

Burning Issues

Thinking for more effective fire management

Fires in the tropics: highly visible but poorly understood

What difference can data make?

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Not all fires are bad

Simple data, the key to complex fires

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Fires in the tropics: highly visible but poorly understood

Aiming to prevent future fires, 40 fire projects and missions costing well over US\$ 30 million have worked in Indonesia over the last 20 years. Despite the money and effort spent on their prevention, fires continue to burn every year. Why is this? One of the reasons efforts to prevent forest and land fires have not been effective is that the fire problem remains poorly defined and understood. Some fundamental information gaps have to be filled, before suitable solutions can be found.

Currently the necessary data is not collected. Because in many countries fire management is divided amongst an array of agencies, fires are misunderstood, falsely viewed as an unpredictable emergency situation and the need for consistently collected data is not appreciated. The complexity of fire being creator and destroyer at the same time further complicates the issue.

The data needed is simple and relatively straightforward to collect:

- ◆ When did the fire start?
- ◆ Where did the fire start?
- ◆ When did the fire finish?
- ◆ How large is the area burnt?
- ◆ What ignited the fire?

Consistently collected data over time will help to understand the fire problem. The data will allow better management of fire by concentrating resources for prevention, suppression and recovery where fires are most problematic.

What difference can data make?

Each year many people across South East Asia suffer from choking smoke and haze. Smoke and haze is responsible for at least 1/3rd of the total economic losses from forest fires, equal to around US\$ 800 million in 1997/98. Transboundary haze affecting neighbouring countries is also a politically contentious issue. How can data help?

Well-collected simple data can identify the geographic focus, the major land uses, the key fire users and the timing of fires. This supports the development of focussed options to manage unwanted fires. As a simple example; Peatlands cover only 10-14% of Indonesia's landmass, but when they burn, produce about 60% of smoke and haze including carbon emissions. This knowledge suggests focusing fire management efforts on a small area, the peatlands, where it will be most effective in reducing or preventing haze and smoke.

Thinking for more effective fire management

Burning Issues is presented to provide factual, concise knowledge on issues of fire management for policy makers and key actors whose decisions will make a difference to forest and fire management. This issue examines **Why fires in the tropics are highly visible but poorly understood**. Other topics discussed are "Fire Management" and "Zero Burning".

What data is available for South East Asia?

Much of the information on fires in the region available today is the result of foreign sponsored missions and projects, many of which work within short time frames. This is particularly the case for Indonesia. It is not surprising, that much of the information available lacks consistency in presentation and over time. But each provides insight into a facet of fire, its impacts and problems. Together these outputs form a mosaic, which lacks the cement to keep it together and provide a base. The cement, or information that is lacking is simple data, such as date, time and place of fire.

Some countries in South East Asia collect some data, but generally countries do not collect the complete data needed for meaningful analysis and useful recommendations for fire management.

The data most consistently available are 'hot spots'. These are fires remotely sensed from satellites. Hot spots do not indicate area burnt and can only provide useful information in combination with other spatial data, such as for example endangered species habitats, land use or vegetation data.

The only reliable burnt area assessment readily available in South East Asia was undertaken by GTZ (German Technical Cooperation Agency) for East Kalimantan in Indonesia after the 1997/98 fires. For other times and places, the area burnt remains largely a 'guesstimate'.

How should data be collected?

The data required is easy to collect. At the field level, all that is needed is a watch, pen and a simple form (see example of fire report from Australia). To assure the data is reliable, comparable and timely, it is crucial that data collection and reporting follow standardized rules and procedures. The procedures should clearly prescribe how the data should be collected in the field, and how and when the field reports are forwarded to the central coordinating agency, which collects, and analyses the data and makes it available. In most countries a government organisation with field offices, such as for example the forest service, is in charge of data collection. It is important that one single agency coordinates or is in charge of data collection.

Why is simple data not collected?

The simple data required is not collected for a number of reasons. In many countries fire management is divided amongst an array of land and disaster management agencies. In part this is, because fires are misunderstood and viewed as an emergency or disaster situation, which needs mitigation only when it hits. This is a crucial misconception, as fire management can only be effective, if practiced year-round. Government and involved agencies do not appreciate the need for consistently collected data to underpin analysis and contribute to developing strong policy options. Lack of bureaucratic capacity and basic tools, such as maps also play a role.

To consistently collect basic data on fire, however, a focal agency for fire management is needed. A lead agency would have the responsibility for identifying the data to be collected, the standards and methods for collection and consistent format to support reporting and enable analysis.

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Fire is complex: it destroys and creates. This is one of the reasons, why fire is poorly understood.

Preliminary Fire Report (Modeled after a preliminary fire report of the Forestry Commission of NSW in Australia)	
From _____ District to _____ Region	
From _____ Region to _____ Fire management Head Office	
District to fax Region, Regions to fax to Fire Management H.O.	
• 1. Fire Number (The Fire number should identify the district, region and sequence of fires in a year, E.g. First Fire Kutai Barat District in Kalimantan Timur, Indonesia : Ku Bar 1)	
• 2. Location	
• 3. Date fire Started ___/___/___	
• 4. Category (Categorization of fire by potential magnitude of negative impact it can cause)	
• 5. Source (What might have started the fire? Ignition source)	
• 6. Area Burnt (This is most useful, when broken down in categories, such as for example by land use and/or land cover)	
• 7. Comments and Prognosis	
All Questions Must be Answered	

Not all fires are bad

Fire is complex: it destroys and creates. This is one of the reasons, why fire is poorly understood.

Simple information, such as time, place, number, extent of fires, and why the fire was lit will contribute to a better understanding of fire.

Ecologically, fire in the tropics is disastrous.

For some ecosystems fire is very important. In the tropics, however, fire is almost always an ecological disaster. Tropical rain forests in their undisturbed state are nearly 'fire proof'. The vegetation layers keep moisture in and wind and heat out. Conditions for damaging fires do not develop. However, when the canopy is opened up (for example due to logging or roads) sun and heat enter the forest, moisture escapes and the forest dries out. As tropical forests are opened up for logging and road construction, they not only lose their natural defence against fire, but more dead wood than under natural circumstances is left behind in the forest, providing fuel for future fires. After a forest is burnt, more light and space is available for grasses and other vegetation to grow on the forest floor. This vegetation dries out more quickly and easily burns, creating a cycle rendering the forest ever more inflammable.

Economically, fire can be safe and cheap or risky and costly

Fire destroys causing immense economic costs, but fire also creates and maintains assets.

Fire is an effective tool to prepare land for agricultural activities. For local farmers fire remains the only affordable tool to do this. Non-fire land clearing alternatives exist for large-scale commercial plantations. In the long-term and under most circumstances these large-scale non-fire land clearing methods are cheaper than burning.

Fire that escapes management, lit accidentally or deliberately, can destroy assets with great negative economic impact. The 1997/98 fires

in Indonesia are estimated to have created damage of about US\$ 3 billion from increased health and transportation costs, reduced income from tourism and destruction of assets such as timber, crops and infrastructure.

One fire can be good and bad

What complicates the issue further is that the same fire can be perceived as productive and destructive. A fire lit for subsistence agriculture helps the local farmer to feed his family. The smoke from that same fire however, might affect people in Singapore.

Which fires are bad?

Whether fires are a problem or not depends on the answer to the following questions:

- ◆ Is people's health negatively affected?
- ◆ Is biodiversity threatened, protected or even stimulated?
- ◆ All costs included, do fires save or cost money?
- ◆ Who benefits and who loses from a fire?

Simple data, the key to complex fires

Simple information, such as time, place, number, extent of fires, and why the fire was lit will contribute to a better understanding of fire and clearer answers to the questions above. This will ultimately help focusing resources on the most damaging fires.

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Further Reading

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Project FireFight Southeast Asia is seeking to secure the essential policy reform at national & regional level within South East Asia that provides a legislative and economic basis for controlling harmful anthropogenic forest fires.



IUCN – The World Conservation Union seeks to influence a just world that values and conserves nature. It seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.



WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. One focus is on forests and WWF works with its partners to protect, manage and restore them through its national offices and programmes in the South East Asia and across the world.



The European Commission through its programs and projects throughout the world, and particularly in South East Asia the EC-Indonesia Forest Program, seeks to improve understanding and intensify relations between the EU and its partner nations in pursuit of mutual interests and cooperation in fields such as trade, development, science, education, human rights and culture.



The Centre for International Forestry Research (CIFOR) contributes to the sustained well-being of people in developing countries, particularly in the tropics, through collaborative strategic and applied research and related activities in forest systems and forestry, and by promoting the transfer of appropriated new technologies and the adoption of new methods of social organization of national development.



The International Centre for Research in Agroforestry (ICRAF) aims to reduce rural poverty, increase food and nutritional security and enhance ecosystem resilience in the tropics through improved agroforestry systems.

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