

# Sustainable development goals of water preservation based on myths and local community wisdom around Penanggungan Mount, East Java, Indonesia

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**Abstract.** Clean water for the world's entire population is one of the SDGs. The local community around Mount Penanggungan, East Java, has a way to utilize and preserve water resources in its environment. This article will show how local communities' myths, traditions, and values can conserve water. This research uses a qualitative approach. The research site is on Mount Penanggungan, the most popular destination, Tetek Belahan, and Jolotundo Temple. The subjects of this study were caretakers, village leaders, indigenous figures, tourists, and local communities. The object of this study focuses on extracting the meaning of myths and local wisdom relating to the SDGs. This study shows that some myths or mythologies significantly affect people's view of water on Mount Penanggungan to this time. Some local traditions and values can maintain the preservation of springs located at ancient sites on Mount Penanggungan.

## 1 Introduction

On September 25, 2015, at the United Nations headquarters, world leaders formally endorsed the Sustainable Development Goals (SDGs) as a global development agreement. Approximately 193 heads of state attended, including Indonesian Vice President Jusuf Kalla, who also supported the SDGs Agenda. In 2017, Presidential Regulation (*Perpres*) SDGs No. 59 of 2017 on implementing Sustainable Development Goals was established in Indonesia. The regulation is also a commitment to implementing and realizing SDGs in a participatory manner by involving all parties in Indonesia. Ideally, achieving the SDGs will involve all circles, including minor rural communities, in maintaining and preserving water and other natural resources for everyday life.

The Area around Mount Penanggungan, East Java, has a tremendous wealth of mineral water resources. Residents in Surabaya, Sidoarjo, and surrounding areas who do not have clean water facilities for drinking and cooking depend on water from Mount Penanggungan. The water is transported through tanks and piped by retail traders into jerry cans carried to

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people's homes. Clean water taken from the slope area of Mount Penanggungan is called "*Prigen Water*," according to the toponym of the Prigen area on the eastern slopes of Mount Penanggungan, Pasuruan Regency. This wealth also caused many mineral water producers to set up factories there. Water will likely become scarce if water usage continues at this extensive rate.

Mount Penanggungan, 1653 meters above sea level, is between Pasuruan and Mojokerto regencies. Mount Penanggungan can be seen from Surabaya and Sidoarjo, located north. In addition to abundant water resources, Mount Penanggungan is rich in accommodating about 120 ancient sites dating from the 9th to 15th centuries. In addition, there are also twists in some ancient sites of Hindu-Buddhist royal relics, such as Tetek Belahan Temple and Jolotundo Temple. Search results found several studies that examined the geographical condition of Mount Penanggungan. Some of these studies link geographical conditions (volcanic-hydrogeology, geology) with the spread of conservation zones of historical sites. As a result, the historical sites around Mount Penanggungan have been successfully mapped and divided into five zones, including a group of cultural sites on Mount Penanggungan; a group of cultural sites on Mount Bekel; a group of cultural sites on Mount Genting; a group of cultural sites on Mount Kemuncup; and, a group of outdoor cultural sites consisting of 51 sites. [1]. Previously, there was research on hydrogeology in Area Mount this insurer [2], and also recommends that Mount Penanggungan can be used as a geopark because it has unique geological conditions that affect the determination of the location of the site, architecture, and temple establishment materials close to lava flows and other pyroclastic deposits [3, 4].

Based on geographical conditions and the spread of interesting historical sites, some researchers studied the potential of tourism in the Mount Penanggungan area. Tetek Belahan Temple and Jolotundo Temple are lightning that have tourism potential and wisdom of local values that can be used for educational tours [5, 6] In addition, there is one temple that is considered a *masterpiece* of the temple complex in Mount Penanggungan, because of its beauty and function as a hermitage location during the time of Mpu Sendok to the Majapahit [7]. There is a study that shows Mount Penanggungan can be a potential tourism location and be able to improve the surrounding economy if supported by adequate infrastructure, as well as the attention of various policymakers [3, 8, 9].

With diverse historical sites, attractive geographical conditions, and communities thick with cultural values, researchers see great potential in studying Tetek Belahan Temple for its local values that follow the SDGs, especially preserving clean water in Indonesia. This research will investigate the myths that make people continue to come to the Temple Tetek Belahan cleavage to utilize the water. In addition, this research will also describe how local communities in East Java conserve water resources, contributing to works of literature about how the wisdom of cultural traditions can be engaged in preserving water at sites around the world. Connections between Indigenous peoples and water preservation have been documented, for example, throughout Australia [10], where Indigenous knowledge respects life-sustaining water and the ecologies of water sources: "For all Australian Indigenous cultures, water is a storied medium that connects the past and present in the 'long now': a living and lively substance that sustains their Country" (p. 27). For example, Whadjuk Noongar people say the chain of wetlands on the coastal plain around Perth in Western Australia was made by the *Waugal* rainbow serpent. This creation spirit still inhabits the deepest of aquifers below the city. Therefore, effective coalitions of Indigenous people, scientists, and environmentalists have formed in and around Perth to protect wetlands from road construction and property development encroachments. *Waugal* is the vital force of running water in the region, so respecting the *Waugal* requires Indigenous (and non-Indigenous) peoples to practice protocols of respect and care for water sources. Indigenous Peoples' practices of maintaining cultural protocols and protecting water sources can be found further inland in Noongar Country, such as the Wilman People's project to reinvigorate

their culture while restoring the Hotham River and its tributaries [11]. Learning from and respecting Indigenous knowledge and practices of water management is seen as a solution to managing water scarcity in Australia [10]. This article aims to elucidate how local communities on the slopes of Mount Penanggungan have been able to sustain water resources through the implementation of myths and religious rituals. The results of this research can inform the development of strategies for other local communities to ensure access to clean water, aligning with the broader objectives of the Sustainable Development Goals.

## 2 Method

This study uses a qualitative approach because it examines local myths and wisdom. The object of research is myths and local wisdom values found in two locations, namely, Seloliman Village, Mojokerto Regency, and Wonosuryo Village, Pasuruan Regency, which are both on the slopes of Mount Penanggungan. The study subjects were site keepers, village leaders, caretakers, local communities, and tourists. The study was conducted over three months, from August to November 2021.

There are several qualitative methods used. Documentation studies have been researched before to look for existing local myths and values data. Phenomenology studies are conducted to explore information (local wisdom, existence of values) from various sources related to existing phenomena. Several procedures were performed in this study for data retrieval. Surveys were conducted to dig up information and clarify myths at historical sites on Mount Penanggungan. The next step is an interview to identify local values around the Mount Penanggungan site and clarify previous research about Mount Penanggungan. Data analysis used in this research is a qualitative-verification data analysis strategy; this strategy is an inductive analysis of research data conducted throughout the research process undertaken [12]

## 3 Results and Discussion

### 3.1 Myths

The mountains in Java have different meanings for each community. Mountains on the island of Java are mentioned in several books written in the past, including the book of *Tantu Paggelaran*, *Arjunawiwaha*, *Kunjarakarna*, *Bujangga Manik*, *Negarakertagama*, and *Partayajna* [13]. Mount Penanggungan is considered a very sacred mountain by Hindu-Buddhist communities in the past. In ancient Java, ancient Javanese people called this mountain Mount Pawitra, which means holy. Indeed, there is a reason why Mount Penanggungan, which is only 1659 masl, is considered sacred; even many places of worship were built that survived from the 10th to 15th centuries AD. The creation of Mount Penanggungan is revealed through mythology in the Book of "*Tantu Panggalaran*." The manuscript tells the mythology of the formation process of Java Island and its mountains, including Pawitra, and the beginning of human life on the island of Java. The book "*Tantu Panggalaran*" provides reasons for the water around Mount Penanggungan to be considered holy and productive.

The book "*Tantu Panggalaran*" explains that the island of Java is unstable, often vibrating and swaying [14]. Seeing this, *Bathara Mahakarana* (*Bathara Guru*) ordered all gods, reps, angels, bidder, and Gandharva to Jambudipa (India) to move half of Sang Hyang Mahameru (the highest mountain touching the sky) to Java Island to balance it. Mahameru is a sacred mountain by Hindu-Buddhist mythology that is believed to be the center of the [15] universe, connecting the microcosm (*Buana alit*) with the macrocosm (*Buana ageng*) [14, 16]

Bashara Vishnu became a giant snake that wrapped around and twisted Mahameru to escape from the base. Sang Hyang Brahma transformed into a great turtle king to sustain Mahameru. It is also said that the incident resulted in the storm's exit and the flash, and then there was a rumbling sound because the gods were saying the word "*astu*" to gain strength.

Upon arrival in Java Island, Mount Mahameru, which comes from Jambudipa, was placed in the western part. Instantly, Java Island became unbalanced and inclined to the west. Then, the gods were ordered by Bathara Guru to move the other part to the east of Java Island. The uprooted part of Mahameru was then moved to the east, and part of the mountain in the west became Mount *Kelapa-paratha* (*Kailasa*), which is believed to be Mount Salak. Along the way, some of the ruins of Mount Mahameru fell and became mountains on the island of Java. Successively, the ruins became Mount Katong, Wilis, Kampud (Kelud), Kawi, Welirang, Mount Arjuna, and Mount Semeru. At the same time, Mount Penanggungan was the peak of Mahameru, which had collapsed. This moment also makes Mount Penanggungan special because it is seen as the cut-off peak of Mahameru, which is why this mountain is considered sacred. The link between buana alit and Buana ageng. Therefore, in Hindu-Buddhist mythology, Mount Penanggungan is a holy mountain and has infinite religious value:

"Because of the fall, cut the bottom of the Sang Hyang Mahameru so that the standing leaning to the north (moving broken peak). So, the gods established the peak of Sang Hyang Mahameru. "It Pawitra", which means "well clean," said all gods. So now his name is in Pawitra, at the peak of Sang Hyang Mahameru, which was once said. It is said that Sang Hyang Mahameru is not sturdy, meaning he leans on the Brahma mountain because Sang Hyang Mahameru will collapse if not propped up on Mount Brahma because of the lower cut. Because Mount Brahma strengthens it, Sang Hyang Mandaragiri immediately stands tall. Therefore, Java became sturdy, stopped shaking, and settled strongly ("*Nisadapageh*"). Therefore, Sang Hyang Mahameru is called the mountain "*NISADA*" [14].

The verse footage in the Book of "*Tantu Panggelaran*" above tells how the peak of Mahameru was cut and became Mount Pawitra, which is interpreted as "clean" or "holy" based on the knowledge that is developing today. After the complete transfer of Mahameru to the East of Java Island, it eventually became sturdy and stable, stopped shaking, and settled.

There are exciting things relating to the transfer of Mahameru before it was planted in the western part of Java Island. According to the book "*Tantu Panggelaran*," the gods who twisted Sang Hyang Mahameru suffered fatigue and thirst. At the same time, the gods drank the Kalakuta water from Mount Mahameru. It turned out that the *kalakuta* water was poisonous; all the gods finally died, then Bathara Guru was seen sucking the *kalakuta* water.

Sucked in water *kalakuta*. *Bathara Guru's* neck blackened its color like "after all". Therefore, Bathara Guru is named Bathara Nilakanta, because his neck is black anyway. Said *Bathara Guru*, "Oh, this water is very powerful. I was in pain from him." Instantly, it was observed that the poisonous water of *kalakuta* then became the holy water of true life.

After being sucked by Bathara Guru, with its power *kalakuta* water was transformed into *tatwa amreta siwamba* (holy water of true life) [15]. Then, all the gods were doused with the amreta and came back to life. Even they became excited and had more power to lift Mahameru back. Indeed, in Mahameru, there are *Mirah*, gems, diamonds, and gems jugs named Kamandalu, in which there is holy *amreta* water. This story is also very influential on Hindu-Buddhists' views from the past to the present. They will consider the water on Mount Mahameru and its ruins to give off holy *Amerta* water, not least on Mount Penanggungan. Therefore, there are several twists around Mount Penanggungan whose water is considered sacred until now. In addition to, holy water is believed to cure all kinds of diseases.

Many springs appear around the slopes of Penanggungan. However, not all are famous, and many people come too [16]. One of the most famous is the Jolotundo, which has a reasonably abundant spring. The water in this temple is considered sacred and nutritious, and

it is the second-best water quality after *zam-zam* water in Mecca. In addition, Tetek Belahan Temple removes water from both breasts in The Statue of Dewi Laksmi. Both were considered to have holy water. Until now, these two water source sites have been crowded and handled by people who believe in the efficacy of the water.

Mount Penanggungan has a mythology of how it was created and continues to impact the behavior of the people around Mount Present. Residents believe the sanctity of existing water in Mount Penanggungan to have an impact on the emergence of rituals such as Ruwat Dusun in Tetek Belahan Temple and Ruwat Sumber conducted by the Seloliman village community in Jolotundo Temple Complex. The tradition that continues to be maintained proves that people's belief in the myths on Mount Penanggungan is still firm.

The revealed representation of the "*Tantu Panggelaran*" text is also an implementation of Javanese, Hindu (Shiva), and Buddhist syncretism, and all three are in a mutualistic relationship. In most of the stories in the book, it appears that Hinduism / Shivaism is dominant. However, implicitly the concepts of Buddhism are more prominent, and Java, with its original culture, can unite the parallels of multi-religion and multiculturalism with universal values and norms in the spiritual life of its people.

### 3.2 Local community wisdom

Some traditions are very closely related to the fact that Mount Penanggungan is a source of holy water for the surrounding community. The tradition is closely related to the gratitude of Seloliman and Wonosuryo villages for the abundance of "*Ruwat Sumber*" (local term). People there usually hold *Ruwah/Ruwat Sumber* ceremony or *Bari'an Sumber* or Ruwat Dusun / Punden. One of the interesting things about some traditions relating to managing and maintaining water flow in one of the Villages of Sempur in the Seloliman area is to do *Ngrocok* events or clean streams or times. The event is meant to clean the waterways. Usually, after carrying out this tradition, then follows a series of events, "*kenduren*" or "*tahlilan*."

As the caretaker of the Jolotundo Lightning site showed the distribution of tourists who came to Petirtaan Jolotundo was dominated by religious tourists from Sidoarjo, then Surabaya, Malang, Mojokerto, and even Palembang, who were seeking spiritual elevation. He also explained that the water quality in Petirtaan Jolotundo was examined by archaeologists from the Netherlands and in 1986 was ranked 3rd in the World after the source of Zam - Zam water and the water source of the Ganges River. But in 1995, newer research gave rise to new data in the form of water quality in Lightning Jolotundo, which was ranked 2nd in the World after the source of Zam-Zam water. Until now these rankings are still trusted by visiting tourists.

There is a tradition carried out every year by the people around Mount Penanggungan, especially Seloliman Village and Wonosuryo Village, namely the *Ruwat Sumber* or *Ruwat Dusun* tradition. *Ruwat Sumber* is a ritual performed in the spring of each hamlet whose *ruwatan* tradition process consists of three stages including preparation, implementation, and closing. The first stage of the *ruwatan* tradition is the preparatory stage which begins with a committee's formation. The special committee is tasked with preparing core events such as determining the implementation date, usually carried out before the 10th date of *Suro* month with *hari pasaran legi* determination. The committee prepares equipment in the form of offerings and *ubo rampenya*, *cok bakal*, *tumpeng*, donors, guests, and various arts that will be displayed.

The second stage of the implementation of *ruwatan* tradition is the implementation stage. Before the event, various kinds of arts were displayed, including *jaranan*, *bantengan*, *Ujung*, and *wayangan*. This stage contains various arrangements of events, including Sumaninggah, a request for permission or notification to God Almighty and the ancestors who are there

about implementing ruwatan traditions carried out in siti inggil: Kiran Agung in Petirtaan Candi Jolotundo thought the 33rd carrier of jugs that will be filled with water from various sources. The next event is the release of birds and tree planting as a symbol of nature preservation. Birds released with the provisions are not enemy birds of farmers, while there is no provision on tree type for the trees to be planted. The release of birds and planting of trees is a form of preservation and control of nature [17].

## 4 Discussion

Local myths and traditions affect the sustainability of people's lives around the slopes of Mount Penanggungan. Some mythologies keep local communities believing in their ancestors' views. Although culturally relevant, the mythology told in the "*Tantu Panggelaran*" book is no longer popular among the people of Penanggungan slopes. However, practically, they still try to maintain what is a legacy and realize that it is worthwhile.

**Table 1.** Related Myths and Local Traditions with Sustainable Development

Myths and Local Traditions	Sustainable Development Values
Water in Mount Penanggungan is the Holy Water of True Life, which has properties for treatment.	Water that is believed to be sacred will continue to be preserved and maintained by the local community; they are aware that it is a valuable asset of its environment, so it needs to be maintained
Prohibition of cutting down trees around Jolotundo Temple.	Maintaining the forest ecosystem around Jolotundo Temple. Ecological mitigation to avoid climatological and hydrological disasters. It's a good thing for flora and fauna.
Ruwatan Water source observance is done every year.	Good appreciation from the local community for the sustainability of springs in ancient sites.

*Ruwatan* tradition is a form of gratitude to the Creator for overflowing water. The meaning of the *ruwatan* tradition is divided into two: the meaning of self-concerning human life from beginning to end and the meaning of the environment in relation to the beginning to the present. It aims to raise awareness of the reciprocal relationship between humans and nature [18]. Therefore, *Ruwatan* is used as a societal symbol to maintain environmental sustainability. "*Rawat Petirtaan Jolotundo*" positively impacts the existence of springs and the protection of flora and fauna. *Ruwatan* community participants from Seloliman Village realized the importance of maintaining existing water sources, flora and fauna. As a result, the condition of the water source in Jolotundo is still sustainable, and the flora and fauna in the Jolotundo area. *Rawat Jolotundo* must be protected and implemented further to protect the nature and traditions of local culture. Children should be given more space than the next generation to support Jolotundo and its surroundings [19, 20].

As a noble heritage, the community around Jolotundo Temple and Tetek Belahan Temple has built myths and traditions that flourish in and around the site. These myths and traditions apply to the villagers and everyone visiting the site area. The myth contains many values: trust, respect, vigilance, memory, and introspection. The values contained in the *Ruwatan* tradition include gratitude, awareness of preserving nature, understanding of ancestral heritage, coexistence, and more. The values maintained to date make local communities sustainable, such as 1) Guaranteed water sources and 2) Improving economic conditions. The

wider community, especially the younger generation, needs to understand that the myths and traditions of the Jolotundo region need to be understood and preserved [21].

## 5 Conclusion

Local communities on the slopes of Mount Penanggungan, especially around the Tetek Belahan and Jolotundo temples, have myths or mythology, traditions, and values that align with the goal of water resource preservation. The mythology about the creation of the Holy Water of Mount Penanggungan is in a book from the 15th century and is not recognized by the local community. However, their views and values on the sanctity of maintaining the water source remain embedded in their culture. Local communities like Ruwat Sumber and Ruwat Dusun have several water preservation traditions. The impact of local traditions and values is very positive for preserving water and the ecosystem around the site.

## Acknowledgement

This research was made possible through the generous funding of the Dean of the Faculty of Social Science and Political Sciences, State University of Surabaya. The first author's contributions included data collection and SDG value analysis. The second author provided a critical review of the data analysis, and the third author significantly enhanced the manuscript's language and overall quality.

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