Case Studies

Emanual Lado in his Mahoni plantation: “These trees are my pension.”
(Photo: Nina FitzSimons)

Green Gold

Agro-forestry in East Nusa Tenggara restoring the land, increasing productivity and improving economic livelihoods

by Nina FitzSimons

Slash and burn is the way most famers clear their land in Nagekeo district on the island of Flores. It is the same throughout most of the province of East Nusa Tenggara (NTT). This practice has been passed down from generation to generation. Some farmers say that the smoke from the fire creates clouds and ensures the rains will come. Others say it is the only way to germinate the grass for livestock. A few don’t know why they do it – it’s just the way it has always been done.

Nagekeo is very mountainous, rocky and semi-arid. The slash and burn practice used to be sustainable when the population sise was much smaller and the land could be left fallow for more than ten years. However, with the growing population, land must now be rotated every two to three years. This has resulted in severe land degradation and a depletion of aquifers. It is not surprising that NTT experiences the highest levels of food shortages in the country. This correlates with the high levels of child malnutrition and the lower life expectancy compared to neighbouring NTB and other parts of Indonesia.

However, things are being done a little differently in the village of Raja. In 2007, the village was introduced to a method of cultivation known as agro-forestry.

This method is an integrated approach to farming, which has environmental conservation at its core. The system was developed by Yayasan Mitra Tani Mandiri (YMTM), a local NGO. YMTM received support from the Australian Government through the Department of Foreign Affairs and Trade (DFAT) from 2007 to 2015 to implement the approach in 90 villages in NTT.

Agro-forestry uses terracing and semi-permanent cultivation to stabilise the soil and to improve water retention. Hardwood and cash crop trees are planted on the upper, steeper terraces and then food and fodder crops are planted in-between.

Emanual Lado, or Eman as he’s known, was one of the first farmers to pilot the approach in Raja village. “When YMTM first came, my land was empty except for grass and a few local shrubs. I burnt it every year because I thought it would prevent pests," explains Eman. “I planted maize on 0.4 hectares of land but only ever got about 200 kg a year. This wasn’t enough to feed my family of five," says Eman.

Eman’s land was terraced in 2007. “We are all part of a farmer’s group and we share the workload," explains Eman. “We were able to clear the land in two days and then it took a week to terrace it all."

The land Eman is hoping to purchase. “This is what my land used to look like,” he says. (Photo: Nina FitzSimons)

“These trees are both my pension fund and the future for my grandchildren. The impossible has been made possible - we have turned this golden land green.”

- Emanual Lado, farmer

Eman planted the upper slopes with a range of trees including mahogany, white teak, orange, cashew, candle nut, acacia, sandalwood, eucalypt and mango. “I then planted pineapple, betel and pepper between the trees. On the lower slopes, I planted maize and green vegetables," says Eman. “At first it felt strange not to clear the land each year but the YMTM field officer told me that I must leave the organic matter on the ground."

Eman and other members of his famer group attended training to improve their cultivation practices. “In the past we would just throw seeds all together and just hope something would grow," explains Eman. “Now we dig holes at set distances apart and each terrace grows one type tree or crop. We use bio-urine and compost collected from our cows as fertiliser." The difference was immediate. “The first maize harvest was 600 kg. That’s when the other farmers started to pay attention."

Eman’s land also started to stabilise. “In the past I just used rocks to try and stabilise the soil. But after the first rains they would wash away along with all my top soil. The trees I have planted not only prevent erosion, but they have improved the water table." Eman explains the small creek at the bottom of his land now has water all year around, “It is now September and the end of the dry season and there is still a little water. This is all because of the trees."

Eman has now extended the amount of land he is cultivating from 0.4 hectares to two hectares. He is also negotiating the sale of two cows to buy another hectare of land close by. “I have planted a total of 2,684 trees," says Eman proudly. “Our village has planted a total of 81,000 trees and we plan to continue planting."

Not only have there been significant improvements to the environment, but Eman has experienced a siseable change in his household income. During the 2014 season Eman harvested 300 pineapples, 5 kg of candle nut, 2 kg of pepper, 60 mangoes, 100 kg of cashews and green vegetables for an annual additional income of Rp 3.54 million (approximately $350). In addition, he has now harvested 5m^3 of his timber for Rp 15.6 million (approximately $1,575). Eman is also a certified seed supplier of mahogany and white teak along with three other farmers. In 2014, Eman made Rp 17 million ($1,700) from the sale of seeds and seedlings. This is a 900% increase on his previous income.

Others are now seeing the environmental and economic benefits of the agro-forestry approach. “My neighbour is a teacher and has learned from me and he is cultivating his land the same way," says Eman. Raja village has received recognition for its environmental success from the provincial government. In 2009 the village head were awarded the prestigious provincial Kalpataru Award for environmental development.

The farmers in the target villages in NTT have planted a total of 7.5 million trees. “These trees are both my pension fund and the future for my grandchildren," says Eman. “The impossible has been made possible – we have turned this golden land green."

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AIP-Rural is a suite of programs that improves smallholder farmers access new markets, better inputs, knowhow and technology, irrigation and small loans. Its goal is to achieve a sustainable 30% increase in the net incomes of 1,000,000 male and female smallholder farmers in eastern Indonesia by 2022. AIP-Rural operates in East Java, West Nusa Tenggara, East Nusa Tenggara, Papua and West Papua.

The program focuses on agricultural sectors that have strong growth potential and are the main source of income for a large number of smallholder farmers. All of this is done through co-investing in new business models with local, regional, national, and international market players to create business models that improves the agriculture sector’s competitiveness, especially smallholder farmers.

AIP-Rural is supported by the Australian Government