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"Cultural Sustainability in the Built and Natural Environment"

Gateway to Sustainable National Park

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Abstract

This research explores issues on sustainability of Malaysian National Park (called Taman Negara), complied ecotourism approach with a balanced between economic development and preservation. With this approach, a holistic manner in managing the natural and cultural heritage of Taman Negara is expected. The objective of this paper is to relate various issues of heritage sustainability with environment-behavior. Unobtrusive observation and interviews with the locals are methods to identify the problems. Remote sensing images were taken to monitor land use changes. The expected outcome of the study is to generate a conceptual approach for developing sustainable Taman Negara as a tourist destination.

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1. Malaysian stance on sustainable national park

Malaysia commits for a sustainable forest management. Her commitment reflects through progress made on forest matters since The National Forestry Policy adopted in 1978 (revised in 1992) and the amendments of the National Forestry Act 1984 (Amended 1993). The policy provides a greater emphasis to environmental protection and conservation of biological diversity. The National Forest Programme is part of the National Sustainable Development Strategy (The Government of Malaysia, 1997). Research activities need to start from this definition in order to protect that the environment that we inherited from the past generation to future generations is a combination of nature and culture. Regarding the age of Malaysian most well-known national park namely Taman Negara, scientists have generally accepted that

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the age of the park is about 130 million years. The park is home to a myriad of flora and fauna with high itinerary of tourists seeking experiences of the rainforest (Malaysian Annual Report 2006). With this advantage, the natural heritage (the forest) and habitat at Taman Negara should be managed and developed in a holistic manner. A land use master plan is expected to take into account the needs for environmental protection, the maintenance of ecological balance and not to forget the economic return for now and the future. One of the best ways to look into this complex issue is to start with the current and uprising problems encountered by the National Park.

1.1. Tourism development

Tourism is fast becoming the second importance sector for Malaysian economy. The number of international arrivals to Malaysia showed a significant growth of tourist arrivals from 5.5 million in the year 1998 to 22 million in 2008 (MTPB, 2009). Tourism in Malaysia, especially after 1990s, continues as a popular destination though most of the tourism development focusing on traditional resorts and ecotourism. Despite the call for more local participation in the development and management of the tourist sites, it is obviously indicated that tourism is being developed further and further away from the local people's benefits. For instance, the focus is more toward high spending tourism rather than a quality and responsible tourism. The running of ecotourism in these areas is mostly privatized. There are conflicts of interests between public and private sectors in interpreting sustainability. While the government is dealing with strategies on carrying capacity and sustainability; the private sectors find ways to decrease the limit.

It is rather obvious that many countries, including Malaysia gauge the success of the tourism sector on the number of arrivals and the estimated income generated from the tourism sector. It is felt vital to measure the impact of those destinations without affecting the sustainability of the environment. Negative tourism impacts on sustainability can be detrimental to the people and future economy of the country. Overcrowding, misuse of natural resources, uncontrolled construction of buildings and infrastructure, and other activities associated with tourism produce impacts on the environment. In general, the impacts of tourism vary according to the quantity of tourist entry, the nature of tourists and the characteristics of the site.

1.2. Adventure tourism, nature-based tourism and ecotourism

The market in specialist adventure activities or sometimes terms as extreme adventures such as four-wheel drives in particular, white water rafting, are more recent and rapidly expanding. Most of these activities sometime do not qualify as ecotourism when it is not properly handled. In some case, they are harmful to the environment. They are indicative of the conflicts that can arise between adventure tourism, nature-based tourism and ecotourism, both in terms of objectives and practices.

1.3. Understanding and management on biological diversity

Over 10,000 species of plants, 250 kind of birds, local mammals include mouse deer, barking deer, wild ox, and numerous monkey species, tapir, elephant, leopard and tiger present at Taman Negara, though not easy to spot (Taman Negara Pahang, Malaysia: MHTML Doc 25/3/2009). The value of biological diversity or biodiversity and ecological system in the context of genetic, social, scientific, educational, cultural, recreational, aesthetic and environmental sustainability are priceless. Therefore, it is a common concern to everyone in the world. The relevant authorities and agencies are responsible in conserving biological diversity including its resources in a sustainable manner. Tourism impacts on sustainability of protected areas can be broadly classified in two categories: direct and indirect. Direct

impact caused by the presence of tourists. On the other hand, indirect impact is caused by the infrastructure created in connection with tourism activities. Thus, although tourism can be a lucrative source of revenue for a protected area, it can also represent a major management problem which affects the sustainability of our environment. As with most problems, the negative impacts of tourism can only be managed effectively if they have been initially identified, measured and evaluated. Once this has been done, tailored management responses can be created. The development (country and people economic), environment and preservation issues of Taman Negara has to analyzed holistically to uphold the concept of sustainable development. This research covers these issues through three main perspectives.

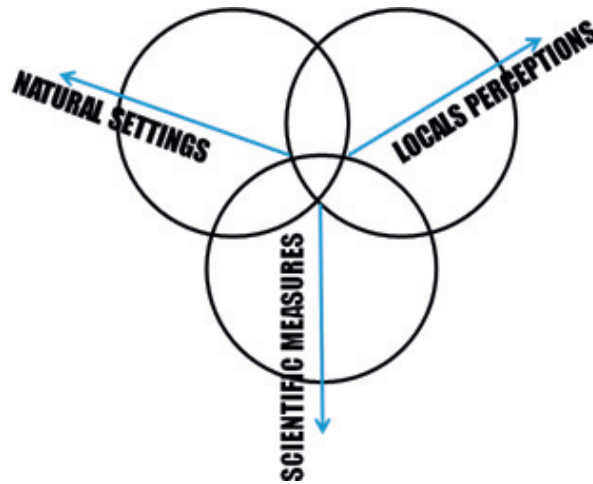


Fig.1. Research analysis domain

2. Natural settings

Taman Negara is often referred to as the untouched jungle and the oldest rainforest (130 million years old) in the world. The jewels in this virgin forest are the thick jungle and the deep river flowing from the tributaries of Banjaran Titiwangsa (the Titiwangsa Main range) across the three states of West Malaysia that is the state of Pahang, Kelantan and Trengganu. Gunung Tahan is the highest peak in Malaysia offers ecotourism experiences and challenges especially to mountain climber's adventures. River Tahan and River Tembeling converge at Kuala Tahan and later meet River Jelai, which flows to River Pahang (the longest river in Malaysia). River Tembeling becomes the main accessibility to Taman Negara via water route.

Unobtrusive observations as agreed by (Zalina, S. et al., 2012) is chosen to be an appropriate tool for the ground survey to recognize human and nature in terms of behaviour, culture and setting. In this research, observation was carried out through Sungai Tembeling as this river acts as the main mobility route for the people in Taman Negara. It is vital to study the habitants along this river including its population, their mobility trend, economics activities, cultural heritage and environmental awareness. The river also acts as the boundary which separates two-thirds of the protected area of Taman Negara from its surrounding fringe development. Thus, it is very important to identify the possibilities of encroaching activities along the river banks. Monitoring the sizable development through scheduled photographs collectively records the development on-site activities. Data collected were used to evaluate and understand the relationship between development and sustainability. The natives or the aborigines are considered as part of the natural setting in this research.

2.1. The environment of Taman Negara

Taman Negara being protected under three states (Pahang, Trengganu and Kelantan) enactment which is The Taman Negara Enactment (Pahang) No. 2 of 1939 is enforced in the state of Pahang. The Taman Negara Enactment (Kelantan) No. 14 of 1938 in the state of Kelantan and the Taman Negara Enactment (Terengganu) No. 6 of 1939 in the state of Terengganu. It has been developed into a famous ecotourism destination in Malaysia. There are geological and biological attractions such as the Gunung Tahan the highest point of the Malay Peninsula. The park is also well known for the home of some rare mammals, such as the Indochinese Tiger, Sumatran Rhinoceros, Malayan Gaur (seladang) and Asian Elephant. Sungai Tahan and Sungai Tembeling also have been preserved to protect the Malaysian mahseer (ikan kelah in Malay), a type of game fish. With the strong uphold of the preservation law, the National Parks still maintain the virginity of its tropical rainforest with thick undergrowth, the mammals, fishes and the environment. There are many different types of animals which are kept on farms such as the water buffalos, the cattle and goats. Tourist can see water buffalos dipping themselves in the cool river (Fig. 2). These are a common site along Sungai Tembeling. Along the river banks one can observed that there are patches of clearings and deforestation mainly for agriculture that is rubber plantations and small scale cash crops (Fig. 3). Even though, it is on the outside boundary of the protected area, but this activity has to be properly managed by the government. What is afraid is that firstly, the clearings can slowly encroach into the protected area. Secondly, it will disrupt the continuity of the environment. This will have an impact on the micro climate and to the flora and fauna of the region. The study on forest density using remote sensing illustrates this phenomenon further.



Fig. 2. Water buffalos taking a deep in river



Fig. 3. Cash crops and rubber plantation along river bank

Since there is no inland transportation at Taman Negara, the local people and tourists depend greatly on boat services. The transportation system in Taman Negara eliminates the use of fiber-boat and only use boats made up from wooden water craft which is powered with diesel engine. The wooden boats lengths are between 40 feet to 60 feet. The services are used to transport tourists to the designated location or for them to experience the adventures of rough white water rapid and the rainforest environment. The wooden boats also act as the main means of transportation for the locals. There are issues on this mode of transportation voiced by the locals which will be discussed later.



Fig 4. Long wooden boat as means transportation

2.2. The Batek tribes

What can be observed uniquely along the river are few patches of settlements which adjoined to the riverbank landscape. They were the nomadic tribes of Taman Negara i.e. the aborigines from the “Batek” tribes. The Batek (or Bateq) is indigenous people (currently numbering about 750) who live in the rainforest of Peninsular Malaysia. As a result of encroachment, they now primarily inhabit the Taman Negara National Park. They are nomadic hunters and gatherers, so the exact location of their settlements change within the general confines of the area that they inhabit (Endicott, Kirk, 2004). The word ‘Batek’ means original people in Malay and was probably first used to identify these people by Austronesian speaking settlers who arrived by boat from the islands of Southeast Asia. The Batek people were first documented by Europeans in 1878, when explorer-naturalist Nicholai Miklukho-Maklai of Russia wrote about them (Lye, Tuck-Po, 2004). The Batek normally lives in family groups, in wooden structural tents or “lean-tos” construction, with about 10 families forming an encampment. Each encampment generally has control of the land immediately around it, but since the Batek does not believe in the concept of private land ownership, the encampment considers it to be the caretaker of the land, rather than its owner. Also since they are nomadic once most of the usable wild plant resources have been depleted from a given location they will move to another spot, within their habitat.



Fig 5. Batek Tribes Community at river bank
Source: Badaruddin (2002)



Fig 6. Batek Tribes Community inland
Source: Badaruddin (2002)

The Batek is a peaceful society people. Their way of life is very simple. The social norms dictate most of their way of life. Everything is shared with the entire society such as food and property. It is observed that the Batek is contented with their way of life while knowing that there are developments surrounding them. Agreeing with Badaruddin Mohamed, (2002) the Batek continues to be mere ‘objects’ or ‘products’ to be gazed by the visitors. They come to visit aboriginal villages and observe Batek’s lifestyle. The visit activity at Batek village is a prominent feature, in the tourism activities in Taman Negara. However, it is observed that they rarely become owners who run businesses related to tourists. On the contrary, this could also due to the fact that the aborigines are not reliable (as workers, according to one park’s managers), and their academic background is relatively lower. The Batek Tribes believe on the idea of taking only what you need and leave the rest to the nature.

2.3. Private chalet and camp site operators

An intriguing circumstance is numbers of private owned chalets and camp site operators at both side of the river banks namely the Mat Leon Village, Nusa Holiday Village, Dali Guest house and others. Despite they are small, the activity can be an eye sore, and there is no proper monitoring system in the aspects of

waste and services. These operations can be a treat as they can at any time encroach into the protected area.

3. Local perceptions

Interviews with the locals and the head of the villagers were carried out with the aim firstly, to find out the current development of the village and secondly, to gauge their awareness on forest conservation and sustainability. It is obvious that there are local settlements (villagers or the kampongs) live along the river banks. They were the local settlers who cleared the land mostly on the right side of the river bank (if one is travelling upstream). By definition, these areas are not confined to the protected area of National Park. The settlers form a small group of village communities or “kampung” headed by a leader or ‘Ketua Kampung’. There are seven villages identified along the river which are: Kampung Pagi, Kampung Kuala Sat, Kampung Bantal, Kampung Gusai, Kampung Mat Daling, Kampung Sempat and Kampung Samah. The kampongs’ population is 10 to 500 people. Their occupations are mainly rubber tappers and small chalet operators mostly for budget tourists. Basic amenities such as primary schools were provided by the government for the community. Table 1 below summarizes the population, amenities, occupation and average income of the inhabitants under investigation.

Table 1. Population description and distribution of the locals

Name of Village	No. of Houses	No. of people	Head of Village	School	Other facilities	Main Occupation	Average Income
Kg. Pagi	53	300	1	Primary school: 1 Secondary school: none	Electricity & water	Rubber tappers	Below RM500
Kg Kuala Sat	50	300	1	Primary school: 1 Secondary school: none	Electricity & water	Rubber tappers	Below RM500
Kg. Bantai	80-90	500	1	Primary school: 1 Secondary school: none	Electricity & water	Rubber tappers, Small chalet operator	RM500- RM1000
Kg. Gusai	65	330	1	Primary school: 1 Secondary school: none	Electricity & water	Rubber tappers	RM500- RM1000
Kg. Mat Daling			1	Primary school: 1 Sec school: none	Electricity & water	Rubber tappers, Small chalet operator	Below RM500
Kg. Sempat	1	4	-	-	Electricity & water	Not Specific	Below RM500
Kg. Samah	-	-	-	-	Electricity & water	Not Specific	Below RM500

Interviews with the locals and the head of the villagers imply the willingness of the population to participate in the well being of the community and the environment. The people show high respect towards the environment and researchers’ efforts towards materializing the sustainable approach. This statement on the local people’s behaviour was in line with the earlier findings on local willingness to participate (Daim, M.S., 2011). Unfortunately, their particular concern on the issue of sustainability is distracted from their attentions and actions since they are more focused on the problem of insufficient basic infrastructure. Their realizations in fulfilling the basic needs were expressed fanatically to the

researchers such as to have sufficient support for education, proper health care and communication. The locals need the right to communicate within their communities as well as outside their community. The people need a proper mode of transportation, proper telecommunication and able to access on the advantage of information technology (IT). Unanimously, they require efficient road transportation.

4. Scientific evidence

Finally, the issues on sustainability versus uncontrolled development will be supported technically using remote sensing discipline, whereby images on the natural setup, land use and land clearings due to development (problems on law prohibited logging is not discussed in this research) were taken at intervals of five years. Remote sensing in environmental analysis is a very useful tool to evaluate land conditions and mobility of the location (Burrough P. A., 1986). Forests, rivers, secondary plantations and human habitat will be identified to define the percentages of the natural environment with the developed area.

Remote sensing defines as a technique of obtaining aerial information about objects through the analysis of data collected by special instruments that are not physically in contact with the objects of investigation. As such, remote sensing can be regarded as "reconnaissance from a distance," "teledetection," or a form of the common adage "look but don't touch" (Burrough P. A., 1986). Remote sensing thus differs from in situ sensing, where the instruments are immersed in, or physically touch the objects of measurement. Monitoring land use is a move often taken to monitor 'land use' activity (the local term "gunatanah"). Researchers manage to determine land use change in National Park area, Pahang between year 1988, 1998 and 2006. To that purpose, three satellite images have been derived from the National Center of Remote Sensing (MACRES) used of different years:

- Landsat TM (05/03/1988)
- Landsat TM (12/01/1998)
- Spot 5 XS (13/03/2006)

The study area covered 205.1 km square feet.

4.1. Changes on land use of year 1988, 1998 and 2006

By referring to Fig. 7, it shows that there is an increase of land use in terms of percentage for distribution of development and agricultural purposes. On the other hand, there is a decrease in land use percentage for the distribution of forest and water body. Fig. 7 displays of land use image in year 1988, 1998 and 2006. In this way, based on the remote sensing data, land use changes are distinctively visible.

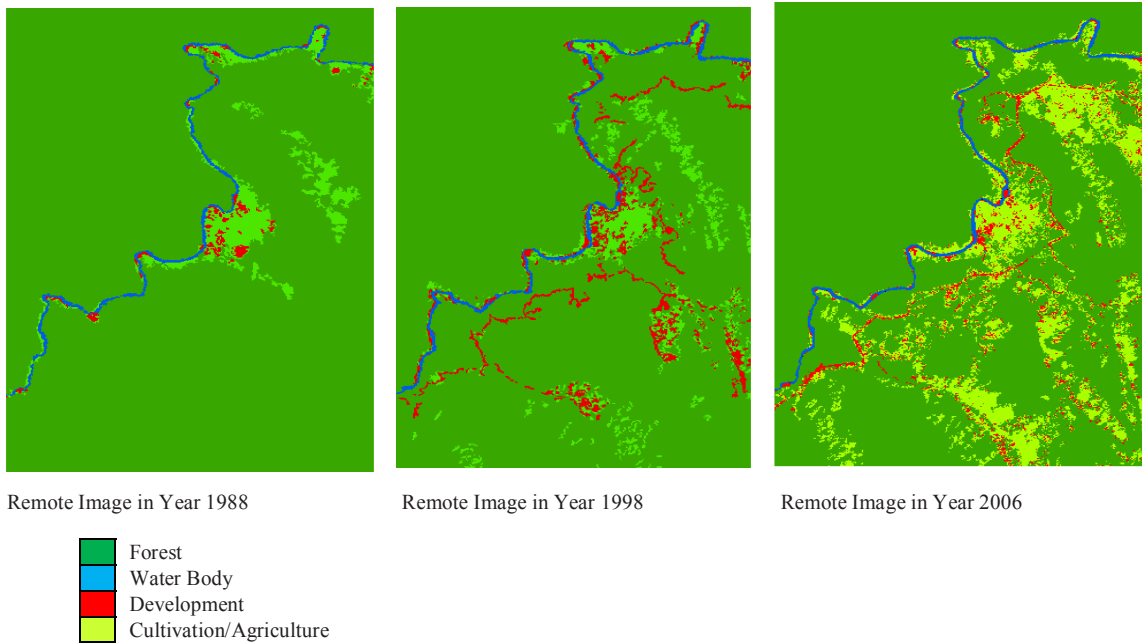


Fig. 7. Land use changes shown within 5 years interval

In the duration of 18 years (1988 to 2006), it is found that there is a decline in forest area as much as 11.4% whereas for crop/agriculture and development show an increase of 8.8% and 3.1% respectively. Water bodies showing minimum changes and that can be considered as consistent. Table 2 shows changes of landuse type of year 1988, 1998 and 2006.

Table 2. Land use changes

Year		1988		1998		1906
Land use	(km ²)	(%)	(km ²)	(%)	(km ²)	(%)
Forest	193.0	94.0	183.6	89.5	168.9	82.6
Water Body	2.6	1.3	2.9	1.4	2.7	1.3
Development	1.4	0.8	7.7	3.8	7.5	3.4
Cultivation/Agriculture	8.1	3.9	10.9	5.3	26.0	12.7

5. Conclusions and recommendation

From the observations and interviews with the locals, the following conclusions were derived:

- 1) The precious environmental beauty and sustainability of Taman Negara looking from Sungai Tembeling are well intact at the moment. The Bateks (the aborigines) are contented with their way of life while knowing that there are developments surrounding them. Seldom, they become owners or run businesses related to tourism. On the other hand, the locals at the fringe of the protected area felt the pressure to survive on current challenging life. They need to have proper health care, education, modern communication system, such as telecommunication and information technology (IT).

However, the locals utmost need an efficient transportation system to help them to travel from the interior to the urban areas.

- 2) By maintaining an appropriate pricing policy in national parks regularly, the responsible local authority is protected from the financial crisis in achieving successful and sustainable management of national parks. Not only controlling the natural sustainability but also to provide economical sustainability such as offering quality products and services at fair prices to visitors. Park resources such as scenic beauty and conservation of endangered species are not traded in the market place like many other commodities, so they require the use of non-market valuation techniques. One of the methods commonly used for non-market valuation is the Contingent Valuation Method (CVM). With Willingness to Pay (WTP) as the elicitation method, CVM was used to determine the appropriate pricing policy for the sustainable management of Taman Negara National Park (TNNP). Findings of the study by Zaiton Samdin (2008), reveals that visitors were willing to pay more for entrance fees, which presents implications to policy makers to guide future management of TNNP. This option clearly brings revenue maximization, thus establishing an efficient pricing system.
- 3) Furthermore, image of Taman Negara needs to be well presented. The approach and the design of the national park have to portray sustainability image of the park with local materials, construction, and technology (such as water harvesting system and passive ventilation). It is sad to say that the existing planning and building control do not give a serious attention of a satisfactory image at this juncture. At the moment, the existing image does not fulfil this requirement (suggestion for future research).
- 4) Data from remote sensing shows there are an increase in clearing of lands, population and deforestation within the *protected area* and the *non protected area*. The result shows that, in the duration of twenty years time, there is ten percent increase of land clearings. This graph shows a critical result in which reflects a proper action need to be taken. The idea of sustaining our forest with its rich flora and fauna can just be a regrettable dream. The issue on irreplaceable forest cannot be taken lightly. Once they are gone you will weep good bye. Enforcement and implementation of law on deforestation and issues on encroaching activities have to be taken seriously.

While the Government, NGOs and other partners have focused efforts on ecotourism, the loss of habitat and biodiversity continues through the clearing of forests, uncontrolled infrastructure, agriculture, encroachment activities as well as other unsustainable land uses such as poorly-managed tourism development and improper design of the tourism centre. Sustainability and ecotourism have to be integrated. The suggestion for this is to create a well balance design on the site with goals and objectives towards sustainable planning, process and technology. To create a well balance design two important factors need to be established. This approach is termed by the researchers as Sustainable Tourism Gateway which is a proposal concept to introduce a transition space between two entrances or gateways to the inner parts of the National Park. This space is created to facilitate monitoring and controlling of the park and at the same time creating buffer zone for the spill out of the development. The approach will assist the government by educating visitors on issues related to sustainable tourism and taking the interest of all stakeholders including indigenous people, local communities, visitors and industry into the development of the National Park. Fig. 8 below illustrates the above concept.

The diagram illustrates three main components of the concept which is Gate 1, Gate 2 and the Transition or Buffer zone area. Gate 1 is the pre entrance that is a space approaching the park while Gate 2 is in the protected area of the National Park. The activities within Gate 1 and 2 are precisely stated in the diagram. The third component of the concept is the Transitional Space or the Buffer Zone (Sudip Pandey, 2010). The function of this area is to demark the transition between the protected areas from the non protected areas. This zone can have the entrance gate which acts as the forefront security for the inhabitant of the National Park and the collection point for the contribution fee. It is suggested that an Advisory Committee will be handling these responsibilities

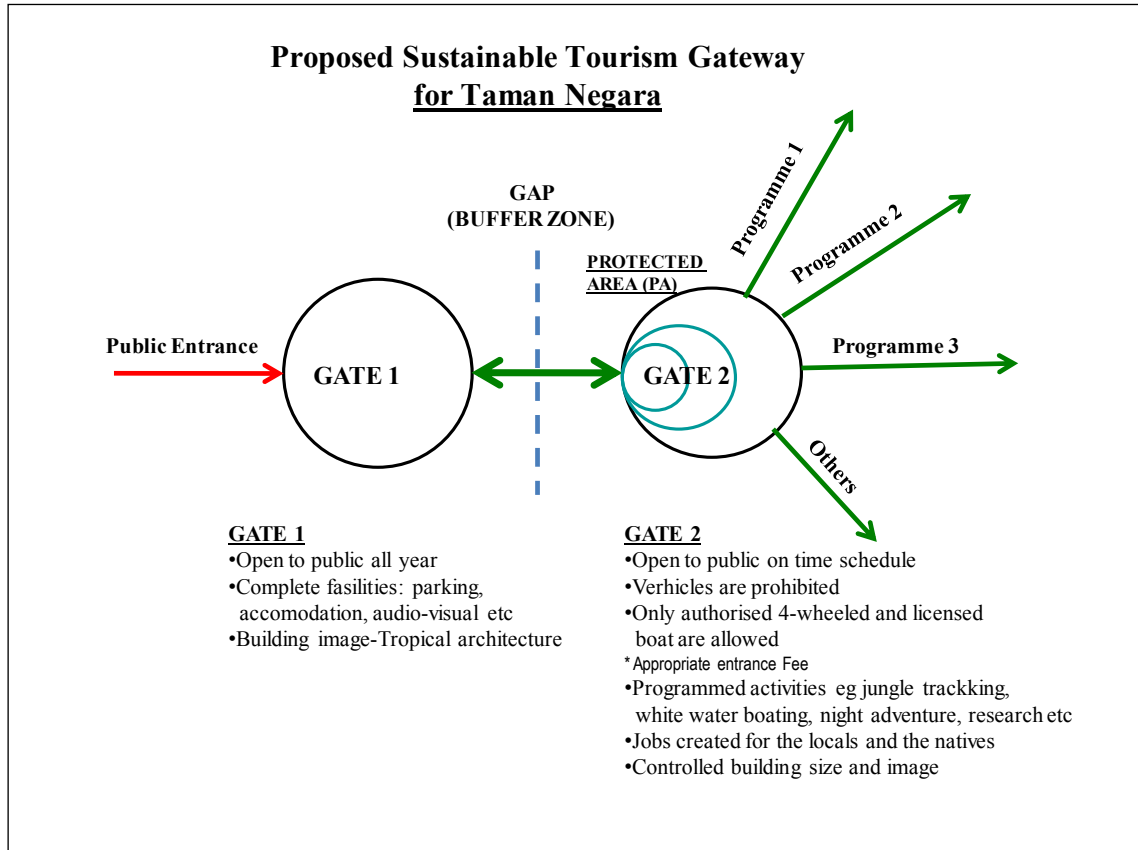


Fig. 8. Proposed sustainable tourism gateway concept

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