

8 Main Conclusions and the Way Forward

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Forests provide essential services to support human well-being. They cover about a third of the Earth's land surface, grow in many climates, store about half the total carbon contained in land ecosystems and, very likely, host the majority of terrestrial biodiversity. The impacts of future climate change on forest ecosystems and the goods and services they provide are therefore of major global concern.

Regardless of mitigation measures taken now or in the near future, historical emissions and inertia in the climate system mean that some climate change has become inevitable. Individuals, societies and institutions, therefore, should be aware of those likely and possible future impacts of climate change on forests and have management and policy options at hand to support adaptation.

The assessment of available scientific information in this report confirms that climate change is already affecting forest ecosystems and the services they provide, and will have increasing effects on them in the future. The ongoing climate change could put at risk essential ecosystem services, including carbon regulation and the maintenance of biodiversity; the loss of carbon-regulating services would seriously accelerate climate change.

The negative social and economic consequences of a loss of forest ecosystem services due to climate change are potentially dramatic. The forest-dependent poor in particular will, in many regions, face increasing difficulty in meeting basic needs for energy, food and clean water, which would lead to deepening poverty, deteriorating public health and increasing social conflicts. In many countries, current governance failures increase the socio-economic vulnerability of many people.

Climate change could have positive effects as well. The increases in economic productivity that will occur in forests in some regions due to increased tree growth will present new opportunities for forest industry and forest-dependent communities.

This assessment has revealed the limitations in current knowledge on the impacts of climate change on forests and people. Forest adaptation studies are relatively recent, and only a few have documented evidence of success in the implementation of adapta-

tion strategies. It is necessary, therefore, to continue to support research that will reduce uncertainty about the local level climate-change impacts on forests and improve knowledge about management and policy measures that will promote successful adaptation. The well-planned monitoring and evaluation of adaptation measures is important to facilitate continuous learning and to enable the further development of such measures.

Existing climate-change scenarios and ecological models should be further developed to adequately explore the complex interactions between forests and the climate system. Given the diversity of forests, more precise regional and local climate-change projections are urgently required. Much more research is also needed on the forest-related social and economic impacts of climate change, especially on forest-dependent people. Projections of future economic conditions are inherently uncertain, not least because they are linked to climate and ecological models that contain their own uncertainties. The current lack of data on the supply of many non-wood forest products and their future demand imposes further limits on the assessment of climate-change impacts.

Climate change is only one factor affecting forests and the people depending on them for their livelihoods. Others include human population growth, changes in the extent of croplands and pasturelands, epidemic diseases, invasive species, forest fire and industrial pollution. The effects of such factors, and their interactions with climate change, complicate analyses of the impacts of climate change on forest goods and services.

Despite the limitations of current knowledge, climate change is progressing too quickly to postpone action pending the outcomes of future studies. This assessment has revealed strategies that can significantly reduce climate change risks and enhance the adaptation of forests and people to climate change. It confirms that the practices associated with sustainable forest management are likely to help reduce environmental, social and economic vulnerabilities under a wide range of potential future climatic conditions. Therefore, better implementation of sustainable forest management can immediately help

to reduce vulnerability to climate change. Actions aimed at maintaining and increasing the diversity of species and genes in forests can help mitigate climate change risks. Many management actions taken in the context of adaptation, such as the prevention of large-scale fires, could also assist in the mitigation of climate change. By and large, forest managers will need sufficient flexibility to choose locally appropriate adaptation measures.

New modes of governance are required that enable meaningful stakeholder participation and provide secure land tenure and forest user rights and sufficient financial incentives. Flexible approaches to policy design are needed that are sensitive to context and do not rely on a single, one-size-fits-all mechanism. To meet the challenges of adaptation, commitment to achieving the goals of sustainable forest management must be strengthened at both the

international and national levels.

Climate change adaptation and mitigation are closely linked and complementary. Indeed, given the importance of forests to climate, successful mitigation requires that forests are able to adapt to climate change. This suggests opportunities to at least partly finance adaptation costs through payments for mitigation services.

Unmitigated climate change is likely to exceed the adaptive capacity of many forests in the course of the current century. On their own, therefore, adaptation measures will be insufficient for forests to adapt to climate change; large reductions in emissions from fossil fuels and deforestation are needed to preserve the adaptive capacity of forests and to enable them to continue making their essential contribution to the mitigation of climate change.