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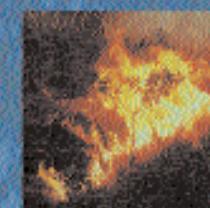
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Fires, Laws and Regulations – Towards Best Practice for Legal Aspects of Fires

Hanoi, 2-4 June, 2003

*Edited by
Dicky Simorangkir, Patti Moore, Nina Haase, and Peter Moore*



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Eucalyptus plantation in Congo by Dr. Takeshi Toma, CIFOR

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Preface

The forest fires of 1997 and 1998 created enormous ecological damage and human suffering and helped focus world attention on the problem. There is a growing concern that action is needed to catalyse a strategic international response to forest fires. There are no ‘magic bullets’ or ‘instant solutions’. The issues to be addressed are complex and cut across many interests, sectors, communities, nations and regions. Many believe that action only takes place when fires are burning, with little attempt to address the underlying causes.

For that reason WWF – The World Wide Fund for Nature and IUCN – The World Conservation Union have joined forces to develop Project Firefight South East Asia to secure essential policy reform through a strategy of advocacy using syntheses and analyses of existing information and new outputs. More specifically, the project aims to enhance the knowledge and skills of key stakeholders with regard to forest fire prevention and management and, where necessary, to facilitate the adoption of new and/or improved options. The project works at the national and regional levels across South East Asia to support and advocate the creation of the legislative and economic bases for mitigating harmful anthropogenic forest fires.

The problem of forest fires lies beyond the capacity of national governments and international organisations to handle alone. This is why the project pursues a multiple stakeholder approach, working closely with WWF’s extensive network of National Organisations and Programme Offices in South East Asian, IUCN’s broad-based membership, world-renowned scientific commissions, and collaboration with ASEAN governments, UN agencies, EU projects, GTZ, CIFOR, ICRAF, RECOFTC, academia and the private sector. The project ensures popular participation, public awareness, policy outreach and programmatic impact in connection with fire-related issues.

Within the South East Asia, the project undertook studies and organised conferences, workshops, and meetings focusing on three areas of fire management: community-based fire management, legal and regulatory aspects of forest fires, and the economics of fire use. Resulting from these activities are the identification of political, private sector and civil society stakeholders and the legal, financial and institutional mechanisms appropriate to South East Asia that can positively influence their fire-related behaviour. In addition, national and international policies, which promote or fail to discourage forest fires, are identified.

This report documents and analyses the existing legal approach in the region and current experience in the development and implementation of fire related laws and regulations, including the collation and explanation of gaps, inconsistencies, and conflicts in fire related laws and regulations, as discussed in the “Workshop on Legal and Regulatory Aspects of Forest and Land Fires in South East Asia”. The workshop was conducted in Hanoi, 2-4 June 2003, in collaboration with IUCN Viet Nam, WWF Indochina, and the Ministry of Agriculture and Rural Development, Viet Nam.

It is expected that this report will be valuable information and a reference for all relevant parties, particularly South East Asian governments, in formulating more appropriate legal arrangements on forest and land fires.

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List of Abbreviations

ASEAN	Association of South East Asia Nations
DFW	Department of Forestry and Wildlife, Cambodia
EU	European Union
FFPM & C	Forest Fire Prevention, Management and Control
FPD	Forest Protection Department, MARD, Vietnam
GTZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit
HTTF	Haze Technical Task Force
IUCN	The World Conservation Union
MAF	Ministry of Agriculture and Forestry, Lao PDR
MAFF	Ministry of Agriculture, Forestry and Fisheries, Cambodia
MARD	Ministry of Agriculture and Rural Development, Vietnam
MONRE	Ministry of Natural Resource and Environment, Vietnam
NSW	New South Wales
PAFO	Provincial Agriculture and Forestry Office, Lao PDR
DAFO	District Agriculture and Forestry Office, Lao PDR
PPFSEA	Project FireFight South East Asia
RFD	Royal Forestry Department, Thailand
SRFA	Sub-Regional Fire Fighting Arrangement
USAID	United State Aid Agency
WWF	World Wide Fund for Nature

1. The Workshop

1.1 Background

As part of its three-theme approach, Project FireFight South East Asia conducted a review and analysis of legal and regulatory aspects of forest fires in South East Asia.¹ Additionally, a specific review for the very complex legal situation in Indonesia has also been conducted.² Findings of both reviews have shown that a major factor in sensible analysis of fire related laws and regulations is the lack of an identified set of elements or components that constitute the collective view of “best practice” or are considered essential to sound forest fire legislation. The absence of a basic or agreed legal set-up confounds comparison or analysis of existing mixes of laws, regulations and policies.

For that reason, Project FireFight South East Asia in collaboration with IUCN Viet Nam, WWF Indochina, and the Ministry of Agriculture and Rural Development, Viet Nam, organised a “Workshop on Legal and Regulatory Aspects of Forest and Land Fires in South East Asia” in Hanoi, 2-4 June 2003, to review what is known and develop a draft “best practice” frame of fire laws and related elements, particularly for the Indochina region.

Hanoi, Vietnam was chosen as the workshop location not only because of its good access to international flights and workshop facilities but more importantly in recent decades the activities on fires in the region, including the programme and activities related to legal arrangements on fire have been focused on specific countries, particularly Indonesia, Malaysia, Thailand, Brunei and Singapore. In these countries the negative impacts of fire, smoke and haze were more pronounced.

For the Indochina region fire issues have become more important in recent years. Following the change in the landscape, the result mainly of ‘slash and burn’ activities by local communities and some land use change, the fire risk is likely to increase. The big fire outbreak in U Minh Thong National Park in Viet Nam last year, for instance, was the worst forest fire in Viet Nam for decades. The issues of forest and land fires are now very high on the agenda in Indochina. For the geographic balance of activities and focus in the region Project FireFight South East Asia therefore held the workshop in Indochina.

Participation was by invitation only. The participants were representatives from various international organisations, ASEAN Secretariat, and from forest, agriculture, environmental, and natural resource management agencies from Viet Nam, Cambodia and Lao PDR. All participants had experience and knowledge on legal issues in their respective countries. Additionally, a participant from India attended the workshop. This was to encourage exchange information, experience and a view on fire issues between regions. The list of invited participants is attached in Appendix 1.

¹ Abdullah, A. (2002): A Review and Analysis of Legal and Regulatory Aspects of Forest Fires in South East Asia. Project FireFight South East Asia, Bogor, Indonesia.

² Simorangkir, D. and Sumantri (2002): A review of legal, regulatory and institutional aspects of forest and land fires in Indonesia. Project FireFight South East Asia, Bogor, Indonesia.

1.2 Structure and flow

The workshop was designed in a “semi-structured way” (see Fig. 1 for workshop structure and process) to allow time and flexibility for discussion and sharing of information and experiences with regards to legal arrangements, their development and implementation in the represented countries (the agenda of the workshop is attached in Appendix 2).

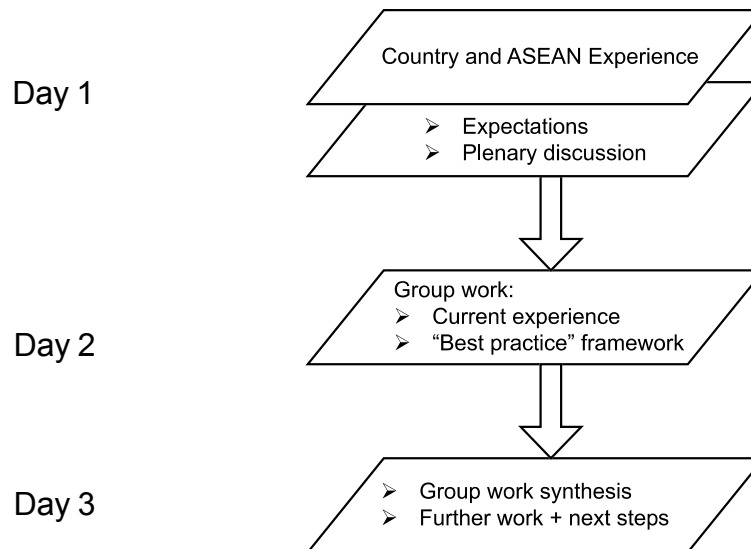


Figure 1: Workshop's structure and process

In the morning of the first day some opening remarks were made by representatives of IUCN Viet Nam, the Ministry of Agriculture and Rural Development Viet Nam and WWF Indochina Programme, which described the general situation related to fire issues in the region, the importance of the issues with regards to people's livelihood, forest management and conservation, and also the high expectations for the workshop. The overview, context and objectives of the workshop were then presented by the coordinator of Project FireFight South East Asia.

This first session was finalised with a keynote speech that outlined Australia's experiences in developing legal and institutional frameworks for fire management. This presentation gave the workshop participants insights on the development of the fire management system in Australia in the last century. The speaker focused particularly on the legal structures, law enforcement and governance, socialisation and dissemination of laws and regulation. Key elements of laws and regulation and their operational reality with regards to accountability, responsibility and separation of powers were noted.

In the second session a series of country presentations from Cambodia, Lao PDR, Thailand and Vietnam were given (see details of all presentations in Appendix 3). Each of these presentations gave the overview of forest and fire management in the respective country that focused on the issues of forest cover, land-use and land-allocation, underlying causes and impacts of forest and land fires, existing legal and institutional frameworks on fires, fire management related programme and activities, and the communities' role and involvement in fire.

The remaining presentations provided an overview of the legal context of fire at the regional level. The first presentation reviewed existing laws and regulations on forest fires in South East Asia based on reports by PFFSEA. It analysed also the gaps,

conflicts and inconsistencies among legal instruments of each country in South East Asia and between national and regional legal instruments. This presentation was complemented by a second that reported on what the ASEAN countries (particularly Indonesia, Malaysia, Brunei, Singapore) – under the coordination of ASEAN Secretariat – institutionally have done (e.g. various agreements, treaties, etc. and establishment of SRFA and HTTF), and what are their activities at the regional level. Both sets of presentations, the country specific and the regional were delivered as an ‘entry-point’ and basis for the working group discussion to follow.

On the second day, participants were divided into two working groups to discuss certain issues that had been prepared prior to the workshop and refined with inputs extracted from the presentations and discussions in the first day.

In the first working group session in the morning, the key issues discussed were centred around the questions on:

- How is the use of fire regulated in the nations represented?
- What are the legal and regulatory frameworks on fire? How were they developed?
- What are the key constraints, conflicts and inconsistencies in fire-related laws and regulations?
- How are fire-related laws and regulations implemented? Best and worse case examples?
- What knowledge and information is needed for an effective fire management system? Are they available?

Preliminary analysis, including on forest policy reforms and social, legal and regulatory framework, was also done to explore the constraints, conflicts and inconsistencies in fire use practices. The intent of the discussion in groups was to collect the current experience in the development and implementation of fire related laws and regulations in each of the represented countries.

The aim of the afternoon working group discussion session was to document the best practice of laws regulating fire and fire use and related elements as a tool/mechanism for evaluation and comparison. The following questions were given to guide the discussion:

- What are the key elements or basic principles of fire-related laws and regulations in your country? How are they determined and who is responsible?
- What are the critical aspects – social, economic and environmental – to be considered in the development and implementation of laws and regulations? What should be the roles and responsibilities of communities in this process?
- How can the effectiveness of the laws and regulations be assessed and evaluated?
- Are there any mechanisms to review, improve and reconcile the laws and regulations? If so, what are they and who is responsible?
- What is the institutional framework on fire management in your country? Who is doing what? Is there clear definition of authority, functions, tasks and responsibilities? How are these coordinated?

In the final session on the third day, the results of the working groups were synthesised and further discussed. Next steps were identified to:

- Fill gaps and conduct further analyses as identified
- Communicate and socialise framework for the best practice in fire related laws and regulations

2. Current experience in the development and implementation of laws and regulations

2.1 Existing legal arrangements

In all of the four countries presented (Cambodia, Lao PDR, Vietnam and Thailand), forest fires are considered an important issue with a high commitment from governments to manage them. However, the perceived level of threat varies due to the differences in intensity and scale of fire-related problems in each country. While fire has been seen as a serious problem in Thailand for decades, it is perceived to be less threatening in other countries. In Vietnam fire has become a more serious problem since 2002, when a large and damaging fire in U Minh Thong National Park burnt more than eight thousand hectares of forest.

The perception of threat is reflected in the legal and institutional arrangements with regards to fire. Of the nations invited Thailand has the most advanced regulations and institutional arrangements on fire, but in all countries improvements can be made, as none of the four countries has a complete and coherent law on fire. Each has some elements of legislation that are positive and sound however. Generally, fire regulations are part or components of other laws such as environment and forestry acts (see details in country presentations, Appendix 3). First attempts to document and analyse existing legal arrangements resulted in listing of key elements of laws and regulations as shown in Table 1.³

While most of the key elements of fire management are included in various regulations in Vietnam and Thailand, Cambodia and Lao PDR have not yet issued explicit fire regulations. With regards to the ‘technical aspects’ of fire management, all countries stipulate some elements of prevention (public awareness, warnings and so on), as well as prohibiting fires and suppression aspects of fire in their regulations. On the other hand, the remaining important elements of prevention (fuel management and prescribed fire use), preparedness to fight fires and restoration aspects seem not to be recognised or included in any of the existing laws or regulations, with the exception of Vietnam in some respects.

Involvement of relevant stakeholders in managing fire is also an important aspect that is mentioned in various regulations. Particularly the local community’s involvement is crucial since agricultural activities are the main source of fires. In this respect, regulations of those countries lay down the institutional framework in fire management at various levels, from national to village level. Regulations also stipulate the coordination amongst, and the separation of, roles and responsibilities (except Lao PDR) of the involved parties at the national level. However, this is often unclear and leads to weak coordination and overlap, even conflict, in conducting fire management

³ The information in Table 1 is based on documents available during the workshop, and on the personal knowledge of the participants. An in-depth analysis of this kind would help individual countries to identify the issues that need to be included in their fire laws and regulations. It would also be helpful for countries that are interested in harmonizing their fire laws and regulations

⁴ Presented by Dr. Peter Moore, PFFSEA

activities. Only Thailand stipulates the cooperation with other stakeholders (governmental and non-governmental) at regional and international levels in its regulations. This reflects the long-history and experience of fire management in Thailand.

It is unclear to what extent law enforcement is captured in the existing laws and regulations. Only Vietnam stipulates the means and roles for this clearly in its regulations. , Enforcement must be assumed since the penalties (punishments and fines) for fire are specified in detail in the existing regulations of the other countries. This, however, is very rarely enforced for various reasons (see below).

Education and public awareness are also considered as important elements of laws and regulations with all countries but Cambodia setting it out in their regulations.

Table 1: Key elements of laws and regulations

	Cambodia	Lao PDR	Vietnam	Thailand
Prevention	√	√	√	√
Education / Public Awareness		√	√	√
Preparedness				
Monitoring			√	√
Prohibition	√	√	√	√
Coordination (national)	√	√	√	√
Cooperation (regional/ international)				√
Suppression	√	√	√	√
Restoration				
Responsibilities	√		√	√
Enforcement	?	?	√	?
Penalties	√	√	√	√
Incentives: public officials		√	√	
			√	
Land tenure/registration	√	√	√	
Funding			√	√

- | |
|---|
| √ |
|---|

 Available in or existing as laws/regulations or their elements
- | |
|--|
| |
|--|

 Not existing in law
- | |
|---|
| ? |
|---|

 Insufficient information available

2.2 Main problems and constraints

The biggest problem faced in these nations is the lack of resources; financial, human, physical and knowledge. This not only reduces capacity to develop appropriate laws and regulations, but also hinders the conduct of necessary practical measures on the ground, particularly law enforcement. Additionally, the common sectoral approach and weak coordination amongst the relevant stakeholders, governmental and non-governmental, makes the problem even more complex and difficult to solve. There are other critical issues for the countries represented discussed in the workshop:

- There is no clear mechanism to analyse, assess and evaluate the existing laws and regulations. If ever, only the government agencies have conducted self-assessment on the laws and regulations they produced. The effectiveness and appropriateness of the existing laws and regulations is therefore not clear. Moreover, without comprehensive assessment and evaluation it is almost impossible to know where any difficulty lies and how to improve the legal arrangements.
- The main source of fires in those countries is the agricultural (slash-and-burn) activities of local communities that are often very poor. Fire is often the only available tool for them to clear and prepare the land. This is why local communities continue to use fire despite serious efforts by governments in awareness raising and law enforcement. Notably the law is very often not 'enforced' because of local people's poverty. The punishment or fines for fire use are very high and beyond most local people's capacity to pay.

3. Essential elements of laws and institutional frameworks

From the presentations and discussions in the workshop, it was identified that there are some important elements that have to be taken into account in developing laws and regulations, and in their implementation. Following sub-chapters list those elements, categorized into three groups: 1) General considerations - issues that should be considered in the establishment of legal arrangements, 2) Core principles, and 3) Operational elements of laws and regulations.

3.1 General considerations

Framework law

The ideal approach for legally regulating fire management would be to consolidate all existing laws and regulations into one national level “umbrella” framework law. This should:

- establish fundamental principles;
- provide common definitions for terms;
- set out the technical requirements for fire management;
- clearly allocate responsibility for each aspect of fire management among all levels of government; and
- explicitly state how fire management activities are to be funded.

In addition, the framework law should establish responsibilities for carrying out other activities related to fire management, including information management, public awareness, training, and education.

Within the framework provided by the law, there should be flexibility for provincial, district, and village level authorities and communities to implement the basic obligations of the law, taking ecological and social needs and local circumstances into account. Operational details for implementing the law should be set out in one comprehensive regulation.

Harmonization

At a minimum, existing laws and regulations should be reviewed to find out if:

- they contain all of the elements described here; and if
- they contain provisions that conflict with each other or with other laws and regulations related to fire management.

If there are conflicts, or if important elements of fire management are missing, existing laws and regulations should be amended to eliminate the conflicts and include all necessary provisions.

National legislation in ASEAN Member States should include an explicit reference to the ASEAN Agreement on Transboundary Haze Pollution if the country is, or intends to become, a Party to that Agreement. Parties to the ASEAN Agreement will have to include specific provisions in their national fire management laws to implement their obligations under the Agreement.

3.2 Core principles

Sovereignty

The State has the right to manage and use the natural resources within its territory in accordance with its own national environmental and development policies.

Do no harm outside national territory

The State has the responsibility to ensure that fires and fire management activities within its territory do not cause damage in the territory of other States or in areas beyond the limits of national jurisdiction.

Precaution

The lack of scientific certainty must not be used as a reason to postpone action to avoid potentially significant or irreversible damage that fires may cause. All policies and measures related to fire management must be based on anticipating and preventing fire damage, rather than on attempting to remedy or compensate for it.

Participation

Fire management activities must rely on the involvement of designated public authorities at all levels of government, as well as local communities, individual citizens, and the private sector. Women and men must have equal opportunities to take part in planning and implementing fire management activities and must have equal access to the benefits of those activities.

Co-operation

The State must cooperate with other States to control any transboundary effects of fires and fire management activities within its territory. It must collaborate with other States to implement the provisions related to fire management in international agreements to which it is a Party.

Sustainable development

Fire management must be carried out in ways that support national development processes, ensuring that fire does not lead to the long-term decline of biodiversity and natural resources and that it helps to maintain their potential to meet the needs of present and future generations.

All fire is managed

When fire is needed for agricultural or other purposes, it must be managed so that the purpose is achieved and no damage is caused. When fire is unwanted, whether it is started accidentally or intentionally, it must be managed to minimize whatever damage it may cause.

Fire management must not create a driver for poverty

People, whose livelihoods involve using fire as a tool must be helped to learn how to manage fire and must not be disproportionately penalized for unintentional damage that may be caused by their fires.

Definitions

All terms specific to fire management must be technically correct, clearly defined and used consistently in all fire management laws and regulations. Use of terms that are not specific to fire management must be consistent with the way those terms are defined in other national laws and regulations.

3.3 Operational elements

3.3.1 General elements

Comprehensive coverage

Fire must be managed in all categories of forests and in all areas outside natural forests and plantations, regardless of how the land is used.

Land and resource tenure and use

Ownership and use rights to land and natural resources must be clearly allocated and registered. Land use must be identified and mapped.

Powers and responsibilities

Fire management is decentralized. Powers and responsibilities are devolved to all levels of government, including local communities, and are clearly described for each:

- central/national
- provincial
- district
- local/village/commune

Responsibilities may be area-based or task-based.

“Area-based” means that, for example, forest authorities are responsible for managing fires on forestlands, agriculture authorities are responsible for managing fires on agricultural lands, protected area authorities are responsible for managing fires in protected areas, and other authorities are responsible for managing fires on the lands for which they have jurisdiction.

“Task-based” means that responsibility for specific fire management functions is distributed among different government authorities. For example, environment officials may be responsible for monitoring and recovery, forest officials may be responsible for preparedness and suppression, and communications and information officials may be responsible for public awareness.

Coordination mechanisms

If more than one government agency is involved in fire management, the law or regulations must clearly set out horizontal and vertical lines of communication and decision-making. Horizontal coordination includes all agencies and other stakeholders at one level of government – for example, local forest officials, local police, and the leaders of local communities. Vertical coordination refers to communication and the chain of command between the different levels of responsibility – for example, between the local and district levels, the district and provincial levels and the provincial and central levels.

Cooperation

The focal point(s) for cooperation with regional and global organizations and networks must be clearly designated. If there is more than one focal point, there should be an explicit requirement for them to coordinate and a mechanism for doing so.

3.3.2 Fire-related technical elements

All fire must be managed to achieve the purpose for which it is used or to minimize its impact if it is unwanted. The requirements for comprehensive fire management have been placed into a framework with five aspects:

- **Analysis:** It is essential to define the problem so that it can then be effectively addressed using resources most efficiently. To prevent fires, it must be known who or what starts the fires and why. If fires are mostly human made, then education campaigns might be the most efficient management tool. If too much fuel is the problem, then forest and fuel management need improvement. It is also important to know, where and when most fires start.
- **Prevention:** As is widely accepted: ‘prevention is better than cure’. A significant proportion of time and resources should be spent on prevention. Prevention reduces the likelihood and impact of fires, reducing unwanted ignition sources, the intensity of fires, and increasing the ability of organisations and communities to deal with fires. Prevention can include education and awareness raising (school books, publicity material, games, other publications) or fuel management (reduction, removal, or other manipulation of the fuel for fires, generally sound and sustainable forest management), and enforcement (appropriate laws and regulations, sanctions and supervision).
- **Preparedness:** To ensure that fires are not a surprise, early warning systems and ways to improve readiness to respond to fires are needed. This includes infrastructure and engineering such as building and maintaining of roads, tracks (for access to the fires), firebreaks, fire towers and preparing assets and homes. The training and development of fire management and suppression personnel is one of the most important aspects of preparedness. This is supported by equipment purchase and maintenance, and the ongoing monitoring of weather conditions, fuels and ignition sources to provide timely advice and warnings on possible fires, so that these resources can be effectively used.
- **Response:** Commonly referred to as ‘fire fighting’ or ‘suppression’. Contrary to common belief, fires are not ‘put out’ but ‘secured’ or ‘contained’. The usual method is to cut the fire from access to new fuels by creating a fire line around the perimeter of the fire, which stops the fire from spreading. Once this is completed, the fire is made safe by treating the fire edges along the fire line, dousing and cooling embers and hotspots in a process known as ‘mopping up’ (put out using water or earth).
- **Recovery or Restoration:** The repair, replacement and rebuilding of damage caused by fire. This includes assets, such as plantations, houses and infrastructure, but also the restoration of fire damaged ecosystems including the re-establishment of ecosystem function, structure, productivity and natural fire regimes, all of which are part of sustainable forest management. Similarly, communities often need support to recover from the physical and physiological impacts of fire. Restoration can be very important to prevent future fires. Burnt areas may be more prone to fire in the years following a fire due to increased fuel and debris from burnt, dead plants.

3.3.3 Additional operational elements

Information management

This element includes collecting data and information, processing and storing it, and making it available in an appropriate format to everyone who needs it. The technical element of fire science research and analysis requires information management, and there should be an explicit link between the two elements.

Public awareness

This element is an important part of fire prevention. It must be explicitly linked with fire science research and analysis and with information management. Successful public awareness activities require “functional dissemination” – information must be delivered in ways that are understandable and usable by the individuals and groups to which it is directed.

Extension

Extension means activities that one or more fire management authorities carry out with local communities. At a minimum, it includes providing technical support with fire management techniques and hands-on training opportunities.

Education

Concepts and practical examples related to the causes, uses and management of fire, the damage it can cause, and ways to avoid and mitigate that damage should be included in the national science curriculum at primary, secondary and university levels. This element should, at a minimum, include a specific requirement for fire management authorities at all levels to collaborate with the Ministry of Education and local teachers to be sure that this is done in ways that are appropriate to each level and each locality.

Training

Training in the technical aspects of fire management should be made available for members of local communities who are involved in fire management and for government agency fire managers at all levels. Where public or private institutions that provide such training already exist, this element should include specific references to them. If training facilities or programs do not already exist, this element should specify the steps to be taken to establish them.

Resourcing

Three types of resources are required for fire management:

- financial;
- human; and
- material.

This element should include an explicit requirement that national, provincial, district and local budgets will allocate adequate financial resources to support the human and material resource requirements for fire management. It should specify which authorities at which levels are responsible for the costs of each aspect of fire management. If a national environment fund or a similar fund exists, this element should specify how resources from that fund could be accessed to support fire management.

Incentives and Disincentives

This element should enable incentives for the transfer of fire management technologies and for effective participation in fire management. It should also enable disincentives for activities and technologies that create or contribute to fire hazard conditions. Incentives and disincentives may be monetary or non-monetary. They should apply to government officials, local communities, private citizens, and private sector companies and organizations, and should be designed specifically for each of those groups. Perverse incentives in existing laws and regulations that encourage practices that lead to fire hazard conditions should be identified and amended or repealed. Fire management laws and regulations should generally emphasize incentives and disincentives and rely on penalties for clearly specified cases.

Enforcement

This element should specify the enforcement powers and responsibilities of each level of fire management authority, including local communities. It should also clearly indicate the kind and quality of evidence required to prosecute violations, and specify who has the power to collect, store, and present that evidence. If civil and criminal laws or codes or any other laws and regulations are related to enforcement of fire management laws and regulations, there should be explicit references to those laws and regulations.

Liability

At least one ASEAN Member State makes landowners strictly liable for damage caused by fires occurring on their property. If strict liability is to be applied, this element must explicitly include it.

Penalties

There may be civil fines and/or criminal penalties for negligent or intentional violations. They should be proportional to the offences — the amount of damage done and whether it was a repeat violation. Generally, fines should cover the costs of restoring areas damaged by fires, and they should be proportional to the economic capacity of the violator.

Accountability

Government officials should be accountable for the performance or non-performance of the responsibilities assigned to them under fire management laws and regulations. This element should set clear standards for accountability and the consequences for non-performance or unacceptable performance.

Assessment

There should be a requirement that fire management laws and regulations are reviewed periodically. Specific provisions, or entire laws or regulations, should be amended or repealed when they no longer meet the requirements of technically, economically and socially adequate fire management.

4. Next steps and further work

Table 2 shows the list of needs and proposed follow-up activities at the country and regional levels as discussed in the workshop.

The needs and –based on that– the proposed next steps are centred around the following key issues:

- Better understanding of fire through collection and analysis of data and fire-related research;
- Revision and improvement of existing laws and regulations, including the development of guidelines and a best practice framework;
- Development of a more appropriate institutional framework on fire, from national to community levels, with clear separation of roles and responsibilities;
- More effective and consistent law enforcement;
- Capacity building through training;
- Awareness raising; and
- Development of information networks and stronger collaboration amongst relevant stakeholders at various levels.

The discussion on who should take responsibility for the proposed activities indicated clearly that there is an increasing awareness amongst the government agencies that a more participative approach is needed in developing a better forest fire management system, including in the development and implementation of laws and regulations. It seeks not only the stronger horizontal collaboration between relevant agencies at the central level, but also vertically between various levels, from central, provincial, district, to village levels. Moreover, support from other stakeholders such as NGO's, researchers and others are considered important. This perception was also shared at the regional level.

Remarkably, all represented country, including the ASEAN, have the same constraints in developing a better fire management system. Lack of financial and human resources, including technical expertise and equipment, are the most important issues where support is sought from other parties, particularly from the donors. Additional support is also needed with regards to better cooperation and collaboration with other stakeholders at the national and regional levels.

Table 2: List of needs and proposed activities

	Priority needs	What next?	Who responsible?	Support needed
Cambodia	<ul style="list-style-type: none"> Basic fire center Appropriate materials and equipments Information network 	<ul style="list-style-type: none"> More understanding on fire behaviour Database collection efforts 	<ul style="list-style-type: none"> MAFF/Dept. of Forestry and Wildlife Local NGO 	<ul style="list-style-type: none"> Expertise Budget
Lao PDR	<ul style="list-style-type: none"> Update forest law Set up forest fire regulation Dissemination to all stakeholders 	<ul style="list-style-type: none"> Establish a responsibility organization from central up to local level 	<ul style="list-style-type: none"> MAF & STEA (key) Line agencies NGO 	<ul style="list-style-type: none"> Financial Human resource Material
Vietnam	<ul style="list-style-type: none"> Fire forecast and warning Awareness raising Law enforcement Strengthening regional cooperation 	<ul style="list-style-type: none"> Revision of decree 22 on forest fire Training, advocacy, and awareness raising Establish & improve monitoring network for early warnings Capacity building inc. equipment and technology transfer 	<ul style="list-style-type: none"> MARD/FPD and MONRE Provincial FPD, SC, forest owners, communities, and local authorities 	<ul style="list-style-type: none"> Research Resources/ funding information
India	<ul style="list-style-type: none"> Fire to be identified as a core issue that needs adequate attention Develop appropriate institution from national to local level to address the issues of forest fires Research Proposes legal framework Capacity building 	<ul style="list-style-type: none"> Collect and analyze the baseline information on forest fire The analysis will lead to some outputs which may be worked into activities Capacity building of forest protection committees 	<ul style="list-style-type: none"> Govt. Forest department with other key stakeholders, inc. WWF India 	<ul style="list-style-type: none"> Financial and regional cooperation
Regional	<ul style="list-style-type: none"> To know individual government's priorities If technical assistance is required, need request from government Haze agreement implementation One stop (timely) provision of regionally standardized basic data on fire (time, place, extend, vegetation) Some institutional arrangements in place in this sub-region to facilitate follow-ups (in addition to Sumatra & Borneo) Best practice framework for the whole region Ratification of haze agreement by remaining countries Information sharing (Singapore regional monitoring station and all other countries) 	<ul style="list-style-type: none"> Assist in circulating outputs regionally and sub-regionally Regional organizations to coordinate support each can provide to individual governments and to sub-regional groups Other members also to develop best practice framework and share it with this group (joint workshop?) Set up a sub-regional arrangement Development of procedures, etc. to implement haze agreement Agreement on standard and national collection and provision of basic fire data to a central regional point 	<ul style="list-style-type: none"> IUCN+WWF (PFFSEA), ASEAN, APCEL National governments and ASEC to coordinate Member countries to put up a proposal at regional meeting – ASEC facilitate HTTF / member countries ASEC / ASEAN Centres, member countries assisted by technical experts 	<ul style="list-style-type: none"> Technical expertise to facilitate the development of procedures, harmonized data and workshops Some funding for member countries' participation Some technical expertise initially <p>Support offered:</p> <ul style="list-style-type: none"> Technical assistance in developing legislation Information

Appendix 1: List of invited participants

No	Name	Organisation and contact details
Cambodia		
1	Mr. Sar Rao	Deputy Chief of Forest Engineering Office, Department of Forestry and Wildlife 22 Street 302&57 P.O. Box 1356, Bung Keng Kong I, Phnom Penh, Cambodia Tel: +855 (23) 214 627 Email: ccp.srao@everyday.com.kh
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Vietnam		
7	Vice Minister Nguyen Van Dang	Vice Minister Ministry of Agriculture and Rural Development (MARD) No.2 Ngoc Ha Street, Hanoi, Vietnam
8	Dr. Nguyen Ba Thu	Director Forest Protection Department (FPD), MARD 2 Ngoc Ha Str., Hanoi, Vietnam Tel: +84 (4) 7335680, Fax: +84 (4) 7335685

* Not present

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13	Mr. Nguyen Quang Cua	Deputy Director of Forest Protection Department of Ca Mau Province 51 A duong Hung vuong, P5 Thanh Pho Ca Mau Tel: 0780 837488, 0913712856, 0780 833 701 Fax: 0780 837 489
14	Mr. Do Van Son	Department of Fire Control and Prevention Ministry of Public Security 44 Yet Kieu, Hanoi, Vietnam Tel: +84 (4) 8226602
15	Mr. Nguyen Phuc Tho	Expert, Forest Fire control and management Division/FPD 2 Ngoc Ha Street, Hanoi, Vietnam Tel: +84 (4) 7335679
16	Mr. Nguyen Van Lu	Director of Tram Chim National Park Tram Chim, Tam Nong District, Dong Thap Province, Vietnam Tel: +84 (67) 827081, Fax: +84 (67) 827307 Mobile: 0913-967705
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Vietnamese Member of IUCN Commission on Environmental Law (CEL)		
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31	Nguyen Minh Thong	Country Representative IUCN Vietnam 13 A Tran Hung Dao, Hanoi, Vietnam Tel: +84 (4) 8258794 Email: [REDACTED]

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Mass Media		
VietnamNews		
Vietnam Television		
Hanoi Television		
Lao Dong Newspaper		
Agriculture and Rural Development Newspaper		

Appendix 2: Workshop agenda

Day 1, Monday, 2 June 2003	
08:00 – 08:30	Registration
08:30 – 10:00	<p>Opening Session Introduction and Welcome Remark by Mr. Nguyen Minh Thong, IUCN VN Country Representative Welcome Remark by Mr. Eric Coull, Director of WWF Indochina Programme Opening Remark by Vice Minister Mr. Nguyen Van Dang, Ministry of Agriculture and Rural Development Framework for “best practice” in fire related law and regulations - an overview, context and objectives of the workshop –by Dr. Peter Moore, PFFSEA Coordinator Key Note Speech “The rationale for, and development of legislation, to assist the management of rural and forest fires” by Mr. Ross Smith, Forestry and Fire Specialist, Global Fire Management Pty Limited.</p>
10:00 – 10:15	Tea/Coffee Break
10:15 – 12:25	Country Presentations (Chairs: MARD and IUCN)
10:15 – 10:45	Cambodia Country paper by: Mr. Sar Rao, Deputy Chief of Forest Engineering Office, DFW, Cambodia
10:45 – 11:15	Lao PDR Country paper by Mr. Khamphone Rasachack, Head of Planning Division, Department of Forestry, Lao PDR
11:15 – 11:45	Thailand Country paper by Dr. Peter Moore, PFFSEA Coordinator on behalf of Dr. Siri Akaakara, Director Forest Fire Control Division, Department of National Park, Wildlife and Plant Conservation, Thailand
12:25 – 13:30	Lunch
13:30 – 15:00	Country Presentations - continued
13:30 – 14:10	Vietnam Country paper by Mr. Nguyen Phuc Tho, FPD/MARD, Vietnam
14:10 – 15:00	“Toward a Framework for Best Practice in Fire Related Law and Regulations” Experience in ASEAN member states by Ms. Patricia Moore, Head of the IUCN Regional Environmental Law Programme, Asia Review of the legal context on fire in ASEAN by Ms. Adelina Kamal, ASEAN Secretariat
15:00 – 15:30	Tea/Coffee Break
15:30 – 17:00	Plenary Discussion Session Discussion on the presentations and exchange experiences to get a clear indication where the problem lies from in the development and implementation of fire related laws and regulations and a basis for the working group discussions on the next day
17:00	Conclusion and end of Day One (FPD, IUCN and PFFSEA)
17:30	Workshop Reception (hosted by MARD, IUCN, WWF and PFFSEA)

Day 2, Tuesday, 3 June 2003	
08:30 – 12:15	Working Groups (Facilitators: Mr. Chun Lai and Mr. Tim Dawson)
08:30 – 08:45	Guidelines for group work
08:45 – 11:30	Group work (including tea/coffee break)—two concurrent sessions: Collecting the current experience in the development and implementation of fire related laws and regulations from your countries: <ul style="list-style-type: none"> • Constraints, conflicts and inconsistencies in fire related laws and regulations • Best and worse case examples of law implementation and enforcement • Gaps between laws, including in the knowledge and information base
11:30 – 12:20	Group reports back to the Plenary (15 minutes presentation and 10 minutes discussion for each group)
12:20 – 13:30	Lunch
13:30 – 17:00	Working Groups – continued (Facilitators: Mr. Chun Lai and Mr. Tim Dawson)
13:30 – 16:10	Group work (including tea/coffee break)—two concurrent sessions: Discussion and documentation of a best practice frame of fire laws and related elements as a tool/mechanism for evaluation and comparison including: <ul style="list-style-type: none"> • The key elements of law; • The major aspects of process to achieve balance; • A mechanism for review and improvement; and • Accountability, responsibility and separation of powers.
16:10 – 17:00	Group reports back to the Plenary (15 minutes presentation and 10 minutes discussion for each group)
Day 3, Wednesday, 4 June 2003	
08:30 – 10:00	Plenary session (Facilitators: Mr. Chun Lai and Mr. Tim Dawson)
08:30 – 08:50	Summary of group works (Facilitators)
08:50 – 10:00	Plenary discussion
10:00 – 10:15	Tea/Coffee Break
10:15 – 12:00	Plenary session – continued (Facilitators: Mr. Chun Lai and Mr. Tim Dawson) Identification of further work and next steps to: <ul style="list-style-type: none"> • Fill gaps and conduct further analyses as identified; and • Communicate and socialise framework for the best practice in fire related laws and regulations
12:00 – 12:30	Conclusion and Closing Remarks (FPD/MARD, IUCN and PFFSEA)
12:30	Lunch

Appendix 3: Workshop presentations

Opening Remarks

Dr. Peter F. Moore (*Project FireFight South East Asia*)

“Framework for ‘best practice’ in fire related law and regulations - an overview, context and objectives of the workshop”

Background

The forest fires of 1997 and 1998 created enormous ecological damage and human suffering and helped focus world attention on the problem. There is a growing concern that action is needed to catalyse a strategic international response to forest fires. There are no ‘magic bullets’ or ‘instant solutions’. The issues to be addressed are complex and cut across many interests, sectors, communities, nations and regions.

For that reason WWF – The World Wide Fund for Nature and IUCN – The World Conservation Union have joined forces to develop Project Firefight South East Asia to secure essential policy reform through a strategy of advocacy using syntheses and analyses of existing information and new outputs. More specifically, the project aims to enhance the knowledge and skills of key stakeholders with regard to forest fire prevention and management and, where necessary, to facilitate the adoption of new and/or improved options. The project works at the national and regional levels across South East Asia to support and advocate the creation of the legislative and economic bases for mitigating harmful anthropogenic forest fires.

Project FireFight South East Asia undertook studies focusing on three areas of fire management: community-based fire management, legal and regulatory aspects of forest fires, and the economics of fire use in South East Asia. The expected results of these studies are the identification of political, private sector and civil society stakeholders and the legal, financial and institutional mechanisms appropriate to South East Asia that can positively influence their fire-related behaviour. In addition, national and international policies, which promote, or fail to discourage, forest fires are identified.

As part of its three-theme approach, Project FireFight South East Asia conducted a review and analysis of legal and regulatory aspects of forest fires in South East Asia. It reviews existing laws and regulations on forest fires in South East Asia and analysis gaps, conflicts and inconsistencies among legal instruments from each country and between national and regional legal instruments. Additionally, a specific review for the very complex legal situation in Indonesia has also been conducted. It is anticipated that the result of both reviews will improve the understanding and comprehension of legal regimes governing prevention and control of forest fires in South East Asia and furthermore will support the relevant stakeholders, particularly South East Asian governments, in formulating sound and appropriate legal and institutional frameworks for more responsible fire use. Both reviews have been published and distributed to various stakeholders.

Findings of both reviews have shown that a major factor in sensible analysis of fire related laws and regulations is the lack of an identified set of elements or components that constitute the collective view of “best practice” or are considered essential to sound forest fire legislation. The absence of a basic or agreed legal set-up confounds comparison or analysis of existing mixes of laws, regulations and policies. For that reason the project has collaborated with the Government of Vietnam, WWF and IUCN to hold this workshop to review what is known and consider “best practice” frame of fire laws and related elements. The workshop involves other relevant actors, particularly South East Asia government agencies.

Structure and flow

The workshop will use a process of:

- Presentations on the existing legal approach for example countries of the region.
- Analysis and discussion of the fire and related aspects of laws regulations with a focus on identifying:
 - Gaps between laws;
 - Perverse constructs that stimulate damaging fires or restrict effective action to address underlying fire causes;
 - Effective legal and regulatory arrangements; and
 - The balance of:
 - legal structures;
 - enforcement and governance;
 - socialisation of laws; and
 - operational reality.
- Discussion and documentation of a best practice frame of fire laws and related elements as a tool/mechanism for evaluation and comparison including:
 - The key elements of law;
 - The major aspects of process to achieve balance;
 - A mechanism for review and improvement; and
 - Accountability, responsibility and separation of powers.
- Next steps for the Best Practice Legal Framework.

Expected Outputs

Outputs from the Workshop will include:

- A collation and explanation of:
 - Gaps between laws and Perverse constructs;
 - Best case examples; and
 - An identified balance of legal, enforcement, governance and social aspects of law and related aspects.
- A draft best practice frame of fire laws and related elements.
- Identified further work and next steps to:
 - Fill gaps and conduct further analyses as identified; and
 - Communicate and socialise the best practice framework of forest fire laws.

Keynote Speech

Mr. Ross Smith

“The rationale for, and development of legislation, to assist the management of rural and forest fires”

Introduction

Legislation is the collective of the laws that are imposed by a Nation, a State, a Territory or other administrative unit within a country. They are the formal laws that are established by the Government of the day and they set out the rules of behavior that are expected by citizens, they provide specified persons and organisations with the power and authority to take actions and they may provide for penalties for non-observance of the law. Formal legislation may not necessarily incorporate customary and ancient laws that are a part of the social fabric of a society.

As recent global events have demonstrated, no events can be eliminated with the simple stroke of a pen. If such was the case, terrorist incidents, wars and health disasters could all be made to vanish through a simple administrative process by legislating that such events ought not to happen. Unfortunately, that outcome is not possible. What can be done is to enact legislation, which provides for how incidents or events might be managed and which also identifies systems, procedures and responsibilities that may become necessary as a consequence of such an incident,

Forest and land fires are no different. Legislation, just because of its very existence, cannot control or eliminate fires, limit the area burnt or remedy any effects. Legislation is one of the tools that governments, fire managers, forestry agencies and land managers utilize to adequately manage fire, in order to minimize its adverse social, commercial and environmental effects and to maximize its beneficial effects.

A most important precept is that legislation is an enabling mechanism in that it assists communities, agencies and their officers to implement sound fire management. Widespread acknowledgement of this from many countries demonstrates quite conclusively that reliance solely upon laws and legal constraints has only a limited effect on the incidence and management of wildfires, unless that legislation is supported by very strong and well-ordered management systems that carry the imprimatur of the Government of the day.

Legislation provides the basis for agencies to act, and establishes the rules by which they operate and can provide a sound base to ensure that communities have a strong sense of ownership in management of fire and the resultant protection to their communities.

In establishing sound fire management legislation some basic questions that need answers are:

- *Why is legislation necessary and what is its role in fire management?*
- *What are the critical elements of legislation that need to be identified?*
- *How should legislation be developed and what constraints or conflicts affect the outcome?*
- *How should “competing” legislation be managed?*

The New South Wales Context

In considering these issues I would like to draw upon some of the experiences in developing fire related legislation in NSW, as well as other parts of the world. To put this into the appropriate context, it is necessary to briefly examine the Australian and NSW situations.

Within Australia, forest and rural fire management is primarily a State and Territory responsibility, rather than a Federal or national responsibility, unlike for example, the United States where there is joint land management responsibility shared between State and Federal jurisdictions, with the federal agencies generally fulfilling the major role. This absence of federal oversight is not a critical factor for Australia and the manner in which legislation is established and operates acknowledges State and Territory autonomy. It may be useful in some circumstances to have a degree of harmonization between state/territory, national and international legislation, a matter that I will comment further about.

Individual States and Territories within Australia, the macro political subdivisions, are geographically very large entities, generally with very low populations by global standards. There is a strong synergy between the States and Territories. Australia also has a feature that few other countries possess – it has no international neighbors on its land boundaries, and as a direct consequence there is never an issue that many countries experience where forest fires cross international boundaries, although they frequently cross from one state to another

To put NSW into context with SE Asia some brief statistics follow:

- It is one of the of the smaller States in Australia
- Area 81 000 000 hectares (Australian continent 700 713 000 ha)
- Population 6 000 000 approximately 80% urban, 20% rural/forestry (Australia 20 000 000)
- NSW Forest area: 16 000 000 hectares
 - Commercial forest: 2 900 000 ha
 - Conservation reserve: 5 900 000 ha
 - Private and other government tenure: 7 500 000 ha
- Australia is the next driest continent to Antarctica. Climate varies from tropical in the north to temperate in the south.
- NSW is predominantly temperate with average rainfall up to 1000 mm along a very narrow coastal strip, with rapidly declining rainfall as low as 250 mm per annum in the near deserts in western NSW.
- Weather patterns are unreliable and major fluctuations in rainfall occurrence give rise to episodic drought and flood.
- In common with the rest of South Eastern Australia, NSW experiences bushfires or forest and grass fires on a regular basis
 - In a severe season as much as 4.5 million hectares can be burnt (1975/75 and 1984/85), housing and asset losses can be very severe (1993/94 - 205 houses, 2001/02 – 109 houses, 2002/03 - 86 houses plus 531 houses in the Australian Capital Territory, a small Federal enclave within NSW.
 - Loss of human life can also be significant in South Eastern Australia
 - 1939 71 deaths
 - 1967 62
 - 1968 37
 - 1983 81 (76 in a single afternoon 16/02/83)

Why is legislation necessary?

In the NSW context legislation is seen as necessary tool for emergency service and land management organisations, to enable them to efficiently deal with periodic occurrence of fire. There is a need for these organisations to hold statutory powers and a legal right to take action in fire management operations. There is now widespread community acceptance that there are key issues emerging from uncontrolled and untrammled occurrence of fire associated with public safety, asset protection and environmental protection. A brief synopsis of the development of fire related legislation in NSW follows.

European settlement

Historically, the need to suppress bushfires had existed since the early days of settlement when Europeans, who were generally unfamiliar with, and unskilled in, the application and control of fire settled this continent and began to carve out a new life. This was allied with significant changes to the existing ecology occasioned by widespread introduction of hooved grazing animals, extensive forest and woodland clearing for agriculture and a marked reduction in traditional Aboriginal burning practices, leading eventually to their almost complete cessation.

Whereas the burning by Aboriginals was undertaken for specific purposes at recognized times of the year, wholesale application of fire to piles of tree debris cleared for agriculture unwanted crop residues resulted in many catastrophe fires when the farmers, unskilled in burning practices, failed to recognize the onset of unfavorable conditions, or sometimes quite deliberately burnt under hot dry conditions, or failed to take adequate precautions to prevent fire from escaping. With a rapidly expanding settler population, unnatural fire starts became more frequent during the hotter and drier summer months.

Graziers adjacent to large tracts of forested areas also applied fire with some vigor to the “bush” in order to promote palatable stock feed. The hardier more xerophytic vegetation, common in much of Australia, is not normally attractive to stock, if more palatable vegetation is available. As a result, there arose a common practice of annually setting fires in large tracts of forest areas by graziers, particularly along the coastal parts of northern NSW. They didn’t particularly care who owned the land; some of it was theirs but other lands were managed by forestry or conservation agencies. This deliberate firing was usually timed for late winter to promote tender shoots in the forest areas just prior to the normal spring flush in open grazing lands.

Unfortunately, this period frequently coincided with the early onset of adverse fire weather with strong winds, elevated temperatures and, if the early spring/summer rains did not arrive, a very dry fuel load. This set the scene for a number of bushfires that occasionally attained catastrophic proportions causing damage to forest and agricultural areas, and periodically taking life.

Early legislation

Europeans first settled NSW in 1788. Prior to federation in 1900, there had been some desultory attempts to introduce legislation to provide a means of controlling bushfires. There were little resources available for enforcement, the population was too sparse and land clearing for agriculture was too common for legislation to have any appreciable effect on forest fire occurrence and management. In essence, there were no resources to police the legislation and the rural communities either were unaware of it or chose to ignore it.

Between 1901 and 1937 several pieces of legislation were enacted. The first was the *Careless Use of Fires Act 1901*, substantially revised in 1906, 1912, and 1930. This Act set out mostly those principles relating to use and misuse of fire, and it established punitive measure for those that did not comply. No mechanisms for managing fire were set by this legislation.

The *Local Government Act 1906* was enacted and then completely rewritten in 1919. This Act gave local Councils (the third and lowest tier of Government in Australia from National – State – Municipal) the power to require land owners to modify hazards on their land but such severe restrictions were placed on Councils in achieving this, as to render the power almost ineffective. These restrictions were modified in 1932.

Other and significant effects of the Local Government Act included the ability for Councils to form volunteer bush fire brigades and the powers were extended to Captains of Bush Fire Brigades in the 1932 amendments. These people were provided with authority to act against fires and given protection, or immunity at law, for actions undertaken by them in good faith. At this point in NSW, rural/forest fire management was a joint and very loose collective responsibility of the Forestry Commission, volunteer bush fire brigades, where they existed, and local Government councils.

Although a Royal Commission into bushfires had been implemented in 1927, no action was taken to establish any formal collective of agencies or to coordinate their actions, until 1937, when the Chief Secretary convened a meeting of interested parties to deal with the impending bush fire season. Notes prepared by the Forestry Commission included a striking commentary on the lack of interest by citizens and governing bodies in NSW. Although the first bush fire brigade was formed in 1896, the movement had languished and although local government bodies and other bodies possessed strong individual powers, collective action was seldom taken.

From this it can readily be appreciated that in a situation where the communities within the State were unwilling to embrace the legislation that it was not entirely effective. Legislation is akin to a padlock on a door – the padlock will keep honest people from opening the door and legislation might only be obeyed by those who believe in it and some of those who understand it. But many people may choose to ignore it if there is not a strong implementation mechanism.

A Bush Fires Advisory Committee was established as an outcome from the 1937 meeting. It included members from the Board of Fire Commissioners (structural/urban firefighters) Forestry Commission (forest fire), Police (Public safety, Grazier's Association (agricultural fires), Rangers League and Department of Works and Services. This Committee had no statutory powers, but it was the first time for 150 years that a mechanism existed to bring all the interested and involved parties together in a unified approach.

This committee existed for 12 years. Whilst it made some progress, overall results were disappointing with its most useful focus being on publicity and public education campaigns. Very severe fire seasons occurred in 1939 and 1944/45, during the second World War, following which NSW enacted the historic *Bush Fires Act 1949*, a very strong and sound legislative base for fire management in NSW, that although amended many times, remained in force for 48 years and provided the foundation for the current *Rural Fires Act 1997*.

The Bush Fires Act, for the first time identified and allocated responsibility for fire management in NSW. Importantly, it provided a mechanism for funding and mandated the responsibility for Local and State Government to each contribute 25% to the annual fund and insurance companies to contribute 50%.

Focus on community education, training and publicity

Hitherto, the legislation had dealt primarily with rules about the use of fire, penalties for failing to observe those rules, the powers of local government Councils to establish bush fire brigades, powers and responsibilities attaching to brigade officer positions and hazard management on State government lands held in reserve for future uses. Little attention had been paid to coordination of management practices between agencies and the vital practices of training, publicity and community education.

Amendments in 1970, following a disastrous season in 1968 in which 14 deaths occurred, about 170 houses were destroyed and 2.5 million hectares of forest and grazing land were burnt in eastern NSW. These amendments enabled enormous progress in training, community education, equipment development, assessment of new technology and research and very significantly some robust planning processes.

The planning process, a statutory obligation, required that any organization, including government departments associated with land and fire management could be required to develop plans setting out procedures for coordinating fire suppression and also to implement practical steps to reduce hazards on public lands. A statutory committee (the Bush Fire Coordinating Committee) was established with comprehensive powers to oversee these activities and to also ensure that fire fighting authorities provided adequate training and sufficient equipment.

Cohesive approach

This Act remained in force until 1997 when it was replaced with the *Rural Fires Act 1997*, a completely new piece of legislation although it retained many of the sound provisions from the former Bush Fires Act. The 1997 legislation was enacted following a very severe fire season that saw 4 fatalities, and the loss of 205 houses, as severe fire activity ravaged coastal NSW in late 1993 early 1994. A lengthy and searching Coronial inquiry ensued culminating in recommendations to substantially alter rural fire management by the creation of a Rural Fire Service, a small government department to administer a fire service consisting almost entirely of Volunteer members.

Some of the reforms introduced by the 1997 legislation and strengthened by amendments following a further adverse season in 2001/02 include much greater emphasis on planning and preparation, very positive identification of responsibilities for managing fire hazards and a much stronger role for the fire service in assessing and approving building development in bush fire prone areas.

Currently the NSW Rural Fire Service is arguably the largest cohesive emergency service in the world with common standards of training across the Service, a single command system and adequate and sound equipment. Volunteer numbers are about 69 000 with 500 paid staff. Three other identified fire management authorities exist in NSW and they are Forestry Commission (1000 fire management personnel), National Parks and Wildlife Service (1200 personnel) and New South Wales Fire Brigades (3000 permanent, 3000 casually employed firefighters). Common management systems for fires exist across the four authorities.

Critically, the roles of each of the firefighting authorities with respect to forest and land fires is spelled out in the *Rural Fires Act*, and the coordination provisions for engaging in all fire management activities are at their zenith. The current system is regarded as best practice, but it has required about 100 years to evolve to this position and has necessitated much negotiation and interaction with stakeholders, as well as critical analyses of disaster situations.

The strength and success of the current system relies on several factors:

- The majority of responsibility resides at a local level involving representatives of volunteer brigades, State and Local government and the four fire management authorities,
- Planning is coordinated on a local “district” basis involving people who live and work locally but who are tied to the above agencies,
- Coordination provisions cover all phases of preparation and prevention and are not targeted only at “emergency” suppression activities.

Responsibility

It is evident from even a brief analysis of how legislation developed in NSW that responsibility for fire management must be clearly defined. Whether that responsibility rest with a single agency or with multiple agencies is irrelevant – what is important is that it must be clear to the agencies and to the communities who may be affected, which agency or agencies holds the statutory responsibility to ensure effective fire management is implemented, and the circumstances under which they can or must act.

Prior to the 1970 amendments to the *Bush Fires Act 1949*, many instances occurred where fires were burning in remote and inaccessible lands for some weeks prior to the onset of severe fire weather. Inevitably these fires burnt into developed areas, sometimes causing catastrophic destruction, and tragically, loss of life.

Subsequent investigations revealed that these fires were not considered by any specific agency to be their responsibility. Consequently, no agency took the responsibility for their initial management, little or no management was applied and the consequences were disastrous. Because of the propensity of parts of the NSW community to annually “burn off the bush” these fires were often recognized as “*doing a good job*” and recognition of the potential for such fires to eventually create havoc was not high.

It has probably only been within the last two decades that all sections of the community now appreciate the need to have a clearly defined agency responsible for each and every fire. The legislation now clearly mandates who is responsible to take action against fires

Legislative review

Legislation must be dynamic and open for review on a regular basis. It is critical to effectiveness that legislation is used as a working instrument. Because of the complexities of how legislation may be written, it can be the case that an unintended or overlooked consequence can emerge that places the legislation, and its implementers into a difficult legal position. Thus, necessity for amendment can easily emerge very early in the life of a new piece of legislation.

To avoid situations where almost immediate review is necessary, legislators can remove many anomalous positions from draft legislation by ensuring that there is an effective review and consultation process with key stakeholders. I can’t speak for the globe generally, but in the NSW situation there are approximately 1 000 current Acts of Parliament, most of which have an associated Regulation. That is, there are almost 2 000 separate pieces of current legislation. Without a detailed and comprehensive knowledge of all the legislation it is very easy to prepare a draft amendment that may be in conflict with other legislation, hence involvement of all of the stakeholders who possess an interest in specific legislation is a key method of identifying potential conflicts.

In the NSW situation, the methodology to develop new or amended legislation centers around a drafting instruction to the Parliamentary Counsel that sets out what the new legislation or amendments aims to achieve, and for example, the scope and nature of statutory powers to be provided to identified classes of people. The bureaucrats or the Minister responsible do not draft the legislation, although they will have a major role in determining the direction that it should take.

On each occasion where a serious fire season occurs there will be a series of formal analyses undertaken. Such analyses include those undertaken by the fire management authorities and major public inquiries, such as Coronial inquiries or Parliamentary inquiries. These analyses can identify where legislation requires alteration or strengthening. Importantly, communities must have opportunity for input to these inquiries, irrespective of their nature to ensure that valid concerns of the wider community are considered.

Education

Legislation allows the government of the day to transact its business in the manner and method of its choice. It is vital that if the intent of the legislation is to cause people or communities to behave in a certain manner or to provide powers and responsibilities to individuals, then the parties caught by the legislation need to be aware of the potential impact upon them.

This is particularly the case with fire legislation where many activities are prescribed and the prescription sets out clearly those things that landholders, users of fire and other people are permitted to do and the circumstances under which that permission is, or is not, valid. Equally important are the powers and statutory obligations of agencies with a mandate to practice sound fire management.

It is naturally very important, if there has been a significant change in obligations imposed by legislation, or if there have been new obligations introduced, to ensure that the targets of those changes very clearly understand what the changes entail.

As a follow on to the consultation process used to develop legislation is an information and education process. How this is implemented depends on the culture and social fabric of the affected communities and must be tailored to fit their social needs and communications mechanisms. The important issue is to clearly advise affected people of any new constraints or changes.

Consolidated Legislation

It is my view that for matters touching on fire management, or indeed for any emergency management role, the legislation ought to be consolidated. There can be a strong temptation to give local government administrations, forestry and conservation organisations, and emergency management agencies, different sets of legislation to manage the same issue. This can be fraught with danger as it can allow competing interests to prevail to the detriment of community good and in certain cases it can promote a “laissez-faire” attitude because “nobody” is responsible.

There can be little doubt that some of the more notable fire disasters in south east Australia arose because many fires were permitted to burn unchecked in the lead up to that which was obviously likely to be a severe fire season or seasons. The reason? Because no agency or organization had been specifically charged with the responsibility for fire management and fires were burning on “no-man’s land”. A situation like that cannot now prevail in NSW and the lead fire legislation identifies a person or authority with responsibility for any class of fire that occurs anywhere in NSW at any time.

Across the world, development of forest and rural fire management, as opposed to urban and structural fire management has almost always been led by forestry agencies. It is no secret that in the United States, Canada and Australia that much of the early work in developing equipment, fire prediction systems, early warning systems, organized detection, formal fire prevention activities, and in some cases organization of community firefighting groups occurred with significant inputs from forest services. Outside of those countries there is also a significant input from forestry agencies.

This was because the forestry services have a long-term interest in the future of the forest estate. Their planning horizons are measured in decades rather than months or years, and for a long time, forestry was one of the few disciplines in which people could undertake formal training in fire science. So not only were they interested in forest fire management, they were equipped better than most to really understand fire, so they developed skills in both controlling and using fire.

This in no way reflects upon the anthropogenic use of fire that is practiced, and has been for millennia, around the globe. Communities still exist in many countries where understanding and use of fire is a vital part of their existence. In some instances, latter day fire managers have drawn on the customs and skills from such communities to advance the knowledge and understanding of fire.

As rural and forest fire management abilities developed so too did agencies with responsibilities other than forestry. In the NSW context, the Forestry Commission was established in 1916 and was given a charter that required it to manage the forest estate on behalf of the people and communities in NSW. It was able to influence the direction in which fire management headed but at no stage sought to be the lead agency.

In a similar vein and in accord with a general global elevation of an interest in conservation, the NSW conservation agency, National Parks and Wildlife Service was established in 1968 and now operates under the *National Parks and Wildlife Act 1974*. Neither forestry nor national parks agencies enjoy specific fire legislation. They each operate under legislation that provides them with the necessary charters to manage their estates but their respective legislation is relatively silent on fire matters. Each agency is clearly mandated to manage and protect its estate but the obligations, powers and responsibilities afforded to each agency with respect to fire, reside within the *Rural Fires Act 1997*.

In this manner the Government, the community and the fire management authorities all understand precisely where powers and responsibilities begin and end.

Thailand is suitable case study on the question of consolidated legislation. There was no specific legislation (as at February 2001) dealing exclusively with forest and rural fire management in Thailand. Individual land management acts contain sections dealing with forest fire use. According to Siri Akaakara, 2000, in "Forest Fire Control in Thailand", current fire management legislation is found in the following:

- Forest Act 1941, section 54
- Wildlife Conservation and Protection Act 1960, section 24
- National Park Act 1961, section 16(1)
- National Forest Act 1964, section 14

I have found similar situations in Croatia and Bulgaria and both of those countries are now reviewing the fire management legislation with a view to consolidation into a single set of fire laws.

International harmony

Legislation must match the social financial and political structure of the country in which it is to take effect. It may be important to recognize customary law and tradition that can have significant cultural or religious significance. Non observance of tradition in some cultures can lead to an almost complete rejection of “formal” laws.

It is unlikely that effective legislation can be implemented by the simple expedient of copying legislation from another jurisdiction. Financial positions or constraints, cultural issues and even the basic objectives may be vastly different. There is no problem in analyzing legislation from a neighboring country to understand what its objectives are and to attempt to achieve a degree of harmonization. Where cross border cooperation in fire management is practiced, harmony in fire related legislation could be of great value in providing or seeking assistance from neighboring countries.

Australia does not harmonize its fire legislation with other countries, as its closest neighbor is 160 kilometers over sea and there are no cross border fire issues. Unlike Australia, there are many countries on the same continent where there is value in harmonizing legislation. A good example is the European Union (EU). Countries seeking accession to the EU are required to harmonize certain legislation with the EU model, as a precursor to gaining admission.

Croatia is a small country on the Adriatic Sea. It has commenced EU accession processes. Legislation between agencies was not harmonized and a fire management working group recognized this as a major barrier. After the first analysis it was concluded that it was not desirable at that point to remove individual sectoral laws but that essential changes could be achieved through a new fire law. The group determined that establishment of procedures and rules of behavior were not clear, no adequate system for responsibilities in tracking finance was evident and if each institution involved in rural fire management operated under individual its sectoral laws, then a lack of coordination existed.

Therefore the group attempted to achieve harmony between institutions and proposed a new law on prevention and control to replace the 1999 law. (*Law on Fire Suppression (1999)*).

Realistic legislation

If legislation is to be effective it must be realistic and it must be implementable. The intent and objectives of the legislation must be able to be serviced by some form of inspectorial, audit or compliance process. I have worked in several countries where I have been engaged on fire management missions and a typical scenario that arises is the question of prohibitions on the deliberate use of fire for a specified period each year.

Very often I find that fire use by farmers and agriculturalists, graziers and forest workers is prevalent through the declared fire season, when technically fire use is prohibited. This is clearly evident – sometimes the fires are still burning in the middle of the prohibition season. On questioning about the policy on use of fire I am often told: “*There is a total prohibition on the use of fire between say, 1 June and 30 September each year*”. Fire is clearly being used and when further questioned it is revealed that either there are no resources to implement and police the legislation or that the fires “*are only small fires*” or that nobody cares. Under those circumstances I seriously question the value of the legislation because everybody ignores it, including those with the vested authority to implement and uphold it.

I ask you to take a moment and reflect on the position with legislation and deliberate use of fire in your locality. Is it similar to that which I have described above or do the authorities and communities take it seriously?

Formulating new legislation

There are some basic steps that need to be followed in developing new legislation or remodeling existing legislation. I offer the following comments from the perspective of a practical person who seeks legislation that works efficiently, and not from the perspective of a legal person whose responsibility it is to draft new laws.

I believe firmly in the proposition that those who want the legislation – effectively the Government or its agents – must carefully analyze what the intent of the legislation is before commencing to draft it. Sometimes it is useful to undertake that exercise before existing legislation is considered as a possible model, or whether parts of existing legislation are to be retained in the new legislation. In effect, the developers of the legislation should start with a clean sheet of paper.

Following analysis of what is trying to be achieved, a basic framework can be developed and if a logical and systematic process, with adequate consultation is implemented, a sound basis for effective legislation should emerge. I would counsel strongly against “borrowing” legislation in toto from another country. There is no reason why sound components from other legislation cannot be used, but I believe the rigor in carefully analyzing what the real objectives of new legislation are, will automatically build in existing social, cultural and financial constraints and mores that may exist, and which may be quite different to somewhere else.

I hesitate to say what individual countries or agencies should include in their legislation, but I offer the following observations as potential starting points. They are neither mandatory nor exclusive, and each individual case deserves its own separate analysis.

Determine the objectives of the legislation. This is the real starting point and you must understand very clearly what it is that you want the legislation to achieve.

Define responsibility and enunciate who is responsible for various actions and what their obligations are.

Determine the people or positions to hold authority or powers to take action and define the circumstances in which they can exercise their powers.

Coordination provisions may be necessary if multiple agencies have responsibilities for fire management, public safety and asset protection.

Define critical elements of fire management – e.g. prevention, preparedness, community education, suppression, and recovery – and determine the provisions that will apply. Be careful not to focus only on suppression, the other elements are equally important.

Obligations on land management agencies and private land-holders with respect to use and control of fire need to be defined

Interstate and/or International provisions should be considered if it is likely that cross border fire management activities would occur.

Penalties for failure to comply with legislation.

Realism in ability to effectively achieve the provisions of the legislation is essential. Unless the fire management system can effectively implement the legislation, or is capable of upgrade, seriously question the intent and provisions of the proposed legislation.

Funding is a critical element for success. If it is possible to do so, the basis for funding rural/forest fire management can be included in the legislation.

In concluding there are two issues that I want to really emphasize:

- Legislation is only one of the tools, albeit an important tool, available to agencies charged with responsibility for fire management. Without sound legislation, exercise of fire management may be legally suspect and can expose the people and agencies undertaking action. Legislation will not necessarily change the nature of that which is done, or ought to be done, but it does provide a legal foundation that enables the people charged with responsibility to take action, to do so with confidence.
- Fire oriented legislation needs to focus on a much wider field than suppression and/or penalties for improper observance of fire laws.

Too often, fire management is simply regarded as “*fire fighting*” and legislation as a “*mechanism to impose penalties because somebody broke the law.*” Both topics are much broader and demand a full and thorough understanding of their wider meaning.

1. CAMBODIA

Mr. Sar Rao (*Forest Engineering Office, DFW*)
“Forest Fire Management of Cambodia”

A. Introduction

A.1 Location and climate

Cambodia is one of tropical countries, it is in continental South-East Asia, lies between latitudes 10° and 15° North and longitudes 102° and 108° East with a total area of 181 248 km² sharing borders with Thailand, Laos, and Vietnam. The country consists of 21 provinces, 2 towns (Keb and Sihanoukville) and the Capital City (Phnom Penh).

The population in 1998 was estimated at 11,5 millions with annual growth rate of about 2,8 %. The settlement of the population is concentrated to the central plain. The population of this area is about 318 per square kilometre. The coast region has density of about 60 per square kilometre and the upland regions are decreased as low as 1 per square kilometre. Furthermore, 85 % of the Cambodian people are rural farmers who depend on agriculture and forest and non-wood forest products for their subsistence.

The climate of this country is classified as humid tropical with alternating distinct wet and dry seasons most pronounced in the central plains. It's greatly influenced by monsoon circulating system and topography. There are two well-defined seasons, namely: the rainy and dry seasons. Rainfall in the southwest is from May to October followed by the dry period from November to April. The average annual rainfall ranges from 1000-2500 mm across the country. Annual temperature ranges from 25°C in late December to 29°C in early May, with humidity ranging from 65-70 % in early part of the year rising to 85-90 % in August and September

A.2 Forest background

The forests are a natural source of wealth in terms of a growing and dynamic forest asset. The asset must be managed wisely to provide for the next and future generations of Cambodians. Managed wisely it can continue to supply the needs of the people at a local level and the needs of government in terms of income for rehabilitation and development.

In the decade of 1960, forests cover was approximately 13.2 million hectares, about 73 % of Cambodia's total land area. It makes up a major part of the natural resource base. The importance of sustainable management of these forests has been the subject of much discussion recently, while most other countries in the region lost a large part of their productive forests.

Up until 1970, the forests of Cambodia were managed in a way that caused little impact to the overall forest ecosystem. The country was divided into a system of forest reserves with management designed to be conservatively sustainable. There was a fledgling timber industry developed and strong institutional controls by way of a District Forester and District System.

The outbreak of fighting in 1970 shut down the possibility of industry development, closed down the local industry and prevented access to the forests. During the next twenty years the forests only provided fuel and building timber for local community use. Shifting cultivation in the northeast forests had some impact on the forests but the impact was minimal.

However, as the country emerged from the tragic political experiment and unstable political conditions of the 1970's and 80's, logging proliferated in the country,

demand for Cambodian timber increased, and extraction rapidly reached unsustainable levels. This increase in timber production has also exceeded the capacity, both physical and institutional, of forest management to regulate production and maintain sustainability of forest resources.

A.3 Current resource base

The forest cover consists of both closed forests such as: *evergreen closed, evergreen disturbed, evergreen mosaic, semi-evergreen closed, semi-evergreen disturbed, semi-evergreen mosaic, deciduous, deciduous mosaic, regrowth, swamp regrowth, swamp, mangrove, bamboo, swamp mosaic* and opened forests such as: *shrub land evergreen, plantation, shrub land dry deciduous, scattered trees on swamps*.

Areas of forest cover remaining in Cambodia have been estimated by various organizations over recent year and these estimates vary significantly. Based on the inventory data implemented by IREF before the year of 1970 under the help of USAID, the forest cover was 13.227.100 ha or 73 % of the total land area.

The trend however is quite clear. The statistics reveal a rapid depletion in the resource with the percentage of land area with forest cover now estimated to be as low as 58 % of the total land area that actual forest data consist of 10.535.763 ha (Source of GIS Unit, DFW through interpretation using Satellite Image, 1996-97).

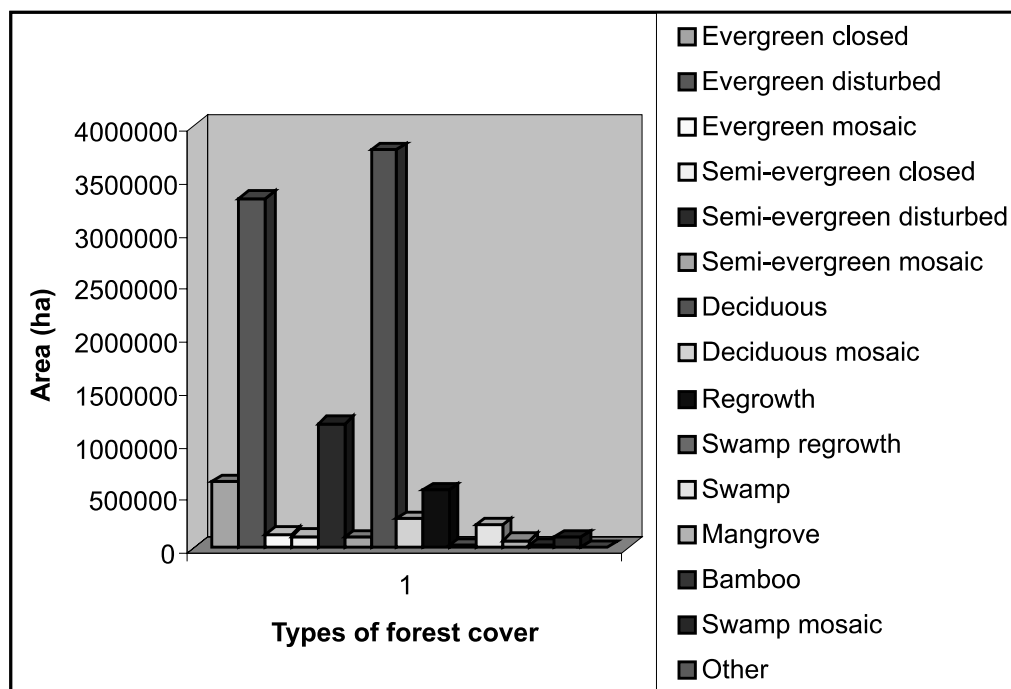
Table 1: Statistical database of the forest cover in Cambodia, 1996-97

N°	Forest types	Code	Area (ha)	Percentage
I. FOREST				
1	Evergreen closed	11	634.869,04	3,50
2	Evergreen disturbed	12	3.323.527,58	18,34
3	Evergreen mosaic	13	135.632,80	0,75
4	Semi-evergreen closed	17	111.842,98	0,62
5	Semi-evergreen disturbed	18	1.184.689,31	6,54
6	Semi-evergreen mosaic	19	97.905,10	0,54
7	Deciduous	20	3.777.678,00	20,84
8	Deciduous mosaic	22	274.552,92	1,51
9	Regrowth	40	544.777,80	3,01
10	Swamp regrowth	41	23.590,91	0,13
11	Swamp	52	222.149,55	1,23
12	Mangrove	53	77.259,59	0,43
13	Bamboo	63	21.822,99	0,12
14	Swamp mosaic	56	105.464,94	0,58
15	Other	55	0	0
Total forest		-	10.535.763,51	58,13

II. NON-FOREST				
1	Wood-/Shrubland evergreen	61	749.049,13	4,13
2	Grassland	62	492.808,12	2,72
3	Plantation	54	73.467,60	0,40
4	Wood-/Shrubland dry deciduous	64	1.480.042,40	8,17
5	Scattered tree of swamp	65	353.830,83	1,95
6	Mosaic of cropping area < 30 %	81	191.316,48	1,06
7	Mosaic of cropping area > 30 %	82	71.246,31	0,39
8	Agricultural land	91	3.589.740,96	19,81
9	Barren land	92	14.985,26	0,08
10	Rock	93	0	0
11	Urban/Built-over area	94	33.928,55	0,19
12	Water	95	446.315,98	2,46
13	Wetland	97	89.080,37	0,49
14	Clouds	99	1.496,94	0,01
15	Other	96	1.756,40	0,01
Total non-forest		-	7.589.065,33	41,87
TOTAL			18.124.828,84	100,00

Source: GIS & RS Unit, DFW

Figure 1: Forest cover of Cambodia



B. Deforestation, progress and cause

Since the early 1970s, Cambodia was into civil war and unrest. This state of war has greatly reduced and cut off our forest activities. The forests of Cambodia have been and are being transformed to other land use, and in many parts of the remaining forests have been disturbed causing more reduction in the extent of these resources.

The main causes of forest degradation are increased population, the expansion of agricultural lands, increased fuel-wood and construction wood demands, clearings for shifting cultivation and failure in forest policy. Moreover, the main constrains in the management and implementations of forestry sector are poverty. Illegal forest land occupation, uncertainty in the management and utilization of forest lands, overall weakness in rural development, large area forest land grabbing for commercial purposes, forest clearings for land ownership and an organized collusion in illegal logging, especially the removal of timbers in excess of forest resource capacity.

Between 1970 and 1997, forest cover was removed about 2 million hectares and there is no precise data on how much this cover remains at present. Analysis of changes in land use data from 1992/93 to 1996/97 reveals that deforestation has been occurring at an accelerating rate. According to report of MRC/GTZ and GIS and RS Unit of DFW showed that Cambodian land use has accelerated in the last twenty years. Land use data is summarized in Table 2 below.

Table 2: Forestland cover change in hectares between 1970-1997

Land use	1970	1992/93	1996/97	Change	Annual change, % (From 93 to 97)
Forest Areas:					
- Dry Land Forest	12.449.900	10.464.774	10.263.797	-200.977	-0,48
- Edaphic Forest	777.200	427.145	408.142	-19.003	-1,11
Sub-Total Forest	13. 22 7.1 00 (73%)	10.891.919 (60%)	10.671.939 (58%)	-219.980	-0,50
Total Non-Forest		7.261.066	7.481.046	+219.980	+0,50
Total Area	18.103.500	18.152.985	18.152.985	-	

Source: GIS & RS Unit, DFW

C. Establishment of Forest Fire Unit

The Forest Fire Unit (FFU) was established in the year of 2000 (Figure 2). It is one of the Units under organization of Forest Engineering Office, DFW and nowadays, it plays an important role for general prevention and suppression of forest fire in the whole forest area of the country. Furthermore, this Unit can have another functioning to look for financial supports and the project involved to the development of its sector, especially, in the aspects of researching or studying the fire behavior and fire danger rating.

D. Forest fire behavior

Fire is rarely occurred in almost all kinds of the forest cover of Cambodia through natural causes and not considered as a serious threat, but fire management, prevention and suppression are still quite important.

According to the investigation and activities in the field, the forest fire can become a threat if the level of degradation continues at a current rate creating favourable conditions for large-scale fire. Generally, fire may occur in such types of forest cover as: deciduous, bamboo, pine forest, hard wood natural forest and also in plantations during the dry season. Most of the species that constitute the deciduous forest shed their foliage almost 100 % while the dry season was coming from December to August, building up the heavy inflammable fuel load on the ground. In addition, the leaf shed from canopy opens the ground surface to a greater sun exposure leading to condition conducive for a high degree of fire hazard.

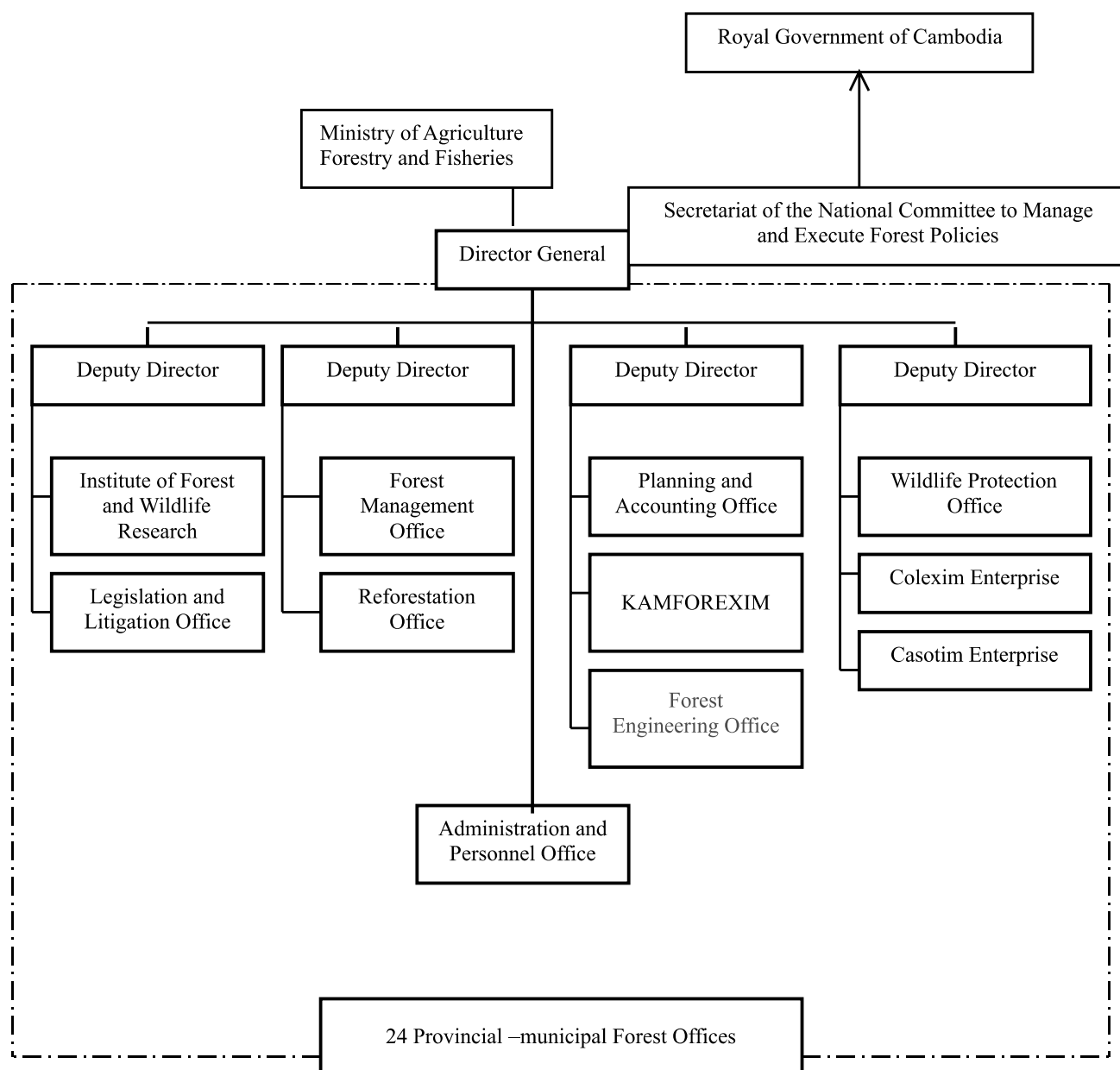
E. Root causes of fire

There are many root causes of fire, mostly, can be attributed to the local people related to the customs and traditions and also the activities of the concessions. These can be summarized as follows:

- Fire spreading from shifting cultivation that is widely practiced and it is still on a large-scale in Cambodia, especially by the hill tribe people,
- Setting of fire in the grass growth to clean the oxcart roads and footpaths to the forest,
- Setting of fire before rains coming in open lands close to the forests to promote grass growth (pasture) with the rains for feeding cattle,
- Setting of fire underneath Dipterocarp tree for the purpose to obtain higher yield of resin from the tree,
- Setting of fire to trap or poaching wildlife or chase away bees to collect honey,
- Setting of fire from throwing cigarette light butt or other fire along the roads and boundaries of forest or in the forest,
- Careless of workers during start chainsaws and other machinery can increase fire risk, and
- Careless of people in cooking and have not extinguished before leaving from the forest.

Figure 2: Structure of Department of Forestry and Wildlife

Organization Chart of Department of Forestry and Wildlife (January, 2001)



F. Fire prevention activities

The prevention of forest fire is very important task for DFW every year. The measures to prevent the fire are taken as follows:

- Each provincial authority has to form a commission against forest fire in dry season every year. The members of this commission are included people from district, village and forestry sectors,
- Collaboration and active involvement with local communities and private sectors because both sectors, especially local communities who live near or in the forest play an important role in fire prevention and suppression and then also report to the nearest forestry and local authorities,
- Government officials such as: police, armed forces, students, monks have to obligate to assist the forestry authority in the fire prevention and suppression,
- Strengthen and upgrade the forest law and regulations corresponding to fire management,
- Public announcement using poster in language and graphic or photographs. In addition, the information and education in forest fire should be publish to the public through media programs (television, radio, newspaper...etc),
- Provide the forest fire prevention educational program to communities, villagers, schools and universities,
- Identify the forest area which could be fire,
- Construct the fire lines against forest fire surrounding the area which could be fire,
- Promote the active participation of the concessionaires, sub-contractors local communities to be based on their abilities which could be enhanced through training in fire management and on providing the appropriate equipment and incentives whenever feasible,
- Rewards and incentives to reporter of forest fire and effort in forest fire suppression.

G. Law aspects

Any prohibitions of forest fire prevention are set within New Forestry Law on Article-36 and Article-37 below:

Article-36:

- A. It is prohibited to set fires in the Permanent Forest Estate, except by the Forest Administration to benefit silviculture or forest maintenance.
- B. Ministry of Agriculture, Forestry and Fisheries shall issue Declaration on guidelines to determine sectors of forest fire control, forest fire prevention and creation of Forest Fire-Fighters Committees in forest areas.
- C. People, armed forces and authorities of all levels shall be jointly responsible for forest maintenance and protection, fire prevention and fighting against fires.

Article-37:

- A. For those communities that traditionally practice slash and burn agriculture, such practice shall be permitted to continue on community land having been registered with the State and in other areas where the division level of the Forestry Administration authorizes the activity as part of a community forest management plan. Unless otherwise stated in this law, all other slash and burn practices are prohibited in natural intact forest in the Permanent Forest Reserves.
- B. Forest reserved for slash and burn practice shall be identified by Sub-decree.

The legal penalties will be practiced with an individual who has failed in both Articles as mentioned on Article-97 of the New Forestry Law. It is indicated in summary of two main points of mistake: clear forest land and enclose it to claim ownership by illegal means and set forest fire intentionally. The punishment is identified under Class-I of forest offence that will be subject to 5-10 years in prison.

H. Conclusion

The forest and wild land fires in Cambodia are not mentioned as a serious threat to the forest area, but it sometimes occurs and damages many hectares of the forest. Due to the lack of expertise, financial supports and equipment to assist on the fire prevention and suppression activities, it is leading to a simple way for its performance. In fact, there are some fire patterns can be avoided through enhancement of awareness of the indigenous people and its participation and involvement or community-based development.

According to the above-mentioned, we expect that the Workshop on Framework for “Best Practice” in Fire Related Law and Regulations being organized by Forest Protection Department of Ministry of Agriculture and Rural Department, Vietnam on 02-03 June 2003 will provide us a real opportunity for further understanding about fire behavior and new innovative method to prevent or suppress fire as well. It can also be shared the experience to each other on fire management, law enforcement and research methodologies of other countries, and we will be able to meet the point how to improve the forest fire prevention and suppression activities in Cambodia successfully.

2. LAO PDR

Mr. Khamphone Rasachack (*Planning Division, Department of Forestry, Lao PDR*)

“General Information of Forest Fire in Lao People’s Democratic Republic”

A. General information of Lao PDR

The Lao People’s Democratic Republic is located in the centre of south East Asia, Sharing borders with China to the north, Myanmar to the north West, Thailand to the West, Cambodia to the South and Vietnam to the East.

With an area of 236.800 square kilometers, around 70% of its terrain is mountainous, with a maximum elevation of 2.820 meters at Phou Bia in Xieng Khouang Province. The landscapes of northern Lao PDR and the regions adjacent to Vietnam in particular are dominated by hills. The Mekong River is the main geographical feathur in the West and, in fact, forms a natural border with Thailand in most areas.

The Mekong River flows through nearly 1.900 kilometers of Lao territory and shapes much of the lifestyle of the people of Laos. Time in Lao People’s Democratic Republic is 7 hours ahead of Greenwich Mean Time (GMT*7).

Lao enjoys a tropical climate with two distinct seasons the rainy season from the beginning of May to the end of September and the dry season from October though to April. The yearly average temperature is about 28°C, rising to a maximum of 38°C in April and May. In Vientiane minimum temperatures of 19°C are to be expected in January. In mountainous areas, however, temperatures drop to 14°C—15°C during the dry months, and in cold nights easily reach the freezing point.

The average precipitation is highest in southern Laos, where the Anamite—mountains receive over 3.000 milimeters annually. In Vientiane rainfall is about 1.500—2.000 milimeters, and in the northern provinces only 1.000—1.500 milimeters.

Lao People’s Democratic Republic has great potential of natural resources which serves as a strong base for development and is also emerging as a centre of economic corridor linking sub-regional economies.

Forests account about 47% of the country territory. Forest resources serve as an important source of food for the rural people and provide significant income for local people. The extent of agricultural land is also important, especially in the lowlands, which form about 20% of the country.

Hydropower is considered as the other main source of export earnings. During the past five years, Lao People’s Democratic Republic has achieved average economic growth of about 6% annum and reduced the incidence of poverty from 45% to 38.6%.

The country is administratively divided in to 18 provinces including one municipality (the Capital City being Vientiane) and one special zone, and subdivided into 142 districts with 10.873 villages, 865.535 households and 5.377.000 people.

The population consists of 47 ethnic groups, grouped into three main cultural groups are as follows:

- Lao Loum;
- Lao Theung; and
- Lao Soung.

About seventeen percent of the population lives in the urban areas.

Agriculture and Forestry is the backbone of the Lao economy, accounting for about 50% of the country's GDP and provides about 85% to 90% of total employment. Agriculture production is still at subsistence level to a large extent, especially in the remote upland areas.

Rice remains the most important staple food. Major cash crops are: maize, beans, coffee, tobacco and vegetables, Livestock, especially cattle, indigenous fishes and non timber forest products such as benzoin, cardamom, rattan and resins provide significant income earnings to the country.

As part of the reform process launched under the umbrella of the New Economic Mechanism (NEM) in 1986, the Lao People's Democratic Republic has advanced significantly in strengthening its international and regional relations.

The Lao People's Democratic Republic is now a member of many regional and international organizations, including the Mekong River Commission (MRC) and, since July 1997, a member of the Association of South East Asian Nation (ASEAN). The Lao People's Democratic Republic has applied for World Trade Organization (WTO) membership.

B. Forest area and forest type

Lao PDR is a country with rich forests and biodiversity resources, including wild terrestrial and aquatic animals. It has a forest cover of about 11,200,000 ha, equivalent to 47% of the country, which can be divided into regions as follows:

sl.No	By region	Total land area (ha)	Forest area (ha)	Percentage
01	Northern	9.821.000	3.563.000	36
02	Central	7.229.000	3.739.000	52
03	Southern	6.630.000	3.800.000	57
Total		23.680.000	11.162.000	47

And divided into forest types as follows:

- Dense forest: 3,436,000 ha, or 30.5%
- Mixed forest: 5,685,000 ha, or 50.4%
- Deciduous forest: 1,933,000 ha, or 17.1%
- Pine forest: 209,000 ha, or 1.9%
- Teak forest: 10,000 ha, or 0.1%

C. National forest and forest land ownership

National forest and forestland is the property of the national community. The state represents the national community in the management and allocation of forestland for rational use by individuals and organizations. Individuals and organizations only acquire tenure rights to trees, natural forest and forestland when they receive the authority of responsible agencies.

Trees and forest planted or regenerated by individuals or organizations using their own labour or capital and with the recognition of the state, become the property of the

planter or regenerator. The planter or regenerator then assumes the rights of possession, use, transfer and inheritance in accordance with regulations and laws. (Forest law, article 5).

D. General information of forest fire and/or deforestation

Some of the main causes of forest loss and degradation in Lao PDR are shifting cultivation, commercial logging, encroachment by farmers into upland forest areas, rural use of forest and uncontrolled fires. Shifting cultivation clearance, on which some 253,000 families depend (1.5 million people, based on the 1985 census), is affecting an estimated of 300,000 ha per annum, and a further 100,000 ha are affected by fires annually (TFAP 1990). In 1990, the number of shifting cultivators increased to 277,000 families (Phanthanousy, 94); the number reduced to 187,000 families (30% of the population) in the mid 1990s with an estimated area cleared of 177,000 ha annually (Kingsada, 1998). In 1996, it was reported that the area under shifting cultivation was 176,000 ha, which is a 10% reduction compared to the 1991 level (DoF, 1997). Shifting cultivation in Lao PDR is believed to cause serious degradation to the land and the environment and has been a matter of concern for a long time. Since the 1980s, the stabilisation of shifting cultivation has been a major policy focus of the government, but it is a complex issue and must be considered in association with integrated rural development of the uplands (Sawathvong, 1998). Currently, a major programme in the Department of Forestry aims to find ways to stabilise shifting cultivation.

E. Causes of forest fires may be of the following types:

Intentional:

Over 50 percent of the fires are caused intentionally by man. These may occur due to the following reasons:

- The forest floor is often burnt by villagers to get a good growth of grass in the following reason or for a good growth of mushrooms;
- Wild grass or undergrowth is burnt to search for animals;
- Also that wild animals may stay away from the villages.

Unintentional:

These fires are caused due to man's carelessness i.e. without intention to set fire. Such fires may be due to the following reasons:

- Unextinguished camp fires of poacher, trekkers and or labourer;
- Careless throwing of fires after honey collection;
- Unextinguished bidis, cigarette butts, matchsticks atc. by graziers, travellers, picnickers or even forest labourers;
- Burning of agriculture fields adjacent to forested areas. Such fires is left unattended may spread to forest areas.

F. Forest fire conserving measures

Lao PDR still has one of the highest proportions of relatively intact forest in Asia. However, rapid degradation has occurred since the 1970's, with forest cover declining from approximately 70% of the land area to about 47% today (NOFIP.1993). Depletion of forest resources has resulted from shifting cultivation, conversion for permanent agriculture, commercial logging, hydroelectricity projects and forest fires.

After the country has had an independent since 1975 the Government of Lao has plaid attention to conserve and protect the natural resources and biodiversity that is

the property of the national community. In connection to the above mention in 1996 the Government of Lao had promulgated and implemented the forestry law.

Based on the forestry law 1996 (article 45) The Prevention and Control of forest fire is the responsibility of all people. Forest management agencies and local administrative authorities have the duties of educating people about the serious danger of forest fire and working out necessary rules and measures to prevent forest fire.

In case of forest fire local administrative authorities and forest management agencies must lead efforts to fight the fire by bringing together vehicles, material, equipment and labour from all available sources. After the fire is extinguished, vehicles, material and equipment must be returned to its owners and/or appropriate compensation given for any damage incurred.

Individuals and organisations, including the armed forces, must give their full and prompt co-operation to the local administrative authority in fire fighting. The implementation of staff and concerned forests unit of central and local administration of protection of forest fires in Lao PDR based on the notices of the Ministry of Agriculture and Forestry that are issued to advise, monitor and protect the forest fires around the country .

G. Strategy vision of forest for the year 2020

The Government of Lao PDR recognizes the necessity of the Forest Strategy for the year 2020 formulation as follows:

1. Forest and forest products in Lao PDR play very important roles in its socio-economy development, especially the well being of local farmers and environment stability. Lao PDR's socio-economy is undergoing rapid development and its forest resource base including wildlife has been rapidly deteriorated. It is essential to review the forestry sector within the economy and social development goals and framework in order to classify its roles and contribution to poverty alleviation and economic development for the benefit of the poor.
2. Government of Lao PDR has taken various actions including legislation and programme in collaboration with the international community for sound development of the forestry sector and resource conservation in the last ten years after the first National Forest Conference in 1989 and adoption of National Forestry Action Plan in 1991. Recognizing the changing roles of the forestry sector, it is necessary to formulate a comprehensive set of policy, strategies and actions based on the analysis of current situation of the sector and the assessment of the achievements and impacts of past or ongoing policy, programmes and projects.

The Government has set a target to stabilise shifting cultivation in the country by finding alternative occupations for 100,000 families by the year 2000, while the remaining families will be offered alternatives by the year 2020 (Kingsada, 1998). Among the permanent occupations proposed in this regard are:

- | | |
|---------------------------------------|------------------|
| ➤ Sedentary paddy farming | 15,000 families; |
| ➤ Livestock-fishery occupation | 20,000 families; |
| ➤ Tree planting as an occupation | 30,000 families; |
| ➤ Growing short duration crops | 23,600 families; |
| ➤ Practising permanent upland farming | 11,400 families. |
- Land and forest allocation will be completed in all of the target villages;
 - Most of the forest areas will be classified;

- Most of the national protected areas and production forest will be under long term management planned;
- Tree plantation forest will be established up to 500.000 ha to increase the forest cover as 70 %; and
- Most of wood export will be in the form of finished and or semi finished product.

H. Conclusion

- The Government of Lao has had plaid attention to conserve and protect natural resources and biodiversity that is the property of national community, by means of promulgated of forestry law, declared of decrees and a yearly make announcement for forest fire prevention and control;
- Eventhough the government try hear to play more attention to conserve and protect natural resources and biodiversity, but it seem to be diffculted to stop the destruction of forest resource and biodiversity from the shifting cultivation as well as a forest fire. Therefore, Lao PDR is still being lead develop country, almost of national community occupation are agriculturist, lack of resources and fund. On the other hand the law enforcement is not effective;
- Although forest fire is not the serious problem like other countries in this region. However, this issue should be considered and play attention; and
- To manage and implementation of forest fire prevention and control in effective manner it need some more fund, resources and the cooperation with neighbour countries.

Forest Fire prevention The case of Sayaboury Province

Introduction

From 1998 CESVI, an Italian NGO already working in Lao PDR, was involved in the problems of uncontrolled fires derived from slash and burn cultivation in Sayaboury province. CESVI developed a project in two phases, and is now settling the third. To decrease uncontrolled forest fire and reduce risks for the local communities and environment was the starting goal of CESVI activities, which were mainly focused to increase among the local communities the risk perception of the uncontrolled forest fires and to build a disaster response capacity at political and community level. CESVI worked mainly on capacity building, training and public awareness campaign. With the second phase the project staff investigated them more deeply, becoming involved in the international debate about forest fires. It became evident that the problem of forest fires is not only a technical problem due to the lack of skills of farmers that do not know how to use fire as an agricultural tool. Instead, socio-economic issues complicate it. One of the most important consideration that could be done up to this point is that local communities can not live without using fire, at least at the present moment when their livelihoods are firmly based on upland rice farming and collection of Non timber forest products (NTFPs), that are activities where fire is used as a tool. When appropriately used and controlled fire can also have a positive impact on forest ecology.

In 1998 adverse climatic conditions and the El Nino phenomenon in 1997 to 1998 created very dry conditions in various locations in South East Asia, including Lao PDR. In mountainous Laos many farmers practice upland rice cultivation with a technique that has been described in simplified and contested terms as rotational agriculture, swidden cultivation, or slash and burn.

Simplifying a lot this technique involves the selection of a mountainous plot where the farmers cut the wooden vegetation and burn it to create ashes. When the rain starts the ashes penetrate the soil making it fertile and good for upland rice farming. The people of around the world have been practising this technique for centuries, with various results. Recently concerns for its effects on the environment, of these practices and its longer-term effects on the socio-economical and environmental conditions of upland communities.

Given the importance of forests for the livelihoods of local people and the economy of Lao PDR, the Government of Lao PDR designed and implemented new policies aiming at limiting the number and impact of forest fires, initially setting a goal of “Ending shifting cultivation in the year 2005”. A population was invited to abandon slash and burn cultivation, both because of the enormous damage that uncontrolled fires can cause to the forest which still represent in most of the country the primary source of food and material, and also because they were convinced of the benefit of practising a paddy field rice cultivation that is more profitable and less destructive for the forest.

Among the different province of Lao PDR the North western province of Sayaboury was one of the strongly affected by wide uncontrolled fires that spread out over forestland during the dry season of 1998. This prompted the provincial government of Sayaboury to ask for collaboration from CESVI, which was working in that area.

Project Rational and Objectives, and Planned and Activities

Phase I:

Long-term Objective:

To decrease uncontrolled forest fires and reduce risks for the local communities and environment.

The immediate Objectives:

- To increase among the local communities the risk perception of the uncontrolled forest fire;
- To build a disaster response capacity at political and community level.

Unless the project is articulated in three main fields of intervention as follows:

- Capacity building of local government official (mainly concentrated on Provincial and District Agriculture and Forestry Officers);
- Training of farmers and set up of fire volunteer groups and committees;
- Public awareness campaign.

For the purpose of organizing the study tour and training activities in the best possible manner. CESVI did contact various organization and potential partners for the implementation of this activity, namely the GTZ Forest Fire project in Indonesia, the Asian Disaster preparedness Centre and the Forest Fire Control Division (FFCD) of the Royal Forest Department, Thailand.

Drawing on experiences from Thailand, the project trained 15 government officials in Thailand who then return to the province and trains other PAFO/DAFO staff, who then train farmers groups. The content of training courses at this stage is mainly technical is as follows:

- Forest Fire control organization;
- Forest Fire control and fighting;
- Fire detection;
- Fire prevention campaign;
- Use and maintenance of fire fighting equipment;
- Firebreak lines construction;
- Early burning;
- Control of slash and burn fire;
- Safety in fire fighting.

The strategy was to spread out the skills by organizing training of trainers at the various levels, such as province, district and village with the aim of having trained farmers and volunteers groups in each village. At the same time the provincial and district government capacities would have their capacity to plan and manage the fire issues increased. At the same time the project targeted a larger audience with a public awareness campaign. To provide farmers with viable alternatives to upland rice farming as a means of subsistence the project, then experimented pilot agriculture activities. This was very small and experimental activity that had good results.

In the villages the project set up groups of fire volunteers and village fire committees with the task of designing fire plans and implementing them. At this stage everything is following a top-down approach where the village level is merely implementing the directions coming from the provincial and central level. But still everything was done in the prospective of a future autonomy of the fire volunteers and

committees. This first training phase represent the necessary training step to raise the capacity at local level.

The awareness campaign focused mainly on the long-term effects of destructive fires and on appropriate behaviours to reduce uncontrolled fires and consisted in:

- Production and distribution of posters and booklets;
- Television spots;
- Theatre shows.

The list of activities implemented in the first phase includes:

- International training of trainer;
- Final workshop;
- Training of trainers for province and district officials;
- Training of farmers group on fire prevention and fighting;
- Production and distribution of fire fighting tools;
- Awareness campaign;
- Pilot agriculture activities;
- Study tour for forestry officials.

During the first phase some aspects about the relation between people, fire and the environment emerged as particularly important, outlining the need to investigate on them more in depth during the second phase.

Phase II:

The official goal of the project is:

To decrease uncontrolled forest fire in the project area and reduce the risk brought to the population, communities and environment.

Immediate objectives:

- To increase among the local communities the risk perception of the uncontrolled forest fires;
- To build a disaster response capacity at political and community level.

The project has been successful in raising among local communities the risk perception linked with uncontrolled forest fires. The awareness was raised by means of an information and education campaign including theatre shows, school activities, posters and booklets distribution, and TV spots.

The project successfully established and strengthened Village Fire Committees and Fire Volunteer groups in each target village that was linked to the district and province level by government appointed coordinators. The project supported the set up of village networks and facilitated inter village meeting, which provide an institutional opportunity for collaboration on forest fire issues between neighbour villages themselves and between villages and the local government.

Lessons Learned

Critics of the CESVI project during Phase I point out that the project is using a simplistic approach for a complex issue. It was less a “community based” or participatory project than community involved-government imposed project. Like the non-timber forest products project, initial motivation for forest fire management came from government, but requires local involvement to be successful. The local people may have a need for fire management, but they did not ask for the help. Additionally, Phase I of the CESVI project focused on prevention and management of fire, but did

not go future, which is an issue throughout Lao PDR. Nevertheless, CESVI is at least dealing with the issue and willing to improve their program, and is also the first fire management program in Lao PDR. If CESVI is successful, their project can be used as an example for others looking for way to educate and disseminate forest fire prevention material. They can also develop fire specific materials and serve as both a pilot project and a resource centre of information for other project.

It can potentially be problematic to train in another country such as Thailand, especially if Thai issues are different from Laos. It is necessary to ensure Thai trainers understand the issues in Lao PDR (not always easy to share information between Thai and Laos, Laos and Vietnam often easier). However, staff that attended the training of the CESVI Phase II course, said learning in Thai was not a problem. Although not all the case studies were immediately applicable to Laos, the main concepts, which participant described as “listening to villagers needs on a case by case basis” did come across clearly. It may also be useful to involve villagers to participate in training to ensure understanding and ownership from all levels, not just government.

The real effectiveness of the CESVI training is not yet known, and will be evaluated as government officials facilitate community based fire management processes in their districts. It is hopefully that the CESVI project will be able to generate some lessons learned from the field and apply to other parts of Lao PDR, or other countries (Ganz 2000).

3. THAILAND⁴

Siri Akaakara (*Director of Forest Fire Control Division, National Park, Wildlife and Plant Conservation Department Thailand*)

“Forest Fire Control in Thailand – Law and Regulation Aspects”

Introduction

For Thailand changes in forests have been significant in the last 20 years. Fire plays the most destructive role in the forest ecosystem, second only to deforestation. However, these changes over time seem slow to human eyes.

Fire is and has been, for centuries, a part of terrestrial environments of the world. Through careless behavior, man has often so increased the effect of fire that a productive environment is destroyed or injured.

Forest fire description

Type, duration and occurrence

Forest fires occur during the dry season from December to May with their peak in February-March. Fires mainly take place in; Mixed Deciduous Forest, Dry Dipterocarp Forest, and Forest Plantations, and to some extent in Dry Evergreen Forest, Hill Evergreen Forest or even in some parts of the Tropical Rain Forest.

Table 1. Area burnt in each type of forests in 2000

Forest type	Area burnt	
	Hectare	%
1. Mixed Deciduous	63,420	68.0
2. Dry Dipterocarp	20,279	21.7
3. Secondary Growth	3,628	3.9
4 Forest Plantation	2,193	2.4
5. Hill Evergreen	1,858	2.0
6. Dry Evergreen	1,021	1.0
7. Bamboo	835	0.9
8. Natural Pine	90	0.1
Total	93,324	100

Ground fires also occurred in swamp forest.

⁴ Presented by Dr. Peter Moore, PFFSEA

Causes

Statistics from the Forest Fire Control Division of the Royal Forest Department since 1985, record very few naturally caused fires - all fires are man-caused as follows:

Table 4. Causes of forest fire

Causes	Percentage (%) Average from 1985-1997	Percentage (%) Average from 1998-2002
1. Gathering forest non-timber products	26	35
2. Agricultural debris burning	18	17
2. Incendiary fire	17	9
4. Carelessness	16	2
5. Hunting	15	22
6. Illegal logging	-	3
7. Cattle raise	-	2
8. Unidentified causes	8	10
Total	100	100

Annual burnt areas

Before 1984 only estimations were made for the amount of forested area burnt by fire. Macleod (1971) estimated that the annual forested area burnt was about 18,772,000 hectares.

In 1985 the first aerial survey for area burnt revealed that 3.5 million hectares of forest (including grass and bush lands) were burnt, 21% of the total forested area concentrated in the northern region where the largest forested area exists. Aerial surveys 1986, 1992-1998, thereafter conducted by satellite imagery

Table 5. Annual burnt areas caused by forest fire

Year	Area burnt by forest fire (ha.)
1985	3,535,110
1986	3,797,289
1992	2,030,160
1993	1,459,617
1994	763,648
1995	643,799
1996	490,303
1997	660,208
1998	1,145,452
1999	293,480
2000	93,324
2001	76,189
2002	139,389

Fire impacts

Monetary or environmental damage caused by fire are tremendous.

- Fire damage in monetary terms is difficult to assess. Pine forest and tree plantations had monetary losses of about 35,735; 15,375; 23,700; and 8,750 Baht per ha. 1998 figures of 38,614 Baht per hectare for Dry Dipterocarp forest and 59,776 Baht per hectare for Mixed Deciduous forest.
- Loss of plant nutrient and water quality could be equivalent to a monetary loss of about US\$ 16,000-32,000 million per year.
- Impact on air quality and scenic beauty:
- Impact on wildlife:

Historical development***Background***

Until 1971, no records kept of forest fire occurrence in Thailand.

The Early Practice of Forest Fire Control

Up to 1971, little action on forest fires

The development of Forest Fire Control

Thailand has been widely concerned about forest fire since 1970. Under the aid of the Government of Canada by the Canadian International Development Agency, Mr. J.C. Macleod, visited and studied forest fire in Thailand for approximately seven months, February to September, 1971. He gave both general and specific recommendations among them:

- 1) The establishment of a forest fires Act is a primary requirement.
- 2) A Forest Fire Control Unit, or Section, should be set up now in the Royal Forest Department.

In 1976, the Forest Fire Control Section was established in the Forest Management Division for working in the Forest Fire Control Project of the Forest Conservation Centre.

A few years later, the Forest Fire Control Section was upgraded to the Forest Fire Control Subdivision to undertake forest fire control activities nationwide. This is largely due to the cabinet resolution on February 24 and November 3, 1981, which intended to tackle forest fire problems.

Many effective measures have been taken on forest fires. Due to the budget limitation, at that time 2.8 million hectares or 21% of the total forest land were placed under the intensive fire suppression programme.

Later in 1993 the agency was promoted to a full Forest Fire Control Division. In 1999 the agency was upgraded to a Forest Fire Control Office.

In October 2002 there was a major restructuring of Bureaucracy System. The fire control agency was reorganized according to the Bureaucracy System's restructuring Act 2002. Now the body designated to forest fire control is called "The Forest Fire Control Division" under the National Park, Wildlife and Plant Conservation Department, Ministry of Natural Resources and Environment. Fire suppression programme is able to cover 38% of the total forested land.

Policies and legislation

Policies

The National Forest Policy

The latest National Forest Policy No.18 (1985) stated that a substantial plan for tackling the deforestation problem (e.g. shifting cultivation, forest fire etc.) must be determined. Suppression as well as law enforcement measures must be clearly set.

The Cabinet Resolution

The Cabinet Resolution dated November 3,1981 gave the following general directives for coping with forest fire:

- All commercial as well as state flights have to report discovered forest fires.
- Imposing measures to intercept forest traverses.
- Procuring aircraft equipped with fire suppression equipment in readiness to combat fire.
- Imposing a fire suppression plan.
- Coordinating with countries with successful fire suppression experiences in order improve fire suppression plan.

The measures approved by cabinet according to the above directives were as follows:

Initial measures

- The Royal Forest Department has to establish the organization to undertake forest fire control activities.
- In fire-prone areas, forest fire control units must be established.
- The Ministry of Interior must share responsibilities in fire prevention and suppression by organizing local fire fighting volunteers. In addition, they have to cooperate with the Royal Forest Department in delivering volunteer training.
- All government agencies nationwide, commercial aviation, and communication networks under the Ministry of Interior have to immediately report all discovered fires to the Royal Forest Department or its sub-units.
- Providing sufficient budget as well as essential fire suppression equipment in order to achieve effective fire control.

Long-term measure

- The Ministry of Agriculture and Cooperatives in cooperation with the Ministry of Interior must plan the long-term project for fire fighting volunteer training in fire-prone areas nationwide.
- Because there is no particular law regarding forest fire, the Royal Forest Department must propose a Forest Fire Control Act emphasizing prevention measures.
- The Royal Forest Department must train all government employees based in adjacent fire-prone areas, and all employees are obliged to assist in fighting fire.
- The Royal Forest Department must assess all operations done in accordance with the above measures.

The Royal Forest Department Policy

The Royal Forest Department policy stated toward forest fire control in practical aspect as “to minimize damages caused by forest fire by using all means either prevention or suppression strategy.”

The Office of Prime Minister's Order

The Office of Prime Minister's Order dated March 25, 1998 appointed the National Forest Fire Management Committee and empowered the committee to:

- Formulate the coordination and command plan for executing units at province and district levels in order to obtain effective fire suppression operation.
- Mobilize all manpower as well as resources available for fighting fire.
- Seek cooperation from private sector as well as fire volunteer to support suppression operation.

Legislation

There is no specific forest fire control Act in Thailand. Although 4 of the existing forestry acts contain sections stating the penalty for setting forest fire, however prevention measures are not stated. Present fire control legislation is found within these following laws:

- *Forest Act 1941, section 54*
- *Wildlife Conservation and Protection Act 1960, section 24*
- *National Park Act 1961, section 16(1)*
- *National Forest Act 1964, section 14*

Sanctions

Violations of the above Acts by setting forest fire are liable to be fined and/or be imprisoned as follow:

- Violation of Forest Act 1941, section 54 - not exceed 50,000 Bahts fine, 5 years imprisonment or both
- Violation of National Forest Reserve Act 1964, section 14 5,000-50,000 Bahts fine and 6 months-5 years imprisonment
- Violation of National Park Act 1961, section 16(1) not exceed 20,000 Baht fine or not exceed 5 years imprisonment or both
- Violation of Wildlife Conservation and Protection Act 1960, section 24 not exceed 30,000 Bahts fine or not exceed 5 years imprisonment or both

Forest Fire Control institutional framework

Organization

The legitimate organization undertaking forest fire control activities is the *Forest Fire Control Division* under the *National Park, Wildlife and Plant Conservation Department*. This Division is composed of:

- *Strategy and Planning Sub-division*, which is responsible for:
 - Transform the policy into implementation.
 - Strategic Planning and budgeting.
 - Monitoring and evaluation.
 - Coordinate with concerned organizations domestically and internationally.
- *Information and Research Sub-division*, which is responsible for:
 - Fire statistics.
 - Information need for fire control planning.
 - Fire research.

- *Training and Development Sub-division*, which is responsible for:
 - Training for Fire Boss, Crew Boss, Fire Crew, Fire Tiger Special Force and Fire Volunteer.
 - Develop fire equipment, fire campaign materials, techniques and tactics in fire prevention as well as fire suppression.
- *Forest Fire Control Coordination Centre*, which is responsible for:
 - Supervise and coordinate fire control stations in its respective areas.
 - Support the operation of fire control station
 - Coordinate with all agencies concerned in order to obtain public participation in fire management.
 - Command and maintain *the Fire Fighting Special Task Force (Fire Tiger Team)*
- *Forest fire control station*, which is the executing unit.
Each station has subordinate units called Forest Fire Suppression Mobile Units. It carries out 2 main tasks:
 - Forest fire prevention campaign.
 - Forest fire suppression.
There are 330 units nationwide, 15-fire crew, generally responsible for suppression operation within 10,000 hectares of forest. Due to budget limitation, only 4.68 million hectares or equivalent to 35.7 % of total forest land are placed under fire suppression programme.
- *Forest Fire Control Training and Development Center*
They are the executing units of the Training and Development Sub-division.
- *Forest Fire Control Research Center*
Conducting research and study on forest fire.

Cooperation among institutions

Forest fire becomes a nationwide problem. The problem basically comes from grass-root level and is strongly influenced by social and economical conditions of each community. To cope with this problem effectively, all concerned agencies either from state or private sectors must actively participate. Moreover full cooperation from all local people is of utmost importance. Therefore, obtaining cooperation from all walks of life is the key toward success in fire management. However, taking any action requires budget especially in fighting fire, which is one of the most costly operations. This fact always becomes major constraint once any cooperation among Institutions takes place.

Cooperation with Armed Forces

Military has high potential to support fire control operations during severe fires the National Park, Wildlife and Plant Conservation Department pays the army's costs

Cooperation with the Ministry of Interior

The Ministry of Interior has played an obvious role in addressing forest fire. Currently there are *Provincial Forest Fire Control Committees* in every province. Unfortunately the function of such committee still concentrates on administrative as well as coordination aspects.

Cooperation with non-government organization

There is still little cooperation between state and NGOs as far as fire control is concerned.

Cooperation with rural community

Fire problem will not be solved without full cooperation from local people. The Royal Forest Department has launched all its efforts to obtain people participation in fire management. Approximately 10,000 fire volunteers are trained annually. Unfortunately, the poor attitude towards forest fire is greatly due to the fact that fire damage is limited mainly to state properties and not likely to threaten lives and properties of people. Therefore without financial incentive or other direct interests, the concept of fire volunteer does not work well in this country.

4. VIETNAM

Mr. Nguyen Phuc Tho (*Forest Protection Department, MARD*)

“Forest Fire Prevention, management and control in Vietnam”

A. State of forest fire prevention and management in Vietnam

Currently, Vietnam has a forest cover of about 11.5 million ha (or equivalent to about 35,7% of the country's area), of which more than 9.5 million ha is natural forest and about 2 million ha is plantation. Approximately about 6 million ha of easy-burned forest ecological systems including pine forests, melaleuca forests, bamboo forests, eucalyptus forests, dipterocarp forests young natural regenerated forests and non-timber forests.

During the last 11 years (1992 – 2002), there were 14,132 forest fires cases occurred and caused damages to 66,000 ha of forests of which 36,000 ha are natural forest and 30,000 ha are plantation. Estimated damages would be hundreds of billions Vietnam Dong and bad impacts on the environment. During a period of first four months 2003, there were 351 forest fire cases that burned 1,590 ha of forests of which 1,120 ha of plantation and 470 ha natural forest. The number of forest fire cases decreased by 64% and the forest areas burned decreased by 72% in comparison with the same period of the last year. Major reasons of forest fires are:

First: There are a lot of limitations and slowness in deploying of relevant instructions/regulations at district, commune and village levels. Appropriate laws and policy of the Government have not been widely and deeply propagandized, disseminated, well perceived, and concretely brought up to each household and the entire society.

Second: The forest fire control force is thin in term of coverage. There are no professional and specialized forest fire forces. Therefore, although many people have been mobilized to stamp out big and large fires that occur in a large area, however, the fire control effectiveness is very limited.

Third: many localities have limited budgets allocated for forest fire prevention, management and control. There is either no or very small budgets provisioned for fire prevention establishments in forestry programmes.

Fourth: Vehicles and equipment for forest fire prevention and management are not only insufficient, but also rudimental, and backward, thus do not meet the complicated requirements and tasks of the forest fire prevention and management.

Specialized equipment and information systems for forest fire forecasts and warning do not correspond to the requirements of forest fire control and management.

B. System of forest fire related laws and regulations, and institutional arrangement of forest fire forces

B.1. Forest fire related law and regulation system

Recognizing the forest fire as a big tragedy and the fact that potential risks due to forest fires are regular threats, the Government of Vietnam is very interested in forest fire prevention and control, thus has issued a system of laws and regulations as follows:

- Laws issued by the National Assembly: The Law on forest protection and development, the Law on fire prevention and control, and the Criminal Law. In all these related laws, there are articles concerning forest fire prevention and management as follows:
 - + Governmental Management agencies in the forestry sector have the responsibility in developing and instructing the implementation of options/

- projects for forest fire prevention, management and control; organizing forest fire forecast activities; developing and organizing necessary forces and equipment for forest fire prevention, management and control.
- + Projects/alternatives for forest fire prevention, management and control are required to be developed and included in plans/planning and projects for forest protection and development
 - + Most rapidly mobilization of forces and equipment to stamp out forest fires, etc. and defining the organisation of a professional and specialized forest fire force.
 - + Defining fines measures and levels imposed to organizations and individuals violating legal governmental regulations on forest fire prevention, management and control.
- In order to institutionalize legal regulations, the Government of Vietnam has issued many legal and normative regulations to guide and organize activities for forest fire prevention, management and control such as:
 - + Decree No. 39/CP issued on 18 May 1994 stipulated about the organization system, tasks/responsibilities and power/competence of the Vietnam Forest Ranger in which there is the responsibility on forest fire prevention, management and control.
 - + Decree 22/CP issued on 9 March 1995, promulgated regulations on forest fire prevention management and control.
 - + Decree No. 77/CP issued on 29 November 1996 and Decree No. 17/2002/NĐ- CP issued on 08 February 2002 about the administrative fines in the area of forest management and protection, and forest product management.
 - + In order to timely supply concrete guidance to the forest fire prevention, management and control activities, the Prime Minister has promulgated many important decrees such as: Decree No. 286/TTg issued on 2 May 1997 on strengthening urgent measures for forest protection and development; Decree No. 21/ 2002/CT- TTg issued on 12 December 2002 on strengthening the implementation of forest fire prevention, management and control activities.
 - + Every year, Ministry of Agriculture and Rural Development and People's Committees at all levels issue many documents to steer, guide inspect, supervise and speed up organizations, units, forest owners and households to strictly participate, within the responsibility of each individual and unit, in the deployment and implementation of forest fire prevention, management and control activities.

B.2 Organization system for forest fire prevention, management and control

The Vietnam Forest Ranger (Forest Protection) has the responsibility in forest fire prevention, management and control activities. This is stipulated in the legal documents under laws as a legal basis for the organization of forest fire prevention, management and control activities in Vietnam. The institutional system for forest prevention, management and control was established from the central to local levels.

B.2.1 System for steering and commanding forest fire prevention, management and control at all levels

- The Central Steering Committee (NSC) for forest fire prevention, management and control is chaired by the Ministry of Agriculture and Rural Development. Leaders of the Ministry of Defense and Ministry of Interior are the vice-chairs. Leaders of the Ministry of Labour, War Invalid and Social Affairs, the Committee for Ethnic Minorities of Mountainous areas, the Vietnam Television, the Voice of

Vietnam, the Department of Fight Operation, the Department of Forest Protection (FPD), and the Police Department of Fire Fight are the members of the NSC. The Office of the NSC is located within FPD.

- The Commanding Committees for forest fire prevention and control at all level are chaired by the Vice-Chairpersons of the relevant People's Committees. Leaders of Forest Protection at all levels are standing vice-chairpersons. Leaders of concerned departments are members of the commanding committees. Standing Offices of Commanding Committees for forest fire prevention and control are located in the forest protection departments at the same level.

B.2.2 Specialized forest fire prevention, management and control force (Forest Ranger/Forest Protection Department)

- At the central level, The Forest Protection Department belongs to the Ministry of Agriculture and Rural Development. The Forest Protection Department is the advisory organisation to the Minister of Agriculture and Rural Development in fulfilling the state functions in forest management and protection, and at the same time, it is the organization providing technical instructions to all forest protection sub-departments throughout the country. In addition to fulfilling 9 tasks of the Standing Office of the Central Commanding Committee for Forest Fire Prevention, Management and Control (FFPM&C), FPD is also the organisation implementing professional/technical tasks in the area of FFPM&C such as developing a system of related forest fire laws and regulations, procedures, technical norms, instructions and guidelines on development of forest fire forecast and warning systems; cooperating with the Standing Office of the Central Commanding Committee for FFPM&C to urge and closely steer localities to well fulfill activities related to FFPM&C, and to timely steer the fire control activities in order to stamp out a fire when it occurs.
- At provincial level: Provincial Forest Protection Branches/sub-Departments are under the technical instruction of the Forest Protection Department. Provincial Forest Protection Branches/sub-Departments are responsible for inspection, examination and implementation of FFPM&C activities; development of projects of FFPM&C and plans for implementation and development of technical measures for forest fire warning/forecasts, supplying timely information on FFPM&C, organizing technical and professional training on FFPM&C in order to be ready for participating in controlling forest fires when required, propagandizing and educating people to take part in FFPM&C activities.

B.2.3 Forces collaborating in FFPM&C activities

In order to have the highest effectiveness of the FFPM&C, The Government of Vietnam has instructed concerned ministries and Departments at the ministerial level to collaborate with Forest Protection, Police and Army forces to organize multi-disciplinary teams for FFPM&C activities.

- On 13 December 2002, Ministry of Agriculture and Rural Development, Ministry of Interior, and Ministry of Defense issued the Inter-ministerial Circular No. 144/TTLB - BNNPTNT- BCA - BQP providing guidance on the collaboration and cooperation between forest rangers, police and army forces in forest protection activities.
- Minister of Defense has instructed all units of the whole Army to pass this collaboration spirit through to each soldier in order to implement this guidance in a serious and effective way. The Army force should closely collaborate and cooperate with police, forest ranger forces and related organizations, sectors of relevant localities in FFPM&C activities.

- Ministry of Interior - Police Department of Fire Prevention and Control has developed plans appointing forces for forest fire control activities when large and big fires occur. Many officials have appointed to join inter-ministerial inspection teams on FFPM&C. In addition, the Ministry of Interior has also assigned the police forces at local levels to collaborate with forest ranger forces in implementing FFPM&C activities.

B.3 Forest fire prevention and control activities

At the beginning of the dry season every year, in order to improve the effectiveness of the fire prevention and control measures, minimise the number of forest fire cases as well as their damages, fire prevention and control forces organise a conference to review the forest fire prevention and control in the past year and to deploy forest fire prevention and control plan for the current year. Activities include:

- Central steering committee for fire prevention and control formulates interdisciplinary task forces comprising mandated agencies as well as other partner institutions in order to monitor and supervise provinces in strengthening and actively carrying out forest fire prevention and control measures, especially at the forest fire hotspots. For instance, in the dry season of 2002 – 2003, 10 task forces were formulated and operated in the Northeastern, Northwestern, Northern Central, Central Highland, Eastern South, and Mekong River Basin regions.
- Standing office of the Central steering committee for fire prevention and control is on duty all day and night during the peak period of the dry season to supervise forest fire prevention and control activities as well as to mobilise fire prevention and control forces in case fire widely spreads and supports are needed. Communication is maintained the clock round via fax, telephone and email in order to timely update information on forest fire status of provinces.

The Forest Protection Department (FPD) directly supervises provincial Forest Protection sub-departments/branches in forest fire prevention and control activities. FPD develops and operates the forest fire forecast and early detection system. Forest fire forecast nation wide is made based on the uses data bank, forest fire monitoring software from national down to regional, provincial, district and commune levels, maps, hydro-meteorological data and satellite image interpretation. Information is then aired on daily television and radio programmes.

B.4 Socialization of forest protection, and forest fire prevention and control

Vietnam has carried out several measures to implement the socialization of forest protection and management and forest fire prevention and control policy. This includes decentralization of powers and responsibilities to local authorities in the state management of forest and forestry land.

- Attention is given to the allocation of terrace production areas to mountainous ethnic minorities. Land is set aside for food production in order to settle local people livelihood as well as to mitigate uncontrolled forest exploitation and fire. This also facilitates the settlement in hamonisation with forest protection and social-economic development programme.
- By implementing the forestry economy renovation policy, different economic sectors can equally participate in forestry activities. Individuals, households and social-economic associations can either be given or hire land as well as can be contracted in forest protection and management in long run for forestry

development. Opportunities for people and communities to actively participate in forestry activities have increasingly been increased. For almost 10 years of the implementation of the Decree 02/CP dated 14 April 1994 on forest land allocation, 8.7 million hectares of forest, including approximately 1 million hectares of special use forest, 3.1 million hectares of protection forest and 4.6 million hectares of production forest, has been allocated by authorities at all levels. 2.6 million hectares of forest has been given to 452,100 households and 6.1 million hectare of forest has been given to 27,300 associations. In terms of forest protection and management, more than 3.1 million hectare of forest has been contracted to households and associations. The forestland allocation policy has woken up the sense of ownership of people and has given the forest genuine owners. This leads to the fact that forest is protected and people feel assured in managing and investing to their allocated forest.

- In order to enhance community participation as a contribution to the promotion of the forest protection socialisation and bringing the forest protection effort to the people's cause, the Government of Vietnam, with the implementation of the regulation on commune democracy, has guided the development of community regulation on forest protection and development at hamlet and village levels. For 3 years of implementation, this has been undertaken in 23,624 hamlets, belonging to 2,833 communes and 374 districts. In these areas, illegal hunting, trading, and exploiting forest products as well as forest fire have been reduced. Especially, the forest protection regulation has contributed to the improvement of awareness, responsibility and self-consciousness of every member of the community, promotes the positiveness of custom of every ethnic group of the community, and mobilizes, to a maximum extent possible, local existing resources for the forest protection and development as well as for the forest fire prevention and control.
- Working on the ground, sticking to people and forest to protect forest and improve responsibilities of inhabitants and communities, the Government of Vietnam has guided the appointment of officials to work at very local level. For more than 2 years of implementation, 3,473 forest protection officials have been allotted to more than 4,454 communes in 52 out of 58 forest covered provinces and 9 national parks. Main tasks of the local forest protection officials are to disseminate forest legislations, advise and monitor the enforcement of the Law on Forest Protection and Development in the area, build capacity for and improve the effectiveness of local authorities in the management of forest, determine rights and obligations of forest owners and hamlet communities, and closely monitor trend of forest and forestry land in the area.
- The Government of Vietnam is one of the founders of as well as has acceded to the ASEAN Agreement on Transboundary Haze Pollution from forest fire.

C. Lessons learnt in forest fire prevention and control

Prevention and early control is the guiding principle in forest fire prevention and control. Therefore, fire prevention is the primary task and has been translated into practice by the following:

- Strengthening forest fire forecast and warning activities; frequently monitoring and controlling forest burning in dry season; disseminating information on mass media. This is a multi-functioning measure i.e. on the one hand can be an effective measure to prevent forest fire and on the other hand can communicate and disseminate information to and raise the sense of responsibility of every single level, sector and individual.

- Raising the roles and responsibilities of local authorities at all levels and forest owners in forest fire prevention and control planning; improving the roles and responsibilities of individuals and communities in managing and protecting forest through forestland allocation and leasing and forest management and protection contracting.
- Given that forest fire is a social and human induced phenomenon, apart from communication and education activities, strict measures are needed such as the limitation of human access to forest in the peak period of dry season and strict discipline of violation. In addition, there is a need for organising people commitment signing in forest protection and forest fire prevention and control.

Fire control needs to be rapidly undertaken and based on the ‘four local availabilities’ principle i.e. local commanding and management, local forces, local facilities, and local logistics in order to timely extinguish the fire when it is at the beginning stage.

Legislation improvement needs to be continuously undertaken in response to the demands in forest fire prevention and control, and strict legislation enforcement is of important need.

D. Conclusions

In the recent past years, with attention given to forest fire prevention and control by the State and authorities at all levels, integrated measures in forest fire prevention and control have been strengthened and achievements have been gained. This has proved its own sound direction. However, potential risk of forest resources degradation caused by forest fire is still a common thread. Forest fire still seriously occurs here and there, thus, it is not yet met the demands and requirements of sustainable forest resources protection and development.

Therefore, investment to forest fire prevention and control is needed, not only for the sustainable development process of Vietnam but also for other Asian countries as well as for the world. Vietnam looks forward to closely cooperation with you in order to exchange information and hopes to receive your supports to strengthen its capacity in forest fire control.

Regional Papers

1. Ms. Patricia F. Moore (*Head, IUCN Regional Environmental Law Programme, Asia*)

“Toward a Framework for Best Practice in Fire Related Law and Regulations” –

Experience in ASEAN Member States

Context — variations among countries

- Different legal systems
- Different procedures for developing & adopting laws & regulations
- Institutional jurisdiction & capacity
- Availability of funding & the will to allocate it

Fire related laws & regulations

- Forest sector
- Environment
- Protected areas

- Agriculture
 - Land use/allocation/tenure
- also other regulations on
- Local government
 - Tax/investment
 - Civil & criminal procedure & evidence

Some “Best Practice” examples from national laws and regulations

- Regulate prevention and control of open burning outside natural forests — Brunei, Indonesia, Malaysia
- Clearly assign responsibility for fire management among public sector and private sector actors — Indonesia, Viet Nam
- Provides incentives for local communities and the general public to assist in preventing and controlling fires — Lao PDR

Elements of fire related laws

Technical:

- Define and register rights to land & resources
- Establish landscape and land use plan
- Regulate construction in forests & wildlands, especially burned areas
- Balance prevention/prohibition, suppression/control, mitigation, rehabilitation
- Apply prevention and control measures to:
 - all categories of forests
 - areas outside natural forests & plantations
- Require extension, education, training, public awareness

Operational Responsibilities

- Specify responsibilities of each:
 - agency/lead agency
 - level of government
 - local & indigenous communities
- Specify responsibilities according to:
 - land/resource use
 - land/resource tenure
 - tasks for preventing & suppressing fires & for restoring burned areas
- Coordination in-country
Avoid/eliminate overlaps of jurisdiction
- Cooperation — bilateral & multilateral
- Funding:
 - Specify who bears the costs of each aspect of fire management
 - Establish fund for restoring burned areas
- Incentives & Disincentives (*monetary and/or non-monetary*) for:
 - local communities & general public
 - private sector
 - institutions & individual officials

- Enforcement:
 - Specify:
 - responsibilities for enforcement among forest officers, police, local government authorities, protected area managers
 - evidence required to prove a violation
- Penalties:
 - violators pay for restoration/rehabilitation
 - fines cover costs of restoration/rehabilitation
 - criminal penalties for specific violations
 - accountability standards for public authorities and consequences for failing to meet them
- Options for how to introduce them
 - Consolidate provisions in existing laws and regulations into framework regime for fire management
 - Harmonize existing laws and regulations
 - + Make sure terms used are clearly defined, technically correct, and used consistently

2. Ms. Adelina Kamal (*ASEAN Secretariat*)

“ASEAN’s Initiatives on Transboundary Haze Pollution”

A. Institutional arrangements

- ASEAN Ministerial Meeting on Haze
- Haze Technical Task Force
- RHAP Coordination and Support Unit within the ASEAN Secretariat
- Subregional Fire-fighting Arrangements (SRFAs) for Borneo and Sumatra
- Subregional Climate Review Group
- SRFA Legal Group on Law and Enforcement:
 - Focus in enhancing the capacity of SRFA members in law and enforcement
 - Discuss respective laws on enforcement of open burning and law enforcement capabilities
 - Assess gaps and training needs in law and enforcement and implement training programmes

Future direction:

- Establishment of a new subregional group
- Determining structure, format, focus of discussion and programme of activities
- Sharing of experiences/ best practices between the existing and the new subregional groups

B. Policy Instruments

Regional Haze Action Plan

The objectives:

- to prevent land and forest fires through better management policies and their enforcement;

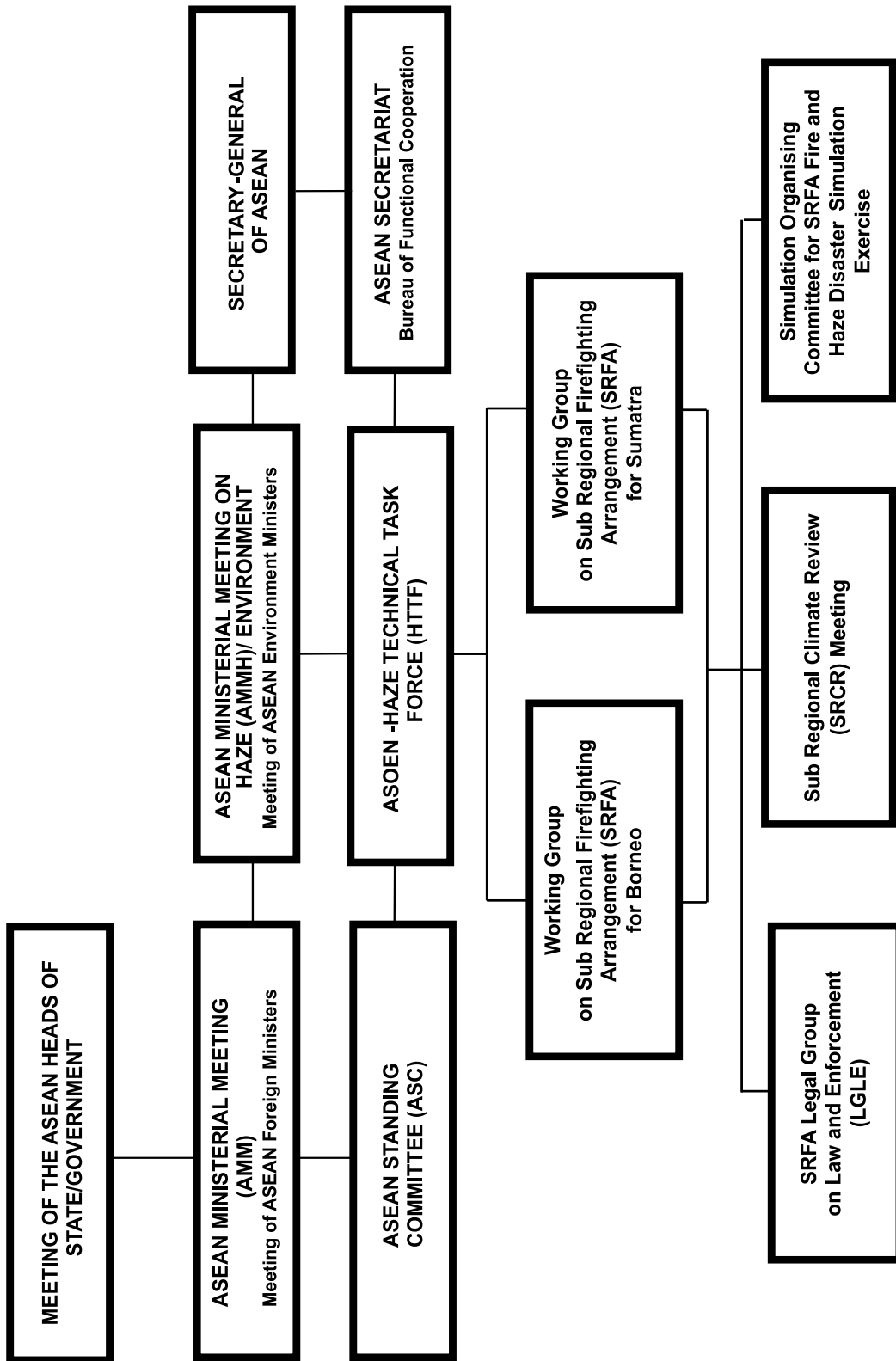
- to establish operational mechanisms to monitor land and forest fires; and
- to strengthen regional land and forest fire- fighting capability and other mitigating measures.

Zero Burning Policy

ASEAN Agreement on Transboundary Haze Pollution

- Contains measures on:
 - monitoring;
 - assessment and prevention;
 - mechanisms for coordination;
 - lines of communication; and
 - procedures for deployment of people, materials and equipment across borders in the event of transboundary haze pollution.
- Requires countries to ‘respond promptly to requests for information and consultations sought by another country threatened by the haze
- Obligates countries to take legal, administrative and/or other measures to implement their obligations
- Provides for the establishment of an ASEAN Centre to facilitate cooperation and coordination in managing fire and haze
- Provide a framework for member countries to fine-tune their national policies
- Provide a framework for the development of standard operating procedures for actions
- Ongoing activities:
 - SRFA SOP for monitoring and assessment
 - SRFA SOP for joint emergency response
 - Simulation to test the SOP

Figure 1: Institutional arrangement for ASEAN cooperation on transboundary haze pollution



C. Projects/Activities

- Prevention
 - Training Course for Prosecutors and Investigators on Enforcement against Open Burning
 - Community Awareness Programmes
 - Dialogue Sessions with Plantation Companies
 - Guidelines for the implementation of zero burning policy and controlled burning practices
 - ASEAN Peatland Management Initiative
- Monitoring
 - Strengthening the ASEAN Specialised Meteorological Centre
 - GIS Database for Sumatra, Kalimantan and Malaysia
- Mitigation/ Suppression
 - Fire Suppression Mobilisation Plans, Immediate Action Plans, *SRFA-SOP*
 - Fire and Haze Disaster Simulation Exercises
- Coordination, Public Information and Capacity Building
 - World Conference and Exhibition on Land and Forest Fire Hazards
 - Publications: “Fire, Smoke and Haze”
 - Capacity Development for the RHAP-CSU and HTTF
 - Video-conferencing for the ASEAN Secretariat and SRFA Member Countries
 - Development of Southeast Asia Regional Information Clearinghouse
 - ASEAN Haze Action Online: www.haze-online.or.id
 - Haze Newsletters