

# PERCEIVED TOURISM IMPACTS OF VISITORS AND RESIDENTS ON WATER QUALITY IN REDANG AND PERHENTIAN ISLAND, MALAYSIA

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**ABSTRACT:** *Tourism is one of the leading contributor to service industry in Malaysia and is gradually growing. The growth of this industry brings impact towards the environment, specifically the water quality of islands. This study views into the visitors and residents perception of the impacts of tourism towards the water quality of islands. A total number of 211 and 258 questionnaires were distributed to visitors in Redang and Perhentian Island which are popular tourist destinations. Meanwhile, 188 residents from Redang and 183 from Perhentian were also distributed with the questionnaires. The results indicate that there is a high level of agreement that the water quality of both islands are effected by tourism for both visitors and residents. There were significant difference on the level of agreement between visitors and residents in Perhentian Island for items on sewage water and living things on the sea. Establishing carrying capacity and embedding environmental education in sustainable tourism management would help broaden the perception of visitors.*

**Keywords:** Visitors', Residents, Tourism Impacts, Water Quality, Island, Carrying Capacity

## 1. INTRODUCTION

Tourism industry is one of largest service industry in Malaysia and continually growing. In 2015, the country received 25.72 million tourists with a total receipt of MYR69.21 billion (Ministry of Tourism Malaysia, 2016). The total receipt from tourism is expected to increase 4.1% per annum from 2015 to 2025. The total receipt projected for the year 2025 is MYR95.9 billion which depicts a total nearly 2 billion per week. The total contribution of the tourism industry to Gross Domestic Product (GDP) stands at 5.6% (World Travel and Tourism Council, 2016). The tourism industry is a major contributor to the foreign exchange, employment, payment for imported input goods while accumulating investments for new infrastructures [1-5].

The tourism industry has proven to be not only beneficiary towards the economic and social well-being but also contributes negative impacts towards a country [1,6-8]. Tourism activities have been identified to have a major negative impact towards the environment [7,9-16]. The impact of tourism activities towards the environment spreads in a variety of components. The components that are directly affected by tourism activities include ecological resources, natural sights, air, energy and water consumption, and natural resources [1, 6, 7, 13, 17-20].

The effect of tourism activities toward the environment has frequently been the essence of discussion in environmental summits. Environmental impacts from tourism activities was first highlighted in the Brundtland Commission 1987 where it was mentioned that any development although sufficient to the need of the present should not endanger the need of the future [14]. The next summit which brought forward the issue mitigating environmental impacts was the Rio Summit 1992 which introduced the concept of Local Agenda 21 [21].

Local Agenda 21 has identified various efforts from detailed tourism planning to the involvement of local community and

visitor to ensure the sustainability of the environment due to tourism development. [22] reviewed 16 summits or meetings that have included the concept of tourism that is more environmentally conscious [22]. In recent development, the summit Rio+20 [23] discussed about the importance of protecting the environment throughout tourism development. In this summit, a report called 'The Future We Want' was produced. The report highlighted the involvement of the local community and the awareness of tourism as an important factor towards tourism that considers the preservation of the environment for the future generation.

## 2. LITERATURE REVIEW

In accordance with the Local Agenda 21 and Rio 20+, Malaysia has also been moving towards establishing a tourism industry which is more environmentally conscious. Various studies have been conducted to further explore the impacts of tourism towards the environment. The studies on the water quality on the island have been in attention for the recent period of time. The studies conducted on the tourism industry has affected the water quality on the island in various forms including the degradation of coastal areas, decrease groundwater quality and reduction in water resources [3, 24-27]. However, it was also found that industrial, human and natural activities also contributed to the degradation of water quality on the islands [25, 27].

Studies conducted on the perception of visitors and residents on the impact of tourism towards the water quality in islands concluded similar outcomes. Residents agree that tourism had positive impacts on their economic wellbeing. However, they also agree that the environment especially the water quality on the islands is being affected by tourism [24, 26, 28]. [24], further concluded that water quality is important to the residents from the religious aspect. Residents who are majority Muslims, give immense importance to water due to

its economic value. Where else, visitors concern towards the water quality is to ensure the sustainability of natural activities [3, 29].

Impacts on the water quality especially on the island held valid importance in both the perception of visitors and residents. Hence, the objectives of this study would be:-

- i. The level of agreement of visitors and residents on the impacts of tourism on the water quality of Redang and Perhentian Island.
- ii. The difference in the level of agreement of visitors and residents on the impacts of tourism on the water quality of Redang and Perhentian Island.

**3. PROPOSED RESEARCH METHODOLOGY**

The main research method that was used is quantitative design in the form of a survey. According to [30], a survey based on evaluation usually involves acquiring a desired or undesired result. In addition, the survey conducted in this research has two main purposes which are descriptive and explanatory [31]. The descriptive purpose of this study is to look at the level of agreement of the visitors and residents on the impacts of tourism on water quality. The explanatory purpose would be to look at the difference between the level of agreement of the visitors and residents.

The most common instrument used to collect data in a survey is by using a questionnaire. The questionnaire that was used in this study consists of questions on all the physical impacts of tourism on the environment. However, this study narrowed its scope to only the questions on water quality. A 5 point Likert scale was used to measure the level of agreement of the respondents on the water quality. Locations that was chosen for the study are Perhentian and Redang Island. These islands were chosen as they are popular island destinations in Malaysia. Redang Island is believed to attract more than 8000 tourist per day during its peak season besides being recognized as one of the most beautiful island in the Peninsular Malaysia [32, 33]. Perhentian Island where else has evolved into a major tourist attraction due to the development of world class facilities and scuba diving offerings [28, 29].

A simple random sampling was applied to distribute the questionnaire. Data obtained was analysed using SPSS. The level of agreement for descriptive analysis is analysed by dividing the range of Likert scale (5-1=4) with 3. The range of the mean analysis are Low (1.00 – 2.33), Medium (2.33 – 3, 67) and High (3.68 – 5.00). An independent sample t-test was conducted to analyse the difference of perception between visitors and residents.

**RESULTS AND DISCUSSION**

A total number of 183 residents and 258 visitors from Perhentian were obtained as respondents where else in Redang, 188 residents and 211 visitors were obtained as respondents. Although simple random sampling was applied, the visitors varied in the types of visitors. Perhentian had 134 domestic and 124 international visitors as respondents where else Redang had 136 domestic and 75 international visitors as respondents. The residents where else varied in the type of

occupation. The perception of visitors and residents as important variables in the model of explaining attitude towards tourism impacts was included [34]. A descriptive analysis would allow the researcher to analyse the perception of visitors and residents.

**Table 1: Descriptive Analysis of Visitors' and Residents' Perception in Redang and Perhentian Island on Water Quality**

Visitors		Redang			
Perhentian		Mean	SD	Mean	SD
Item					
Imperfectly treated sewage water from tourism premise effects water quality	Quality of water effected by water-based tourism activities	3.99	0.884	3.94	0.960
Living things in sea effected by water pollution		4.09	0.849	4.06	0.934
Residents		Redang			
Perhentian		Mean	SD	Mean	SD
Imperfectly treated sewage water from tourism premise effects water quality	Quality of water effected by water-based tourism activities	3.54	1.046	3.73	1.305
Living things in sea effected by water pollution		3.86	0.875	3.94	1.130
		3.86	0.816	3.94	1.085

Table 1 shows a descriptive analysis of visitors' and residents' perception in Redang and Perhentian Island on the impact of tourism activities on water quality. From the table, all items for visitors are in the range of high level agreement that water quality and living things in sea are affected by tourism activities and the pollution from these activities. From the residents' perception, the level of agreement was at a high level. However, the item that imperfectly treated sewage water from tourism premises effects water quality was at a moderate level.

The high level of agreement for nearly all items from both the visitors and resident is in accordance to model of [34]. This is due to the fact that they are important variables in explaining attitude towards the impacts of tourism towards the

environment. The perception of visitors and residents on the negative impacts of tourism towards the environment has been the basis for planning and management of sustainable tourism development [13, 17, 26, 35].

Visitors and residents have different motives for their perception on impacts of tourism towards the environment. Visitors' perception are motivated by the depth of their memories, quality of experience and level of enjoyment [17, 36]. In contrast, residents are motivated by effects on their economic wellbeing and life satisfaction [13, 35]. Despite the difference in motivation, both share a common concern towards mitigating the tourism impacts towards the environment. A t-test analysis is conducted to analyse whether there is a difference between residents and visitors in their perception on water quality for Redang and Perhentian Island.

**Table 2: Difference of Visitors' and Residents' Perception on Water Quality for Redang and Perhentian Island**

Item	Redang		t-value
	Residents N=188	Visitors N=211	
Imperfectly treated sewage water from tourism premise effects water quality	3.54	3.99	-4.591**
Quality of water effected by water-based tourism activities	3.86	3.99	-1.469
Living things in sea effected by water pollution	3.86	4.09	-2.738**
Item	Perhentian		t-value
	Residents N=183	Visitors N=258	
Imperfectly treated sewage water from tourism premise effects water quality	3.73	3.93	-1.813
Quality of water effected by water-based tourism activities	3.94	3.91	0.288
Living things in sea effected by water pollution	3.94	4.06	-1.224

\*\*Significant at p<0.01

Table 2 shows the t-test analysis of the perception of difference on water quality between visitors and residents. The t-test indicates that there is a significant difference between visitors and residents on the perception on imperfectly treated sewage water from tourism premises and effects of pollution on the living things in the sea. In both of

these items, visitors have a higher level of agreement. The item on the quality of water is affected by water based activities in Redang and all items in Perhentian show no significant difference between residents and visitors.

The t-test analysis which indicated a higher level of agreement for the visitors compared to residents might be contributed by their knowledge and learning on the environment. Only 33% Malaysians show interest in learning regarding the environmental pollution that is occurring in the country [37]. This is lower than the interest shown by the other communities such as the European Community which is at 56%. The difference in the level of learning could be the factor that contributes to the difference in perception between visitors and residents.

**4. CONCLUSION**

The high level of agreement of visitor and residents on water quality indicates that they are very keen in mitigating the impacts towards environment from tourism activities. Instilling visitors and residents with environmental education could be a step to bring out positive actions. Environmental education could be the bridge that helps to bring out a positive attitude from visitors towards the environment [36]. Environmental education is also believed to bring out positive attitudes from residents as well [13, 38].

There were a few items that indicated significant difference in perception on water quality between visitors and residents. This difference might be due to the difference in perception on the acceptable level of water quality. Carrying capacity could become a standard indicator of an acceptable level for both visitors and residents. Carrying capacity in tourism is the maximum number or threshold value which can be accepted or accommodated by a tourist destination while maintaining visitors and residents satisfaction with reference to a standard of quality [1, 14, 39]. Carrying capacity established in coastal areas would help to cope with environmental degradation.

As an overall conclusion, visitors and residents both have high level of agreement on tourism impacts on the water quality of Redang and Perhentian Island. Provision of environmental education could help bring out positive perception of the visitors and residents into positive and responsible attitudes. However, there were a few items where the visitors and residents differ in their level of agreement. Carrying capacity should be established in order for visitors and residents to recognize a standard acceptable level of environmental condition.

**5. REFERANCE**

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