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Climate change and forest resilience

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Significant global climate change is inevitable. Tree species have a limited capacity to tolerate climate change or migrate through natural or artificial means. We do not know enough about the comparative resilience of forest-based, agricultural, marine or fresh water ecosystems. But it is clear that biodiverse forest ecosystems are under threat. And the threat extends beyond forests themselves. An estimated 60 million indigenous people are heavily dependent on the world's rainforests. Some 350 million people live in or close to dense forests and rely on them for subsistence or income. A further 1.2 billion people in developing countries depend on trees on farm to generate food or cash.

Challenges to forest-based livelihoods

Challenges to forest-based livelihoods are numerous and very much dependent on location. Loss of land for production in low-lying areas may go hand in hand with increasing pressure on land because of changes in growing conditions or new environmental immigrants. There will be changes in the survival of indigenous species, and new conditions for production of commercial exotics. Events such as fires, floods and landslides will increase risks. Change and resilience elsewhere also matter. Global climate change will affect the comparative advantage of growing timber and non-timber forest products in different localities, with potentially major shifts in international markets.

Poorer countries are disproportionately dependent on natural resources. Participatory poverty assessments show how important the natural environment is to the most vulnerable groups in those countries. Poverty mapping shows how poor people often live on marginal lands, steeply sloping areas or areas subject to flooding. The poorest in society are both most dependent on natural resources and most vulnerable to the impacts of climate change.

The links between forest resilience and climate change

Understanding and making the most of forest resilience in the face of climate change is important on three counts:

- Mitigation – Growing forests absorb CO2, an important greenhouse gas. There is a need to redress the current imbalance between deforestation and afforestation, which is responsible for approximately one fifth of human CO2 emissions.
- Risk reduction – Forests help to reduce risks from climate change for some of the poorest and most vulnerable groups. Poor people need to secure access to renewable forest products (fuel, construction materials, medicines, food and fodder) and services (soil stability, recharge of groundwater, coastal protection, biodiversity conservation).
- Adaptation – Tree based landscapes could be designed to provide diverse, more resilient livelihoods in the face of increasingly erratic weather, droughts and fires, floods and landslides and sea level rises. We need to understand whether adaptation is possible, and how, in different contexts (Figure 1).

Better use and more effective adaptation of forest resilience can only happen if relevant institutions have the capacity to help forest-dependent people to assess and act on change in forest ecosystems, products and markets – both locally and internationally. What is needed now is support and development of institutional awareness and capacity to deal with specific challenges in forest-based livelihoods due to climate change.

KEY MESSAGES:

- **Forest ecosystems help protect poor people from climate change (e.g. providing subsistence foods in increasingly intense droughts or buffers to coastal erosion caused by rising sea levels).**
- **Forest ecosystems may not be able to adapt to the rate of temperature change or the intensity of weather events and associated impacts such as fires or floods.**
- **Resultant short term shocks and longer term erosion of forest ecosystem resilience are likely to hit the poor hardest.**
- **There may be ways of adapting forest landscapes to minimise risks – but these will require strong and knowledgeable local institutions, political will and advanced planning.**
- **Policy makers should actively support an alliance of local institutions that seek to co-develop social and forest resilience in areas most vulnerable to climate change.**

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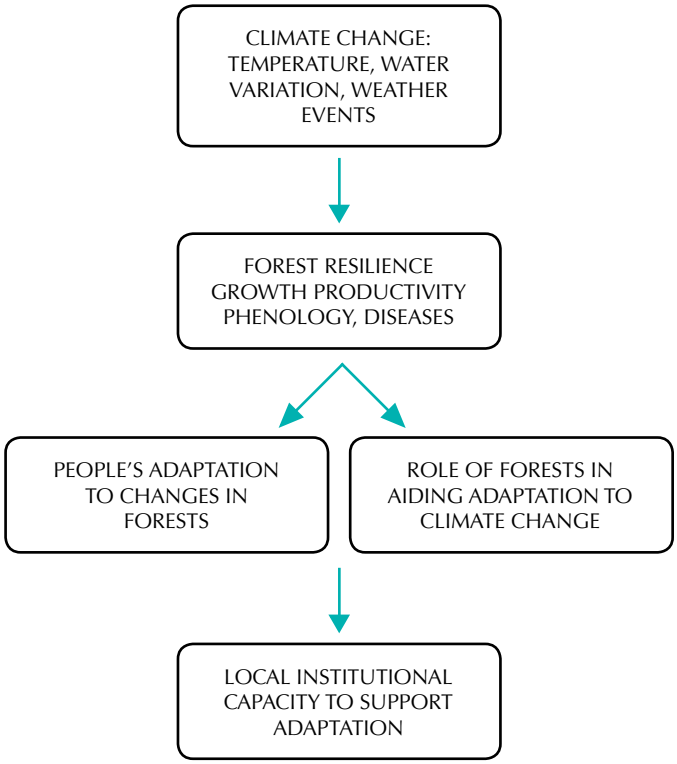
Figure 1.



As the nature of the threat to forest ecosystems and poor livelihoods becomes clearer in each context, IIED will help to facilitate an alliance that is geared to strengthening local institutions. The alliance will aim to explore adaptation strategies that might include:

- Increasing local ownership and access to forest resources
- Developing local monitoring and analysis of climate change impacts
- Building institutional responsibility for adaptation strategies
- Favouring more diverse livelihood systems in which forests and trees play an integral part
- Providing incentives to counter lucrative but high risk systems such as monocultures
- Strengthening buffer zones and protection areas
- Minimising fragmentation and promoting connectivity
- Protecting mature stands and refugia (e.g. montane or moist forest areas)
- Managing fire and pests

Policy makers should be aware of the importance of developing both social and forest resilience to climate change. They should think in terms of devolving responsibility and finance to local institutions that are at the front line of adaptation to climate change. As the pace of climate change continues to increase, underwriting the costs of a broader alliance to explore these issues would make good sense.

Some important caveats…

Climate change may well have many more important impacts on poor people outside of forest-related products and services. Conversely, forest-related livelihoods may have far more pressing challenges than climate change. These scenarios will change over time – but we need to be careful before investing a substantial proportion of limited resources in development of capacity around forests and climate change.

…and a collaborative way forward

IIED is working with partners, especially from least developed countries, to identify which (if any) of the most pressing problems to do with climate change involve forest resources. The overarching project: "Capacity strengthening of civil society in Least developed countries on Adaptation to Climate Change (CLACC)" currently involves 12 countries in Africa and Asia – but its work is relevant to many other vulnerable countries. It aims to engage with sectors that climate change is likely to affect. It will facilitate discussion within these sectors, including the forest sector, identify the major issues where impacts will be felt, and analyse how to adapt to those impacts.

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