

Tukad Unda Development: From a Viral Tourism Object to A Center for Future Bali Civilization Plan

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ABSTRACT

Tukad Unda is a volcanic-formed river with areas for drainage and deposition of lava material resulting from volcanic eruptions. The area covers the Karangasem Regency in the upstream and Klungkung Regency in the downstream parts. In the Balinese language, Tukad means river, and Unda means terraced. Hence, Tukad Unda means terraced river. The obvious point is that Tukad Unda flows through a dam with two overlapping terraces. Thus, the flowing water forms a level resembling a mini waterfall. The place is one of a kind for those who enjoy calm and breezy nature. Besides having clear water with schools of small fish, the area is also surrounded by soothing trees. Tourists can either stop by the available restaurants or play in the water. The water barrage of Tukad Unda has become a tourist destination that attracted much attention from visitors in recent years. Its serene, lush natural atmosphere, gurgling water, and a curtain waterfall on the dam wall showcase a relieving experience in downtown Klungkung. Tourists can now comfortably visit the Tukad Unda dam area since the local village has managed the area as a complete tourist destination with various supporting facilities. However, Tukad Unda is a river prone to mud flooding, especially when Mount Agung experiences increased volcanic activity. Thus, the central and local governments focus on developing supporting facilities to strengthen the Tukad Unda utilization. In addition, many studies show the potential of the Tukad Unda, along with its watershed, which, when properly developed and managed, can significantly impact the welfare of the surrounding community.

Keywords: Tukad Unda, Tourism Object, Bali.

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INTRODUCTION

Tukad Unda is a volcanic-formed river with areas for drainage and deposition of lava material resulting from volcanic eruptions. The area covers the Karangasem Regency in the upstream and Klungkung Regency in the downstream parts. It has characteristics of 10 meters to 67 meters width river bed, normal water levels between 50 cm and 200 cm, and flood water height from the river bed of approximately 600 cm.¹ Tukad Unda is one of the major rivers in Bali with a consistent flow. It flows water throughout the year. This river flows from the upstream area of Karangasem Regency and empties into Tangkas Village, Klungkung Regency. Tukad Unda has tributaries, namely Tukad Sabuh, Tukad Pedadakan, Tukad Langon, Tukad Barak Ancut, Tukad Yeh Sah and Tukad Telaga Waja. This river extends to 22.56 km, with a 230.90-kilometer square watershed area.²

The Dam of Tukad Unda is located about 200 meters east of the Kerta Gosa

Klungkung tourist attraction, precisely in Banjar Lebah - Klungkung. Even though the Tukad Unda Dam has been around for a while, since several social media influencers have vacationed in the area, the dam has become the latest recreational destination in Klungkung. Social media sensation based on visitor participation proves an easy and inexpensive promotional activity in introducing new

tourist objects to a wider audience.³ The distance between the Tukad Unda Dam attraction from Ngurah Rai airport is a 1.5-hour drive by car. It can be accessed via the Ida Bagus Mantra bypass route, then take a left to the north to the center of Klungkung city.

In the Balinese language, *Tukad* means river, and *Unda* means terraced. Hence, Tukad Unda means terraced river. The



Figure 1.⁴ Like a water curtain that stretches approximately 100 meters in length, Tukad Unda offers the charm of a tourist attraction.



Figure 2.⁸ Societies along the riverbank utilize the water flow to irrigate their rice fields and bathe or wash clothes.



Figure 3.¹³ Tourists can now comfortably visit the Tukad Unda Dam area since the local village has managed the area as a complete tourist destination with various supporting facilities.

obvious point is that Tukad Unda flows through a dam with two overlapping terraces. Thus, the flowing water forms a level resembling a mini waterfall. The place is one of a kind for those who enjoy calm and breezy nature. Besides having clear water with schools of small fish, the area is also surrounded by soothing trees. Tourists can either stop by the available restaurants or play in the water. While enjoying the meal, the visitor would be presented with a beautiful view of the river. From the south side, tourists can also see a vast green savanna with farmer's cows.

Tourism developed in Bali is cultural tourism. In this context, the culture refers to Balinese culture based on Hinduism's teachings. This customary lifestyle is based on various traditional institutions in Bali, such as *Subak*, Indigenous Villages and folks, *Pemaksan*, *Banjar*, etc. Tourism growth is expected to align with Balinese culture's development in an interactive-mutualistic relationship. Generally, tourist attractions in Bali highlight the beauty of the natural aspects. Natural tourism objects are very closely related to increasing the productivity of forest resources in the context of economic development,

Oka A.Yoeti (1985) says a tourist object attracts people to a certain area. The same thing was also revealed by S. Pendit (1994); anything interesting, worth visiting and seeing in tourism is referred to as a tourist object. From some of the definitions above, it can be concluded that tourism objects have attractiveness, uniqueness and high value as a destination for tourists who come to an area. Tourism hugely influences Bali's economy, leading to the high growth rate of Bali's GRDP, above the national average. Bali's high GRDP growth far exceeds the population growth rate. Thus, the per capita income of the Balinese has also increased at quite a high figure. A group of people and rural communities enjoy this high economic growth, especially those related to the tourism industry.⁵

Like a water curtain that stretches approximately 100 meters in length, Tukad Unda offers the charm of a tourist attraction.⁶ Tukad Unda's infamous water curtain attracts travelers from many

places to spend their vacation on this point of interest. Tukad Unda has clean and clear water, reflecting the vast blue sky above the river. No wonder many young couples prefer the place as the site to do their pre-wedding photo shoots. Tourist visits increase on weekends or holidays. Many foreign and local couples are willing to drive hourly to take their pre-wedding photos. Previously, before Tukad Unda was considered underrated, a couple that wished to do a pre-wedding photo session was permitted to conduct the session free of charge. Then, after Pakseballi village was designated as a tourist village, the management decided to set rates for tourists who wanted to visit the Kali Unda tourist attraction or to do a pre-wedding photoshoot session. Several infrastructures around the dam are referred to as the Kali Unda Tourist Attraction area. The point of interest provides facilities and services such as Parking Areas, Lodging, Bathrooms/toilets, Rest area, and Restaurants.

For residents, spending their time at the Tukad Unda Dam is routine. The dam on the largest river in Bali provides a serene atmosphere, especially early in the morning and afternoon after working hours. A long bridge is built over the river, connecting Klungkung and Karangasem regencies. From the top of the bridge, passersby can see the Dam with its long waterfall scenery. The traffic over the bridge is relatively quiet compared to a few years before Ida Bagus Mantra By Pass was established. Hitherto, travelers prefer to opt for the Bypass Road to visit the eastern regencies. The dam of Tukad Unda is built in stages to expose the upper-level water flow. The source of water flow originates from a combination of several rivers; therefore, the water hardly recedes throughout the season. One of its upstream sources is the Telaga Waja river, which comes from mountain springs. Societies along the riverbank utilize the water flow to irrigate their rice fields and bathe or wash clothes.

Tourists may access Tukad Unda from the eastern gate. A fee of IDR 10,000 will be charged for visitors who would like to do normal sightseeing. Tourists doing pre-wedding photos at Tukad Unda would need to pay an additional fee. There is general

information for tourists to understand when visiting Tukad Unda. For instance, if a visitor decides to go down to the water area, If the water temperature feels warm, the water discharge has increased, which means it is dangerous for tourists to play in the Tukad Unda. However, if the water still feels cold, then it is safe for visitors to play in the river.⁷

The village municipality manages the Tukad Unda as Tourism Object in collaboration with the Pakseballi Traditional Village. Their responsibilities include site handling, planning, maintenance of the place, cleanliness of the place, security and financial supervision of the tourist facilities. The Klungkung Government acts as a supervisor for the Tukad Unda control team. Initially, Pakseballi Village was made as a tourist village in early January 2017, where the management was fully given to Pakseballi Village officers. However, the village municipality cooperates with traditional villages to manage various tourism spots in their area.

In managing the Tukad Unda attraction, the village treasurer is responsible for the village's financial management. Despite the Tukad Unda has become a tourist attraction, the village municipality does not prohibit the community in the vicinity from carrying out their daily activities around the Dam. However, it does forbid the community to dispose of their ceremonial tools in the river. Before Tukad Unda and Pakseballi villages were made into tourist villages, the habit frequently took place. The village municipality provides a disposal site; thus, it would not interfere with the view of the Tukad Unda.

Arrangement of Areas Around Tukad Unda (Dam and Watershed)

Visits to this Tourism Object, bordering Semarapura Kangin Village, Klungkung District and Pakseballi Village, Dawan District, were brisk. Especially during the holiday season. Generally, visitors prefer the area as a spot for taking pictures. The Regent of Klungkung, I Nyoman Suwirta, discussed the arrangement of the surrounding banks to give a more attractive impression. The arrangement will be carried out on state land north of the weir, in the Semarapura Kangin

Village area.

The concept is to transform the land into a campsite, with motor cross tracks nearby. Suwirta visioned that tourist visits might be increased, thus give impact the people's economy in the vicinity. Semarapura Kangin Village Head, I Wayan Sudarma supported the arrangement plan to be realized. It is considered to have a positive impact on the community's economy. The visit to Pakseballi Village has rapidly increased. The village side is also intensively carrying out arrangements, including building several supporting facilities.⁹

Despite its well-maintained condition, Tukad Unda faces many threats as a tourism destination. The banks of Tukad Unda are close to the downtown living area. The high intensity of vehicles passing the area results in the water being prone to vehicle pollution, in addition to the dense population around the riverbank, gradually affecting the water quality. Furthermore, in the rainy season, the river carries high water discharge, with average rainfall is 1357 mm.¹⁰ High rainfall in the area occurs in December-April, causing the water level to increase by 600 cm resulting in the site being prone to landslides. A study by Dewi (2019) proposed a landscape plan for Tukad Unda as a waterfront park. The Landscape plan is expected to provide space for various activities and facilities. Activities that are needed by the community include socializing and recreational facilities such as footpaths and bridges connecting the eastern and western banks. Then, the utilization of waterfront parks increases water absorption, reduces soil erosion, and reduces air pollution.^{11,12}

Potential and Challenges in the Unda Watershed Area

In 2017, Tukad Unda experienced severe mudflow. The water from upstream carried volcanic materials from Mount Agung, Karangasem. The phenomenon occurred in November 2017 and caused Tukad Unda to experience siltation. The sand sedimentation on the border of Pakseballi Village and Semarapura Kangin Village caused the siltation. It sparked fears that residents living in the vicinity would be flooded during heavy rains. The resident

was forced to refugee to their relative's house. A similar situation occurred in the Tangkas Village area river due to illegal sand mining. Head of the Klungkung Public Works, Spatial Planning and Residential Area Office, Gusti Nyoman Supartana, said that according to his observations, silting had indeed occurred a lot. Even in the Tangkas Village area, it reached 4 meters in depth.

The Tukad Unda flows from the upstream area around Mount Agung, Karangasem Regency. It empties in the south at Gunaksa Beach, Klungkung Regency, which has a watershed area of 230.90 km² and a main river length of 22.56 km. As a river with a volcanic area upstream, this channel often traverses volcanic material, such as lava which flows along the river channel. Based on government administration through the Bali Penida River Basin Office, the Public Works Office for the Province of Bali, and the Klungkung and Karangasem regencies 2016 have built several lava control structures along the channel. Types of existing buildings include ground sill, check dam and consolidation dam.

In 2019, the Central Government was planning to build an estuary in the Tukad Unda's basin. The estuary construction was a solution for further utilization of Tukad Unda water. One of them is the freshwater supply. Tukad Unda water is one of the potential sources of fresh water in Bali, with a water discharge capacity of 1,500 liters per second. However, this potential water had been wasted in the sea, and one of the reasons why Bali experienced a water deficit. The Tukad Unda estuary development plan has been discussed since 2013, but the establishment was delayed due to technical problems.

Establishing the Tukad Unda estuary would increase the number of water source reservoirs in Bali. Previously, Bali already had several reservoirs. Among them are Palasari reservoir in Jembrana, Titab in Buleleng, Gerogak reservoir, Telaga Tunjung reservoir in Tabanan and Muara reservoir in Denpasar.¹⁴ Klungkung Regency is one of the regencies in the Bali Province, which has a surface water source potential. However, in reality, only 61.8% of the total clean water needs in the regency are accessible to the public. The Klungkung

regency government anticipated the problem by looking for a new alternative raw water source besides the existing water source, namely the downstream Tukad Unda river, which is approximately two kilometers from the center of Klungkung city. A study by Suarjana (20...) showed that the downstream of Tukad Unda highly meets the demand for clean water in Klungkung Regency, furthermore yields significant surplus throughout the year. This advantage can be utilized by the surrounding regencies such as Gianyar and Denpasar.¹⁵

Tukad Unda watershed normalization project

In early 2020, an estuary reservoir was constructed downstream of Tukad Unda as a flood control infrastructure for disaster mitigation. The project is estimated will take two years, from 2020 to 2022. The Tukad Unda watershed consists of one main river and tributaries. The main streams and tributaries from the upstream will congregate towards the downstream. The discharge in the downstream is greater than that in the upstream part because the downstream is where the mainstream and its tributaries collect.¹⁶

The Governor of Bali, I Wayan Koster, explained that to meet funding, the Provincial Government of Bali had received IDR 1.5 Trillion in loans from the National Economic Recovery Fund (PEN). The fund includes assistance for the Tukad Unda normalization by the Ministry of PUPR, which cost IDR. 234 billion. Then, proceed with the construction of estuary reservoirs. The governor said the area was designed in such a way as to prevent landslides, mudflows, floods, and others. This development was dedicated as a marker of *Bali Padma Bhuwana*, Bali, as the Center for World Civilization. According to him, this development reflects the 500-year journey of the evolution of civilization in Bali, since the time of the Gelgel Kingdom, with king Dalem Waturenggong.^{17,18}

CONCLUSION

The water barrage of Tukad Unda has become a tourist destination that attracted much attention from visitors in recent years. Its serene, lush natural atmosphere, gurgling water, and a curtain waterfall on the dam wall showcase a relieving experience in downtown Klungkung. Tourists can now comfortably visit the Tukad Unda dam area since the local village has managed the area as a complete tourist destination with various supporting facilities. However, Tukad Unda is a river prone to mud flooding, especially when Mount Agung experiences increased volcanic activity. Thus, the central and local governments focus on developing supporting facilities to strengthen the Tukad Unda utilization. In addition, many studies show the potential of the Tukad Unda, along with its watershed, which, when properly developed and managed, can significantly impact the welfare of the surrounding community.

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