Delicate balance: fire's necessary role can lead to disaster.

Making a friend of fire

Finding a balance between the positive and negative impacts of fire is important for people in rural Indonesia and remote areas of northern Australia, writes **Rebecca Thyer**

For subsistence farmers in rural Indonesian villages, fire can be both a constructive and destructive force. Farmers use fire to clear and prepare land for the coming season's crop, but out-of-control fire can have catastrophic consequences, leading to loss of lives, homes and livelihoods. For huge areas of northern Australia, raging fires often have devastating environmental and economic effects.

The delicate balance between fire's necessary and disastrous roles is the subject of an ACIAR-sponsored project called 'Impacts of fire and its use for sustainable land and forest management in Indonesia and northern Australia'.

Project coordinator Dr Bronwyn Myers, from Charles Darwin University in the Northern Territory, says the idea evolved from the need to develop relevant policies and outcomes, communication and education products that allowed for the judicious use of fire in sustainable land and forest management.

"For villagers, fire can mean the loss of homes and livelihood. Most live on subsistence farming and a fire can wipe out their entire crop," she says.

Fire's effect on forests can also impact severely on villagers' lives. "Forest remnants are used significantly by villagers," Dr Myers says. "Forests are used for hunting and gathering, certain plants are used for resin that is sold on to furniture manufacturers, palm plants are utilised to produce alcohol, while other forest products have medicinal uses."

While the scale of Indonesian forest fires can vary, they are most common in the dry season when the fuel is easily set alight. Using hi-tech mapping techniques, historic maps and economic information from focus discussion groups and surveys from villagers in Indonesia, the project team is determining current and past patterns of fire in strategically located sites in western Indonesia (southern Sumatra and eastern Kalimantan), eastern Indonesia (Sumba and Flores) and northern Australia.

"Mapping has been very important," says Dr Myers. "Even low-tech mapping, such as participatory mapping on butcher's paper with input from villagers, is very important for determining fire history and for villagers to own the mapping process."

This has been important for BAPPEDA NTT, the Provincial Development Planning Board for East Nusa Tenggara. "Its senior officers are now using fire and land-use maps to determine the best way forward."

Mapping techniques have helped to determine positive and negative impacts of a range of fire management strategies, such as prescribed or controlled burning, while participatory planning has identified policies that help improve livelihood options for different land users.

Dr Myers says that while capacity building in Indonesia has also been important, "we first needed to use proven methods to learn more about fires. Once we worked these things out, it was then important to get local researchers doing it themselves."

In Australia, the process was similar. "While a lot of mapping is already done here through the Tropical Savannas Management Cooperative Research Centre, one major area that we did expand on was the review of fire policies across northern Australia."

In Indonesia and Australia, fire policies are often written in cities far away from the savanna areas. "We have implemented fire management practices that are appropriate for the areas we were targeting," she says.

While Dr Myers concedes it will take years to get the full picture and see the full benefits of changes, changes to land management during the past three years have made a difference. Villagers testify that they have been able to protect assets by using controlled fire, and planning agencies have embraced the use of fire as a land management tool.

Carbon credits offer new hope to remote smallholders

REBECCA THYER REPORTS ON A 'CROP' THAT HAS NO TRANSPORT COSTS OR QUALITY ISSUES

Using economic incentives to improve the environment can not only reduce the effects of global warming, but also provide an additional source of income for those living in remote rural areas.

For many smallholders in Indonesia, outlets for the agricultural products they grow are limited to local markets. With high transport costs and increasing quality demands from end-users, other regional or international markets are out of reach.

However, by selling carbon sequestration services or 'carbon credits' (payments for preventing use of resources that will release carbon into the atmosphere), these obstacles could be removed, opening a whole new market. As trees absorb carbon dioxide – one of the most common greenhouse gases – they help to control global warming. Trade in carbon credits has therefore emerged as a way to meet the demands of the Kyoto Protocol.

But carbon credits are also valuable for social and economic reasons, says Dr Oscar Cacho, who is leading an ACIAR project on the role of credits in influencing the economic performance of farm forestry schemes in Indonesia and temperate Australia. "As the output does not need to be transported, poor farmers in remote areas can really benefit. This is an important aspect of the project. Another attractive feature is that there are no quality differences. A molecule of carbon is the same independently of where it resides, so smallholders will not face the common problem of being unable to achieve the quality required by international markets."

The ACIAR project aims to "sort out the basics" of a possible system, so that when certain aspects of the Kyoto Protocol are implemented, Indonesian farmers will be ready to take advantage of it. Consequently, an important part of the project has been skills building.

"Our research team in Indonesia is developing skills in measuring, planning and participating in these schemes. This has been one of the main outcomes – capacity building, so that when a scheme is eventually established, they will have the means to implement it."

Dr Cacho, from the University of New England's School of Economics in Armidale, New South Wales, says that the concept of carbon credits has important implications and countries need to know about potential profitability, both nationally and at the individual farmer level.

"The project was designed to determine the most appropriate farm forestry systems for capturing carbon-credit payments and to evaluate the effect of different mechanisms for translating international exchanges of carbon credits into incentives at the level of individual farmers."

The ACIAR-sponsored project is being undertaken with the World Agroforestry Centre, the Centre for Socio Economic Research on Forestry in Indonesia and NSW Agriculture.

Since starting the project in 2000, the team has created a database of 29 agroforestry systems. These detail the inputs required to operate a business (for example the money and labour needed), profitability and carbon sequestration potential. "We have shown that carbon credits can stimulate agroforests and, when properly established, could be self sustaining," Dr Cacho says.

Systems that are sustainable in their own right, such as fruit, rubber and other resin-based trees, are being considered "so we get to the point where trees are valuable for other reasons".

The project team is now developing a mechanism to show the money required for transaction costs, such as lawyers for contracts and staff to police the system and estimate carbon sequestration.

New ways for small farmers to enter the forest industry

PROJECT SEEKS THE BEST FORMS OF PARTNERSHIP TO BENEFIT FARMERS AND THE INDUSTRY

Poor, small-scale farmers often miss out on the benefits of commercial forestry. Yet tapping into this industry could assist rural people and their communities by providing additional income. By examining different partnership schemes, a new ACIAR project aims to develop systems that will benefit both small landholders and the forestry industry in Indonesia and Australia.

Via three case studies in the Indonesian provinces of Sulawesi and Nusa Tenggara and in Australia's Murray Darling Basin, the ACIAR project 'Community partnerships for plantation forestry: enhancing rural incomes from forestry in eastern Indonesia and Australia' will find out what ingredients work best for partnerships between growers and industry.

In Indonesia, people have sold forest and wood products to supplement or sustain rural incomes for centuries. However, the use of contracts or formal purchasing agreements is a relatively new concept. In Australia, small landholders are often overlooked by the forestry industry.

Project leader Dr Digby Race, from Charles Sturt University, says the project aims to overcome these issues and make commercial forestry a viable option for many more small-scale farmers. "We think the critical ingredients for good partnerships tend to be generic. Wherever forest companies are operating and farmers are present, the elements necessary to produce a good partnership should be the same."

He says the benefits of a viable farm forestry industry are multi-faceted. For smallholders, potential benefits include higher returns per land unit or on capital, time and labour investment, more convenient distribution of income, security of market and reduced risk of financial loss, reinforcement of land tenure and access to other forms of credit.

For industry, benefits may include increased access to resources, more predictable costs of resources, decreased need to invest in plantation establishment, increased long-term security of investment and enhanced harmony with local communities.

"Partnerships, by broad definition, connect growers with processors of forest products," Dr Race says. "However, each partner is typically seeking different benefits. And our idea of what constitutes a successful partnership is still quite hazy."

Trading partnerships take many forms, including out-grower schemes (joint-ventures), cost-benefit sharing agreements, contracts with grower cooperatives and market brokers.

While little information exists on what works best, it is known that out-grower arrangements vary considerably in their ability to be mutually advantageous. And poor grower-industry links are regularly identified as one of the major constraints to forestry development and why small-scale farmers miss out.

The project team will initially look at developing small-scale farmers' 'social capital' – helping rural communities to be better informed about the nature of commercial silviculture and how the forest industry works; empowering them to negotiate better; building their capacity to be actively involved in decision-making processes that affect them (for example commercial transactions); and teaching them how to work together effectively.

"Where there's an absence of social capital amongst local communities, the prospects of commercial contracts being mutually beneficial are much less likely," he says.

The project combines the research capabilities and expertise of the Indonesian Forestry Research and Development Agency in Sulawesi, the Center for International Forestry Research in Bogor, WWF Indonesia in Mataram, Charles Sturt University, Australian National University and the Cooperative Research Centre for Sustainable Production Forestry.