

Indigenous knowledge is key to better managing water in Indonesia

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During my childhood, there was plenty of water in the rivers near my home village in Lembata island, Eastern Indonesia. Two main rivers flowed all year long.

Almost every day we went to the rivers to play or to find food such as frogs, prawns and eels to take home for our family to eat. My older brother was better at catching them than me. He was always the first to catch something and by the time we went home he would have plenty of frogs and prawns wrapped in palm or banana leaves. We loved hanging out at the river and in the nearby forests in the clean air surrounded by the meditative sounds of flowing streams and bird song. We learnt to be hunters and gatherers by doing and we learnt to appreciate the beauty of our natural surroundings and the food that nature provided. One afternoon we saw a wild pig lying by the riverbank. Quickly and quietly my brother, who was about 10 at the time, approached the pig, grabbed its legs and jumped into the river with it to drown it. For several minutes there was a struggle as the pig tried to survive, but my brother won the battle. We came home proudly carrying the dead pig for our family to eat that night.

The river sites are still there, but sadly no more water flows through them at all. They have been declared dry, or 'dead', for about twenty years. Though there is still water upstream, it is hardly enough for the consumption of the growing local population. There is a sense of sadness amongst the community. The rivers where we used to play in our childhood are dry and desolate. There are no more frogs, prawns, and eels—only naked rocks are visible. The large native trees along the

rivers, as well as the fauna, are largely gone. The locals have lost the epicentre of their livelihood and activities. In other parts of Indonesia such as Bali, widely known as a tourist destination, some rivers are also drying out and the situation is becoming a crisis.

In Lembata, climate change is likely already being experienced not only in the decrease of annual rainfall, but also in the change of seasons—the wet and dry seasons are no longer predictable. The rainfall has decreased, and it falls at different times than before. Dr Hery Kuswanto and colleagues, in their research published in 2021, concluded that the area studied had experienced extreme drought and will do so in the future. Even though there is no explicit mention of climate change as a contributing factor to the drought, the research could provide a basis for further studies on climate change and its impacts on the amount of rainfall in Lembata and elsewhere in Indonesia. The unpredictability of seasons has made it very difficult for the locals, who are mostly dry-field farmers, to plan for planting. As a result, they can no longer rely on crop planting as their primary source of food. Food security has become a serious issue in Lembata, leading to an increasing reliance on food imported from other parts of Indonesia. Indonesia, one of the world's biggest rice producers, is also implementing plans to import extra rice from India to stock up its supply in times of emergency such as El Nino. The drying out of rivers is truly a serious problem worldwide.



An indigenous community in Lembata. Credit: Ignasius Sulong Uak, 2022.

Indigenous voices

In order to hear Indigenous perspectives from Lembata in relation to the problem of the rivers running dry, I facilitated an online group conversation, or storytelling—locally known as Tobe Tutu—in late April 2023 with members of the Lembata community. Fifteen people (7 women, and 8 men, aged between 20 to 70 from various roles in the community such as local elders, government officials, activists, teachers and students participated in the online sessions. Lembata is the site of my collaborative Indigenous knowledge research undertaken in 2022. The

research, funded by the University of Melbourne's Indigenous Knowledge Institute, focuses on Indigenous knowledge of food and medicinal plants (not yet published).

The main purpose of the recent Indigenous group conversation was threefold:

- to raise awareness of clean water shortage problems in Lembata;
- to understand the causes and impacts of rivers drying out; and
- to seek sustainable ways to conserve the remaining springs and rivers.

Participants expressed deep concern about the dried out rivers and the reduced volume of water in the springs. Some even raised the frightening prospect that within the next ten years or so some of the remaining springs in Lembata will completely dry out.

The Indigenous storytelling approach—Tobe Tutu—provides those involved with a platform to share stories about their local environment, and also to gain mutual knowledge and understanding of some of the ecological crises they face. Scholars Sophie Pascoe and colleagues have explored local ways of being and knowing in the midst of the catastrophic challenge of climate change. Indigenous storytelling can be a powerful way of transferring knowledge about how to restore the natural environment and may also spark a collective will to restore the lost natural environment (such as by re-planting bamboo near springs and cultivating now-rare native plants). It can also help maintain cash crops such as candlenuts and cashews and better manage agricultural practices. When participants shared stories about rivers being an important source of food, it became clear that storytelling connects the past to the future.

Causes, impacts and action

Those involved in the Indigenous storytelling conversation tried to understand the specific causes of the rivers drying out. Participants clearly acknowledged that a range of destructive human activities were the main cause. One participant asserted,

'We ourselves are to be blamed for the current water crisis. We have failed to take care of our watersprings. This is our greatest ecological sin, and the next generations will suffer.'

They referred to traditional agricultural practices that involve forest clearing occurring too near springs, and which sometimes resulted in wildfires, which occurred annually particularly in the 1970s and 1980s. Participants admitted that there had been no routine reforestation by the local community. Reforestation work around springs had been carried out by a handful of young people, but only on an ad hoc basis. The participants also asserted that in the early 1980s a village situated near the source of the springs in the mountains was transmigrated to a valley, to make the area near the springs a protected forest. However, intensive agricultural activities in the area have occurred, including the establishment of coffee and candlenut plantations, drawing water from the springs for local consumption. In addition, the local government recently declared a new brand name of local coffee, using the name of the village whose residents were transmigrated to another village, which indicated that the local government is encouraging the development of the area near the springs into coffee plantations. According to the participants, the local government does not seem to have sustainable policies and commitment to conserve springs and rivers.



Traditional way of planting seeds. Credit: Gabriel Wejak, 2022.

The Indigenous storytelling group also discussed commercial logging, which has been occurring since the 1970s, and this practice has contributed to the drying out of rivers. I recall that in the 1970s and 1980s a Catholic missionary from the USA ran a timber business at the local parish. Due to a desperate need for money for children's education and for building houses, the locals agreed to the felling of big native trees, including those near the springs.

Participants identified that the impacts of rivers drying out. One of the main problems is that as traditional planting cycles are becoming less predictable, and clean water is no longer plentiful, food insecurity is an increasing problem. Unlike in my childhood, villagers are now struggling to supply their own local food. Public health and basic hygiene is also impacted by the lack of clean water for household consumption. There are also effects on economic activities and development such as building houses, schools, churches, and other public facilities.

Some have nicknamed my village a 'candlenut village' because it is mostly surrounded by candlenut trees. Many have been planted near springs and may be contributing to the springs drying out. The replacement of diverse native trees with agricultural crops such as candlenut trees has meant that the loud birdsong that we used to hear every morning is no longer present to wake the villagers each morning. On a deeper level, certain birdsongs that signal the change of agricultural seasons are no longer heard, nor are the birdsongs that herald an imminent death in the community. Back in my childhood, when someone was dying, we knew it through the birdsong of a particular bird days before the person died.

The participants did not specifically mention climate change and global warming. When pressed on these issues, they were silent except for requesting for more information. Scholar Arianti Ina R. Hunga, has pointed out that climate change is a global problem but which has local effects.

Having explored some of the impacts of the water crisis in Lembata, the group also

discussed ways to tackle it. The participants felt a sense of renewed motivation to conserve their remaining springs. They suggested that they need to approach the local government departments for more proactive efforts in addressing the problem of rivers drying out through forestation and tightening of laws to protect the springs and rivers. One participant accused the local government of doing nothing, implying that there seems to be a lack of respect shown by the government to the traditional owners of land and water. Furthermore, he stated that more dialogue is needed between the government and Indigenous communities about how to best conserve the springs using Indigenous knowledge and practices of water conservation.

Generally, in Indonesia, as noted by activist Dewi Candraningrum, there are no policies that can effectively tackle the ecological crisis. This is because the state has prioritised economic development in the short term over sustainability. Indonesia's development strategy has contributed to ecological crises such as global warming, deforestation, species extinction, as well as water shortage and pollution. The participants suggested that more information is needed to educate the public about the importance of sustainable forest and water conservation. However, they did not tackle the problems that might be caused if economic activity was reduced or stopped entirely in order to facilitate forest and water conservation.

Without dedicated policies and actions on water security, it is predicted that Indonesia, in general, will fall short of its Vision 2045 GDP target by up to 7.3 percent. This is a frightening prospect, given that most rivers in Indonesia are already heavily polluted. As Indonesia's economy and demography continue to grow, the demand for clean water will also rise. This is inevitable.

Loss of rivers, loss of Indigenous identity

Indigenous identity is at risk of being lost. In Indigenous cultures in general water is sacred, and there is fear that the water element of rituals could be lost. For example, in Lembata, on the fourth day after a funeral ceremony, members of the extended

family go to a nearby river together to bathe and to wash clothes and linen. This is an important ritual to mark the end of the initial grieving period, and to resume usual daily activities. When a person believed to practise black magic wants to let go of their destructive power, they go to the river to symbolically relinquish it. Water is always used in Indigenous healing practices in many parts of Indonesia. In Bali Hinduism, water is sacred, as a powerful symbol of the living goddess, a symbol of purification used to cleanse one's mind and soul. Life begins and ends with water. Thus, for the Balinese, water should not be wasted, it must be distributed fairly and evenly, as demonstrated in their traditional system of *subak*, simply defined as a system of water distribution to rice-fields. Moreover, *subak* represents Tri Hita Karana—an Indigenous Balinese philosophy that fosters the idea of balance and harmony between people, nature, and the spiritual realm.

The depletion of water resources in Lembata and Bali are a threat to the livelihoods of Indigenous people, but even more importantly, their beliefs and practices regarding the sacredness of water, which is intrinsically connected to their very identity. Water is inseparable from life and water matters for everyone. It is therefore imperative to raise community awareness about how to take care of water resources.

I would like to conclude by re-telling a story from my village about our springs. My ancestors had difficulty finding water to drink. They had fire, but no water. They cooked their meals on the fire. They ate well, but there was no water to drink. It was the dry season and no rain meant no water. They had no idea where to find a spring. A dog they had for company and for hunting sensed the human desperation for water and went alone in search of a spring. When it found one, it ran back to my ancestors and led them to it. They drank and bathed in the newly discovered water. My ancestors then built shelters and planted crops near the springs. To the people of my clan, the dog is the compass which leads us to the spring, it is our totem and a sacred animal—sacred like the waters themselves. Indigenous people should have a key voice in managing water resources, preserving both the physical and sacred aspect of springs and rivers.

Main image: Indigenous women carrying bananas as an offering for the local land custodian at a harvest ritual in Lembata on 22 February 2022. Credit: Tony Lebuan.