Dam-busting forest, water 'myth-understandings'

Meine van Noordwijk and Fahmuddin Agus, Bogor

Given that the recent tragic floods in East Java's Blitar regency are being blamed on upstream deforestation, it is timely to look at some of the myths surrounding trees and water.

Recent analysis shows that misunderstandings -- sometimes called "myth-understandings" -- about forests and water are the underlying cause of a number of problems. Further, the perpetuation of these "myth-understandings" is a major cause of poverty.

Thousands of small-scale coffee growers in Indonesia have been forcibly removed from upper watersheds in the name of protecting forests for hydroelectricity projects or for soil conservation.

Research now shows their coffee gardens did not reduce water flow. Despite this scientific evidence, we continue to see governments around the world remove people from forests or prohibit them from pursuing their traditional tree-based agroforestry livelihoods.

Recent power failures in West Sumatra's hydroelectricity supply have been blamed on deforestation attributed to small-scale farming in the Singkarak catchment. The real cause is the lack of rain.

The technical design of the dam assumes a dry season of no more than two months. If the dry season lasts longer, the water needed to generate the electricity dries out. Recent years have seen longer-than-average dry periods and has thus caused increasingly more blackouts.

Would planting trees help? Probably not. Longer dry seasons reflect climate change, which happens at a global level -- it cannot be undone locally. Blaming the people who live in the upstream areas for deforestation only increases their poverty and does nothing to encourage them to protect the environment.

In Lampung, blackouts were caused by landslides that buried the access road to the Way Besai hydroelectric power station -- not by deforestation in the catchment.

As for the media's oft-reported argument that upstream deforestation causes downstream flooding, this "myth-understanding" contradicts blaming upland farming -- such as around the hydroelectricity plants -- for causing drought.

The scientific argument is too complex to cover properly here. Put simply, the main causes of flooding are changes in riverbeds, destruction of wetlands, loss of ground cover that supports earthworms, compaction of the soil around houses and on roads, and loss of temporary storage areas.

The removal of trees in watersheds is just one of the many factors that cause flooding as river water flow increases, and as forest canopy decreases. Planting trees may lessen the intensity of floods, but are unlikely to eliminate floods.

Avoid flooding, increase dry season river flow seems to have been one of the key assumptions underpinning the GERHAN", the Government's National Movement for the Rehabilitation of Land and Forest.

With a budget of Rp 1.473 trillion (US$163 million), GERHAN's aim in 2004 is to rehabilitate 500,000 hectares across Indonesia. In 2003, the budget was Rp 1.114 trillion ($123 million) for 300,000 hectares across 15 provinces, 29 watersheds and 145 districts.

But the notion that replanting trees will "avoid flooding and increase dry season river flow" is another "myth-understanding" that deserves questioning.

The simple scientific explanation is that generally, more water transpires from most trees species than from field crops.

This "myth-understanding" could have been avoided by questioning the received wisdom about trees increasing dry-season flow by hypothesizing on the possible short- and long-term impacts of planting trees in watersheds.

The standard solution around the world to rehabilitating watersheds is to plant trees in the hope of recreating natural forest. Again, the myth prevails and fantasy overrides fact. Natural forests provide livelihood options only where the population density is very low.

The fact is, there are many examples of densely populated areas providing the watershed functions expected from "forests". Areas with mixed land use and, generally, many trees planted by farmers, can support medium- to high-population densities before the watershed functions are affected.

What farmers need in these areas, where they have long-term land-use rights, is help in getting more access to their preferred trees in areas. Providing secure access to land encourages farmers to participate in watershed management.

Our research in Sumatra and Java show that when it comes to official tree-planting schemes, no shared understanding exists as to the underlying problem and how it can be solved.

In the priority setting process, the government should ask farmers for their opinions. In many places in Indonesia, a major problem is the lack of clarity regarding regulations on the use and care of large areas designated as national forests.

The field of forestry is full of unquestioned management mantras. It is time to examine some of their underlying assumptions seriously, and it is time that some hard facts replaced the myths, not just in the minds of officials making decisions about land use, but also in the community at large.

Farmers have limited access to information about markets or livelihood opportunities using unfamiliar trees. They know about erosion and filter effects on the landscape, but not what happens after water infiltrates the soil. People living in the city and policymakers may not know any better, and have difficulties explaining the process of water flows that start with rainfall.

There are many good reasons to plant trees, but do not expect trees to stop floods or landslides immediately. Choosing trees according to the farmer's preference will go a long way towards improving watershed quality while also providing them with a livelihood.

The GERHAN program is making strides in listening to farmers and supporting them -- this needs to become the standard approach across the country.

Meine van Noordwijk is Regional Coordinator of the World Agroforestry Centre, Southeast Asia Regional Office, Bogor.
Fahmuddin Agus is a researcher and head of the Soil Research Institute, Bogor.