



A wood yard at a pulp mill in Guangzhou, and a plantation of Chinese fir, *Cunninghamia lanceolata*, in Zhejiang, China.
(Photos by Christian Cossalter)

Influencing plantation policy in China

Research by CIFOR scientists Christian Cossalter and Chris Barr, described in last year's annual report, examined China's ambitious programme to develop a plantations-based wood-pulp industry. The researchers found that although the Chinese government was encouraging the development of some 6 million hectares of fast-growing pulpwood plantations, there would be significant shortfalls in domestic supply for some time to come. This meant China was likely to continue importing wood fibre, possibly harvested from natural forests in countries like Indonesia.

In 2005, the researchers were invited by the World Bank to conduct a more detailed analysis of plantation development and industrial wood demand in just one province, the Guangxi Zhuang Autonomous Region. The research, a collaborative effort between CIFOR, the Guangxi Provincial Forestry Bureau and the Guangxi Forest Survey and Design Institute, has had a significant influence on a major World Bank loan for plantation development.

'During recent years, the province has seen a rapid expansion in its production of both fibreboard and paper, mirroring the trends throughout China as a whole,' explains Cossalter. Since the mid-1990s, China's production of medium-density fibreboard, or MDF, has risen some 30-fold, and Guangxi is now one of the largest producers. China has also dramatically increased its pulp and paper production; once again, Guangxi has been a significant player.

'On paper, you might expect the fibreboard and wood-pulp industries to be competing for the same wood supply,' says Cossalter, 'but our research showed that they are tapping into different resources.'

This is because some 90 per cent of the MDF is manufactured for the local market, where price matters more than quality. MDF manufacturers use small, low-quality products that come from wood waste and from thinning pine plantations. In contrast, producing high-quality paper requires high-quality pulp produced from larger diameter eucalyptus logs. So there is little overlap in demand.

The worrying news for the MDF industry, highlighted by the research, is that the rapid growth of a modern paper industry in Guangxi is leading to a rapid expansion in eucalyptus plantations, and these are frequently being established on wasteland and old pine forests – the very resource on which the MDF industry depends.

These and other findings of the research have encouraged the World Bank to revise the specifications for its US\$100 million loan to the Guangxi Forestry Bureau. Originally, the intention was to use most of the loan to establish new eucalyptus plantations. 'As a result of the research, the focus has now changed,' explains Cossalter. 'The amount of land which will be devoted to eucalyptus has been cut by half, and the new plantations will not only serve the pulp and paper industry, but other sectors, such as the MDF manufacturers, as well.'

The Guangxi Forestry Bureau had originally planned to spend most of the loan on state farms, but there will now be a much stronger focus on providing assistance for farmers and village groups to establish new plantations. This will be of considerable benefit to local livelihoods in some of the poorer rural areas. This is a good example of research that really makes a difference.

Making scientific waves



Mention tropical rainforest to most people and they'll probably think of lush vegetation dripping with moisture. The last thing that's likely to come to mind is drought. Yet droughts do occur in some tropical rainforests, and they can cause immense damage. This was the key finding of research conducted in Borneo by Douglas Sheil, a CIFOR biologist, and Mark van Nieuwstadt. The research was published in the *Journal of Ecology* in 2005, and it immediately attracted the attention of *Science*, the prestigious American journal, which nominated it as one of the highlights of recent scientific research in 'Editors' Choice'.

Scientists have always found it difficult to disaggregate the effects of fire and drought in tropical forests, as fires rarely happen without a drought first. Subsequent changes are then blamed on the fire, but what about the impacts of the drought? 'In the past, most people overlooked the impact of drought on tropical forests, and assumed that fire does more damage,' explains Sheil. 'But we've shown that's not what happens.'

The researchers worked on adjacent sites in East Kalimantan, one exposed to a severe drought, the other to fire. They discovered that drought had a much more pronounced impact on large, mature trees than fire, killing almost half of those with a diameter of over 80 cm. Fire, in contrast, caused relatively little damage to large trees, but killed far greater numbers of small saplings than drought. The good news is that significant quantities of biodiversity appear to survive both fire and drought. 'Those who argue that fire- or drought-stricken forests should be cleared for agriculture or other uses should think twice,' says Sheil. 'Given time, they will recover.'

This wasn't the only Sheil research project to capture the attention of the scientific world in 2005. Before he joined CIFOR, Sheil worked in Uganda in an area which had been cleared of elephants in the 1960s. He wondered whether the absence of elephants had influenced the nature of the vegetation, and he set up a project to observe their impact on the flora of a protected area where they were still plentiful.

With the help of Agus Salim, a CIFOR statistician, Sheil was able to make sense of the perplexing data he had gathered. This showed that different trees possess different strategies and responses to elephants, and it proved conclusively that elephants have a significant impact on forest structure and species composition. This is of more than academic interest. It means that areas which are now devoid of elephants are probably undergoing significant botanical changes, while the vegetation in protected areas with unnaturally high elephant populations may also be subject to profound change.

The research paper 'Forest tree persistence, elephants, and stems scars' was published in the journal *Biotropica* in 2004. The following year, Sheil and Salim received the 2005 Biotropica Award for Excellence in Tropical Biology and Conservation. This award recognises outstanding contributions in the field of natural history research in tropical regions.

CIFOR scientist Douglas Sheil conducting fieldwork in the Malinau Research Forest, East Kalimantan, Indonesia.
(Photo by Miriam Van Heist)



OBJETIVOS DEL PROYECTO

* Facilitar la comunicación e interacción entre comunidades y gobiernos municipales



* Hacer el proceso de planificación más Sistemático, transparente y participativo

