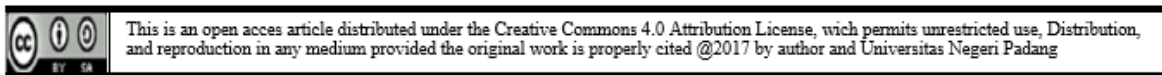# Land Characteristics Study as Halal Tourism Destination Supporting Factors at Benang Kelambu Waterfall in Central Lombok Regency of West Nusa Tenggara Province

* Trina Febriani[1], Dasrizal[2], and Nana Sutrisna[3]

1) Master Program Student of Geography Education Faculty of Social Science, Universitas Negeri Padang, INDONESIA
2) Department of Geography Education, STKIP Sumatera Barat, Indonesia
3) BPTP West Java, Indonesia

Email: trinafebriani20@gmail.com

Abstract

Land is one of supporting factors of Halal Tourism Destination at Benang Kelambu Waterfall in Central Lombok Regency. This research was aimed to collect, process, analyse the data and discuss about land characteristics as supporting factors of Benang Kelambu Waterfall Halal. This study used a descriptive analysis method. This study was focus on 1) Describing the land characteristics in supporting the development of Benang Kelambu Waterfall tourism destination. 2) Describing the concept of land use related to supporting factors of Benang Kelambu Waterfall Halal Tourism Destination. The land characteristics include the topography, region, soil type and climate. In this research, factors in developing concept of tourism were tourism potential, tourist attraction, tourism land resources, accessibility, facility and infrastructure, and land use management. After processing and analyzing collected data, Benang Kelambu Waterfall was rated as 83-101 or classified as cultivation and forest area so that it could be managed and used for tourism area.

Keywords: Land Characteristics, Land Quality, Tourism Potential

Introduction

Land use is one of alternatives form of utilizing the land for different purposes such as agriculture, plantation, pasture and for tourism purposes (Hermon, 2012a; Hermon, 2012b; Hermon, 2014a; Hermon, 2014b; Hermon, 2017). Land use is also defined as humans' effort in exploiting natural enviroment in order to meet certain needs in their lives. Tourism is one of an important economic sector in Indonesia. In 2009, tourism sector ranked as a third in Indonesia's foreign exchange income after oil, natural gas and palm oil. The number of tourist who visit Indonesia was more than 9.4 million people in 2009 or increased to 7.05% compared to the previous year. Natural and cultural resources are important components of tourism in Indonesia. Indonesia has a combination of its tropical climate, 17.508 islands with almost 6000 are uninhabited islands, and its third longest coastline in the world after Canada and European Union (Hermon, 2015; Hermon, 2016a; Hermon, 2016b).

Indonesia is also the largest archipelago and most populated country in the world. Beaches in Bali, dive sites in Bunaken, Mount Rinjani in Lombok, and various national parks in Sumatra are the examples of natural tourism in Indonesia. Those tourism destinations are supported by rich cultural heritages which reflect

Indonesia's history and dynamic ethnic diversity and its 719 local language in those islands. Prambanan Temple, Borobudur Temple, Toraja, Yogyakarta, Minangkabau and Bali are some of cultural tourism destinations in Indonesia. Until 2010, there were 7 locations in Indonesia which include in UNESCO World Heritage Sites list. Meanwhile, other 4 representatives were also included in UNESCO Representative List of Intangible Cultural Heritage of Humanity, namely wayang, keris, batik and angklung. Benang Kelambu Waterfall, as one of most beautiful waterfalls in Lombok Island which is located at Dusun Pemotoh, Air Berik Village, Batukeliang Utara District, Central Lombok Regency of West Nusa Tenggara Province. It is the upstream of Benang Stokel Waterfall. This waterfall is flowing out of the sidelines of shady grambung trees with six rows of water points gushing from the top of a hill that similar to a mosquito net or a curtain. That is why this waterfall is named after Benang Kelambu (mosquito net) (Hermon, 2017; Hermon *et al*., 2017).

The neigbouring waterfall is Benang Stokel Waterfall. It is located in the foot of Mount Rinjani and precisely located at Dusun Pemotoh, Aik Berik Village, Batu Keliang Utara District, Central Lombok Regency. Those spots are easy to reach. It is only 30 km from Mataram City, the capital city of West Nusa Tenggara Province. Benang Kelambu Waterfall is one of mainstay attractions in Lombok Island which has an outstanding natural beauty (Wisata lombok, 2015). It is a source for regional economy from tourism sector but the existence of Benang Kelambu Waterfall has not become main local economy. These cause by the inadequated accessibility, facility and infrastructure, and public facility which make it difficult for tourists to visit the place. These factors also related to the land characteristics of the site which is dominated by steep slopes. Therefore, the government should pay special concern by building a good road facilities so that the tourists can visit the place safely and comfortably (Hermon *et al*., 2018a; Hermon *et al*., 2018b). It is mentioned in the constitution No 26 Year 2007 about spatial planning which regulates in detail the national, provincial and regencies/municipalities spatial planning in order to create a safe, comfortable, productive , and sustainable national territorial space in accordance with national insight and state resilience. Land use is a concept related to maximum use of land which also regulates the responsibility of land maintenance which includes responsibility for land management as well as soil fertility.

Method

This study is a descriptive research with a qualitative approach (Mixed Method*)*. The Mixed-Method research was oriented in the use of quantitative and qualitative method in the process of a research and the combination of physical geography and social geography. The techniques of collecting data were observation, interview, and literature or document study. There were two types of data collected. They were primary and secondary data. Primary data was collected through field observation and interview with the informants. Meanwhile, secondary data was obtained from available documents in governmental institutions of Central Lombok Regency such as BPS, BAPPEDA, and local Tourism Official. The participants of this research were local people who lives around Benang Kelambu Waterfall. The researcher used AHP *or Analytical Heirarchy Process* method as technique of data analysis (Saaty, 2001). The land use planning developed using scoring method in order to determine a land potential by giving a score to each land characteristic. (Hermon, 2009; Hermon, 2015; Hermon, 2016a; Hermon, 2016b; Hermon, 2017; Hermon *et al*., 2017).

Results and Discussion

Central Lombok Regency is located in West Nusa Tenggara Province. DMS Longitude and Latitude coordinates for Central Lombok are: 82° 7' - 8° 30' S and 116° 10' - 116° 30' E, stretching from the foot of Mount Rinjani in the north to the coast of Kuta in the south with some small islands around it. The area of Central Lombok Regency is about 1.208,39 km². It borders Mount Rinjani in the north (West Lombok and East Lombok Regency), Indian Ocean in the south, West Lombok Regency in the west, and East Lombok Regency in the East. Land characteristics are closely related to land evaluation. The characteristics were classified based on 3 major factors, namely *topography*, *soil,* and *climate.* These land characteristics, especially topography and soil, are the elements of landform mapping units (Ritung, 2003).
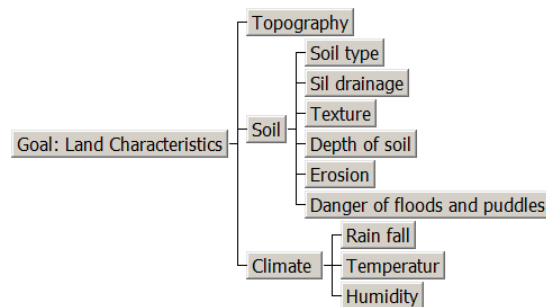
Figure 1. Land Characteristics in Supporting the Development of
Benang Kelambu Waterfall Tourism

Topography

The topography (slope) in the area of north Batukliang District is formed by > 40% slopes with an area of ± 5.043 Ha or 75.85% of area is very steep. The criteria of length is 50-250, the landform criteria is convex, and the vegetation around the area is dominated by strong rooted plants such as coconut tree, banana plant, durian, and others. The land topography (steep slopes) has resulted in major factor that inhibit the development of tourism destination in Benang Kelambu Waterfall. The factor is road access which takes about 30 minutes by foot from entrance gate to the tourist site.

Soil

The soil in this area is clay with granular and thick soil structure which include as a good soil quality since its location in the foot of Mount Rinjani. It is a very fertile land which is good for agriculture and tourism. The level of erosion was less than 25% to 75% since the area is a bit steep, the level of erosion that occured was quite moderate.

Table 1. Soil Type Distribution in Central Lombok Regency

No.	Soil Type	Area (Ha)	Percentage
1	Alluvial	2.4	2
2	Grey Regosol	26.416	21.86
3	Brown Regosol	7.222	5.98
4	Brown Forest Soil	9.15	7.57
5	Dark Grey Grumosol	30.771	25.46
6	Complex dark grey Grumosol Mediteran Brown Litosol	6.494	5.37
7	Complex Mediteran Brown Grumosol Grey, Brown Regosol and Litosol	38.372	31.75
	Total	**120.839**	**100**

Climate

Climate is the average state of the weather in a large area and is determined on the basis of the calculation in a long time (approximately 30 years). Climate elements are similar to weather's. According to statistical data by Meteorological Agency that the highest temperature in 2015 ranged between 30.9° – 32.1° C, and the lowest temperate was between 20.6° - 24.5°C. The highest temperature occured on April and October while the lowest one occured on November. A a tropical area, NTB, especially Central Lombok Regency had a relatively high average of humidity between 48 - 95 %. Rainy season started from October/November to April with average rainfall of more than 100 mm and the highest rainfall occured

on January that reached amount 375 mm. Meanwhile, from Mei to September average rainfall was below 100 mm and even lower than 50 mm. The lowest rainfall occured on August with an average of 0,58 mm. Most rainy days occured on January with the total average of 18.16 days and least rainy days occured on August with the total average of 0,58 days. As for water supply, whether it is for clean water or agriculture, the northern area of Central Lombok Regency has many springs and the total of water debit reserves is about 5.162 liter per second (BMKG.2016). Average Rainy Days and Rainfall per District in Central Lombok Regency.

Table 2. Average Rainy Days and Rainfall per District in Central Lombok Regency (2017)

District	Total of Rainy Days	Rainfall (mm)
1. Praya Barat	107	1.996
2. Praya Barat Daya	*)	*)
3. Pujut	128	1.717
4. Praya Timur	112	1.388
5. Janapria	105	1.576
6. Kopang	89	1.039
7. Praya	80	1.867
8. Praya Tengah	74	1.139
9. Jonggat	105	1.514
10. Pringgarata	99	1.544
11. Batukliang	134	2.109
12. Batukliang Utara	116	2.268

The concept of Benang Kelambu Waterfall tourism development could be based on various perspectives such as natural and cultural attractions, accommodation, accessibility and transportation, the nearest tourist information, medical facilities and security, human resource, shopping facilities, water energy and waste. This evaluation was conducted after doing discussion with the respondents. The relative comparison values were processed by using matrix manipulation or by solving mathematical equations. The purpose was to determine relative rangkings of all alternatives. The selection of criteria was based on weight value of each alternative development concept of Benang Kelambu Waterfall tourism object. Criteria analysis was done if the value of consistency ratio of pairing criteria was <0.1. After analysing the criteria of development concept of Benang Kelambu Waterfall tourism object, then the following criteria were obtained.

1. Natural Attraction (0,277)
2. Accessibility and Transportation (0,251)
3. Cultural Attraction (0,163)
4. Nearest Toursit Information (0,095)
5. Human Resources (0,070)
6. Accommodation (0,058)
7. Shopping facility (0,036)
8. Water Energy and waste (0,029)
9. Medical Facility and Security (0,021)

In term of natural attraction, the development concept of Benang Kelambu Waterfall Tourism object is very promising because the fresh air of the mountain area so its suitable for family recreation. Regarding to its accessibility that the area is inadequate. There is no adequate roads that can be to the site. There are rarely information such as sign direction along the way to the location. Accommodation and lodging are very few and are away from the tourist site. There are very few shopping facilities. Medical facility must exist in the area because the site is a natural attraction site (aquatic) which is susceptible to accident. In term of security, the facility is adequate for example there is special parking lot build in the site.

Conclusion

Based on the research conducted in the field, it can be concluded that in term of its natural attraction Benang Kelambu Waterfall site is very suitable to be developed as an icon of aquatic tourism. In term of its strategic location, there are some factors that inhibit that development such as inadequated road access and transportation to the attraction. Therefore, government and local people should play a major role in developing the tourism object. Moreover, it will also help improving economy of the community in the future. With the score of 83 – 101, the concept of land use in Benang Kelambu Waterfall is classified as cultivation area which means that it could be used as tourism object because the area is a forest area that could be used by local people in order to support their economy.

References

Alikondra, H.S. (2012). Konversi Sumber Daya Alam dan Lingkungan Bogor Gajah Mada University Press.

Asir La Ode. (2013). Alternatif Teknik Rehabilitas Lahan Terdegrasi pada Lahan Bekas Galian Industri (Alternative Rehabilitation Teknique on ex-Industrial Land). Jurnal. Balai Penelitian Kehutanan. Manado

Badan Standarisasi Nasional. (2010). Klasifikasi Penutupan Lahan. Jakarta: SNI 7645:2010

Bintarto dan S. Hadisumarno. (1979). Metode Analisa Geografi .LP3ES. Jakarta

Buono, *et al*., (2004) Klasifikasi Penutupan dan Penggunaan Lahan Pada Multispectral Image dari Landsat Thematic Maper Menggunakan Probabilistic Neural Network.Jornal.IPB.ac.id

[BPS] Badan Pusat Statistik. (2017). Lombok Tengah dalam Angka. BPS Kota Lombok Tengah. Nusa Tenggara Barat

De Kok, J.L., G. Engelen, R. White, H.G. Wind. (2001). Modeling Land-Use Change in a Decision-Support System for Coastal-Zone Management. Environ. Model.Assess.6, 123-132

Dwipradnyana I Made Mahadi. (2014). Factor-Faktor Yang Memepengaruhi Konversi Lahan Tertanian Serta Dampaknya Terhadap Kesejahteraan Petani studi Kasus di Subak Jadi, Kecamatan Kendiri, Tabanan).Tesis Program Studi Magister Agrobisnis Universitas Undayana Denpasar

Hermon, D. (2009). Dinamika Permukiman dan Arahan Kebijakan Pengembangan Permukiman pada Kawasan Longsor di Kota Padang. Disertasi. IPB Bogor

Hermon, D. (2012a). Dinamika Cadangan Karbon berdasarkan Perubahan Tutupan Lahan menjadi Lahan Permukiman di Kota Padang. Forum Geografi. Vol. 26. No. 1: 45-52

Hermon, D. (2012b). Mitigasi Bencana Hidrometeorologi: Banjir, Longsor, Degradasi Lahan, Ekologi, Kekeringan, dan Puting Beliung. UNP Press.

Hermon, D. (2014a). Impact of Land Cover Change on Climate Change Trend in Padang, Indonesia. Indonesia Journal of Geography. Vol. 46. No. 2: 138-142.

Hermon, D. (2014b). Geografi Bencana Alam. Radjawali Press.

Hermon, D. (2015). Estimate of Changes in Carbon Stocks on Land Cover Change in the Leuser Ecosystem Area. Forum Geografi. Indonesia Journal of Spatial and Regional Analysis. Vol. 29. Issue 2: 187-196.

Hermon, D. (2016a). The Changes of Carbon Stocks and CO_2 Emission as The Result of Land Cover Change for Tin Mining and Settlement in Belitung Island Indonesia. Journal of Geography and Earth Sciences. Vol. 4: 17-30.

Hermon, D. (2016b). The Changes of Carbon Stocks and CO_2 Emission as the Result of Land Cover Change for Tin Mining and Settlement in Belitung Island, Indonesia. Journal of Geography and Earth Science. Vol. 4. No. 1: 17-30.

Hermon, D., P. Iskarni., O. Oktorie., and R. Wilis. (2017). The Model of Land Cover Change into Settlement Area and Tin Mining and its Affecting Factors in Belitung Island, Indonesia. Journal of Environment and Earth Science. Vo;. 7. No. 6: 32-39.

Hermon, D. (2017). Climate Change Mitigation. Rajawali Pers (Radjagrafindo). Jakarta.

Hermon, D., A. Putra., and O. Oktorie. (2018a). Suitability Evaluation of Space Utilization Based on Enviromental Sustainability at The Coastal Area of Bungus Bay in Padang City, Indonesia. Vol. 14, Issu 41: 193-202.

Hermon, D., Ganefri., A. Putra., and O. Oktorie. (2018b). The Model of Mangrove Land Cover Change for the Estimation of Blue Carbon Stock Change in Belitung Island-Indonesia. International Journal of Applied Environmental Sciences. Vol. 13. Number 2: 191-202.

Iswandi, U. (2009). Dampak Konversi Lahan Pertanian Menjadi Non Pertanian Terhadap Lingkungan di Kota Padang. Tesis. Program Studi Ilmu Lingkungan Program Pascasarjana Universitas Negeri Padang

Muta'ali Luthfi. (2015). Teknik Analisis Regional Untuk Perencanaan Wilayah,Tata Ruang dan Linkungan.Fakultas Geografi Universitas Gajah Mada Yogyakarta

Nasikun. (1996). Urbanisasi dan Kemiskinan di Dunia Ketiga. PT.Tiara Wacana Wacana.Yogyakarta.

Novianti, L. (2012). Analisis Perubahan Luasan Tutupan lahan Wilayah Pesisir Timur Banyuasin dengan Metode Change Vector Analysis.Tesis UDS Semarang

Munibah, K. (2008). Model Spasial Perubahan Penggunaan Lahan dan Arahan Penggunaan Lahan Berwawasan Lingkungan (Studi kasus DAS Cindana, Provinsi Banten). Disertasi. Bogor. IPB

Pamundu, T. (2005). Metode penelitian geografi. Jakarta: Bumi Aksara

Ritohardoyo. (2013). Penggunaan dan Tata Guna Lahan. Ombak.Yogyakarta

Sugiyono. (2009). Metode Penelitian Kuantitatif & Kualitatif dan R&D, Alfa Beta, Bandung.

Yoeti, O. A. (2008). Perencanaan dan Pengembangan Pariwisata. Jakarta, Pranadya Pratama