total capacity of (300 kVA).

- **Sources of solar energy at the airport:** ARSC has carried out a project to install a canopy above which is a solar power station with a capacity of 280 kilowatts (on high stands in the parking lot in front of Terminal 2).
- **Lighting poles - solar heaters:** Solar energy is used in lighting poles of the airport wall. There are 12 solar water heaters



# Second: Airport Waste System

## Solid waste

- The solid waste resulting from the operation of the passenger and administrative buildings, the airside, the parking lots for buses and cars at the airport is disposed of by the cleaning company (System One), which transports it outside the airport to the public dumps in the governorate in Mandelaga Al-Khanasir (the company does not recycle solid waste).
- Coordination is underway for the entry of Sharm El-Sheikh airport waste into the state system through a "specialized solid waste management company" (collection - transportation - sorting - recycling "safe disposal")
- Average monthly quantities of waste: approximately 160 tons
- It was directed to study finding alternative solutions to modify the path of exit of solid waste in Terminal 1 because it does not pass through the hall in front of passengers, provided that the timings for the exit of waste are determined in times other than operating times, in coordination with operations and the cleaning company.
- Sharm El-Sheikh International Airport is provided with CAN BANK waste machines.
- A study is required to sell solid waste to maximize the airport's economic return.

# Third Airport Hazardous Waste

Sources of hazardous waste at the airport: The Egyptian Company for Airports - EgyptAir Ground Services Company - The Egyptian Company for Aviation Services - Misr Petroleum Company). From figure 1 and the table, it appears that the waste has become increased.

- Types of hazardous waste: (oils - tires - batteries - radiation generators for X-RAY devices – waste medical generated from quarantine).
- Hazardous Waste Storage.

## **Fourth:**

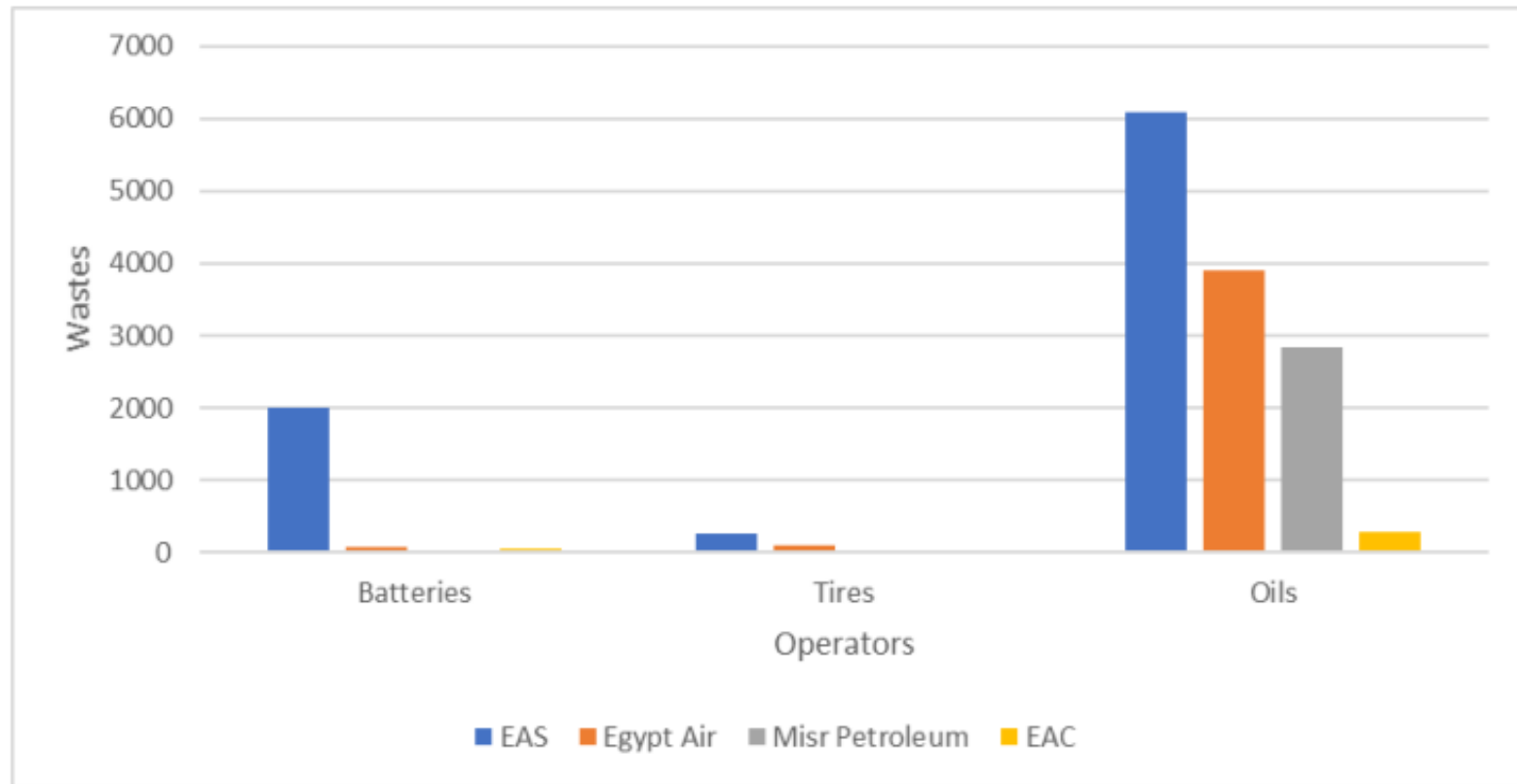
**Spent Oils** - The quantities of spent oils are collected in drums placed in a vertical position in an environmentally safe manner

**Fifth: Rubber** - The temporary safe storage of the rubber is adhered to in an environmentally safe manner.

**Sixth: Used Batteries** - The spent batteries (dry or liquid) shall be properly placed and kept from breakage or internal acid leakage and shall be collected on wooden pallets.

**Seventh: Radiation generators for X-RAY devices** - they are delivered to the Atomic Energy Commission.

**Eighth: Medical waste generated from the quarantine** - It is collected in special bags inside the quarantine clinic at the airport and is transported through the Directorate of Health Affairs, Hazardous Waste Department, under the responsibility of the quarantine.



**Figure1:** Inventory of hazardous waste at Egyptian Airports 2021



# Waste Management At Sharm Elshiekh Airport

From the conducted interviews, it was evident that the Egyptian Holding Company for Airports and Air Navigation (EHCAAN) has reviewed the most important achievements made so far in its project to develop Sharm El Sheikh Airport as passenger throughput at the facility increases. This can be displayed through:

- The company explained that the airport upgrade plan is one of its most important sustainable development projects.
- Several upgrade and expansion works have been accomplished in the airport to cope with development plans that coincided with Sharm El Sheikh City's hosting of the United Nations Climate Change Conference (COP27) in 2022.

# Waste Management at Egyptian Airports

- The airport's infrastructure has been upgraded significantly and the passenger terminal expanded to accommodate five million travelers a year.
- In line with the global trend of green transition that is applied to airports, shifting to rely on new and renewable energies, Egypt has begun procedures for converting Sharm el-Sheikh Airport into a green airport, powered by solar energy units.
- This move comes in line with Egypt's Vision 2030 to achieve sustainable development, and the hosting of the South Sinai resort's hosting of the COP27 conference in November 2022.

# RESEARCH FINDINGS

It is found that one of the projects being carried out in advance of Sharm el-Sheikh being designated a green city is the endeavor to transform the airport there into an environmentally friendly airport.

Principal findings include:

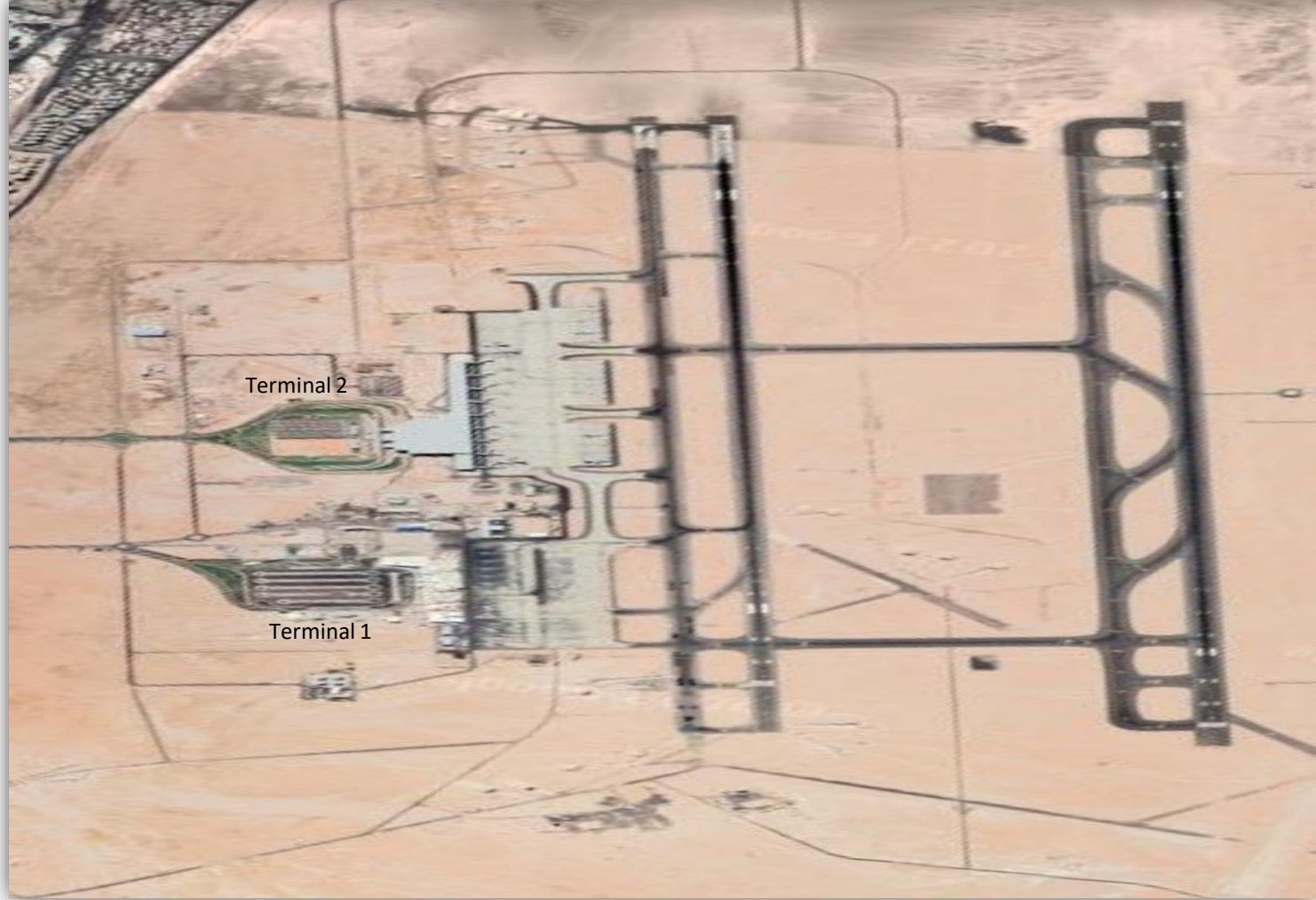
- The Industrial Modernization Center's implementation of the Egypt Small Solar Cell Systems project resulted in success, and the Sharm El-Sheikh Green Airport project is a continuation of that achievement.
- The Sharm El-Sheikh Airport Project, carried out by the Industrial Modernization Center in collaboration with the United Nations Development Program, aims to promote the installation of solar cell systems in a variety of industries, including those related to manufacturing, commerce, tourism, education, and public buildings.

# RESEARCH FINDINGS

- Little solar power plants have been installed in Sharm El-Sheikh as a result of coordinated efforts by the ministries of energy, aviation, trade, industry, and the environment, as well as the Governorate of South Sinai and the United Nations Development Program.
- The goal of the project using modest solar energy systems is to promote the use of ecologically friendly energy and raise knowledge about how to best utilise the natural resources present in Sharm El Sheikh.

# CONCLUSION AND FUTURE RESEARCH

- Airports are working to increase sustainable development practices through reducing noise pollution, adopting indoor air quality control, and reducing the use of toxic substances. The conducted interviews revealed that the application of sustainability is very important, as it works to reduce pollution through the airport operators' endeavor to mitigate carbon emissions, reduce waste, enhance economic contribution, satisfy passengers, and meet the needs of employees.
- It is concluded that Sharm el-Sheikh airport has adopted the policies and designs towards sustainability. It is recommended to adopt the concept of sustainability in airports by training to increase the practice of sustainability. For future researches, it is endorsed to benchmark between Sharm elSheikh airport and other airports in Egypt.



Terminal 2

Terminal 1

Thank You