

## **Utilization of The Ayung Watershed (DAS) as A Sustainable Tourism Attraction In Gianyar Regency**

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### **Abstract**

This study aims to analyze the internalization of the externalities of the use of the Ayung watershed and examine the role of stakeholders in managing the use of the watershed in the tourism sector. Samples were selected through ABGC snowball sampling (Academic, Business, Government, and Community). There are two types of data used. Direct observation and in-depth interviews were used to collect primary data. Secondary data is taken from satellite imagery and MAPID.id. The analytical approach used is qualitative analysis, and stakeholder analysis uses Mactor. The results of this study show that the Ayung watershed is used for tourism, such as resorts, restaurants, and rafting. Rafting tourism is the only direct use of the Ayung watershed. The development and management of tourism around the Ayung Watershed apply the Tri Hita Karana concept. Tri Hita Karana, namely Rahyangan (relationship with God), Pawongan (relationship with the community), and Palembanghan (relationship with design and use of materials). In addition, the concept of nature embodied by the resort manager is also an effort to preserve the Ayung Watershed. Stakeholders with great influence and interest in protecting the Ayung Watershed include agriculture, LMDH Pesanggem, and Perhutani.

**Keywords:** Ayung Watershed, Regulation, Utilization, and Stakeholder

**JEL Classification:** Q50, Q560, Q580

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### **INTRODUCTION**

Humans and the environment cannot be separated, where humans themselves really need the environment for daily life and the environment that requires humans to maintain the ecosystem. It is necessary to use sustainable environmental resources so that the ecosystem is maintained. Socio-economic aspects of watershed management practices, namely, increasing land productivity and improving livelihood strategies. The impact of increasing community institutional strengthening such as watershed committees, self-help groups and community involvement in watershed management practices (Mengistu & Assefa,

2020). People can use it for agricultural irrigation, for household purposes such as washing, cooking, tourist attractions, and so on. However, it should be noted that in addition to the positive impacts provided by the use of watersheds, it also has negative impacts, namely the presence of sediment due to erosion, waste from tourism objects, and household waste. Utilization of river flows needs to be regulated in central government or local government regulations to maintain the existing ecosystem. Watershed planning must be flexible enough to allow stakeholders to consider issues that may not be addressed (Bosch-Belmar et al., 2020).

Government regulations related to space in the region have determined that the watershed (DAS) is included in the category of protected areas. This decision is substantively based on the consideration that the watershed is a buffer zone whose existence must be maintained to support the stability of the surrounding area. Bali Provincial Regulation No. 16 of 2009, Article 50 paragraph 6 stipulates that construction along ravines on riverbanks is only permitted on a radius of at least twice the depth of the ravine, which is calculated from the edge of the ravine to the flatplane. At shallow depths, the minimum radius allowed is 11 meters. The regulation is clear that the government maintains the environmental sustainability of the watershed. If the watershed is used in accordance with government regulations, the ecosystem will be maintained. The watershed has tourism potential for the community, especially for the Balinese community where Bali is a well-known tourist destination both domestically and abroad. In the context of development in Bali, watersheds, especially cliff areas, have developed into areas that capital owners eye as locations that provide potential sites for developing tourism amenities. This has been proven by the construction of various tourism facilities on cliff land. Tourism is one of the economic driving factors in an area. So tourism development in an area is closely related to economic development (Mubinovna, 2020; Villanueva-álvaro et al., 2017). However, tourism is also a factor that can damage the environment, especially when it is developed close to nature, such as in the watershed area (Li et al., 2020).

According to Lakshmi & Shaji, (2016), tourism is one of the activities that can bring significant changes in the economy and the environment. Bali tourism development encourages the growth of accommodation facilities, especially hotels and restaurants, to provide a higher selling value. For example, the existence of hotels and restaurants in the Ubud area, Gianyar Regency, is located along the Ayung Watershed, where hotels and restaurants in this area offer views of the river and cliff areas which are the main attraction for tourists. In addition, the Ayung watershed is also used as a recreational rafting facility managed by the local community (Sudarma & Widyantara, 2016). The decline in the quality of the watershed is caused, among other things, by several things such as increasing population pressure due to industrial development, infrastructure development, and the development of settlements, making it a dumping ground for solid waste (garbage) and liquid waste, low capacity of institutions tasked with preventing and rehabilitating damage to natural resources. , policies that are not yet in favor of preserving natural resources (SDA), coordination that is not yet optimal between related stakeholders, and awareness and participation of various parties including some communities that are still lacking in the context of natural resource utilization and conservation (Sudarma & Widyantara, 2016). The biggest influence on the

sustainability of the ecosystem is the construction of water tourism in the watershed (Purba et al., 2020). Therefore, it is necessary to do proper management in order to reduce the tourism impact caused.

The increasing number of tourist visits is one indication of an increase in the demand for facilities and infrastructure as well as various tourist activities. This demand then has an impact on the high utilization of the watershed (Eryani et al., 2019). The conversion of undeveloped land into built-up land can trigger silting downstream of the river due to the movement of large amounts of nitrogen and soil due to tourism activities (Li et al., 2020). Changes in watershed environmental conditions can affect the quantity and quality of water (Hellman et al., 2018), reducing the aesthetic value of recreation, and reducing biodiversity (Li et al., 2020). Damage to environmental quality is a service fee incurred for services provided by the environment can also be interpreted as an externalities.

externalities are not reflected by the market but are accepted by society as costs due to perceived losses, so that when the output of minerals increases, it will cause increased environmental damage and of course additional hazards due to mining activities increase, so externality costs increase (Pyndick & Rubinflod, 2015). Assessment of the externalities caused by environmental damage due to mining activities can be tangible and intangible. Tangible impacts have monetary value obtained in the market, while intangible impacts do not have monetary value in market mechanisms (Chu, et al., 2020). An economic assessment of environmental quality degradation is needed to determine monetary costs, so that conservation efforts can be prioritized that are focused on increasing the provision of environmental quality improvements.

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The need to maintain ecosystems in the use of watersheds for economic activities in order to avoid environmental damage that can harm the community (Ni et al., 2018). Potential ecological and economic risks as a result of competing demands for ecosystem use and related pressures on ecological resources can be reduced through the protection imposed by existing policies (Retallack, 2021). The existence of regulations from policy makers is an effort to protect the environment in connection with the use of the watershed. This research is important to analyze the externality of the utilization of the cliff area of the Tukad Ayung watershed through internalization to maintain a balance between economy and conservation in Bali tourism.

Watershed (DAS) is an area bounded by natural boundaries, such as ridges or mountains, as well as rock boundaries, such as roads or embankments, where rainwater falls in the area contributing to the flow to the control point (outlet)

(Supirin, 2002). Watershed is a complex megasystem, including physical systems, biological systems, and human systems. Each system and its sub-systems interact with each other. The role of each component and the relationship between components dramatically determine the quality of the watershed ecosystem. Disturbance to one component of the ecosystem will be felt by other components with the nature of the impact chain. The balance of the ecosystem will be guaranteed if the common conditions between components run well and optimally (Asdak, 2010; Kursadi et al., 2010). Watershed land use decisions can also affect the environment and generate externalities which can be runoff causing excessive erosion and flooding (Marques et al., 2017).

Watersheds are usually divided into three parts, namely upstream, middle, and downstream areas. Biogeophysically, the upstream watershed area is characterized by the following: it is a conservation area, has a higher drainage density, is an area with a significant slope (greater than 15%), is not a flooded area, the regulation of water use is determined by the drainage pattern, and the type of vegetation is generally forest stands. Meanwhile, the downstream watershed area is characterized by the following: it is a utilization area, the drainage density is smaller, it is an area with a small to minimal slope (less than 8%), in some places, it is a flood area (puddle), the regulation of water use is determined by irrigation buildings and the type of vegetation is dominated by agricultural crops, except for estuarine areas which are dominated by mangrove/peat forests (Boavida-Portugal et al., 2016).

In simple terms, public goods are defined as goods consumed together without reducing user satisfaction. With such properties, public goods mean goods that are not exclusive or anyone can consume them. With this nature, the provision of public goods is very risky to give rise to the so-called free riders and externalities. Where free riders take advantage of public goods, enjoy the benefits without contributing to their provision (Prastyadewi et al., 2020). In comparison, the externality is the impact of a production activity by one party that must be borne or accepted by another party who is not involved in the production process in question. Externalities are described as the effects felt by one person caused by the actions of others. A positive externality is an act of a person that benefits another, but the benefit is not allocated within the market. Negative externalities are costs imposed on others outside the market system as a product of productive activities (Suprayitno, 2017; Verhoef & Nijkamp, 2002).

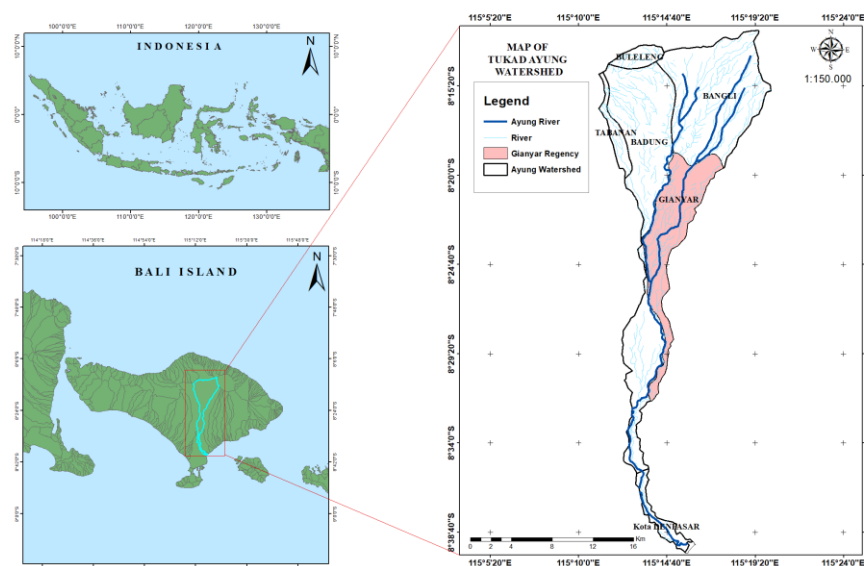
Economic theory describes the problem of providing public goods through the contribution of each individual to the game. Each player (member of society) must decide how much they will contribute to the provision of public goods. Experimental research on public goods has been around since the early 1970s. The experimental design carried out by Issac et al. in 1970 used a sum of money given to a group of experimental participants, which had to be invested and divided into private and public accounts. The investment decisions are made jointly. Personal account balances will be cashed individually, while public account balances will be multiplied and distributed equally among each group member. Free raider appears as a theoretical balance in which the benefit of any money contributed by individuals to the public is less than one. At the same time, equilibrium can occur if each individual is willing to donate all their money to the public account. The game is repeated several times for each different group. From this game, it is then

found that there is a conflict of interest of each individual in investing their money for public goods (Ostrom, 2006; Tregarthen & Rittenberg, 2012).

This study aims to identify customary regulations regarding the use of watersheds in Bali, analyze the use of the Bali Ayung watershed in the tourism sector and analyze the relevant stakeholders who play a role in the preservation of the Ayung watershed.

## METHOD

This research was conducted in Ubud District, Gianyar Regency, especially in watersheds used in the tourism industry. The Ayung River is one of the largest and longest rivers in Bali. This research focuses on the Tukad Ayung watershed area, which is used to provide tourist accommodation in the form of building hotels and restaurants. The DAS flow area covers six regions of Bali: Badung, Gianyar, Bangli, Tabanan, Buleleng, and Kota Denpasar. Its width is roughly 29,717.17 acres. The Ayung River flow region is dominated by agricultural areas, which account for about 11,984.94 ha or 40.33% of the total area, and field areas, which account for roughly 6,332.16 ha or 21.31% of the total area (Rosilawati, et al., 2020). Figure 1 below shows the study area:



**Figure 1.** Location of Study Area  
Source: mapid.com, processed (2023)

A qualitative approach is used to answer the objectives of this research. Qualitative research can explain phenomena that occur through researchers who are declared as instruments, follow cultural assumptions, and simultaneously follow the data (Mulyadi, 2011). The sampling technique used is *Purposive Sampling*. The sample in this study is the stakeholders who utilize the Tukad Ayung watershed in Ubud District, Gianyar Regency, Bali. The sample of stakeholders used in this study is Department of Agriculture (DISPERTAN), *Pesanggem*, Forest Village Community Institution (LMDH), and Indonesian State Forest Company (Perhutani) which have a direct role in making regulations related to the use of watersheds. In-depth interviews in this study were carried out through 6 mechanisms (Hansen,

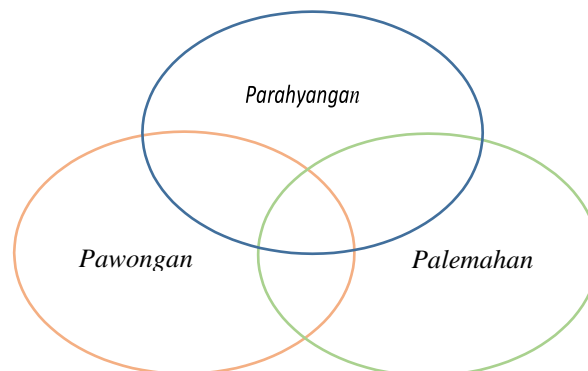
2020): (1) Problem identification; (2) interview design development; (3) conducting interviews; (4) doing a transcript of the interview results; (5) interview data analysis; (6) presentation of interview results. In order to provide a clear illustration of the research phenomenon, the addition of Mactor's analytical tools can provide a more visual and easy-to-understand general picture of the relationships between stakeholders.

The research uses primary and secondary data. Primary data were obtained through in-depth interviews and direct observation. Secondary data sources are obtained from BPS (Central Bureau of Statistics) and other related agencies. The analytical methods used in this study include descriptive analysis, literature review, and stakeholder analysis which are then explained by a simple triangulation method.

## RESULTS AND DISCUSSION

### Regulations Applicable to the Existence and Utilization of Watersheds in Ubud, Bali

According to the Regional Regulation of the Province of Bali Number 3 of 2021, Desa Pakraman controls the use of watershed areas in Bali. Desa Pakraman is a customary law community unit in the Bali Province that has a unified tradition and manners of association with the Hindu community from generation to generation in Kahyangan Tiga or Kahyangan desa ties, has a specific territory and assets, and has the right to care for its own household (Sudiatmaka & Hadi, 2018). The regulation is called *perarem* (*kesehatan krama*/customary members) in the traditional village. *Perarem* is a derivative of *awig-awig*, which is a village agreement. *Perarem* includes criteria that must be met in land use, namely *parahyangan* (relationship with God), *pawongan* (relationship with the community), and *palemahan* (relationship with design, use of materials). These criteria are also known as the *Tri Hita Karana* concept. All activities involved in the village concerned were initially in the pekraman village. For development using watersheds, businessman or investor must report to the krian so that the customary village will see the plan and location of the development until finally a recommendation is given to the government. This is based on information obtained during an in-depth interview with Mr. Tjok Gde Raka Soekawati (Cokorda), the King of Ubud and the owner of The Royal Pitamaha Hotel.



**Figure 2.** The concept of *Tri Hita Karana*

Source: Primary Data, 2020

Hotel development as one of the supporting accommodations for tourism in the Province of Bali must meet the criteria in this concept. The Royal Pitamaha is one of the hotels located along the Ayung watershed, precisely in Kedewatan Village, which applies this concept and becomes a benchmark for developing other hotels in the vicinity, as stated by Mr. Tjok Gde Raka Soekawati (Cokorda), who is a resource person in this research.

*“After I surveyed all hotels built along the Ayung River, always surveyed at the Royal Pitamaha Hotel, I have interviewed all of them, so they are oriented towards Royal Pitamaha.”*

The construction of The Royal Pitamaha is based on the concept of *Tri Hita Karana*, namely by paying attention to spiritual, natural, and human aspects. This is a statement made by Mr. Tjok Gde Raka Soekawati (Cokorda) as follows:

*“...back to the conceptual order, do they equate or do they apply his concept of MahaRsi Markandeya, namely parahyangan, pawongan, palemahan. We lower it in the form of a hotel concept, the building, the people, etc.....”*

*Tri Hita Karana* is one of Sad Kerthi's local wisdoms, which is the philosophy of organizing tourism in Bali as stated in the Regional Regulation of the Province of Bali Number 5 of 2020 concerning Standards for Implementing Balinese Cultural Tourism. Through this regulation, sustainable development in the Province of Bali is carried out by synergizing tourism and culture (Ariyudha et al., 2021). This is also the basis for using the Ayung watershed for tourism.

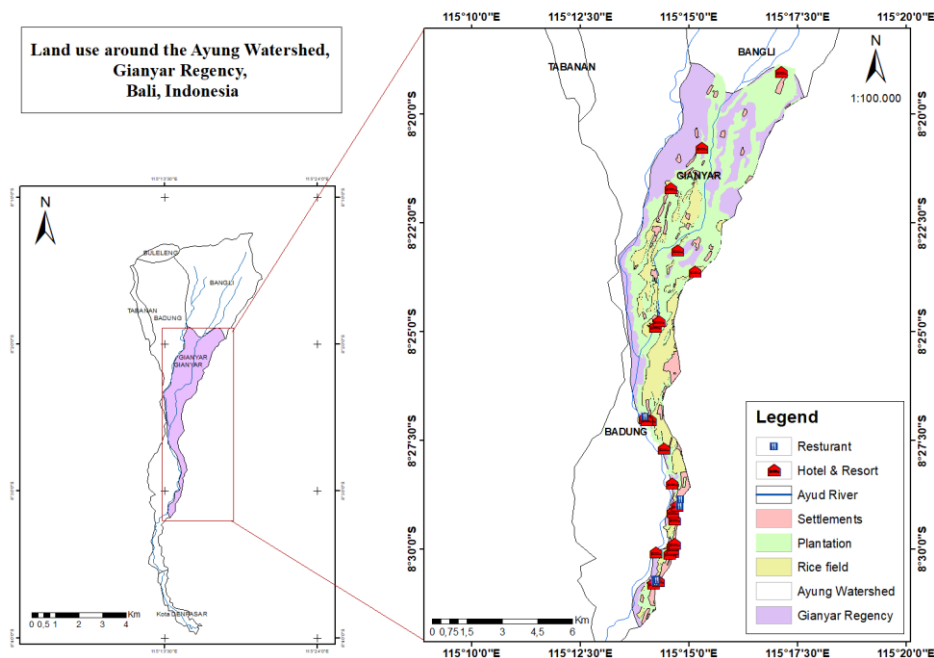
#### **Availability of Watershed Resources: Allotment of Utilization**

A watershed is a land area that is an integral part of a river and its tributaries, which functions to accommodate, store, and drain water from rainfall to the lake or to the sea naturally, where the land boundary is a topographical separator and the boundary between the sea to water areas that are still affected by land activities. (Regulation of Public Works and Public Housing of the Republic of Indonesia). The Ayung Watershed or Tukad Ayung is located to the south of the mountains that border North Bali and South Bali. It is a cross-provincial tukad because it crosses 5 (five) regencies and 1 (one) city (Bangli, Buleleng, Tabanan, Badung, Gianyar, and Denpasar cities). Ayung watershed has a river upstream located in Kintamani District, Bangli, and empties into Padanggalang Beach, Sanur. The Ayung River itself is the longest in Bali, with approximately 68.5 KM with a watershed area of about 301.9 km<sup>2</sup> (Wijana et al., 2018).

Based on water use, the Ayung River is used for irrigation water and as a source of raw water for drinking water (PDAM), toilet water, agriculture, animal husbandry, religious activities, and tourism (Bappeda, 2020). The development of this tourist attraction is also accompanied by the construction of supporting facilities such as hotels, villas, restaurants, and other facilities. Rice fields dominate the utilization of the Ayung River border area. Within the framework of tourism activities, the entire river flow is used for rafting tourism activities, which are supported by various hotel facilities, restaurants and other facilities by sharing space by 25%. As much as 45% and 20% are used as a dry land/vacant land. In addition to rice fields and dry fields, the utilization of the border area in Tukad Ayung also consists of residential and hotel, shops, and public facilities, each with 15%, 15%, and 5%. The Ayung River is essential because of its role as a water

source for agropolitan and agrotourism areas in Payangan District. Payangan agrotourism was developed in two villages, namely Kerta Village and Buah Kaja Village. Payangan Agrotourism offers several tourism options: tracking village tours, buggy/quad, educational tours, flower plantations, coffee plantations, citrus plantations, and integrated agriculture.

Tourism in Gianyar Regency, especially around the Ayung Watershed, carries the concept of "back-to-nature" tours that take advantage of natural beauty. This is shown by the existence of hotels and restaurants around the Ayung Watershed in Gianyar Regency, which offer natural scenery with a distinctive concept of Balinese culture. Another tourism attraction that also makes direct use of the Ayung River is rafting. In addition to tourism, the Ayung Watershed is also used for agricultural land and settlements. The use of the Ayung watershed is shown in Figure 3 below.



**Figure 3.** Land use around the Ayung watershed, Gianyar Regency, Bali  
 Source: Mapid.com, processed (2023)

Based on Figure 2, it can be seen that there are hotels and resorts, as well as restaurants, that utilize the Ayung Watershed. Tourism in this area is developed by presenting its natural beauty to tourists. This can be seen where hotels, resorts, and restaurants are dominated by plantations and rice fields, while utilization for housing is lower. To attract tourists, nature in the Ayung watershed area is managed to maintain its beauty. In addition, rafting is a tour that directly utilizes the Ayung watershed. The rafting route starts from the headwaters of the Ayung river and ends in the Ayung watershed area in Gianyar Regency, more precisely in Ubud District. Table 2 below lists hotels, resorts, restaurants, and rafting that utilize the Ayung Watershed.



**Table 2.** Hotels/Resorts, Restaurants and Rafting in the Ayung Watershed Area, Gianyar Regency, Bali

<b>No</b>	<b>Nama Hotel/Resort</b>	<b>Restaurant</b>	<b>Rafting</b>
1.	Nandini Jungle Resort and Spa	Wijaya Kusuma	Mason Adventure Rafting
2.	Hanging Garden	Lobong Culinary Experience	Sobek Adventure Rafting
3.	The Samaya Ubud Bali	Warung Makan Mardika	Ubud Rafting
4.	Bambu Indah	Warung Kayana	Toekad Rafting
5.	Sayan Terrace Resort	Swept Away Restaurant Ubud	Ubud Bali Rafting
6.	Four Seasons	Dapoer	Bali Bintang Rafting Ubud
7.	The Sayan House	Bambu Indah Garden	Ayung Dewata Rafting
8.	Room@Bali		Bali Amazing
9.	Amandari		Red Paddle Bali Adventure
10.	Mandapa, a Ritz Carlton Reserve		Graha Adventure Rafting
11.	Black Penny Villas Ubud		Payung Rafting
12.	Ailla Ubud		Mahkota Rafting Bali
13.	COMI Shambhala Estate		Sari Profit Rafting
14.	Ayung Resort		New Gangga Whitewater Rafting
15.	Villa Pita Linggar		Bali Max Rafting
16.	HidewaySwing Bali		Toyam Rafting
17.	The Royal Pita Maha		Teja Tourisr Sevices
18.	Matahari bli Thude		Rio Bali Rafting
19.	Awan Biru Villas		Bali Pertiwi Rafting
20.	The Payangan Retreat		
21.	Dara Ayu Villas		
22.	Villa Theresa		
23.	Green Spirit Villa		

Source: mapid.com

A logical explanation for the many facilities in tourist areas is support for the large tourism demand in the Ayung watershed tourism (Putra, 2017). The greater the demand for tourism, the greater the costs that must be made in the context of remuneration for the use of natural resource services. In addition, the number of houses/hotels/inns that exist along the Ayung Watershed can put pressure on environmental quality (eg. erosion) (Purba et al., 2020). Therefore, it is important to internalize the costs of externalities that occur due to tourism activities.

### **Internalization of Tourism Externalities in The Ayung Watershed Area**

The impact of the development of tourism in the Ayung watershed area is tremendous. One of the problems that often arise as discourse is severe land conversion around the Ayung watershed. One of the problems that often arises is the lack of awareness of residents around the watershed in maintaining the cleanliness of the area along the middle and lower reaches of the river (Waridin & Astawa, 2021). If we examine further, not all residents and tourism actors realize the importance of the area around the Ayung watershed. Utilization without proper management worsens the condition of the edge of the Ayung watershed.

Marisni, one of the people who is a resident who lives in the Ayung watershed said that, so far, many people have not realized the importance of preserving the Ayung watershed, some of the land-use changes have created fears of landslides in the *tebih* area, which is tilted, so that if people do not maintain the catchment area is well maintained, so that if the community does not keep the catchment area well maintained, it is feared that the landslide on the deeper wall around the Ayung watershed will get worse. Resort managers regret the lack of government socialization regarding the importance of watershed management. Some resort managers only move unilaterally in internal management and have not involved the community at large. Resort development relies on nature around the resort to focus on keeping the surrounding area beautiful and natural. This will significantly support the continuity of development around the Ayung watershed area. Resort managers protect the Ayung watershed by applying the *Tri Hita Karana* concept in their management. The concept of a resort that blends with nature is evidence of the manager's role in preserving the Ayung Watershed so that the visitors have felt it. In addition, based on Bali Regional Regulation No. 16 of 2009, the resort development is also located more than 30 meters from the river.

The role of the traditional village is also crucial in the regulation and management of the Ayung watershed; management regulations should be strictly monitored and regulated by the customary village to maintain the natural role of the Ayung watershed. Moreover, it is necessary to maintain one of the most famous local cultures globally, namely the existence of SUBAK, a customary law community that is agrarian and religious in nature, which is historically growing and developing as a customary organization at the farm level. The Ayung watershed is a concept used for forest conservation and function.

So far, community participation, especially in the Ayung watershed area, is still said to be lacking because public awareness is still limited to their traditional responsibility for cleanliness in the Ayung watershed area. The results of the interview show that, so far, once a month, the traditional villages around the Ayung watershed carry out mutual cooperation to protect the environment around the

Ayung watershed, some people are still found to carry out often harmful activities such as littering, illegal logging, and activities that can damage the environment along Ayung watershed. This also makes resort actors around the Ayung watershed object because they are not supported by the surrounding community in maintaining its sustainability.

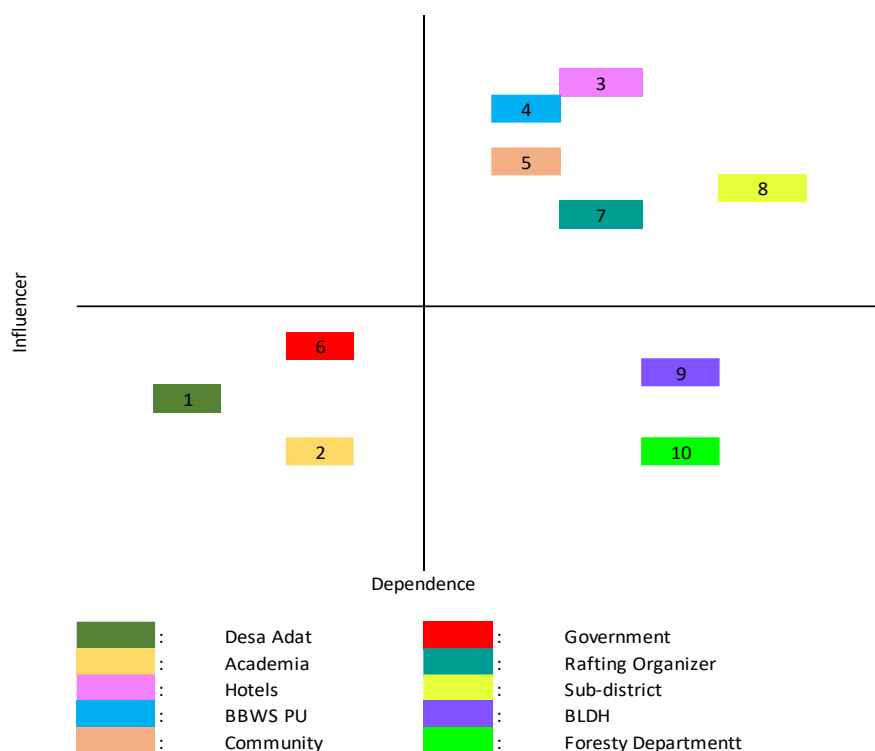
### Stakeholder Analysis

Stanghellini, (2010) classifies the stakeholders involved in water management into appropriators (takers), providers (providers), and producers. Appropriators can be individuals or economic activities, such as household, industrial, or shipping activities that use or consume water sourced from or within the water resource system. Providers are those who organize the provision of water resources. At the same time, producers build, repair, or take action to ensure the sustainability of the water resource system itself. The role of government organizations at all levels (national, provincial, and local) acting as providers. However, on the other hand, government agencies can act as producers, primarily referring to implementing agencies, such as the ministries dealing with water resources, agriculture, or mining. Most can be classified as appropriators for private institutions or the private sector, taking water or polluting it to produce various goods and services. For communities that play a role in watershed management, individual appropriators can be organized in many different ways, such as communities or user organizations.

Meanwhile, Non-Governmental Organizations (NGOs)/Community Organizations (*Ormas*) can have different roles, particularly as appropriators, although in some instances, they may be entrusted with production tasks. According to (Stanghellini, 2010), it is clear that all categories of stakeholder overlap with roles and interests in water management. In the management of the Ayung watershed, those who have a higher interest are the tourism managers and the surrounding community, where the community around the Ayung watershed has a high awareness of environmental sustainability, especially the Ayung watershed. Public awareness also encourages tourism managers around the Ayung watershed to have a high role in managing the Ayung watershed.

Stakeholders in this study were analyzed using a matrix analysis tool to determine the role of each stakeholder in the management of the Ayung watershed, with the following results.

Figure 4. shows the relationship matrix between stakeholders, divided into 4 (four) quadrants. Quadrant 1 is a context setter, where stakeholders in this quadrant have a strong influence but low importance. There are no stakeholders included in this quadrant. Quadrant 2 or key players in this study have strong influence and importance. Stakeholders included in this study have a strong influence on the success of the Hotel program, BBWS PU, Society, Rafting, District. Quadrant 3, or subject, has high importance and low influence on PHBM activities. Stakeholders in this quadrant are BLDH Forestry. In this case, the businessman is interested in supplying wood that will then be sold or distributed to consumers. Quadrant 4, or crowd, has low importance and influence. Stakeholders included in this quadrant is Traditional Villages, Academics, Regency Government.



**Figure 4.** Stakeholder Analysis  
 Source: primary data, processed (2023)

Community participation is a fundamental factor in protecting the environment, very influential in watershed management in Bali, both in the form of statements and in the form of activities by providing input of thoughts, energy, time, expertise, capital, and or materials, as well as participating in utilizing and enjoying the results of development. Public awareness to actively participate in maintaining river flow in their area means that the sustainability and sustainability of the watershed will be maintained. One small role that has a tremendous impact is managing household waste disposal. This is because the most extensive watershed pollution comes from household waste, so the denser the population around the watershed will have a very significant impact on the ecosystem in the watershed (Putra, 2017).

## CONCLUSION

Tourism activities, especially hotels and restaurants, in the Ayung watershed area in Ubud have positive and negative impacts on the community and the environment. Customary rules and beliefs are also influential on tourism development. Government regulations bind the use of conservation areas to maintain the balance of nature and prevent overexploitation from the development of the tourism industry. *Perarem* is a derivative of *Awig-Awig*, which is a village agreement. The role of stakeholders in managing the utilization of the Ayung watershed is divided into four quadrants: context setters, key players, subjects, and crowd.

The need for synergy between stakeholders to maintain the sustainability of the Ayung watershed is vital. Ubud's tourism heavily depends on nature and culture,

and the local community is committed to preserving nature and its indigenous culture by supervising traditional villages. The traditional village plays a very important role, especially in avoiding conflicts of interest among stakeholders.

This research only describes the use of the Ayung watershed and how it contributes to businesses and the surrounding community in protecting the Ayung watershed, which is explained qualitatively. So that further research is needed to determine how far the positive and negative impacts of the use of the Ayung Watershed are for its sustainability.

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