

OUR ETHICS TO OUR WATER: PERSPECTIVES OF LOCAL KNOWLEDGE TO WATER AND ITS MANAGEMENT

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History tells us that the ability to manage water and conquer water sources determine how a civilization flourished and gained its power. Since a long time ago, freshwater has been exploited to create vast area of agricultural and industrial lands that bring economic growth. Yet today, human being and other species have to cope with serious water problems, such as decreased precipitation, depleted freshwater reservoir, increased pollution, and raised sea level. Unfortunately, our wisdom in treating water in so many ways has been changed. Previously, water was seen as a sacred element that belongs to God, today, people take it for granted; that water is just natural resource subject to exploitation. This brings an interesting question: do we – people in Indonesia- still have remaining local knowledge and wisdom which help us to treat water ethically and morally as a precious resource? Along with that question, this paper answers how and why unethical and abusive actions to water occur, and what factors influencing it. These questions are addressed by looking at existing literatures on local values, norms, and traditional practices in water management in Indonesia, and examining theoretical perspectives on how the values changed. This research paper is developed by studying the cases of water management in Java and Bali, using prominent literature such as Beatty (1999) and Lansing (1987).

Keywords: water, ethics, local knowledge and values, Indonesia

INTRODUCTION

Elizabeth Hunt (2004) raised questions about the future of earth and its inhabitants. Her concerns were based on the fact that fresh water supply has been decreasing at alarming rate. Global climate change intensifies water pollution, and there is also imbalance between supply and demand of water. By 2025, there will be a drastic shortage of water for the forecasted 3.5 billion global populations, while some 2.5 billion

people will lack basic sanitation. This is due to rapid industrial growth, climate change, and population growth.

This negative forecast, however, faces all earth's inhabitants, including a densely-populated Island of Java, Indonesia. Java, which is a medium-sized island in Indonesia, supports 60% of the country's population (approximately 160 million). Further, Java's water potential (which is only 4.5 % of the country's total potential) has to serve 70 % of Indonesia's irrigation area and 70 % of the entire country's requirement for water (Wignyosukarto, 2009). In terms of quality, water in Java has severely been polluted by industrial and household waste. It was estimated that the total waste entering big river in Java, such as Citarum was 3,2 million m³ of waste a year and the liquid waste from agro-industry is numbered at 216 thousand m³ a year (Tejalaksana, 2006). In addition, some rivers in Java have been extremely degraded. Some watersheds such as Citarum, Brantas, Serayu-Bogowonto and Bengawan Solo struggled to cope with sedimentation, and it is predicted that some of them will only be able to supply water up to 2010 (Wignyosukarto, 2009).

In other areas of Indonesia, the figure is not much better than the above. Sentani Lake in Papua has become shallower at approximate rate of 5 meters a year. Similarly, Tondano Lake in North Sulawesi which once was recorded to have a maximum depth of 50 m, in 2002 it was only 10 m (Tejalaksana, 2006).

This sad picture of water management in Indonesia, seemingly in contrast to local traditions, values and ethics to water practiced by local people since early history of Indonesia. Religious and spiritual people of Indonesia, have long been known for their harmony with water and its environment. It could be traced back from rituals and practices that they performed to respect water and its elements. Why and how Indonesian's ethics towards water has changed remind a big question to answer. This paper, will explore the values, ethics, and practices as how Indonesia treated water in their local perspective. Two cases, Java and Bali, will be presented to understand how water is valued.

Water in Javanese's perspective

The importance of water has been recognized in local traditions and communities in Java. In early history of Java, Hinduism and Buddhism were permanent religions accepted by kings of Java. Enourmous temples and shrines, such as Borobudur (Buddha) and Prambanan (Hindu), prove the existence of Hindu and Buddha religion in Java. Later, Islam entered Java and gave a new value to the Javanese mythology. Andrew Beatty explained that Java is a unique place where

the values of Buddhism, Hinduism, and Islam blend and created a new cosmology, namely Javanese cosmology.

Javanese believe that the earth consists of four elements: water, fire, wind, and metal. This belief evolves from Hinduism, in which Vishnu (a major figure in Hindu, together with Shiva and Brahma) is the controller of water, fire, wind, and metal. Among Javanese, the symbol of four elements is practiced in their local ceremony, such as *Slametan*. *Slametan* (a ceremony seeking for God's blessing preceding an important occasion such as marriage, birth of a baby) involves four color-porridge (*jenang manca warna*). The color (black, red, yellow and white) symbolizes four elements in Hindu and Budha. In Javanese language, *jenang manca warna* is also called *dulur papat limo badan* (four brothers represent the fifth, namely body). In here, 'four brothers' is a terminology used to explain four elements that protect human's body and soul.

In other Javanese community, two of the four elements is called *kakang kawah* (amniotic fluid) and *adhi ari-ari* (placenta). The other two represents blood and chorion. This symbolizes that since the beginning of a man's life, he/she has a companion of four elements that shape her/his body and soul (Beatty, 1999). It is interesting to see that water, in terms of amniotic fluid, placenta, blood, and chorion, is given a special value in Javanese's mythology. This shows that in local perspective, water is a special property that accompanies humans from their inception. In Java, the word of *tetes*, *tes*, or *titis* (the sound of water drop), is a verb which explains how water creates life. If we look at the Islamic's culture of this view, it is rather similar. In Qur'an, it is stated that human begins from water (sperm contains water).

The importance of water among Javanese is not only that it shapes life itself, but also in the value that it purifies body and soul, as explained by ritual of *padusan* (literally means taking a bath). This ritual is usually performed before people enter an important phase of their life, such as marriage or adulthood. It is also regular practice before people enter the month of Ramadan (fasting month according to Islamic calendar). *Padusan*, as an important ritual following a marriage, involves some offerings such as seven-color flowers, foods and drink. Purifying body and soul using water, is also an important aspect in Islam. Hereby, people are asked to wash their self before performing *sholat* (prayer). This practice is called *wudhu*.

In fact, in Islam, the cleanliness of water determines whether the *wudhu* is accepted or not. Water accepted for *wudhu* has to fulfill several criteria, including: free from *najis* (dirt). Substances that can be

categorized as najis is faeces and urine. Second, water for *wudhu* has to fulfill certain quantity, that is about 1 kulah.

Irrigation and water management in Trowulan, East Java

In the early history, Indonesia, especially Java, was an agricultural region. Its economic highly tied to the availability of water for agriculture. The remnant of Trowulan, East Java, tells the story of ancient water management in Majapahit, famoulsly known as the first kingdom that unified Indonesia and expanded their territory to Thailand, Kamboja, and Singapore. The site was the center of Majapahit and had the world's attention since it was founded by Sir Thomas Stamford Raffles in the 19th century. Trowulan is an archaeological complex of temples and shrines including Tikus Temple, Bajang Ratu Gate, Wringin Lawang Gate, Brahu temple, Putri Cempa's Shrine, Segaran Pond, Candi Menak Jingga Temple, Umpak, Troloyo, and many more.

Some of the temples was used as public bathing (*pertirtaan*), such as Tikus Temple. This temple was recovered in 1914 and was constructed by red bricks that shaped the pond as a public bath. Another site is Segaran Pond. This pond is very large, hence it is given its name as *segoro* (means sea). This pond was used as water reservoir, public bath, and a place for miitary practice.

The site of Trowulan shows that water management has arrived before the country's independence. Moreover, this traditional water management had been designed to cater various water users, i.e the government (used for military practice), religious practice (used for the temple), public (used for bathing and recreation), and farmers. Interestingly, the center of this water management was the temple, which represents religious value. It shows that the people of Majapahit put water as a sacred entity of their belief system, which was to be respected and protected.

Water Management In Bali

Badung District, southen part of Bali Island, has traditionally been practicing an organization to manage water for every membering farmer. This organization is called *subak*. Traditionally, *subak* does not only manage water sharing among farmers but also execute religious rituals following agricultural practices in Bali. Hence, in Bali, irrigation is not only about allocating water as a resource but also is about practicing religious belief. Actually, Badung is not the only one practicing *subak*. There are 151 subaks managing the terrace of agricultural land in Bali. Gianyar and Bedugul also use *subak* for water sharing and practicing rituals.

Many of the *subaks* operate in paddy fields. Balinese people, since ancient tradition, aim at having two harvests in a year. To achieve this aim, *Subak* is supported by a calendar system which enables this. Hence, *subak* is not a simple system. It is a highly dynamic system integrated with people's culture, religious values, and local wisdom that specifically practiced among Balinese. As an example, the ritual of *nyungsung* (the 'pregnancy' of rice), is performed when the rice panicle starts to swell (*pregnant*). The *nyungsung* is determined by calculating Javanese calendar which based on lunar movement. At the full moon of 10th month according to Javanese calendar, the *nyungsung* is performed (at around May). It is not known whether it is scientifically calculated or is based merely on coincidence, *nyungsung* only occurs when the water and the sunlight is perfectly match to the requirement of panicle growth. The highest need of water and sunlight is during the formation of panicle, and it is decreasing afterwards (Lansing, 1987).

Therefore, we can say that *nyungsung* is highly linked to the optimum use of water and light. It is also correlated with the timing of harvest, which is in dry season, as the Balinese want it. Dry season is perfect for harvesting because it is dry and less water hence rice could easily be processed. In addition, the timing of harvest in dry season will minimize the pests. These reasons sound very scientific for such an ancient organization. But, Stephen B Lansing (1987), showed empirical data to prove the relationship between *nyungsung*, rainfall rate, pests, and harvest time. He suspected that *subak* regulates biochemical processes in the soil, including nutrient cycle such as nitrogen and phosphorous. Interestingly, all of the processes revolves around water.

The uniqueness about *subak* does not stop at the mystery of *nyungsung*. Local farmers in Bali practice local wisdom in farming. They are able to adapt to the water availability. Their local aim says that they have to harvest rice twice a year. For achieving this aim, when rainfall rate at the highest peak, farmers plant long-maturing rice (200-210 days), namely *del* rice. This type of rice is high in quality and nutritious. In contrast, during dry season, *subak* allocates water fewer than wet season. At this time, people plant short-maturing rice, which lasts only 120 days. This type is called *cicih* rice. *Cicih* responds well to dry soil, and is non photosensitive. In between the planting of *del* and *cicih*, there is a month for the agricultural land to rest. This resting period applies for all *subaks* in Bali, hence gives a month for disrupting the life-cycle of pests.

The above *subak* arrangement cannot be separated from a *pura* (Hindu temple), namely water temple. As an example, Pura Ulun Danu Batur, which is known as a major temple for *agama tirtha* (a belief system at regulating water). In the belief of *agama tirtha*, water is seen

to be sacred and thus is able to purify something physically and spiritually. Pura Ulun Danu has 147 shrines for prayer to *Dewa Ulun* ('Ulun' God) and 204 *subaks* in Batur. Every year, priests of the Pura Ulun will write invitations and announcements for each *subak* to perform rituals and inform the *subaks* when the start of irrigation begins.

When the values change?

It is interesting to see that while the initial tenet of the ethics to water was that water is sacred, hence it is to be respected and protected, this value has shifted in parallel with the shift in people's livelihood. As the country embraced an industrial regime, all connection to water is merely seen as a resource.

Traditionally, among Indonesians, whether Javenese, Balinese, or other ethnics, it is widely accepted that water is important for purification. Traditionally, people use surface and ground water for their daily needs, mainly for domestic needs agriculture. But, since water is seen as a resource, people's values and ethics towards water change. In modern views, water is seen as commodity that is valued for money.

In modern views, the problem of water could be summarized into three: (i) inadequate freshwater supplies, (ii) inequitable access, and (iii) water injustice resulting from corporate control over this asset. These problem raised questions about ownership of water and whether it is commodity of public good. Many literatures have discussed a question with regard to water: Is water a human right or a commodity? Some share a belief that water belongs to everybody, therefore a right to water should be given to people and not to an individual or a company (Barlow, 2008). In contrast, some argue that people cannot be guaranteed a right to water (UNHCR, 2009). Although people are given a right to water, they still can have problems related to mismanagement. Western capitalism model assumes that privatization will ensure an effective and efficient water management system. International agencies, such as the World Bank, International Monetary Fund, and Inter-American Development Bank are aggressively provide loans for water privatization.

In practice, however, Indonesia's water regulation such as *Undang-Undang No 7 Year 2004* has been criticised to give wide access for private companies to exercise ownership to water. In fact, some public assets which provide water to public have been privatized such as Palyja (Jakarta water company in collaboration with Lyonnaise, France). Moreover, some multinational players, such as Danone, have been given an enormous right to sell water under their brands.

CONCLUSION

People in Indonesia especially –in this case- in Java and Bali, have been long developed their local values to cope with water management and water shortage. But, all industrial practices occurring in this modern days, seemingly in contrast with local ethics and values to water which treat water as public good and having spiritual dimensions. Yet, the movement to return to the traditional values and ethics, is eclipsed by the interest of industry. *At this time of crisis, shall we return to the old practices, then?*

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