



Fire alarm!



*More action is needed to address the causes and effects of tropical forest fires*



**B**etween September 1997 and May 1998, wildfires turned 5 million hectares of forest on the islands of Borneo and Sumatra to ash.

The causes of these fires were many and interconnected. Drought, an influx of new settlers, poor land management practices, a breakdown in the rule of law and widespread poverty combined to produce one of the biggest social, economic and ecological disasters the region has ever seen.

### **A global problem**

Such fire disasters are not limited to the Asia/Pacific region. The moist tropical forests of Africa and Latin America and the Caribbean are also facing an increasing fire threat: hundreds of thousands of hectares of Amazon forests, for example, 'light up' each year. The impacts can be devastating: tropical forest fires destroy homes, livelihoods and wildlife and pollute river systems. The smoke hazes create health and navigation hazards on a regional scale, and the carbon emitted contributes significantly to the build-up of greenhouse gases in the atmosphere.

So what is being done about it? The International Tropical Timber Organization (ITTO) and its partners – governments, environmental non-governmental organizations, industry, and other international institutions – have made a start. But it's time for a far greater effort by the global community.

#### **ITTO**

From its base in Yokohama, Japan, ITTO brings together 57 member states – 30 of which are in the tropics – in support of the sustainable development and conservation of tropical forests. Each is represented on the International Tropical Timber Council, which meets twice annually to plan and finance new initiatives. Principal among the Organization's activities is assisting member countries with their conservation, natural forest management and reforestation efforts, including the protection of tropical forest resources from both natural and human-caused destructive agents. Of these, fire looms as one of the most important.





Agus Widianto



Jim Sorenson

## The role of fire in the tropics

As far as we know, moist tropical forests remained relatively free of large-scale, human-caused fires until recent history, partly because a closed-canopy rainforest doesn't burn easily. Fire was used in traditional small-scale agriculture – 'swidden' or 'shifting' agriculture – for clearing and 'fertilizing' the soil, and as an aid to hunting, but these uses involved only small areas of land and the impacts were relatively minor. When fire was used it was managed well because of skills gained through generations of experience.

### A complex problem

But the special immunity of tropical rainforests to fire is being eroded. As populations increase, people are moving into lands that were once only lightly inhabited. Fire is sometimes called the 'tractor of the poor': settlers with little or no skill in managing fire as a tool to clear land are trying, with limited success, to mimic the use of fire by indigenous people.

Forests are also being converted to industrial-scale plantations such as oil palm and rubber, and fire is often employed to remove unwanted biomass. Moreover, fire is sometimes used to illegally degrade forest so that it becomes eligible for such conversion.

Adding to the complexity is an increasing level of conflict in the margins of the forest. For example, traditional rules of land ownership and tried-and-true ways of resolving village-level disagreements have been displaced in some countries by national laws that are implemented ineffectively, particularly in times of social and political upheaval.

The growth of the timber industry has also contributed to the problem. By reducing tree canopy cover, logging helps dry out the soil and vegetation and creates flammable debris, thereby increasing the forest's vulnerability to fire. Roads built for timber extraction allow the poor and landless to move deeper into the forest, using fire to create space for agriculture.

A forest burnt once may, in time, recover. However, for many years it will be vulnerable to a second fire. This, in turn, will make it more susceptible to subsequent fires, which are likely to be larger and faster-moving. Many moist tropical forests, once burnt, enter a cycle of increasingly frequent fire events until they have been converted to fire-tolerant grasslands and savannas.



Jim Sorenson

The losses from tropical forest fires are borne locally – by farmers and their families – and at the national, regional and global levels. The 1997/98 fires on Borneo, for example, caused damage to roads, buildings, timber supplies and other materials estimated at more than US\$5 billion, a figure that doesn't include the value of lost biodiversity or water pollution, or the emotional toll of lost friends, relatives, homes and livelihoods. A heavy haze hovered over six countries for nine dark months at the height of the crisis, polluting the air breathed by 70 million people. Millions of people in the region required treatment for smog-related respiratory ailments, and nearly 300 people died due to transportation accidents caused by reduced visibility.

### **Fighting fire**

ITTO has been working to bring about greater awareness of the serious threat posed by fire in moist tropical forests. An important initiative at the global level was the publication in 1997 of the ITTO *Guidelines on fire management in tropical forests*. These added to the Organization's series of

guidelines covering sustainable tropical forest management (in both natural and planted forests) and biodiversity conservation.

The *Guidelines on fire management* are designed to help ITTO producer and consumer countries develop programs for reducing fire damage, and to help tropical forest managers and rural residents safely use and benefit from fire in land-use systems. Countries are guided step-by-step through the development of an integrated forest fire management program that considers all aspects of fire planning, prevention, suppression and rehabilitation (see box right).

The value of ITTO's work on fire guidelines was recognized by the World Health Organization, which developed its *Health guidelines on episodic vegetation fire events* in reference to the ITTO guidelines. Similarly, the Food and Agriculture Organization of the United Nations has used the ITTO guidelines as a key resource in developing guidelines on forest fire in temperate and boreal forests.

## The ITTO guidelines on fire management

The ITTO *Guidelines on fire management in tropical forests* provide a basis for policymakers and managers at various levels to develop programs and projects in which the specific national, socio-economic and natural problems related to fire in tropical natural and planted forests will be addressed. They embody what is known as integrated forest fire management (IFFM) – the total package of issues that must be addressed and measures that must be taken to minimize the adverse impacts of fire. IFFM is not limited to fire prevention and fire suppression; it also embraces the use of prescribed fire as a tool, community involvement and law enforcement. IFFM programs will not only safeguard forest investments, they are essential to the achievement of sustainable forest management.



The ITTO guidelines are organized into seven categories: policy and legislation; strategies; monitoring and research; institutional framework and capacity development; socio-economics; land resources management and use; and training and public education. They prescribe 29 'principles' known to affect fire management, and for each principle there are recommended actions.

For example, Principle 8 states in part that "the majority of tropical forest fires and other wildland fires are caused by the activities of the rural population". The recommended actions relating to this principle are centred on providing incentives to rural communities for fire prevention and sustainable fire use.



### Fire mission

Tropical forests exist across three continents and several archipelagos, including major portions of Africa, Asia and South America. Fire and its effects do not respect political boundaries; therefore, international coordination is needed.

In the wake of the 1997/98 fires, ITTO sent an investigative mission to Indonesia and Malaysia to make recommendations for follow-up actions in forest fire prevention and management. The Organization also supported the 1998 *International Cross Sectoral Forum on Forest Fire Management in South East Asia*. This meeting, held in Indonesia, drew together 19 countries and eight international organizations. It encouraged the establishment of effective fire suppression

programs, the provision of fire detection capability and fire equipment, and the increased involvement of local people, the private sector and non-government organizations. Subsequently, a haze action program was developed and is being implemented in the ASEAN region, and a taskforce has been set up to address fire and haze issues. ITTO is also working with other international agencies to strengthen the global response to tropical forest fires (see box next page).

### Case study: Indonesia

Indonesia has been the focus of a significant part of ITTO's work on forest fire. Like elsewhere in the tropics, Indonesia's fire management difficulties have wide-ranging causes. Both small-scale farmers and large-scale agribusinesses use fire as the



cheapest and fastest way to clear land, while the inappropriate harvesting of timber often causes unnecessary damage and creates conditions conducive to forest fire. Moreover, migrants to forest areas sometimes show their inexperience by setting fires in peat swamps; these emit inordinate quantities of smoke and are difficult to extinguish. Conflicts over land ownership – increasingly common in many areas as populations grow, change and strive to rise above poverty – can lead to arson and escalating social tensions. Solutions to problems such as these are not easy to find.

Indonesia was the first country to test the ITTO *Guidelines on fire management in tropical forests*, which were used by the Ministry of Forestry to develop its national-level guidelines for managing forest fire. With further assistance from ITTO, the Ministry of Forestry has funded formal training in fire prevention and suppression for field workers across the country. There are now some 16,000 trained fire-fighters in Indonesia, but they remain severely under-resourced and, in many districts, without adequate institutional support.

What should be done with burnt forests? ITTO has helped the Indonesian Ministry of Forestry to conduct research into methods of rehabilitating fire-damaged forests, bringing together government, non-government organizations and industry to address the issue.

### **Case study: Ghana**

In Ghana, fire causes major economic losses through the destruction of forests, agricultural crops and other property, and adversely affects important resources such as water supply, soil fertility and biodiversity. Severe droughts in recent years have increased these impacts. The Ministry of Lands and Forestry sought assistance from ITTO to bring the situation under control.

Using techniques described in the ITTO *Guidelines on fire management in tropical forests*, the Ministry proposed a fire management program dealing with its serious fire situation. ITTO is providing funding to help identify fire causes and effects, create an efficient forest fire control system, institute an effective wildfire prevention program, and develop mechanisms for the rehabilitation of fire-degraded forests.

## **International cooperation**

ITTO is working closely with the Food and Agriculture Organization of the United Nations and other agencies to coordinate global efforts on tropical forest fire management and control. For example, the two organizations recently brought together forest fire experts who agreed that the establishment of agreements, protocols and institutional capacity to better share international fire management resources, knowledge and understanding should be an overriding priority.

The experts recommended that FAO, ITTO and collaborating agencies should support action in a number of areas, including:

- improving capacity and capability to prepare for forest fires, particularly in countries that have existing gaps in attributes such as laws, policy, planning, practices and monitoring;
- catalyzing action in providing technical support to member countries in development of agreements at the bilateral and regional levels for mutual assistance in preparation for, and emergency response to, fire events;
- establishing an international forest fire information centre to facilitate the sharing of worldwide information among all partners, including real-time situation reports and conditions;
- developing emergency response agreements bilaterally and multilaterally;
- activating a taskforce to track and monitor progress in the development of agreements;
- developing funding mechanisms to encourage emergency response agreements;
- establishing compatible incident management organization systems in countries to facilitate the integration of international resources; and
- developing training and briefing programs for emergency response teams.

ITTO recognizes the urgent need for more on-the-ground action and is encouraging members to develop projects that address the complex causes of tropical forest fire. It is also exploring other ways in which it can contribute to further improvement in and implementation of fire management policies, both within individual member countries and internationally.



### Case study: Côte d'Ivoire

Another West African nation with an important tropical timber resource and a serious fire problem is Côte d'Ivoire. Forests cover only a small portion of the nation's land area and are disappearing rapidly due to agricultural expansion. It is important that the remaining forest is protected.

Fire has long been used in Côte d'Ivoire for farming, hunting and other traditional purposes. Because of this, it is difficult to prevent fires that escape during the dry season from further destroying the declining forest resource. People living close to the forests need to be educated about the danger of fire as part of an effective fire management program. To this end, ITTO is funding a three-year public awareness program that is leading to a better understanding of the causes and effects of wildland fire and to the development of forest fire prevention and control systems.

### Better forest management

One of ITTO's most important roles in reducing forest fire is to help improve forest management and forest harvesting, because well-managed forests are less vulnerable to devastating wildfire. Indeed, a large part of the more than US\$200 million the Organization has spent on project work to date has been directed towards implementing sustainable forest management. For example, ITTO is funding the development of 'demonstration' forests, designed to test the technical and economic feasibility of sustainable forest management and to transfer experiences to the wider timber industry. In partnership with the



industry, governments and local communities, ITTO is helping to ensure that the benefits and costs of forest management are shared equitably, a key to reducing both poverty and the social conflicts over land use that can lead to an increase in fire.

ITTO is also working with forest concessionaires to introduce into standard practice its criteria and indicators for sustainable forest management, which are critical for improving the quality of forestry. In addition, it is establishing regional schools to train forest workers – managers, supervisors and operators – in reduced impact logging techniques that create fewer openings in the forest canopy and leave less flammable debris on the ground, thereby decreasing the vulnerability of the forest to fire.



## More action needed

ITTO has helped to establish a policy framework within which nations and the international community can work together to tackle the issue of tropical forest fire. It is also helping to train people in member countries and funding research and field implementation.

But fighting the misuse of fire in tropical forests is not an easy task. Many of the countries in which the problem is worst are desperately short of the resources they need to address it: poverty remains the biggest obstacle to the effective implementation of integrated forest fire management. Thus, fighting fire in the tropics will require a much greater injection of funds and expertise from the international community than has been available until now, sustained efforts to reduce rural poverty, the use of genuinely participatory processes, and a huge commitment to training and institutional development. Only then will the threat posed by tropical forest fires be extinguished.



**INTERNATIONAL TROPICAL TIMBER ORGANIZATION**

International Organizations Center, 5th Floor, Pacifico-Yokohama, 1-1-1, Minato-Mirai, Nishi-ku, Yokohama, 220-0012, Japan  
Tel 81-45-223-1110 Fax 81-45-223-1111 Email [itto@itto.or.jp](mailto:itto@itto.or.jp) Web [www.itto.or.jp](http://www.itto.or.jp)