



**Forests and Climate Change:  
Mitigation and Adaptation through  
Sustainable Forest Management**

**Remarks presented by  
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**To the**

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Thank you Mr. Dawoud,

Fellow Panellists, Distinguished Delegates and Guests,

I am very happy to join you today for a discussion of what is perhaps one of the most important questions of our time: how to change our behaviour to both reduce the effects of human activity on our atmosphere and adapt to current, ongoing changes in our climate and environment.

The way we manage and use our land and the way a changing environment affects our natural resources are directly linked to both sides of this question. Forests and forest products can play a significant role in mitigation of harmful effects of green house gas emissions. They can act as a “sink” to absorb emissions and store large quantities of carbon for extended periods of time. Forests are also an important component of adaptation strategies needed to address continuing, sometimes dramatic, changes in the natural resource base that sustains our livelihoods. Sustainable forest management is thus a critical component of any policy and action programme that seeks to address the growing global concern about the impact of climate change.

Of course, forests provide a wide range of benefits beyond those related to climate change. Accounting for approximately thirty percent of the world’s land mass, forests provide economic, social, cultural and environmental services. More than one billion people live in or around forests and use forest resources for fuel, timber, food, medicine and income; of these, 70 million are Indigenous Peoples living in remote areas that depend completely on forest resources for their livelihoods. In addition, forests contribute significantly to populations living farther a field through the provision of a wide range of forest products, recreational opportunities as well as environmental services such as protection of the watershed. Clearly, the potential contribution of forests to the mitigation of climate change is just one of many benefits forests provide for local communities and urban populations, as well as a large number of business enterprises.

But our time today is limited, so I will provide you with a quick overview of the relationship between deforestation and climate change, as well as how sustainable forest management plays a role in both mitigation and adaptation to climate change. At the same time, I will share with you some of the policy discussions underway both in the UN Forum on Forests and other parts of the UN system that seek to address this issue.

### **Deforestation, Forest Degradation and Climate Change**

Trees, soil and forests take in carbon at a rate that is determined by a number of factors including the type of forest, its location, and its age. Forests store large amounts of carbon in trees, under-story vegetation, and soil. Globally, they contain some 1.2 trillion tonnes of carbon, just over half the total in all terrestrial vegetation and soils.<sup>1</sup> Generally speaking, young, growing and well managed forests are good “sinks”. Tropical forests are able to take-in and store carbon at a greater rate than boreal forests.

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<sup>1</sup> FAO, “World Agriculture: Toward 2015 / 2030” <http://www.fao.org/docrep/004/y3557e/y3557e10.htm>

Not all forests are good carbon “sinks”. Old-growth forests may be net-emitters of carbon as the large proportion of older trees begin to decompose. Nonetheless, human activity in the form of deforestation and forest degradation are the primary drivers of carbon emissions from forests. It has been estimated that tropical deforestation accounts for about 20 percent of human-generated CO<sub>2</sub> emissions<sup>2</sup>. The overall figures still require much further clarification. Forest management and forest operations have a long term effect on human-generated emissions, and all the factors contributing to the balance between emissions and storage are not yet fully understood.

The causes of deforestation and forest degradation are complex and are often manifestations of careless excavation of natural resources without proper management and regeneration activities. Sustainable forest management provides a method of balancing diverging priorities of sustainable economic and social development on the one hand, and ecological sustainability on the other. When following the principles of sustainable forest management, forest resources are managed and extracted at a rate that meets the needs of the society while ensuring forest regeneration, health and vitality.

Deforestation and forest degradation are the result of a confluence of actors, interests and circumstances. Drivers range from the growing demand of timber and forest products in global markets to conversion of forest land to pasture for large scale cattle ranging or more profitable agricultural products, such as corn or palm oil. Forest land is also sacrificed to meet the needs of local communities for land to use in subsistence agriculture. A diverse set of changes such as in technology, access to roads and transport, prices of agricultural inputs, industrial development and fluctuating labour markets at the local and national levels - to name a few - can have both positive and negative impacts on the rate of deforestation.<sup>3</sup>

The actors engaged in deforestation also vary significantly from region to region and even from one locale to another. In Latin America, for example, the majority of forest degradation is a result of large-scale agriculture and unsustainable harvesting of timber, with 45 percent of land use change being the conversion of forests to large-scale permanent agriculture. While in Africa, deforestation is primarily driven by small-scale permanent agriculture and charcoal harvesting, accounting for about 60 percent of land use change there.<sup>4</sup> In those boreal and temperate forests of North America and the Russian Federation where deforestation is still occurring, unsustainable timber harvesting seems to be the primary driver. As in Latin America, a significant portion of deforestation in Asia is driven by large-scale permanent agriculture (30 percent of land use change) but unsustainable harvesting plays a major role in this region. Though land

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<sup>2</sup> House, J., Brovkin, et al. (2006) Climate and Air Quality In: Millennium Ecosystem Assessment 2005—Current State and Trends: Findings of the Condition and Trends Working Group. Ecosystems and Human Well-being. Island Press, Washington, DC.

<sup>3</sup> see Chomitz, Kenneth M., Buys, Piet, De Luca, Giacomo, Thomas, Timothy S. and Wertz-Kanounnikoff, Sheila (2006) At Loggerheads? : Agricultural Expansion, Poverty Reduction, and Environment in the Tropical Forests. World Bank, Washington, DC.

<sup>4</sup> United Nations Food and Agricultural Organization (FAO) (2001) Global Forest Resources Assessment 2000: Main Report Forestry Paper 140, Rome.

use tends to be more clearly segregated in other parts of the world, there may be many interests competing over the same piece of territory in Asia. One particular area may be disputed by a combination of small commercial farmers, large timber and plantation interests and long-residing local populations,<sup>5</sup> indicating the need for complex policy measures. Sometimes the solutions can be very straightforward. For example, changes in land tenure laws in Mali to allow ownership of forests and trees by local communities have resulted in a significant reversal in the loss of forest cover as local communities begin to replant forests and replace the trees they cut for fuel-wood. In other areas, the complexity of actors and circumstances means that policy decisions are not always so straightforward and depend on national priorities and development strategies.

### **Sustainable Forest Management, Mitigation and Adaptation**

The United Nations has been working to promote the widespread use of sustainable forest management for more than fifteen years. This year, the United Nations Forum on Forests, in a historic agreement, completed and adopted the Non-Legally Binding Instrument on All Types of Forests, which sets a framework for the implementation of sustainable forest management by all countries. We anticipate that the General Assembly will adopt this Instrument at its next session.

The instrument includes four Global Objectives on Forests, the first of which is "... to reverse the trend of loss of forest cover..."<sup>6</sup>, in other words, to not only stop deforestation but to instigate a transition to increase overall forest cover. Countries have committed to follow the principles of sustainable forest management to accomplish this goal.

The issue of forests and sustainable forest management has been a priority on the international policy and political agendas dating back to the 1992 United Nations Conference on Environment and Development (UNCED). Previous sessions of the UN Forum on Forests and previous intergovernmental fora on forests agreed on over 270 proposals for action, and several other resolutions and decisions. The Non-Legally Binding Instrument marks a culmination of these efforts and seeks to highlight priority issues for action.

The instrument provides countries with a number of policy proposals intended to guide and assist the implementation of sustainable forest management. These include guidance on such issues as:

- ◆ Forest Law Enforcement and Governance
- ◆ International Trade in Forest Products
- ◆ Protection of Forests
- ◆ Science and Research

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<sup>5</sup> Kaimowitz, David, and Angelsen, Arild (1998) Economic Models of Tropical Deforestation: A Review. Center for International Forestry Research, Bogor, Indonesia.

<sup>6</sup> United Nations (2007) Report of the United Nations Forum on Forests Seventh Session E/CN.14/2007/8 E/2007/42(SUPP), New York. Available at <http://www.un.org/esa/forests>

- ◆ Public Awareness and Education
- ◆ Private Sector and Industry
- ◆ Indigenous and Local Communities
- ◆ Monitoring, Assessment and Reporting

The concept of sustainable forest management includes the creation of conservation and protected areas to preserve biodiversity and other environmental services; but it goes beyond conservation, in its recognition that people and communities depend on forests for income and livelihoods. By recognizing the multiple aspects and benefits of forests, it is hoped that policy makers can better judge the value of their forests and the importance of allowing access to forest resources, in a way that ensures the long-term health and sustainability of this important natural resource.

### *Mitigation*

Sustainable forest management contributes significantly to mitigation of harmful effects of greenhouse gasses. In general, the term mitigation refers to all activities aimed at reducing green house gas emissions and / or removal of CO<sub>2</sub> from the atmosphere with the aim of stabilizing CO<sub>2</sub> concentrations. Actions which can be taken in the forest sector to promote mitigation include:

- ◆ managing forests with high carbon uptake potential,
- ◆ expanding such forests through reforestation and afforestation,
- ◆ reducing deforestation and reversing the loss of forest cover,
- ◆ providing an enabling environment for investments and market access to sustainable forest-based products, and
- ◆ increasing the use of forest-based products such as bio-energy and durable wood products, and substituting these for less eco-efficient materials.

Forest-related mitigation activities often have a cost advantage over other mitigation strategies. They can also be designed to support other national development and poverty alleviation priorities because of the multiple benefits forests provide. The Intergovernmental Panel for Climate Change (IPCC) estimates that about 65% of the total mitigation potential in the forest sector is located in the tropics and about 50% of this total could be achieved by reducing deforestation.<sup>7</sup> In other words, because tropical forests have the greatest potential for carbon uptake and storage, the most cost effective way of reducing carbon concentrations in the atmosphere, is to reduce deforestation of tropical forests and allow for forest cover expansion.

Modern bio-energy can also contribute substantially to mitigation by providing an alternate source of renewable energy. Using fuels such as bio-diesel made from wood products is carbon neutral because trees harvested for use as fuel are continually

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<sup>7</sup> IPCC, 2007. Climate change 2007: Mitigation. Contribution of Working group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O. R. Davidson, P. R. Bosch, R. Dave, L. A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

replanted. In addition, forestation and bio-energy plantations can lead to restoration of land that has been degraded by over-extensive agriculture, manage water runoff, retain soil carbon and benefit rural economies by providing employment and income. However, if such plantations are not designed properly, they do have the potential to compete with land for food production and may be negative for biodiversity.

### *Adaptation*

Of course, climate change has detrimental effects on forests themselves. In the Northern Hemisphere, rising temperatures have led to significantly increased rates of forest fires and a proliferation of pests and disease. This has heavy cost implications for timber production and will require changes in management and protection schemes. The IPCC reports that due to increased drought and fire, timber production is projected to decline by 2030 over much of North America, Central and Eastern Europe as well as southern and eastern Australia, and parts of eastern New Zealand.<sup>8</sup> In Latin America, by mid-century, increases in temperature and associated decreases in soil water are projected to lead to gradual replacement of tropical forest by savanna in eastern Amazonia. Semi-arid vegetation will tend to be replaced by arid-land vegetation.<sup>9</sup> This change in productivity and tree density will have implications for the potential of forests to mitigate climate change in the long run, though it is expected that there will be much variation by region and sub-region. Adaptation strategies specific to forests will undoubtedly be necessary in all regions.

At the same time, forests do have the potential to contribute to national adaptation strategies. Planting forests and sustainable forest management can aide in the protection of soil and land against detrimental impacts of flooding. In addition, forests can be used to rehabilitate degraded land and maintain water quality by trapping sediments, taking up nutrients, and immobilizing toxic substances. Adaptation strategies that promote sustainable forest management and community based forest management have the potential to not only protect land and people from some of the harmful effects of rising global temperatures, but also to provide opportunities for greater, more sustainable rural development and poverty alleviation through income generation and employment opportunities.

### *Policy*

The two most basic policy tools that governments have at their disposal in promoting the use of sustainable forest management for both mitigation and adaptation are national and international financial incentives and regulation. While the UN Framework Convention for Climate Change is in the process of considering the creation of financial incentives for reducing emissions from deforestation, the primary obstacle at both the international and national level remains a lack of capital. Current estimates of how much capital

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<sup>8</sup> IPCC, 2007. Climate change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

<sup>9</sup> Ibid.

would be required to effectively reduce deforestation rates vary significantly not only by analytical study, but also by region and sub-region.

At the national level, land tenure issues can present a challenge to the creation of such incentives, though this obstacle should be easier to overcome. National level governments also have a much wider array of financial incentives at their disposal including the creation of market access for non-timber forest products, the promotion of agro-forestry, the creation of payment for environmental services schemes, and the decentralization of management in the form of community based forest management.

As the Non-legally Binding Instrument on All Types of Forests highlights, governance is crucial a component of successful sustainable forest management as is law enforcement. Though regulation can be a highly effective means to combat deforestation and promote the use of sustainable forest management, lack of capacity in monitoring and lack of resources for law enforcement are inhibiting factors in many developing countries.

### **Conclusions**

The United Nations Forum on Forests Secretariat will continue to work towards focusing attention on the links between forests and climate change.

In April 2009, at its next session, the United Nations Forum on Forests will take up the issue of Forests and Climate Change. Countries will have the opportunity to consider how implementation of the Non-legally Binding Instrument and the use of sustainable forest management can help in reducing deforestation as well as in mitigating and adapting to the effects of climate change.

Forests have tremendous potential to serve as a tool in combating climate change, protecting people and livelihoods, and creating a foundation for more sustainable economic and social development. Sustainable forest management provides the framework for international and national level planning of how best to confront this ever changing and ever challenging obstacle that we all face together.