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Tourism Carrying Capacity of Babak Pelangi Waterfall Tourist Attraction in the Dry Land Area of Lantan Village, Central Lombok Regency

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A B S T R A C T

This study aims to analyze the tourism carrying capacity of the Babak Pelangi Waterfall tourist attraction in the Dry Land Area in Lantan Village, Central Lombok Regency. Tourism carrying capacity is important to ensure that tourism activities do not exceed environmental capacity and maintain visitor comfort. The study used a quantitative approach through observation methods, questionnaires to 30 tourists, interviews with managers, and literature studies. The calculation of carrying capacity was carried out using the Cifuentes (1992) formula at three levels: physical carrying capacity (PCC), real carrying capacity (RCC), and effective carrying capacity (ECC), taking into account correction factors such as rainfall, slope gradient, soil sensitivity, and flora diversity index. The analysis results show that the PCC value is 1,413 tourists/day, RCC is 145 tourists/day, and ECC is 43 tourists/day. The average real visit of 20 tourists/day is still far below the maximum capacity, so the tourism carrying capacity of Babak Pelangi Waterfall is categorized as large and can still be developed further.

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INTRODUCTION

Tourism is a strategic sector in Indonesia that plays a crucial role in supporting economic growth and social development. This is evident in its significant contribution to foreign exchange earnings and job creation, which continued to increase from 2020 to 2022 (Hasibuan et al., 2023). Given this crucial role, the tourism sector presents an opportunity that must be maximized by the central and regional governments through coordination to develop tourism resources by providing supporting facilities and comfort for tourists.

In the context of tourism and the environment, Arida (2017) agrees that tourism development must be based on sustainable principles that respect environmental carrying capacity, responsibility, and the unity of tourism activities. Tourism carrying capacity relates to the biogeophysical, socioeconomic, and sociocultural aspects of a tourist location so that it can support tourism activities without reducing environmental quality or tourist satisfaction during tourism activities (Muta'ali, 2015).

Tourism activities impose a burden in the form of various interactions and activities within the tourist environment, making safety and comfort crucial interrelated aspects that shape tourists' perceptions of tourist attractions. This safety and comfort directly influence tourist satisfaction, from the journey to and from the arrival at the tourist destination (TD) (Yamti et al., 2023). Tourist satisfaction significantly contributes to revisit intentions and a positive destination image. Good environmental management and comfort will increase tourist satisfaction, as well as the number of visits and loyalty (Amilia, 2020).

The development of the tourism sector in West Nusa Tenggara (NTB), particularly in Central Lombok Regency, has received significant attention through various central and regional government policies and programs. Central Lombok Regency is included in the National Strategic Area (KSN), which has environmental concerns, and therefore, tourism development is supported by conservation and rehabilitation efforts (BAPPEDA NTB, 2024).

Lantan Tourism Village in Central Lombok Regency is a tourist destination currently under development. One of the village's attractions is Babak Pelangi Waterfall, developed since 2018 by the Tourism Awareness Group (Pokdarwis). This attraction offers the attraction of beautiful, cool natural scenery and supporting facilities. This combination of natural beauty and man-made facilities provides added value for visitors and helps meet the needs of today's tourists (Muljadi, 2009).

Lantan Village is an area dominated by dry land and the Babak Pelangi Waterfall tourist attraction in Rerantik Hamlet is included in it. According to BPS (2017) Lantan Village has an area of 4,168 Ha, with most of it being dry land with an area of 4,016 Ha. Supporting this, based on Balitklim (2003) rainfall below 2,000 mm is included in the characteristics of dry land. With these rainfall characteristics, the Babak Pelangi Waterfall tourist attraction in Rerantik Hamlet, Lantan Village is included in the characteristics of dry land. Based on climatechart data, the annual rainfall distribution between 2018-2020 was less than 2,000 mm, namely in 2018 with rainfall of 1,439.5 mm, in 2019 it was 1,071 mm, and in 2020 it was 1,664.7 mm.

In tourism development, analyzing tourism carrying capacity is an important alternative to minimize the negative impacts of tourism activities. The arrangement, management, and development of tourism systems must be adjusted to the environmental carrying capacity to prevent degradation of the area due to the burden of tourism activities exceeding its capacity. Therefore, this study was conducted to determine what actions are still possible and whether they can be developed further, as well as the environmental capacity to accept tourism activities related to the Babak Pelangi Waterfall tourist attraction in the Dry Land Area in Lantan Village, Central Lombok Regency, so that sustainable tourism can be achieved.

LITERATURE REVIEW

Tourism Carrying Capacity

The concept of tourism carrying capacity refers to the maximum capacity of a tourist area to accommodate tourist activities without causing environmental damage, a decrease in the quality of the tourist experience, or social conflict with the local community. Law Number 32 of 2009 states that environmental carrying capacity is the ability of the environment to support human life and other living things, while maintaining a balance between the two. This demonstrates the importance of managing tourist areas that considers ecological and social capacity.

According to Muta'ali (2015), the environmental carrying capacity of a natural tourist attraction is the tourist attraction's ability to accommodate a large number of tourists within a certain area and time period. Siswantoro (2012) adds that carrying capacity is a broad and dynamic concept that encompasses environmental, social, and economic aspects, and must guarantee future sustainability.

As a form of operationalization, Cifuentes (1992) divides tourism carrying capacity into three levels, namely:

a. Physical Carrying Capacity (PCC)
b. Real Carrying Capacity (RCC)
c. Effective Carrying Capacity (ECC) (Muta'ali, 2015).

The calculation of these three levels of carrying capacity is used to determine the maximum number of tourist visits based on the physical, biotic conditions and management capacity of the area.

Physical Carrying Capacity (PCC)

The PCC is the maximum number of tourists that can be physically accommodated within the available space within a tourist area at a given time. The calculation takes into account the size of the tourist area, the required area per tourist, and daily rotation factors. PCC refers to the maximum number of tourists a tourist area can physically accommodate without causing environmental damage or a decrease in the quality of the tourist experience (Muta'ali, 2015).

Real Carrying Capacity (RCC)

The RCC is the maximum number of visitors allowed to visit a tourist attraction, taking into account correction factors. The RCC is a form of correction to the PCC, taking into account actual conditions in the field, such as topography, soil, rainfall, and the presence of vegetation (Muta'ali, 2015).

Effective Carrying Capacity (ECC)

The ECC is the maximum number of tourists that can be accommodated, taking into account the area's management capacity. This is determined by the number of available management staff compared to the ideal number required (Muta'ali, 2015).

So overall, tourism carrying capacity is an important concept in the sustainable management of tourist attractions, which involves three levels of measurement (PCC, RCC, and ECC), the use of this carrying capacity is the basis for maintaining ecological and social balance and ensuring long-term tourist comfort.

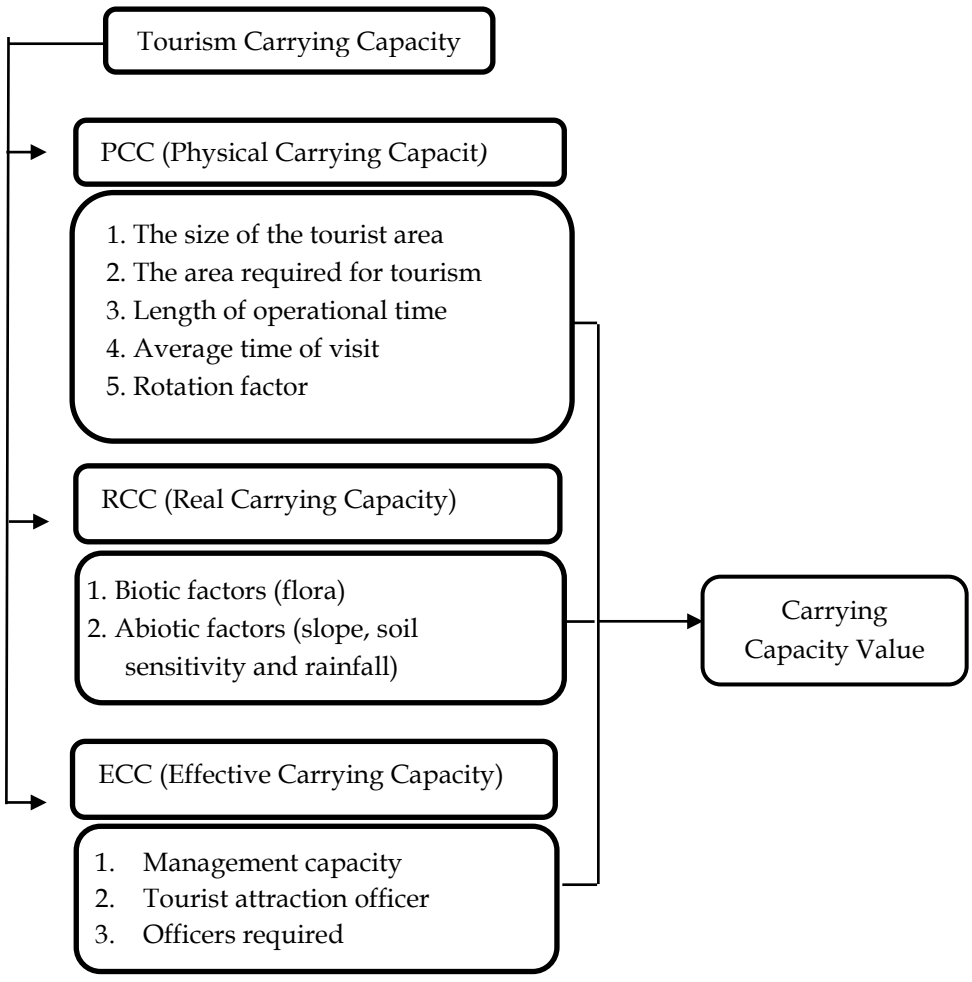

Figure 1 Thinking Framework

Operational Definition

1. Tourism carrying capacity is part of the biogeophysical carrying capacity of a tourist location, which supports tourism activities without causing

environmental degradation. Tourism carrying capacity is analyzed through carrying capacity calculations, which are used to determine the number of tourists that can be optimally and effectively received without causing damage to the area.

2. Physical carrying capacity is the maximum number of tourists physically accommodated within the space provided at any given time. This is because tourists need space to move freely according to their tourism activities without considering correction factors.
3. Real carrying capacity is the maximum number of tourist visits an area can accommodate, taking into account correction factors specific to that area. These correction factors take into account the physical conditions and characteristics of the area, such as rainfall, slope, soil type, and vegetation, which can limit the number of visits.
4. Effective carrying capacity is the maximum number of visitors permitted at a tourist site, taking into account factors such as management capacity and environmental conditions. Simply put, it is the maximum number of tourists a tourist site can accept without damaging the environment or disrupting visitor comfort, taking into account the site's management capacity and adjustments to the actual carrying capacity.

METHODOLOGY

In this study, the approach used is a quantitative approach with data collection techniques in the form of observation, questionnaires, interviews, and literature studies. To obtain data related to the length and area of the required tourist area, a questionnaire was distributed to 30 tourist respondents who came to visit. As well as to calculate the tourism carrying capacity, it was carried out by referring to Cifuentes (1992) who divided it into three levels, namely physical carrying capacity (PCC), real carrying capacity (RCC) and effective carrying capacity (ECC) (Muta'ali, 2015).

Analysis Method

This calculation is used to determine the maximum number of tourist visits to a tourist attraction based on the physical and biological conditions, as well as the management capacity of the area. The resulting effective carrying capacity is then compared with the actual number of tourist visits per day. If the effective carrying capacity is greater than the actual number of tourist visits, it means the tourist attraction has a significant carrying capacity and can still be developed. If the effective carrying capacity is less than the actual number of tourist visits, it means the tourist attraction has been exceeded and requires control and management. If the effective carrying capacity is equal to the actual number of visits, it means the tourist attraction's carrying capacity is optimal and effective and efficient.

1. Physical Carrying Capacity (PCC)

The formula for calculating physical carrying capacity is as follows:

$$PCC = A \times V/ax\ Rf$$

Where:

A = area available for tourism

V/a = V is a tourist and a is the area required for one tourist

Rf = rotation factor With the note that:

a. The area required by a tourist for tourism activities.

b. The rotation factor (Rf) is the number of daily visits that are still allowed for an area, which is formulated as follows:

$$Rf = \frac{Jam\ Operasional}{Waktu\ rata\text{-}rata\ kunjungan}$$

2. Real Carrying Capacity (RCC) The calculation of real carrying capacity is formulated as follows:

$$RCC = PCC \times Cf1 \times Cf2 \times Cf3 \times Cf4$$

Where:

RCC = real carrying capacity, namely the maximum number of tourists who can visit an area

PCC = physical carrying capacity

Cf...Cfn = correction factors of the parameters that adjust to the environmental characteristics at the research location being calculated.

Such as soil type, slope gradient and rainfall with their respective classifications, then calculated to get the real value.

In this study, the correction factors used are 4, namely:

Cf1 = Correction factor of Rainfall

Cf2 = Correction factor of Slope Gradient

Cf3 = Correction factor of Soil Sensitivity

Cf4 = Correction factor for the presence of flora in the tourist area.

Then it is calculated according to (Zacarias, 2011 in Siswantoro, 2012) to calculate Cf using the formula:

$$Cf = \frac{Mn}{Mt} \times 100\%$$

Where :

M N= actual condition/actual value of correction factor

Mt= maximum limit value of the correction factor

The correction factors applied to the calculation of real bearing capacity are:

a. Biotic factors, in the form of flora which are the attraction of tourist objects
b. Abiotic factors include slope gradient, soil type and rainfall.

3. Effective Carrying Capacity (ECC)

Effective carrying capacity is able to determine the number of tourists permitted/able to be accommodated by a tourist area per day, which is formulated as follows:

$$ECC = PCC \times MC$$

Where:
ECC = effective carrying capacity
PCC = physical carrying capacity
MC = area management capacity, which can be calculated using the formula (Siswantoro, 2012):

$$MC = Rn/Rt \times 100\%$$

Where:
MC = area management capacity
Rn = number of tourist attraction officers
Rt = number of officers that should be needed

RESEARCH RESULTS AND DISCUSSION

Physical Carrying Capacity (PCC)

Physical carrying capacity is a calculation aimed at determining the number of tourist visits that can be physically met within the available space, or the area of the tourist attraction. In analyzing physical carrying capacity, several pieces of information are required, including:

1. Size of tourist area

The area information in this study is needed to define the boundaries of the measured area and is also part of the management of the Babak Pelangi Waterfall tourist attraction. Data on the area of the tourist attraction was obtained by manually tagging the location using the GPS Field Area Measure application, based on information from the manager, who is also the Head of Rerantik Hamlet. The results show that the area of the Babak Pelangi Waterfall tourist attraction iscovering an area of 1.7 hectares.

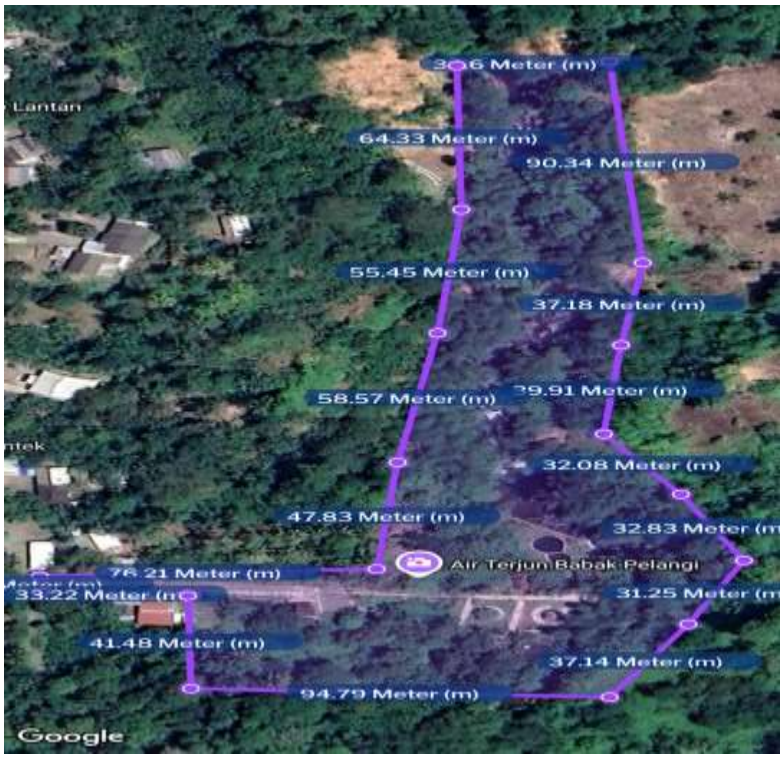

Figure 2: Area of the Babak Peangi Waterfall Tourist Area

2. *The area required by tourists*

The data on the area required by tourists is intended as information to determine how much area of tourism is needed by tourists to remain comfortable in their tourism activities. In this study, this information was obtained by distributing questionnaires related to tourists' desires regarding the size of the area of tourism they need to remain comfortable while traveling. In this study, through the distribution of questionnaires related to the area of area per tourist to be able to remain comfortable in their tourism activities, it was found that it was 37m2.

3. *Tourist attraction operating hours*

According to information obtained from the management, the Babak Pelangi Waterfall is open every day of the week, from 8:00 AM to 5:00 PM. This means the waterfall is open nine hours a day.

4. *Average length of tourist visit*

Tourist visit duration is the amount of time tourists spend enjoying various types of tourist activities. This information was obtained from questionnaires distributed to visiting tourists. The results revealed an average tourist visit duration of 175.5 minutes, equivalent to 2.925 hours.

5. *Rotation factor*

Rotation information was obtained by dividing the average visit duration by the Babak Pelangi Waterfall tourist attraction's operating hours. The previous analysis revealed that the average tourist visit duration was 175.5 minutes,

equivalent to 2.925 hours, and the operating hours were 9 hours. The resulting rotation factor was 3.077.

From the information related to the data in the physical carrying capacity analysis, the Babak Pelangi Waterfall tourist attraction has been operating since 2019 with a total land area of 1.7 Ha and is managed by the community around Rerantik Hamlet through POKDARWIS Solah under BUMDes Lantan. The Babak Pelangi Waterfall tourist attraction has operational hours from 08:00 – 17:00 which is open every day throughout the week. Based on the processing of questionnaires distributed to 30 respondents who were the research sample, the average number of tourist visits was 175.5 minutes or the equivalent of 2.925 hours. Next is the calculation of physical carrying capacity from previous information as a basis, then calculated using the equation according to Cifuentez (1992) (in Muta'ali, 2015:230):

PCC = A x V/ax Rf

Table 1 Calculation of Physical Carrying Capacity

N 0	**Data**	**Mark**
1.	A = Area of tourist area =	1.7 Ha = 17,000 m2
2.	V/a = Is a tourist	V = 1
	a = Is the area required for a tourist	a = 37 m2
	=	V/a = 1/37
3.	Tourist attraction operating hours =	08.00 - 17.00 = 9 Hours
4.	Average length of tourist visit =	2,925 Hours (175.5 minutes)
5.	Rf = Rotation factor (operational time / average length of tourist visit) =	9/2,925 = 3,077
	PCC = A x V/ax Rf	17,000 x (1/37) x 3,077
	=	1,413 tourists / day

Source: Primary Data Processing, 2025.

From the results of the value calculationThe physical carrying capacity of the maximum capacity of the physical environment that can accommodate the number of visitors without experiencing damage or a decrease in environmental quality is 1413 tourists per day.

Real Carrying Capacity (RCC)

Real carrying capacity is a calculation intended to determine the maximum number of tourist visits that can be accommodated by considering the actual correction factors existing at the Babak Pelangi Waterfall tourist attraction. This study includes four correction factors:

1. *Rainfall*

Based on rainfall data and estimated rainy days which are considered the same according to the District in Central Lombok Regency in 2024. North Batukliang District is the average in a year in 2024 is 252 mm. According to the

Decree of the Minister of Agriculture Number 837 / Kpts / Um / 11/1980 of 1980 the classification of rainfall intensity is the average rainfall in mm a year divided by the average number of rainy days during one year, then the rainfall intensity class is multiplied by a weight value of 10, with the following criteria:

Table 2 Rain Intensity Classes

Rainfall Intensity Class	Intensity (mm/rain day)	Information	dignity
1	< 13.6 mm/day	Very low	10
2	13.6 – 20.7 mm/day	Low	20
3	20.7 – 27.7 mm/day	Currently	30
4	27.7 – 34.8 mm/day	Tall	40
5	> 34.8 mm/day	Very high	50

Source: Attachment to Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980 Concerning Criteria and Procedures for Determining Protected Forests

The following is rainfall data by sub-district in Central Lombok Regency in 2024:

Rainfall Data Table, Estimated rainy days, average rainfall per day and classification based on Decree of the Minister of Agriculture Number 837 of 1980.

Table 3 Rainfall Rain Intensity and Rainfall Intensity Class

Regency	Subdistrict	Rainfall in 2024 (mm)	Rainy day		Rainy Day Estimate	Rainfall Intensity/Rainy Days (mm)	Rainfall Intensity Class
			Min	Max			
Central Lombok	East Praya	1794	11	20	16	14	2
	West Praya	1477	11	20	16	11	1
	Pringgarata	1854	11	20	16	14	2
	Kopang	1825	11	20	16	14	2
	Pujut	1434	0	10	5	11	1
	Janapria	2015	0	10	5	16	2
	Batukliang	1640	0	10	5	13	1
	Praya	1592	0	10	5	12	1
	North Batukliang	3025	0	10	5	23	3
	Jonggat	1330	0	10	5	10	1
	Central Praya	1444	11	20	16	11	1
	Southwest Praya	1712	20	25	23	13	1

Source: BMKG 2025 data processing.

Based on the data, Batukiang Utara District has a rainfall of 3,025 mm/year with an estimated number of rainy days of 130 days in one year with an average rainfall intensity of 23 mm/day. This means that according to the Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980, Batukliang Utara District is included in class 3 with a moderate category. Regarding the rainfall data obtained, the characteristics of which are different from the statement that tourist attractions are located on dry land are because the scope of the data viewed is different from the focus on the Lantan Village region and in this analysis, sub-district region data is used. Then, to calculate the correction factor for rainfall intensity, the following equation is used Zacarias, 2011 (in Siswantoro, 2012:45):

$$Cf = Mn/Mt \times 100\%$$

With:
Mn is the rainfall intensity value in North Batukliang District
Mt is the highest rainfall intensity value in Central Lombok Regency

$$Cf = 30/30 \times 100\% = 1$$

The results thatThe rainfall correction factor for the research location was 1, indicating that the rainfall intensity at the research location, compared to the districts in each sub-district, was the highest in Central Lombok Regency. This indicates that the rainfall at the location is beneficial for natural beauty, but it also requires attention to accessibility and tourist comfort during the rainy season for tourism activities.

2. *Slope Gradient*

Based on secondary data from the 2015 National Disaster Management Agency (BNPB), it is known that the Babak Pelangi Waterfall tourist attraction has an average slope of <2%. According to the Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980, slopes are divided into certain classes and then multiplied by a weight value of 20, as follows:

Table 4 Slope Gradient Classes

Slope class	Slope	Information	dignity
1	0% - 8%	(flat)	20
2	8% - 15%	(sloping)	40
3	15% - 25%	(a bit steep)	60
4	25% - 45%	(steep)	80
5	45%>	(very steep)	100

Source: Attachment to Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980 Concerning Criteria and Procedures for Determining Protected Forests.

Slope gradient data was obtained from secondary data through BNPB 2015 which can be seen in the Slope Gradient Map attachment. Based on these data, the results show that in North Batukliang District, the slope class is 1 to 5.

Meanwhile, the research location, namely the Babak Pelangi Waterfall object, has a slope gradient of <2%, which means it is included in slope class 1. Thus, to calculate the correction factor for rainfall intensity, the following equation is used Zacarias, 2011 (in Siswantoro, 2012:45):

$$Cf = Mn / Mt \times 100\%$$

With:
Mn is the slope gradient at the Babak Pelangi Waterfall object
Mt is the highest slope gradient value in North Batukliang District.

$$Cf = 20/100 \times 100\% = 0.2$$

The results obtained are that the correction factor for the slope of the research location is 0.2, which means that the slope of the slope at the tourist attraction location shows a gentle slope so that it is safe, comfortable and also ideal for carrying out tourist activities without dangerous topography.

3. *Soil Sensitivity*

Based on secondary data from the West Nusa Tenggara Province Mining and Energy Agency in 2015, it was discovered that the Babak Pelangi Waterfall tourist attraction has Mediterranean Brown soil. According to the Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980, soil sensitivity is divided into certain classes and then multiplied by a weight value of 15 as follows:

Table 5 Soil Sensitivity Classes

Land class	**Soil Type**	**Information**	**dignity**
1	Alluvial, Glei Soil Planosol Hydromorph Grey, Litterita Groundwater	(Not sensitive)	15
2	Latosol	(A bit sensitive)	30
3	Brown Forest Soil, Non Calcis Brown, Mediteran	(Lack of sensitivity)	45
4	Andosol, Laterite, Grumosol, Podsol, Podzolic	(Sensitive)	60
5	Regosol, Litosol, Organosol, Renzina	(Very sensitive)	75

Source: Attachment to Decree of the Minister of Agriculture Number 837/Kpts/Um/11/1980 Concerning Criteria and Procedures for Determining Protected Forests.

Soil sensitivity data was obtained from secondary data through the Mining and Energy Service of NTB Province 2015 which can be seen in the Soil Type Map attachment. Based on these data, the results show that in North Batukliang District there are several types of soil, namely Regosol, Litosol and Mediterranean Brown which are found in tourist location objects, which are based on soil sensitivity classes in classes 3 and 5, and the research location with Mediterranean soil types is in soil sensitivity class 3. Thus, to calculate the

correction factor for soil sensitivity, the following equation is used Zacarias, 2011 (in Siswantoro, 2012:45):

$$Cf = Mn / Mt \times 100\%$$

With:
Mn is the slope value of the sensitivity of the land at the Babak Pelangi Waterfall object
Mt is the highest land sensitivity value in North Batukliang District.

$$Cf = 45/75 \times 100\% = 0.6$$

The results showed a correction factor for the soil sensitivity of the research location of 0.6, indicating that the Babak Pelangi Waterfall area has a moderate or low level of sensitivity to environmental pressures. This means that although the soil is still stable enough to support tourism activities, proper management is still necessary and crucial to maintain the sustainability of this tourist attraction.

4. *Simpson Flora Diversity Index*

As a tourist attraction located within a community-managed forest, Babak Pelangi Waterfall naturally boasts a diverse flora. Therefore, a correction value for the flora diversity index within the tourist area is included. The resulting values are interpreted as follows:

Table 6 Interpretation of Simpson's Diversity Index

D value (1 - $\sum p^2$)	**Interpretation**
0 – 0.20	Very low diversity
0.21 – 0.40	Low diversity
0.41 – 0.60	Moderate
0.61 – 0.80	High diversity
0.81 – 1.00	Very high diversity

Source: Siswantoro, (2012).

Simpson's diversity index is calculated using the following equation (Siswantoro, 2012:51):

$$\text{I-DS} = 1 - \lambda$$

$$\lambda = \sum ni(ni\text{-}1)n(n\text{-}1)$$

Where:
s = number of species
ni = number of individuals of species i
n = number of individuals of all species

The following is data on the number and types of flora and the calculation of the Simpson diversity index for flora in tourist attractions.

Table 7. Simpson Diversity Index

Simpson Diversity Index					
this	**ni(ni-1)**	**n**	**n(n-1)**	**λ**	**I-DS**
4808	3200020	4808	23112056	0.14	0.86

Source: Primary Data Processing, 2025.

From the calculations carried out, the Simpson Diversity Index value was obtained at 0.86 with an interpretation of very high diversity, this means that the existing flora individuals come from different species by 86%. This means that the flora found at the Babak Pelangi Waterfall tourist attraction location is well varied and is not dominated by just a few flora species, which is an indication of the ecosystem of the tourist area in a stable ecosystem state with high potential and also attracts tourists who have an interest in the state of diversity of flora.

Next, the real carrying capacity of the Babak Pelangi Waterfall tourist attraction was calculated using the following equation according to Cifuentez (1992) in Muta'ali (2015:230):

RCC = PCC x Cf1 x Cf2 x....x Cfn

FromThe equation above uses four correction factors in this calculation: rainfall, slope gradient, soil sensitivity, and flora diversity. Based on these four correction factors, the actual carrying capacity of the Babak Pelangi Waterfall tourist attraction is calculated as follows:

Table 8 Data and Calculation of Real Carrying Capacity

No	Data	Mark
1.	PCC =	1,413
2.	Correction Factor 1 (Slope Gradient)	
	Mn = 20	
	Mt = 100	
	Cf = (Mn / Mt) x 100% =	0.2
3.	Correction Factor 2 (Soil Sensitivity)	
	Mn = 45	
	Mt = 75	
	Cf= (Mn/ Mt) x 100% =	0.6
4.	Correction Factor 3 (Rainfall)	
	Mn = 30	
	Mt = 30	
	Cf= (Mn/ Mt) x 100% =	1
5.	Correction Factor 4 (Simpson Flora Index)	0.86
	RCC = PCC x Cf1 x Cf2 x Cf3 x Cf4 =	1.413 x 0.2 x 0.6 x 1 x 0.86
	=	145 tourists / day

Source: Oah Data, 2025.

From the results of the value calculationThe real carrying capacity of the maximum number of visitors that can be received by a tourist area, taking into account the physical conditions and environmental characteristics by applying correction factors for environmental variables that influence the capacity of a tourist area is 145 tourist visits.

Effective Carrying Capacity (Effective Carrying Capacity)

The effective carrying capacity value is to determine the number of tourist visits that can be accommodated by the tourist area by looking at the real carrying capacity value and the management capacity of the tourist attraction. The Babak Pelangi Waterfall tourist attraction has a total of 10 workers who are also included as managers who actively work and manage the tourist attraction. Workers are divided into tourism management activities with 1 to 2 people in one day. However, according to the Head of Rerantik Hamlet who is also included in the management structure of the tourist attraction, 10 officers are still considered insufficient and not optimal, according to him the number of workers who participate in managing and taking part in the administration of the tourist attraction is a minimum of 30 people with the number of daily duties being 5 people consisting of 2 officers at the main gate who are tasked with selling entrance tickets to the tourist area, 1 person is tasked with security, 1 person is tasked with cleaning and 1 person as an information worker and data collection. With this in mind, the related data and needed in calculating the effective carrying capacity are as follows.

Table 9 Number of Workers and Income in April 2025 at Babak Pelangi Waterfall

Data on the Number of Workers and Number of Visits in April 2025				
Number of Managers/Workers	Amount	April Income	Ticket Prices	Number of Visits in April
Officer Available	10	Rp. 3,000,000	Rp. 5,000	Revenue/Ticket Price
Officer needed	30		=	600 Tourists Per Month April/30 Days = 20 Tourists Per Day

Source: Babak Pelangi Waterfall Tourist Attraction Management (2025).

Then, the importance of calculating effective bearing capacity, calculations are carried out using the following equation according to Cifuentez (1992) in Muta'ali (2015:230):

$$ECC = PCC \times MC$$

The following is data and calculations of the effective carrying capacity of the Babak Pelangi Waterfall tourist attraction.

Table 10 Data and Calculation of Effective Carrying Capacity of Babak Pelangi Waterfall

No	Data	Mark
1.	RCC =	145
2.	Rn = Number of tourist attraction officers =	10
3.	Rt=Number of tourist officers required=	30
4.	Mc = Management capacity (MC= R/Rtx100%) =	0.3
	ECC = PCC x MC =	145 x 03
		43 tourists / day

Source: Data Processing, 2025.

From the results of the value calculationeffective carrying capacity which is a safe limit for visits that guarantees sustainability and comfort for visitors and the environment,taking into account the capabilities of human resource management and management systems at tourist locationsain one day is 43 tourists. With the manager's statement in the form of income of Rp. 3,000,000 inApril 2025 and the ticket price is Rp. 5,000, then the number of visits is 6,000 tourist visits. With this number, it is divided by the number of days in that month, which is 30 days, so the result is that there are 20 tourist visits in a day, which when compared to the number of carrying capacity values is greater and it can be concluded that the PCC value>RCC>ECC> and the ECC value is greater than 20 average tourist visits where the value isis 1413>145>43>20 so the valueThe tourism carrying capacity of the Babak Pelangi Waterfall tourist attraction includesin the large carrying capacity category so that it can be developed further.

CONCLUSION AND RECOMMENDATIONS

The tourism carrying capacity of Babak Pelangi Waterfall in the Dry Land Area in Lantan Village, Central Lombok Regency, is categorized as large, allowing for further development. With a carrying capacity value of PCC>RCC>ECC>, the average number of actual tourist visits is1413>145>43>20.

ADVANCED RESEARCH

As a follow-up to this research, the author recognizes the importance of further research on the Babak Pelangi Waterfall tourist attraction in the Dry Land Area of Lantan Village, Central Lombok Regency, not only limited to assessing its tourism carrying capacity, but also examining tourists' perspectives and assessments of the attraction to provide a broader picture of its sustainability, particularly for tourism development with significant tourism carrying capacity potential.

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