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**INTERNATIONAL CROSS SECTORAL FORUM
ON FOREST FIRE MANAGEMENT IN
SOUTH EAST ASIA**

JAKARTA, INDONESIA, 7 and 8 DECEMBER 1998

REPORT OF THE MEETING

[Pursuant to the Decision 8(XXIV)]

INTERNATIONAL CROSS SECTORAL FORUM ON FOREST FIRE MANAGEMENT IN SOUTH EAST ASIA

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REPORT OF THE MEETING

The International Cross Sectoral Forum on Forest Fire Management in South East Asia, hosted by the Government of Indonesia and jointly co-sponsored by the Japan International Co-operation Agency (JICA) and the International Tropical Timber Organisation (ITTO) met in Jakarta, 7 – 8 December 1998, with the specific goals to:

- gather information concerning the causes of forest fires and their impacts on humans, bio-diversity, and the environment;
- review existing land use conditions and to consider further input to land-use management reform;
- analyze institutional development and the integration of current efforts to overcome the impacts caused by forest fire;
- develop technology for forest fire prevention and management;
- develop a policy and mechanism (including institutional development) to improve regional efforts to anticipate the trans-boundary impacts of forest fires; and
- develop guidelines for the drawing up of a National Action Plan for the management of forest fires and their associated impacts, applicable at the local, national and regional levels.

216 participants from 19 countries and 8 international organisations, representing a wide range of disciplines attended the Forum. The Forum was organised into plenary, one at the beginning and another at the end, and working group sessions. The participants were divided into three groups to discuss Forest Fire Prevention; Forest Fire Control and Rehabilitation; and Trans-boundary Issues. A total of 39 papers on various aspects of forest fire were presented at the Forum.

This report summarises the outcome of the Forum, including findings and recommendations.

1. PREAMBLE

Wildfires have been present on earth since the development of terrestrial vegetation, playing a significant role in maintaining biogeochemical cycles and disturbance dynamics in some ecosystems. Fire and ecosystems have interacted throughout time influencing such ecosystem functions as: recycling nutrients, regulating plant succession and wildlife habitat, maintaining biological diversity, reducing biomass and controlling insect populations and diseases.

Taking a cue from nature, early humans used fire as a tool to alter their surroundings and later to prepare land for cultivation. Use of managed fire became a common practice in land conversion activities. However, once out of control, fire can lead to long-term site degradation and other detrimental impacts.

The recent major fires in Indonesia and elsewhere coincide with El Niño events; and therefore El Niño, has been blamed for the damage and devastation caused by these fires. El Niño is a weather phenomenon, which aggravates the forest fire danger situation, by creating drought conditions conducive for the spread of wildfire. El Niño by itself is not a sufficient cause for forest fire; and major fires have taken place in Indonesia not simply due to El Niño, but due to a much more complex interaction of human-induced conditions, which, among others, include availability of dry fuel load (caused by wasteful logging, land clearing), providing the material to feed the conflagration and an ignition source.

The forest fire scene in Indonesia is characterised by conditions emanating from negligence and linked both to subsistence and commercial activities. They are, among others: large scale logging, leaving a high percentage of residues in the forest, which in drought years become highly combustible; land clearing practices of HTIs, plantation companies and small holders using open, broad cast fires to dispose off the clearfelled materials cheaply; careless use of fire by graziers, NWFP collectors, campers and others; intentional fires for staking land claims, or for other reasons. These have caused increased frequency of forest fires.

The situation is exacerbated by other constraints. They include, *interalia*, the following: weaknesses in policies, legislation (including rules and regulations), and their implementation/enforcement; lack of funds and facilities; weaknesses of organizational structure and coordination; unclear authority and functions; inadequate infrastructure, lack of trained personnel, insufficiency of equipment; reluctance/resistance to adopt zero-burn techniques of land preparation on the part of land owners, or low-impact logging on the part of concessionaires; inadequacies in forest fire management exemplified by lapses in monitoring, fire-danger warning, fire protection/prevention measures, pre-suppression planning and preparedness, and firefighting capability; poverty, social conflicts and lack of incentives for the local community to participate in forest fire protection, and lack of awareness; institutional inability to learn lessons from past experience.

Fundamental changes in these framework conditions are required for long-term control and reduction of forest fires.

During the two spells of wildfires between September 1997 and May 1998, an estimated 6 to 10 million ha of land was burned. Official figures of forests burned is about 800,000 ha, covering primary forests, secondary forests, peat swamp forests, national parks and forest plantations. These catastrophic fires and the associated haze resulted in profound impact on economic, ecological, physical and social environment in the ASEAN region. Millions of tonnes of biomass, including timber and NWFPs were consumed by the fires. Physical infrastructure was destroyed. It affected industrial production; resulted in fishing decline; caused loss of biodiversity, disrupted commerce; registered sharp fall in tourism revenue. During the worst haze, atmospheric pollution index reached above 850 in some parts of Indonesia and Malaysia, while a reading of 300 – 500 is considered most hazardous. Health of some 70 million people in six countries were affected. The total estimated value of economic and social damages is about US\$ 6 billion. While these figures help to provide the magnitude of the calamity, many of the deleterious effects of fire on Indonesia's tropical rain forests cannot readily be cast in economic terms.

The 1997 – 98 fire event, from its very beginning, led to several initiatives at national, regional and international levels. Many countries and international organisations provided emergency assistance in cash and kind, including equipment, materials, medicine, service of fire fighters, and so on. The Indonesian Government reactivated and strengthened the Forest and Land Fire Control Centres at national and provincial levels and Executive Units and Fire Brigades at subdivisional and local levels. The National Coordination Committee on Forest and Land Fire Control, with BAPEDAL serving as its secretariat, was given the responsibility to: coordinate monitoring of hot spots appearing on NOAA weather satellite images, carry out surveillance, provide early warning about fire danger, transmit information and guidance regarding action to be taken at the local level and so on. Since the fire event was declared a disaster, the BAKORNAS PB undertook the overall responsibility of coordinating the activities of various agencies including activities such as water bombing and cloud seeding. In spite of it, the fire suppression efforts suffered from organisational and communication weaknesses, and it was the onset of rains that finally extinguished the fire.

At the regional level several initiatives were taken to address the problem of transboundary haze pollution – such as establishment of Haze Technical Task Force, regular meetings of the ASEAN Environment Ministers and ASEAN Senior Officers on Environment, formulation of ASEAN Regional

Haze Action Plan and its implementation; and coordination of ASEAN regional level actions with support from ADB.

At the time of 1997 fires, there were four important forest fire projects ongoing (funded by GTZ, EU, JICA and ITTO) and another (UK) with a major fire related component. There are now over 35 projects (including the ongoing, new, and pipeline projects), supported by bilateral donors, UN agencies, international NGOs and others. Most of the current projects are of short-term scope, investigating the underlying causes, or addressing specific aspects, of actions required – e.g. capacity building, biodiversity conservation. A trend in new projects is the high emphasis given to sophisticated remote sensing technology for monitoring and fire prediction, compared to practical pre-suppression and suppression activities, particularly to strengthen the capability of field offices and concession units. There are also no projects which seriously address the issue of post-fire forest rehabilitation.

Integrated Forest Fire Management (IFFM) is essential to control the damaging role of fire, without unduly curtailing its beneficial aspects and to reduce the intensity of fires in cases of fire events. Scientific and planned actions for fire protection, monitoring, prediction and prevention, fire-danger warning and preparedness for fire suppression, supported by appropriate policies and strategies are essential. Forest rehabilitation, a post fire activity, is a vital component of IFFM.

IFFM can be treated in three specific phases: (i) pre-fire planning and fire prevention involving fire breaks, fuel load control, weather monitoring, fire risk assessment and early warning, equipment development, enforcement and surveillance, training in firefighting, research and extension, and infrastructure development; (ii) fire suppression, covering fire detection; quick communication; organisation of fire crews; and (iii) post fire rehabilitation and management, covering fire inventory and classification, and rehabilitation planning. In all these aspects it is necessary to strengthen institutional framework, research and public education. It is also crucial that the technology adopted is appropriate and local participation is guaranteed through proper incentives.

The concept of IFFM recognises the traditional/beneficial role of fire; it integrates the local people and communities in the system of fire management planning and implementation; it appropriately balances the level of technology; it calls for improved knowledge about resources and fire risks. Avoiding wild fires, and capacity to quickly contain fires if started are indicative of good fire management.

The participants noted with appreciation that an integrated action plan for forest and land fire management in Indonesia is ready in draft form. This plan has incorporated the action proposals contained in the National Haze Action Plan, prepared under the auspices of the Regional Haze Technical Task Force.

2. FOREST FIRE PREVENTION

Knowledge about, and analysis of, causes, both predisposing and immediate, of forest fires is important to design and implement measures of fire protection. Efforts to prevent forest fires call for several related actions to control the causes of fire, involving: clearing of fire lines around forest blocks; reduction of fuel load by prescribed burning; establishment and maintenance of green belts; weather monitoring and fire danger assessment; mapping of fire-prone areas for special surveillance; fire classification, generation of management data/information, fire modeling; creation of public awareness, provision of incentives for community participation/co-operation, and so on. Preparedness for potential fire event is an aspect of fire prevention and involves control of ignition sources, development of infrastructure and communication facilities, equipment development, assessment of training needs, crew development training, and demonstration, etc. However, forest fire prevention is a weak area in Indonesia. The participants heard with interest the experiences of the different donor-assisted forest fire management projects, and how the projects are attempting to address the constraints. While remote sensing facilities for mapping and monitoring are available centrally, there is lack of an appropriate communication system to convey urgent fire related information to the field.

Evidence shows that there has hardly been any serious fire in the undisturbed primary forests, which strengthen the view of the ecologists that in the tropical rain forests fires are almost excluded, due to fuel characteristics and its moist condition.

3. FOREST FIRE CONTROL AND REHABILITATION

Forest fire control or suppression involves actions during the fire, whereas rehabilitation is a post-fire activity. The series of activities under forest fire control include surveillance/observation, detection, quick action to put out the fire (involving organisation/mobilisation and dispatch of the crew), fire fighting logistics, and fire suppression. The response time and the effectiveness of suppression depends on the speed of relaying correct information about the fire and the organisational formalities involved. Under the existing system in Indonesia, official channels of communication are very slow. Tools/equipment and trained crew are crucial for fire control. The tools/equipment should be simple, adaptable and compatible. However, the equipment available now are of poor standard and there are very few trained fire fighters; and they are hardly provided with any protective gear. Regular drills and demonstration are lacking. There is need to considerably strengthen local level field capability for fire fighting, but there is little motivation or incentive. There is much less preparedness to control fires in peat forests which also burns below ground and causes excessive smoke.

Lack of effective and meaningful coordination has been a serious problem during the 1977-98 fire disaster. Aerial support for fire fighting (e.g. water bombing) provided as part of emergency assistance was also not effective. Helicopters and fixed wing planes have their role in fire fighting, provided they are well integrated into the system. On the other hand, if there is no effective and efficient system in place to prevent, control and combat fires at site, any amount of technological inputs elsewhere will not be of much use. Balancing of equipment, technology and training are required for optimising benefits.

Mopping up of the burned area is to be undertaken before a post-fire inventory and classification is carried out. Plan of action for follow up has to be decided accordingly – for example, to salvage the usable materials, to carry out sanitary operations, to rehabilitate the area by natural regeneration or artificial means, etc.

Post-fire rehabilitation often turns out to be a major investment activity. For lack resources, this important aspect of forest fire management is often neglected, leaving the remnants as a source of fire in a not too long distant future.

4. TRANS-BOUNDARY ISSUES

Fires do not respect national (in some cases, even natural) boundaries. Fires can spread between countries sharing common land boundaries. Smoke/haze caused by fire often spread far and wide, as was experienced during the 1997-98 forest fires in Indonesia, when it affected at least six countries in the region.

Trans-boundary haze pollution is an environmental hazard caused by fires, particularly by clusters of peat fires. Haze consists of smoke, smoke condensation and particulate matter. While the health of millions in the region was affected by fire, over 40,000 persons were hospitalized for respiratory and other haze-related ailments. Its long-term impact on health of exposed children and elderly are yet unknown.

The effect of haze on light and visibility also impacted on economic production (both manufacturing and agricultural), transport, tourism and so on. Haze-caused accidents resulted in loss of lives. Several gaseous compounds in the haze are likely to affect global environment and climate. Quantitative evaluation of impacts was however limited due to fragmentary character of the particle measurement data and methodological problems.

Inter-governmental efforts of ASEAN countries in addressing trans-boundary atmospheric pollution has resulted in a Regional Haze Action Plan which was approved for implementation in December 1997. The Regional Haze Action Plan has three major components – namely monitoring, prevention and mitigation, sub-divided into 20 activity groups and 50 specific actions.

Trans-boundary issues related to haze pollution, among others, involve the need for studies on the nature and intensity of haze, nature of pollutants and their effects; surveillance of incidences of diseases; health assessment studies, medical emergency services; dissemination of information; policies on haze mitigation, and regional co-ordination of activities. There is clear need in the health sector for long-term planning to mitigate the effects of forest and land fires, supported by a national coordination of infrastructure development, equipment and skills for air quality monitoring, health effect

alleviation, community awareness raising and education programs, structured data collecting systems and rapid response mechanisms.

5. RECOMMENDATIONS

The forum made the following recommendations:

General:

- Institutional weaknesses are a paramount factor causing inefficiencies of forest fire management. The situation calls for several measures to reorient and strengthen the institutions and institutional instruments for ensuring integrated and sustainable forest fire management, involving:
 - Policy reforms on aspects touching on forest fire management, directly and indirectly, and assigning of appropriate priority for forest fire management. Clear policy relating to land management and land clearance which takes into account the land requirements for various purposes is an important aspect in this regard.
 - Appropriate revision/reformulation of laws, rules and regulations and their effective implementation to support integrated forest fire management (IFFM).
 - Organizational reforms to facilitate effective and efficient functioning of sustainable forest management including IFFM, which would call for definition of clear functions, devolution of responsibility and authority, meaningful decentralization and smooth and speedy flow of information.
 - A comprehensive and integrated National Fire Plan within the overall framework of National Forest Programme, preferably following a landscape planning concept, and specifying priorities, locations, time schedules, scope and objectives, costs and benefits and so on.
 - Adequate provision of funds.
 - A single-window coordinating mechanism, fully rationalized to be capable of addressing all situations and eventualities.
 - National fire management guidelines and specific/detailed manuals for component activities such as fire protection, prescribed burning, equipment maintenance, fire fighting operations etc.
- The countries are urged to consider the establishment of a national fire management unit/agency, with wider scope and responsibility, within the existing (or reformed) system of public forest administration.
- The countries undertake capacity building for IFFM covering related human resources development, development of science and technology, infrastructure, equipment and facilities.
- While acknowledging that theoretical and practical aspects of fire management need to be balanced in any curriculum for education and training, the Forum underlined the importance of practical, field-oriented training and continuous periodic drills for the fire crew. Facilities available in Fire Academies can be adapted suitably, and/or additional and adequate facilities for forest fire fighting would need to be established, depending on the situation. In addition to the regular fire crew, there is need to impart training in forest fire fighting to voluntary fire forces, police and military, Fire and Rescue Services and staff of private sector and NGOs.
- Considering that forest fire related research has suffered from neglect in developing countries, and to steadily improve the system of IFFM, funds, facilities and expertise be provided for undertaking research relating to the various IFFM-related aspects such as climate variation, fire monitoring, fire danger assessment, fuel characteristics, fire suppression measures, equipment systems, problems of specific vegetational types (e.g hill forests, peat swamps), fire proneness, smoke impacts,

rehabilitation silviculture and so on. A related consideration is acquisition of technology from outside, suitably balanced to the situations in the country.

- Appropriate participatory mechanisms be developed to obtain participation/ cooperation of local people, communities, private sector and NGOs in fire prevention and suppression activities. Local people can be enlisted as voluntary fire wardens and voluntary fire fighters. Improved incentives including honorarium, access to resources and entrepreneurial opportunities, provision of off-farm income-earning activities should be provided to promote participation.
- Raising of peoples awareness and extension on forest fire management are required to motivate people to prevent and mitigate forest fires.
- Pilot scale practical demonstration of IFFM can serve multiple objectives of practical training, awareness creation and research.
- The Forum stressed the need for increased donor support, through financial and technical assistance, for forest fire management, and improved donor co-ordination to improve effectiveness.
- Regional cooperation and collaboration in forest fire and haze related activities need to be sustained and strengthened.
- Mobilization of additional resources for IFFM is an important requirement and can be achieved through innovative measures such as objective-oriented taxes/charges, surcharges on postage stamps and rail and air tickets, and targeted funding facilities.
- With respect to Indonesia's programme on forest fire management, the participants appreciated the concept and content of the newly prepared draft of the Integrated Action Plan for Forest and Land Fire Management in Indonesia, which has incorporated and refined the action proposals contained in the National Haze Action Plan; and stressed that the plan should be made implementational without delay, duly providing budget allocation, defining responsibilities and establishing a clear time frame.

Forest Fire Prevention

- Prevention is one of the most effective ways to tackle forest and land fires, and it should be made effective and efficient in all its aspects.
- Sophisticated satellite/monitoring technology provides crucial information which can be continually updated. In order to be useful, it is necessary to link the system (e.g. satellite/remote sensing, GIS) with local (on site) information needs. In this regard it is necessary to standardize data gathering, processing and forwarding/receiving systems.
- Establish and improve the system of fire risk assessment, fire danger warning, and code of public behavior in high fire danger situations.
- Discontinue to the extent feasible, conversion of natural forests into plantations or into other forms of land uses.
- Wherever selective cutting is used, establish and observe appropriate annual allowable cut and low intensity of removal; practice low impact and waste-free harvesting systems.
- Rationalize shifting cultivation practices through introduction of improved agro-forestry systems, off-farm employment opportunities, equity participation in local enterprises and so on, to wean away farmers from destructive practices.
- Promote public goodwill to the cause of forest protection through help to solve local land tenure issues, to relieve local grievances caused by forestry regulations, to provide resource access and so on.
- Promote measures of poverty alleviation, targeting the communities living in and around forest areas, to support food and income security.

- Optimize size and terms of forest concessions to ensure improved fire protection measures and related infrastructural facilities.
- Establish land clearance and management regulations to introduce fire permit system for open burning, to promote zero-burn land preparation and other environmentally sound practices.
- Establish a system of fire-belts/green-belts around forest management units/blocks, as well as other practical measures of fire protection and control.
- Develop and enhance buffer zones of protected areas with the dual objectives of fire prevention and habitat protection.

Forest Fire Control and Rehabilitation

Forest Fire Control

- Improve the system, and capability, of fire surveillance and fire detection.
- Establish permanent fire crews and keep them in good fitness and field training to fight fire when one occurs. The fire crew be strengthened by local volunteers, where required. Their training should include exposure to problems of different forest types (e.g peat swamps, coal seams, savannah and terrain).
- Adequate amount of the different types of tools, equipment (transport, firefighting, communications) and materials be procured and kept in good condition and readiness. The equipment should be balanced according to the level of skill and training of the crew, and should be simple and compatible to meet the needs..
- Involve local people, private sector and NGOs in the different aspects of fire control as appropriate.
- Emphasis of forest fire control should be on strengthened field capability, with other systems suitably tuned to it.

Rehabilitation

- Fire events be followed by a detailed assessment and classification of impacts in order to design appropriate salvage and rehabilitation operations, to establish priorities and to develop/apply proper silvicultural and logistical measures.

Trans-boundary issues

- On regional co-operation strengthen regional co-operation in addressing trans-boundary pollution and related issues, including collaborative programmes and exchange of information (e.g meteorological data).
- On health aspects: conduct analysis of substances/components of haze and their injurious impacts on human health in the short and long term ; establish monitoring network for collection of data on basic parameters of fire and haze; study linkages of air quality and health; establish system to inform public on pollution level and precautions required; create emergency medical services wherever necessary.
- On air quality: improve capability to monitor air quality and disseminate information.

- On meteorology and weather monitoring: promote management of relevant meteorological data and analysis of fire-weather relationship; conduct integrated studies on climate variability/change; support provision of improved early warning and hot spot information; conduct studies on “mood swings” of El Niño and on how to internalize the information for effective IFFM.
- Conduct research on other socio-economic impacts of haze pollution.
- Participate in international initiatives of wider significance in the area of science and technology (e.g capacity building and training) and research initiatives such as SEAFIRE under the international Geosphere-Biosphere Programme.

6. CONCLUSIONS

In summary, the recommendations of the meeting are related to actions to fill in gaps or to strengthen the existing capability under the following important areas: capacity building; pilot demonstration (model forest for IFFM, fire suppression training, participatory methodologies); community participation (through incentives, income earning activities, involvement in production enterprises); rehabilitation of burned areas (through sanitary operations, salvage fellings and replanting); rationalization of shifting cultivation (incorporating agroforestry, skill development, crafts); optimizing the size of forest concessions (to ensure scientific management); formulation of national forest fire plans; establishment of regional and international cooperation on trans-boundary issues related to forest fire.

APPENDIX:

Report of the Informal Consultation on the Niche Role for ITTO in Forest Fire Prevention and Management

Jakarta, Indonesia, 9 December 1998

Report of the Informal Consultation on the Niche Role for ITTO in Forest Fire Prevention and Management

Jakarta, Indonesia, 9 December 1998

PREAMBLE

Taking advantage of the BAPPENAS/JICA/ITTO International Cross Sectoral Forum on Forest Fire Management in South East Asia, 7-8 December 1998, in Jakarta (Indonesia), an informal consultation of selected persons was arranged on 9 December 1998, to discuss the niche role of ITTO in the area of forest fire prevention and management. 22 persons from 14 countries attended the consultation (the list of Participants is hereto attached). The Consultation was chaired by Dr. B.C.Y. Freezailah, Executive Director of ITTO.

ITTO OBJECTIVES OF RELEVANCE TO FOREST FIRE MANAGEMENT

The consultation noted that ITTO, through its commitment to achieve sustainable forest management, is deeply concerned with forest fire related issues. Five of the ITTO objectives, enshrined in ITTA 1994, brings out this concern explicitly or implicitly:

Objective (d): To enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000;

Objective (f): To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests;

Objective (j): To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interest of local communities dependant on forest resources;

Objective (l): To encourage members to develop national policies aimed at sustainable utilization and conservation of timber producing forests and their genetic resources and at maintaining the ecological balance in the regions concerned, in the context of tropical timber trade;

Objective (m): To promote the access to, and transfer of technologies and technical cooperation to implement the objectives of this Agreement, including on concessional and preferential terms and conditions, as mutually agreed.

Other objectives of ITTA 1994 such as Objective (e) "to promote the expansion and diversification of international trade in tropical timber...by taking into account prices, which reflect the costs of sustainable forest management ..." also deals with prerequisites and conditions which would support effective forest fire prevention and management.

GLOBAL CONCERN

The consultation further noted that the frequency and intensity of forest fires have recently increased and that forest fires have been a major factor contributing to annual deforestation taking place in all types of forests. In this connection, the consultation recalled that the Antalya Declaration of the XI World Forestry Congress, 13-22 October 1997, had called on countries to develop, implement and review policies, plans and management practices aimed at minimising the destructive nature and extent of wild fires on forest lands.

The consultation stressed that in order to ensure production of timber from sustainably managed forests, it is necessary that all aspects of forestry, including forest fire management, are given due consideration.

ITTO ACTIVITIES RELATING TO FOREST FIRE MANAGEMENT

ITTO has been active in the tropical forest fire scene for over 10 years. One of the earliest forest fire projects of ITTO was developed in 1987 for investigation of the steps needed to rehabilitate the forest areas affected by fire in East Kalimantan, Indonesia. Several ITTO projects dealing with sustainable forest management also include components of forest fire protection. Pursuant to a decision of the International Tropical Timber Council, ITTO developed and published a set of international guidelines for the protection of tropical forests against fire - i.e. "ITTO Guidelines on Fire Management in Tropical Forests, 1996". This guidelines closely complement the previously published ITTO guidelines for: sustainable management of natural tropical forests; establishment and sustainable management of planted tropical forests; and conservation of biological diversity in tropical production forests.

The consultation expressed appreciation that the key action areas identified in the ITTO Libreville Action Plan 1998 to 2001, such as improved marketing and distribution of tropical timber, secured and improved tropical timber resource base, optimised mix of goods and services, improved utilisation of the forest resource to realise the greatest possible social benefit, institutional strengthening and human resources development, development of science and technology and improved public awareness, subsumes the need, and conditions necessary, for forest fire prevention and management. The Twenty Fourth Session of the ITTC, held in Libreville, Gabon, 28 May 1998 had also decided, inter alia, to send expert missions to member countries suffering from forest fires, to examine the extent and causes of fire during 1997-1998, to review the various national and international initiatives being undertaken and to propose future options for ITTO involvement within the framework of ITTA 1994. Accordingly, an ITTO Mission on Forest Fire Prevention and Management was sent to Indonesia and Sarawak, Malaysia, 8-20 September, 1998. ITTO stands ready to send similar missions to other countries, if need arises.

INTERNATIONAL CROSS SECTORAL FORUM ON FOREST FIRE MANAGEMENT

The consultation reiterated and endorsed the recommendations of the International Cross Sectoral Forum on Forest Fire Management in South East Asia, 7-8 December 1998 covering: strengthening of institutions, policy reforms, rationalisation of laws and regulations, planning and coordination, capacity building, technological innovations, research and extension, peoples' participation, comprehensive and rational system of incentives, awareness raising, resource mobilisation, and so on. It highlighted the importance of measures to prevent forest fires, waste-free harvesting, preparedness for fire suppression, control of transboundary pollution, rehabilitation of areas affected by fire, promotion of forest-based enterprises for generation of additional employment and income, and infrastructure development.

RECOMMENDATIONS ON ITTO's NICHE ROLE IN FOREST FIRE MANAGEMENT

The consultation underscored that several aspects of forest fire management and related issues fall under the mandate of ITTO, and recommended that ITTO enhance its assistance to member countries, as required, in the area of forest fire management, while building strategic partnerships with relevant agencies at regional and global levels.

Producing member countries of ITTO include those which have been affected by forest fires of varying size, intensity and frequency, as well as those which have so far been unaffected by major fires. Actual nature of forest fire management measures will vary depending on the respective situations. In all cases, however, it is necessary to adopt an integrated approach to forest fire management.

Integrated forest fire management (IFFM) is not to be built entirely on fire exclusion. Beneficial roles of fire are considered as integral elements of the overall approach to sustainable forest resource management and protection. Local people and communities are to be integrated into the overall system of fire management planning. Depending on the level of technological capabilities, it is necessary to guard against the tendency to concentrate on high-tech inputs to the neglect of important field level practical action.

While fully recognizing that the responsibility for effective forest fire management rests with the national authorities, the consultation expressed the strong view that ITTO and other interested international agencies have to play a decisive catalytic and supporting role. The consultation acknowledged that the concern about the global impact of forest fires in the form of transboundary pollution, climate change and loss of biodiversity are real. The participants also elaborated forest fire-

related problems and situations facing their respective countries and indicated areas where ITTO can effectively play a niche role. The consultation, accordingly, recommended that depending on the needs and situation, and in collaboration with other relevant agencies, ITTO involvement in integrated forest fire management should cover the following aspects:

- ❖ Capacity building. This covers policy and regulatory instruments, human resource development, strengthening of institutions, infrastructure development, and preparedness and coordination to ensure pro-active response.
- ❖ Planning support, to prepare and operationalise forest fire management plans at national and forest management unit levels.
- ❖ Support to member countries in elaborating and operationalising a fire permit system, to control the sources of fire.
- ❖ Promotion of buffer zone management, to control fires, particularly in protected areas.
- ❖ Science and technology development relating to forest fire management for increasing efficiency, with adequate emphasis for action research, covering practical aspects of fire prevention and suppression.
- ❖ Establishment of pilot demonstration areas/centres for promoting improved forest fire management practices and conducting practice sessions for the benefit of public sector, NGO's and local community. This can be done by establishing permanent demonstration forests, as well as by incorporating elements of forest fire management in on-going forestry projects. The potential of expanding the scope of Sarawak Model Forest Management Project and/or the Bulungan Research Forest of CIFOR was mentioned in this connection.
- ❖ Facilitate peoples' participation in forest fire management through appropriate incentives such as tenure security, promotion of non-wood forest products, establishment of small-scale forest-based enterprises, creation of off-farm employment opportunities, rationalisation of shifting cultivation and so on. Establishing a system of Honorary Fire Wardens and Peoples' Voluntary Protection Force is a way of encouraging peoples' participation, which should go beyond engagement in firefighting operations alone and should cover all aspects of sustainable forest management.
- ❖ Support for decentralisation of decision powers and authority, and involvement of local organisations in forest fire management. The example of Sarawak where Village Headmen are vested with the powers/responsibilities of Forest Rangers in specified aspects was mentioned.
- ❖ Assistance for development/preparation of detailed guidelines and technical manuals for important activities (such as prescribed burning and fuel-load reduction; hotspot analysis; equipment audit and maintenance; preparation for fire suppression; post-fire classification of damage; rehabilitation planning) relating to integrated forest fire management.
- ❖ Support for planning and implementation of rehabilitation measures, including salvage operations, silvicultural and logistical aspects, mobilisation of resources and forest health monitoring.
- ❖ Creation of awareness, among public and politicians, about the injurious impacts of wild fires and the benefits of scientific forest fire management. Educational pamphlets, briefing talks supported by audio-visual media, and demonstration can help to improve awareness.
- ❖ An aspect related to the above is dissemination of information, experience and knowledge through regional seminars, study tours, information networks, websites and publications. Tours organised for decision makers of ITTO member countries to observe and study successful cases of forest fire management (e.g. in Sarawak) will be particularly helpful.

The consultation further recommended that: (i) ITTO provide support, as appropriate, to the Global Fire Monitoring Centre (and its core activity: the South East Asian Fire Monitoring Centre), being managed by the Fire Ecology Research Group of the Max Planck Institute of Chemistry in Germany and (ii) ITTO take initiative for establishing an Inter-agency Task Force, involving interested international agencies such as World Bank, Asian Development Bank, FAO, WHO, WMO, UNESCO, UNEP and CIFOR as well as international NGOs.