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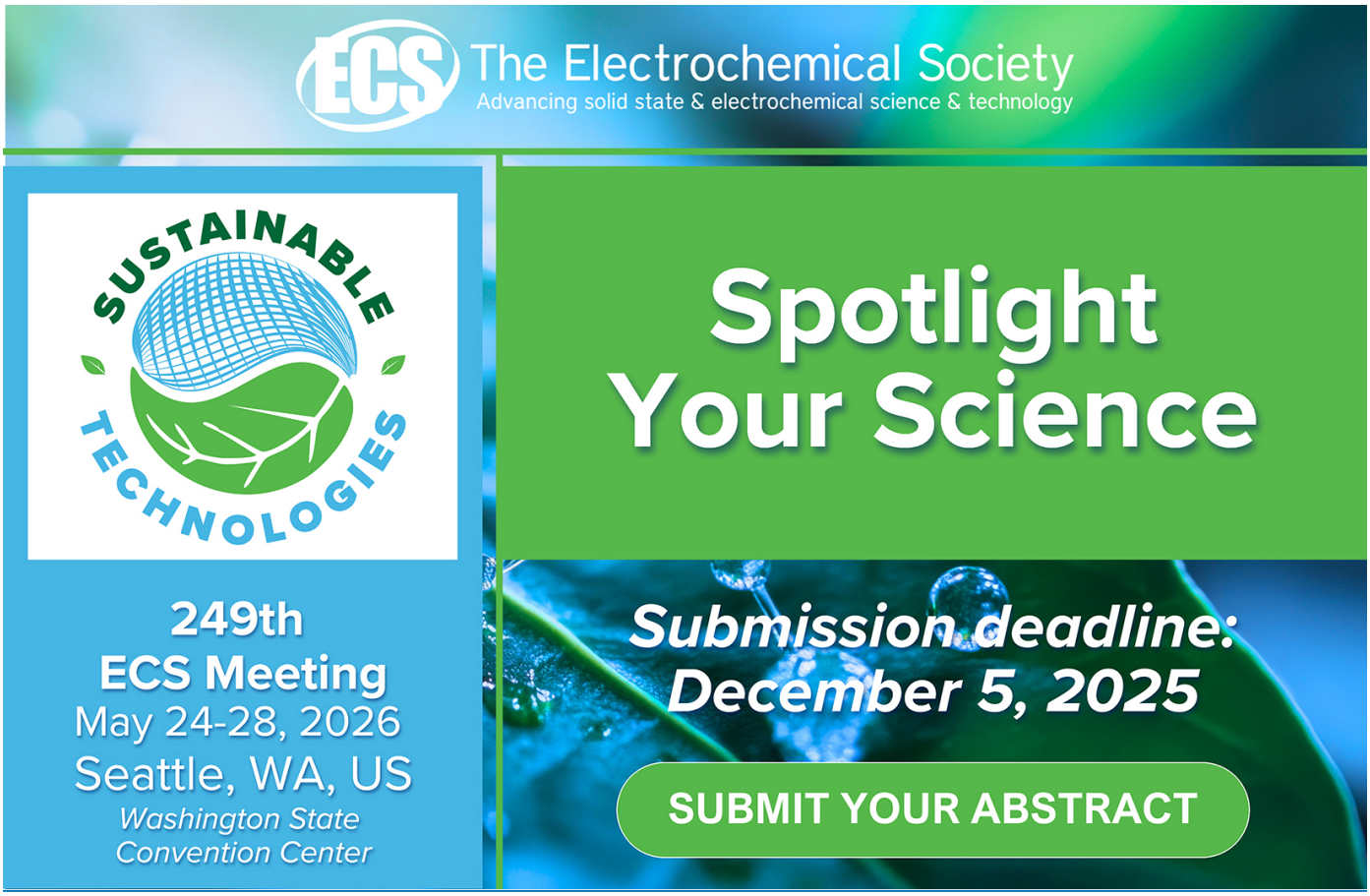

Planning a tourism landscape in geosite area: Sipiso-piso waterfall

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Abstract. Landscape is one of the valuable assets in tourism, especially in rural tourism. Good landscape planning can be increasing the tourism in one place. In Geopark area, landscape planning is also necessary, and it is because geopark area is also a landscape. This paper aims to create a landscape planning concept in Sipiso-Piso Waterfall that can be used to improve the tourism in Sipiso-piso Waterfall. The method that used in this paper is a qualitative method that is used interviews with related stakeholders like, local figure, government, and academic, and field observation in the study area. The data obtained would be analyzed with four elements of landscape namely, open space, pedestrian path, street circulation, and street furniture. The result shows that the four elements of landscape in Sipiso-Piso Waterfall is still not proper and needs improvement.

Keyword: Landscape planning; Tourism, Sipiso-piso Waterfall

1. Introduction

To face highly competitive tourism industry and to achieve a large income that earned from it, tourism destination needs to emphasize landscape as its main component to attract tourists [1]. The importance of landscape is more stressed in geoturism, as this concept can only use in the area with geological phenomena and unique landscape [2]. Hence, As the leading tourist destination in Karo Regency and one of geoutourism area (geosite) of Toba Caldera, the largest supervolcano in the world, which occurred 74 thousand years ago [3], the landscape in Sipiso-piso Waterfall should be properly planned and managed to attract tourists. However, in the recent research, a lot number of tourists expressed their disappointment toward Sipiso-piso Waterfall and did not want to return to Sipiso-piso Waterfall anymore [4]. It needs to be fixed because tourist satisfaction notably affects the sustainability of tourism destination [5]. Therefore, this paper will discuss how the concept of landscape planning in Sipiso-piso to improve its tourism.

2. Landscape Design

Geotourism is globally growing tourism form that creates by the activities of local people and others to promote geopark and provide geological landscape interpretation [6]. The Landscape referred in geotourism can be in the form of mountains, valleys, massive cliffs, volcanoes, karst landscape, a group of landforms, a single landform, a rock outcrop, and a fossil bed or a fossil [7]. There are four things to considered before planning a geotourism area, visits to geological features (bus, boat, car, cycling, hiking trail); viewpoints; geo-activities (guided tours, cultural performance, educative attraction); and facilities & attendant infrastructure (interpretative panels, geosite visitor centers, souvenir shop, accessibility, and other supporting facilities) [7- 9].

Landscape consists of three fundamental elements, namely landscape structure, landscape function, and change of landscape [10]. Nonetheless, in creating a landscape planning, planner need to understand the dynamic interaction between landscape structure and landscape function [11]. Landscape structure is the spatial relationship between landscape elements such as street, corridor, patches, and so forth. An open space should provide a place for social interaction, attracting a lot of visitors to do their activities there, and can take a form of shops, restaurants, cafe, retail, park [13]. To achieve a good pedestrian path, safety and comfort are needed [4,14]. Circulation is the connectivity that connects the surrounding area in the form of accessibility, and in its planning, parking is one of the importance of circulation [15-16]. While, Street furniture is defined as any form of signage, benches, trash cans, street lights, and so forth, that can support the activities take place in a public space [17]. Meanwhile, Landscape function is the interaction between animal, human, water, and plants that happen in landscape elements. According to Urban Design Compendium, the landscape includes a lot of things, open space; pedestrian path; street and circulation; and the street furniture [12]. The key to landscape planning is to treat everything as landscape either it is a building; pavement; street; park; and others, to avoid SLOAP (Space Left Over After Planning).

In this research, four elements of landscape structure, namely open space; pedestrian path; street and circulation; and the street furniture, were used as the main components while also keep pay attention to the interaction that happens in it. These four elements will be integrated with four elements geotourism, namely geological features visiting; veiwpoints; geo-activities; and facilities & attendant infrastructure (table 1) with goals to obtain the concept of landscape planning in the geosite area.

3. Methodology

3.1. The Method

This research was conducted to find the good landscape planning concept in Sipiso-piso Waterfall Geosite Area and to refine the previous research that investigates the concept of geotourism in the Toba Caldera [18] using qualitative method to collect data. The data obtained through direct observation and interview with stakeholders. Data that taken from direct observation in the form of actual photographs to record the physical condition of the area (characteristics & size) and the activities according to the components of research variables (table 1). The data were also collected through depth interviews with seven stakeholders related to tourism in Sipiso-piso Waterfall, namely local figures, tourism activist, local people, government official, geologist, and academic figure to acquire their perceptions about the study area especially related to the components of research variables (table 1). After that, the data will be analyzed with the theory of landscape planning and geotourism to create a good landscape planning concept in geotourism area.

Table 1. Research Variables

Landscape Structure Variables	**Geotourism Variables**			
	Geological features Visiting	**Viewpoints**	**Geo-Activities**	**Facilities & Attendant Infrastructure**
Open Space		– Viewpoints – Park	– Cultural Event – Educative Attraction	– Souvenirs Shops – Restaurant & Café – Visitors Center – Toilet
Pedestrian Path	– Hiking Trails	– Stop Points	– Guided Tour	
Street and Circulation	– Accessibility – Entrance			– Parking
Street Furniture				– Interactive Panel – Signage – Trash Can – Bench – Street Light

3.2. Research Area

This research is taken place at Sipiso-piso Waterfall, Tongging, Merek, Karo Regency. Sipiso-piso Waterfall is not only the leading tourist destination in Karo Regency but also one of geosite in Toba Caldera Geopark, precisely located in Geoare Haranggaol. This Waterfall is formed from the Toba Caldera supervolcano eruption that happened 74 thousand years ago [3]. In Sipiso-piso Waterfall, tourists can buy the unique souvenir of Karo Regency, trekking to Waterfall, picnic with family while looking at the scenery of Toba Lake and Sipiso-piso Waterfall (Figure 1.)

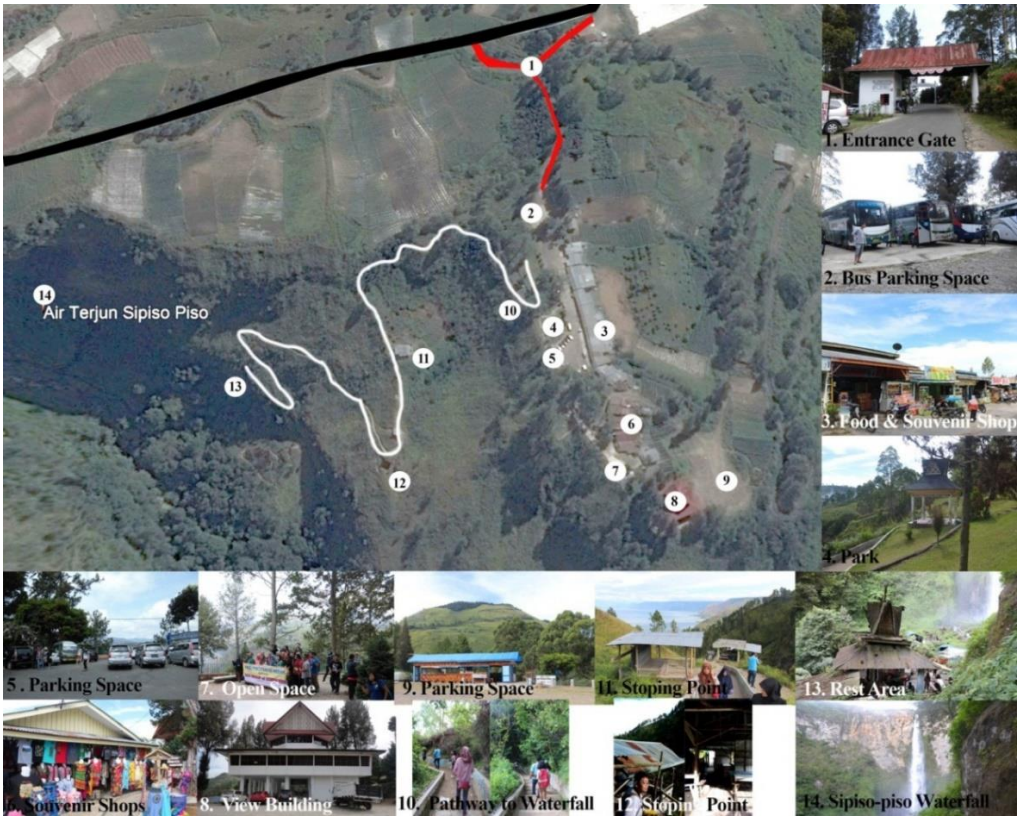

Figure 1. Research Area

4. Result and Discussion

4.1. Open Space

As the natural tourism destination, Sipiso-piso Waterfall has relatively wide open space forms, such as souvenir shops, parks, pavilions, food stalls, toilets, and building that used for sight seeing the Toba Lake (see figure 1). Despite its fairly wide forms, it is still not meet the needs of open space forms that geosite area should have (see table 1). The Visitor center, one of the necessary element in geotourism, is nowhere be found in Sipiso-piso Waterfall Area. The visitor center in tourism can help tourists to answer the questions about tourism destination and build up their confidence to do the activities that they want [14]. Moreover, visitors center in geotourism area is needed to give the tourists the information about any activities to do and to educate them about what is geotourism and geopark [19]. The key respondent also expressed their regrets about it.

"There is no visitors center, that is the thing that was still lacking in here. Tourists can only ask merchants in Sipiso-piso Waterfall for information."
(Key Respondent: Local Figure)

Apart from a lack of visitor center, the activities that tourists can do in Sipiso-piso Waterfall are limited. Tourists only spend their time mostly for an hour or so if they are not going down to the location of the waterfall. It is supported by key respondent.

" It has been more than ten years, and there are no any other activities like cultural festival of musical performance. Tourists only come to Sipiso-piso to sightseeing and then going home."
(Key Respondent: Tourism Activist)

Tourism activities like cultural festival/performance or educative attraction will actively increase the length of time that tourists spend in tourism destination and maintain its sustainability. The Cultural festival will attracts a lot of tourists where they can experience the local culture of one tourist destination [4]. Not only that, but cultural performance can also educate tourists about geotourism, like in Longshuan Global Geopark, where local people perform their culture tradition at the geosite. That Cultural performance gives a 'refreshing' vibe that attarct tourists to understand about geotourism [20].

Viewpoint is one of the significant things in geosite area. Viewpoint is the most popular educational tool about geopark by tourists because they can experience the beauty of the geological phenomenon that has no scientific element [21]. In Sipiso-piso Waterfall, there are some viewpoints like pavilions, parks, and view building (see figure 1 number 4,7,8). From there, tourists can see the scenery of Sipiso-piso Waterfall and Toba Lake. Unfortunately, it is poorly designed that it is hard to see clearly or even take a picture of it.

4.2. Pedestrian Path

When tourist wants to visit the location of the waterfall, they must pass through about 700 meters long and 200 meters height steep pedestrian path with three rest area where local people sell food and drinks (see figure 1 number 10-13). The required time to go there is about 40 minutes to 1 hour, and 1 hour or more to get back up. Many tourists stop midway and do not want to come back anymore because they are exhausted and feel not safe when visiting the waterfall location. It is also expressed by the key respondent.

"A lot of tourists that already come down and don't want to come again. They said they were exhausted and did not want to experience it anymore."
(Key Respondent: Local People/Merchant)

For tourists to feel satisfied when they are on pedestrian path at tourism destination, the key factors to achieve it are comfort and safety [4,13]. In ensuring the comfort and safety of tourists, on trekking track to waterfall need to have footpath, direction sign, handrails, stop point, warning sign, dan rescue team [22-23]. Sadly, the trekking track in Sipiso-piso Waterfall still lacks in the safety area. There are much slippery and damage path due to sand and landslide, missing and damaged handrails, extremely steep path, and no rescue team or guide to help pass it. If something happened, local people who also the merchant in there would act as the rescue team. It is derived from interviews with key respondents.

"If anything happens when visit waterfall location, local people will be the to save them."
(Key Respondent: Local Figure)

4.3. Street and Circulation

It takes about 1 hour (49 Km) from Kota Berastagi; about 3 hours and 30 minutes (112 Km) from Medan; and about 3 hours and 40 minutes from Kualanamu Airport to get to Sipiso-piso Waterfall. The accessibility to Sipiso-piso Waterfall is quite easy to pass with land transportation, but only tourists who have private vehicles/rent vehicles like motorcycle or car and the one who come with group using tourist bus that can get to Sipiso-piso Waterfall. There is no public transportation directly to Sipiso-piso Waterfall, the only public transportation that people can use is Becak. It is also supported by the key respondent.

" Yes, There is still no public transportation to Sipiso-piso Waterfall other than Becak."
(Key Respondent: Local Government Official)

Accessibility is one of the essential factors in tourism so tourists can reach their destination [5]. By using public transportation, tourists who walk can also reach the tourist destination [4,15]. Thus, it is necessary to add public transportation that can access to Sipiso-piso Waterfall to facilitate tourists to reach it. The entrance to Sipiso-piso Waterfall is in between the road to Sipiso-piso Waterfall and Sipiso-piso Mountain (see figure 1 number 1). The entrance fee charged 4000 rupiahs per person. Tourists need to pay everything that related to tourism when they are in one tourist area especial;y in geopark area, to improve the economy of local people and maintenance the place [24].

The parking area in Sipiso-piso Waterfall is divided into three locations that charged 5000 rupiahs per vehicles. The first parking area is majority used for tourist buses, but sometimes there are also private cars parked there (see figure 1 number 2). And the other two parking space is used for parking cars and motorcycles (see figure 1 number 5, 9). Although the parking area at Sipiso-piso Waterfall is quite sufficient, there still many vehicles that not parked in the parking lot and parked their vehicles on the street, because the parking area is not well-ordered and organized. The well-organized parking area has an impact on the tourist satisfaction and makes them want to return to one tourist destination [4]. One of the examples is Huangshan Global Geopark which has six divisions of parking area [25].

4.4. Street Furniture

All the elements of street furniture that needed at geotourism area from the interpretative panels, seating place, trash cans, street lighting, and signage are already there. However, the numbers are still inadequate, and the conditions are not feasible and at the not well-planned place. The interpretive panel is under shady tree and tourists often unaware of its presence. Also, there are only two interpretative panels in Sipiso-piso Area. The lack of interpretative panels is not only occurred at Sipiso-piso Waterfall but also at others Waterfall Area [23]. Interpretative panels are the most important things in geopark tourism area, and it always designs with natural materials like woods or rocks to blend with the environment [3 - 18]. Moreover, to make tourists not feel bored, interpretative panels should be designed as attractive as possible and easy to understand. Like in Zion National Park, where tourists can drink the water from the spring in the area from the interpretative panels [20].

The existing seating area is found only at the top area of Sipiso-piso Waterfall Area. While at the trekking track to waterfall location seating area is nowhere to be found. Seating area or rest area is needed by tourists so they can feel comfortable and rest while looking at the scenery of the area [14]. The trash cans at Sipiso-piso Waterfall are easy to find. But sadly, it conditions mostly damaged, and there is still lack of tourists awareness that makes that place has a lot scattered trashes. Trash cans element is essential in tourism area because the dirty place would make tourists feel uncomfortable and do not want to return to that place again [14]. It is also supported by key respondents statement.

"There are already a lot of trash can. But, it is not well-maintained, and tourists still have lack of awareness about it."
(Key Respondent: Tourism Activist)

One of street furniture elements that still insufficient at Sipiso-piso Waterfall is the street lighting. When dawn before night, the only lighting has at the area are from the shops. There is almost no street lighting, particularly at the trekking track to waterfall location. Even though at that time, there are still many tourists there. It is very dangerous because the field that must pass through is already very hard and with no lighting at all would only make it harder to pass. Street lighting can make tourists feel safe and confident to spend a longer time at tourist destination [4,14].

The Signage at Sipiso-piso Waterfall is still inadequate. The only signage is the street direction sign at the entrance and signage for parking area and toilet. Signage on tourism location, not only in the form of direction sign but also should be integrated with other tourist information forms like maps, brochures, guide, interactive panels until the real experience there [20]. At the trekking path location to waterfall, there is no signage at all. Where signage in that place is needed to help tourists know their position and know how much time will they get to their destination [23].

4.5. Landscape Concept

Geotourism tourist area would be successful if the landscape planning were done well [1-2]. Sipiso-piso Waterfall is still far from success. Many elements of landscape that are still lacking there start from elements of open space, pedestrian path, street and circulation, and street furniture. Following is the concept of landscape at Sipiso-piso Waterfall which is expected to fulfill the landscape elements in geotourism area (see figure 2.).

Figure 2. Sipiso-piso Waterfall Landscape Concept

In open space part, Sipiso-piso Waterfall still has no visitor center, tourism activities, and viewpoint. View building in Sipiso-piso Waterfall area is recommended to be used as visitor information center (see figure 2). Visitor information center in geopark area is different from visitor center that exists in other tourist areas. In geopark area, other than providing information about the area, the visitor center contains information about geopark and education on natural resources, geodiversity, biodiversity and cultural diversity that can also be equipped with exhibitions for cultural and educational activities, museum and audio visual, like in Beigua Geopark, Italy [19].

Trekking tracks at Sipiso-piso Waterfall need to add paving, and hand railing, direction sign, and warning sign. In the concept, there are seven places to stop (see figure 2). A stop point or seating area should be added, so tourists do not feel tired and enjoy the journey. The stop point can be put together into a viewpoint like the one at Huangshan Global Geopark with a trekking track that has length about 90 Km with 50 stop point and viewpoint [25]. Although key respondents and tourists want alternative access such as cable car or outdoor lifts, the authors do not recommend it to maintain and conserve the waterfall area. High visitation at waterfall area can cause the environment to be degraded and become over-exploitation [23].

The parking area at Sipiso-piso Waterfall is already good enough, but it needs some improvement so that no vehicles are parked on the street anymore. Besides, the place for Bus to parked should not have private vehicles parked there (see figure 1 number 2). For street furniture, the authors recommend to repair the existing trash cans and give each tourist, who will come down to location of waterfall, a compact trash bag so the scattered trashes would be minimalized. The addition of interpretative panels is also significant in Sipiso-piso Waterfall since the numbers of the interpretative panels there are still insufficient. The panels should be placed around the waterfall location and the path to the waterfall [23]. Also, street lighting and signage are elements of street furniture that need to be added in the location, especially on the path to the location of the waterfall. And for existing landscape elements at Sipiso-piso Waterfall location must be redesigned by the circumstances of the environment to complement the concept of geotourism there [3-4, 18].

Conclusions

Sipiso-piso Waterfall, based on the study of four elements of landscape planning, open space, pedestrian path, street and circulation, and street furniture, are still very weak. Moreover, the landscape of Sipiso-piso Waterfall is still not represented as geopark area. Elements of open space in Sispiso-piso Waterfall is still not adequate; there are no visitor center, educational and cultural activities, and viewpoint in there. For a pedestrian path to the location of the waterfall is need to have footpath, direction sign, handrails, stop point, warning sign. Training of local people to become a rescue team and guide is necessary to ensure safety when passing through the trekking track. Street and circulation elements and circulation are the strongest elements there. But still have shortcomings, like public transportation to the tourist sites. Also, the parking lot still needs to be reorganized. And the last element is the element of street furniture is still very lacking, especially street lighting and signage. The addition of these items is highly recommended. Therefore, Sipiso-piso Waterfall has to be rearranged to become a successful geopark tourist area. This paper provides the concept of landscape planning that should be done in Sipiso-piso Waterfall to improve its tourism. For further research, it is recommended to study another element of planning in Sipiso-piso Waterfall to complete this research.

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