

## Strength-weakness-opportunities-threats Analysis of Penang National Park for Strategic Ecotourism Management

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**Abstract:** The Penang National Park (PNP), formerly known as Pantai Acheh forest is one of the few natural heritages in Northern Peninsular Malaysia with many unique features such as the meromictic lake, turtle sanctuary and so forth. These features could prove to be potentials and opportunities for ecotourism. This SWOT analysis is based on empirical field observation and on secondary sources was carried out on the PNP. Socio-economic factors and environmental factors were taken into account for the SWOT analysis. SWOT analysis has shown that the gazettement and unique features of the PNP were the strength whereas sensitive environment and absence of strict environmental management were found to be the weaknesses. Income generation and environmental education were found to be the main few opportunities. Land scarcity issues and political interventions were found to be the main threat. Through the findings, TOWS analysis technique was deployed to identify strategic management options. It was conducted in a manner that internal strengths and external opportunities were maximised while the internal weaknesses and external threats on the PNP were minimised. Several strategic management for PNP in ecotourism context have been identified which are economic opportunities, environmental education and research. In addition to that, strategic options have been identified to counter against the external threats and internal weaknesses such as land scarcity, encroachment and poachers of flora and fauna. SWOT analysis however could be further improved with open ended question to identify more options for strategic management.

**Key words:** Natural Heritage • SWOT analysis • Ecotourism Management • Penang National Park

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### INTRODUCTION

**Swot Analysis:** SWOT analysis has its origins in the 1960s [1] which is a simple yet useful planning tool to understand the ‘Strengths’, ‘Weaknesses’, ‘Opportunities’ and ‘Threats’ as part of a strategic planning process. In that planning process various factors influencing the operational environment are diagnosed in details [2]. Following that, strategic alternatives are selected in the light of the strengths, weaknesses, threats and opportunities of the organization as determined through internal and external environment analysis [3]. SWOT analysis is intended to maximize strengths and opportunities, minimize external threats, transform weaknesses into strengths and to take advantage of opportunities along with minimizing both internal weaknesses and external threats [4]. It is useful especially in preparing for future scenarios and is economically justifiable in that losses can be minimized.

SWOT analysis is often employed when monitoring or evaluating a specific program, service, product or industry and exploring improvement measures [5]. Some of the applications of SWOT analysis are included in the private sector as well as in public administration, professional associations and academia [6]. For example, Dillan [7] conducted SWOT analysis to evaluate the Australian profession of agricultural economics while Coetzee and Middelman [8] investigated the SWOT of the fynbos cut flower industry in South Africa. The Food and Agricultural Organisation of the United Nations [9] also formally recognized the SWOT analysis technique as an important participatory assessment tool to be used in gathering, synthesis and analysis of information for community forestry development.

The advantages of SWOT analysis are that it is simple and cost efficient. SWOT could generate many ideas which could be useful in summarizing key management issues and opportunities. Through ready

countermeasures as outcome, ‘strength’ could be maximized to overcome weaknesses. Similarly, opportunities are maximised and threats minimised. Though SWOT is simple and cost efficient, the disadvantages is that, SWOT analysis is not is not critically presented. Thus TOWS analysis is needed by maximising the internal strength and external opportunities to curb against the internal weaknesses and to counter against external threats. SWOT is also useful in addressing issue management, before it becomes a threat.<sup>1</sup> Oliver and Donnelly [10] reviewed the proper blend of tools and approaches for strategic management and found that SWOT Analysis should be used in combination with Strategic Issue Management Systems along with issue characterization, strategic objectives, force field analysis, stakeholder assessment, scenario mapping and key player assessment. Zarkos *et al.* [11] have also incorporated SWOT analysis that is widely used by managers with the real options to produce more flexible strategic plans.

**Area of Study: the Penang National Park:** Formerly known as *Hutan Pantai Acheh* or Pantai Acheh Forest Reserve, the Penang National Park is situated in the northwest corner of Penang Island and was declared a

national park on the month of April 2003. The PNP is also the first protected area which was legally gazetted under the National Park Act of 1980 however logging activities were only stopped since the year 1996.

From the map of Penang in figure 1, it is apparent that the PNP is a coastal forest on an island. Although the PNP is not a virgin forest as timber extraction has been carried out 1910s to 1930 [12], it has a size of about 1266 hectares of coastal hill. Inland forests and woodlands in the park extend to the sea and thus form part of the coastal area. These are the interface between land and sea which are diverse in function and form<sup>2</sup>. Such formations are comprised of special forest communities which include beach forests, mangrove areas, peat swamps, periodic swamps and riparian forests.

The first two forest ‘communities’ mentioned above are notable in the PNP. Apart from mangrove areas, the PNP consists of eight forest beaches, rocky shores and an inner forest. Teluk Bahang, Pantai Kerachut, Pantai Mas and Teluk Duyung (Monkey Beach) are the famous four of the eight pristine sandy beaches within the park. Within the park, most of the rivers are small but clean. These include the Sungai Duyong, Sungai Pantai Kerachut and Sungai Gemuruh. The PNP is also rich in timber as well as medicinal and ornamental plants.



Fig. 1: Location of Penang and Penang National Park  
Source: <http://www.malaysia-maps.com/>

<sup>1</sup>[www.emeraldinsight.com/1755-425X.htm](http://www.emeraldinsight.com/1755-425X.htm) [Accessed September 2010]

<sup>2</sup><http://www.fao.org/forestry/4302/en/> [Accessed March 2009]

Although some of the area has been logged, most of the area in the park is hilly which makes logging difficult. At the moment about 70 hectares of the forests of the PNP is classified as virgin forest. The PNP also houses a biological and marine research station owned by the Universiti Sains Malaysia. In this well-known research station, both foreign and local biologists and other scientists often conduct their experiments and researches in the national park.

**Objective:** The Penang National Park is chosen as the study area for analysis of ‘strength-weakness-opportunity-threat (SWOT). This paper is specifically concerned about the identification of strengths, weaknesses, opportunities and threats of the Penang National Park in the context of ecotourism management. Since the gazettelement of the PNP in the year 2003, there is no notable SWOT analysis conducted in the park, although there are many opportunities for the PNP to grow as an important ecotourism destination in highly urbanised Penang State, both for local as well as foreign tourists. Hence, there are many opportunities which have yet to be tapped fully into for strategic sustainable and eco-friendly income. TOWS analysis is subsequently deployed to identify best options for strategic management.

**Methods:** SWOT analysis is needed for a fast and simple analysis of the Penang National Park strategic ecotourism management and planning. Elsewhere, notable SWOT analysis has been successfully carried out for ecotourism research. For example, Kahveci *et al.*,<sup>3</sup> conducted a SWOT analysis on ecotourism and sustainable development based on the forests and the forests villagers in Turkey. The Department of Tourism of Kerala, India, has also conducted SWOT analysis<sup>4</sup> as part of the “Tourism Vision of 2025”. Kerala is listed and named as one of the “ten paradises of the world” and “50 places of a lifetime” by the National Geographic Traveller magazine<sup>5</sup>. Interestingly, SWOT is conducted to form a guideline for action plan as part of the tourism vision for Kerala. Wrigley and Gould [13] have used SWOT to assess the need for recreation and ways to increase user participation in a public park environment at Pukekura Park, New Zealand. Elsewhere in China [14] and Portugal [15], studies employing SWOT analysis have recommended development plans for their respective

countries. In Malaysia, SWOT analysis was carried out locally in Matang Mangrove forests as a potential ecotourism site (Ayob<sup>6</sup>).

SWOT analysis could be conducted in various ways. Empirical observation, group interview or even single person interview is possible. Group or single brainstorming session of possible ideas for each ‘SWOT’ aspect could be carried out in a project, activity or organisation. Information could also be obtained and searched through secondary sources such as official documents, journals, reports as well as personal ideas. Information collected must be realistic and checked for authenticity.

There is no notable publication on SWOT analysis conducted for the PNP ever since its inception about 7 years ago. Therefore, as a preliminary step, SWOT analysis is conducted through an empirical method via qualitative field observation and secondary sources such as conference proceedings, journal publications and reports. In addition to the ecotourism context, socio-economic and environmental factors were taken into account. In the following steps, TOWS matrix technique was applied to identify the best policy response to strategically overcome the weaknesses and threats identified. Without the TOWS technique, the SWOT analysis would not be a complete analysis.

## RESULTS AND DISCUSSIONS

Upon synthesizing and analysis of the information gathered, they were divided according to the strengths, weaknesses, opportunities and threats as in table 1. From the SWOT matrix worksheet, strength indicates an advantageous beneficial quality or attribute present in an organisation, situation or system. Strength could be drawn to secure success in planning. From Suh and Nick [6], strength is something positive which should help in strategy planning and could be taken advantage of. In table 2, one of the notable strengths for the PNP is the gazettelement under the National Park Act 1980. From section 4 of the National Park Act 1980 [16], the objective of the establishment of National Parks is the preservation and protection of wild life, plant life and objects of geological, archaeological, historical and ethnological and other scientific and scenic interest and through their conservation and utilization to promote education, health, aesthetic values and recreational of the people.

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<sup>3</sup><http://www.fao.org/DOCREP/ARTICLE/WFC/XII/0708-A1.HTM> [Accessed May 2009]

<sup>4</sup>[http://www.keralatourism.org/tourismvision/swot\\_analysis.htm](http://www.keralatourism.org/tourismvision/swot_analysis.htm) [Accessed July 2009]

<sup>5</sup><http://en.wikipedia.org/wiki/Kerala> [Accessed May 2010]

<sup>6</sup><http://mahdzan.com/papers/mangrove/mangrove.asp> [Accessed August 2009]

Table 1: An Example of a SWOT Matrix Worksheet

INTERNAL	Strengths	Weaknesses
EXTERNAL	Opportunities	Threats

Table 2: SWOT and TOWS Analysis of Penang National Park

	Internal Strengths	Internal Weaknesses
	<ol style="list-style-type: none"> <li>Gazettement under National Park Act of 1980</li> <li>Unique features (meromictic lakes, beaches etc)</li> <li>Historical (lighthouse and Acehnese tomb)</li> <li>No permanent settlement</li> <li>Easily accessible by tourists</li> <li>No admission fee</li> <li>Research station</li> </ol>	<ol style="list-style-type: none"> <li>Environmentally and ecologically sensitive</li> <li>Absence of strict rules for entering the PNP</li> <li>Absence of proper solid waste management</li> <li>Absence of proper zoning and border fencing around the park parameter</li> </ol>
External Opportunities	S-O Strategies	W-O Strategies
<ol style="list-style-type: none"> <li>Generation of sustainable income through ecotourism partnership with hotel owners</li> <li>Generation of income through willingness to pay entrance fees</li> <li>Creating environmental awareness through education</li> </ol>	<ol style="list-style-type: none"> <li>Forming of partnership for tour package between hotel owners, local community and PNP management</li> <li>Develop a minimal entrance fee plan</li> <li>Improve partnership with higher education to attract international researchers</li> <li>Partnership with NGOs to create a holistic environmental education hub at the PNP</li> </ol>	<ol style="list-style-type: none"> <li>Planning of proper solid waste management and collection</li> <li>Planning of solid waste rules and regulations for visitors</li> <li>Integration of solid waste management plan into environmental education</li> </ol>
External Threats	S-T Strategies	W-T Strategies
<ol style="list-style-type: none"> <li>Land scarcity issue</li> <li>Political intervention</li> <li>Risk of destruction of unique features</li> <li>Farmers encroachment</li> <li>Theft of flora and fauna</li> </ol>	<ol style="list-style-type: none"> <li>Strict enforcement of gazettement and strong political will</li> <li>Stricter fines for poachers and plant theft</li> <li>Forming of partnership with universities to manage part of the park</li> <li>Conflict resolution with all stakeholders</li> </ol>	<ol style="list-style-type: none"> <li>Development of borders/fencings around the parameters of Penang National Park</li> <li>Benchmarking with S-T 1, 2 and 3.</li> </ol>

Since the PNP has been gazetted, no major construction or development is to be carried out in the PNP. Besides that, the PNP also served as part of water catchment area for the Teluk Bahang dam. As Penang is a water stressed state, the state government could not afford to destroy any more water catchments.

In addition to that, the PNP has many unique features which are exclusive compared to other National Parks in Malaysia. The PNP boasts of a meromictic lake and turtle nesting beaches. The meromictic lake is the one and only such lake in the South East Asia region. The unique features include a unique meromictic lake and mudflats. About 10 hectares of the total 1266 hectares of forest makes up the meromictic lake, a kind of lagoon. It is one of the most distinctive features in the park. During the season between March and August, 2 layers of water are present in the lake. One is the seawater which is pushed into the lake during the high tides. Being denser, the salt water layer occupies the bottom, despite being the warmer layer. The other layer comprises freshwater that comes

from the many streams feeding the lake. The park is also rich in biodiversity, harbouring rich fauna such as the giant flying squirrel, slow loris, monkeys, flying lemurs and mouse-deers [17]. The Pantai Kerachut in the Penang National Park and Rantau Abang of Terengganu are the only known turtle breeding sites<sup>7</sup> in Malaysia [18]. The green turtles (*Chelonia mydas*) usually land between the month of April and August. Subsequently, they are followed by the Olive-Ridley (*Lepidochelys olivacea*) between the month of September and February. The pristine sandy beaches are often used by nature lovers for recreational activities such as camping, swimming, boating etc. With vast bird species around the forest, it is also a good place for bird watching. According to Kumar [19], the PNP is a haven for birdwatchers. The Penang Island itself has recorded total of about 200 species of birds and the majority of them can be found in the PNP. The PNP can certainly claim to be one of the unique natural heritage sites in Malaysia with vast potentials for ecotourism and natural heritage conservation.

<sup>7</sup>www.wildlife.gov.my [Accessed March 2009]

Since PNP is a coastal forest, the park consists of eight sandy and pristine beaches. Tourists can enjoy swimming as well as camping activities. Many tourists and students have frequently camped by the beaches in the park. Most of the rivers are also clean but one of the rivers, namely Sungai Tukun is slightly polluted because of the river chalets built nearby. Besides natural features, the PNP boasts of several historical sites such as the lighthouse and Achenese tomb. The Achenese tomb is located at the Teluk Duyung section of the PNP. As PNP is a gazetted forest reserve, there is no permanent settlement in PNP except for the biological field station of Universiti Sains Malaysia. The PNP is also easily accessible to many people including tourists as it is situated close to Penang's famous tourism destination in Batu Feringghi. Another notable strength is the absence of entrance fees, making the park accessible to all.

Weakness on the other hand indicates the presence of a negative state in an organisation which could result in lesser efficiency of an activity being carried out. Since weakness is an unfavourable condition which could lead to reduced profitability or adoption [6], it also indicates what could be done to avoid the said adversary. In terms of weaknesses the forest of PNP is environmentally and ecologically sensitive according to Chan et. al.[20]. As such, no major developments must be carried out in the forest or in the vicinity of the forest. According to Amiruddin [21] ecosystem on the meromictic lake is also very sensitive to environmental changes. Expansion of water volume in the lake may cause major casualties to the freshwater fish species at Pantai Kerachut as those fishes are unable to withstand the salinity of the seawater. Since PNP is a coastal forest, it will be constantly facing the risk of coastal soil erosion. Coastal soil erosion could destroy the beaches in the long term around the PNP as what happened to the beach of Gurney Drive. According to Hong and Chan [22] in their evaluation of visitors' environmental perception of PNP, it was found that about 83 percent of visitors to the park stated that they have come across solid wastes being thrown irresponsibly around the PNP. This indicates that there is an absence of proper solid waste management. Through observation at the entrance at the PNP as well as other places of interests in the park, it was also found that absence of zoning and security fence are weaknesses to the PNP. This could result in trespassing of unregistered visitors through illegal entrance which could result in plant theft and illegal animal poaching.

Despite the weaknesses present, there are many opportunities for the PNP to grow as a major ecotourism site. In SWOT analysis context, opportunity means

potentials present to conduct or carry out an activity in order to increase the efficiency or improving the quality of management of any kind of organization. An opportunity that has been identified, taken up and applied successfully could also be regarded as future strength. Thus the main policy aim is to exploit any opportunities present [6]. From table 2, there is an opportunity of sustainable income generation through ecotourism and entrance fees. Besides those opportunities from economic context, there will also be an opportunity to create and increase environmental awareness for the visitors through environmental education.

Basically, threat is a statement of intention to cause or inflict damage on anything through unwanted action. But in SWOT analysis, threat means an obstacle which is currently faced which could lower down the chance of success of a project. If the threats were to be 'realized', then they would turn into weaknesses in the future. The main aim is to overcome or avoid such threats to prevent any inefficiency on any projects or undertakings.

There are several threats of various degrees to ecotourism development of PNP. First and foremost is the threat of solid waste management. With rapid influx of visitors, the PNP is facing environmental threats in terms of risks of floral and fauna extinction. There is reported loss of species such as the 'clouded leopard/*harimau dahan*'. Turtle eggs are also reported being stolen from the coastal area and this will decrease the chance of turtles visiting the shore in the future [23]. In addition to that, Ang [24] stated that Indonesian workers were found using mist net to trap birds and bats for food. Worse is that the mist nets were laid at the forest edge bordering the meromictic lake which could in turn pose environmental threats to the wildlife in the area.

Due to scarcity of land, private land owners on the fringe of the park may be 'greedy' enough to encroach their developments (agriculture, housing development and tourism development) into the park. This could be seen from the Paya Terubong hills in which the hills were cleared for construction of apartments units. These constructions have caused adverse impacts such as flash flood and so forth [25]. Some of the threats of encroachment into the PNP are soil erosion and pollution, as well as weakening of the adjacent slopes thus weakening the structure of the nearby Teluk Bahang Dam. This might also disturb or affect the ecosystem of the forest as encroachment often results in forests clearance. According to Chan *et al.* [26], farming activities are closely related to the development of the hill land. Be it legal or illegal, farming activities involve deforestation and replacing the cleared area with crops.

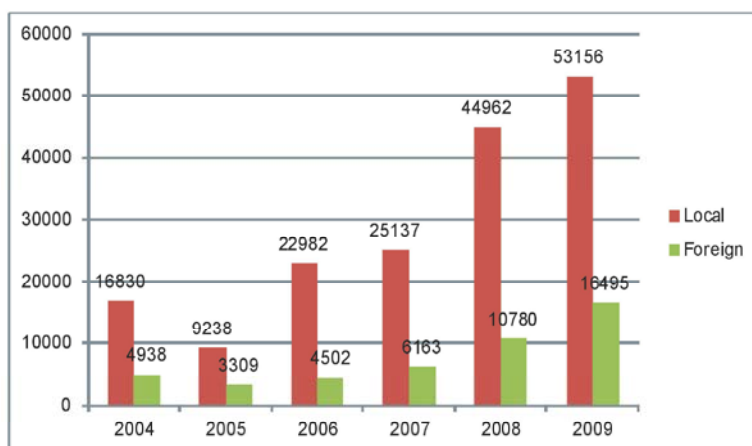


Fig. 2: Annual Statistic of Tourists visiting the Penang National Park  
Source: Wildlife Department, Penang, Malaysia

This could lead to a significant increase in soil erosion rates. Daniel and Kulasingham [27] have found that erosion rates in forested and farmed areas are  $25 \text{ m}^3 \text{ km}^{-2} \text{ yr}^{-1}$  and  $732 \text{ m}^3 \text{ km}^{-2} \text{ yr}^{-1}$  respectively. This is an increase of more than 29 times. In addition to that, the aesthetical value of the PNP could be reduced or even destroyed and thus could result in reduction of total annual visitors in the long run.

**Tows Analysis:** In order for strategic action plans to be formed and created, the strengths and opportunities factor in the SWOT analysis could be utilised to overcome the weaknesses and the future threats.

In the first section, internal strengths will be used to capitalize the opportunities identified. The PNP management team could form partnerships with hotels in Batu Feringghi and Tanjung Bungah in promoting the PNP to the foreign tourists. Several types of tour packages could be planned to increase visitors to places such as the mangrove forests and meromictic lake as well as the light house. These areas are the least visited according to the research of Hong and Chan [22] on the places visited by tourists. Figure 2 clearly illustrates that the numbers of both local and foreign tourists visiting the PNP have been increasing exponentially. Sustainable income could be generated through collection of entrance fees. Although there are no admission fees, a research of Hong and Chan [22] on the willingness to pay (WTP) by visitors showed that 80 percent of the total 30 visitors interviewed stated that they are willing to pay for an entrance fee to the PNP. Therefore it is logical for the PNP management team to develop a minimal fee plan for local

and foreign visitors. Pearce and Moran [28] believed that WTP is one of the sources of funds for protected areas and a huge flow of finance could come from individual's WTP. With the income collected, it could be used to further improve the management and maintenance of the PNP's special and unique features, as well maintaining the place as one of the nation's important turtle nestling sanctuaries.

The fact that George Town City in Penang has been listed as one of UNESCO's World Heritage Site on 7 July 2008 is another advantage for the PNP to be internationally recognized as well. The PNP could take advantage of the influx of visitors to George Town. Visitors to the city would not be able to experience ecotourism activities and nature and the PNP can offer both.

From an environmental context, smart partnership with the University Sains Malaysia could be further improved to attract more international researchers to the PNP. In addition to that, partnerships with environmental based NGOs such as the Water Watch Penang, Malaysian Nature Society, Malaysia Environmental NGOs (MENGOs) and so forth could be forged to create a holistic environmental education hub at the PNP. Environmental education in this context is important in raising environmental awareness especially for the locals as a UNESCAP [29] report stated that environmental awareness in Malaysia is still at the preliminary stage. This opinion is further supported by a study by Abdul Aziz Shamsuddin [30] which found that there was no significant correlation between the students' conceptual understanding of the environment and their willingness to protect the environment<sup>8</sup>.

<sup>8</sup>[http://assets.wwf.org.my/downloads/eeasa\\_paper.pdf](http://assets.wwf.org.my/downloads/eeasa_paper.pdf) [Accessed May 2009]

By further exploiting the external opportunities, several internal weaknesses could be countered. With the imposing of entrance fees, the fees could be utilised to develop a proper solid waste management and collection plan. For example more garbage bins could be installed around the PNP. Recycling activities could also be carried out to engage visitors as well as increase the parks revenue. Rules and regulations on solid wastes could be refined to limit the carrying of plastic drinking bottles and food into the park. Solid waste has always been an issue as it is not properly managed due to frequent camping and recreational activities. In addition to that, solid waste management plan could be integrated in the environmental education plan to create and increase awareness on the solid waste issue in Penang.

Through maximising the internal strengths to counter the external threat, very strong political will and strict enforcement are needed to counter the land scarcity issue. No major developments should be allowed within and around the PNP to prevent any negative effects as a result of the park's sensitivity. In addition to that sustainable income through ecotourism as well as international recognition could be tapped in order to prevent any major development of the PNP due to land scarcity. Partnership with the Universiti Sains Malaysia could be further forged to allow parts of the national park to be managed by the university for research purposes. This strategy could be seen in some countries such as Japan and the USA. For example, parts of forest reserved in Furano, Hokkaido were given to the University of Tokyo for forestry research and management. With this strategy, development of the forest commercially could be prevented.

As the Wildlife Department is under the jurisdiction of the Federal Government, the PNP, is under the jurisdiction of the Federal Government in a broader umbrella. According to Chan *et al.* [26], there is disagreement and some friction between federal and state governments. The friction has been more and more evident when Penang State fell to the opposition parties in the 2008 general elections. This has resulted in poor cooperation and coordination between the state government and the wildlife department (a federal agency). This challenge needs to be quickly resolved if the PNP hopes to be managed in an efficient manner. The Wildlife Department, should also invite other government departments and NGOs to work with it for the sake of the park.

To reduce and eventually eradicate farmers' encroachment, meetings and plans for conflict resolution must be carried out as soon as possible with all relevant

stakeholders. Measures such as compensation and relocation could be resolved as well as informing culprits of the risks and penalties of encroachment into the forest of the PNP.

The external threats of illegal poaching and faunal thefts are largely due to the internal weaknesses of the absence of proper zoning and fencing around the parameter of the national park. This could be prevented by enacting fencings around the parameter of the park. Since the size of the PNP is small, enacting fences should be affordable and easily accomplished. To further amplify the effect of reducing illegal poaching and flora theft, benchmarking with strict enforcement and heavier fines (including jail sentences) must be implemented. More forest rangers could be employed especially among the local communities. This is crucial as currently the majority of the employees of PNP are from other states in Malaysia.

According to Chan [31], despite all the rhetoric, ecotourism has not really taken off in the PNP. Though the PNP has great potentials, it remains a big challenge to develop and make the park a viable ecotourism destination. Gazetting the PNP is just the beginning. The park must now be managed sustainably and profitably. Recent developments in Penang illustrate the Penang State Government's foresight and desire to create a balance between development and conservation. Due to numerous threats and the fact that the park's environment and its attributes are dynamic and are always changing, there should be periodic expeditions to continuously document and update existing data in the park. Researchers can use the PNP as an outdoor laboratory to study and enhance its ecotourism and other potentials. The Penang State Government can push for ecotourism cum research/study as a new focus by taking advantage of many universities' summer courses by offering the park as a field site. This will put the PNP on the international map. The PNP authorities can develop fields of studies linked to ecotourism such as climatology, hydrology and environmental studies, biology, biodiversity and study of unique endemic species of flora (both land and aquatic), study of tropical species of fauna (land and aquatic), study on the recreational, ecotourism potentials and aesthetic aspects of the PNP, study on sustainable development of the park and its surroundings, forestry and water resources management and tourism and hospitality. As an ecotourism destination, the PNP can house a nature education centre for school children, a natural laboratory for scientific research and a "life" laboratory for ecotourism, recreation and outdoor activities/research [31].

## CONCLUSION

Penang National Park is considered one of the smallest national parks in the world. Although small in size, it is rich in natural resources and natural heritages including several unique features such as the meromictic lake, pristine beaches, clean rivers and biodiverse flora and fauna. The PNP has all the potentials to serve as a major tourist destination for ecotourism activities not just in Penang State but also for northern Peninsular Malaysia [32]. With the right management and political will combined with smart-partnerships with NGOs and local communities, there is no reason why ecotourism cannot be developed for the PNP. However, a balance needs to be struck between ecotourism development and environmental conservation to ensure sustainability [32].

Compared to Taman Negara, Malaysia's premier national park, the PNP is little known and pale in comparison. However, through the minor and major aspects identified in the SWOT analysis it is possible to overcome each weakness and threat by strategising the management plan to turn the PNP into a nationwide known ecotourism site. Potentials and opportunities must be tapped to gain sustainable income and in turn, fully utilise the income to develop and maintain the facilities in the PNP. While these could be recommended to the management authority of the PNP, political intervention and will is one of the major factors in overcoming the identified threats, especially the threat related to land scarcity issues. Due to the land scarcity issue, housing developments tend to produce huge income for housing developers. If pressures from the developers are not controlled, land de-gazettement could happen in the fringe areas of the park for housing projects to take place. Logically, it is better to create long term sustainable income based on ecotourism instead of destroying nature for the greed of quick money and thus jeopardising the flora and fauna as well as the water catchment area. Awareness and environmental education are very important in instilling in the minds of all PNP stakeholders on the importance of natural heritage and environmental conservation.

This paper has identified the threats on the PNP. What remains is a daunting task but achievable challenge to reduce these threats via strict enforcement, involvement of all stakeholders via empowerment of NGOs and the public, in order to work together for the benefit of the park. While the Wildlife Department should remain as the authority in charge of the PNP, other government agencies, the private sector and NGOs should be invited to help manage the park. For example,

the private sector can contribute funds and the running of public awareness programmes on biodiversity, flora and fauna and public education can be carried out by NGOs. By involving a wide spectrum of stakeholders and interested parties with diverse expertise, the management and conservation of the PNP will be a sustainable one not only for the current generation but for the future generations. The lessons learnt in PNP via SWOT analysis certainly have great value for other Malaysian ecotourism destinations where encroachment and intrusion are on the increase, including Royal Belum State Park, Taman Negara, Ulu Muda Forest Reserve and small islands ecotourism sites such as Perhentian, Redang and Tioman. SWOT analysis can be similarly applied in these destinations.

**Recommendations:** Although SWOT is recommended to be performed by a group of individuals it is also possible to be carried out by a single individual. This is advantageous in that ideas could be sparked from a line of thinking beginning from an individual. However, the time factor and biased ideas could be the disadvantages for group discussions. Empirical field observation could be carried out for time efficiency. However, it is recommended that open ended questionnaires be administered for a group of experienced visitors of PNP. For example, Suh and Nick [6] performed an open ended survey questionnaire for their SWOT analysis research and showed that this could be undertaken on groups of individuals from the same organization to prevent biased ideas. Their research also showed that the time taken can be minimised. One of the main limitations of this approach, however, is that the importance of each factor in decision-making cannot be measured quantitatively and it is difficult to assess which factor has the greatest influence on the strategic decision [33]. Hai and Tsou [34] suggested the use of a quantifiable SWOT method which adopts the concept of Multiple-Criteria Decision Making (MCDM) or a multi-hierarchy scheme to simplify complicated problems. The indices of SWOT are voted on and weighted to assess the competitive strategy and the total weighted scores method is then used to identify the best strategic alternatives.

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