Forests for adaptation and adaptation for forests

When they talk about climate change and forests, people largely think in terms of mitigation. By planting trees we can mitigate climate change by mopping up some of the atmospheric carbon. And by curbing deforestation and forest degradation, we can reduce the emissions going into the atmosphere. We have paid much less attention to forests and adaptation: devising ways through forest management to help human communities and the natural world cope with climate change.

Although climate change poses a significant threat to tropical forests, it is often overlooked, not least because many countries are preoccupied with more obvious threats, such as illegal logging and agricultural expansion. A new study, launched by CIFOR at the 14th UN Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP 14) in December 2008, argues that we need to pay greater attention to the impact of climate change on forests and to future adaptation strategies.

'Most forest managers know relatively little about the impact of climate change, and even less about how they could adapt their forests to cope with change,' says Bruno Locatelli, CIFOR scientist.

But it is not just forest managers who are in the dark. Adaptation is a new arena for tropical forest scientists, and tropical forests are a new arena for adaptation specialists. *Facing an Uncertain Future* is an essential primer for both these groups. It shows how we can help forests to weather the storm of climate change—'adaptation for forests'; and how forest can help communities to cope better with climate change—'forests for adaptation'. See http://www.cifor.cgiar.org/publications/pdf_files/Books/BLocatelli0801.pdf.

Climate change is already affecting tropical forests in some parts the world. Most obviously, changes in temperature and rainfall are leading to a greater chance of fire.

'In these instances,' says Locatelli, 'forest managers could develop fire prevention plans to reduce risk.'

However, he concedes that this will generally be a costly, short-term strategy which is only likely to apply to forests that are considered of high value, either economically or for wildlife conservation.

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CIFOR scientist

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Forest fruit collecting in Brazil's tropical forest. Photo by Flávio Contente 01

Transferring bags of charcoal from donkey carts to river boats in Mali. Photo by Daniel Tiveau 02

Stacking fuelwood in Mali. Photo by Daniel Tiveau 03

Climate change is causing shifts in bio-geographical zones, and this means that some species are likely to be threatened. The authors of *Facing an Uncertain Future* suggest that policy makers and forest managers design strategies to help species migrate to other areas. This might involve the creation of wildlife corridors between large blocks of forest.

Climate change is also likely to lead to the spread of invasive species, and measures to prevent this spread or remove them might need to be established.

A variety of silvicultural practices could also help forests adapt to climate change, according to another CIFOR study published in 2008. For example, forest managers could increase the diversity of species and thus increase the likelihood of establishing species that will survive climate change. See '*Mitigation needs adaptation: tropical forestry and climate change*'. http://www.springerlink.com/content/1x87u71312n8j368/.

Then there is the other side of the coin: forests for adaptation. According to the authors of *Facing an Uncertain Future*, forests have the potential to help human communities cope with climate change. They suggest that we adopt conservation and management policies that reduce human vulnerability by protecting the environmental services that forests deliver.

'This is a very new area of concern,' says Locatelli, 'and it requires not only a lot more research, but a shift in thinking among policy makers.'

At present, most national adaptation strategies concentrate on individual sectors, such as water, agriculture and industry, and tend to ignore the complex links among them. For example, forests play a vital role in regulating water supplies, but national adaptation strategies, where they exist, often fail to recognise these links. Yet, if forests and their surrounding landscapes are threatened, this will almost certainly have an adverse effect on water supplies, as one of the case studies in *Facing an Uncertain Future* illustrates.

Hydroelectric power production in Costa Rica is extremely vulnerable to climate change, and the authors of the case study found that the increase in the frequency of heavy rainfall had led to an increase in the rate of erosion, and thus an increase in siltation in the power generating dams. Current programmes involving payments for environmental services do not cover agriculture, and therefore fail

to have a significant impact on erosion. If water supplies are to be safeguarded against climate change, policy makers need to consider new incentive schemes to reduce erosion and siltation: forestry, agriculture and water supply must be considered together, rather than as separate sectors.

Although most of the efforts to tackle climate change have been directed towards mitigation, the need to develop policies for adaptation is now widely acknowledged, as is the need to establish new funding mechanisms. See 'Taxing times' below. *Facing an Uncertain Future* suggests that efforts to design national adaptation policies have been largely inadequate. A lack of information, uncertainties about the impact of climate change, the political preference to concentrate on policies that bring immediate short-term gains—all have hindered the development of adaptation policies. However, research by CIFOR scientists working on the Tropical Forests and Climate Change Adaptation (TroFCCA) project has identified possible pathways for mainstreaming adaptation into policy, and it is encouraging scientists, decision makers and donors to pay greater attention to the role forests could play in adapting to climate change. See 'Adapting to change in northern Mali' on page 12.

Taxing times

The UNFCCC secretariat estimates that the money needed for adaptation could exceed US $100 billion a year for several decades. The funds currently available under the Kyoto Protocol and a range of other measures come nowhere near meeting such a large bill. In order to raise more money, an Adaptation Fund was established in 2007. Markku Kanninen, who leads CIFOR's climate change research, is one of the alternate members on the Adaptation Fund's board. He believes the fund, which will take 2 per cent of all the revenues raised by the carbon trade under the Clean Development Mechanism, has the potential to make a significant impact.

'Most of the first year was taken up with designing the rules and regulations,' says Kanninen, 'but we are hoping that by the time we get to COP 15 in December 2009, the first tranche of projects will have been financed.'