



## TOURIST' WILLINGNESS TO PAY FOR SUSTAINABLE TOURISM: THE CASE OF IJEN CRATER NATURAL TOURISM PARK

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### Abstract

*Ijen Crater Natural Tourism Park/TWAKI (92 ha) is part of the Ijen Crater Nature Reserve area (2,468 ha) with various kinds of protected biota. In 2016 UNESCO designated Ijen Crater as one of the Biosphere Reserves of 120 countries in the world. All the uniqueness that TWAKI has means that tourist visits to this destination tend to increase significantly, and in the end the carrying capacity of the environment has been exceeded in the last four years. TWAKI is only able to accommodate 165,600 tourists per year based on its area. Therefore, proper management of the TWAKI is needed, to accommodate tourism functions and maintain main function as a nature conservation area, but a lot of funds are needed. Willingness to pay (WTP) tourists are expected as another source of funding outside the government. This study aims to analyze the level of WTP tourists. This research was designed using the Contingent Valuation Method (CVM), which is a survey method to ask tourists about the value or price they give to commodities that have no market value such as environmental goods. The results showed that the average WTP value for foreign tourists was US\$ 28 and IDR 25.000 for domestic tourists, so that the economic value of ecotourism and estimated income from ticket sales based on the WTP value were US\$ 864.528 or around 12 billion and IDR 3.776.800.000. Both values show values greater than the basic WTP value, which is calculated based on data on the number of tourists. This total value is also greater than the total budget required by TWAKI for maintenance, management and conservation costs.*

**Keywords:** Nature Park, Ecotourism, Willingness To pay, Contingent Valuation Method

### 1. INTRODUCTION

In 2016 UNESCO designated the Ijen Crater Nature Reserve as one of 120 Biosphere Reserves in the world. The Ijen Crater Nature Reserve has mountains with a height of 2,443 meters above sea level and a crater lake with the highest acidity level in the world as well as the blue fire phenomenon as the main tourist attraction. The blue fire phenomenon of the Ijen Crater Nature Tourism Park (TWAKI) is one of a kind, considering that the blue fire phenomenon in other countries can only be seen after a volcanic eruption or after a fire occurs (Grunewald, 2008). Apart from that, the activities of sulfur miners in TWAKI is a form

of social-cultural attraction also determine tourists' desire to visit (Ichسانی, 2014; Fitroh, et al. 2017).

Various efforts to attract tourists to TWAKI are also carried out by the local government in the form of organizing tourism-related events which are held at this destination every year. BBKSDA East Java is also maximizing the development of public infrastructure in the form of pavilions and toilets to provide facilities to tourists when they are at tourist destinations.

The various tourism attractions owned by TWAKI, as well as the efforts made by the government, have resulted in tourist visits to this destination experiencing a significant increase from 2014 to 2018, namely 95,717 (2014), 169,447 (2015), 202,730 (2016), 176,095 (2017) and 181,858 (2018). The composition of tourist visits was always dominated by domestic tourists from 2014 to 2018. Only in 2012 were foreign tourist visits higher (55.3 percent) than domestic tourist visits. The high number of tourist visits made TWAKI the Natural Tourism Park in East Java with the highest visits from 2013 to 2018 (BBKSDA East Java, 2019).

On the one hand, the increase in the number of tourist visits shows the popularity of TWAKI as a tourism product (supply side). On the other hand, this also raises concerns regarding the reduced ability of TWAKI to carry out its main function as a nature conservation area. Referring to the opinion of Douglas (1975), that forest areas developed for tourism can only be visited by five tourists per hectare per day (Fandeli, 2002). Thus, TWAKI's 92 ha area can only accommodate 165,600 tourists every year. Based on these calculations, it can be concluded that TWAKI's environmental carrying capacity has been exceeded in the last four years.

The arrival of large numbers of tourists and the continuing increase in the number of tourists is a problem that needs to be studied in depth. So far it is not known whether those who visit TWAKI are ecotourists or mass tourists. The presence of tourists in destinations with ecotourism status clearly makes tourists status as ecotourists, but they do not necessarily realize conservation and care about local communities. The high number of tourist visits gives rise to various problems that could actually threaten TWAKI's future, such as; the large amount of plastic waste produced by tourists accumulates on climbing routes and of course this condition will have a negative impact on the forest ecosystem (Zen 2016); increasing acts of vandalism in destination areas (Pratami, 2017); and can disrupt the breeding cycle of animals and change their natural behavior (Finnesey, 2015).

If seen from the demand side, the number of TWAKI tourists which reaches hundreds of people on weekdays and thousands of people on weekends could endanger the safety of tourists due to the steep and narrow climbing routes. This condition can also cause delays in the evacuation process if there is an increase in the status of the volcano or other natural events (Pratami, 2017).

To overcome TWAKI's over carrying capacity, space utilization/demand is carried out so that the destination can still accommodate tourism functions and maintain its main function as a nature conservation area (Widowati and Nadra, 2013; Widiyanti, 2016; Aryasa, 2017). The demand at TWA is in the form of intensive areas/main tourism spaces, semi-intensive areas/supporting spaces and extensive areas/conservation spaces (Am-ir, 2012; Beljai et al, 2014). With demand, the use of natural resources can be controlled effectively and reduce the density of tourist traffic to the crater.

Zoning requires quite a lot of money, therefore various sources of funding are needed to carry out this effort. Considering that the state's ability to protect conservation forest areas is very weak because the budget allocation is not commensurate with the existing forest area, so the budget for protection is still very minimal (Wonodipuro, 2018). The source of funding for TWAKI does not only come from the government, but can also come from tourists who visit the tourist destination. This is an effort to provide educational benefits and build tourist awareness of the value of conservation which can be realized in

the form of a willingness to pay contribution (Dhaniswara, 2014). Apart from that, another benefit is that tourists can still enjoy tourism activities by being charged a fee aimed at managing tourist destinations (Isnain, 2017).

## 2. RESEARCH METHODS

### 2.1 Data Collection Methods

The research was conducted at the Ijen Crater Nature Tourism Park which is located in two administrative areas, namely Tamansari Village, Licin District, Banyuwangi Regency and Sempol Village, Ijen District, Bondowoso Regency.

The determination of respondents was carried out deliberately. Respondents are tourists who have experienced the TWAKI ecotourism experience. Respondents were 15 foreign tourists and 85 domestic tourists. The total number of respondents was 100 people. Data was obtained through various data collection techniques, namely observation, surveys and literature studies.

### 2.2 Analysis Method

Contingent Valuation Method (CVM) is a survey method for asking respondents about the value or price they give to commodities that do not have market value such as environmental goods. In this research, the method used is Closed-ended referendum elicitation format (Bidding game format), or closed questions, where consumers are asked whether they want to pay a certain amount of money which is proposed as a starting point by giving a choice of yes or no, or agree or disagree. If the answer is yes then the bid amount will be increased to the agreed level. If the answer is no, the bid value is reduced to the agreed amount.

Willingness to pay is a person's desire to pay for goods and services produced by natural resources and the environment or measuring the monetary value of goods and services for the ecological value of the ecosystem or environment (Sadikin, 2017). The estimated average WTP is calculated using the formula:

$$EWTP = \sum_{i=0}^n WTP_i P f_i$$

EWTP is the estimated average WTP,  $WTP_i$  is the  $i$ th WTP value,  $P f_i$  is the relative frequency,  $n$  is the number of respondents, and  $i$  is the  $i$ th respondent who is willing to pay. The sum of the data is the middle value or average WTP converted to the total population in question. After obtaining the estimated middle or average WTP value (EWTP), the total WTP value (TWTP) can be estimated using the formula:

$$TWTP = \sum_{i=0}^n WTP_i \left( \frac{n_i}{N} \right) P$$

TWTP is the total WTP,  $WTP_i$  is the WTP of the  $i$ -th individual,  $n_i$  is the number of  $i$ -th samples who are willing to pay WTP,  $N$  is the number of respondents,  $P$  is the population,  $i$  is the  $i$ -th respondent who is willing to pay for ecotourism or environmental services.

## 3. RESULTS AND DISCUSSION

### 3.1 Socioeconomic Characteristics of Tourists

The majority of foreign respondents, 78 percent, visited TWAKI once in the last year. This trend also applies to domestic tourists. As many as 47.6 percent visited TWAKI only once in the last year, the remaining 22.2 percent visited once every two years. International respondents consisted of tourists from Germany, USA, Australia, France, Italy, India, Russia, Malaysia and Sweden. Meanwhile, most domestic tourists come from Bali, Manado, East Java (Probolinggo, Surabaya, Malang), Kalimantan, Bekasi, Jakarta, Bogor, Bandung, Yogyakarta and Lombok.

The age of tourists is dominated by those of productive age, approximately 20-29 years. This figure is in line with the educational background of tourists, most of whom are college graduates. It can be described that the natural conditions of TWAKI require people who have quite good physical strength, where they are dominated by those of age who tend to still be productive. This empirical reality also explains that special interest natural tourism such as TWAKI is still dominated by highly educated tourists. The average income generated ranges between 1-3 million for domestic tourists and under US\$ 30,000 per year for foreign tourists, with a family of 1-2 people. This means that TWAKI can still be reached by various groups with even a small income range.

### 3.2 Result and Discussion

Before interviewing tourists to identify the WTP value, the basic WTP value is first determined which will be used as the standard WTP value in this analysis. Currently the entrance ticket price for TWAKI is IDR 5,000- IDR 7,500 for domestic tourists and IDR 100,000- IDR 150,000 for foreign tourists, which is 20 times the entrance ticket price for domestic tourists. Determination of the basic value of WTP is calculated based on data on the number of tourists in 2018, namely 151,072 domestic tourists and 30,876 foreign tourists. Then look at the total budget required by TWAKI in 2018 for maintenance, management and conservation costs, namely IDR 7,002,088,600 (BBKSDA Conservation Section Region V East Java, 2019). All this data is then calculated for the basic WTP value from the total budget divided by the number of local and foreign tourist visitors, namely 7,002,088,600 divided by 181,858. So we get a conversion of the basic WTP value for domestic tourists, namely  $7,002,088,600 / ((30,876 \times 20 \text{ times the ticket price for domestic tourists}) + 151,072)$  and produces a figure of IDR 9,131.66 or rounded up to IDR 10,000 as the basic WTP value for local tourists. The basic WTP value for foreign tourists is 9,131.66 multiplied by 20 and produces a figure of 182,633,324, then rounded up to Rp. 182,633 or at the exchange rate when the survey was conducted, namely Rp. 14,000 to US \$ 13.045237 which is rounded up to US \$ 14.

The results of the interviews revealed that 100 percent of the respondents were foreign tourists who were willing to pay and 72 percent were domestic tourists. The WTP value is calculated based on the WTP distribution data of TWAKI respondents in Table 2 below.

Table 1 Distribution of Tourist WTP Values

Domestic Tourists				Foreign tourists			
WTP Values(Rp)	Frequency (Tourists)	Relative Frequency	Total (Rp)	WTP Values (US\$)	Frequency (Tourists)	Relative Frequency	Total (US\$)
100000	1	0,02	1639,3	100	0	0	0
60000	1	0,02	983,6	75	0	0	0
50000	2	0,03	1639,3	70	0	0	0
45000	3	0,05	2213,1	60	1	0,07	4
40000	2	0,03	1311,5	50	2	0,13	6,7
35000	4	0,07	2295,1	35	1	0,07	2,3
30000	8	0,13	3934,4	30	1	0,07	2
25000	11	0,18	4508,2	25	3	0,2	5
20000	12	0,19	3934,4	20	5	0,3	6,7
15000	6	0,1	1475,4	14	1	0,07	0,9
10000	8	0,13	1311,5	10	1	0,07	0,7
5000	3	0,05	245,9				

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n	61	1	25491,8	n	15	1	28,2667
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The average WTP value for domestic tourists was obtained at 25,491.8 or rounded up to Rp. 25,000. The number of TWAKI domestic tourists in 2018 was 151,072 people, so the economic value of the ecotourism environment or the estimated income from ticket sales was IDR 3,776,800,000. Meanwhile, the average WTP value for foreign tourists is US\$ 28.3 (rounded to US\$ 28). The number of TWAKI foreign tourists in 2018 was 30,876 people, so the economic value of ecotourism and the estimated income from ticket sales based on the WTP value was US\$ 864,528 or around 12 billion.

Based on the results, the average WTP value of domestic tourist respondents is Rp. 25,000 and foreign tourists is US \$ 28. Both values are greater than the basic WTP value calculated based on data on the number of tourists in 2018 and also greater than the total budget required by TWAKI in 2018 for maintenance, management and conservation costs. This value shows both the type of tourist preference for TWAKI ecotourism is good, as well as better concern for the ecotourism environment.

This is a form of tourism risk management, considering in the tourism context refers to planning and implementation that leads to managing the adverse impacts of crises and disasters on tourism. The sustainability of a tourism destination is significantly influenced by its ability to adapt to changing market conditions, use resources efficiently and deliver innovative planning and development strategies regarding risk management (Ural, 2015). The lesson that can be learned is that the absence of risk management or poor risk management and a lack of preparedness to deal with the negative impacts of tourism causes the risk to escalate into a significant crisis (Suroso, 2017).

#### 4. CONCLUSION

Starting from the problem formulation, theoretical studies and the results of quantitative analysis, it can be concluded that as many as 100 percent of foreign tourists and 72 percent of domestic tourists are willing to pay more for the satisfaction they have received while at TWAKI. The average WTP value of foreign tourists is US\$ 28 and IDR 25,000 for domestic tourists, so that the economic value of ecotourism and the estimated income from ticket sales based on the WTP value are US\$ 864,528 or around 12 billion and IDR 3,776,800,000 respectively. These two values show a value greater than the basic WTP value, which is calculated based on data on the number of tourists in 2018. The total value is also greater than the total budget required by TWAKI in 2018 for maintenance, management and conservation costs. The authors suggest that future studies for deeper insights could be gained by segmenting tourists further, perhaps by motivations or income levels, to tailor conservation funding approaches more effectively.

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#### REFERENCES

- Amir, S. (2012). *Optimasi Pemanfaatan Wisata Bahari Bagi Pengelolaan Pulau-Pulau Kecil Berbasis Mitigasi (Kasus Kawasan Gili Indah Kabupaten Lombok Utara Provinsi Nusa Tenggara Barat)*. Institut Pertanian Bogor.
- Aryasa, A.M. (2017). *Pengembangan Pengelolaan Kawasan Konservasi Dalam Taman Wisata Alam Telaga Warna-Telaga Pengilon Kabupaten Wonosobo*. Tesis, Program Studi Magister Ilmu Lingkungan, Universitas Diponegoro.

- Beljai, M., Muntasib, H., & Sulistyantara, B. (2014). Konsep Penataan Lanskap Untuk Wisata Alam di Kawasan Taman Wisata Alam Sorong. *Jurnal Manusia dan Lingkungan*, 21(3), 356-365.
- Dhaniswara, M. (2014). Analisis Willingness To Pay Menuju Pelestarian Ekosistem Wisata Bahari Karimunjawa Jawa Tengah. Fakultas Ekonomi dan Bisnis Universitas Diponegoro.
- Fandeli, C. (2000). *Pengembangan Ekowisata Berbasis Konservasi di Taman Nasional*. Fakultas Kehutanan UGM, Pusat Studi Pariwisata UGM, dan Kantor Kementerian Lingkungan Hidup Republik Indonesia.
- Fandeli, C. (2002). *Perencanaan Kepariwisata Alam*. Fakultas Kehutanan Universitas Gadjah Mada: Yogyakarta.
- Grunewald, O. (2008) Kawah Ijen Vulcano Indonesia. [www.olivergrunewald.com](http://www.olivergrunewald.com)
- Ichsani, I.Y. (2014). Place Brand Experience Wisatawan Kawah Ijen Terkait City Branding The Sun Rise of Java Kabupaten Banyuwangi. Ilmu Komunikasi-Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Brawijaya.
- Isnan, W. (2007). Kesiapan Membayar Pengunjung sebagai Dasar Pengelolaan Pariwisata Berkelanjutan. *Balai Litbang Lingkungan Hidup dan Kehutanan Makassar, EBONI* 14(2), 111-121.
- Muhamad. (2013). Kapasitas Daya Dukung Fisik dan Lingkungan Optimal Sebagai Daya Dukung Kepariwisata Alam Yogyakarta Utara setelah Pascaerupsi merapi 2010. *Jurnal Kawistara*, 3(2), 117-226.
- Pratami, R.H.Y. (2017). Pengembangan Wisata Alam di Taman Wisata Alam Kawah Ijen. Fakultas Kehutanan, Institut Pertanian Bogor.
- Sadikin, P.N., Mulatsih, S. & Pramudya, B. (2017). Analisis Willingness To Pay Pada Ekowisata Taman Nasional Gunung Rinjani. *Jurnal Analisis Kebijakan Kehutanan*, 14(1), 31-46.
- Suroso. (2017). Analisis Manajemen Risiko pada Kawasan Taman Nasional Gunung Gede Pangrango (TNGGP) Jawa Barat. *Jurnal Bina Akuntansi*, 4(2), 44-81.
- Ural, M. (2015). Risk Management for Sustainable Tourism. Review Article DOI 10.1515/ejthr-2016-0007
- Widiyanti, H. (2016). Strategi Tata Kelola Pengembangan Ekowisata di Taman Wisata Alam Kawah Ijen Provinsi Jawa Timur. *Sekolah Pascasarjana, Institut pertanian Bogor*.
- Widowati, S., & Nadra, N.M. (2013). Evaluasi Penerapan Prinsip-Prinsip dan Kriteria Ekowisata di Kawasan Taman Wisata Alam Kawah Ijen Banyuwangi. *Jurnal Sosial dan Humaniora*, 3(3), 312-321.
- Wijayanto, T. (2017). Kementerian Lingkungan Hidup dan Kehutanan Lengkapi Infrastruktur Penunjang di Gunung Ijen. *kompas.com* diakses pada 15 Februari 2018.
- Wonodipuro. (2018). Mahalnya Menjaga Indonesia. [www.antarariau.com](http://www.antarariau.com) diakses pada 15 Februari 2018.
- Zen, M.H., Wulandari, D. (2016). Pengembangan Wisata Alam di Taman Wisata Alam Kawah Ijen Studi Kasus Taman Wisata Alam Kawah Ijen. *IOSR Jurnal Bisnis dan Manajemen*, 18(8), 41-47.