



**UNIVERSITI PUTRA MALAYSIA**

**WILLINGNESS TO PAY TOWARDS THE CONSERVATION OF  
ECOTOURISM RESOURCES AT GUNUNG GEDE PANGRANGO  
NATIONAL PARK, WEST JAVA, INDONESIA**

**NUVA**

**FPAS 2007 3**



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ECOTOURISM RESOURCES AT GUNUNG GEDE PANGRANGO  
NATIONAL PARK, WEST JAVA, INDONESIA**

**By**

**NUVA**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfilment of the Requirements for the Degree of Master of Science**

**December 2007**



**This thesis dedicated to my beloved papa, mama, and my sister n' brother  
Maresfin Rusin, Salma Radhin, Hanna and Yusif**

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment  
of the requirement for the degree of Master of Science

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ECOTOURISM RESOURCES AT GUNUNG GEDE PANGRANGO  
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**Chairman : Professor Hj. Mad Nasir Shamsudin, PhD**

**Faculty : Environmental Studies**

The objectives of this study are to determine the visitors' willingness to pay for conservation of the resources at Gunung Gede Pangrango National Park (TNGP), and to determine the satisfaction of visitors towards the use of the ecotourism resources of the park. The dichotomous choice CVM method is used to determine the willingness to pay (WTP). A total of 423 respondents were interviewed face-to-face to collect the data.

The results show that most visitors are satisfied with the ecotourism resources in TNGP, many of the visitors have come to TNGP more than once. In order to sustain the benefits derived from the case of the resources at the park, the visitors agree that various organization involved most cooperate to conserve and protect the ecotourism resources.

The factor analysis identified seven factors that may be related to visitors' satisfaction towards the ecotourism resources at TNGP. These factors are grouped into three general aspects, which are the environmental exploration, satisfaction of public amenities and outdoor recreation.

The economic benefit of conservation of the ecotourism resources at TNGP was measured using the visitors' willingness to pay (WTP) for higher entrance fee to the park. A logit regression model was used to determine visitors' willingness to pay. The results indicate that income, gender (male) and residential (urban) were the significant factors that influencing the visitors' willingness to pay for the entrance fee to TNGP. The mean willingness to pay (WTP) is found to be RP 7629.77 per visit. It is estimated that in 2004 the benefits of conservation of the ecotourism resources in TNGP amounts to RP 452 million.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Master Sains

**KESANGGUPAN MEMBAYAR TERHADAP PEMULIHARAAN SUMBER  
EKOPELANCONGAN DI TAMAN NEGARA GUNUNG GEDE  
PANGRANGO, JAWA BARAT, INDONESIA**

Oleh

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**Disember 2007**

**Pengerusi : Professor Hj. Mad Nasir Shamsudin, PhD**

**Fakulti : Pengajian Alam Sekitar**

Kajian ini adalah bertujuan untuk menilai kesediaan untuk membayar untuk pemuliharaan sumber-sumber di Taman Negara Gunung Gede Pangrango (TNGP), Indonesia, dan untuk menentukan tingkat kepuasan pelawat terhadap penggunaan sumber ekopelancongan di taman tersebut. Pendekatan yang digunakan iaitu pilihan dikotomous penilaian kontingensi. Sejumlah 423 responden telah ditemubual untuk mengutip data.

Keputusan yang diperolehi menunjukkan bahwa sebilangan besar pengunjung adalah merasa puas dengan sumber ekopelancongan di TNGP, kebanyakan pelawat telah berkunjung ke TNGP lebih daripada sekali. Para pengunjung berpendapat yang pihak-pihak yang mempunyai kepentingan harus bekerjasama untuk memulihara dan menjaga sumber ekopelancongan.

Keputusan yang diperolehi dari analisis faktor telah mengenal pasti tujuh faktor yang berkait dengan kepuasan pengunjung terhadap sumber ekopelancongan di TNGP. Ketujuh-tujuh faktor tersebut digabungkan menjadi tiga aspek umum yang terdiri dari eksplorasi alam sekitar, kepuasan terhadap ameniti awam dan rekreasi luar.

Nilai faedah pemuliharaan sumber ekopelancongan di TNGP telah diukur dengan menggunakan konsep kesediaan membayar (WTP) untuk peningkatan bayaran masuk ke taman berkenaan. Model regresi logit telah digunakan untuk mengukur kesanggupan membayar pengunjung. Keputusan kajian mendapati bahawa pendapatan, jantina (lelaki) dan tempat tinggal (kota) merupakan faktor yang signifikan yang menentukan jumlah kesediaan membayar oleh pengunjung untuk biaya masuk ke TNGP. Nilai purata kesanggupan membayar dianggarkan sebanyak RP 7629.77 per lawatan. Faedah pemuliharaan sumber ekopelancongan tahun 2004 dianggarkan berjumlah RP 452 mil.

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I certify that an Examination Committee has met on 27 December 2007 to conduct the final examination of Nuva on her Master of Science thesis entitled "Willingness to Pay Towards the Conservation of Ecotourism Resources at Gunung Gede Pangrango National Park, West Java, Indonesia" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulation 1981. The Committee recommends that the student be awarded the relevant degree.

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## DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

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Date: 20 February 2008



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**LIST OF ABBREVIATIONS**

CV	Compensating Variation
CVM	Contingent Valuation Method
CS	Consumer Surplus
EV	Equivalent Variation
MB	Marginal Benefit
NOAA	National Oceanic and Atmospheric Administration
TCM	Travel Cost Method
TNGP	Gunung Gede Pangrango National Park
WTP	Willingness to Pay
WTA	Willingness to Accept



# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

Tourism's share to develop a region is substantial for many developing countries, where tourism can generate various economic benefits, including increase foreign exchange earnings, employment, income, and other government revenues. In Indonesia, tourism sector also has become one of the foremost sectors, within the non oil sectors, for many years. Currently, tourism progress is based on sustainability principle which is concerned for biodiversity conservation. Tourism activities that maintain the environmental sustainability is called as *niche tourism* or recognized as *ecotourism*.

Ecotourism has emerged as a fast growing segment in the world tourism industry, particularly since the part of the 1980s. Ecotourism creates an enhanced environmental awareness and feelings of concern for the environment and thus encourages participants to protect the environment (Herath, 2002). Besides, ecotourism is also widely accepted as a policy to offer environmental, socio-economic, and cultural benefits for society at every level of administration both local and national in a country.

In the Indonesia National Development Guidelines, tourism in Indonesia has developed through an integrated system, interdisciplinary, participatory



approach, using economical and technical criteria, ergonomic, socio-cultural sensitivity, energy saving, nature conservation and minimizing the environmental impact. The old tourism development approach has been changed to increase the welfare of local people that participate in tourism (Indonesian Ecotourism Centre, 2005).

Indonesia has established principles and objectives to develop ecotourism in conservation areas. The principles include: (a) to maintain the balance of nature in the ecosystem and its life support system; (b) to protect biodiversity and to use it as a genetic pool; (c) to provide facilities for research, development, education and training; (d) to provide facilities for nature tourism and preserve local culture; and (v) to maintain the balance between economic interest and conservation of natural resources and their ecosystems (Manurung, 2000). Tourism is a complex sector because it could be considered as an industry, a human experience, or as a subject for academic discussions.

The realization of tourism in any place including Indonesia will engage many parties, such as government, local communities, private venture with various scale and type of commerce, NGOs (local and international), and also professionals. Ecotourism as a special kind of tourism in Indonesia is a major concern of many Government Ministries, as well as different interest groups. The ministries which have relations with the development of ecotourism are The Department of Forestry for forest ecotourism, The Department of Home Affairs, The Ministry of Culture and Tourism, and also The Department of Marine Resources for marine ecotourism.

As an archipelago with more than 17,000 islands and five main islands (Sumatra, Java, Kalimantan, Sulawesi, and Papua), Indonesia is one of *mega biodiversity* countries in this world that recognizes the importance of sustainable development to enhance the quality of life, and to improve the economic, environmental and social conditions. The way to keep this up is by developing the ecotourism potential. The strategic position of Indonesia with the multiplicity in ethnic and cultural richness, a variety of landscapes and forest/marine resources as definite national assets provide competitive advantage in developing ecotourism or sustainable tourism.

There are approximately 49 different types of ecosystems in Indonesia. Even though the area of Indonesia territory is only 1.32 percent of the total world area, it has 10 percent of plant species in the world, 12 percent of mammal, 16 percent of reptile and amphibian, 17 percent of bird, 25 percent of fish and 15 percent of insect species (Manurung, 2000). Over a hundred million of forest areas in Indonesia are also a potential indicator to develop ecotourism, 30 million hectares of which are protected forest, and over 15 million hectares are nature preservation area comprises of national parks, grand forest parks and nature recreation parks. Around 7.3 million hectares are nature conservation area, which includes the natural preserve and the animal conservation areas distributed in many different locations.



**Figure 1.1 Indonesia Ecotourism Map**

(Source: Indonesia Ecotourism Centre, 2005)

Usually, ecotourism activities are implemented at the conservation area or national parks, which have long been accepted as popular tourist sites. In Indonesia, there are more than 40 national parks whose functions include conservation of natural resources and the promotion of scientific knowledge, education and nature conservation (Directorate General of Forest Protection and Nature Conservation, 2005). Gunung Gede Pangrango National Park (TNGP) is one of Indonesia's national parks. As a conservation areas with gorgeous view for ecotourism, Gunung Gede Pangrango National Park plays an important role in many aspect such as economic, social, and culture for society not only to those who stay around there, but also other people who enjoy the resources.

National park may types of benefit, direct or indirect benefits, such as water quality, education and research, tourism activity, etc. From the tourism perspectives, the communities who live around Gunung Gede Pangrango National Park can get

benefits such as job opportunities, additional income from tourist guiding, selling traditional handicraft and other trading, lodging, etc. Besides, the government also can get funds from visitors who pay entrance or user fees to keep the sustainability of resources within this park. Visitor's user fees are one approach to receive the public benefits of ecotourism, which often ensue mostly to the private sector. These fees also can be used as a management tool to reduce visitation in areas from over-use and accompanying ecological damage.

To extend the ecotourism activities and facilities at Gunung Gede Pangrango National Park, and also to manage the sustainability of its ecosystem at once, the authority of Gunung Gede Pangrango National Park plan divides the park into three different zones (Wiratno *et al.*, 2004):

1. Use Zone.

It covers 0.54 percent (80 ha) of the total area Gunung Gede Pangrango National Park which is designed for limited use zone, and 5.44 percent (827 ha) of the total area which is designed for intensive use zone around the resort areas.

2. Wilderness Zone.

It covers 29.12 percent (4,424 ha) of the total area Gunung Gede Pangrango National Park. This zone uses as a core zone protection, and there is no permanent building is allowed to build.

### 3. Core Zone.

It covers 64.91 percent (9,860 ha) of the total area of Gunung Gede Pangrango National Park. This zone is full protection, where there is no any kind of building here is allowed and this area also forbidden for every visitor.

Besides, in order to reduce a negative impact of high number of visitors who want to climb the mountain, the management of the park makes regulations such as using the quota and booking system for every visitor which will do climbing and camping in Gunung Gede Pangrango National Park.

## **1.2 Background of Gunung Gede Pangrango National Park**

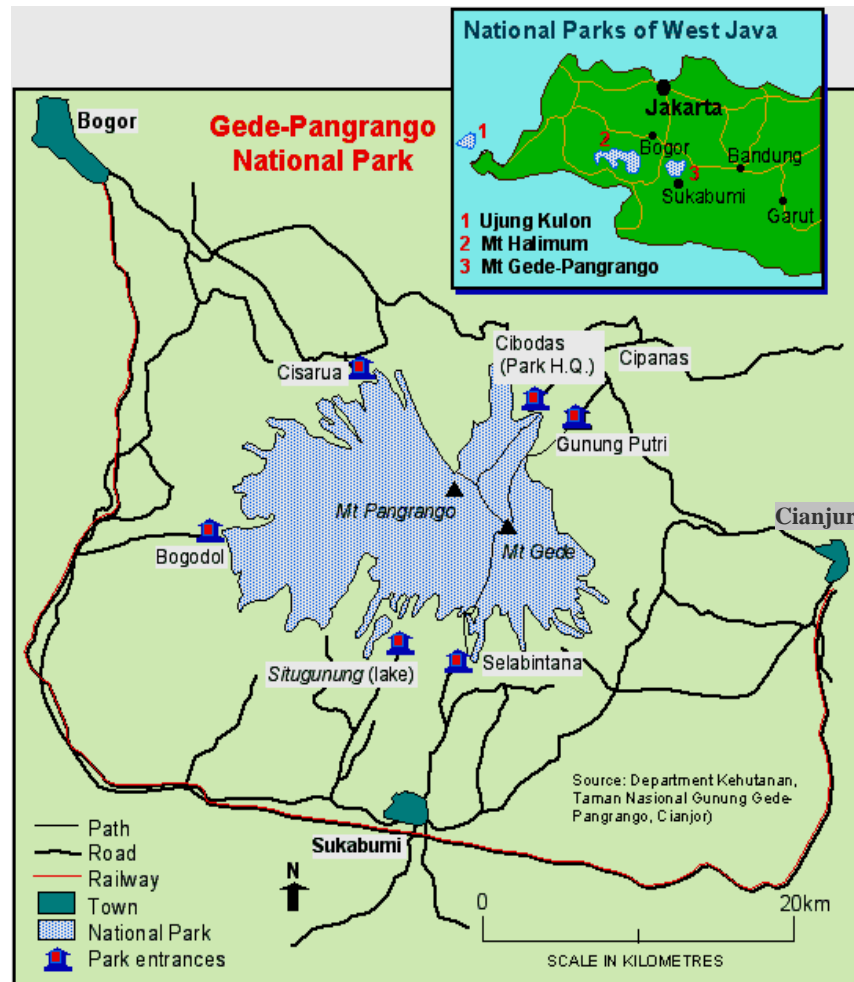
Gunung Gede Pangrango National Park that was gazetted in March 6<sup>th</sup>, 1980 is one of Indonesia national park which locates in West Java, Indonesia. Gunung Gede Pangrango National Park has an essential value of natural resources where this area is a part of ecosystem of tropical rain forest in Java Island that comprises a variety of landscapes. The site has beautiful waterfalls, lakes and rivers, rugged volcanic landscapes, quite alms, montane swamp and tropical mountain forest. On the higher grounds there are vast alpine grassy areas. Gede Pangrango National Park covers 15,196 ha which include several already existing conservation areas such as Cibodas nature reserve (240 ha), was gazetted in 1889 and extended to 1,040 ha in 1925 is the oldest reserve in Indonesia that is well known as a planting area for Indonesian exotic flora, Cimungkat nature reserve (56 ha) gazetted in 1919, Situgunung

recreational park (120 ha) was gazetted in 1975, and Mount Gede Pangrango nature reserve (14,000 ha) was gazetted in 1978.

Gede Pangrango National Park is situated between longitudes  $106^{\circ}51'$  -  $107^{\circ}02'$  east and  $64^{\circ}1'$  -  $65^{\circ}1'$  south which is one of the wettest parts of West Java. Administratively, it is shared among the regency of Bogor, Cianjur, and Sukabumi (Figure 1.2). Gunung Gede Pangrango National park lies near Bogor on the Puncakpass and is easy accessible. During the weekends the place is overrun by local residents from Jakarta.

Gede Pangrango National Park contains twin volcanoes; Gunung Gede (2,958 m asl) and Gunung Pangrango (3,019 m asl). Both mountains are connected by a high saddle at about 2,500 m. The mountains slopes are very steep and are cut into by rapidly flowing streams which carve deep valleys and long ridges. Such features are typical of a young and highly erosive landscape. While impressive in their own right, Mount Gede Pangrango is merely the latest eruption point on older volcanic complexes. Pangrango is perched at the very top of a huge crater rim known as Mount Mandalawangi. Pangrango evokes aesthetic feelings of what a graceful volcanic cone should like and, reflecting its tranquil appearance, the mountain is classed as extinct. On the other hand, Gede is a very dangerous volcano. Currently deceptively quiet, viewed over time Mount Gede is one of the most active volcanoes on Java. The new Gede summit also sits on an older volcanic complex. The original Gede caldera measured 1.8 km in diameter. A newer, slightly smaller crater rim of 1

km diameter, has built up on the floor of the old caldera, where the old and new rims forming two overlapping circles.



**Figure 1.2 Gunung Gede Pangrango National Park, Indonesia**  
(Source: Indonesia Ecotourism Centre, 2005)

Mt. Gede's first documented eruption occurred in 1747. Activity was severe, and accounts describe two lava streams flowing from the Lanang crater. The eruption was atypical, as it gave rise to the only recorded lava flow in the last 250 years. It is probable that the 2-km track of lava responsible for the hot water springs of Air Panas dates back to this event. A part from a few minor events (1761, 1780 and 1832) the mountain slept for almost one hundred years. Then, at 12 November 1840,



a large, unexpected eruption awoke the surrounding villages with a thunderous noise, accompanied by severe earth tremors. A burning cloud of gas roared down the northwest slopes of the mountain, luckily stopping before it reached the Cibodas Botanic Gardens.

Mount Pangrango is a second highest mountain in West Java after Mount Cereme. Mount Pangrango is located beside Mount Gede, but Pangrango's climbers not as much as Mount Gede. Footstep at back of Pangrango have tough ascent plus woods tick which crossbar making climber must be bent and sometimes crawl on their hands and knees.

### **Climate and Weather**

Annual rainfall in Gunung Gede Pangrango area is very high, where this area is one of the wettest parts in Java Island with the average is in the range 3,000 - 4,200 mm per annum. The wettest season is from October to May, coinciding with the North West monsoon, with more than 200 mm of rain every month and over 400 mm per month between December and March (the park is usually closed during this period). The best time for visiting this park is during the driest months (June-September), when average monthly rainfall drops below 100 mm.

Annual average temperature varies from about 18°C in Cibodas to less than 10°C at the top of Gunung Gede Pangrango. The temperature on the peaks at night-time period may drop below 5°C. Relative humidity in this park is likewise high,