



The Trees on Farms Project

INDONESIA

Planting Trees on Farms

Agroforestry is a cultivation system that involves planting trees and other plants on farms to reduce poverty, to protect the environment, and to improve food security and nutrition.

Indonesia: the country context

With a population of more than 260 million people, Indonesia is both a major emerging economy and a major emitter of greenhouse gases. Indonesia's emissions are mostly the result of fires on peatlands and of land use change with these leading to environmental degradation; the loss of biodiversity; and the unsustainable use of natural resources. According to MOEF (2018), the extent of Indonesia's Forest State land in 2016 was 86 million ha with an average forest cover of about 70% or 63 million hectares. Although the deforestation rate reduced significantly from 1.87 million ha/yr in 1990 into 0.48 million ha/yr in 2016/2017, the deforested area is huge. About 75% of this deforested area was associated with agricultural expansion.

The Challenge: Feeding Indonesia's population while maintaining biodiversity

- In Indonesia, monocultural agriculture is the largest contributor to biodiversity loss.
- Monocultural agriculture destroys biodiversity by converting natural habitats to intensely managed systems and by releasing pollutants, including greenhouse gases.
- Biodiversity loss results in a loss of soil fertility, erosion, degradation of water supplies, salinization, and increased carbon emissions.

The benefits of planting trees on farms to create agroforestry systems

Around the world, the benefits of planting trees on farms has been widely acknowledged, with these benefits including the following:

Environmental benefits of planting trees on farms:

- Increasing soil fertility
- Reducing erosion
- Improving water supplies
- Lessening the risks of salinization

Economic benefits of planting trees on farms:

- Diversifying farmers' crops to generate additional income
- Reducing dependence on costly inputs, such as chemical fertilizers and pesticides
- Diversifying farmers' crops to protect against price volatility for a single crop

Social benefits of planting trees on farms:

- Diversifying sources of food to improve nutrition and food security
- Providing fuel, medicines and other useful inputs for use by rural households

In principle, Indonesia's Ministry of Environment and Forestry recognizes these benefits, with the Ministry's official vision statement including the following commitment to 'Agroforestry mainstreamed into forestry development and widely adopted by the community as a forestry and land-use system to meet sustainable forest management goals for improving people's livelihoods and sustaining natural resources.' The Government has promulgated a number of laws and regulations to reflect this, including those related to community forestry and community timber plantations and to soil and water conservation.

In practice, however, these laws are not sufficiently supported by clear implementation guidelines, nor clear national policies on agroforestry and trees on farms. At the local level, extension agencies are challenged in providing support to improve community capacities; to build awareness; or to facilitate access to capital and markets, so farmers still lack of motivation to plant trees on their land.



The Trees on Farms Project

To address these constraints, the Trees on Farms for Biodiversity project is intended to expand knowledge regarding the links between trees, agriculture and biodiversity and to provide tools for practitioners in five countries, including Indonesia. The project will assist Indonesia to achieve Aichi Target 7: “By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.” It will:

Assist local partners to create road maps and business plans: In particular, it will prepare an inventory of the key actors who have most influence on tree planting investments on farms at project sites.

Assess a range of funding and investment options for increasing investment in trees in agriculture: In particular, it will conduct FGD to gain a better understanding of farmers’ perspectives and to identify strategies for tree planting investments. It will also conduct a pilot to determine farmers’ willingness to invest in planting trees through Competitive Award Scheme and Reserve Auction system.

Prepare a biodiversity assessment tool to measure the contribution of trees on farms to biodiversity: In particular, it will conduct a study to analyze biodiversity patterns in three sites to determine the extent of fragmentation of the landscape.





Case studies

Good practices amongst Indonesian farmers

CASE STUDY 1: Planting productive trees on rice fields

Setia Budhi, a rice farmer, has experimented with intercropping productive tree species on his fields. In particular, he has experimented with planting coconut, 'jengkol' (*Archidendron pauciflorum*), mango and other tree species on the earth barriers known as "bunds" that are a characteristic of irrigated rice farming in Indonesia and many places elsewhere. These bunds are used to collect surface run-off, to increase water infiltration and to prevent soil erosion. By building bunds along the rice fields' contour lines, water runoff is slowed down, which leads to increased water infiltration and enhanced soil moisture. To maximize the use of his land, Budhi planted productive trees along these bunds, prioritizing tree species that were tolerant of salinity. He picked these species as soil salinity could impact his harvest and income.

CASE STUDY 2: Intercropping "stinking beans" (petai, or *Parkia speciosa*) and durian with oil palm

A significant proportion of West Kalimantan's rural population derive their livelihoods from smallholder palm oil plantations, often using a system of monoculture, with the planting of the same crop in the same place each year. This zaps nutrients from the earth and leaves soil weak and unable to support healthy plant growth. Because soil structure and quality is so poor, farmers are forced to use chemical fertilizers to encourage plant growth and fruit production. These fertilizers, in turn, disrupt the natural makeup of the soil and contribute further to nutrient depletion. Monocropping also creates the spread of pests and diseases, which must be treated with yet more chemicals. While Farmer Uti continues to derive most of his income from palm oil, he has experimented with agroforestry techniques, intercropping durian and stinking beans to diversify his income and lower his risk in the event of price decreases for palm oil and to improve the quality of his land through increased biodiversity.

CASE STUDY 3: Tembawang: A traditional clan-based agroforestry system

Around the world, indigenous peoples have a long history of practicing agroforestry techniques, often in the context of traditions of local wisdom that explicitly restrict or forbid environmentally damaging practices and that support high levels of biodiversity. In West Kalimantan, areas of remnant forest are often collectively owned by clans, with individual members having defined and restricted rights to harvest the products of specific trees or species, although they may only plant or harvest in a manner that does not negatively impact the rights of other members. In one such agroforestry system, hosted by Siyanto, members of the clan harvested durian, rambutan, cocoa, coffee and numerous other fruit and nut species. Research has shown that the level of biodiversity on these systems approaches that found in remaining primary forests.

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