



**Mediterranean Forum for Applied Ecosystem-Based Management
(MED4EBM)**

**Touristic Glass Bottom Boats Data Gathering and Analysis Deliverable 4
Final Report**

**MED4EBM Project Citizen Science Aqaba Glass Boats Data
Gathering Campaign**

Submitted to
**United Nations Development Programme
(UNDP - Jordan)**

by
Aqaba Touristic Glass Bottom Boats Society

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List of Abbreviations

CP: Sank ship (Cedar Pride)	MB: Marine Beach
HC: Hexagonal Corals	HB: Hotels Beach
NCC: National Camb Corals	SB: South Beach
JGC: Japanese Garden Corals	OPLB: Old Phosphate Loading Berth
MM: Military Museum	AMR: Aqaba Marine Reserve
GB: Ghandour Beach	OPS: Old Power Station

**MED4EBM Project Citizen Science Aqaba Glass Boats Data
Gathering Campaign
Aqaba Touristic Glass Bottom Boats Society**

Abstract

This report presents analysis of some key features of Touristic Glass Bottom Boats activities in Aqaba, Jordan, based on a Data Gathering Campaign conducted during the period September 4th to 28th 2023 by Aqaba Touristic Glass Bottom Boats Society through a contract with UNDP Jordan, the Lead Beneficiary of MED4EBM Project supported by ENI CBC Med Program. The data gathering campaign looked into socioeconomic and environmental aspects focusing on operators' observations on environmental, safety and security conditions, petrol consumption, trip tracks, attractions and financial returns, and visitors' demographics. The dataset provides valuable insights into the level of profitability of glass bottom boats operations identifying financial gains from trips and fuel usage cost, and identifies visitor's distribution in terms of visitation sites, nationalities, age and gender, offering essential information for resource management, financial planning, and customized service provision. Analysis of petrol consumption over the observed period reveals increase directly associated with visitors counts, extended trip durations, or altered trip patterns. Concurrently, trip financial returns exhibited a correlated trend, indicating a strong correlation between the running cost in terms of petrol consumption and revenue. Visitor demographics, categorized by age, gender, and nationality, show notable variations. When adult and child populations rise, males consistently outnumber females. Jordanian visitor numbers remain relatively stable, while non-Jordanian counts exhibit slight fluctuations. Examination of boarding point data demonstrates variations in trip counts across locations: Ghandour, Marina, Hotels, and South Beach. Ghandour consistently maintained higher counts, followed by notable shifts in Marina's popularity, suggesting changes in visitor preferences. Analysis of visitation sites indicates fluctuating patterns, with certain sites experiencing increased or decreased visitation during specific periods, emphasizing the dynamic nature of visitor preferences over time. The overall picture indicates that Glass Bottom Boats tourism is most popular for Jordanians and remain close to Aqaba City Centre with short trips being most common, which could be attributed to their lower cost and shorter duration.

1. Introduction

MED4EBM Project introduced an innovative approach for handling complex Integrated Coastal Zone Management issues. The Project is implemented in four Target Areas in Jordan, Lebanon, Tunisia and Italy. The Project's approach is based identification of ecological and socioeconomic systems at the target areas and follow a data analysis procedure to identify priority management issues. This in Jordan has resulted in two priorities: fisheries and sustainable coastal tourism. Tourist glass boats, also known as glass-bottom boats, are a popular and environmentally friendly way to explore the underwater world without getting wet or harming the underwater habitats. These boats are equipped with large glass panels or windows in the hull, allowing passengers to see beneath the water's surface and observe marine life, coral reefs, and other underwater features.

Aqaba Touristic Boats society established in Jun/1994, represents approximately 200 owners and operators of glass-bottom boats who got actively engaging in collecting field data for the first time in Aqaba, Jordan, specifically related to underwater glass-bottom boat sightseeing. To streamline this process, the society has appointed a young female specialist and three young assistants for data collection. The data collection campaign is centered on exploring the opportunities and challenges encountered by this traditional craft, which holds significant cultural value and supports the livelihoods of approximately 200 families. Tourism plays a pivotal role in the economic landscape of the Jordanian coastal region, and Aqaba stands out as a prominent tourist destination for both local and international visitors. This is due to its world-renowned coral reefs and diving sites, picturesque sandy beaches with a favorable climate, rich historical and cultural heritage, and the proximity of captivating mountain and desert landscapes. Glass-bottom boats used for tourism significantly contribute to Aqaba's tourism sector, underscoring the need for effective management at both official and public levels. The material included in this research gives readers a thorough understanding of what glass boat operations in the charming seaside city of Aqaba will be like in 2023. This dataset records a number of these actions, such as the amount of gasoline used, the distance traveled, the amount of money earned, and the demographics of the visitors. Tourists who want to have an underwater adventure in the breathtaking Red Sea often go on glass boat trips. Gaining knowledge of this dataset's statistical properties can help you understand how these activities operate and how popular they are in Aqaba. We will examine and evaluate important data related to gas usage, travel durations, financial returns, and the breakdown of tourists—adults, kids, men, women, Jordanians, and foreigners—in this analysis.

1. Citizen Science Monitoring Rationale

The Oxford English Dictionary defines citizen science as "scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions," as described by Davis et al. (2023) in their definition of the phrase. A previous experiment made it clear that in order to guarantee the cost-effectiveness of citizen science efforts, teaching and training activities are essential. Overcoming linguistic hurdles and communication modes must be considered in any such endeavor.

Considerations that should be made to improve the likelihood of success:

"Tourism operators must see a clear return on their investment in participating in citizen science projects. The justification for participation should be integrated into citizen science projects and made evident from the start, whether it is to protect their "playground," enhance their reputation, or better serve customers.

Boat owners will gain enhanced knowledge about resources and impacts during their tours. Additionally, they will have the opportunity to effectively introduce the concepts of citizen science and engagement to the public through a two-phase approach.

During the initial phase, boat owners have undergone training, and in the subsequent phase, they became responsible for applying the learned protocols. The following pictures show an enabling session facilitated by Dr. Mohammed Badran for training and awareness raising of the of glass bottom boats community about the importance and methods of cooperation in collecting data.



Figure1. Training and awareness raising session with glass bottom boats community

2. Statement of Problem / Challenges

In the pursuit of implementing a comprehensive Citizen Science Touristic Boats Data Gathering Campaign in the Gulf of Aqaba, several challenges and considerations have emerged that warrant careful attention. The overarching goal of this initiative is to engage tour operators in scientific data collection while fostering environmental awareness among boat owners, crew members, and the general public. However, the success of the campaign is contingent upon addressing the following critical issues:

Seasonal Calibration and Operator Commitment

The campaign's success is inherently tied to the willingness and availability of tour operators, especially during the peak seasons. The challenge lies in effectively coordinating with operators who may have limited time during peak periods. A risk mitigation strategy, such as providing materials for customer reference during busy seasons, is essential to ensure sustained operator commitment.

Consistent Protocol Adherence

Ensuring consistency, reliability, and trustworthiness of the collected data necessitates rigorous training and adherence to established protocols by all participating volunteers. Conducting citizen engagement and science introduction seminars is a critical step, but the challenge lies in maintaining uniformity in data collection practices among a diverse group of operators and volunteers.

Boat Owner and Operators Knowledge and Public Engagement

While the initiative aims to enhance boat owners' and operators knowledge about resources and impacts along their tours, there is a concurrent need to empower them to effectively introduce the concepts of citizen science to the public. The challenge is to strike a balance between improving operators' understanding and promoting public engagement without compromising the quality of data collection.

Phased Approach Implementation

The success of the campaign is contingent on the seamless execution of its two distinct phases: training and application of protocols. The challenge is to ensure that both phases are executed with precision, allowing for a smooth transition from theoretical understanding to practical implementation.

Monitoring Goals and Data Collection:

The defined monitoring goals encompass a range of quantitative and qualitative indicators. Challenges include quantifying visitation frequency, mapping customer distribution, and providing accurate daily information on environmental conditions. Additionally, the collection of historical records presents a challenge, requiring meticulous documentation and organization of past data.

3. Objectives

The primary objectives of the assignment can be summarized as follows:

2.1 Measuring Visit Frequency

- ✓ Quantify the frequency of tourist boat visits, including boat numbers, crew members, visited locations, and trip durations.

2.2 Customer Analysis

- ✓ Analyze the distribution of tourist boat customers based on the number of guests.
- ✓ Identify embarkation points and visited locations.
- ✓ Gather demographic information and evaluate the customer experience.
- ✓ Monitor the adherence to environmental guidelines by both tourist boat operators and customers.

2.3 Environmental Conditions Monitoring

- ✓ Provide daily reports on environmental conditions at visited sites.
- ✓ Collect observations and notes from glass-bottom boats regarding environmental conditions.

2.4 Site Evaluation

- ✓ Offer comprehensive descriptions of the attractions, facilities, accessibility, and environmental conditions at visited sites.
- ✓ Document any unintended human-related impacts and incidents encountered by tourist boats.

4. Methodology

4.1 Data Collection

Measurement of Visit Frequency

- ✓ Surveys have been conducted with touristic boat operators, their crew, and passengers to document details such as the number of boats, crew members, visited sites, and trip durations.
- ✓ Geographic information and logbooks were used to compile information on boat movements and route patterns.

Customer Profiling

- ✓ Face-to-face conversations held with customers of touristic boat services to gather data regarding their demographics, preferences, and overall experiences.
- ✓ Analysis of booking and registration records was performed to identify points of embarkation and sites visited.
- ✓ Environmental compliance observed through and direct observation notes.

Environmental Condition Monitoring

- ✓ Collaboration with glass-bottom boat operators enabled collection of daily observations related to environmental factors, including water quality, marine life sightings, and weather conditions.

Site Characterization

- ✓ On-site visits conducted enabled documenting attributes of attractions, available facilities, accessibility options, and environmental conditions.
- ✓ Intervention of environmental experts will be undertaken to evaluate and document any human-induced impacts on the sites.

4.2. Data Gathering

Aqaba Glass Bottom Boats data gathering team collected data by recording data on data sheets directly from the boats upon completion of every visitation trip. The data of petrol consumption, trip financial return, and visitor were collected over a three-week period from 4th September to 28th September. The data was collected and recorded daily, covering the aspects of petrol consumption (JD), trip financial return (JD), and visitor counts, categorized by age, gender and nationality (Annex1). In addition to filling the data sheet, a friendly conversation was held with the boat captain and some visitors when possible. Data was collected from boats operating from the four onboarding points: Gandoura Beach (GB), Marina Beach (MB), Hotels Beach (HB), and South Beach (SB). Glass-bottom boat tours offer various trip durations, including 15-minute, half-hour, and one-hour options. Figure 2 shows visitation tracks of Aqaba touristic Glass Bottom Boats. Figures 3-5 illustrate the itinerary of some typical glass bottom boats excursion. Figures 6-8 show some features that can be seen during the respective trips.

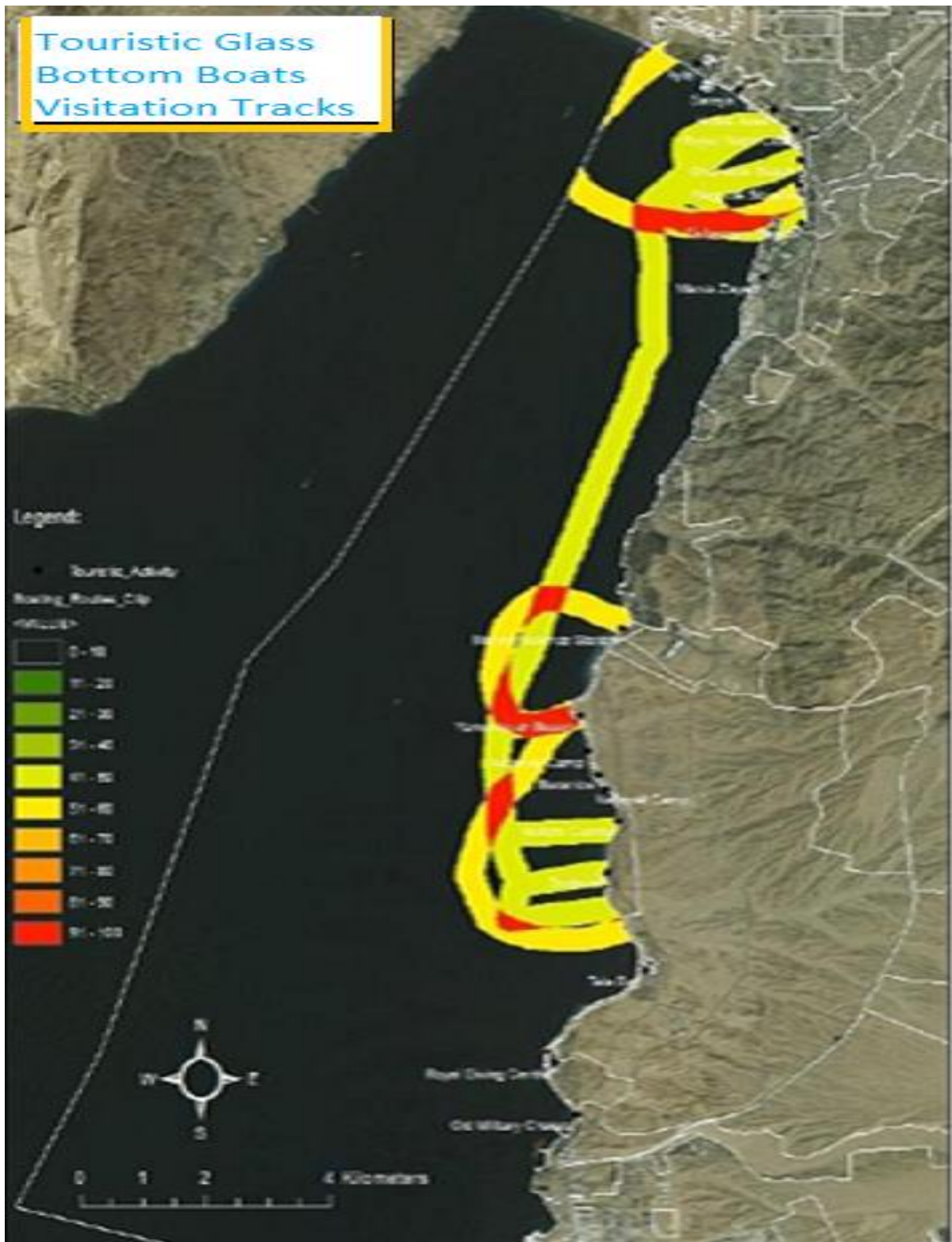


Figure 2. Glass Bottom Boating trips as marine-based tourism activity. Source; Al-Hayek 2016

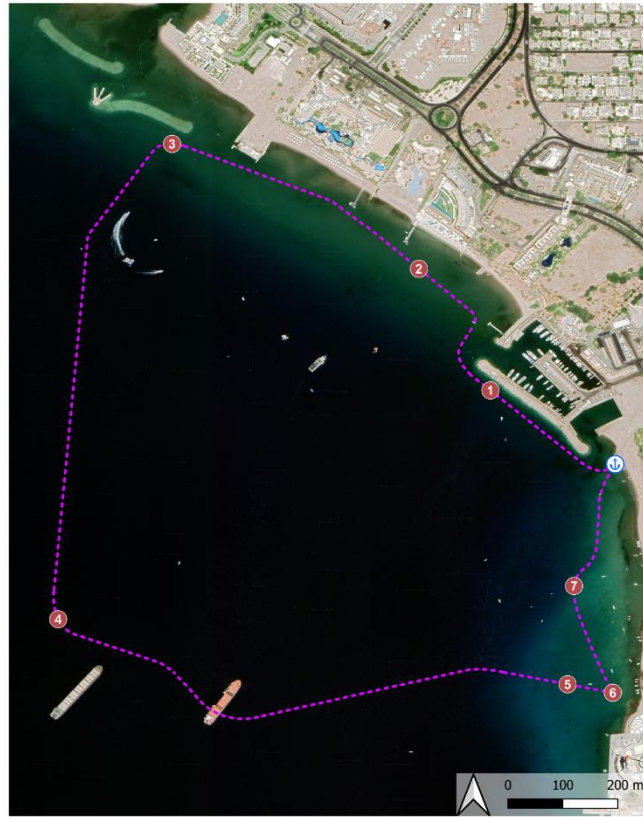


Figure3. One hour trip track

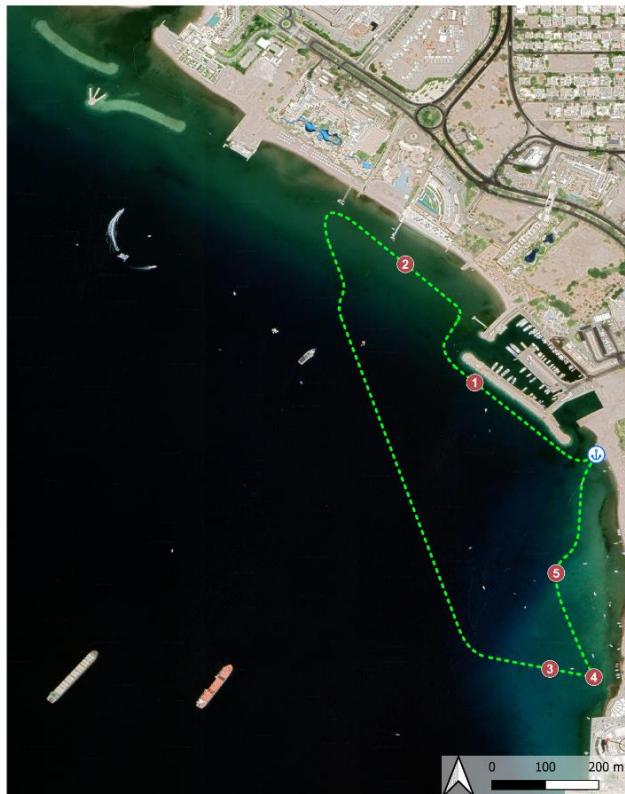


Figure 4. Half an hour trip track



Figure 5. Fifteen Minutes trip track



Figure 6. Photos from Sixty Minutes Trip



Figure 7. Photos from Thirty Minutes Trip



Figure 8. Photos from the Fifteen Minutes Trip

Boarding Points and Visitation Sites Attractions

Touristic glass bottom boats are boarded mainly from the public beach area near Aqaba city centre. This has the advantage of easy accessibility and supports marketing glass bottom boats excursions. Figure 9 shows photos of typical boarding points.



Figure 9. Glass bottom boat's common boarding points

The main marketability factor of glass bottom boats activities is the underwater features targeted by the excursions. Figure 10 shows the common diving sites in Aqaba, which are also targeted by Glass Bottom Boats. Diving sites in Aqaba are presented in an attractive Cellphone App. Produced by the Hashemite Royal Court. Some of glass bottom boats target underwater attractions include:

- Coral reefs within Ghandour Public Beach area and sunken tank near the shore at a depth of approximately 15 meters, which can be included in one short trip.

- Sunken aircraft of the Tristar type near the old port at a depth of approximately 25 meters, intentionally submerged to become a distinctive tourist and coral landmark
- Well established coral reef near the old thermal power station.
- Coral reef area within Aqaba Marine Reserve.
- The Military Museum area, which includes 21 different military pieces intentionally sunk to become a future tourist and coral attraction in the city of Aqaba.
- Sunken ship named "Cedar Pride" and the coral reef named "Japanese Garden." It is considered the most important natural coral landmark in the Gulf of Aqaba and a significant coral viewing station for glass-bottom boat customers.
- Sunken tank and sunken 130C-type aircraft at the Hexagons area

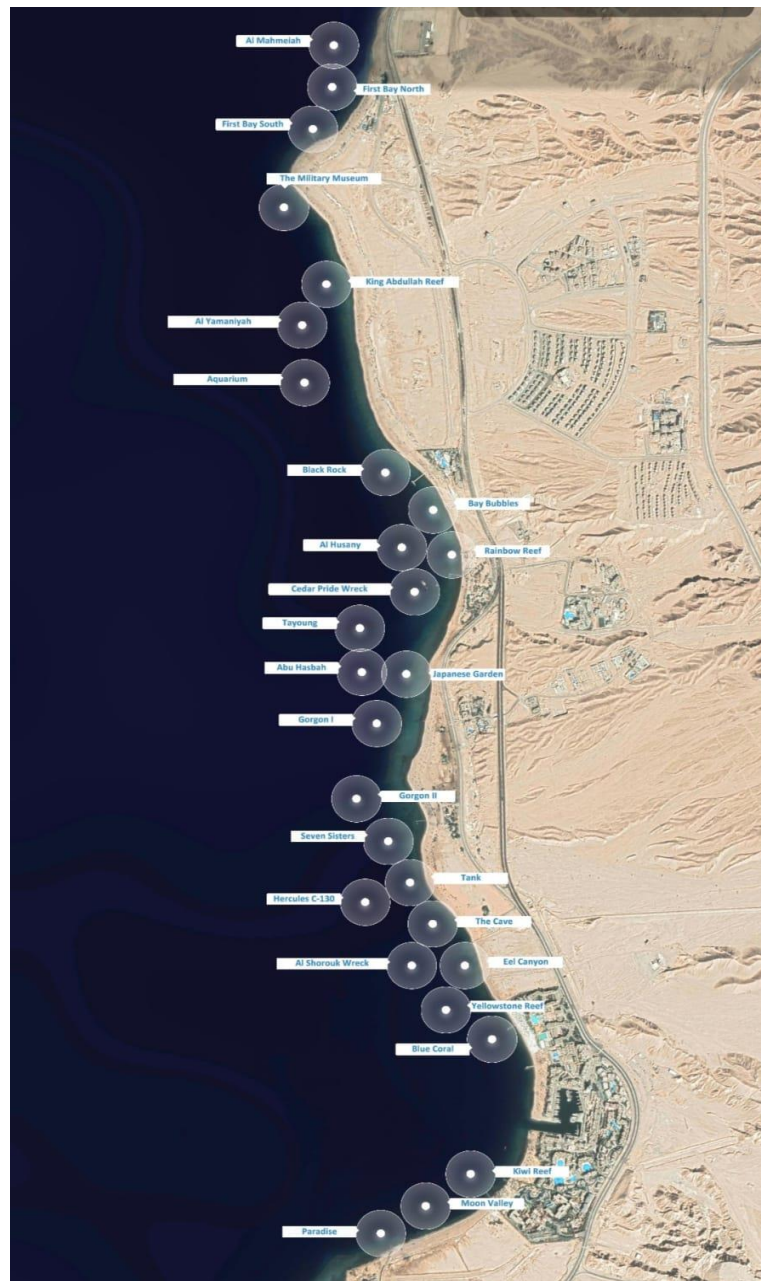


Figure 10. Common Diving Sites in Aqaba. Refer to Cellphone App “Dive in Aqaba”

5. Results

5.1. Data Analysis

The data presented in this document provides a thorough overview of glass-bottom boat operations in the charming coastal town of Aqaba from September 4th to September 28th, 2023. This dataset delivers valuable information on fuel consumption, financial gains from trips, and the demographics of visitors. Analyzing these details is crucial for identifying patterns and trends in fuel usage, trip earnings, and visitor distribution during the specified timeframe.

5.1.1. Total trips from boarding point

In the data presented in Figure.11 for the specified time frames, notable fluctuations are observed across four locations: Ghandour, Marina, Hotels, and South. In the initial period, from September 4th to 13th, Ghandour stood out with a significantly higher count of 118, highlighting its prominence over Marina, Hotels, and South. Marina followed with 41, while Hotels and South had counts of 20 and 44, respectively. Moving to the second period, spanning from September 14th to 21st, there was a significant shift, especially in Marina, where the count surged to 585, surpassing other locations by a wide margin. Ghandour's count also rose substantially to 1087, solidifying its leading position. Meanwhile, Hotels and South remained notably lower at 119 and 28, respectively. In the final period, from September 22nd to 28th, there was a decline in counts for all locations. Ghandour had 195, Marina had 73, Hotels had 23, and South had 39. Despite these fluctuations, Ghandour consistently maintained higher counts, indicating its sustained popularity throughout the specified time periods. Marina experienced a remarkable spike in the second period, suggesting potential shifts in preferences during these intervals.

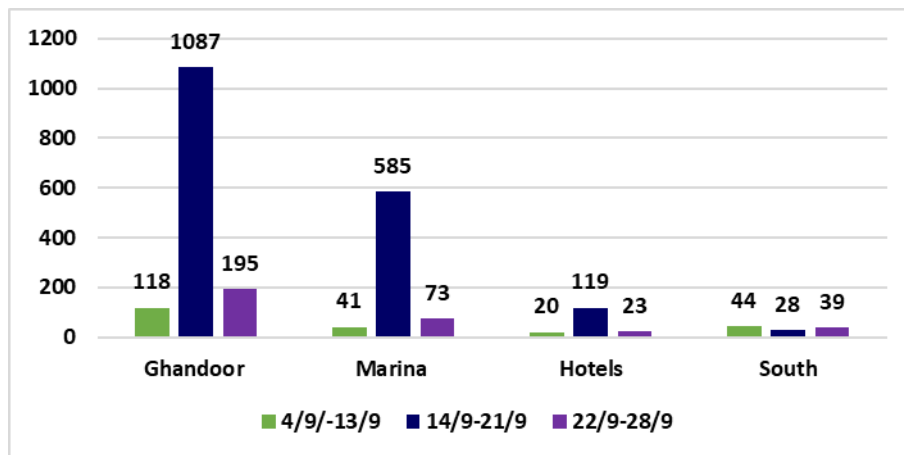


Figure 11. Total trips from boarding point

5.1.2. Total trips to visitation sites

Examining the data on site visits during the specified timeframes illustrated in figure.12 reveals noteworthy patterns. In the initial timeframe spanning from September 4th to 13th, there was a substantial increase in visitation across multiple sites, particularly with significant activity in GB and HB. Transitioning to the subsequent period, from September 14th to 21st, there is a general uptick in visits across all sites, with notable growth observed in AMR and OPS. Interestingly, OPM and OPLB experienced a decline in visitation during this timeframe. Moving to the third period, from September 22nd to 28th, there was an overall decrease in total visits compared to the preceding period. Nevertheless, GB and HB maintained consistently high visitation numbers, and

AMR, OPS, and NCC also exhibited steady visitation rates. The data indicates fluctuations in visitation across specific sites.

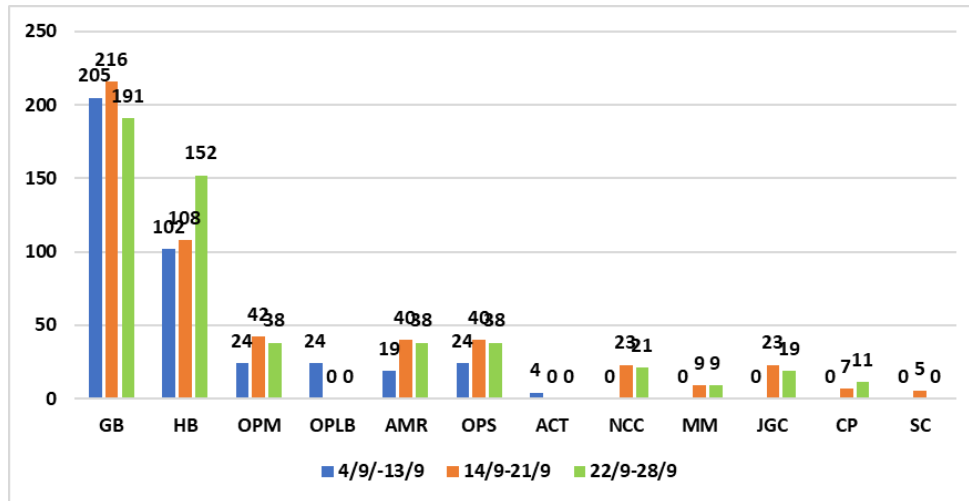


Figure 12. Total trips to visitation sites

5.1.3. Petrol Consumption Analysis

The examination of petrol usage depicted in Figure 13 indicates a progressive upswing in consumption over the span of three weeks. During the initial week (4th September to 13th September), the consumption stood at 764.5 JD. Subsequently, in the second week (14th September to 21st September), there was a notable surge in petrol consumption, reaching 1151.5 JD. This upward trajectory persisted into the third week (22nd September to 28th September), culminating in a consumption figure of 2017 JD. The escalated petrol consumption during this period may be ascribed to factors such as increased visitor numbers, longer journeys, or alterations in travel patterns.

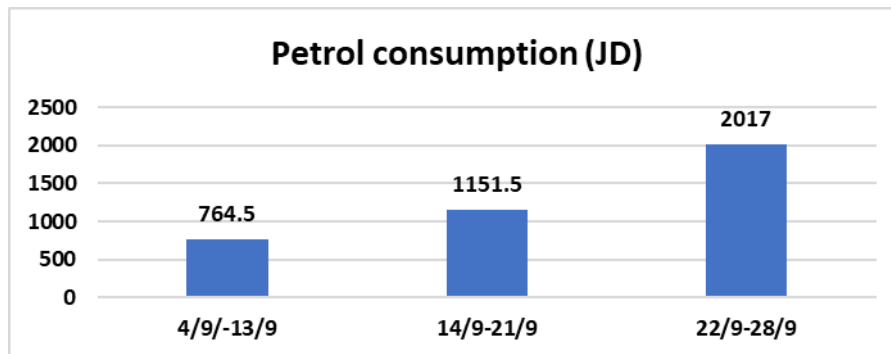


Figure 13. Petrol consumption

5.1.4. Trip Financial Return Analysis

The financial gains from the trips demonstrated a rising pattern over the three weeks, as depicted in Figure 14. Initially standing at 4385 JD in the first week, the financial return increased to 7321 JD in the second week and further rose to 7235 JD in the third week. This upward trajectory in trip financial return implies an enhanced profitability and economic benefit during the observed period. Potential factors contributing to this improvement include more effective marketing strategies, elevated service

quality, or increased spending by visitors. Fig14. also provides insights into the visitor count, segmented by demographics and nationality, with the overall count increasing from 1250 to 1482 over the three weeks. Notably, there is a discernible difference in visitor counts between Jordanians and non-Jordanians, with a higher number of Jordanian visitors throughout the period.

Turning to Fig15, an analysis of the adult category reveals a significant increase in numbers across the specified time periods, rising from 892 to 1109, and further to 1254, indicating a consistent upward trend. Likewise, the count of children exhibits a parallel growth, increasing from 369 to 437, and then to 604 over the observed weeks. This suggests a simultaneous rise in the population of children during this timeframe. Examining gender distribution, both male and female populations show an overall increase over the three periods, with males consistently outnumbering females. There is a notable surge in both genders from the first to the third timeframe. In terms of the demographic breakdown between Jordanians and non-Jordanians, the data reveals a relatively stable number of Jordanians across the weeks. Conversely, the count of non-Jordanians experiences slight fluctuations but remains relatively consistent overall.

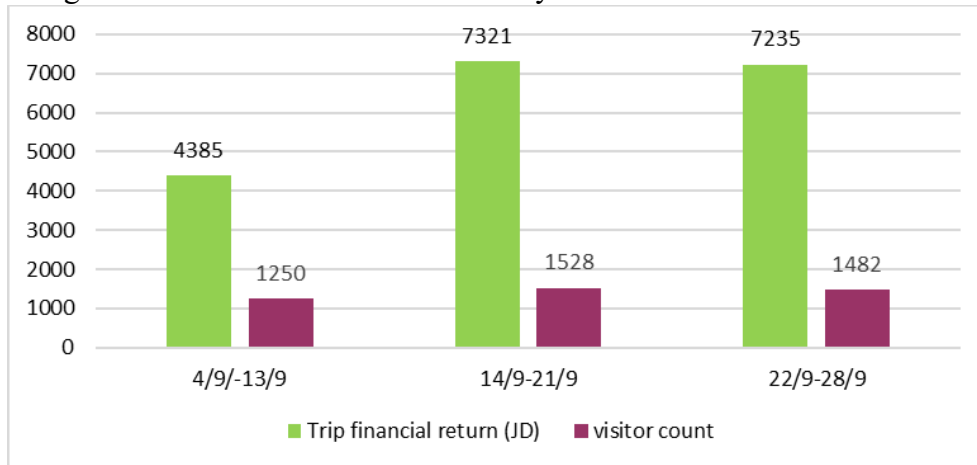


Figure 14. Visitor count Vs Trip financial return (JD)

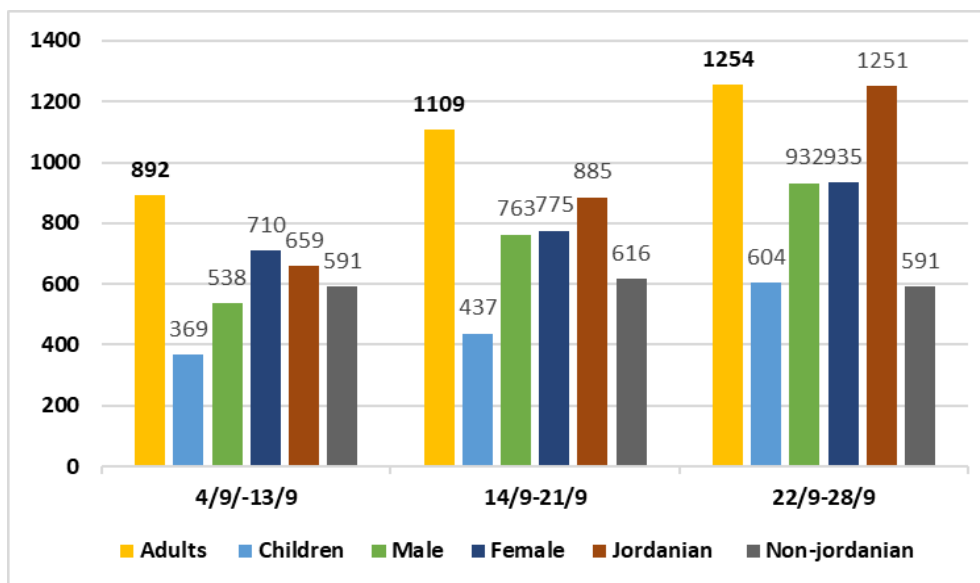


Figure 15. Visitors' age, gender and Nationality

5.2. ISP Data Handling and Analysis

Nine different indicators created and implemented in the database and PROGES-ISP software are presented in this analysis. The indicators were developed based on data collected in the monitoring protocol within the Glass Bottom Boats Data Gathering Campaign, before the implementation work has been performed, specific criteria were established for creating the different indicators:

- The indicators were associated and linked to the "Other touristic activities" component of the system diagram (ID=96).
- The indicators were implemented based on a table previously loaded by the Data gathering Team. The table is named "X_GBB_DATA".
- Each indicator can be visualized through charts. It was not possible to configure and then export GIS maps because no base GIS shapefiles were prepared and visualisation of GIS maps on PROGES-ISP of vector of points is not possible due to limitations in the software.
- Priority was given to generating views through queries derived from the source table for a better and more flexible display of results and for cross-referencing data from different columns in the same table.
- Priority was given to visualizing results over the entire monitoring period, grouped and aggregated by boarding point, rather than individual daily data. With daily data, there would need to export a graph and a map for each day of the protocol, which is not sustainable or representative of the fishing activities.

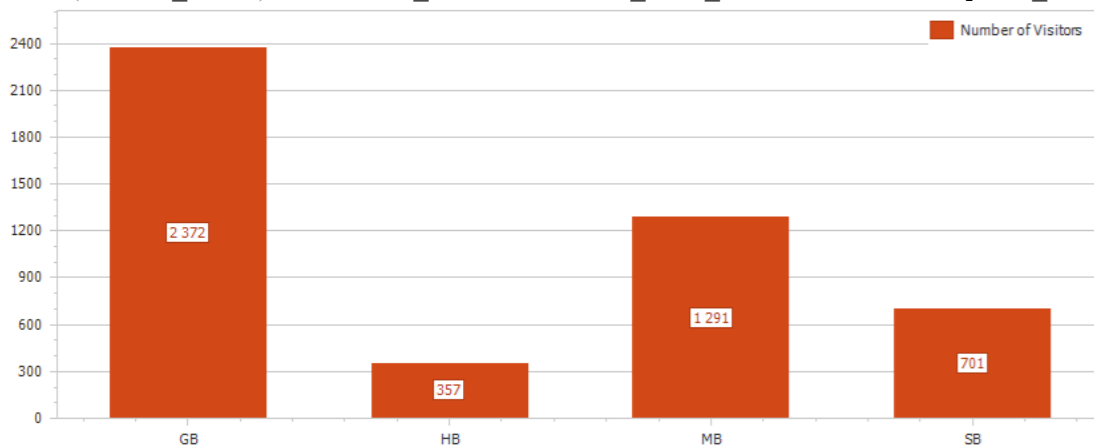
Indicator 1.

Indicator 1 shows the total number of visitors during the whole monitoring protocol grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_Visitors_Year**
- Indicator name on ISP: **PROTOCOL GBB Number of Visitors**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Visitors_Year AS SELECT [LOC_CODE], YEAR(DATE) AS year, SUM(Visitors_Count) AS Visitors_Counts FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Total visitors by boarding point in the whole monitoring period.

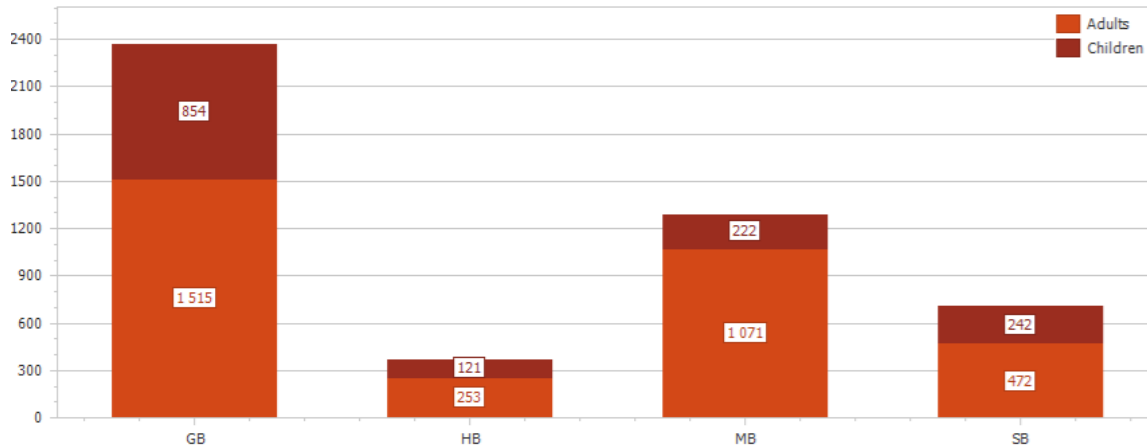
Indicator 2

Indicator 2 shows the total number of visitors as the sum of adults and children, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_AgeClass_Year**
- Indicator name on ISP: **PROTOCOL GBB Number of Adults and Children Visitors**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_AgeClass_Year AS SELECT [LOC_CODE],
SUM(Adults) AS Adults, SUM(Children) AS Children, YEAR(DATE) AS year
FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Total visitors as adults and children by boarding point in the whole monitoring period.

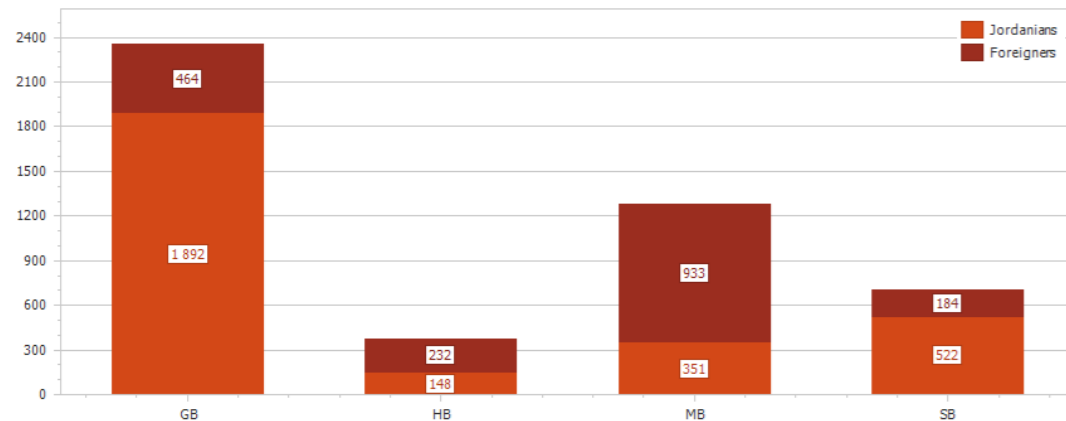
Indicator 3

Indicator 3 shows the total number of visitors as the sum of Jordanian and non-Jordanian people, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_Nationality_Year**
- Indicator name on ISP: **PROTOCOL GBB Number of Jordanian and non-Jordanian Visitors**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Nationality_Year AS SELECT [LOC_CODE],
SUM(Jordanian) AS Jordanian, SUM(Tourist_African + Tourist_American + Tourist_Arabic +
Tourist_Asian + Tourist_European) AS NonJordanian,
YEAR(DATE) AS year FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Total visitors as Jordanians and non-Jordanians by boarding point in the whole monitoring period

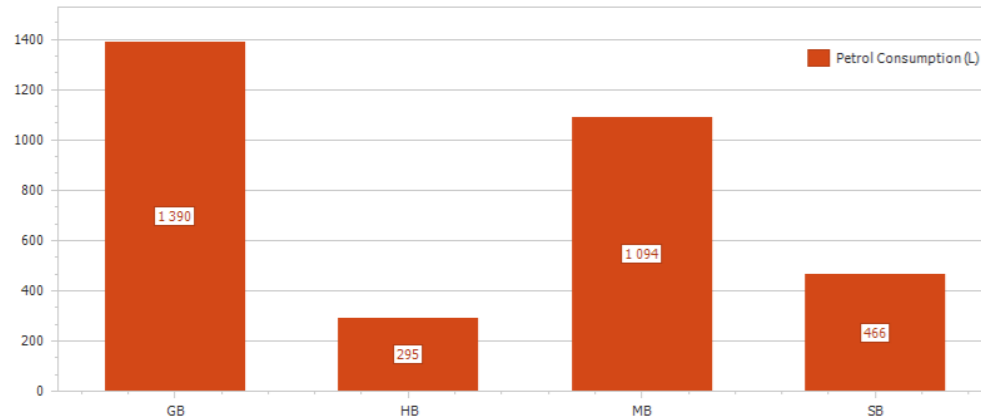
Indicator 4

Indicator 4 shows the total petrol consumed (Liters), during the whole monitoring protocol and grouped by boarding point. One liter is close to 1 JD.

- View name on DB: **Qry_Protocol_GlassBB_Petrol_Consumption_Year**
- Indicator name on ISP: **PROTOCOL GBB Petrol Consumption**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Petrol_Consumption_Year AS SELECT [LOC_CODE],  
YEAR(DATE) AS year, SUM(Petrol_Consumption) AS Petrol_Consumption FROM X_GBB_DATA  
GROUP BY [LOC_CODE], YEAR(DATE)
```



Total petrol consumed (Liters) by boarding point in the whole monitoring period.

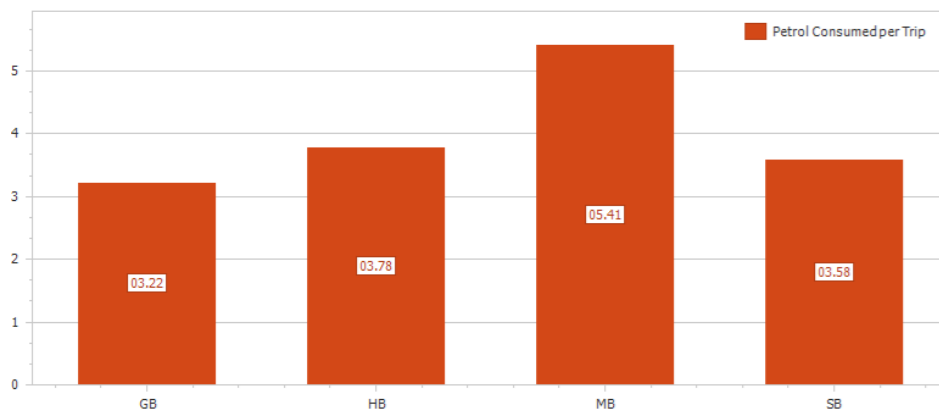
Indicator 5

Indicator 5 shows the average petrol consumed (Liters) per trip, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_Petrol_ConsumptionperTrip_Year**
- Indicator name on ISP: **PROTOCOL GBB Petrol Consumption per Trip**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Petrol_ConsumptionperTrip_Year AS SELECT  
[LOC_CODE],  
CAST(AVG(Petrol_Consumption) AS DECIMAL (10,2)) AS PetrolperTrip, YEAR(DATE) AS year  
FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Average petrol consumed (Liters) per trip, by boarding point in the whole monitoring period.

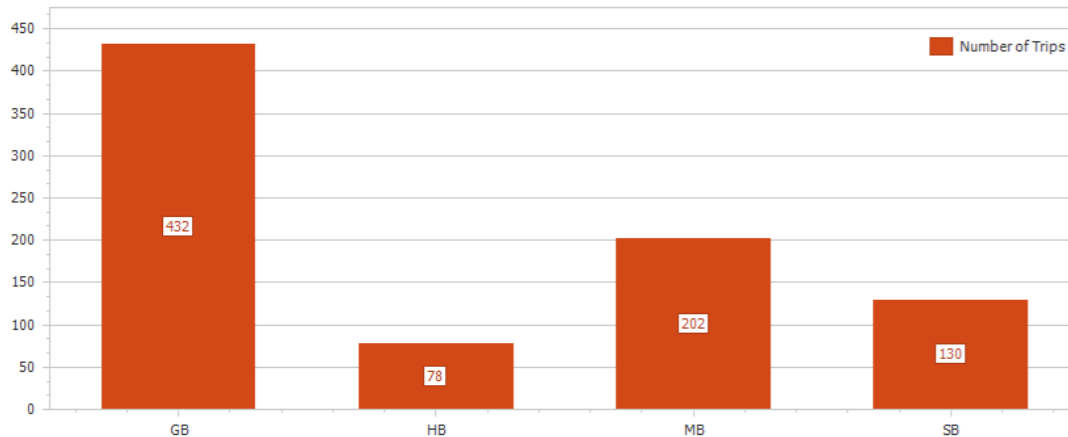
Indicator 6

Indicator 6 shows trip counts, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_Trip_Count_Year**
- Indicator name on ISP: **PROTOCOL GBB Number of Trips**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Trip_Count_Year AS SELECT [LOC_CODE],  
COUNT(*) AS trip_count,  
YEAR(DATE) AS year FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Total number of trips by boarding point in the whole monitoring period

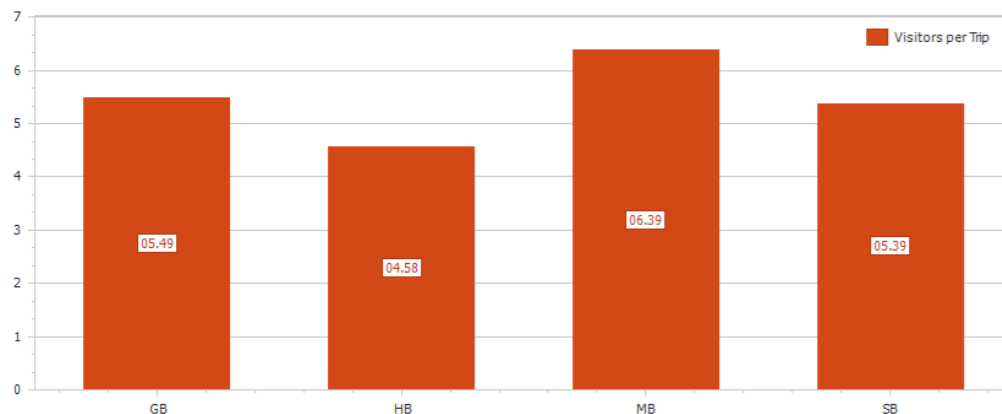
Indicator 7

Indicator 7 shows the average number of visitors per trip, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_VisitorsperTrip_Year**
- Indicator name on ISP: **PROTOCOL GBB Number of Visitors per Trip**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_VisitorsperTrip_Year AS SELECT [LOC_CODE],  
CAST(AVG(Visitors_Count) AS DECIMAL (10,2)) AS VisitorperTrip, YEAR(DATE) AS year  
FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Average number of visitors per trip, by boarding point in the whole monitoring period

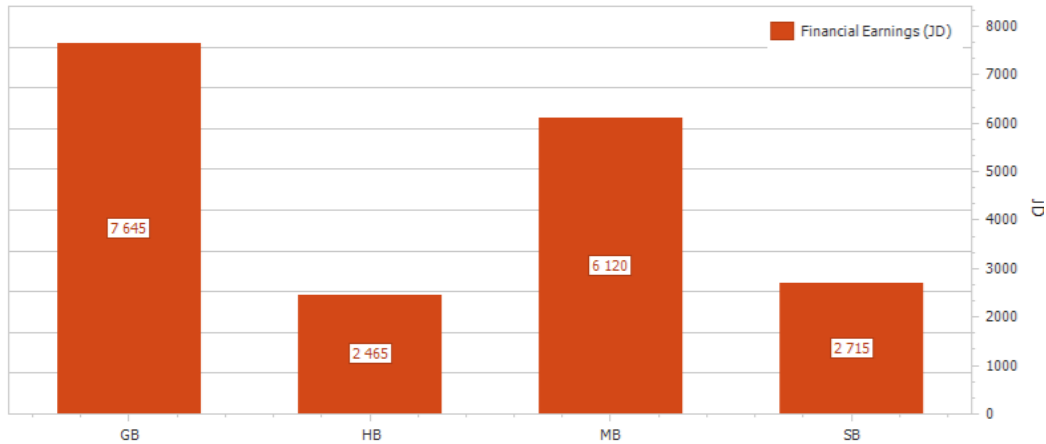
Indicator 8

Indicator 8 shows the total financial earnings, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_Financial_Return_Year**
- Indicator name on ISP: **PROTOCOL GBB Financial Earnings**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_Financial_Return_Year AS SELECT [LOC_CODE],  
YEAR(DATE) AS year, SUM(Trip_Financial_Return) AS Financial_Return FROM X_GBB_DATA  
GROUP BY [LOC_CODE], YEAR(DATE)
```



Total financial earnings (JD) by boarding point in the whole monitoring period

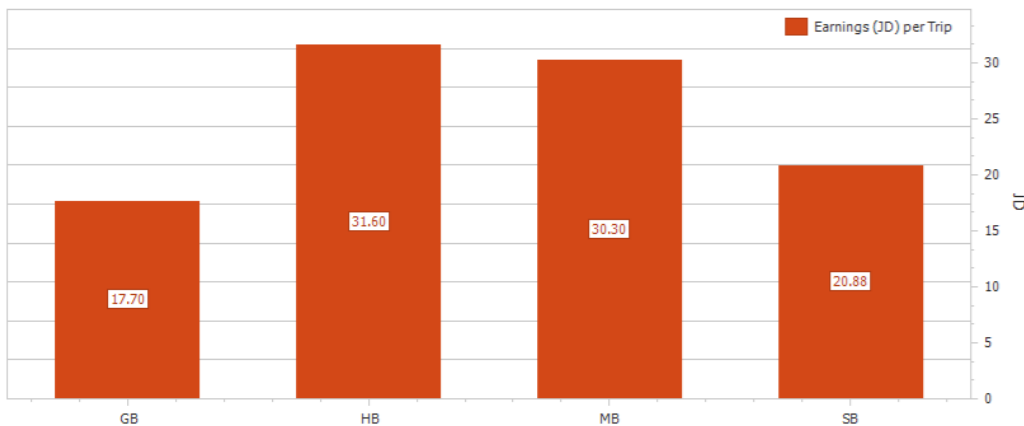
Indicator

In this indicator 9 shows the average financial earnings per trip, during the whole monitoring protocol and grouped by boarding point.

- View name on DB: **Qry_Protocol_GlassBB_FinancialperTrip_Year**
- Indicator name on ISP: **PROTOCOL Financial Earning per Trip**

Query text performed:

```
CREATE VIEW Qry_Protocol_GlassBB_FinancialperTrip_Year AS SELECT [LOC_CODE],  
CAST(AVG(Trip_Financial_Return) AS DECIMAL (10,2)) AS FinancialperTrip, YEAR(DATE)  
AS year FROM X_GBB_DATA GROUP BY [LOC_CODE], YEAR(DATE)
```



Average financial earnings (JD) per trip, by boarding point in the whole monitoring period.

PROTOCOL GBB Number of Visitors	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Number of Adults and Children Visitors	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Number of Jordanian and non-Jordanian Visitors	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Petrol Consumption	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Petrol Consumption per Trip	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Number of Trips	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL GBB Number of Visitors per Trip	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL Financial Earnings	(Glass boats protocol)	Yearly Aggregation	GBB Association
PROTOCOL Financial Earning per Trip	(Glass boats protocol)	Yearly Aggregation	GBB Association

Nine new indicators implemented in PROGES-ISP

6. Discussion

6.1. Touristic Glass Bottom Boats Operators

Data presented in Annex1 provides an overview of the language proficiency and educational backgrounds of various Glass bottom Boats operators. The evaluation includes assessments of Arabic reading and writing, English and another language speaking skills. The operators exhibit a range of educational levels, from primary to university, with corresponding variations in language proficiency. While some operators demonstrate excellent language skills and academic achievements, others show weaknesses in certain areas. It is noteworthy that there are operators with special needs, such as hearing impairment. The diversity in language proficiency and educational backgrounds highlights the importance of tailored language support and educational programs to ensure effective communication and performance within the given context. The data underscores the need for targeted training and support to enhance the overall capabilities of the operators in their respective roles.

6.2 Touristic Boats Navigation and Tourist Excursions

According to Al-Hayek (2016) brief excursions occur either within the northern tourist area / Aqaba City Centre Public Beach or at AMP zones (Currently Aqaba Marine Reserve), whereas extended journeys originate from the northern tourist zone and head towards the AMP zone. Boaters reported to the study totaled 89 boats, but only around 10 of them provide lengthy trips due to the associated high time and costs. The boaters navigate in parallel to the coastline, maintaining a distance of 500 m from the shore. In deeper sea regions, they ensure a minimum distance of 200 m from territorial waters outer boundary. Their typical route includes visits to coral-rich areas, leveraging their local expertise to showcase and explain various coral types and locations to tourists.

6.3. Special Event Happened during Data Gathering Campaign

Demonstrating a cultural heritage value of Touristic Glass Bottom Boats, they frequently perform social celebrations, like weddings, graduations, family parties including birthdays and celebrating new babies in the family. An interesting event happened during the Data gathering campaign period. The Glass Bottom Boats Operators celebrated graduation of one of their colleagues, who received a university degree a maritime ship officer. They executed a joyful boat parade joining about 12 glass bottom boats launched from Ghandour beach as a boarding point on 5th9 2023. The parade lasted for about an hour and was full dance and songs. In order to do that the Boat's operators arranged in advance with the official authorities and the parade was accompanied by a coast guards boat to ensure high level of security and safety. Photos from the celebration are shown in Figure 16.



Figure 16. Photos from the Glass Bottom Boats Celebration, September 5th 2023

7. Conclusions and Recommendation

The Glass Bottom Boats Data Gathering Campaign represented a rich experience to the Project Team and Stakeholders in Aqaba, particularly those who rely on the sea for their livelihoods and had a strong historical misconception that gathering data is against their interest or at least is of no benefit to them. The main conclusions derived from the campaign can be summarized as follows:

- ❖ The Touristic Glass Bottom Boats owners and operators community have become well aware of the importance of data gathering handling and sharing about the different aspects of daily practice. They have been well empowered, educated and trained to collect data benefiting from their local knowledge and daily work. The Glass Bottom Boats Society who started the Campaign very skeptical ended the Campaign strongly determined to sustain data gathering as a part of their regular management routine. In addition to the rich information that can be gained through data gathering, this involvement enables the Society to explore additional opportunities for collaborating with other specialized entities
- ❖ Data gathering addressed critical challenges facing sustainable Glass Bottom Boats Tourism in Aqaba. The initiative's focus on comprehensive data collection is particularly commendable for aiming at initiating data gathering and analysis enhancing the National monitoring programs' scope and reliability.
- ❖ The Data Gathering Campaign provided an outstanding opportunity to put in practice and mainstream the Data Gathering Management Protocol introduced by MED4EBM Project. The various challenges faced in the Data Gathering Campaign have mostly been resolved during implementation, which paves the ground for smoother and less costly long term programs
- ❖ The Data Gathering Campaign by showcasing a robust approach to data collection and analysis and engaging local glass bottom boats owners and operators as well as a young data gathering team including a female in conducting regular field visits and utilizing glass bottom boats operations demonstrate a commitment to obtaining accurate and comprehensive information. The incorporation of data analysis methods, including descriptive, statistical, and graphic presentation, along with production of maps and sharing reports, underscores a rigorous and transparent knowledge sharing process.
- ❖ The information gathered on operators indicate clear needs for intensive enhancement of their communication skills in terms of language and communicating with visitors with special needs, including hearing impairment. It is recommended herein to establish inclusive language support and tailored educational programs. The large differences in language proficiency and educational backgrounds underscores the necessity for customized training and support initiatives to ensure effective communication and optimal performance including marketing to sustain this cultural heritage practice
- ❖ The Glass Bottom Boats Society works diligently in collaboration with governmental, private entities, and local community institutions to enhance the tourism sector, making Aqaba a key tourist destination. Here are some suggestions that may contribute to pushing Aqaba forward in competing as a distinguished tourist destinations worldwide:
 - Swift and urgent government action, in collaboration with all relevant stakeholders, to develop comprehensive maintenance plans for all public beaches to make them competitive with closed paid-service tourist beaches.
 - Better regulate zoning and pathways for tourist boats, yachts, water bikes, and personal watercraft, enforcing speed limits and safety and security considerations. This should include swimmers with careful watch that they don't go outside designated swimming areas due to the risk they pose to their life and public safety.

- Include visual observations and citizen science monitoring in regular environmental monitoring programs and health factors monitoring on beaches.
- Intensify legal control over all maritime vessels, and apply adequate penalties to any actions that may harm marine habitats and coral life
- ❖ Several initiatives happening in Aqaba supported by Aqaba Special Economic Zone Authority and follow up of UNDP through MED4EBM Project and synergy with other initiatives provide substantial support for continued data gathering and employing the information generated in enhancing Integrated Coastal Zone Management in general and Touristic Glass Bottom Boats management in particular. Some of these initiatives include:
 - Aqaba Touristic Glass Bottom Boats Society implementing the Protocol will continue data gathering on their own after the Project ends
 - Four Projects currently in the pipeline will adopt the Protocols in their implementation:
 - Enhancing Aqaba Marine Reserve Management Capacity
 - Enhancing Coral Reefs of the Gulf of Aqaba Resilience to Climate Change
 - UNDP ASEZA GEF Blue Economy on the Jordanian coast of the Gulf of Aqaba
 - Citizen Science data Gathering By Glass Bottom Boats Society will contribute an integral part of upcoming initiatives dealing with sustainable coastal tourism in Aqaba

Annexes

Annex 1. Data Graphic Analysis. Separate Excel File

Annex 2. List of Glass Bottom Boats Operators and Communication Proficiency

Operator's Name	Educational	اللغة العربية - قراءة / كتابة	English Language Speaking	Another Languages
عامر بدير	جامعي	ممتاز	جيد جداً	
احسان البطاينة	اعدادي	ضعيف	ضعيف	
ايهاب الهلاوي	جامعي / على مقاعد الدراسة	ممتاز	جيد	
عمر زغول	اعدادي	ضعيف	ضعيف	
حسام المجالي	اعدادي	ضعيف	ضعيف	
خالد الطحان	ابتدائي	ضعيف	ضعيف	
عامر العقابلية	اعدادي	جيد جداً	جيد	
حسن البلاونة	اعدادي	جيد جداً	ضعيف	ذوي احتياجات خاصة / صم وبكم
محمد الخناتلة	اعدادي	ضعيف	ضعيف	
معاوية ابو العز	اعدادي	مقبول	مقبول	
طارق الشعر	ثانوي	ممتاز	جيد جداً	
هاني بدير	اعدادي	جيد جداً	مقبول	
محمد ماضي	ثانوي	جيد جيداً	ضعيف	
بهاء القيسي	اعدادي	جيد	ضعيف	
احمد الكريمين	جامعي	ممتاز	جيد	
احمد عرفة	ثانوي	جيد جداً	مقبول	
احمد السكاب	ابتدائي	ضعيف	ضعيف	
عبد الوهاب الخرايشة		ممتاز	جيد	
ابراهيم العناقرة	ثانوي	ضعيف	ضعيف	
زيد بيومي		مقبول	ضعيف	
صدام الدبابكة	ابتدائي	ضعيف	ضعيف	
مصعب الرياطي	اعدادي	جيد	ضعيف	
عبدالله جراد	اعدادي	مقبول	مقبول	
مراد البلعاوي	ثانوي	جيد جداً	جيد جداً	
محمد ابو حشيش	ابتدائي	ضعيف	ضعيف	
فادي الدبابكة	جامعي	ممتاز	جيد	
خمس ياسين	ابتدائي	ضعيف	ضعيف	
خالد الشلبي	اعدادي	جيد	جيد	
عماد الخوجة	ثانوي	جيد جداً	جيد	
عاصم الششتاوي	اعدادي	جيد جداً	جيد	اللغة الايطالية / جيد
رمضان الغرابلي	اعدادي	جيد جداً	جيد	
محمد فواز	ثانوي	جيد	مقبول	
سليمان الخوالدة	اعدادي	ضعيف	ضعيف	
ناصر الشناوي	ابتدائي	ضعيف	ضعيف	
عبدالله النصيرات	اعدادي	مقبول	ضعيف	

عبد الرحمن الطحان	اعدادي	جيد	ضعيف	
حمو الكردي	اعدادي	جيد	ضعيف	
معتصم السطوحي	اعدادي	ضعيف	ضعيف	
محمد الغرابلي	ثانوي	جيد جداً	جيد	
ابراهيم ابو شامة	ابتدائي	ضعيف	مقبول	
نجاري بسيوني	ثانوي	جيد جداً	جيد	
عمر ابو غريقانة	ثانوي	جيد جداً	مقبول	
هاشم السطوحي	اعدادي	جيد	مقبول	
علي ابو موسى	ابتدائي	ضعيف	ضعيف	
مهند ابو درويش	جامعي	جيد جداً	جيد جداً	اللغة الروسية / ممتاز
احمد بدير	اعدادي	ضعيف	ضعيف	
محمد الخوجة	ثانوي	جيد جداً	مقبول	
كريم عريج	ابتدائي	ضعيف	ضعيف	
اصيل ياسين	اعدادي	جيد	مقبول	
عبد المجيد ياسين	اعدادي	جيد جداً	مقبول	
ليث النوافلة	جامعي / على مقاعد الدراسة	ممتاز	جيد جداً	
فوزي ابو عبد الله	اعدادي	جيد	مقبول	
احمد البلاونة	اعدادي	جيد	مقبول	
احمد بيومي	اعدادي	جيد	مقبول	
حسين ابو زيتون	اعدادي	ضعيف	ضعيف	
حميد ابو العز	اعدادي	جيد جداً	مقبول	
طارق الرياطي	اعدادي	جيد	جيد جداً	
مرضي بسيوني	ثانوي	جيد جداً	جيد	
مراد البطوش	اعدادي	ضعيف	ضعيف	
سامر الهلاوي	اعدادي	ضعيف	ضعيف	
حسين البلاونة	ابتدائي	جيد	ضعيف	
احمد المجالي	ثانوي	جيد جداً	جيد	
سمير الرياطي	اعدادي	مقبول	ضعيف	
صابر الهلاوي	ثانوي	جيد جداً	جيد	
محمد المجالي	اعداي	جيد	ضعيف	
حمدي الكردي	ثانوي	جيد	ضعيف	
محمد درويش	جامعي	جيد جداً	جيد	
محمود العوضي	اعدادي	جيد جداً	مقبول	
مؤيد الخوجة	ثانوي	جيد	ضعيف	
مالك جراد	دبلوم	ممتاز	جيد	
رعد الخلفات	ابتدائي	ضعيف	ضعيف	
زيد اللباني	جامعي / على مقاعد الدراسة	جيد جداً	مقبول	
عبادة ياسين	ابتدائي	ضعيف	ضعيف	
بكر ياسين	اعدادي	مقبول	ضعيف	
احمد ابو ريا	اعدادي	جيد	جيد	
محمد بدير	اعدادي	جيد	مقبول	

محمد ياسين	اعدادي	مقبول	مقبول	
محمد هشام	ابتدائي	ضعيف	ضعيف	
عدي الدردساوي	اعدادي	جيد	مقبول	
عبد الرحمن سعادة	ثانوي	جيد جداً	ضعيف	
اسامة جراد	دبلوم	ممتاز	جيد جداً	
حسن التيهي	ثانوي	جيد جداً	مقبول	
عبد الله العجالين	اعدادي	ضعيف	ضعيف	
وسيم الغرابلي	اعدادي	ضعيف	ضعيف	
ابراهيم سويدان	ثانوي	ممتاز	جيد جداً	اللغة الرومانية / ممتاز
حسن ابو راس	ثانوي	جيد جداً	جيد	
زياد ياسين	اعدادي	ضعيف	ضعيف	
طه العناقرة	ثانوي	جيد جداً	مقبول	
رعد النصيرات	ثانوي	جيد جداً	جيد	
علي بيومي	اعدادي	مقبول	مقبول	
عبدالله السطوحي	اعدادي	جيد جداً	ضعيف	
ضياء ياسين	اعدادي	جيد	مقبول	
نزيه الرياطي	اعدادي	مقبول	مقبول	
يوسف داود	اعدادي	مقبول	مقبول	

Annex 3. Introductory Note of Glass Bottom Boats prepared by a Participating Boat Operator



مشروع رصد البيئة البحرية بعلم المواطن – القوارب الزجاجية إعداد طارق ابو الشعر مشغل قارب زجاجي

اولاً: تعريف عن مدينة العقبة

تتميز مدينة العقبة بأنها المنفذ البحري الوحيد في الاردن, وهي مطلة على الجزء الشمالي الشرقي من خليج العقبة في البحر الاحمر كما انها بوابة اسبوية للعبور الى قارة افريقيا عبر البحر.

ومحطة مهمة للسفن السياحية والسياح القادمين من جميع انحاء العالم لزيارة الاردن. كما ان ميناء العقبة يعتبر من اهم موانئ المنطقة ومن اهم محطات الشحن الدولي على مستوى العالم.

كما تتميز مدينة العقبة بقربها من مدينة البتراء الوردية (احد عجائب الدنيا السبعة) وايضاً قربها من وادي رم والذي يعتبر من اهم المعالم السياحية على مستوى الشرق الاوسط والعالم. مما يجعلها اهم محطة في جميع البرامج السياحية, واهم محطة على جداول الزيارة لدى السياح من مختلف الجنسيات, ومن جميع انحاء العالم. واهم ما يميز مدينة العقبة هو شواطئها الغنية بالحياة المرجانية.

مما يجعلها اهم مقصد سياحي ورياضي على مستوى العالم لمحبين الرياضات البحرية بشكل عام ورياضة الغوص والمهتمين في المجالات العامة للحياة البحرية بشكل خاص.

ثانياً: مهنة القوارب الزجاجية (قوارب زجاجية القاع).

هي مهنة توارثها ابناء مدينة العقبة من آبائهم وأجدادهم منذ سنوات.

وهي عبارة عن تقديم خدمة القيام بجولات بحرية على متن هذه القوارب للسياح من مختلف الجنسيات حول العالم، للاستمتاع بمشاهدة الشعاب المرجانية والاسماك الملونة بأنواعها، من خلال الارضيات الزجاجية الموجودة في هذه القوارب، كما ان مهنة القوارب الزجاجية تعتبر مصدر دخل اساسي للعديد من ابناء مدينة العقبة وعائلاتهم. مما يجعلنا في جمعية القوارب الزجاجية حريصين أشد الحرص على الحفاظ على البيئة البحرية والحياة المرجانية في خليج العقبة، بسبب ارتباطها الاساسي في عملنا ومصدر دخلنا.

ثالثاً: محطات المشاهدة المرجانية

في مهنتنا توجد العديد من المحطات المهمة للقوارب الزجاجية وهي عبارة عن المناطق التي يكون بها تجمعات مرجانية يمكن رؤيتها من خلال القاع الزجاجي للقوارب، ومن اهم هذه المحطات يمكن ذكر

- 1- الشعاب المرجانية الموجودة ضمن نطاق شاطئ الغدور بالاضافة للدبابة الغارقة قرب الشاطئ على عمق 15 متر تقريباً.
- 2- الطائرة الغارقة من نوع تراي ستار قرب الميناء القديم على عمق 25 متر تقريباً. والتي تم اغراقها عمداً من اجل ان تكون في المستقبل معلم سياحي ومرجاني مميز على مستوى الشرق الاوسط والعالم.
- 3- الحيد المرجاني الموجود قرب محطة الكهرباء الحرارية القديمة.
- 4- منطقة الحيد المرجاني الواقع ضمن محمية العقبة البحرية.
- 5- منطقة المتحف العسكري والذي يضم 21 قطعة عسكرية مختلفة تم اغراقها عمداً لتصبح مستقبلاً احد المعالم السياحية والمرجانية في مدينة العقبة.
- 6- منطقة المنتزه البحري والذي يضم ضمن نطاقه، الباخرة الغارقة التي تحمل اسم (سيدار برايد) والحيد المرجاني الذي يحمل اسم (الجبانيز جاردن) والتي تعتبر اهم معلم مرجاني طبيعي في خليج العقبة واهم محطة مشاهدة مرجانية لزبائن القوارب الزجاجية.
- 7- منطقة شاطئ السداسيات والذي يحتوي ضمن نطاقه على دبابة غارقة وطائرة غارقة من نوع C 130

رابعاً: التحديات التي تواجه قطاع القوارب الزجاجية.

تستقبل مدينة العقبة سنوياً مئات الالاف من الزوار من جميع محافظات المملكة الاردنية الهاشمية على شكل سياحة داخلية، بالاضافة لاعداد مماثلة تقريباً من السياح القادمين من جميع انحاء العالم. وكما ان هذه الاعداد تشكل رافد اقتصادي مهم للقطاع السياحي بكافة اشكاله بما فيها قطاع القوارب الزجاجية والقطاعات الاخرى بشكل عام. فان هذه الاعداد تشكل تحدي كبير للمدينة ومرافقها بسبب افتقاد المدينة للكثير من العوامل الخدمائية وضعف الرقابة الحكومية على الممارسات السلبية للمنشآت والافراد. مما يؤثر سلباً على القطاع السياحي بشكل خاص والقطاعات الاخرى بشكل عام، واذكر من هذه العوامل.

- 1- عدم وجود شواطئ عامة ومجانية تنافس الشواطئ السياحية مدفوعة الخدمات، حيث ان الشواطئ العامة والمجانية تعاني من النقص في الصيانة الدورية للمظلات والطرق الداخلية

- واعمدة الانارة. مما قد يشكل خطراً على السلامة العامة لمرتادي هذه الشواطئ, وهذا بدوره يجعل الاقبال على زيارة هذه الشواطئ يصبح ضعيفاً وبالتالي ضعف الاقبال على القوارب الزجاجية, كون الشواطئ العامة هي أماكن اصطفاف رئيسية للقوارب الزجاجية. مما يتسبب في تضرر قطاع القوارب الزجاجية بشكل خاص وقطاعات اخرى بشكل عام.
- 2- عدم وجود أماكن مناسبة لاصطفاف القوارب على الشواطئ العامة كالجسور بأنواعها. مما يجبر القوارب الزجاجية على الاصطفاف على الشاطئ.
- وهذا قد يشكل خطراً في بعض الاحيان على السباحين قرب الشاطئ وخصوصاً الاطفال منهم, بسبب صغر المساحات المخصصة للسباحة على الشواطئ العامة.
- 3- افتقاد الشواطئ العامة للصيانة الدورية تسبب في تراكم الصخور والاحجار الكبيرة على الشواطئ, وخصوصاً في أماكن اصطفاف القوارب الزجاجية مما يتسبب في كثير من الاحيان بالحاق الاضرار بالقوارب الزجاجية ككسر الزجاج القاعي او عمل تشققات في بدن القوارب او الحاق الضرر بمحركاتها.
- 4- ضعف الرقابة القانونية على القطع البحرية الاخرى كالقوارب والدراجات المائية الخاصة والعائلية او القطع البحرية المملوكة للشركات السياحية مثل القوارب الكبيرة والقوارب السريعة واليخوت والدراجات المائية, والممارسات المتهورة لسائقها بالقرب من الممرات البحرية المخصصة للقوارب الزجاجية مما قد يشكل خطراً على السلامة العامة لسائقيها وركاب القوارب الزجاجية.
- 5- ضعف الرقابة البيئية والقانونية على مرتادي الشواطئ العامة وزبائن المقاهي والمطاعم الشاطئية, وعدم وجود كوادر كافية لتنظيف الشواطئ بشكل دائم مما يتسبب في تراكم النفايات على هذه الشواطئ.
- 6- عدم وجود أحواض مبيت مجانية مناسبة للقوارب الزجاجية, حيث أن الحوض الوحيد المجاني الموجود لمبيت القوارب الزجاجية والذي نتشاركه مع زملائنا الصيادين يحتوي على اكثر من 300 قارب تقريباً موزعين ما بين قوارب زجاجية وقوارب صيد بالاضافة لبعض القوارب الخاصة والعائلية, وهذا الحوض بالحقيقة يتسع لنصف هذا العدد أو اكثر قليلاً تقريباً مما قد شكل تكديس فظيع للقوارب والحاق اضرار في بعضها.

خامساً: التحديات البيئية.

يعتبر خليج العقبة من اغنى المناطق على مستوى الشرق الاوسط والعالم من حيث تنوع اشكال الحياة البحرية والمرجانية ومقصد سياحي مهم لمحبين رياضة الغوص والمهتمين في الحياة البحرية, كما ان الحياة البحرية والمرجانية تشكل ركيزة اساسية في مهنة القوارب الزجاجية. لكن للأسف هناك تحديات بيئية تشكل خطراً على الحياة البحرية والمرجانية في خليج العقبة يجب ذكرها ومنها...

- 1- عدم وجود رقابة بيئية وقانونية كافية على مرتادي الشواطئ والبحر الذين يقومون بالتخلص من النفايات وبقايا الطعام في البحر.

- وأذكر هنا تحديداً القوارب الخاصة واليخوت المملوكة للشركات السياحية والتي عادةً تشمل برامجها على وجبات غداء للسياح بالإضافة لقيامهم بالتخلص من مياه الصرف الصحي وزيوت المحركات في مياه البحر .
- 2- استهتار بعض طواقم العمل على القوارب واليخوت عند التوقف بالبحر لممارسة نشاطات متنوعة مثل السباحة او الغداء حيث تقوم هذه الطواقم برمي المراسي مما يمكن أن يتسبب بأضرار جسيمة للمرجان والبيئة المحيطة به.
- 3- ضرورة تعزيز الرادع القانوني ضد الافراد الذين يقومون بالغطس الحر لاستخراج الشعاب المرجانية واسماك الزينة الملونة بهدف الاتجار بها.
- 4- ضعف المحاسبة القانونية على الأشخاص الغير مصرح لهم بالصيد والذين يقومون بمد شباك الصيد بأنواعها دون مراعاة مناطق الشعاب المرجانية من خلال الشاطئ، وتركها لليلة كاملة مما يتسبب بتلف البيئات تحت هذه الشباك والاضرار بالكائنات الحية المختلفة التي تعيش فيها.

سادساً: اقتراحات وتوصيات.

- نحن في جمعية القوارب الزجاجية نعمل جاهدين بالتعاون مع جميع الجهات والهيئات الحكومية والخاصة ومؤسسات المجتمع المحلي للنهوض في القطاع السياحي في مدينة العقبة للافضل لجعلها بوصلة سياحية اساسية في الشرق الاوسط.
- لذلك نتقدم بعض الاقتراحات التي قد تساهم بدفع مدينة العقبة الى الامام للمنافسة على خريطة الوجهات السياحية الافضل في العالم.
- 1- تحرك حكومي سريع وعاجل بالتعاون مع جميع الجهات المعنية لوضع خطط لعمل صيانة جذرية للشواطئ العامة كافة لجعلها تنافس الشواطئ السياحية ذات الخدمات المدفوعة.
 - 2- تخصيص كوادر للصيانة الدورية للشواطئ العامة وعدم ترك هذه الشواطئ بدون صيانات دورية مما قد يتسبب بتراكمات كبيرة تهدد السلامة العامة لمرتادي الشواطئ وتأثيرها سلباً على قطاع القوارب الزجاجية بشكل خاص والقطاعات السياحية الأخرى بشكل عام.
 - 3- تخصيص مناطق وممرات محددة وخاصة للقوارب واليخوت والدراجات المائية السياحية والخاصة، والزامهم بتخفيض سرعاتهم لاقبل قدر ممكن خارج مناطقهم المخصصة لهم. وخصوصاً في مناطق نشاط القوارب الزجاجية.
 - 4- تفعيل عقوبات رادعة للسباحين خارج المناطق المخصصة للسباحة وذلك بسبب تعريضهم لحياتهم وللسلامة العامة للخطر.
 - 5- تكثيف الرقابة البيئية والصحية على الشواطئ وتشديد العقوبات القانونية على المنشآت والافراد وعلى كل من يخالف تعليمات الحفاظ على البيئة في جميع المناطق الشاطئية.
 - 6- تفعيل كافة انواع الرقابة القانونية على جميع القطع البحرية بدون استثناء وتغليظ العقوبات الرادعة على كل من يقوم بأي عمل من شأنه الاضرار بالحياة البحرية والمرجانية وعلى كل من يخالف تعليمات المحافظة على البيئة.
 - 7- مكافحة جميع انواع الصيد الجائر وتغليظ العقوبات على الأشخاص الغير مصرح لهم بالصيد بسبب استهتارهم بالحفاظ على الحياة المرجانية.

- 8- زيادة اعداد المراسي الثابتة لاستخدامها من قبل اليخوت والقوارب للوقوف بالبحر عوضاً عن رمي المراسي من اجل الحفاظ على الشعاب المرجانية من أي تكسير او تلف قد يلحق بها بسبب المراسي الغير ثابتة.
- 9- تفعيل وتغليظ العقوبات لردع كل من يقوم باستخراج المرجان وصيد اسماك الزينة بهدف الاتجار بها او لأي اهداف اخرى.
- 10- نقل الشعاب والتكتلات المرجانية بشكل علمي ومتخصص من المناطق التي لا تشهد تواجد سياحي, الى مناطق اخرى تشهد حركات سياحية نشيطة, بهدف الاستفادة منها لزيادة الجذب السياحي لهذه المناطق.
- 11- تكثيف وزيادة عدد حملات الغطس التي تهدف لتنظيف المواقع المرجانية وجوف البحر, ودعوة جميع الجهات المعنية للمشاركة في هذه الحملات.

*******END*******

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