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The Besemah Community's Indigenous Knowledge of Tebat Bukit Conservation in Tebat Benawa Village

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ABSTRACT

This research aims at finding out the form of indigenous knowledge of the Tebat Benawa Community toward Tebat Bukit conservation. The researchers conducted this descriptive study from December 2019 to January 2020. The object of the study was the Tebat Benawa Village Community. The data were collected through literature study, observation, and semi-structured interviews. The results show that the community has five indigenous knowledge in the implementation of Tebat Bukit conservation which is classified into three indicators: the availability of tebat (artificial lake) water, Tebat Bukit, and ghumbus; the use of tebat water called Siring Ayik; tebat and its water management, namely nebaso jalan, ghumbus, and society knowledge transfer in preserving Tebat Bukit through direct experience sharing. The experience sharing is conducted by fishing in tebat, implementing indigenous tradition, socializing with the village administration, giving parental advice, and fostering petatah-petitih (oral tradition on local wisdom).

Indigenous Knowledge Masyarakat Besemah Terhadap Konservasi Tebat Bukit Di Desa Tebat Benawa

ABSTRAK: Penelitian ini bertujuan mendapatkan informasi mengenai bentuk indigenous knowledge masyarakat Tebat Benawa terhadap konservasi Tebat Bukit. Penelitian dilaksanakan dari Desember 2019 sampai Januari 2020. Metode penelitian yang digunakan dalam penelitian ini adalah deskriptif dan objek penelitian ini adalah masyarakat Desa Tebat Benawa. Pengambilan data dilakukan dengan cara study literatur, observasi, dan wawancara semi terstruktur terhadap masyarakat Tebat Benawa yang mengetahui tentang konservasi Tebat Bukit. Hasil penelitian menunjukkan bahwa masyarakat Tebat Benawa memiliki lima indigenous knowledge dalam melaksanakan konservasi Tebat Bukit yang diklasifikasikan kedalam tiga indikator yaitu a) Ketersediaan air tebat : Tebat Bukit dan ghumbus, b) Penggunaan air tebat : Siring ayik, c) Manajemen air tebat dan tebatnya : Nebaso jalan, ghumbus dan transfer pengetahuan masyarakat Desa Tebat Benawa dalam menjaga kelestarian Tebat Bukit melalui pengalaman langsung misalnya ikut mencari ikan di tebat, ikut melaksanakan tradisi adat, sosialisasi dari pemerintah desa, nasihat orang tua, dan petatah petitih.

INTRODUCTION

The water resource crisis in various regions is due to the water deficit resulting from springs drying up. Zhang et al. (2009) state that drought due to a water deficit was experienced in 56% of Java Island in the dry season of 1993. However, it occurred in Java and Bali in 2000, and it extended to Sulawesi and NTT regions in 2015. It is estimated that the water deficit would increase in 2000 to 75%. In terms of its water balance, the Ministry of Environment expresses that a water deficit is yet to occur (Sugiharto, 2019).

The Mining Office of DKI Jakarta calculates groundwater use by assuming that it is used by those who do not use water from the Local Water Company (PDAM) (Hayati & Wakka, 2016). The damage to water resources leading to water deficit is caused by several factors, including the destruction of watersheds (DAS), changes in land-use patterns from agriculture to non-agriculture, reducing forest area, the increase of intensive land use, the absence of soil and water conservation efforts, and the unclear direction and implementation of development for water resource problem solution at the national level. Furthermore, water depletion is also the effect of pollution, river sedimentation, global warming, and climate change (Islam et al., 2021). Therefore, it is necessary to have the proper way of managing water resources to meet the daily needs of living things. The proper natural resource management will improve human welfare, and the other way around, and the poor management will cause bad impacts on humanity (Fauzi, 2006)

Conservation of water resources is one of the solutions to the water resources issue (Kodotie & Syarief, 2005). It is potentially more effective when implemented, which complies with the local conditions and indigenous knowledge owned by each community. The emergence of indigenous knowledge related to water

and respect for water as a source of life resulting from the community's dependence on water (Mawardi, 2012). Indigenous knowledge can be defined as the community's activity, knowledge, and belief in managing nature, which is toward environmental sustainability (Himmah, 2020).

Indigenous knowledge is the product of the direct experience of local communities (Agrawal, 1995). It can take the form of values, norms, beliefs, ethics, customs, and particular rules (Sartini, 2004). It generally emerges through a long internalization process lasting for generations because of the interaction between humans and their environment. This long internalization process leads to the beginning of a crystallized value system of customary law, belief, and local culture.

There have been several indigenous knowledge studies related to water conservation in Indonesia, such as (1) the application of indigenous knowledge in maintaining Senjoyo springs which prevent Tegalwaton Village from drought (Hardati, P., Setyowati, D.L., Wilonoyudho, S., Kariada, N., dan Purwo, 2015), (2) The second is the research on the maintenance of a lake with crystal clear water considered to have sprung from a large banyan tree and is called "tuk sipedug" in Margodadi Village of the western part of Sleman Regency. The water resources are maintained and used by the community for ritual bathing and irrigating rice fields (Hidayat et al., 2020), (3) the research conducted by (Febryano et al., 2014) on the existence of cooperation named horja and mandurung to preserve the Lubuk Larangan of Kaiti River by the people of Sialang Jaya, Rambah District, Rokan Hulu Regency, Riau Province, (4) the study on the tradition of umpan danau and umpan pedagi and the prohibition of tree cutting around Lake Bekat to preserve the lake in West Kalimantan Province (Simangunsong, 2014), and (5) the study on the preservation of the Rangau River in Riau

Province through spatial planning of settlements, irrigation, and plantations (Andrico et al., 2017).

Water is very important for the survival of living creatures. The Besemah-Semende people use water for various purposes such as drinking water, cooking, bathing, washing clothes and kitchen furniture, irrigating rice fields and fisheries, and living space for animals and aquatic plants. The availability of water in the Besemah-Semende Tribe must meet the next generation's daily needs and agricultural needs.

A study showing water conservation in the Besemah-Semende Tribe, which was conducted by (Meilinda et al., 2021), describes that there is four indigenous knowledge of the Besemah-Semende community as water conservation efforts which include: (1) tebat or artificial lakes, as water reservoirs, (2) tambat ayik as part of water recycling, (3) calak badawan as a cultural taboo to protect tebat and springs in the forest from harmful human activities, and (4) bubus tebat, to drain tebat water to harvest fish as part of tebat maintenance management. One of the tebat in the Besemah tribe is the Tebat Bukit.

Tebat is a pond, which functions as a barrier to block the flow of water, dams, or it is placed in rivers or swamps to protect fish (KBBI, 2016). Tebat Bukit is in. Tebat Bukit is an artificial lake owned by the people of Tebat Benawa Village, located in Tebat Benawa Village, Penjalang Village, South Dempo District, Pagar Alam Regency, originating from the Mude Ayek Tebat Benawa customary forest. There has been no research on how the Tebat Benawa community conserves Tebat Bukit. The purpose of this research was to find out the indigenous knowledge of the Besemah Tribe community on the conservation of Tebat Bukit in Tebat Benawa Village."

METHOD

This research was conducted in the Tebat Bukit area in Tebat Benawa Village, Penjalang District, Pagar Alam Regency. The distance between Tebat Bukit and Tebat Benawa Village is about 2 KM, and the area is about 1.5 hectares. Its existence is very useful for the people of Tebat Benawa Village as the main water source for their daily and irrigation needs. In addition to those functions, it also produces a lot of fish (Wijaya, 2019).

It is not known exactly when Tebat Bukit was built. However, it is estimated to be built in the 1950s, and it has never dried up until now that the Besemah tribe continues to use it. This is related to the factor of maintaining the surrounding environment.

The objects of research were the people of the Tebat Bukit area. This research was qualitative research that aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of people individually and in groups (Sukmadinata, 2005)

Data was collected using a literature study, observation, and in-depth interviews with 22 respondents. The selection criteria of the respondents include: physically and mentally healthy, aged around 16-60 years, living in the area for more than five years, a native of the village, which also includes people with mutual relationships with Tebat Bukit. The respondents were coffee farmers, Community heads, traders, traditional or religious leaders, and other people in Tebat Benawa Village.

There were 22 people interviewed, 16 (72%) of whom knew the information about the Tebat Bukit Indigenous Knowledge and the water conservation habits of the surrounding community. All of them reside in the village of Tebat Benawa. The minimum number of participants in a qualitative study in the phenomenological tradition is 8 participants for the interview

(Guetterman et al., 2015). So, 16 participants are sufficient.

The researchers designed the interview framework as a general guideline for conversations with respondents (Bevan, 2014). The interview started with the question, "Do they know the history of the establishment of Tebat Bukit?", "do they know its purpose?" the interview proceeded with questions about its water flow, its use, special traditions carried out by the people around it, the role of its ecology and so forth. Most of the interviews took place in the area around Tebat Bukit while they were fishing or sitting in the yard not far from Tebat Bukit so that researchers could combine interview techniques and direct observation.

To do the Documentation, a camera and a voice recorder were used through interviews and field observations to help simplify and clarify the description of everything related to the problem under study. The gathered data from 16 people (72%) who know indigenous knowledge of Tebat Bukit were analyzed technique carried out descriptively by narrating the results of observations and in-depth interviews of the respondents. It started from December 2020 to January 2021.

The descriptive method can be interpreted as a problem-solving procedure by describing the object of research at the current time based on the facts as they are. Analysis of the data described in the form of narration is connected with the results of field observations and in-depth interviews. What is seen and heard from the research subject can be described carefully and in detail to build a concept that has more meaning in reconstructing research problems. The analysis of the narrated data resulted in the forms of indigenous knowledge of the people of Tebat Benawa Village in conserving Tebat Bukit.

RESULTS AND DISCUSSION

The analysis results showed that indigenous knowledge of the Tebat Benawa community in maintaining Tebat Bukit was classified into three indicators, i.e., availability of tebat water, use of tebat water, and management of the tebat and tebat water, as shown in Table 1. The grouping is based on the existing problems on each indicator. The indigenous knowledge is useful for overcoming the problems in each indicator.

Table 1. Forms of Indigenous Knowledge of the Tebat Benawa Village Community

No.	Tebat Bukit Conservation Indicator	Forms of Indigenous Knowledge	Description
1.	Availability of Tebat water	1) Tebat Bukit 2) <i>Ghumbus</i>	An artificial lake that holds water sourced from customary forests. Taboo culture in the Tebat Benawa community means prohibition (polluting Tebat Bukit, entering the Tebat Bukit area without the permission of the traditional leader, and cutting down trees within a radius of 50 meters from Tebat Bukit).
2.	use of tebat water	1) Siring Ayik	Water reuse or recycling.
3.	management of the tebat and tebat water	1) Nebasi jalan 2) Transfer of community knowledge in preserving Tebat Bukit	Communal voluntary work in cleaning access roads to Tebat Bukit and around Tebat Bukit. A way to increase literacy on water conservation through socialization, advice from parents, and direct experience in the field, such as by practising Nebasi jalan

3) *Ghumbus*

In addition to maintaining the availability of tebat water, ghumbus also functions to manage the tebat and tebat water.

DISCUSSION

A. Availability of Tebat Water

In this research, the availability of water resources that the people of Tebat Benawa can utilize for a long period and in large quantities. The method used by the people of Tebat Benawa to maintain the availability of water resources is to conserve them through indigenous knowledge of Tebat Bukit and ghumbus.

1) Tebat Bukit

Tebat Bukit is an artificial lake that

blocks water flow to accommodate it. Its ability to contain a large amount of water for a long period can help maintain water availability at Tebat Benawa village. Its water sources come from nearby springs or from the *ulu ayik* forest, which is located nearby. The function of the tebat is similar to a modern dam. However, a modern dam is built to block water flow in rivers, while tebat collects water from springs in the forest and rainwater (Mawardi, 2012). Tebat Bukit is the largest source or provider of water for the community. The condition of the hillside can be seen in Figure 1.

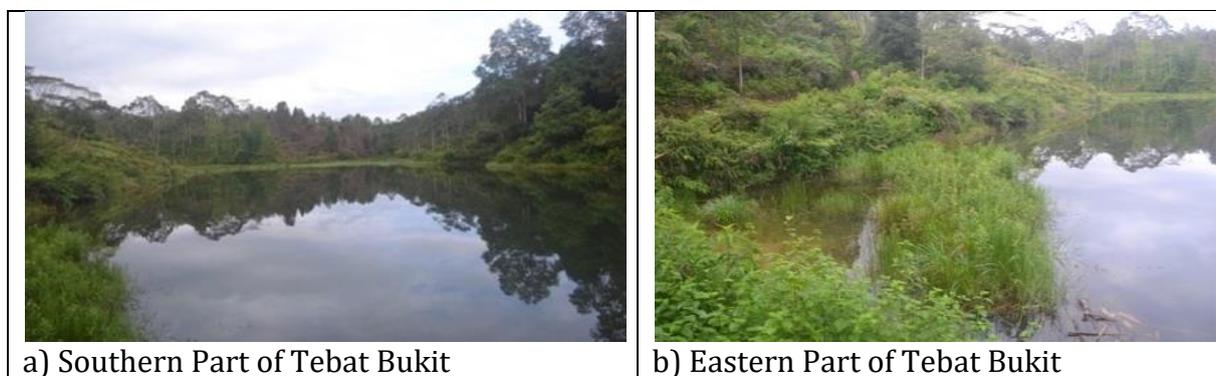


Figure 1. Condition of the Hills

The community uses the water from Tebat Bukit to irrigate rice fields as a source drinking water and cooking, bathing, a washing. Tebat Bukit is different from a traditional dam called Ndiva in Kilimanja Tanzania, which harvests rainwater, and the water is used when the dry season arrives (Mbilinyi et al., 2005a). It is a different from the dams in Iran and Dubai India, which collect rainwater (Zafarnej 2009). Bukit water sources come from a nearby spring or from the *ulu ayik* forest, which is located nearby, and its function is similar to a modern dam. Its function to collect water from springs and rainwater makes it different from the traditional dam called Ndiva in Kilimanjaro, Tanzania,

which harvests rainwater or collects rainwater and then uses it when the dry season arrives (Mbilinyi et al., 2005b). It is also in contrast to the dams in Iran and Dubai in India, used only to collect rainwater. The only difference between the two is that modern dams are built to block water flow in rivers, while tebat bukit collects water from springs in the forest and rainwater (Meilinda, 2022).

2) Ghumbus

Ghumbus is the name of a taboo culture in the Besemah community, stating that the area around the tebat is guarded by the supernatural spiritual powers of the founders of the tebat. It encourages the

people of Tebat Benawa to act and speak carefully around Tebat Bukit. It also made them care about other prohibited actions, as shown in Table 2. The prohibitions help

maintain the availability of stagnant water, assist the management of tebat water and protect Tebat Bukit from damage such as leaks.

Table 2. Taboo Culture of the Tebat Benawa Community

No.	Taboo Culture	Description
1.	Prohibition of polluting Tebat Bukit	It includes polluting Tebat Bukit by littering, urinating or defecating, and bathing during menstruation at Tebat Bukit.
2.	Prohibition of entering the Tebat Bukit area without the permission of the traditional leader	It prevents people from doing damage in Tebat Bukit by explaining various taboos and procedures in entering the Tebat Bukit area.
3.	Prohibition to cut down trees within a 50-meter radius from Tebat Bukit	It maintains the water release area so that availability in Tebat Bukit is preserved

Ghumbus, in addition to social norms, also functions as an informal rule regulating human interaction with others and nature. Previous studies reported that cultural taboos and belief in supernatural powers increased people's obedience better than formal laws. For example, the pamali taboo culture of Kalimantan, pahomba in East Nusa Tenggara, Badad Tanah Jawa on the island of Java, and merti desa in Yogyakarta, Central Java, and East Java (Maridi, 2015).

B. Tebat Water Usage

Water must be used wisely to meet the needs of life in the long term. Tebat Benawa use Tebat Bukit as the main water source in their village. There is a need for awareness of the wise use of water to meet all needs. *Siring ayik* is the indigenous

knowledge of the village on proper and wise use of proper that it can meet both agricultural and daily needs.

1) Siring Ayik

Siring ayik is part of the indigenous knowledge of the Tebat Benawa community for efficient and effective use of water by reusing or recycling water before it flows to the river. The water flow in the Besemah tribe of Tebat Benawa Village is shown in Figure 2. It shows that water flows from a spring from the Mude Ayek Tebat Benawa customary forest to Tebat Bukit. It continues to flow to the community's rice fields and empties into the river. The community can utilize the water streams to irrigate fishponds, cook, shower, and wash clothes.

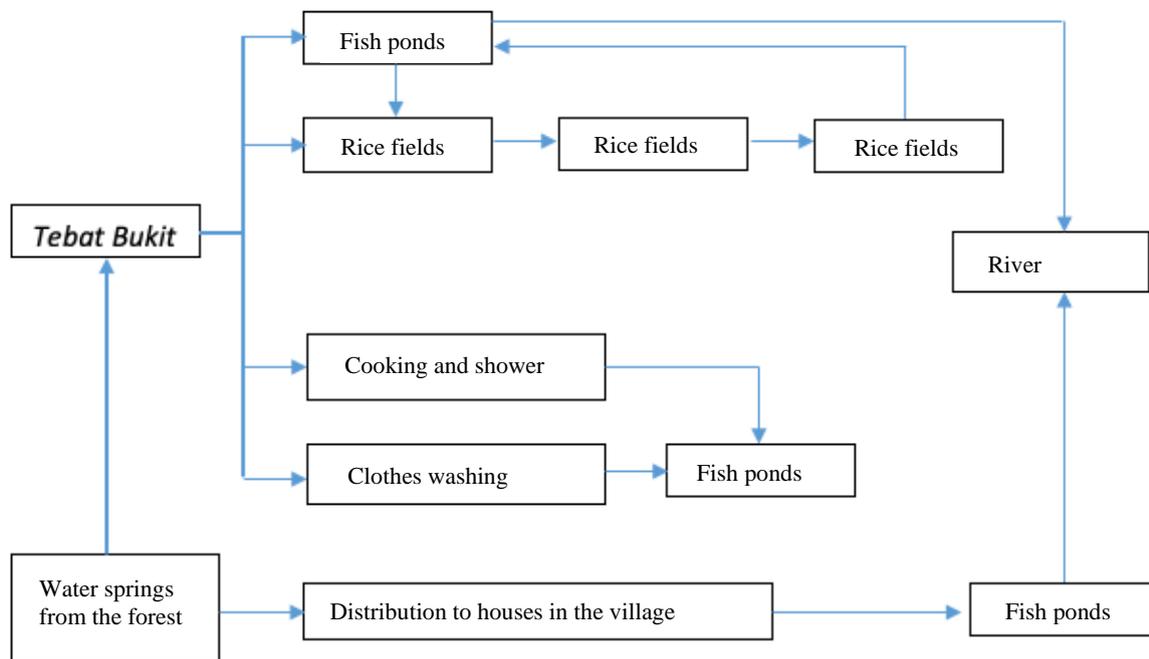


Figure 2. Water Use Diagram of the Village Community (Meilinda et al., 2021))

The reuse of water in the rice fields results in the terrace contours of the rice fields like that of subak in Bali. Planting crops in terrace shapes in contour lines takes advantage of the rain while protecting the soil from the threat of erosion and landslides due to rainwater (Maridi, 2015). Siring ayik is useful for regulating water needs in areas experiencing scarcity and abundant water resources. In scarcity, this technique will seek to channel irrigation from water sources to places of water deficit, whereas in abundance, it will seek to maximize water use. Siring ayik is like Tangata Whenua in New Zealand, which requires a holistic use of water, returning to the ground (papatuanuku) after utilization (Norke et al., 2016).

C. Tebat and Tebat Water Management

Tebat and tebat water management are defined as managing water sourced from tebat and managing the water sources (tebat) for various purposes. Water management aims to obtain a set of knowledge, skills, and thinking patterns that support water management to optimal

decision making (Limantara & Soetopo, 2020). The Tebat Benawa community manages tebat and tebat water with three components of indigenous knowledge, i.e., the tradition of nebasi jalan, ghumbus, and knowledge transfer of the people of Tebat Benawa in preserving Tebat Bukit. Ghumbus helps maintain the availability of tebat water and helps protect Tebat Bukit from damage.

1) Nebasi Jalan

Nebasi jalan is a tradition of *nebasi* or mowing wild shrubs along the road to Tebat Bukit and around Tebat Bukit. It is carried out so that people feel safer and more comfortable in examining the condition of Tebat Bukit. The activity also includes checking for leaks on the tebat, usually carried out by Tebat Benawa people. Moreover, the people also use the road to get to the coffee plantation area. A similar tradition is the *horja* and *mandurung* traditions carried out by the people of Riau Province in preserving the *Lubuk Larangan* of the Kaiti River (Hasibuan & Fauziah, 2015). The activity of *nebasi jalan* is shown in Figure 4.



Figure 4. *Nebasi Jalan* Activity

As explained by (Coppock, 1994) that there are three things that people can do to maintain water sources, i.e., daily, seasonal, and maintenance of the main well. The equipment used in *nebasi jalan* tradition is environmentally friendly such as machetes and sickles. People may bring one of these tools in *nebasi jalan* tradition. It is carried out once a year after the coffee harvest season in September since people have free time after the harvest. The participation of all community members in *nebasi jalan* is a part of seasonal maintenance to clear sentiment and as the main well rehabilitation.

In addition to *nebasi jalan* and *bubus tebat*, other activities for leak checkings of the Tebat Bukit were also carried out. It was also done to collect fish by draining the *tebat*. However, it has long been discontinued since it can interfere with daily and agricultural water needs. The time needed for the *bubus tebat* is about 22 hours, while the time it takes for Tebat Bukit to be fully charged again is 2-4 days. Despite this, the community of Desa Tua dan Desa Baru continues to carry out *bubus tebat*, which aims at cleaning up sentiment and serves as *tebat* rehabilitation (Meilinda et al., 2021).

2) Transfer of Knowledge of the Tebat Benawa Village Community in Maintaining the Preservation of Tebat Bukit

The community around Tebat Bukit has acquired knowledge to preserve Tebat Bukit's environment and manage Tebat Bukit from generation to generation. The knowledge transfer aims at maintaining their local knowledge in managing *tebat*. It also tries to maintain the literacy in water conservation that Tebat Bukit can be well maintained. The knowledge transferred is the Tebat Bukit conservation procedure which includes planning for water distribution through *siring ayik*, various taboos, procedures for utilizing natural resources around Tebat Bukit, road *nebasi jalan* tradition, and various kinds of sanctions as law enforcement efforts.

(Pawarti et al., 2012) explained that indigenous knowledge generally contains teachings to maintain and utilize natural resources (forest, land, and water) sustainably). This method of knowledge transfer is obtained through direct experience, for example, participating in fishing in the *tebat*, carrying out *nguculi ikan* and *nebasi jalan* traditions, socialization from the village government, and advice from advice parents, and *petatah petitih* (oral tradition on local wisdom). Indigenous knowledge is also often expressed in the form of folklore and proverbs (Pawarti et al., 2012).

CONCLUSIONS AND SUGGESTIONS

Based on the description of the results and discussion, it can be concluded that the indigenous knowledge of the people of Tebat Benawa Village in carrying out Tebat Bukit conservation can be seen from three indicators, namely: Availability of tebat water, consisting of *Tebat Bukit* as an artificial lake (dam) to collect water and *ghumbus* as a cultural taboo to protect the tebat and springs in the forest from harmful human activities. The use of tebat water consists of siring ayik as a water recycling system. And tebat and tebat water management, consisting of *nebasi jalan* to maintain Tebat Bukit from wild shrubs and leaks, *ghumbus*; and transfer knowledge to the people of Tebat Benawa Village in preserving Tebat Bukit as an effort to increase community literacy on water conservation.

The author suggests including more determinants of indigenous knowledge and having a larger number of respondents to get better results.

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