Forests and climate change adaptation in Asia

Overview

- Climate change is expected to have significant negative impacts on forest ecosystems in Asia. Unless addressed, these impacts will have knock-on effects on forest-dependent people and wider society.
- Climate change is one of many pressures on forests in Asia, including demand for timber and expansion of agriculture and infrastructure. National economic and development plans should take into account the important roles forests and forestry can play in climate change adaptation.
- Climate change funding presents an opportunity to expand sustainable forest management (SFM) and national adaptation strategies should address climate change adaptation within a broader framework of SFM activities.
- Adapting forests to climate change improves the permanence of carbon stocks and is thus a pre-requisite for effective climate change mitigation. Adaptation activities that assist mitigation should be eligible for carbon financing.
- Adaptive capacity of forest-dependent people can be improved through allocating forestland use rights, local-level capacity building and improving access to markets for forest-based products.

Climate change and its impacts on forest ecosystems in Asia

In Asia, anticipated changes in climate include increases in temperature, precipitation and extreme weather events - including heat waves, floods and droughts - and seasonal shifts in rainfall patterns. These impacts are expected to vary among sub-regions, with high altitude and high latitude areas most affected (Table 1). Coastal areas are predicted to experience sea level rise of 32cm by 2050 and an increase in cyclone intensity and storm surge height.

Table 1: Forecast annual changes in temperature and precipitation in Asia, 2010-2039

	Temperature change (°C)		Precipitation change (%)	
	High emissions scenario	Low emissions scenario	High emissions scenario	Low emissions scenario
North Asia	2.1	2.2	9.3	9.3
Tibetan Plateau	1.8	1.6	7.8	6.5
East Asia	1.5	1.4	2.5	2.8
South Asia	0.9	0.9	2.5	5.5
Southeast Asia	0.9	0.8	-1.0	0.3

Source: Cruz et al., 2007

Expected impacts of climate change on forest ecosystems in Asia are complex. Forests are expected to face increased incidence of fire, dieback, pests and pathogens, invasive species and landslides. Changes in climate will also affect tree physiology and phenology, forest growth and biodiversity, with knock-on impacts on forest-dependent people and wider society. The severity of these impacts will vary among sub-regions and ecosystems.

Forest-based climate change adaptation – key components

Forest-based climate change adaptation (FBA) involves two related components: **'Adaptation for forests'** or strengthening the capacity of forests to deal with climate change and **'Forests for adaptation'** or using forests to help society strengthen resilience to climate change, and to support livelihood strategies. In summary, FBA involves addressing the threats to forests and simultaneously exploring opportunities to make forests an integral part of national adaption strategies.

***'Adaptation for forests' is a component of SFM*,** which provides an integrated framework for systematic management of forests. SFM activities relevant in climate change adaptation include:

- Monitoring and maintaining forest health, vitality and diversity;
- Implementing integrated forest fire management;
- Enhancing landscape connectivity and reducing forest fragmentation;
- Monitoring and removing invasive species and addressing pest and disease threats;
- Undertaking forest restoration and rehabilitation, particularly on slopes;
- Implementing reduced-impact logging; and
- Selecting appropriate species for use in planted forests.

'Forests for adaptation' requires judicious use of forest services and improved access for local communities. Forest ecosystems provide services that reduce the vulnerability of communities and broader society to climate change. These services can be divided into five categories:

- ***Livelihoods:*** providing goods to local communities affected by climate events;
- ***Agriculture:*** conserving and regulating soil, water and microclimate in agricultural lands;
- ***Watersheds:*** regulating water quality and protecting soil from erosion and landslides;
- ***Coasts:*** protecting coastal areas from extreme weather events and sea level rise; and
- ***Cities:*** regulating temperature in cities.[1]

Globally, rural households derive one-fifth to one-quarter of their income from forest and tree resources and are therefore amongst the most vulnerable to climate change impacts on forests. By improving the management of forests and allocating adequate rights at the local level, the adaptive capacity of forest-dependent people will be improved. Measures to increase the flow of benefits from forests and improve local adaptive capacity include:

- Clarifying and strengthening forestland ownership and use rights;
- Reducing and simplifying resource access procedures;
- Maintaining a stable policy and regulatory environment;
- Strengthening sustainable production of, and access to markets for, forest-based products; and
- Applying best practices in forest law enforcement and reducing opportunities for corruption.

[1] Locatelli, B. and Pramova, E. 'Beyond Mitigation: Forest-Based Adaptation to Climate Change'. Presentation delivered at Meeting on Forests and Climate Change Adaptation in Asia, 26 October 2011, Bangkok.

Forest-based climate change adaptation – current status in Asia

SFM is not widely implemented in Asia, undermining adaptive capacity of forests. While SFM has been at the centre of forest policy in most Asian countries for over 10 years, implementation is lagging. Forests are often not actively managed and supplies of wood and non-wood forest products are declining while ecosystem services are being degraded or lost. In some countries, declines in forest cover have been reversed but in others deforestation and resource degradation continue. Improved awareness of the importance of forestry and increased investment will be necessary if FBA is to become a reality.

Adaptation strategies often lack cohesive approaches to forest-based adaptation. Most countries are currently developing climate change adaptation strategies including National Adaptation Programmes of Action (NAPAs).[2] These strategies often include forestry sector activities and a number of related projects are being developed and implemented in the region. However, in most national and sub-national adaptation strategies forestry is largely dealt with in a piecemeal manner, and 'adaptation for forests' is often missing altogether.

For example, Bangladesh's NAPA (2005) and Climate Change Strategy and Action Plan (2008) contain projects on afforestation and reforestation, but are silent on management of fires and invasive species, and forest monitoring. Similarly, China's National Climate Change Programme (2007) outlines the launch of a nation-wide tree-planting and afforestation campaign, but does not include a forestry sector vulnerability analysis. FBA strategies also often lack sufficient detail on participatory processes and sustainable financing.

Lack of inter-sectoral planning continues to be an obstacle to SFM. Activities in non-forestry sectors (e.g. agriculture, mining and energy) can increase or decrease adaptive capacity of forests. For example, promotion of intensive farming and enhanced grazing management can reduce pressure on forest resources. On the other hand, implementation of infrastructure developments without social and environmental safeguards can cause forest degradation and increased vulnerability to climate change. Activities in different sectors therefore need to be well-coordinated.

Forest-based adaptation is still overshadowed by forest-based mitigation. Expectations of obtaining plentiful funding for reducing emissions from deforestation and forest degradation (REDD+) have captured the imagination of many forestry stakeholders. Climate change mitigation and adaptation have been treated as separate topics at national and international levels. FBA is, however, a pre-requisite for effective mitigation, as adaptation measures will help to increase the permanence of forest carbon stocks. Similarly, there is no reason for adaptation activities that contribute to mitigation not to be eligible for carbon financing.

[2] Other examples include Viet Nam's National Target Program to Respond to Climate Change (2007), Indonesia's Climate Change Sectoral Roadmap (2009) and Philippines' National Framework Strategy on Climate Change 2010-2022.

The way forward

Climate change is only one of many pressures on Asia's people and forests. Rapid population and economic growth, infrastructure expansion and rising demand for timber and agricultural commodities are important drivers of change in forests. In many cases, poor governance and poverty exacerbate these pressures. As a result, forests are often not actively or sustainably managed or are being converted.

International funding of climate change adaptation activities is, however, growing.[3] Such funding presents an opportunity for governments to improve implementation of SFM and to strengthen forest-based climate change adaptation. Recommended actions include:

- Accelerate implementation of FBA as a part of wider efforts to expand SFM;
- Include comprehensive coverage of forestry in NAPAs or equivalents;
- Build FBA into forestry mitigation projects. The mitigation potential of 'forests for adaptation' projects should be acknowledged and associated funding made available;
- Build FBA into national conservation and development policies;
- Acknowledge links between forestry and non-forestry sector activities, and improve inter-sectoral communication and planning.

Further reading

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Locatelli, B., Kanninen, M., Brockhaus, M., Colfer, C.J.P., Murdiyarso, D., Santoso, H. 2008. Facing an uncertain future: How forests and people can adapt to climate change. Forest Perspectives No. 5. Center for International Forestry Research (CIFOR), Bogor. Available at www.cifor.org/publications/pdf_files/Books/BLocatelli0801.pdf

FAO 2010. Forests and Climate Change in the Asia-Pacific Region. Forests and Climate Change Working Paper 7. FAO, Rome. Available at www.fao.org/docrep/013/i1759e/i1759e00.pdf.

IUFRO 2009. Adaptation of Forests and People to Climate Change – A Global Assessment Report. IUFRO World Series Vol. 22. IUFRO, Helsinki. Available at www.iufro.org/download/file/4485/4496/Full_Report_pdf/

For further information, please visit:

www.fao.org/asiapacific/forestry-adaptation

or

www.recoftc.org/site/Publications/

[3] Three major multilateral funds are currently available for climate change adaptation activities: the Least Developed Countries Fund (LDCF), the Special Climate Change Fund (SCCF) and the Adaptation Fund. Bilateral and multilateral climate change funds currently add up to USD 55.8 billion (mitigation and adaptation combined).