1. Introduction

It is very important to protect the world's forests from harm. The global forest area is just over 4 billion hectares, which represents 31 percent of the total land area (FAO, 2010a). Forests are important global resources that provide a wide range of environmental, economic and social benefits. They provide a variety of valuable products, such as timber, fuelwood, fibre and other wood and non-wood forest products, and contribute to the livelihoods of rural communities. They provide vital ecosystem services, such as combating desertification, protecting watersheds, regulating climate, and maintaining biodiversity, and play an important role in preserving social and cultural values.

Forests can also play a significant role in addressing global climate change concerns. For example, they absorb carbon from the atmosphere and store it in trees and forest products. Properly managed forests can also provide wood, a renewable alternative to fossil fuels. Conserving overall forest area, replanting harvested forests, and managing forests to maintain vigorous growth are all important ways to reduce carbon dioxide accumulation in the atmosphere.

1.1 PEST THREATS TO THE WORLD'S FORESTS

The health and vitality of the world's forest ecosystems are affected by a range of natural disturbance agents including pests,[1] drought and fire. While disturbance is part of the natural succession processes in forests, it can often limit the ability to meet forest management objectives. A wide range of pests can have negative impacts on forests and the forest sector. Outbreaks of forest insects alone damage some 35 million hectares of forests annually, primarily in the temperate and boreal zones (FAO, 2010a).

Indigenous pest species may become a significant problem, particularly when they reach outbreak populations on introduced tree species. Sometimes even more damage is caused by non-indigenous or introduced pests, which have been accidentally introduced through trade in forest products, live plants and other commodities. Since non-indigenous pests did not evolve with the forests they are affecting, their impacts can sometimes be devastating. In such situations, introduced pests may not have natural enemies that normally keep populations in balance. The new host trees may have insufficient or no resistance to introduced pests. Climate change also appears to be influencing pest establishment in new locations, as well as increasing the severity of impacts of both indigenous and non-indigenous pests. Examples of major pest introductions and their impacts on forests can be found in Annex 1.

[1] Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products (ISPM No. 05, 2010, *Glossary of phytosanitary terms*).

1.2 PROTECTING THE WORLD'S FORESTS

Successful protection of the world's plants, including forest tree species, from pests requires coordinated international action. This coordination occurs through the International Plant Protection Convention (IPPC), which is an international agreement between countries to control pests and prevent their spread. The IPPC's governing body is the Commission on Phytosanitary Measures (CPM), which adopts International Standards for Phytosanitary Measures (ISPMs)[2] to prevent pest introduction and spread and facilitate trade. As of December 2010, 176 countries are contracting parties (members) to the Convention. Under the guidance of the IPPC, most governments have designated national organizations to protect natural resources, including forests, from pest entry and establishment. These are collectively referred to as national plant protection organizations (NPPOs)[3] although countries may call them plant health inspectorates, quarantine services or many other names. NPPOs frequently have to work with neighbouring countries to prevent pest entry and spread between countries. This collaboration may be through regional plant protection organizations (RPPOs).

NPPOs are the official national points of contact to the IPPC, and it is the NPPOs that work together to develop ISPMs. All member countries unanimously agree that ISPMs are effective in managing pest risks and allowing safer trade. NPPOs use the ISPMs as the basis for their national phytosanitary regulations. Because they will have an impact on trade, it is important for everyone involved in forest products trade to understand how these regulations can affect them. ISPMs developed by the IPPC are recognized by the World Trade Organization (WTO), which provides a dispute resolution process for trade issues.

1.3 ABOUT THIS GUIDE

Many people associated with the forest sector can play a key role in preventing the spread of pests, including those involved in growing, planting, managing, harvesting, manufacturing, storing, trading and transporting forest products. This guide is intended to help reduce human-facilitated pest spread and its impacts. It provides easy-to-understand information on ISPMs and the role of forest management practices in implementing phytosanitary standards and facilitating safe trade. Specifically it explains:

- how the ISPMs and NPPO regulations affect the import and export of forest commodities (Chapter 2);
- how people in the forest sector can reduce the risks of spreading pests through effective management approaches (Chapter 3);
- how ISPMs can be used to prevent forest pest introduction and spread (Chapter 4);
- how forest sector personnel can work together with NPPOs to contribute to the development and implementation of ISPMs and national phytosanitary

[2] The titles of all existing ISPMs, and a short summary, are given in Annex 3.

[3] The full list of NPPOs and their official contact persons can be found on the IPPC Web site: www.ippc.int.

regulations that help reduce pest movement while being as least restrictive to trade as possible (Chapter 5).

Each chapter has been prepared as a stand alone document allowing the reader to concentrate on the specific topics that are of interest. A glossary is also provided to further clarify the terminology used.

This guide will be of vital interest to all sectors in forestry and will also benefit forestry policy-makers, planners, managers and educators, particularly in developing countries.