Trail Development

Tourism Development Supporting Biodiversity Conservation in Pangandaran Indonesia
# Report on Trail Development at Nature Recreation Park in Pangandaran

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I. INTRODUCTION

Pangandaran is a world-known coastal tourism destination in Java and is also well known by international tourist particularly from Western Europe. Situated in Ciamis Regency, West Java Province, Pangandaran has a 27 km long beach as a main tourism attraction and a 350 hectare of conservation area as a peninsula that divides the coast into the east and west part. Pangandaran can be reached in 2 hour drive from the capital city of Ciamis Regency, and 5 hour driving from Bandung, the capital city of West Java, and Yogyakarta in Central Java area. The site owns an airport facility called Nusa Wiru, located 20 minute drive from Pangandaran. The airport has just recently been reactivated by receiving regular commercial flights. However, Pangandaran does not have a harbor yet, thus not accessible by boat or ferry.

Its strategic location has encouraged tourist particularly from Jakarta, Bogor, Bandung, Cilacap, and Yogyakarta to visit Pangandaran. During school holiday season, Eid-el Fitr, Christmas, and New Year holiday it is a favorite destination for tourist. Annually, the number of domestic tourist may reach 485,000 and 9,800 of international tourist. The condition has made Pangandaran defined as a featured tourism site in West Java together with Puncak area in Bogor Regency.

Beside the beach; the forest and its biodiversity in Pangandaran become another attraction for visitor. Pangandaran own various ecosystems, both marine and terrestrial. Most of land ecosystems are in good condition, except coastal ecosystem which is damaged; particularly the coral reef and the mangrove. High number of visitation to the Nature Reserve (NR) has encouraged 37.7 ha of its area converted to be a Nature Recreation Park (NRP), in order to accommodate tourism and educational purposes. There are at least 700 species found in Pananjung Nature Reserve and Nature Recreation Park, which comprise of 270 species of trees, 75 species of scrubs, 9 species of lianas, 182 species of bushes, 75 species of grass, 16 species of epiphytes, and 9 species of parasites. Out of all, 80 species can be used as medicine herbs. There are at least 48 macro algae species found at the coastal area. The rare Rafflesia padma requires careful attention because it is a rare and legally protected. Pangandaran is also home for mammals such as the wild ox (Bos javanicus), deer (Cervus timorensis), long tailed monkey (Macaca fascicularis), the flying lemur (Cynocephalus variegata) and the flying fox (Pteropus vampyrus).

On July 17, 2006 Pangandaran area was hit by Tsunami, at least 659 people were killed and caused damage to tourism facilities and habitat degradation such as coral reef and mangrove. Generally, NR and NRP condition is continually being degraded, caused by lack of management. It can be seen from declining of savanna area inside NR that has been a feeding place for wild ox, deer and other species. This condition has forced wild animal seek their food outside of area. In the other side, the NRP does not provide sufficient educational value to visitors; this situation leads to animal behavior change. Declining of environment quality in NR and NRP also may leads to declining of population followed by declining of number of visitor.

Based on the above condition, in order to prevent habitat degradation in NRP, it is necessary to develop concept and management of trail to provide educational value for tourist; so the tourism activity inside NRP is able to provide additional experiences to visitor, as well as to increase the awareness of community and visitors on the importance of natural resources conservation towards sustainable tourism.

II. CONSERVATION AND TOURISM

Tourism and biodiversity conservation are linked to each other and strongly inter-dependent. Biodiversity and its ecosystems are tourism attractions and key assets for tourism, thus required to be conserved and maintained in order to stay attractive. On the other side, environmental condition in a tourism destination also depends on visitor quality and tourism management. It implies that tourism sector needs to be managed properly in order to conserve the environment (nature and culture) as an asset for sustainable tourism. However, people or visitors often perceive that management...
of conservation areas is only the responsibility of park managers. Actually, the responsibility belongs to the entire parties such as park manager, community in the surrounding area, tourism stakeholders, academics, and tourist. Collaboration among stakeholders is necessarily needed in order to conserve the environment; since conservation, knowledge, and tourism are closely linked.

Biodiversity is definitely become main attraction in tourism. Many tourists look for beautiful view and want to directly see the wild or rare animal in their habitat, or endemic species which can only be found in certain habitat. Komodo (Varanus komodoensis) is an endemic and endangered species that belongs to the ancient reptile family which can only be seen in its original habitat at Komodo Island, West Nusa Tenggara. Many domestic and international tourists visit the island only to see this animal directly, before it extincts. Orangutan (Pongo pygmaeus) and Tarsier or Tawiru (Tarsius spectrum) are other popular animals that have been target for visitors. Orangutan can only be find in Sumatra and Borneo, while Tarsier in Celebes. Rare and endemic birds have also become main target for many birdwatchers all over the world, and bird watching tour operator has been one of potential tourism businesses.

Some of tourism destinations in Indonesia have huge potential of natural resources that become their attraction power in attracting visitors. Gunung Bromo Tengger Semeru National Park for instance, has attracted visitors for its beautiful view and amazing desert. Indecon research found that these kinds of tourism destinations spontaneously developed; which means tourism developed before any planning activity was conducted. Similarly, Pangandaran has developed long ago as tourism area due to its wide and long white sandy beach and beautiful view. The existing regulations were made only to accommodate incidental problems at operational level, instead of integrated planning which involved multi stakeholders.

Baseline information gathering by UNWTO, Indecon, and LGW showed that natural attraction is the major factor for attracting tourist to Pangandaran. On the other side, the observation also showed that NR and NRP are poorly managed that leads to animal behavior changing and habitat degradation, both in terrestrial or marine area. According to the existing data, tourism in Pangandaran has developed since 1970-ies yet no tourism development master plan is well established yet.

From the above explanation, habitat and biodiversity conservation and tourism sector are strongly linked and inter dependent. Therefore, it is necessary to develop management on conservation and tourism in mutualism symbiotic approach; which provides benefit both to tourism and conservation of biodiversity and its habitat. It is essentially necessary to develop tourism management plan with emphasize on biodiversity conservation.

III. STRATEGIC ISSUES ON PANANJUNG NATURE RECREATION PARK
Currently, the peninsula of Pangandaran is protected under 3 different types of status: Terrestrial Nature Reserve (419.3 hectares), Marine Nature Reserve (470 hectares, with 12,625 kilometers of coast line and 500 meters width from the furthest tide), and Nature Recreation Park (37.7 hectares). They function as protection zones for living support systems, as well as zones for conservation and sustainable use for biodiversity of flora, fauna, and its ecosystems.

As described earlier, only Nature Recreation Park can be legally utilized for tourism activity. Two other areas are prohibited for tourism activity, although NR has also currently been used as tourism area. Generally, the management of NRP is not optimized. No good interpretation on habitat or biodiversity is provided in the location; thus preventing tourists from getting additional experience during their visit. Poor waste management is another classis problem in the area. Generally, strategic issues in Pangandaran NRP are described below:

<table>
<thead>
<tr>
<th>Strategic Issues</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Poor tourism management in Pangandaran and in NRP area</td>
<td>• No ‘code of conduct’ available for management and ‘code of ethic’ for visitors, as an effort to manage visitor and minimize destructive activity. No proper visitor management. Management is focused to getting income only. • Tourism Information Center is not functioning properly and no interpretation is unavailable in NRP. • Low human resources in management capacity – both in tourism office as the overall manager for tourism activities, Perhutani as NRP manager, and BKSDA as NR manager. The condition is reflected from low management activities and poor services. • Overlapping management in NRP; as Perhutani as concessioner has not implemented its responsibility to invest in NRP area and just sells entrance ticket. The condition has encouraged BKSDA to sell entrance ticket. • No innovation or mechanism yet to overcome littering by visitors and community.</td>
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<td>2. Weak law enforcement by the authority in Pangandaran, NRP, and NR</td>
<td>• No law enforcement from park manager upon vendors who sells in inappropriate places. • No law enforcement upon vendors, fire-wood collectors, and fishermen who enters NRP and NR. • No law enforcement upon community and tourists who do destructive activities, such as collecting marine biota, feeding wild animal, and littering. • No law enforcement upon officers who do not give ticket to visitors.</td>
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<tr>
<td>3. Low awareness of the community and visitors on the importance of natural resources conservation</td>
<td>• Lack of information and socialization on the function of NR as well as the importance of natural resources and biodiversity conservation to community. • Community perceives that the natural resources being exploited will not degrade, such as collecting marine biota for souvenir.</td>
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<tr>
<td>4. Low community awareness on cleanliness and environment sanitation</td>
<td>• Lack of information and socialization on cleanliness and environmental sanitation. • Low community awareness, that hygiene and environmental sanitation is more of individual responsibility rather than of park manager or government. • Weak education on hygiene and environmental sanitation at family level. • The above conditions are linked; they encourage community and domestic visitors do littering.</td>
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<td>5. Habitat degradation and declining population such as wild ox</td>
<td>• Continuing destruction activities that reduce the quality of habitat such as fire-wood collecting, marine-biota collecting, and tourism activity in core zone.</td>
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Report on Trail Development

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<th>Strategic Issues</th>
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<tr>
<td>• Declining food source particularly in savanna; which is caused by the declining of savanna area. It started from Galunggung eruption (1994) that killed various surface plants.</td>
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<td>• Sedimentation and abrasion level made habitat changing.</td>
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<td>6. Negative impact of tourism on biodiversity.</td>
<td>• Feeding wild animal changed animal behavior and turn them much dependent on visitor</td>
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<td></td>
<td>• Marine-biota collecting for souvenir</td>
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<td></td>
<td>• Entering core zone that is prohibited for tourism.</td>
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<td></td>
<td>• Degradation of coral reef, which damaged by improper visit or tourism boat.</td>
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IV. DEVELOPMENT OF INTERPRETATION TRAIL IN NATURE RECREATION PARK

a. The Existing NRP Management and the Trail Condition

In order to optimize area management, park manager has defined a block system, both in NRP and NR. In NRP, it consists of 20.9 ha of Utilization block and 13.4 ha of Protection block. However, marking at the border areas of these blocks has not yet done. Routine activities which are conducted by park manager are: visitor management that covers ticket retribution (East gate, West gate, and white sandy beach), guiding, research, area security; and administrative works. Community outreach activity is conducted only whenever it is considered necessary and usually conducted directly in the field.

Operational of NRP as tourism area has been concessioned to Perhutani through Tourism Concession Permit (Ijin Pengusahaan Pariwisata Alam – IPPA) in 1996. However, up to now Perhutani only sells ticket, provides parking area, and rents out the area for outbound activity and film shooting for television and film needs. Although, according to the Tourism Concession Permit Plan 1996-2026, Perhutani should develop tourism infrastructure, manage, and well maintain the natural resources. Supporting infrastructure is insufficient since most of them now are damaged. Financial support is minimum and insufficient to implement recovery program. Currently, NRP Pananjung has one trail in its secondary forest with various widths from 2 to 4 meter. The total length of the trail is 3 km and divided into 3 sub-trails, which connect main entrance gate at East beach with tourism attractions inside NRP and with entrance gate at West side. The trail is mainly flat with a mixture of soil and sand as a surface. Shelters are mostly located at the intersection of trail and are in poor condition. The direction signs, boards, and map are made from cement; they can be found at briefing area (West gate) and at various locations along the trail. The briefing area is accessible from the West gate through a high cement stairs. The condition of the stairs is poor and harmful to visitor; since the threads are not of same dimensions, the cement surface is broken, and the railing is damaged.

Drainage system in the area is poorly managed. Since it is surrounded by sea, sea water intrusion is high, so the soil becomes full of water and the trail is squasy during rainy season. It encouraged BKSDA to pave the trail starting from the entrance gate at east side to Rengganis. Yet, it The condition even worsen the condition, since it provides better access for fishermen and visitors to use motor cycle to enter the area, which is prohibited to be visited.

At the East gate, there is a BKSDA office building that also functions as Tourism Information Center. However the building is not well kept and ill equipped with information. Meanwhile, tourism attractions are widely spread such as caves at the east side, including Rengganis – a cave with small river inside, its water is believed to have a power to make people stay young. Generally, war and historical artifacts become major tourism attractions, such as Japan cave, Batu Kalde, and etc. Unfortunately, the forest ecosystem and its biodiversity have not been optimized as a tourism attraction to visitor.

Up to now trail management system is unavailable, which means that the trail only functions for sightseeing, experiencing the forest, and connecting one to next tourism attractions. No thematic trail which can provide educational added value to visitors is available. This condition will affect the appreciation of visitor and community on the importance of forest conservation. Moreover, visitor can not gain additional value in their visit. Tourist guides are poorly equipped with good interpretation on nature and biodiversity, yet rather function as road guide and rent lamp for visitors who want to visit the caves. The Pangauban guide has provided more interactive activities in West briefing area, such as providing flying fox game and providing information to visitor. However, they do not have information guideline for visitors. These guides are not trained yet by Perhutani or BKSDA, both on guiding technique or knowledge on biodiversity conservation.

Entrance Stairs and border marking (existing)
b. Existing Information Signs on Tourism
Information signs on tourism are limited to those inside the Nature Recreation Park and on West beach, which have been identified below:

1. Map of Nature Reserve
   - Location: ticket office at East gate
   - Size: 2x3 meter
   - Material: concrete board
   - Content: map of Nature Reserve (land) and Nature Recreation Park

2. Map of Nature Reserve
   - Location: at the visitor centre (East gate), outer wall
   - Size: 1x2 meter
   - Material: wood board, on the wall
   - Content: Map of Nature Reserve (land and marine) including the grasslands and Nature Recreation Park

3. Map of Nature Recreation Park
   - Location: at briefing area, about 500 meter from West gate
   - Size: 1x2 meter
   - Material: concrete board
   - Content: map of Nature Recreation Park, including location of attractions. There is a metal plate next to it which contains the legal status of NRP.

4. Directions pole
   - Location: along trail, at intersection
   - Size: 1x2 meter
   - Material: metal plate, with steel pole
   - Content: directions to areas and evacuation site (in yellow)

5. Explanation on attraction and legal status of historical site (Batu Kalde)
   - Size: 1x2 meter
   - Material: metal plate, with steel pole

b. Interpretation Signs on Biodiversity
Interpretation signs on biodiversity are limited to metal plates mentioning the name (both local and scientific name) of plants inside Nature Recreation Park. Some of the signs are provided by BKSDA West Java, while some others are provided by BPLHD West Java. Some of the metal signs are nailed to the tree trunk, which is not good for the tree.

3. Develop thematic information that is able to increase type of tour product in NRP area.

V. STEPS IN DEVELOPING THE CONCEPT

A. Identifying trail condition and visitor flow during their visit.
   LWG and Indecon have conducted surveys in NRP area both during low and high season. The aim of the survey is to measure trail; observe visitor flow, visitor behavior, local guide activity; observe tools and material used by guide in providing information; and observe the information given by guide to visitors. The result provides input in developing concept and designing interpretation within the area.
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B. Identifying point of interest.
Recording points of interest also was also conducted during surveys, in a different period: morning, noon, and afternoon in order to record various possibilities of anything, particularly the wild life that can be seen by visitor along the trail. It was conducted every one hundred meter with the depth often meter in the left and right side of the trail. Each segment was marked by a direction pole. Points of interest, such as important and high value species, encountered animals, unique nature phenomena, or historical artifact were recorded by our team and local guide. They were recorded and marked in map. Study on secondary data particularly on wildlife was also used in this occasion.

C. Developing Theme and thematic trails.
Information of the points of interest along the trail was used to design the theme for the trail. Developed themes must be provocative and have educational value, so that they are highly attractive to visitors. Once themes were developed, the trail route was designed to accommodate the theme. It is expected that later other thematic tour products can be packaged based on the information which was developed together with local guide and resource person.
Thematic tour products which have been developed are (please refer to the Annex for Map):
- **Discover the Secret of Tropical Rain Forest**
  Within this thematic trail, visitior will learn about forest growth, forest succession, pioneer plants. Visitors will also learn the secret of how the plants survive and interaction between animal and plant.

- **Tracing the History of Pananjung**
  The thematic trail will lead visitor in tracing back or learn about the history of the area by visiting historical artifacts inside NRP.

- **Medicinal Plants**
  Visitor will learn about the function of the forest and medicinal plants that are used traditionally by local people in Pangandaran.
Wildlife watching
The theme was specially designed to take visitors to watch wildlife animals, such as mammals and bird in accurate time.

D. Construction supporting facilities
Physically, the trail in Pananjung NRP has fulfilled the criteria a good trail in terms of its condition, width, and does not require much renovation except at certain points. However there are several trail routes which are currently used by guides and this can create confuse. In order to assist guide and visitors, as well as to improve impact monitoring, a main trail was designed.

As described earlier, the concept is developing main trail with various interpretations in order to provide added value and more knowledge to visitors. The further objectives are:
- Provide working opportunities to local people as guide. Nowadays 40(fourty) guides are operating at the forest and more than 30(thirty) guides are operating at several caves and historical artifacts.

Therefore, the ‘self–guided-tour’ concept is unpreferable in Pananjung NRP.
- Provide environmental educational value as an added value for visitors, guide, and park manager.
- Encourage capacity building of tour guide.
- Provide high quality and true information, particularly on the nature and biodiversity.

In order to support these purposes, several supporting facilities were suggested to be renovated or added. Suggested materials should be non corrosive, not easily broken (especially for roofs since the frequency of falling leaves is high), not easily torn (since long-tailed macaque often destroys the facility). The suggested facilities to optimize the trail development are:

• Direction Meter Pole
  The pole is different with the existing ones, because it will not only give direction at intersection. The new pole marks the distance along the trail and the border of trail route. The pole is provided every 100 meter and numbered with an eye-catching color. The design of the pole follows the regulation of Department of Forestry, which is round shape with diameter 8 to 10 cm, and 60 cm of height from the ground surface. The pole will guide visitors and guides not to cross over the trail and will help guide in story telling. On the other side, they will help in monitoring and recording the database biodiversity along the trail. For instance, if guides and visitors encounter animal, they can easily mark the point in the map. They will be used as tools in monitoring the change of animal territory.

• Interpretation Signs
  Both passive and active interpretation signs are provided on several points. They are located at unique points and provide biological knowledge to visitor related to their daily life.

• Interpretation Briefing
  Interpretation about general information of NRP is needed to be goven prior to any tours. Briefing is usually conducted at west entrance gate by guide. The information panel should be in big size and attractive to be seen or read.

• Trail Border
  Border at the left and right side of the trail at several points is needed to prevent tourists walking outside the designated trail. Walking outside the trail might cause damages on ground surface.
Guide book should be developed to help guide to provide same information to visitors. Surveys have shown that guides often do not provide same information to visitors.

F. Interpretation Design
Refers to the condition of existing interpretation signs and in order to minimize negative impact to the forest and its biodiversity; passive interpretation signs are constructed at several important points and at briefing area. They are also expected to increase environmental education to visitors, guides, and park manager. The interpretation signs depict points of interests, which are Strangler Fig, Buttress Root, Teak Wood Tree, Our Forest and its function, Animal Forest and its role in the forest.

Design and specification of the sign media had been revised many times during the process, due to many inputs from stakeholders. The final design is shown at the following image.

The interpretation signs had been officially launched in February 2009 by Director General of Destination Development of MoCT, Coordinator of UNWTO Bonn unit, and representative from Federal Ministry of Environment of Germany.

New Interpretation media is also provided at the briefing area to replace the existing interpretation media. The new media is much bigger because at the high season the interpretation media is often surround with 20(twenty) people. The new panel is 8 meter of length and 2.2 of width; divided into 3 segments, which are 3 meter, 1.5 meter, and 3.4 meter width each. The media has two faces, so the entire length of the interpretation media is 16 meter.

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Launching of Interpretation Signs
VI. DEVELOPING AN EVACUATION PATH

There are several reasons to design and implement an evacuation escape at the hill at the west entrance gate. The location is expected to be able to be an evacuation location at the first instance if tsunami hits for tourists and community at West beach and inside NRP. The location was chosen based on the following consideration:

1. West beach area is closely located with NRP; the beach is a central location of tourists.
2. Access from West beach and NRP to the proposed evacuation hill is close, about 100 to 200 meters.
3. The hill is high enough to avoid tsunami.
4. The hill covers area of 45 x 40 meter and assumed to be the most sufficient area to accommodate more than 600 people.

The idea of evacuation location was conveyed to government of West Java Province, who plans to finance the development by 2009/2010 budget. The design of the evacuation hill is integrated with the renovation of the stair to NRP, the provision of interpretation media on tsunami and special information on NRP. Design on plan on tsunami evacuation location is shown below:

Design of the Proposed Evacuation Hill