

Fire management – global assessment 2006



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A thematic study prepared in the framework
of the Global Forest Resources Assessment 2005

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Foreword

In 2005, FAO held a Ministerial Meeting on Forests which called for a strategy to enhance international cooperation in fire management, to which this global assessment of fire management is an important contribution. This study complements the Global Forest Resources Assessment 2005 (FRA 2005) as an in-depth thematic study. The FAO-led Global Forest Resources Assessment has continued to respond to the needs of its users and has expanded its coverage to include new issues in sustainable forest management. The present study on fire management was developed from 12 regional working papers prepared within the framework of the Global Wildland Fire Network of the United Nations International Strategy for Disaster Reduction. ‘Fire management’ is defined as involving protection (early warning), preparedness, prevention, response and suppression, restoration/rehabilitation and monitoring.

This study presents information on fire in greater depth than was possible in FRA 2005, including its incidence, impact and management in different regions of the world. It recognizes that not all fires are destructive and that fire management is an essential part of sustainable forest management. Indeed, some ecosystems require fire to induce regeneration and to maintain or enhance biodiversity, agricultural productivity and the carrying capacity of pastoral systems. The study also finds that people are the overwhelming cause of fires in every region, for a wide range of reasons. Without political commitment and proactive campaigns, unplanned fires will continue to impact forests and livelihoods negatively around the world.

Fires in vegetation, including forests, woodlands, rangelands and the interfaces between agriculture and forestry and between wildland and residential/urban areas, are a major, continuing and probably increasing threat to human life, health and livelihoods, to economic development and to the environment. Much more must be done to help the general public and policy-makers understand the scale of this threat and take long-term preventive action, not simply emergency suppression measures when a fire disaster strikes. More must be done, as well, to improve the understanding of fire by urban people at the wildland/urban interface, especially the need to reduce fire threat through fuel management, including prescribed burning. Most important is to address the fire issue at its roots – educating those using fires in land-use systems or in land-use change and those setting wildfires, either through negligence or intentionally. Collection of information at the country level is urgent in order to quantify the impact and scale of the problem, detect trends and contribute to awareness-raising. This data can then be consolidated at the regional level. International collaboration is required, within and between regions, to set up such a data-collection system and to promote the exchange of information and even resources, while donor support is required for capacity-building and the establishment of advanced detection and monitoring systems.

The evidence suggests that a number of factors, but especially climate variability and change and the increasing spread of urban development and attitudes into rural areas, will greatly increase this threat and the scale of fires in vegetation.

The process of preparing this study has highlighted once again the challenges faced by those attempting to gather reliable and current information on fire in different types of vegetation. Feedback by readers is encouraged, including comments or new data, in order to contribute to the evolution of knowledge.

A handwritten signature in black ink, appearing to read 'Peter Holmgren', written in a cursive style.

Peter Holmgren
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This publication is the product of a global team of dedicated people willingly giving of their time and specialist expertise within each of the 12 regional wildland fire networks of the United Nations International Strategy for Disaster Reduction.

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Acronyms and abbreviations

ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
CBFiM	community-based fire management
CIFOR	Center for International Forestry Research
CIS	Commonwealth of Independent States
COFO	Committee on Forestry (FAO)
CONAF	Corporación Nacional Forestal (Chile)
EFFIS	European Forest Fire Information System
F&RS	fire and rescue services
FDRS	fire danger rating system(s)
FRA	Global Forest Resources Assessment
GBA	Global Burnt Area
GFMC	Global Fire Monitoring Center
GIS	geographic information system
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
GTZ	German Agency for Technical Cooperation
GWFN	Global Wildland Fire Network
IATF	Inter-Agency Task Force on Disaster Reduction (UN-ISDR)
ICS	Incident Command System
IFFM	Integrated Forest Fire Management Project
ILO	International Labour Organization
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
JFM	Joint Forest Management Programme
JRC-EU	Joint Research Centre of the European Commission
MODIS	Moderate Resolution Imaging Spectroradiometer
NAFC	North American Forest Commission
NASA	National Aeronautic and Space Administration (United States)
NEESPI	Northern Eurasian Earth Science Partnership Initiative
NGO	non-governmental organization
NOAA	National Oceanic & Atmospheric Administration (United States)
NWFP	non-wood forest product
PREVFOGO	National System for Wildfire Prevention and Suppression (Brazil)
PROARCO	Arc of Deforestation Programme (Brazil)
RECOFTC	Regional Community Forestry Training Centre (Asia and the Pacific)
SADC	Southern African Development Community
SCO	Shanghai Cooperation Organization
TCP	Technical Cooperation Programme
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development

UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-ISDR	United Nations International Strategy for Disaster Reduction
UN-OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNU	United Nations University
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WFAG	Wildland Fire Advisory Group (UN-ISDR)
WG-4	Working Group on Wildland Fire – Working Group 4 (IATF/UN-ISDR)
WHO	World Health Organization
WMO	World Meteorological Organization
WUI	wildland/urban interface
WWF	World Wide Fund for Nature

Executive summary

In the millennium year 2000, an evaluation of satellite data revealed that the land area affected by vegetation fires worldwide was 350 million hectares, much of which was forest and woodland. Most of the area burned was in sub-Saharan Africa, followed at some distance by Australasia. Due to a lack of long-term, consistent data on the occurrence and impact of vegetation fires, it is not possible to determine trends in the global number of fires or the area burned. However, there is evidence from some regions that the trend is towards more fires affecting a larger area and burning with greater severity, while the risk of fire may be increasing under the influence of climate change, in association with land-use changes and institutional constraints on sustainable forest and fire management.

In interpreting the statistics, however, it should be remembered that many ecosystems throughout the world have evolved under the influence of fire and require it for their regeneration.

This global overview of fires in vegetation is based on 12 regional working papers submitted mainly by representatives of the UN-ISDR Global Wildland Fire Network in late 2005. Although many of the countries concerned acknowledge that the reliability of the information may not be high, it is nevertheless the best estimate of the global fire situation to date and gives a good indication of the scale of the impact of vegetation fires on society, on the economy and on the environment.

People were reported by almost all regions to be the main cause of fires in vegetation and in agricultural areas. The estimated social and economic damages caused by fires are enormous, although largely unquantified. They include human and animal lives lost, short- and long-term effects on health, direct material losses and indirect costs such as time lost in evacuations, as well as effects on the environment, including the release of greenhouse gases.

Countries expend considerable resources in fire detection and suppression, primarily through human resources on the ground, but increasingly through satellite systems and aerial firefighting. However, the reaction of policy-makers to catastrophic fire outbreaks, using expensive suppression measures, may divert funds and staff from fire prevention – which could have averted the disaster in the first place. Given that people are by far the main cause of those fires that create problems or have negative impacts on the environment and society, public awareness programmes should be given higher priority. Awareness campaigns should include the increasingly urban populations that oppose all fire, even the prescribed burning that could reduce risk, but persist in building homes in attractive but hazardous locations at the wildland/urban interface.

Fire prevention and suppression are reportedly hampered by unclear lines of institutional responsibility, as well as by conflicting policies and legislation in some countries. Fire management involves early warning, preparedness, prevention (including fuel management, public awareness and training), suppression and

restoration. The importance of national fire management plans that cover all aspects and that reconcile intersectoral considerations cannot be overstressed.

The regional summaries in Part 2 report some collaboration between countries within regions, and even between countries in different regions. International awareness and the potential for collaboration have been increased through high-level regional and global consultations.

The report offers the following recommendations:

- At the political level, the positive as well as the negative effects of fire must be recognized and a strong commitment made to the concept of fire management by all national policy-makers.
- Reliable assessments of the extent and impact of vegetation fires are urgently needed, including:
 - harmonization of terminology and definitions;
 - development of internationally accepted standards and procedures for data collection;
 - development of regional fire databases.
- People must be made more aware of the economic, social and environmental damage caused by fires. Target groups should particularly include policy-makers, urban dwellers and rural populations, especially farmers and pastoralists. One of the main messages to policy-makers should be the need for fire planning and management.
- The role of community-based fire management as an adaptive and sustainable mechanism should be recognized.
- Institutional strengthening is needed in many countries, including clear definition of the responsibilities of each institution in the various aspects of fire management. Fire management plans should be prepared taking into account the plans of other sectors and should include provisions for conflict resolution. There is often a need for the training of fire personnel or for retraining in more sophisticated fire detection, communications or suppression techniques, and for training of others outside the forest sector, including training of farmers in secure methods of prescribed burning.
- National institutions require adequate budgets, and coordination between national institutions and agencies is necessary.
- International collaboration should be continued and expanded.
- Countries should continue to share knowledge and experiences, and should develop reporting frameworks and regional policies on fire management.
- Regional networks, particularly those organized under the UN-ISDR Global Wildland Fire Network, should be consolidated and strengthened and links developed with others – not only for the exchange of information but for training and regional fire planning as well.
- Bilateral agreements on mutual assistance (joint fire suppression) should be promoted, and compatible approaches developed.
- Technical workshops and occasional high-level meetings should be conducted to promote international and regional collaboration and demonstrate political recognition of the importance of fire control.

- Donor support is required in a number of fields, especially for:
 - equipment, training and research into advanced techniques for detection and prediction – in particular satellite systems;
 - training in community-based fire management and encouragement of communities of interest.

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