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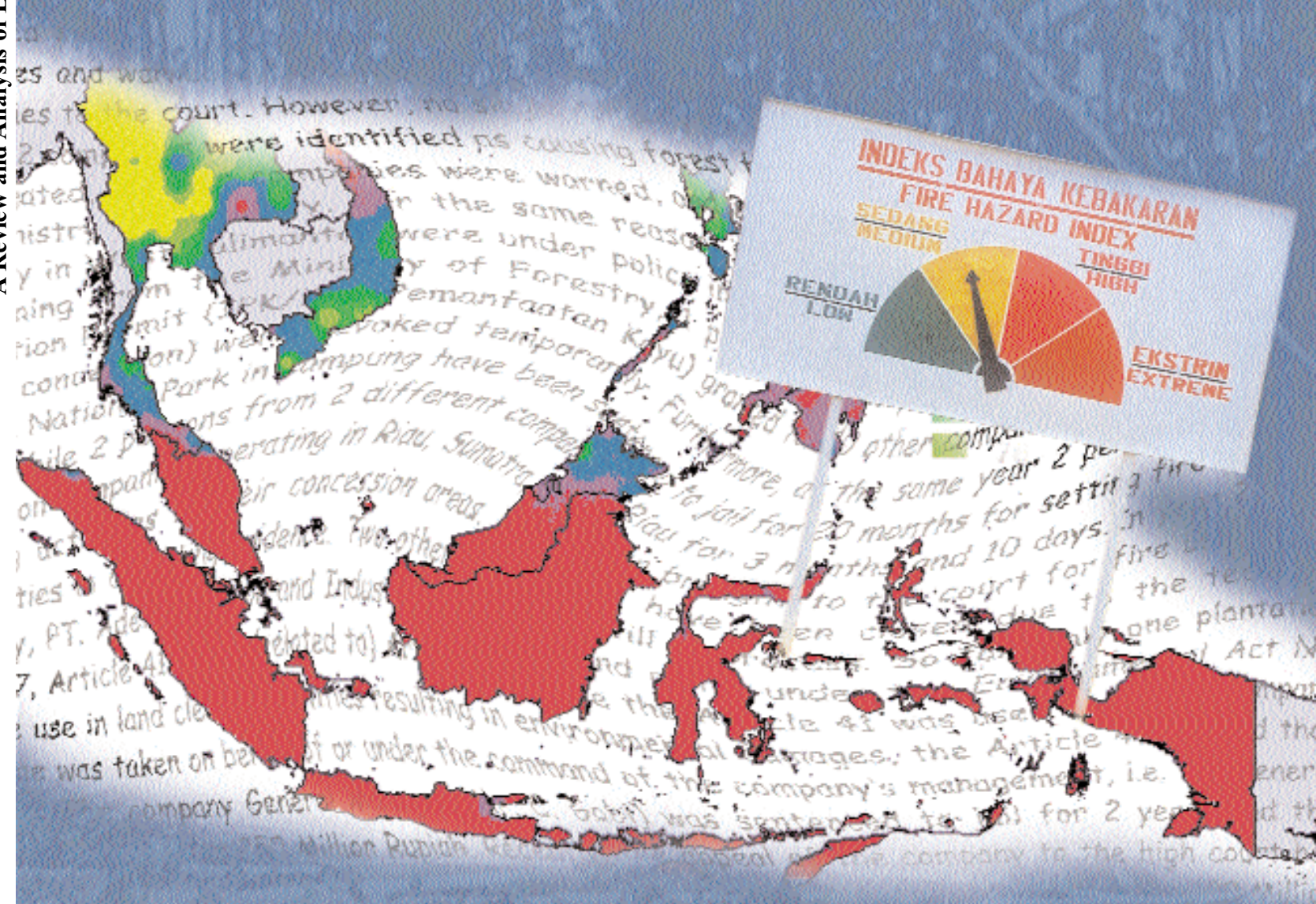
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Project FireFight South East Asia
A Review and Analysis of Legal and Regulatory Aspects of Forest Fires in South East Asia



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Prepared by
Azrina Abdullah



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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 what is an increasing problem. There is a growing feeling within **WWF – The World Wide Fund for Nature** and **IUCN – The World Conservation Union** that action is needed to catalyse a strategic international response to forest fires. There are no “magic bullets” for forest fires. The issues to be addressed are complex and cut across sectors, interests, donors, professions, regions, nations and communities. The organizations feel that action only take place when fires are burning and that little attempt has been made to address the underlying causes.

This is why the two organizations have joined forces and developed “**Project Firefight South East Asia**”. The project objective is to secure essential policy reform through a strategy of advocacy using syntheses and analysis 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 level across South East Asia to support and advocate the creation of the legislative and economic bases for mitigating harmful anthropogenic forest fires.

As the problem of forest fires lies beyond the capacity of national governments and international organisations to handle alone, the project pursues a multiple stakeholder approach. By combining the South East Asian based elements of WWF’s extensive network of National Organisations and Programme Offices, IUCN’s broad-based membership, world-renowned scientific commissions, and collaboration with other stakeholders such as UN agencies, EU projects, CIFOR, ICRAF, ASEAN governments, RECOFTC, universities, etc. the project will ensure popular participation, public awareness, policy outreach, and programmatic impact in connection with fire-related issues.

Project FireFight South East Asia is undertaking 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 region. The expected results of this activity is 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 behavior. Moreover, the combination of these three outputs will identify national and international policies, which promote, or fail to discourage, forest fire.

This report is a review and analysis of legal and regulatory aspects of forest fires in South East Asia. Gaps, conflicts and inconsistencies among legal instruments within and between countries are identified and analysed. Particular attention is paid to possible constraints on convincing South East Asian governments to adopt the reforms recommended and to possibilities of overcoming these. Based on the analysis, possible options, including non-legal approaches, to address these shortcomings are identified. It is anticipated that this report will be perceived as a valuable reference for various actors throughout the region, particularly the governments, in developing legal and regulatory mechanisms to address the issues of smoke and haze.

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Members of the Steering Committee of Project FireFight South East Asia provided useful comments on the draft report and these have been integrated into this final version.

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List of Abbreviations

| | |
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| ADB | Asian Development Bank |
| AIFM | ASEAN Institute of Forest Management |
| APCEL | Asia-Pacific Centre for Environmental Law |
| ASEAN | Association of Southeast Asian Nations |
| ASMC | ASEAN Specialised Meteorological Centre |
| BAPPENAS | National Development Planning Agency, Indonesia |
| DENR | Department of Environment and Natural Resources (Philippines) |
| DG | Director General |
| EQA | Environmental Quality Act 1974 (Malaysia) |
| FAO | Food and Agriculture Organisation of the United Nations |
| HPH | Forest Concession Holder |
| HTI | Industrial Timber Plantation |
| ICEL | Indonesian Centre for Environmental Law |
| INC | Intergovernmental Negotiation Committee |
| ITTO | International Tropical Timber Organisation |
| IUCN | The World Conservation Union |
| IUFRO | International Union of Forestry Research Organisation |
| NEP | New Economic Policy (Malaysia) |
| PFE | Permanent Forest Estate |
| PP | Government Regulation |
| SOP | Standard Operating Procedure |
| UN | United Nations |
| WWF | World Wide Fund for Nature |

Executive Summary

In the last two decades, especially during April 1983, August 1990, June-October 1991, August-October 1994 and September-November 1997, South East Asia countries – particularly Indonesia, Malaysia and Singapore – have experienced major fire and haze events with enormous negative impacts. The 1997 occurrence was the worst experienced in the region in the last 15 years – affecting 70 million people in several countries across South East Asia, both in the short and long term – and prompted many calls for proactive plans from concerned Association of South East Asian Nations (ASEAN) governments.

In dealing with fire problems, a clear, proactive policy implemented by comprehensive and effective legislation and regulations are critical prerequisites for successful forest fire management. Governments from some ASEAN member nations have taken measures to improve the efficiency and effectiveness of fire management programs and activities: numerous laws and regulations on fire management have been issued, supported by an extensive cross - and multi-sectoral organisational and institutional structure. At regional level, in the two decades since the Manila Declaration on the Environment in 1981, ASEAN has had a strong preference for consensus building where protection of the regional environment is concerned. Countries in South East Asia have adopted several regional legal instruments to address environmental problems and transboundary pollution in general, and forest fires and associated smoke and haze in particular. However, despite numerous laws and regulations at local and national level, and agreements, protocols, resolutions and other non-binding environmental accords at regional level, implementation at all levels is far from satisfactory due to various constraints and problems.

This review of the existing forest fire regulatory regimes of the 10 ASEAN countries has identified some common problems:

- ◆ none of the ASEAN members has a specific law on forest fires. Provisions for dealing with forest fires are found in forestry and environmental-related laws.
- ◆ the laws of most of the countries do not clearly allocate responsibility for forest fire management among public and private sector actors.
- ◆ most of the regulatory regimes provide penalties that forest authorities are to impose on violators, but there are no corresponding provisions for dealing with forest authorities that fail to carry out their duties.
- ◆ the laws of nearly all ASEAN countries omit rewards and incentives to the public to assist authorities in spotting and fighting fires.

Related to the implementation of laws and regulations on forest fires some constraints and weaknesses have been identified:

At national and local levels:

- ◆ insufficient political will;
- ◆ vested interests that marginalise issues relating to fire and haze to favour a particular sector, individual or corporation;
- ◆ conflicting roles and responsibilities of institutions concerned with managing forestlands and forest fires;

- ◆ lack of institutional commitment at regional, national, provincial and local levels to invest in preventing land and forest fires as opposed to mitigation (i.e. firefighting);
- ◆ lack of financial, human and technological resources for fire management and to ensure effective implementation of the laws;
- ◆ lack of accurate data/information on forest fires and inadequate communication systems;
- ◆ indifference of the private sector to the environmental consequences of large-scale fires;
- ◆ inadequate knowledge of fire prevention and mitigation techniques, plus the lack of operating procedures and appropriate institutional arrangements for co-ordinating mitigation measures at the national, regional and international levels;
- ◆ inadequate prevention and mitigation capacity; and
- ◆ inadequate or lack of committed funding for prevention and mitigation activities at the regional, national, provincial and local levels.

At regional level:

- ◆ non-intervention principle among ASEAN members that forestall any legal or other action that could have been taken;
- ◆ lack of political will among ASEAN members to incorporate regional soft law into national legislation;
- ◆ absence of requirements in regional policies, declarations and agreements for ASEAN members to enforce international legal instruments;
- ◆ lack of standards in ASEAN agreements that could be readily promulgated by individual members; and
- ◆ discrepancies between the content of regional agreements and national law and their implementation.

Basically these problems highlight the continuing problems to forest fire prevention and control that have also been identified in various other studies including lack of political will, poorly formulated policies, weak legislation, bureaucratic procedures, land-use conflicts and inadequate resources to enforce laws and regulations. To overcome these constraints and weaknesses and to create conducive conditions for the management of forest fires, the following elements for national forest fire regulatory regimes have been identified in previous studies:

- ◆ clear definition of land ownership and availability of a land ownership register;
- ◆ development of a landscape plan that outlines the land uses permitted or practised on defined areas of land;
- ◆ regulations concerning construction in forests and wildlands, especially on burned areas;
- ◆ clear definition of fire management responsibilities related to various types of land ownership and different tasks in fire management;
- ◆ commensurate penalties dealt out to violators who cause forest fires. Offenders should be responsible for costs incurred in rehabilitating burnt forest areas;
- ◆ clear guidelines on what constitutes sufficient evidence to prove violations, to ensure that charges against offenders can be sustained in court; and
- ◆ unambiguous enforcement provisions and institutional mechanisms to implement them.

Complementary and supplementary to those elements identified above, this study gives some additional recommendations derived from the analysis in this report

- ◆ the regulatory regime should be consolidated into one comprehensive law on forest fire management with its corresponding decrees, rules and regulations. If this is not feasible, fire prevention and control provisions in all national legal instruments should, at a minimum, be harmonized;
- ◆ the regulatory regime should clearly allocate responsibility for forest fire management, avoiding or eliminating overlapping of jurisdiction;
- ◆ all terms used in legal instruments related to forest fire management should be technically sound, clearly defined and consistently used throughout the regulatory regime;
- ◆ the regulatory regime should provide a balance of prevention – prohibition of open burning, for example – and mitigation measures;
- ◆ measures for forest fire prevention and control should apply to all categories of forests and extend to areas outside forests and plantations;
- ◆ incentive measures to encourage private sector actors to assist authorities in forest fire prevention and control as well as to reward public sector officials for outstanding performance in the line of duty should be incorporated;
- ◆ in addition to assigning penalties for violations by private sector actors, the forest fire regulatory regime should set accountability standards for public sector authorities and specify the consequences of failures to meet those standards; and
- ◆ fines should be pegged to the cost of restoring areas burnt, in addition to fixed penalties for specific violations. The regulatory regime could establish a national fund for restoring areas burnt by forest fires.

At regional level, several elements to improve the management of forest fires are suggested, include:

- ◆ treaty, which incorporates a liability regime that covers all forms of transboundary pollution;
- ◆ protocol on transboundary pollution that could be formulated along the lines of the 1985 ASEAN Agreement on the Conservation of Nature and Natural Resources; and
- ◆ cross-jurisdictional litigation that allows plaintiffs from any country affected by transboundary pollution to prosecute the offenders in the country, from which the pollution emanated, and permit action against private companies responsible for the pollution.

1. Introduction

The history of forest fires and their effects are well documented in numerous studies and reports. South East Asia has experienced several smoke and haze incidents, often associated with extended drought and widespread use of fire to clear land for oil palm, rubber or pulpwood plantations. In the past two decades, members of the Association of South East Asian Nations (ASEAN) – particularly Malaysia, Indonesia and Singapore – have experienced five major fire and haze events: April 1983, August 1990, June-October 1991, August-October 1994 and September-November 1997 (Leong and Lim, 1999).

The 1997 occurrence was the worst ever experienced in the region, and prompted many calls for proactive plans from concerned ASEAN governments. Indonesia was the worst affected, with an estimated economic loss of US\$ 1 billion, while Malaysia and Singapore suffered a total economic loss of US\$ 372.5 million (ICEL, 1999a). The transboundary pollution came mainly from land conversion fires in Indonesia, which was unable to stop the spread of fires because of a lack of technical expertise, funds and political will.

Even with the numerous ASEAN agreements in place, Indonesia's neighbours were reluctant to take action despite the severity of the pollution for two main factors. The 'ASEAN spirit' of non-intervention is one, and pressure from Singaporean and Malaysian private companies involved in joint ventures with Indonesian timber and plantation companies is the other (Wasson and Elliot, 1998). Countries such as Thailand and the Philippines are now calling for the 'non-intervention' principle to be abandoned in the wake of the 1997/98 haze problem, thus heightening the need for an alternative regulatory regime to deal with transboundary pollution.

1.1. Scope and methodology

This review analyses legislation from all 10 ASEAN member countries,¹ relying on both primary and secondary sources of information – legislation, regulations and other legal and administrative instruments, papers and policy documents from United Nations (UN) agencies, ASEAN, Asian Development Bank (ADB), national governments and research organisations, as well as unpublished materials. In some cases, the study used unofficial translations of regulations not available in English. Secondary information was also collected through interviews with selected individuals who have been involved in the assessment and formulation of policies and legislation at the national and regional levels. Informal discussions were also held with persons familiar with ASEAN's forest fire problems.

¹ Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

2. ASEAN initiatives on forest fire control and management

Land tenure and management policies and practices, transmigration and conversion of forestlands for alternative cash crops and grazing are among the underlying causes of forest fires. There is general consensus in ASEAN that forest fires are affecting the region environmentally and economically, as well as threatening good relationships among ASEAN members. A sound fire policy, supported by effective legislation and regulations, is vital for any fire management efforts. The priorities include ensuring leadership in fire management, achieving regional co-operation and co-ordination, establishing appropriate standards, and providing adequate fiscal resources, technologies and training.

Since the 1980s, countries in South East Asia have adopted several regional legal instruments to address environmental problems and transboundary pollution in general, and forest fires and associated smoke and haze in particular, such as:

- Manila Declaration on the Environment (1981);
- Jakarta Consensus on ASEAN Tropical Forestry of the Third Meeting of the ASEAN Ministers on Agriculture and Forestry (1981);
- ASEAN Declaration on Heritage Parks and Reserves (1984);
- Bangkok Declaration on the ASEAN Environment (1984);
- Joint Communiqué of the Second Ministerial Meeting on Environment (1984);
- Agreement on the Conservation of Nature and Natural Resources (1985);
- Joint Press Release of the Third ASEAN Ministerial Meeting on Environment (1987);
- Jakarta Resolution on Sustainable Development;
- Joint Press Release of the Fourth ASEAN Ministerial Meeting on Environment (1987);
- Kuala Lumpur Accord on Environment and Development (1990);
- Singapore Resolution on Environment (1992); and
- Bandar Seri Begawan Resolution on Environment and Development (1994).

Other, non-legally-binding ASEAN co-operation includes:

- ASEAN Co-operation Plan on Transboundary Pollution (1995);
- Establishment of Haze Technical Task Force (1995);
- Bilateral Memorandum of Understanding between Indonesia and Malaysia on Transboundary Haze (1997); and
- Regional Haze Action Plan (1997).

With the huge economic losses from the fires and haze, the focus has shifted from a regulatory approach to government management and policing of forests as economic resources (FAO, 1999). This is illustrated by the Indonesian and Malaysian governments' formulation of policies, guidelines and legislation to address open burning, forest fires and prevention of future transboundary pollution. In 1999, Indonesia formulated the National Guidelines on Forest Fires Prevention with assistance from the International Tropical Timber Organisation (ITTO). However,

since these guidelines and regulations are largely disregarded, they only complicate the legal system and add to poor or non-implementation of the regulatory regime.

In attempting to assess the effectiveness of existing policies and legislation over the past 15 years, the Indonesian State Ministry of Environment (1998) summed up the problems experienced by other countries South East Asia in implementing the numerous soft and hard laws enacted, including:

- lack of institutional commitment at regional, national, provincial and local levels to invest in preventing land and forest fires as opposed to mitigation (i.e. firefighting);
- increased vulnerability of forestlands to fire due to unsustainable forest management and harvesting practices;
- conflicting roles and responsibilities of institutions concerned with managing forestlands and forest fires;
- indifference to the cyclical nature of the fire-and-haze episodes in the region;
- inadequate information and communication systems;
- vested interests that marginalise issues relating to fire and haze to favour a particular sector, individual or corporation;
- lack of incentives to promote improved logging techniques;
- inadequate research into the use of logging residues;
- indifference of the private sector to the environmental consequences of large-scale fires;
- inadequate knowledge of fire prevention and mitigation techniques, plus the lack of operating procedures and appropriate institutional arrangements for co-ordinating mitigation measures at the national, regional and international levels;
- inadequate prevention and mitigation capacity; and
- inadequate or lack of committed funding for prevention and mitigation activities at the regional, national, provincial and local levels.

This assessment highlights the lack of political will, poorly formulated policies, weak legislation, bureaucratic procedures, land-use conflicts and inadequate resources to enforce laws and regulations that have also been identified in various other studies as continuing problems to forest fire prevention and control.

In addition, gaps in existing policies and legislation at the national and regional levels have been well documented (State Ministry for Environment, 1998; ICEL 1999b; FAO 1999; Bompard and Guizol, 1999), such as:

- lack of political will among ASEAN members to incorporate regional soft law into national legislation;
- absence of requirements in regional policies, declarations and agreements for ASEAN members to enforce international legal instruments;
- lack of standards in ASEAN agreements that could be readily promulgated by individual members; and
- discrepancies between the content of regional agreements and national law and their implementation.

Successful implementation of policies and legislation is highly dependent upon support from all sectors of society. It is imperative that policies and laws provide for effective monitoring, consistent enforcement, institutionalisation within the government and administrative flexibility. To address ASEAN's significant forest fire challenge, any legislative initiative must be coupled with enhancement in areas

such as infrastructure, institutional arrangements, public education and awareness, fire suppression technologies, and settlement policies and practices.

The fundamental problem is that the capacity to enact policies and legislation outstrips the ability and/or the willingness to monitor and enforce them.

3. Laws governing forest fires within ASEAN

Legislation governing forest fires in Brunei, Indonesia, Malaysia and Singapore is presented first, as the haze had a greater impact on these countries' economies. Regulatory regimes in some of the other six ASEAN countries are more comprehensive than in these four countries.

3.1. Brunei Darussalam

Brunei is situated at the northwestern tip of Borneo. Presently, about 80% of its land area, or 469,069 ha, are still under forest cover. Of this, 41% or 235,520 ha have been gazetted as permanent forest reserves.

Most of the fires in Brunei are started out of negligence as bush fires from roadsides, residential and development areas. Forest or bush fires are rarely severe or widespread, and are mostly confined to isolated patches along roadsides. It is estimated that the total area burnt throughout the country is about 6,200 ha, most of which are often brushlands, heath and peat swamps, and forests. In the forest reserves, the areas mostly affected are logged-over forests, some of which have been converted to rattan and timber plantations, or restored through enrichment plantings.

Brunei has extended forest firefighting responsibilities to several government agencies including the Fire Services Department, Armed Forces, Ministry of Development, Ministry of Industry and Primary Resources, Ministry of Health, Department of Public Works, Meteorological Section of the Department of Civil Aviation, Department of Information and the Forestry Department. As forest fire is not a serious concern to Brunei, smoke management has higher priority than forest fire prevention.

3.1.1. Laws related to forest fires

Forestry Law 1984

Section 20 of the Forestry Law Chapter 46 (revised 1984) states that 'no person shall kindle, keep or carry any fire, or leave any fire burning, whether within or outside a forest reserve, in such a manner as to endanger such reserved land'. Reserved land in this context means forest reserves or any forest areas under full Forestry Department jurisdiction. The penalty for such offences is a fine of B\$1,000 and imprisonment of six months.

Minor Offences Act 1998

After the 1997/98 fires, fines for open burning were increased from B\$1,000 to B\$150,000. In addition to these legal provisions, the Fire Services Department is collaborating with the Forestry Department to implement fire prevention measures by requiring the rural population, particularly farmers, to seek approval before burning agricultural residues over wide areas.

3.1.2. Analysis of the laws

The provisions of Section 20 of the Forestry Law are comprehensive, covering areas outside the boundaries of forest reserves. This can be interpreted to cover neighbouring lands marked for clearing, which, if done by burning, can endanger the forests. As with other ASEAN national laws, there are no provisions that outline the preventive measures to be taken by the Forestry Department, leaving the Department's role and responsibility for forest fire management undefined. Increasing the penalties for open burning under the Minor Offences Act complements the Forestry Law. However, neither Act prohibits open burning nor provides rewards to the public and government officers for reporting incidences of forest fires or open burning.

3.2. Indonesia

Indonesia is a country of over 17,000 islands of which 6,000 are inhabited. In 1998, its forest cover was 140 million ha comprising 113.8 million ha of permanent forest and 26.6 million ha of 'conversion forest' (FAO, 1998). The history of forest fires in Indonesia is well documented. In Sumatra, Kalimantan and Sulawesi, forest fires are very often started by human activities such as shifting cultivation, grazing, hunting, and significantly, preparation of land for timber or agricultural crop (e.g. oil palm) plantations. Land conversion includes clear-cut and selection logging by the timber industry, development of large-scale private and state-owned plantations, tree crop smallholder and shifting cultivation by local people and transmigrants (UNCHS and Government of Indonesia, 1999).

3.2.1. Laws related to forest fires

Forest policy in Indonesia is based on the Constitution of 1945, which mandates the state to manage its natural resources, including the forest, for the benefit of the people (Article 33). To simplify the policy, the Government of Indonesia has established several laws and regulations related to forest and land fire, in the form of:

- Acts such as concerning Forestry, Environmental Management, Conservation of Living Natural Resources and their Ecosystem, Ratification of United Nations Convention on Biological Diversity, Ratification of United Nations Framework Convention on Climate Change, Agricultural Crop System and State Administration.
- Government regulations concerning forest protection, environment impacts analysis, air pollution control, government and provincial authorities as autonomy regions, and control of environmental degradation and/or pollution in correlation with forest and/or land fire.
- Ministerial or Director General Decrees.

Forest fires are covered in the Basic Forestry Law No. 41 1999 (which replaced the Basic Forestry Law 1967), the Conservation of Living Natural Resources and their Ecosystem Act No. 5 1990, the Environmental Conservation Act No. 23 1997 and Government Regulation No. 28 1985. Based on these laws and regulations, both the Ministries of Forestry and Agriculture have issued decrees detailing technical guidelines.

There are numerous laws, regulations, decrees, guidelines and directives on the management of forest fires in Indonesia (see Appendix 2 for a list of regulations issued by the Ministry of Forestry). Below is a brief discussion of some of the existing laws related to forest fire management.

Basic Forestry Law Act No 41 of 1999

This is the basic law for all forestry regulations such as Government Regulation on Forest Protection, dealing with the terminology, status and function of forest, forest administration, forest planning, forest management, research and development, education and training as well as extension, control mechanism, decentralisation of authority, traditional community rule, participatory principles, representative claim, forestry conflict resolution, investigation, provision of criminal activity and administrative sanction.

There are two chapters that are closely related to forest fire, namely forest protection and nature conservation (6 articles) and provision of criminal activity (2 articles). Some important information from this act is:

- Forest fire is part of forest protection activities;
- The government should manage all aspects of forest protection inside and outside forest area;
- The concession or license holder shall be responsible for forest protection, including forest fire;
- The community should be involved in forest protection activities, including forest fire; and
- The penalty for individuals or groups or companies that intentionally or carelessly do something illegal is doubled.

Supplementary regulations and decrees related to forest fires

The following brief descriptions of the regulations and decrees still in force after the enactment of the Basic Forestry Law are based on a review carried out by Bompard and Guizol (2000) and a preliminary review of Indonesian laws conducted by Project FireFight South East Asia.

- Government Regulation on Forest Planning (PP) Number 33/1970
Mandates the spatial planning and demarcation of the functional categories of forest together with an inventory and survey of resources for use and conservation. Conservation is given precedence over utilisation in all cases where demarcation is not yet determined.
- Government Regulation on Forest Planning (PP) Number 28/1985
Primary responsibility is given to the provinces to prepare regulations to prevent and suppress forest fires and to provincial forestry officers to protect areas in and around the estate. It is the responsibility of the local population to take part in prevention and suppression of forest fires, but the false assumption that people live only around, but not in, the forest is perpetuated.
- Decree of the Minister of Forestry Number 195/Kpst-II/1986
Directive on the prevention and control of forest fires. Paragraph 10 stipulates that prevention and management of forest fires (PPKH) should be founded in local regulations. Provides guidelines to local governments to formulate local regulations on the prevention and management of forest fires.
- Presidential Decree Number 43/1990
On the establishment of Bakornas PB (National Co-ordinating Board on Disaster Management) as an extra-structural organisation at the national level. Major forest fires can be declared a national disaster.
- Guidelines for the Protection of Utilisation Forestry Number 523/Kpts-II/1993

Each concession holder is responsible for the organisation and equipping of a patrol and protection unit (Satpam PH), appropriately funded and competently staffed according to the size of the concession.

- Decree of the Minister of Forestry Number 677/Kpts-II/1993
On the establishment of an Echelon III Sub-Directorate of Forest Fire under the Directorate General of Forest Protection and Nature Conservation. Describes the tasks and authority of the Sub-Directorates.
- DG of Forestry Production Decree No. 222/Kpts/Dj-VI/94 concerning Guideline for Land Preparation for Timber Estate Development without Burning
Since 1994, the Ministry of Forestry has tried to implement a ‘Zero Burning Policy’ by establishing the technical guidelines concerning land preparation for timber estate development without burning.
- Decree of the Director General of Forest Protection and Nature Conservation Number 243/Kpts/DJ-VI/1994
On fire prevention and control in forest concessions. After a fire, economic and ecological losses and rehabilitation costs of the area burnt must be estimated.

Timber concessionaires (HPH)/Hutan Tanaman Industri (HTI) companies and state-owned enterprises must establish a fire control centre and reduce controlled burning in land clearance. The size of fire control teams is specified. If license holders do not carry out fire control, the services provided by all forestry institutions will be halted. Specifies financial penalties for failure to rehabilitate burned areas.
- Decree of the Director General of Forest Protection and Nature Conservation Number 244/Kpts DJ-VI/1994
On technical guidelines for forest fire control. Requires companies to provide transport, firefighting kits, communications and food, as well as firefighting teams and command posts near the fire areas. Firefighting tools are described, as are supporting machinery and national-level equipment. The number of firefighters is stipulated for various sizes of fire as are the control methods to be used.
- Decree of the Director General of Forest Protection and Nature Conservation Number 245/Kpts/DJ-VI/1994
On the functions, application, maintenance and storing of fire control equipment, transport and communication tools.
- Decree of the Director General of Forest Protection and Nature Conservation Number 246/Kpt/DJ-VI/1994
On the production of fire warning signs. HPH and HTI holders are obliged to provide signs and are instructed on where and how to deploy them.
- Decree of the Director General of Forest Protection and Nature Conservation Number 247/Kpts/DJ-VI/1994
Describes standardised firefighting infrastructure, such as radios, fire control teams, patrol equipment, observation facilities and tools.
- Decree of the Director General of Forest Protection and Nature Conservation Number 248/Kpts/DJ-VI/1994 concerning Standard Operating Procedure for Forest Fire Prevention and Mitigation
Describes fire prevention procedures; patrols; sign fixing; fire control training; observation tower and fire control. It provides a technical guideline

for forest fire prevention and mitigation at any implementation stage. The objective would be the availability of a proper procedure that can be used by workers in the field and the public. More effective and efficient activities are expected to minimise the negative impact of forest fire.

- Decree of the Minister of Forestry Number 188/Kpts-II/1995
Establishes the National Forest Fire Control Centres (Pusdalkarhutnas) with their organisation structure and job descriptions.
- Decree of the Minister of Forestry Number 260/Kpts0II/1995
On improvements to SK Menhut Number 195/Kpts-II/1986 on fire prevention.
- Decree of the State Minister of Environment Number Kpe-18/MenLH/3/1995
On the establishment of National Co-ordinating Team on Land Fires (TKNKL), issued by the Minister of Environment. Creates the National Co-ordination Agency for Land Fires (BKNKL). Mandates the creation of co-ordinating units at the provincial level, to be established by Governor's decree and known as the Co-ordinating Team for Management of Fires (Tim Koordinasi Pengendalian Kebakaran Lahan: TKNPKL).
- Decree of the Director General of Plantations Number 38/KB10/SK/DJ.BUN/05.95
On Zero Burning Land Clearance (PLTB). Sets out in detail how land is to be cleared manually.
- Decree of the Co-ordinating Minister of People's Welfare/Head of Bakornas PB Number 17/Kep/Menko/Kesra/X/1995
On the work of Bakornas BP to prevent and mitigate disasters, as well as on the rehabilitation and reconstruction of disaster areas.
- Decree of the Director General of Forest Protection and Nature Conservation Number 81/Kpts/DJ-VI/1995
On guidelines for Local Forest Fire Control Centres (follow-up of Ministry of Forestry Decree No.188/Kpst-II/1995 and Ministry of Environment Decree No.18/MenLH/3/1995). Stipulates the establishment and membership of provincial Pusdalkarhutna. The Land and Forest Fire Control Task Force (Satlak) is to be housed at the provincial/district forestry office.
- Forestry Ministerial Decree No. 365/Kpts-II/97 concerning National Mascot of Forest Fire Control
This decree declares that 'Si-Pongi' is a national mascot of forest fire in Indonesia.
- Act Number 23/1997
Deals with environment management. It does not specifically refer to fire management but the Act is the foundation for assessing and adapting other existing regulations, including forestry regulations.
- Decree of the State Minister of Environment Number Kep-40 Men LH/09/1997
On the revision of TKNKL to become the National Co-ordinating Team on Land and Forest Fire Control (TKNPKHL). Changes TKNPKHL membership and gives it greater authority to formulate national policies on fire prevention and management; to co-ordinate central and local operations; and to formulate a human resource management system, monitoring mechanism, information and incentive systems.

- DG of Forest Protection and Nature Conservation Decree No. 46/Kpts/Dj-VI/97 concerning Guideline for Alertness and Safety on Forest Fire Suppression
Provides technical guidelines for forest firefighters in terms of alertness and safety during initial/advanced fire attack. The Decree discusses preparedness to ensure safety during forest fire operation and procedures in using equipment.
- DG of Forest Protection and Nature Conservation Decree No. 48/Kpts/Dj-VI/97 concerning Guideline for Forest Fire Control Command System
Provides technical guidelines on command system and how to organise firefighters so that forest fire suppression succeeds. In general the Decree discusses organisation and field fire suppression command system.
- Forestry Ministerial Decree No. 97/Kpts-II/1998 concerning Emergency Procedure for Forest Fire Crisis
This decree plays an important role in operating all forestry agencies at the national and provincial/district levels such as the Provincial Forest and Land Fire Control Centre and District Forest and Land Fire Control Centre.
- Act No 22 of 1999 concerning Regional Government Administration
Following the decentralisation ‘movement’ in Indonesia in the last three years, this Act has been issued to give the local (provincial and district) government authorities the legal framework to administer their own region under the umbrella of Republic Indonesia as a Union Country. The objectives of this Act are to empower (local) community, enhance initiative and creativity, improve community participation, and strengthen the role and function of Provincial/District/City House Representative.
Much of this Act deals with terminology, regional division, establishment and structure of region, regional authority, form and structure of government administration, provincial/district regulation and Head of Region Decree, civil service in the region, finance in the region, co-operation and conflict management, urban area, guidance and supervision, Autonomy Advisory Council, transition provision and concluding provision.
An important point to note is the division of the Republic of Indonesia into autonomous Provincial, District and City Regions to administer all governmental concerns except foreign affairs, defence and security, judicial issues, monetary and fiscal matters, religion, policy on national planning and development, administration system and economic institutions, guidance and empowering of human resources, utilisation of strategic natural resources and high technology, conservation and national standardisation.
- Government Regulation Number 28/1999 on forest protection
Article 10 states that no one is allowed to burn forests without authorisation and stipulates that communities living around forests must participate in the prevention and control of forest fires that is regulated by provincial regulations, based on directives from the Minister. Article 18 imposes criminal sanctions on parties that cause forest fires due to their negligence. Violators will be jailed for a maximum of one year or fined a maximum Rp 1 million.
- Government Regulation No. 25 of 2000 concerning Central Government Authority and Provincial Authority as Autonomy Regions
The purpose of assigning regional autonomy is to enhance community welfare, fair distribution and justice, democratisation, local culture, potential and diversity of the regions.

The scope of authority is classified into several aspects including agriculture, sea, mining and energy, forestry and estate crops, industry and trade, co-operation, investment, tourism, employment, health, education and culture, social welfare, land-use/space planning, land tenure, public works, transportation, environment, domestic affairs and public administration, development of autonomy, budgets, population, sports, law and regulation, information and other specific aspects.

- Government Regulation No. 4 of 2001 concerning Control of Environmental Degradation and/or Pollution in Correlation with Forest and/or Land Fire

The scope of the regulation is to:

- prevent forest and land fire and environment degradation and pollution;
- suppress forest and land fire and environment degradation and pollution;
- rehabilitate the impact of forest/land fire and environment degradation and pollution;
- control the implementation of the efforts;
- give clear responsibility to central, provincial, district/city governments and every concession/license holder;
- give authority to each province and kabupaten/district to develop its own forest and land fire organisation;
- clarifies obligations of individuals or concession/license holders on forest and land fire occurrence; and
- enhance community awareness through development of traditional values and practices supporting forest and land protection, and local institutions.

The central government through the National Budgeting System (APBN) and the provincial/district government through the Provincial/District Budgeting System (APBD) provide funding for the activities.

- Presidential Decree No. 3/2001 concerning Bakornas PB & P (National Co-ordinating Board for Disaster Management and Refugee Control)

This decree is the legal basis for the establishment of Badan Koordinasi Nasional Penanggulangan Bencana & Pengungsi (Bakornas PB & P), a national board responsible for co-ordinating different government agencies in managing national disaster and refugee issues, including fire and haze disaster, e.g.:

- The Ministry of Forestry is involved actively in this board as the leading department for forest fire suppression when the President or Vice President of the country declares any outbreak of fire as a national disaster.
- The board is also involved at the provincial level in the Satkorlak PB & P (Executing Co-ordination Unit for Disaster Management and Refugee) and at the district level in the Satlak (Executing Unit).

- Provincial Regulation on the Efforts of Forest Fire Prevention and Suppression

A few provinces in Indonesia have issued such regulations, e.g. the Nusa Tenggara Timur Provincial Regulation No.26 of 1988, which consists of 9 chapters and 16 articles that describe the requirements of control burning, implementation of prevention and suppression efforts, organisation, provision of criminal punishment, investigation and concluding provision.

- Governor Decree on the Establishment of Provincial Forest and Land Fire Control Centre
This decree describes the organisation structure (*ad-hoc*) of ‘task-force’ Pusdalkarhutnas and Satlak in greater details, including the tasks and roles of each member, who comes from related agencies and companies.

3.2.2. Analysis of the laws

Decentralising autonomy is an ongoing process and Indonesia still needs to formulate general policies to define task, authority and responsibility for all parties and all levels. At the national level, four institutions deal with forest and land fires – Ministry of Forestry, Ministry of Agriculture, State Ministry of Environment and National Co-ordination Board for Disaster Management and Refugees. Many provinces also have difficulties in assigning leading sectors for forest and land fires because several institutions are involved including the Provincial/District Forest Service, Provincial/District Environment Impact Control Office, Civil Defence Office, Provincial Forest and Land Fire Control Centre or Executing Co-ordination.

Indonesia has many laws directed at forest and land clearing by fire. The decrees also include a presumption of guilt if a fire starts on a landowner’s property. However, implementation of these decrees is not co-ordinated mainly because they are issued at different levels by various national ministries and provinces, often without cross-referencing with each other (BAPPENAS, 1998).

Almost 90% of haze come from burning practices both by companies and communities. Unfortunately there is no technical guideline, provincial regulation or Bupati decree for burning practices.

As a point for further consideration, Forestry decree No.251/Kpts-II/1993 that addresses the community use of forest products in concession areas is a contentious decree. While recognising the traditional rights of communities to timber and non-timber products, it also assumes that forests are primarily for timber extraction that can only be carried out by concession holders. Community members must obtain permission from the local head of forestry before they are allowed to access the forest products. This has serious implications for forest management particularly in dealing with community rights and biodiversity conservation (BAPPENAS, 1998).

3.3. Malaysia

Malaysia is a federation of 11 states located in Peninsular Malaysia and 2 states in East Malaysia (Sabah and Sarawak). There have been no major incidences of forest fires in the Peninsular. Isolated outbreaks tended to occur in forests cleared for commercial crop plantations. The cumulative total area of forest fire damage recorded in Peninsular Malaysia between 1985 and 1998 was 2,332 ha, during prolonged annual dry spells from January to March, and June to August (Thai, 2000).

The threat of forest fires in Sabah and Sarawak is more serious. In Sabah, about 1 million ha of secondary forests were burnt between 1983 and 1985 (Thai, 2000). Most of the documented fires were caused by negligence or misuse. The fires in Sarawak tended to be confined to plantations, and are started mainly from agricultural activities in adjoining farms. There are minimal occurrences in the natural forest (Thai, 2000).

Previously, each state had its own Forest Enactment and Rules, a legacy from the British colonial authority adopted in the 1930s. However, these were weak and

deficient in planning forest conservation management and forest renewal operations. Under the Malaysian Constitution, land is a state matter and is thus within the jurisdiction of the respective state governments. Each state is empowered to enact laws on forestry and formulate forest policy independently (FAO, 1997c). The National Forestry Council established in 1971 was to facilitate the adoption of a co-ordinated and common approach to forestry. A National Forestry Policy was later formulated in 1978 to strengthen the institutional base and enhance co-operation between federal and state governments.

Malaysia has now over 46 pieces of environmental and related legislation. The majority of the legislation is sectoral in nature and is implemented by relevant government agencies. As Malaysia became more industrialised in the early 1970s, particularly with the introduction of the New Economic Policy (NEP), a comprehensive piece of legislation to standardise and create uniformity in environmental management became necessary and resulted in the Environmental Quality Act 1974 with the following objectives:

- prescribe premises for occupation and use;
- specify acceptable conditions of discharge, emission or deposit of wastes;
- specify acceptable conditions for the emission of noise into any area, segment or element of the environment;
- prescribe fees; and
- prescribe activities that may have significant environmental impact.

The National Forestry Act was passed in 1984 to streamline and standardise management of forests in Malaysia. Other Acts related to forest management in Malaysia are the Wood-based Industries Act 1984, Water Enactment 1935, Land Conservation Act 1960, National Land Code 1965, Protection of Wildlife Act 1972 (amended 1976, 1988), Malaysian Timber Industry Board 1973, Environmental Quality Act 1974, National Parks Act 1980 (amended 1983) and Malaysian Forestry Research and Development Board Act 1985. With such overlapping jurisdiction for forest management, co-operation among these government agencies is crucial to ensure effective management practice.

After the 1997/98 fire and haze, the Malaysian government proposed a National Contingency Plan to Combat Forest and Plantation Fire in Malaysia with the following objectives:

- establish an immediate and co-ordinated response system on forest and plantation fire in Malaysia;
- enhance response with the existing resources in terms of equipment, manpower and training;
- alleviate or minimise adverse impact on the environment resulting from forest and plantation fire; and
- establish an early warning system to alert authorities at national and regional levels.

In 1998, the Malaysian government also directed the National Disaster Co-ordinating Committee to include forest fire under its jurisdiction in addition to the existing responsibilities for flood, urban fires and other natural disasters. A Standard Operating Procedure (SOP) for forest and plantation fires was also formulated in line with the Malaysian National Haze Action Plan, which is a component of the ASEAN Regional Haze Action Plan. The SOP provides guidelines for the responsibilities and chain of command in response to large-scale forest fires for various government

agencies such as the National Security Division, Royal Police Malaysia, Fire and Rescue Department, Armed Forces, Forestry Department, Public Works Department, Department of Environment, Malaysian Remote Sensing Centre, Wildlife and National Parks Department and Meteorological Services Department.

3.3.1. Laws related to forest fires

National Forestry Act 1984 (amended 1993)

The Forestry Department is responsible for the administration of this Act. Section 81 prohibits the use of fire in removing timber from permanent forest reserves unless authorised. Section 82 states that no person shall kindle, keep or carry any fire, or leave any fire burning, within a permanent forest reserve in such a manner as to endanger the forest reserves. The penalty for both offences is a fine of not more than RM 50,000 or imprisonment for a term not exceeding five years, or both.

Environmental Quality Act 1974 (amended 2000)

Malaysia amended its Environmental Quality Act 1974 (EQA) in July 2000 to address problems related to open burning and to ensure Malaysia's zero burning policy is implemented. The provisions include imposing maximum fines of RM 500,000 and five-year imprisonment. The government recognised that enforcement is needed to ensure the implementation of the Act. The amendment expanded the power to investigate and enforce of various agencies including the firefighting and police services, and officers from the Ministry of Health and local councils/municipalities.

The amendment to the EQA abolished the Department of Environment's powers to issue contravention licences for burning but instead provided a specific list of authorised prescribed activities for open burning (see Appendix 1). There are 15 instances in which open burning is allowed including the burning of:

- any diseased and noxious plants;
- agricultural equipment;
- residues from land cleared for cultivating food crops;
- paddy stalks;
- sugar cane leaves prior to harvesting in an area that does not exceed 20 ha; and
- residues from smallholdings cleared for planting or replanting crops in an area not exceeding 2 ha per day.

The palm oil industry is under pressure to achieve zero burning in their land clearing operations since the EQA 1974 has effectively banned open burning on vast plantation areas. It must be noted that the zero burning policy advocated by the Malaysian government is a misnomer because exemptions are given to allow open burning. The amendment however, placed a complete ban on burning on any peat soil area.

3.3.2. Analysis of the laws

The National Forestry Act is inadequate in addressing forest fires as it is restricted to fires in forest reserves, and provisions for prevention and mitigation measures are absent. Many of the forest fires in Malaysia start outside the boundaries of permanent forest reserves, while the damage to the forest reserves often exceeds the RM 50,000 fine penalty. The laws are limited to forest reserves under the administration of the

Department of Forestry. Provisions should cover areas outside forested areas, especially neighbouring land cleared for plantations, where there is a risk of fires spreading to forest reserves.

The National Forestry Act does not assign responsibility for forest fire prevention and control to people living in the forests. The private sector, particularly plantation owners and developers, are also not legally responsible for ensuring that their land clearance burning does not cause forest fires. However, the amended EQA holds landowners and occupiers responsible for open burning on their property.

Plantation owners also required by the Forestry Law to deposit a certain amount of money into a fund as a collateral in the event that their land clearing start a fire. Costs incurred in reforesting burnt areas can be taken from this fund and the offender will have to repay the amount into the fund. This is similar to the Environmental Fund set up under the EQA 1974 to recover the costs for cleaning up spills or dumping of environmentally hazardous substances or wastes. The Forestry Department could adopt this approach under the Forestry Law.

The responsibility for preventing and combating forest fires is shared by various agencies under the EQA 1974. This offsets the insufficient human and financial resources of individual agencies, and assists the Department of Environment in implementing the EQA. In addition, the amendment to the EQA integrates relevant laws related to open burning such as Fire Services Act 1998 and Plant Quarantine Act 1976, to widen the scope in the event a major fire and haze recur.

Neither the Forestry Law nor the EQA have provisions to reward any person assisting the authorities or offering information on occurrences of forest fires or open burning. This provision should be included as an initiative for reports of violations of the law.

3.4. Singapore

Singapore, an urban island with a land area of 67,584 ha and 85% of its population living in high-rise apartments, has very little land for nature reserves. Thus, the issue of forest fires does not arise. Small-scale fires occur on the fringes of the nature reserves, mainly from fire outbreaks at installations and facilities of satellite stations, utility facilities and developing private residential estates. Singapore's forest fire management is therefore geared towards handling small-scale fires in the nature reserves.

Singapore has no laws related to forest fires. It is, however, vulnerable to the smoke and haze caused by forest fires in neighbouring countries, particularly Indonesia. The National Haze Task Force led by the Ministry of Environment was established to handle the local haze situation. Singapore operates the ASEAN Specialised Meteorological Centre (ASMC), which is intended to be the regional mechanism to strengthen the region's early warning and monitoring system, predict the spread of smoke and haze, carry out systematic tracking of the occurrences of hotspots, and provide the necessary data to support enforcement action.

3.5. Cambodia

The Kingdom of Cambodia is located between Vietnam and Thailand, bordering the Gulf of Thailand. Its forests represent an economically significant renewable resource for the country, occupying 11 million ha or 62% of the total land area (Bunnary and Boung, 2000). The forests are now under threat because of increased demand for

agricultural land, timber and fuelwood due to rapid development programmes and population growth. Fires set by shifting cultivators and other forest dwellers, although not widespread and not considered a serious threat by the government, are slowly becoming a cause of concern.

3.5.1. Law related to forest fires

Draft Forestry Law (awaiting enactment)

The draft has recently been revised but the revision had not been circulated at the time this report was prepared; the copy obtained for the purpose of this report is dated January 2000. The 1998 Forest Practice Rules were an attempt to ensure consistent management of forests in Cambodia. These rules were used to formulate the Draft Forestry Law.

Under Article 7 of the Draft Forestry Law, the Forestry Administration, under the direct authority of the Ministry of Agriculture, Forestry and Fisheries, shall be empowered to implement the law. One of its duties is to take appropriate measures against forest destruction, fires and clearing (Article 8). Chapter 13 (Articles 65-71) of the Draft Law specifically addresses the issue of forest fire, including:

- Article 68 (i): Fires in the Permanent Forest Estate (PFE) cannot be started without approval from the Forestry Administration.
- Article 68 (ii): The Ministry must prepare guidelines to determine the sectors of fire control, forest fire prevention and creation of Forest Firefighter Committees in all forested areas.
- Article 69: Forest slash-and-burn for agricultural purposes by indigenous peoples shall be prohibited within the boundaries of the PFE unless otherwise stated.
- Article 70: People, the armed forces and authorities at all levels shall be responsible for taking care of forests, protecting them, preventing fires and fighting against forest fires.

Article 105 stipulates that, after deducting expenses and safe keeping fees, 50% of fines resulting from a court order, or proceeds from the sale of products that are used as evidence, shall be deposited into the national treasury. The other 50% shall be used to reward appropriate forestry officers. Article 111 rules that setting forest fires is a forestry crime rather than an offence and carries a heavier penalty.

3.5.2. Analysis of the law

The provisions under the Draft Law only cover fires started within, and not outside, the PFE. Provisions should assign responsibility to owners of neighbouring land where fires are started, particularly where there is a risk that the fire may spread into the PFE.

The Draft Law places the responsibility to guide the Forestry Administration in managing forest fires solely on the Ministry of Agriculture, Forestry and Fisheries. Assigning responsibility to a single Ministry helps to avoid conflicts and overlapping of functions among the agencies. This aspect is absent from many of the ASEAN national laws analysed in this report.

Article 70, however, seems to indicate that every person and government agency in the country is responsible for forest fire management, without specifying the responsibility assigned to each actor. Although Article 69 prohibits slash-and-burn

practices “unless otherwise stated”, the Draft Law assumes that indigenous people do not practice slash-and-burn methods outside the PFE boundaries as the provision only covers burning within the PFE.

Article 105 does not provide incentives for the public to report forest fires or provide information that would lead to arrests of culprits. Incentives and rewards should be extended to private citizens as well as to forestry officers. Encouraging involvement of the public would help to compensate for the shortage of forestry law enforcement officers.

3.6. Lao People’s Democratic Republic (Lao PDR)

Lao PDR is a landlocked country on the Indo-China Peninsula, with a wide range of climatic conditions. The national economy has become highly dependent on forests, leading to a rapid decline of forest cover. Due to various causes such as shifting cultivation, unsound logging practices and forest fire, only 47% or 11.2 million ha of its total land area are under forest cover. The quality of the forest is deteriorating steadily, especially in the dry season when unattended fires can spread into forest areas. The Department of Forestry estimated that fires caused by human activities destroyed 211,000 and 62,000 ha of forest in 1998 and 1999 respectively. However, the government’s attempts to reduce the occurrences of forest fires are hampered by the:

- shortage of well-trained and competent staff in the Department of Forestry to undertake and supervise forest fire research, management and operations efforts; and
- dependence on foreign assistance for funds to manage forest fires.

3.6.1. Law related to forest fires

Forestry Law 1996

This law determines the principles and measures for the use, management, protection, conservation, regeneration and increase of forest resources, forests and forestlands in Lao PDR. Several articles in the law specifically address the issue of forest fires, including:

- Article 8 states that “individuals and organisations have obligations to protect and conserve forest and forestland according to regulations, and to develop measures necessary to prevent forest fire and contribute to prohibiting activities which will destroy forest by all possible means.”
- Article 41 prohibits the felling and burning of trees in protection forest, which is defined as ‘forest and forestland classified for the protection of watershed areas and the prevention of soil erosion ... includes areas of forestland significant for national security, areas of protection against natural disaster and the protection of the environment and other areas’.
- Article 45 asserts that the prevention and control of forest fire is everyone’s responsibility. Forest management agencies and local administrative authorities have the duty to educate people about the dangers of forest fires and formulate the necessary rules and measures to prevent forest fires. In addition, they must also lead efforts to fight forest fires by supplying the equipment required, with individuals and organisations giving their full co-operation.
- Article 63 refers to the rights and duties of village authorities to lead the management of forestland to prevent forest fires.

- Articles 68-73 provide for incentives and rewards for ‘good work and measures’ against offenders to encourage individuals and organisations to prevent forest fires. The incentives and rewards include money, credit privileges, tax exemptions, extended lease or increase of leased area. Offenders can be charged with imprisonment between five months to five years and fined twice the value of the goods or materials destroyed or cost of damages incurred by the fires.

There is also a directive on the Prevention of Forest Fires (Directive No. 2094/DoF. 99) but a translated copy was unavailable.

3.6.2. Analysis of the law

Some of the terms used in the law are vague. For example under Article 8, it is stated that ‘prevention measures must be developed ... by all possible means’. The law does not define ‘all possible means’ nor are the obligations of ‘individuals and organisations’ in forest fire management elaborated.

The law only prohibits the burning of trees in the protection forest, although there are four other forest classes – conservation forest, production forest, regeneration forest and degraded forestland or barren land. Reference is not made in the law to fires in these types of forests. This contradicts Article 8, which provides for all forest types to be protected.

The responsibilities of the relevant government agencies in forest fire management are specifically identified, including formulating prevention measures, public education, awareness, and rules and regulations in localities. It is easier for the relevant agencies to define their respective responsibilities to ensure activities are co-ordinated and avoid unnecessary overlap.

Articles 45 and 63 should be integrated to streamline and co-ordinate the efforts and responsibilities of the government agencies and village authorities. Many of the provisions in the law leave it to the relevant agencies authorities to take their own initiatives. Although responsibilities of the agencies are defined, guidelines must be included in the law to assist the agencies and village authorities in carrying out their forest fire management duties.

Offences are limited to fires started within forest boundaries. Fires that start outside forested areas and spread into them should be included to provide a more comprehensive coverage in managing forest fires.

Although the law provides for incentives and rewards for any person assisting the authorities in catching offenders, ‘good work and measures taken’ is not defined. It is necessary to ensure uniformity, as the type of reward or incentive given must reflect the effort taken in assisting the authorities. Also, the law provides no guidelines as to what constitutes as sufficient evidence when charging the offender.

3.7. Myanmar

With the majority of the population living in rural areas, Myanmar’s economy is mainly based on agricultural activities. However, the forestry sector’s contribution to export earnings was 32.1% in 1996. The Myanmar Forest Policy was formulated in 1995 in a holistic and integrated manner within the overall context of sustainable development. It is aimed towards balanced and complimentary land use, gazetting 30% of the total land area as forest reserves and 5% as protected areas (FAO, 1997d).

3.7.1. Law related to forest fires

The Forest Law 1992

This law focuses on a balanced approach towards conservation and development issues. It decentralises the management of forests and encourages increased private sector involvement in the timber trade. Community forestry and public participation in forest management are also covered.

Section 40 of the Act prohibits the ‘kindling, keeping and carrying any fire, or leaving any fire burning which may set fire to the forests in a reserved forest’. In addition, Section 42 states that whoever causes injury to any tree in a forest reserve will be fined the maximum of Kyat 20,000, or 2-year imprisonment.

3.7.2. Analysis of the law

Although community forestry and public participation are encouraged, landowners’ responsibility for forest fire management is not defined. Similarly, there are no provisions to ensure that the private companies prevent forest fires or be held liable for the costs of reforestation should their clearing activities cause a fire outbreak. Rewards and incentives are also not mentioned.

Section 40 limits offences only to fires started in a forest reserve. As with the previous examples, provisions to cover areas outside the boundaries of the forest reserves are necessary.

3.8. Philippines

The Philippines is an archipelago consisting of more than 7,000 islands. It is divided into 16 regions, with a total land area of 30 million ha, out of which 53% or 15.88 million ha are classified as forestland, with the remainder as alienable and disposable land.

Forest fire is a serious issue in the Philippines. Records from 1993 to 1997 showed that fire destroyed almost 50% of the forests, averaging 7,800 ha annually (Pajarillaga and Lansigan, 2000). The common sources of forest fires include natural wildfires (causing minimal damages), negligence, shifting cultivation (*kaingin*) and illegal logging.

The Department of Environment and Natural Resources (DENR) is responsible for forest fire management. Its objectives include:

- reduce the incidence of forest fire in all fire-prone areas;
- institutionalise the beneficial use of fire as a forest management tool by means of prescribed burning;
- provide adequate training to enhance firefighting capabilities of all DENR officers; and
- establish and institutionalise fire research and development to ensure continuous fire prevention and control programmes.

However, the Philippines has not been successful in forest protection and conservation activities (Pajarillaga and Lansigan, 2000). The inadequate forest fire control and management have been attributed to the absence of relevant legislation. In addition, the complexity of dealing with the vast numbers of indigenous people practising slash-and-burn methods, lack of funding, lack of equipment and inability of existing officers in DENR to implement forest fire management programmes compound the problems.

3.8.1. Law related to forest fire

Forestry Code 1975 (revised)

This decree establishes the Bureau of Forest Development, which has jurisdiction over all forestland, grazing lands and other forest reservations. Forest fire is addressed in Section 79 of the Code whereby it states that ‘Any person who ... sets fire, or negligently permits a fire to be set in any forestland or grazing land, shall upon conviction be fined in an amount between five hundred pesos and twenty thousand pesos, or imprisoned between six months to two years’.

3.8.2. Analysis of the law

The Code is regarded to be inadequate with gaps similar to other ASEAN national laws that need to be addressed. This is particularly urgent for the Philippines because forest fire is a serious problem in the country. In its efforts to reduce the occurrence of forest fires, the government has recognised the role of indigenous people as effective forest managers. Community-based forest management programmes are considered a better alternative for reducing forest fires in the Philippines, rather than the introduction of a new law.

3.9. Thailand

Thailand covers an area of 52.6 million ha and is divided into four main regions. In 1998, it had 12.97 million ha of forest area, which is rapidly being diminished by forest fires, particularly in the northern region (Viriyarattanaporn, 2000). Thailand has been faced with serious forest fires since the 1950s. A Cabinet Resolution in 1981 gave general directives for coping with forest fire including air reporting of forest fires, procuring aircraft with fire suppression equipment and developing a fire suppression plan. The National Forest Policy 1985 states that a substantial plan for tackling the deforestation problem due to shifting cultivation and forest fire must be determined.

The main cause of forest fires in Thailand is land preparation for agriculture, but the use of fire in harvesting forest products, hunting, camping and social conflicts are also major sources of such fires. The cumulative total area burnt over the past 7 years were estimated to be 7.53 million ha (Viriyarattanaporn, 2000).

The Forest Fire Control Office under the Royal Forest Department is responsible for fire control activities in all the forest area. However, budget constraints have limited the fire suppression units to operate only in fire-prone areas identified by the Royal Forest Department.

3.9.1. Laws related to forest fires

There is no specific forest fire control legislation in Thailand, but four existing forestry-related legislation contain sections providing penalties for setting forest fires.

Forest Act 1941

Section 54 prohibits the kindling, keeping or carrying of any fire, or leaving any fire burning within a permanent forest reserve in such a manner as to endanger the reserve. Violators are liable to a fine of not more than Baht 50,000 or 5-year imprisonment, or

both. This Act also lists the responsibilities of the Royal Forest Department, which include collecting fire statistics and research, conducting fire prevention campaign and fire suppression.

Wildlife Conservation and Protection Act 1960

Section 38 states that no person shall, within a wildlife sanctuary, possess or occupy the land or build up, or by any other means whatsoever construct, or cut, fell, clear, burn, or destroy trees. The penalty for this offence is a fine of not more than Baht 100,000 or 7-year imprisonment, or both.

National Park Act 1961

Section 16(i) states that within a national park, no person shall occupy or possess land or build up, clear or burn the forest. The penalty for this offence is a fine of not more than Baht 200,000 or 5-year imprisonment, or both.

National Reserved Forests Act 1995

Section 14 states that within national reserved forests, no person shall occupy, possess, exploit and inhabit the land, develop, clear, or burn the forest with the following exceptions: logging or collection of forest products, or educational purposes, with the permission of the Forestry Department.

3.9.2. Analysis of the laws

The provisions in these laws limit offences to fires started within specified areas such as PFE, wildlife sanctuaries, national parks and national reserved forests. Spreading fires that start outside these areas are not considered.

The Forest Act 1941 specifies the responsibility of the Royal Forest Department for forest fire prevention and suppression measures including conducting awareness and education programmes, data collection and research. The remaining three laws do not allocate responsibility.

While recognising the need for law enforcement, the Royal Forest Department also realises that such a measure causes friction between forestry officers and indigenous people. In addition, the Forest Fire Control sub-division lacks the manpower to enforce the laws and encounters difficulty in gathering evidence to charge the offenders. Thus, the Royal Forest Department emphasises educating the rural people on forest fires instead.

3.10. Vietnam

The Socialist Republic of Vietnam occupies a land area of 33.7 million ha, with an estimated population of 75 million in 1997. Out of this, 9 million are ethnic minorities dependent on natural forest resources. Forests are fast declining due to over-exploitation and frequent wildfires as a result of mismanagement. About 56% of the Vietnamese forest areas are susceptible to fire because as they are open forests. An average of 50,000 ha of forests have been burnt annually in Vietnam, with a maximum reaching up to 100,000 ha (Pham, 1999). The forest fires are caused mainly by human activities, including burning for swiddening, grazing, vegetation clearing and hunting.

The Forest Protection Department under the Ministry of Agriculture and Rural Development is responsible for forest fire prevention and suppression. However, forest protection is not a priority as the country recovers from the devastation of the war and faces shortages of financial and human resources. Although the government has passed many laws and decrees, these are not implemented.

3.10.1. Laws related to forest fires

Law on the Protection and Development of Forests 1991

This law was enacted to encourage people to purchase forestlands for forest protection and business development (Pham, 2000). Chapter 3 on Forest Protection deals specifically with forest fires, including:

- Article 18 provides for the People's Committees (provincial-level authorities) to organise the management and protection of forest resources and prevent damages to the forest. This is further elaborated in Article 20 where specific activities are prohibited, including destroying and burning the forests.
- Article 22 states that forest owners must implement measures to prevent and fight forest fires and shall be responsible for the fires they cause. This is further extended to give the state management agency on forestry, together with forest owners, the responsibility to draw up and direct the implementation of plans for preventing and fighting forest fires. This includes organising the forecasting, necessary manpower, means and equipment.

This law promotes preventive action rather than mitigation. It also identifies landowners as being ultimately responsible for any forest fires.

Decree No. 22 1995 the Regulation on the Prevention and Fight Against Forest Fires

This decree spells out the specific responsibilities of agencies such as the Forest Protection Department, People's Committees and the Fire Brigade in combating forest fires. It also addresses management, activities, funding and specific prevention measures to be taken for different types of forests.

- Article 6 of the Decree spells out 7 measures for forest owners to prevent and fight forest fires, including:
 - for concentrated forests, owners must establish firebreaks, put up warning signs, channel streams and lakes, and construct dams and canals to store reserve water;
 - for scattered forests managed by different owners, the owners have a duty to implement forest fire prevention plans drawn up by the Forest Protection Agency and contribute to the costs;
 - forests must not be planted in areas with no forest fire prevention designs; and
 - a plan must be drawn up to provide forest protection units with the necessary equipment and means to prevent and fight forest fires.
- Article 8 provides for exceptions where the use of fire is allowed, namely the burning of swiddens and undergrowth to prepare the soil for forest planting, cooking and heating.
- Article 17 identifies sources of funding required to implement this decree, including the State, localities and forest owners. In addition, a reward scheme is provided under Article 22 where organisations and individuals shall be

commended and rewarded for their assistance in preventing forest fires according to State regulations.

Many of the Directives listed below were issued prior to the dry season in Vietnam as preventive measures.

Directive No. 177-TTg 1995 Urgent Measures to Prevent and Fight Forest Fires

This directive to check the loss of forestlands in Vietnam instructs the Ministry of Forestry, Ministry of the Interior, Ministry of Defence and the People's Committees in the provinces and cities immediately to:

- adopt permanent and concrete measures to prevent and fight forest fires;
- (for the Ministry of Forestry) direct the localities to determine the categories of forest and areas vulnerable to fire; and
- (for Presidents of the People's Committees) personally check the plans for forest fire prevention and implement them directly.

Decree No. 77/1996 Administrative Sanction in Forest Management, Protection and Management of Forest Products

This Decree lists the penalties imposed for violations of rules on forest fires and causing forest fires, ranging from Dong 20,000 for offences such as burning of swiddens or production forests, to a maximum of Dong 50 million for causing fires in protected forests.

Directive No. 07/1998 Strengthening the Prevention and Fight Against Forest Fires

This Directive outlines the budget required for the implementation of the measures provided by the Forest Protection Department and the institutional arrangements of the relevant agencies concerned in the event of a forest fire.

Directive No. 19/1998 Urgent Measures for the Prevention and Fight Against Forest Fires

This complements Directive No. 177/1995 with more detailed responsibilities and roles to be played by the People's Committees and authorities at the district and provincial levels.

3.10.2. Analysis of the laws

Vietnam has been very proactive in developing measures to combat forest fires. Its approach focuses more on prevention than on mitigation. For example, in Decision No. 1856/1996 on the Development of Forecast Levels for Forest Fires, the government assigned the Forest Protection Department to organise the development of forest fire forecast levels for the country's nine different ecological regions. In addition, under Decision No. 86/1998, a Central Steering Committee for the Prevention and Fight Against Forest Fires was established with the Minister of Agriculture and Rural Development as the Committee Chairman to deal specifically with forest fire prevention.

Vietnam has one of the most comprehensive regulatory regimes dealing with forest fire. It addresses many of the aspects missing from other ASEAN national laws including:

- offering rewards and incentives for the public and government officers in assisting the authorities in forest fire management;
- recognising the role of the indigenous people as landowners who have the responsibility of protecting the forest resources through the formulation of guidelines and measures to prevent and combat forest fires;
- providing for alternative clearing practices; and
- identifying clear responsibilities and tasks of each agency and authority in forest fire management.

Despite this advantage, implementation remains a major issue. Problems arising from inadequate human and financial resources, and jurisdictional overlap between the Forestry Law and the Law on Environmental Protection need to be resolved.

4. Analysis of national laws related to forest fires within ASEAN

Appendix 3 contains sections of national laws that refers to forest fires from some ASEAN countries. The following elements are common to the forest fire regulatory regimes of the 10 ASEAN countries.

- None of the ASEAN members has a specific law on forest fires. Provisions for dealing with forest fires are found in forestry and environmental-related laws. In Indonesia and Vietnam, decrees have been issued to address forest fire management. Some interviewees felt that their country's regulatory regime is adequate; others did not. Officials involved in forest fire management in Malaysia thought that the new provisions on open burning under the EQA are adequate to handle any occurrences of forest fires. On the other hand, the Thailand regime is perceived to be inadequate, as there are no specific provisions on preventive and mitigating measures, nor is there a clear definition of fire management responsibilities.
- The forest laws, with the exception of those of Indonesia, Malaysia and Brunei, provide only for preventing or controlling fires started in natural forests, but overlook fires started outside forested areas or in plantations. The laws of some countries, e.g. Lao PDR, provide for preventing and controlling fires in only certain categories of forests.
- With the exception of Vietnam and Indonesia, the laws of most of the countries do not clearly allocate responsibility for forest fire management among public and private sector actors. This is particularly the case when the laws extend enforcement powers to local authorities, health departments and agricultural agencies in addition to forest authorities. In contrast, the regulatory regimes in Vietnam and Indonesia spell out duties and responsibilities to the most minor detail. For example, Indonesian Decree 246/1994 specifies the exact size and shape of axes and other equipment to be used during forest fires (BAPPENAS, 1998).
- Most of the regulatory regimes provide penalties that forest authorities are to impose on violators, but there are no corresponding provisions for dealing with forest authorities that fail to carry out their duties.
- With the exception of Lao PDR, the laws omit rewards and incentives to the public to assist authorities in spotting and fighting fires. Such provisions are important because they encourage reporting of forest fires and violations, which can also allow authorities to build and maintain up-to-date information on forest fires in their jurisdictions.

5. Proposed elements for national legal regimes on forest fire management

The following elements for national forest fire regulatory regimes have been identified in previous studies (modified from Haron *et al.*, 1999):

- Clear definition of land ownership and availability of a land ownership register.
- Development of a landscape plan that outlines the land uses permitted or practised on defined areas of land.
- Regulations concerning construction in forests and wildlands, especially on burned areas.
- Clear definition of fire management responsibilities related to various types of land ownership and different tasks in fire management, e.g., fire prevention, detection and suppression (including co-ordination and co-operation). Laws need to outline specifically the responsibilities of each actor involved with forest fire management. To co-ordinate fire prevention and control, one option would be to establish a council – chaired by a Minister to provide political clout and demonstrate that the government is serious about preventing and controlling forest fires – to oversee fire management and ensure enforcement.
- Commensurate penalties dealt out to violators who cause forest fires. Offenders should be responsible for costs incurred in rehabilitating burnt forest areas. Such a provision, if enforced, could be a powerful deterrent particularly to private sector actors.
- Clear guidelines on what constitutes sufficient evidence to prove violations, to ensure that charges against offenders can be sustained in court.
- Unambiguous enforcement provisions and institutional mechanisms to implement them.

The following elements derived from the analysis in this report complement and supplement those identified above.

- If possible, the regulatory regime should be consolidated into one comprehensive law on forest fire management with its corresponding decrees, rules and regulations. If this is not feasible, fire prevention and control provisions in all national legal instruments should, at a minimum, be harmonised. An example is the Malaysian EQA, which integrated several laws related to open burning and complements provisions of the National Forestry Act 1984 governing fire use in land clearing activities.
- The regulatory regime should clearly allocate responsibility for forest fire management, avoiding or eliminating overlapping of jurisdiction. Vietnam's Forestry Law is a good example.
- All terms used in legal instruments related to forest fire management should be technically sound, clearly defined and consistently used throughout the regulatory regime.
- The regulatory regime should provide a balance of prevention – prohibition of open burning, for example – and mitigation measures.

- Measures for forest fire prevention and control should apply to all categories of forests and extend to areas outside forests and plantations.
- Incentive measures to encourage private sector actors to assist authorities in forest fire prevention and control as well as to reward public sector officials for outstanding performance in the line of duty should be incorporated. Incentives should correspond to the type and degree of service provided, be appropriately publicised and must be equitably and transparently awarded. Lao PDR's Forestry Law is an example.
- In addition to assigning penalties for violations by private sector actors, the forest fire regulatory regime should set accountability standards for public sector authorities and specify the consequences of failures to meet those standards.
- Fines should be pegged to the cost of restoring areas burnt, in addition to fixed penalties for specific violations. The regulatory regime could establish a national fund for restoring areas burnt by forest fires.

6. ASEAN's regional approach to combating forest fire

In the two decades since the Manila Declaration on the Environment, ASEAN has had a strong preference for consensus building where protection of the regional environment is concerned. However, despite numerous agreements, protocols, resolutions and other non-binding environmental accords, implementation is far from satisfactory. This can be contributed at least in part to the 'ASEAN spirit' – a principle of non-intervention in the affairs of another nation, which is based on the Treaty of Amity and Co-operation.

Several suggestions to manage forest fires at the regional level include:

- Treaty, which incorporates a liability regime. All forms of transboundary pollution would be covered including liability for oil spills in regional seas (Wasson and Elliot, 1998).
- Protocol on transboundary pollution. Similar to Wasson and Elliot's treaty approach, ICEL (1999b) has advocated a 'Protocol on Prevention and Warding off Cross Border Smoke Pollution'. Such a protocol could be formulated along the lines of the 1985 ASEAN Agreement on the Conservation of Nature and Natural Resources.
- Cross-jurisdictional litigation. This would allow plaintiffs from any country affected by transboundary pollution to prosecute the offenders in the country, from which the pollution emanated, and permit action against private companies responsible for the pollution. This avoids conflict with ASEAN's non-intervention policy since it removes compensation actions from the public to the private sphere (Wasson and Elliot, 1998).

Another suggestion is the approach presently being taken by the ASEAN Secretariat, which formed an Intergovernmental Negotiation Committee (INC) to draft an Agreement on Transboundary Haze Pollution. The INC met four times in 2001. This proposed Agreement will consolidate ASEAN's efforts to address the smoke and haze issue and could incorporate provisions on issues not addressed in previous agreements (ICEL, 1999b). Given the seriousness of the 1997/98 fires, ratification of the new Agreement by the required number of countries should not be a contentious issue.

7. Constraints on implementing national laws governing forest fires

Implementation of laws, no matter how general or comprehensive, is a major issue in each of the ASEAN countries. Constraints include:

- **Institutional framework**
The capability of ASEAN countries to deal with big fires proved insufficient during the 1997/98 fires. Co-ordination among government agencies responsible for forest fire management was lacking, at least in part because respective responsibilities were not specified in legal and organisational frameworks. Even after that experience, organisational and institutional structures for forest fire management continue to be weak due partly to related deficiencies in finance, technology, staffing, skills and information. To achieve effective fire control, each country must clearly define responsibilities for forest fire management among government agencies, communities and the private sector, address its own shortage of trained manpower and allocate sufficient financial resources to improve its institutional capacities.
- **Lack of funding**
Many ASEAN countries lack the financial, human and technological resources to ensure effective implementation of their own laws. Countries such as Cambodia and Vietnam, among the poorest in the world, face great internal competition for their scarce resources. Financial and technical assistance from international organisations and bilateral donors are needed to establish and maintain appropriate institutional infrastructures and mechanisms, implement forest fire management programmes at all levels, train officers and community groups on operational procedures for firefighting, provide expertise and transfer needed technology.
- **Non-intervention principle**
Despite the variety of agreements among the ASEAN countries for dealing with the smoke and haze problem and the economic losses suffered during the 1997/98 fires, Indonesia's neighbours were reluctant to hold it accountable. The 'ASEAN spirit' of non-intervention came into play, forestalling any legal or other action that could have been taken. Countries such as Thailand and the Philippines are now calling for the non-intervention principle to be abandoned, but it is likely that this principle will continue to play a constraining role in managing the regional impacts of forest fires.
- **Lack of data and information**
Accurate data and information on forest fires are vital for law enforcement. It is necessary to improve the information base, harmonise information from different sources and strengthen national capacities in information collection and analysis. Collection and management of data are often expensive. Thus, it is important for each country to prioritise the kinds of information it requires and to weigh the potential benefit of the information with the cost of collecting and managing it (FAO, 1999). The ASMC in Singapore is a

valuable resource for all ASEAN countries to ensure that available data are used effectively.

- **Insufficient political will**
There have been attempts in Thailand and the Philippines to enact a law specifically dealing with forest fires. So far, these efforts have been unsuccessful as demands of the logging industry and other economic interests take priority. In addition, the lack of understanding by politicians and government authorities regarding the importance of sustainable forest management confounds the problem. For example, police and civil investigators in the forestry sector in Indonesia noted that the absence of authorisation from their superiors to conduct investigations on burning activities is hindering their enforcement efforts (State Ministry for Environment, 1998).
- **Economic development and population growth**
Vast forest areas are being cleared for residential, industrial, agricultural and other development to meet the needs of growing populations. In increasingly difficult economic circumstances and, in some cases, recession, ASEAN countries will need to optimise utilisation of their natural and agricultural resources. This will affect patterns of land use and land clearance, with the likelihood of more frequent forest and land fire outbreaks. This will be the most difficult constraint to overcome. However, governments must take into account the direct and indirect costs of forest fires to national economies. The costs of various options of preventing and controlling fires should be quantified to ensure that policies and programmes are feasible during periods of economic downturn (Haron *et al.*, 1999).

8. Conclusion

At the national level, a proactive policy implemented by comprehensive legislation and regulations are critical prerequisites for successful forest fire management. The ITTO Guidelines on Fire Management in Tropical Forests is a comprehensive set of recommendations which national governments should refer to in formulating an effective fire management plan.

Individual governments should review their own regulatory regimes not only to ensure protection of their own forests, but also to prevent a repeat of the 1997/98 fires. In enacting or amending laws governing forest fires, national governments must integrate issues including clear definitions of land ownership and uses, fire management responsibilities and law enforcement, amongst others, identified in section 5 above. The interests of neighbouring countries must also be considered in reviewing and reforming national regulatory regimes, to ensure that they contribute to implementing the Regional Haze Action Plan. The effectiveness of laws and legal reforms, however, will depend on and must be coupled with updated information, adequate funding, monitoring mechanisms, and enhanced institutional and individual capacities for fire preparedness, detection and reporting.

At the regional level, ASEAN should consider the advantages of cross-jurisdictional litigation as advocated by Wasson and Elliot (1998), in addition to ratifying the Agreement on Transboundary Haze Pollution currently being negotiated. With some members openly critical of the non-intervention principle in relation to transboundary pollution, ASEAN cannot afford to fail to adopt the proposed Agreement and ensure its subsequent ratification, to prevent further economic losses as well as further strains on regional relations. Governments also need to realise the importance of making the new Agreement effective, amend or enact national laws accordingly and, to the extent possible, harmonise them.

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Appendix 1: Prescribed activities for which open burning is allowed under the Amendment (2000) to the Malaysia Environmental Quality Act 1974

The following are prescribed as activities for which open burning is allowed:

- a. the burning of any diseased plant and noxious plant and agricultural equipment relating to the diseased plant and noxious plant pursuant to a notice or direction, as the case may be, under the Plant Quarantine Act 1976 –
 - which shall be felled and is dry prior to burning;
 - during dry weather except where the Inspecting Officer or any other authority under the Plant Quarantine Act 1976 has directed that immediate burning be carried out;
 - between the hours of 8.00 a.m. and 6.00 p.m.;
 - which is carried out away from the roads and other major routes;
 - which does not use material that emits black smoke as tinder material to ignite the fire;
 - that does not cause a nuisance to nearby residents nor interfere with normal visibility;
 - which is closely monitored and controlled and which shall be stopped after the diseased plant and agricultural equipment relating to the diseased plant or noxious plant, and the biomass is completely burned; and
 - of which the Director General has been notified in writing before the burning is carried out.

- b. the burning of carcasses of infected animal, bird and material pursuant to subsection 24 (1) and (2) and 33(1) of the Animals Ordinance 1953 –
 - which is carried out at such areas designated by the veterinary authority;
 - which does not use material that emits black smoke as tinder material to ignite the fire;
 - that does not cause a nuisance to nearby residents nor interfere with normal visibility;
 - which is not carried out at any peat soil area; and
 - of which the Director General has been notified in writing before the burning is carried out.

- c. the burning of solid or liquid fuels or structures in the course of carrying out research into causes and control of fires, or for the training of any Fire Officer, Auxiliary Fire Officer, or any personnel in the fire-brigades of any private organisation, educational institution or voluntary organisation or voluntary fire-brigades, established under the Fire Services Acts 1988 in the methods of fighting fires which is –
 - carried out only at sites which are approved by the Director General; and
 - closely monitored and controlled.

- d. the burning of plant from a land clearing for the cultivation of food crops or cash crops for the purposes of shifting cultivation –
- which shall be felled and is dry prior to burning;
 - during dry weather between the hours of 8.00 a.m. and 6.00 p.m.;
 - which is closely monitored and controlled until completely burned;
 - of which the Penghulu or Village Headman of the village in which the burning is to be carried out has been informed prior to the burning; and
 - which is not carried out at any peat soil area.
- e. the burning of paddy stalks prior to replanting –
- which shall be dried for a minimum period of 7 days prior to burning;
 - during dry weather between the hours of 1.00 p.m. and 5.00 p.m.;
 - which is closely monitored and controlled;
 - if the smoke and particles resulting from the burning do not interfere with the traffic and adequate warning of the potential hazards has been given to road-users where the burning is carried out near the roads or other major routes;
 - that does not cause nuisance to nearby residents nor interfere with normal visibility; and
 - of which the nearest police station has been informed prior to the burning.
- f. the burning of sugar cane leaves prior to harvesting in an area that does not exceed 20 ha during the harvesting period –
- when the weather is dry;
 - between the hours of 11.00 a.m. and 5.00 p.m.;
 - if the smoke and particles resulting from the burning do not interfere with the traffic and if adequate warning of the potential hazards has been given to road-users, where the burning is carried out near the roads or other major route;
 - which is closely monitored and controlled by a competent person to ensure that only the allocated area is burned and that the fires do not spread to adjacent areas;
 - which is carried out after the application for the burning has been approved in writing by the Director General;
 - of which the nearest police station has been informed prior to the burning; and
 - which is not carried out at any peat soil area.
- g. the burning of plants for land clearing for the purpose of planting or replanting of plant crops by smallholders in an area that does not exceed 2 ha per day –
- which shall be felled and is dry prior to burning;
 - during dry weather between the hours of 8.00 a.m. and 6.00 p.m.;
 - that does not use material that emits black smoke as tinder material to ignite the fire;
 - which is carried out away from the roads and other major routes;
 - that does not cause a nuisance to nearby residents nor interfere with normal visibility;
 - which is closely monitored and controlled and which shall be stopped after the felled plant and the biomass are completely burned; and
 - which is not carried out at any peat soil area.

- h. the burning of pineapple stumps prior to replanting, which is dry prior to burning, in an area that does not exceed 6 ha per day –
 - during dry weather between the hours of 8.00 a.m. and 6.00 p.m.;
 - that does not use material that emits black smoke as tinder material to ignite the fire;
 - which the pineapple stumps has not been sprayed with herbicides prior to burning;
 - which is earned out away from the roads and other major routes;
 - that does not cause a nuisance to nearby residents and interfere with normal visibility;
 - which is carried out after the application for the burning has been approved in writing by the Director General; and
 - which is not carried out at any peat soil area.
- i. the burning of any articles as part of religious rites or worshipping activities;
- j. cremation;
- k. camp fire which is not carried out at any peat soil area;
- l. outdoor grills, barbecues or fireplaces for the preparation of food which is not carried out any peat soil area;
- m. the burning of leaves, tree branches and yard trimming in villages in rural areas which is not carried out any peat soil area; and
- n. the burning of flammable gases where the industrial flare is properly operated.

Appendix 2: Technical guidelines issued by the Ministry of Forestry, Indonesia

1. Forestry Ministerial Decree No. 523/Kpts-II/93 concerning Guidelines for Forest Protection in Forest Concession Areas
2. Forestry Ministerial Decree No 260/Kpts-II/95 concerning Guidelines for Forest Fire Prevention and Suppression Efforts
3. Forestry Ministerial Decree No 188/Kpts-II/95 concerning Guidelines for National Forest Fire Control Centre
4. Forestry Ministerial Decree No 365/Kpts-II/97 concerning National Mascot of Forest Fire Control
5. Forestry Ministerial Decree No 97/Kpts-II/98 concerning Procedure of Forest Fire Crisis Management
6. Provincial Regulation (*Peraturan Daerah*) for every province
7. Governor Decree concerning Provincial Forest and Land Fire Control Centre for every province
8. DG of Forest Protection and Nature Conservation (PHPA) Decree No. 243/Kpts/Dj-VI/94 concerning Technical Guideline for Forest Fire Protection Prevention and Mitigation in Forest Concession Areas and other Forestland Uses
9. DG of PHPA Decree No. 244/Kpts/Dj-VI/94 concerning Technical Guideline for Forest Fire Suppression
10. DG of PHPA Decree No. 245/Kpts/Dj-VI/94 concerning Standard Operation Procedure of the Use of Forest Fire Suppression Equipment
11. DG of PHPA Decree No. 246/Kpts/Dj-VI/94 concerning Guideline for Creating and Posting Forest Fire Sign
12. DG of PHPA Decree No. 247/Kpts/Dj-VI/94 concerning Guideline for Standard of Forest Fire Prevention and Mitigation Supplies
13. DG of PHPA Decree No. 248/Kpts/Dj-VI/94 concerning Standard Operation Procedure for Forest Fire Prevention and Mitigation
14. DG of PHPA Decree No. 81/Kpts/Dj-VI/95 concerning Implementation Guidance for Forest and Land Fire Control
15. DG of PHPA Decree No. 46/Kpts/Dj-VI/97 concerning Guideline for Alertness and Safety on Forest Fire Suppression
16. DG of PHPA Decree No. 48/Kpts/Dj-VI/97 concerning Guideline for Forest Fire Control Command System
17. DG of Forest Utilisation Decree No. 222/Kpts/Dj-VI/94 concerning Guideline for Land Preparation for Timber Estate Development without Burning
18. DG of Plantation Decree No. 38/KB.110/SK/Dj.BUN/05.95 concerning Guideline for Land Clearing without Burning for Estate Crops Development.
19. Each Regional Forest Officer has a Decree concerning Establishment of Command Post, Establishment of Provincial Task Force and others

Appendix 3: Sections of selected national laws related to forestry fires

Brunei Darussalam

Forestry Law 1984

Section 20

Subject to the provision of Section 21 (Act excepted from Section 20), no person shall kindle, keep, or carry any fire, or leave any fire burning, whether within or without a reserved forest, in such a manner as to endanger such reserved land. (“Reserved Land” in this context means forest reserves or any forest areas falling under the full jurisdiction of the Forestry Department. Penalty for such offence is a fine of B\$1,000.00 and imprisonment of six months).

Cambodia

Draft Forestry Law (awaiting enactment)

Chapter 3 Forestry Administration

Article 7

1. The Forestry Administration shall have a centrally-directed structure of horizontal administration divided into inspections, cantonments, divisions and triages placed under direct authority of the Minister of Agriculture, Forestry and Fisheries.
2. The Forestry Administration shall be empowered legally to act pursuant to its forestry duties and assignments at all levels of its administration nationwide.
3. *Prakas* of the Ministry of Agriculture, Forestry and Fisheries shall define the organisation and function of the Forestry Administration.

Chapter 13 Forest Protection

Article 65

1. The forest and its domains shall be protected against all forms of loss due to the destruction caused by excessive exploitation, abusive forest clearing, forest fires, slash-and-burn fields, diseases, noxious insects and the introduction of harmful species of vegetation.
2. Activities that damage forests and its domains shall be prohibited. In particular:
 - a. To displace, to remove, or to destroy the boundary post or distinctive signs marking a forest boundary.
 - b. To mutilate, poison, destroy, fell, or uproot trees without technical necessity.
 - c. To exercise the forestry users’ rights differently from those recognised or authorised.
 - d. To exercise other means, e.g., by keeping unleashed or leashed livestock in areas sprouted with new young growth resulting from harvesting or forest fires, or in areas being planted, or already planted.

Article 66

1. The export and import of tree seeds or vegetation species shall be subject to study and evaluation by the Forestry Administration and will require permission from the Minister of Agriculture, Forestry and Fisheries.

2. The import of seed of all species shall have an Import Visa issued by the scientific authority of the exporting country.

Article 67

1. In addition to other Laws on quarrying, soil and sand excavation, mining and other natural resources, all excavation works and exploitation conducted within a Permanent Forest Estate shall require a prior study and evaluation by the Ministry of Agriculture, Forestry and Fisheries, and shall also require an authorisation from the Royal Government.
2. Such authorisation shall duly define the protection and restoration measures on sites for quarrying, soil and sand excavation, mining and the utilisation of other natural resources, under which the holder of rights shall be responsible for.
3. Not provoking and aggravating soil erosion, or damaging vegetation, hydrologic systems and the quality of water.
4. After the completion of work, restoring sites for quarrying, soil and sand excavation, mining and the utilisation of other natural resources, into their original state within the time frame set by the permit.

Article 68

1. It is prohibited to set fires in the Permanent Forest Estate. Setting fires may be done especially by the Forestry Administration as a special measure for silviculture or forest well being.
2. Guidelines to determine sectors of forest fire control, forest fire prevention and creation of Forest Firefighters Committees to be enforced in all forest domains shall be determined by *Prakas* of the Ministry of Agriculture, Forestry and Fisheries.

Article 69

1. Forest slash-and-burn for agricultural purposes by indigenous people shall be prohibited within the boundaries of the Permanent Forest Estate, unless otherwise described in the provisions of the Law.
2. The forestland reserved for this type of use shall be prescribed by Sub-Decree.

Article 70

People, armed forces and authorities at all levels shall be responsible for taking care of forests, protecting them, preventing fires and fighting against forest fires.

Article 71

Unless otherwise prescribed in the provisions of this Law, all forest clearing activities for any purposes within the boundaries of the Permanent Forest Estate shall be considered as a criminal forestry offence and shall be subject to criminal sanctions.

Chapter 16 Procedures to Resolve Forestry Offences

Article 105

After deducting the amounts of expenses and safekeeping fees, the fines resulting from court order, or proceeds from the sale of evidence products, shall be divided, *with* fifty percent (50%) deposited into the national budget and another fifty percent (50%) *used* to reward appropriate forestry officers.

Chapter 17 Forest Offences and Legal Penalties

Article 111

The following activities shall be regarded as forestry crimes:

1. Forging or using a fake hammer-stamp, or destroying the mark of the Forestry Administration that was affixed on logs.
2. Misrepresenting oneself by wearing the uniform, insignia, or hierarchical ranking badge of a Forestry Administration Officer.
3. Falsifying public documents related to the forestry or wildlife domain.
4. Destroying, hiding, selling, or stealing forest evidence.
5. Demolishing, changing, eliminating or damaging the boundary posts of forest areas.
6. Clearing forestland and enclosing it to claim ownership.
7. Setting forest fires, intentionally or unintentionally.
8. Girdling, poisoning, destroying, or felling trees, or uprooting *trees* to collect stumps.
9. Establishing a processing base for medicinal vines (Vor Ror Mirt), or a craft base for other sub-products, leading to the destruction of the forest and forest domain.
10. Hunting or killing rare or almost extinct species of wild animals.
11. Transferring rights, or selling all kinds of permits or authorisation letters, without authorisation.
12. Repeatedly committing offences without resolving to cease such activities.

Lao Peoples' Democratic Republic (Lao PDR)

Forestry Law 1996

Section I General Provisions

Article 8

Obligations in the Protection and Conservation of Forest and Forestland

All individuals and organisations have obligations in the protection and conservation of forest, forest resources and forestland, watersheds, wildlife and the environment. The use of forest and forestland by individuals and organisations must accord with regulations and not degrade or deplete forest resources. Individuals and organisations should develop measures necessary to prevent forest fire and contribute to stopping all activities that destroy forest by all possible means.

Part 5 The Protection and Conservation of Forest

Article 41

The Protection and Conservation of Forest

In order to preserve watersheds, prevent soil erosion, safeguard strategic areas for national defence, protect against natural disaster and maintain the environment it is necessary to strictly protect and conserve protection forest areas. In protection forest the following activities are prohibited; shifting cultivation, felling and burning trees or forest, removing trees, cutting firewood, raising animals, constructing houses or any other infrastructure and conducting other activities including the extraction of soil, stones or minerals, hunting or gathering of prohibited forest produce.

Article 45

The Prevention and Control of Forest Fire

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, materials 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 firefighting.

Section V The Organisation for Management of Forest and Forestry Inspection

Part 1 The Organisation for Management of Forest

Article 63

The Rights and Duties of the Village Authority

In the management of forest, forestland and forestry activities the village authority has the following rights and duties:

1. Organise the implementation of decisions and orders from the District Agriculture and Forestry Office concerning forest, forestland and forest activities.
2. Organise the allocation of village forest and forestland to individuals and organisations within the village, to manage, protect and conserve, regenerate plant, increase and use efficiently according to agreements, plans and regulations approved by the District Agriculture and Forestry Office.
3. Inform and educate villagers of the importance and value of forest and forestland, watersheds and the natural environment so that they fully understand.
4. Monitor changes in the conditions of forest, the environment and the operation of forestry activities in the area of the village and report on these to the District Agriculture and Forestry Office.
5. Mobilise the people of the village to manage forest and forestland within the area of the village.
6. Develop specific village regulations for the management, protection and conservation of forest, watersheds, wildlife and the natural environment appropriate to the actual conditions of the village.
7. Organise sedentary livelihoods for villagers aimed at limiting and ending tree felling, damage to the forest and protecting and conserving the natural environment to allow the regeneration and development of forest and forest resources toward a state of natural equilibrium.
8. Consider permission for villagers to fell trees within the village in accordance with regulations.
9. Monitor and prevent any hunting or sale of forest animals in violation of regulations.
10. Lead the timely prevention of harmful activities affecting forest resources, watersheds and the environment such as tree felling, burning forest and all other activities which damage forest resources, wildlife and water resources.

Section VI Incentives and Rewards for Good Work and Measures against Offenders

Article 68

Incentives and Rewards for Good Work

Individuals, organisations or enterprises that perform outstanding work in protection, conservation, management, tree planting, regeneration and the prevention of damage to forest and forestland will receive recognition, incentives and rewards determined by the government. These incentives and rewards include money, credit privileges, tax exemptions, extension of lease period or increase of leased area and others in accordance with regulations.

Article 69

Measures against Offenders

The main measures against parties that break the forest law are as follows:

- warning and education
- fines
- criminal punishment

In addition there are other punishment measures.

Article 70

Warning and Education Measures

Warning and education measures are applied for the following, first time offences, which cause damage valued at less than 50,000 kip.

1. Clearing of forest for shifting cultivation outside of allowed areas or in violation of other regulations.
2. Cutting of firewood, fence posts or construction timber for household consumption in violation of regulations.
3. Collection of forest produce in protected areas and/or in violation of other regulations.
4. Hunting and fishing of prohibited species in protected areas or during the closed season.
5. Illegal possession of prohibited species in violation of regulations.
6. Possession of hunting equipment in violation of regulations.
7. Import of plant and wildlife species in violation of regulations.
8. Use of forestland in violation of regulations.
9. Refusal to co-operate with forestry officers performing their duties.
10. Failure to report the use of forest or other information about forest and forestland to forestry officers.
11. Other minor violations of regulations.

Article 71

Fine Measures

Fines will be applied, at twice the value of either the damage, the value of the goods or illegal materials, the value of repairs, resource tax and any other fees or rent, to parties committing the following offences:

1. First offences as described in points 1, 2, 3, 4, 5, 6, 7, 8 of Article 70 with damage valued from 50,000 to 500,000 kip, or, if it is a second offence, with a value of 50,000 kip or less.

2. Unauthorised import, sale or possession of logging or wood processing machinery.
3. Possession or transport of timber or other forest products in violation of regulations.
4. Use of raw materials for wood processing factories in violation of regulations.
5. Failure to pay resource tax, forest fees or forestland rent.
6. Hunting or fishing of prohibited wildlife with a value of no more than 500,000 kip.
7. Unauthorised occupation of forestland.
8. Unauthorised conversion of forestland.
9. The use of forestland for an authorised purpose.

Article 72

Criminal Punishment Measures

Parties that commit the following offences will be deprived of freedom for between three months and five years and fined twice the value of the goods, materials or damages involved:

1. Felling of trees, clearing and/or burning forest and causing damage valued at more than 500,000 kip, or repeating these offences three or more times and each time causing damage valued at less than 500,000 kip.
2. Hunting and fishing for specially prohibited wildlife, as determined by the concerned agencies such as kouprey, saola, gaur, elephant, douc langur or fresh water dolphin.
3. Hunting or fishing for wildlife with devices that cause mass destruction.
4. The unauthorised import, sale or possession of woodcutting and sawing equipment as stipulated in Article 32 paragraph 2 of this law. The unauthorised import, sale or possession of logging or wood processing machinery three or more times.

Officials who permit the felling of trees or the transport of wood when they do not have authority to do so, approve the conversion, allocation or transfer of forestland in violation of regulations and laws, or misuse their duties or position for personal benefit, will be deprived of their freedom for between six months and five years.

Article 73

Additional Punishment Measures

In addition to the main punishments described about in Articles 70, 71 and 72, offenders may be subject to additional punishments such as suspension or withdrawal of permits, the withdrawal of tenure rights to forest and forestland, planting trees as a form of compensation and confiscation of equipment used in, and evidence of offences.

Malaysia

National Forestry Act 1984 (amended 1993)

Section 81

Acts prohibited in permanent reserved forests:

1. Unless authorised under this Act, no person shall, in a permanent reserved forest
 - a. graze cattle or permit cattle to graze;
 - b. fell, cut, ring, mark, lop or tap any tree; or injure by fire, or otherwise, or remove any tree or timber;
 - c. cause any damage in felling any tree or cutting or dragging any timber;

- d. search for, collect, subject to any manufacturing process or remove any forest produce or minerals;
 - e. clear or break up any land for cultivation or any other purpose;
 - f. use poisonous substance, or dynamite or other explosives on rivers or lakes for the purpose of fishing; or hunt, shoot, fish or set traps or snares; or
 - g. trespass in any manner not in this section herein before prohibited.
2. Any person who contravenes subsection (1) shall be guilty of an offence and shall on conviction be liable –
 - a. if the offence is under paragraph (a) of subsection (1), to a fine not exceeding ten thousand ringgit;
 - b. if the offence is under paragraph (b) or (c), to a fine not exceeding fifty thousand ringgit or to imprisonment for a term not exceeding five years or to both such fine and imprisonment; and
 - c. if the offence is under paragraph (d), (e), (f) or (g), to a fine not exceeding ten thousand ringgit or to imprisonment for a term not exceeding three years or to both such fine and imprisonment.
 - d. (Deleted).
 3. Any person convicted of an offence under this section may, in addition to any penalty imposed on the conviction, be ordered to pay the State Authority –
 - a. ten times the value of any tree or timber; and
 - b. the costs of repairing any damage, in respect whereof the offence was committed, and any sum ordered to be so paid shall be recoverable as if it were a fine so imposed.

Section 82

Prohibition of fire

1. No person shall kindle, keep or carry any fire, or leave any fire burning, within a permanent reserved forest in such a manner as to endanger such reserved forest.
2. Any person who contravenes subsection (1) shall be guilty of an offence and shall on conviction be liable to a fine not exceeding RM 50,000 or to imprisonment for a term not exceeding five years or to both such fine and imprisonment.

Myanmar

The Forest Law 1992

Chapter XII Offences and Penalties

Section 40

Whoever commits any of the following acts shall, on conviction, be punished with fine which may extend to Kyats 5,000 or with imprisonment for a term which may extend to 6 months or with both:

1. trespassing and encroaching in a reserved forest;
2. pasturing domestic animals or permitting domestic animals to trespass in a reserved forest;
3. breaking up any land, clearing, digging or causing damage to the original condition of the land without a permit in a reserved forest;
4. causing damage to a water-course, poisoning the water, using chemicals or explosives in the water in a reserved forest;

5. catching animals, hunting or fishing in a reserved forest;
6. kindling, keeping and carrying any fire or leaving any fire burning which may set fire to the forests in a reserved forest;
7. moving forest produce without submitting to examination at the revenue station; and
8. violating any provision of the rule, procedure, order, directive or notification issued under this Law.

Section 42

Whoever commits any of the following acts shall, on conviction, be punished with fine which may extend to Kyats 20,000 or with imprisonment for a term which may extend to 2 years or with both:

1. felling, cutting, girdling, marking, lopping, tapping or injuring by fire or otherwise any tree in a reserved forest;
2. extracting, moving or keeping in possession unlawfully timber from reserved tree other than teak without a permit;
3. establishing and operating a saw pit, saw-mill, tongue-and-groove mill, plywood mill, veneer mill or a wood-based industry with the exception of wood-based cottage industries and furniture industries without a permit; and
4. constructing a charcoal kiln or burning charcoal without a permit.

The Philippines

Forestry Code 1975 (revised)

Section 79 Unlawful Occupation or Destruction of Forestlands and Grazing Lands.

Any person who enters and occupies or possesses, or makes kaingin for his own private use or for others, any forestland or grazing land without authority under a license agreement, lease, license or permit, or in any manner destroys such forestland or grazing land or part thereof, or causes any damage to the timber stand and other products and forest growth found therein, or who assists, aids or abets any other person to do so, or sets a fire, or negligently permits a fire to be set in any forest or grazing land, or refuses to vacate the area when ordered to do so, pursuant to the provisions of Section 53 hereof shall, upon conviction, be fined in an amount of not less than five hundred pesos (P500.00), nor more than twenty thousand pesos (P20,000.00) and imprisoned for not less than six (6) months nor more than two (2) years for each such offence, and be liable to the payment of ten (10) times to the rental fees and other charges which would have accrued had the occupation and use of the land been authorised under a license agreement, lease, license or permit: Provided, That in the case of an offender found guilty of making kaingin, the penalty shall be imprisonment for not less than two (2) nor more than four (4) years and a fine equal to eight (8) times the regular forest charges due on the forest products destroyed, without prejudice to the payment of the full cost of production of the occupied area as determined by the Bureau: Provided, further, That the maximum of the penalty prescribed herein shall be imposed upon the offender who repeats the same offence and double the maximum of the penalty upon the offender who commits the same offence for the third time.

In all cases, the Court shall further order the eviction of the offender from the land the forfeiture to the government of all improvements made and all vehicles, domestic animals and equipment of any kind used in the commission of the offence. If not

suitable for use by the Bureau, said vehicles, domestic animals, equipment and improvements shall be sold at public auction, the proceeds of which shall accrue to the Development Fund of the Bureau.

In case the offender is a government official or employee, he shall, in addition to the above penalties be deemed automatically dismissed from office and permanently disqualified from holding any elective or appointive position. (As amended by PD No 1559).

Thailand

Forest Act 1941

Section 54

No person shall, kindle, keep or carry any fire, or leave any fire burning, within a forest in such a manner as to endanger the forest reserves.

Violations of the above acts by setting forest fire are liable to be fined not exceeding Baht 50,000 and/or imprisoned not exceeding 5 years, or both.

Wildlife Conservation And Protection Act 1960

Section 38

No person shall, within a Wildlife Sanctuary, possess or occupy the land, or build up, or any other means whatsoever construct, or cut, fell, clear, burn, or destroy trees or any other flora, dig for minerals, excavate ground or rock, pasture animals, change the waterway or cause the water in the river, stream, marsh or swamp to overflow, dry up or become poisonous, or endanger the wildlife.

In cases where it is necessary to implement for purposes of protection, maintenance and improvement of a Wildlife Sanctuary, or for educational purposes and scientific research, or to facilitate the residing in or sojourn in or to render safety and inform the public, the Director-General is empowered to order in writing the competent officer of the Royal Forest Department or the Department of Fisheries, whichever the case may be, to perform any such activity in a Wildlife Sanctuary, and he shall comply with the rules laid down by the Director-General with the approval of the committee.

National Park Act 1961

Section 16

Within the National Park, no person shall:

1. occupy or possess land including build up, or clear or burn the forest;
2. collect, take out, or alter any act whatsoever things, endanger or deteriorate timber, gum, resin, wood-oil, turpentine, mineral or other natural resources;
3. take wildlife out or alter any act whatsoever things or endanger the wildlife;
4. alter any act whatsoever things, endanger or deteriorate soil, rock, gravel or sand;
5. change a waterway or cause the water in a river, creek, swamp or marsh to overflow or dry up;
6. close or obstruct a water course or way;
7. collect, take out, or alter any act whatsoever things, endanger or deteriorate orchid, honey, lac, charcoal, bark or guano;
8. collect or alter any act whatsoever things, endanger flowers, leaves or fruits;

9. take in, take out any vehicle or drive it on the way not provided for such purpose, unless written permission has been obtained from the competent officer;
10. cause any aircraft to take off or land in the place not provided for such purpose, unless written permission has been obtained from the competent officer;
11. take cattle in or allow them to enter;
12. take in any domestic animal or beasts of burden; unless he has complied with the rules laid down by the Director-General and with the approval of the Minister;
13. carry on any activity for benefit, unless written permission has been obtained by the competent officer;
14. post a notification or advertisement, or scratch or write on any place;
15. take in any gear for hunting or catch wildlife or any weapon, unless written permission has been obtained from the competent officer and the conditions stipulated by the latter have been complied with;
16. fire any gun, cause any explosive article to be exploded or let off any fireworks;
17. make a noisy disturbance, or alter any act causing trouble or nuisance to any person or wildlife;
18. discharge rubbish or things at the place not provided for such purposes; and
19. leave any inflammable article that may cause fire.

National Reserved Forests Act 1995

Section 14

Within the National Reserved Forests, no person shall occupy, possess, exploit and inhabit the land, develop, clear, burn the forest, collect the forest products nor cause by any other means whatsoever any damage to the nature of the National Reserved Forests, except:

1. logging or collection of forest products under Section 15, exploitation or inhabitation under Sections 16, and 16 (bis), or 16 (ter), carrying out any activity under Section 17, utilisation under Section 18, or carrying out activities under Section 19, or 20; and
2. logging of reserved timber species or collection of reserved forest products under Law on Forests.

Vietnam

Law on the Protection and Development of Forests 1991

Chapter III Forest Protection

Article 18

The People's Committees at all levels shall, depending on their functions, tasks and powers, organise the management and protection of existing forest sources; prevent actions damaging the forest; implement protection and development measures for forest flora and fauna; protect water source; and protect soil to prevent soil erosion.

Article 20

Strictly prohibit all activities, like forest destroying and burning; forest and forestland encroaching; exploitation, trade and transfer forest products; hunting of forest fauna; cattle grazing in forest, which are contrary to the stipulated legislation.

Article 22

The forest owners must implement measures on the prevention and fight against forest fires, and shall take responsibility for the causing of forest fire.

The state management agency on forestry at various levels has the responsibility to draw up and direct the implementation of the plans for prevention and fight against forest fires; organise the forecast of forest fires; organise the necessary manpower, means and equipment for the prevention and fight against forest fires. The State managerial agencies in the concerned branches have the responsibility to co-ordinate with the state management agency on forestry in the prevention and combat against forest fires.

All organisations, individuals in the forests and on the forest fringes must obey regulation on prevention and fight against forest fires issued by the state management agency on forestry.

When a forest fire breaks out, the People's Committee at various levels shall have the power to mobilise all necessary forces and means to combat the fire in time.

Decree No. 22 1995 The Regulation on the Prevention and Fight Against Forest Fires
Chapter 11 Regulation on the Prevention Against Forest Fires

Article 6

All forest owners must carry out the following measures of prevention and fight against forest fires:

1. With regard to the concentrated forests, the forest owners must build forest prevention works, such as fire separation lines and canals, guard mirador against fires, warning signs and fire ban signs, communication system, transformation and construction of streams, lakes, dams and canals to store reserve water to fight forest fires. They have to submit to the direction and control of the local forest protection agency.
2. With regard to the scattered forests managed by different forest owners, the local forest protection agency must work out plans of forest fire prevention and direct its implementation. The forest owners must implement and have the duty to contribute to the expenditures for the realisation of the plan of fire protection and combat.
3. While designing the concentrated forests, it is necessary to design also works to prevent forest fires, which must be approved by the provincial forest protection agency. Forests must not be planted where no forest fire prevention works have been designed. When a forest is planted, these works must also be constructed immediately.
4. In planting forests, especially in planting inflammable trees like pine, maleleuca and other oleaginous trees, silvicultural measures must be taken such planting multi-tier mixed forests, building fire separation tree lines with fire-resistant trees.
5. In the places vulnerable to forest fires, and where conditions permit, measures of replenishment, tending and sanitation of forests, or the method of "controlled advance burning" shall be applied before the hot and dry season, with a view to reducing the sources of inflammable materials.
6. During the hot and dry season, there must be a permanent patrol and guard to detect forest fires and rescue the forest in time, whenever a fire breaks out.

7. There must be a plan to equip the forest protection forces with the necessary equipment and means to prevent and fight forest fires, combining simple and mechanised means, in order to modernise step by step the prevention and fight against forest fires.

Article 8

Fires can be made in the forests in the following cases (not provided for in Article 7):

1. The burning of swiddens must comply with Article 21 of Law on Protection and Development of Forests. Before burning, the owner of the swidden must build a fire separation line around it; and the burning is allowed only when there is a light wind and a guard must be posted so that the fire shall not spread to the nearby forest. All the embers must be put out after the burning.
2. The burning of undergrowth to prepare the soil for forest planning must comply with the regulations on prevention of forest fires stipulated in Item 1, Article 8 of this Regulation.
3. Making fires for cooking, heating and other necessities in the forests should avoid the places with lots of dry inflammable materials and all the embers must be put out after the use of fire.

Chapter IV Budget for the Prevention and Fight Against Forest Fires

Article 17

The expenditures for the prevention and fight against fires derive from the following sources:

1. The State allocates fund from the budget (comprising regular expenditures for professional activities, specialised equipment, capital construction) for the rangers in the prevention and combat against forest fires, for the construction of fire prevention works, for directing and inspecting the forest owners in the prevention and fight against forest fires, together with other local forces, such as the police, the army and volunteers among the population.
2. The localities shall deduct from their budget a reserve fund to overcome the natural disasters, including crop failures or forest fires, which cause great losses in lives and property to the local population.
3. Contributions of forest owners who invest in the prevention and fight against forest fires, on the forestland allocated by the State to the organisations, households and individuals for stable and long term use in forestry business.