



# **STRATEGY AND ACTION PLAN FOR SUSTAINABLE MANAGEMENT OF PEATLANDS IN ASEAN MEMBER COUNTRIES**

**UNDER THE FRAMEWORK OF THE  
ASEAN PEATLAND MANAGEMENT INITIATIVE (APMI)**

**DRAFT  
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**Based on papers and discussions at the first consultative workshop for all  
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Annex 2	List of current HTTF/APMI focal points
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## PREFACE

The development of a Regional Strategy for ASEAN Country Members on Peatland Management is due to the pressing need recognised by both local and international communities for wise use and sustainable management of peatlands as well as the emerging threat of peatland fire and its associated haze to the economy and health of the region, and its possibility of contributing to global climate change. The ASEAN Peatland Management Strategy is being developed within the framework of the ASEAN Peatland Management Initiative (APMI) and the ASEAN Agreement on Transboundary Haze Pollution.

The ASEAN Ministerial Meeting on Haze on 11<sup>th</sup> June 2002 in Kuala Lumpur decided to focus on the issue of peatland management and fire, and the associated haze. Hence, it was agreed the development of the Initiative that will serve to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation to support and sustain local livelihoods, reduce risk of fire and associated regional haze and contribute to global environmental management.

The development of a regional strategy was one of the items in the initial workplan (2003-2005) of the APMI that was approved during the HTTF Meeting in Manila, Philippines on 28<sup>th</sup> February 2003. Subsequently each country was requested to provide background information and country papers which were discussed in a regional workshop on the APMI in October 2003 which also agreed on the framework of strategy. These inputs were compiled and synergised into a strategy document by the ASEAN Secretariat with the technical input of Global Environment Centre in the period from December 2003 to June 2004. Due to the absence of few countries in the regional workshop, this document still needs further refining as well as more input of information from these countries.

The strategy document is divided into two parts. The first part gives a range of information on the background of the peatland in Southeast Asia, with specific information on extent, status, uses, existing policies and institutions involved in peatland management, issues and problems face, needs and recommendations on general as well as in respective countries. Some countries are yet to provide part of those information contained in Part 1.

Part 2 contains the development of the strategy from its background, its formulation, the rationale and justification of having such strategy on a regional scale, general and detailed objectives with action points, and an initial framework for the implementation of the strategy.

The strategy's primarily focuses on the following four objectives:

- Enhance Awareness and Knowledge on Peatlands
- Address Transboundary Haze Pollution and Environmental Degradation
- Promote Sustainable Management of Peatlands
- Enhance and Promote Collective Regional Cooperation on Peatland Issues

It sets out operational objectives that would contribute to the delivery of one or more of the areas above, which would serve as guidance to AMC and other implementing bodies and collaborating partners through specific action plans and the proposed timeframe for these actions. Considering the increasing need for networking, regional and international cooperation to address the issue of peatland fire and haze, conservation and sustainable management, and capacity building in peatland related research and management - this Strategy can play a greater role to provide the formal cooperation among AMC through technology and expertise transfer, technical and financial assistance to solving peat-related problems in the region.

The AMC will be responsible for agreeing to the action plans to ensure that the general and the operational objectives are met. This would be done through the National Consultative Meetings in AMCs planned between August – September 2004 and the 2<sup>nd</sup> Regional Meeting on APMI scheduled for October 2004.

## PART I      BACKGROUND

### 1. Introduction

The information used for this section on background of peatlands in Southeast Asia was primarily taken and compiled from the papers presented by ASEAN Member countries during the first Regional Meeting on ASEAN Peatland Management Initiative, held in Bogor, Indonesia from the 16-17<sup>th</sup> October 2003. For countries such as Cambodia, Lao PDR and the Philippines, information is yet to be provided. In addition information was taken from the official document of the ASEAN Peatland Management Initiative.

### 2. Extent of peatlands in Southeast Asia

The total area of peatland in Southeast Asia is estimated to be about 20 million ha, which is 60% of the world's tropical peatlands and roughly one tenth of the entire extent of global peatland resource. The majority of the peatland of Southeast Asia occurs in Indonesia, which has over 70% of total peatland area in Southeast Asia. Other major peatland areas are found in Malaysia, Thailand, Viet Nam, Brunei Darussalam and the Philippines. However, increased development, land conversion and degradation caused by forest fires have reduced peatland resources significantly over the past few years. Peatlands are usually found in low altitude, sub-coastal areas extending inland for distances up to 300 km. The depth of peat varies from 0.5 m to more than 10 m.

AMC	Distribution of Peatland	Estimated Total Area (ha)	Year of estimate
Brunei Darussalam	- 21.8% of Brunei Darussalam - Belait Plain (part of the great Baram-Belait peat swamp) is the largest single area of deep peat (98,884 ha)	126,000	1984
Cambodia	- To be provided	-	-
Indonesia	- Major areas: a) Sumatra – 6.59 million ha b) Kalimantan – 4.45 million ha c) Papua – 2.33 million ha d) Sulawesi – 0.13 million ha	13,000,000	2002
Lao PDR	- To be provided	-	-
Malaysia	- Peninsular Malaysia – 0.8 million ha - Sarawak – 1.66 million ha - Sabah – 80,000 ha - Major remaining areas: a) North Selangor Peat Swamp b) SE Pahang Peat Swamp c) East Malaysia: - Sarawak – Third division - Sabah Klias Peninsular	2,500,000	1989
Myanmar	- 3 Major areas: a) Pyin Oo Lwin - 750 ha b) Heho – 400 ha c) Kalaw – 3,017 ha	4,167	2003
Philippines	- Main area of peat is in the southern island of Mindanao, primarily in Agusan Marsh and Liguasan Marshes	-	-
Singapore	- No peatlands	-	-
Thailand	- Major areas mainly found in southern Thailand: Narathiwat Province of SE Thailand (45,000 ha).	64,000	2003

AMC	Distribution of Peatland	Estimated Total Area (ha)	Year of estimate
Viet Nam	<ul style="list-style-type: none"> <li>- Occurs in southern Viet Nam – Mekong Delta (U Minh region in Ca Mau province)</li> <li>- Two main peatland areas:               <ul style="list-style-type: none"> <li>a) U Minh Thuong National Park</li> <li>b) Vo Doi Nature Reserve</li> </ul> </li> </ul>	24,000	2003

### 3. Status of peatlands

#### 3.1. Summary of Status of peatlands in each ASEAN Member Country (AMC)

AMC	Current Status
Brunei Darussalam	<ul style="list-style-type: none"> <li>- Most under protection forest</li> <li>- A large part of the Belait Peat Swamp proposed as forest reserve</li> <li>- Large portion of deep peatland is still intact and a significant proportion is still in natural state.</li> <li>- Nearly all shallow peatlands have been converted, especially in the Brunei Muara District</li> </ul>
Cambodia	- To be provided
Indonesia	<ul style="list-style-type: none"> <li>- Most designated as production or protection forests.</li> <li>- Some important areas in existing / proposed national parks/national reserves.</li> <li>- Large areas have been cleared and converted for agriculture or estate crops</li> <li>- Significant area developed for agriculture and abandoned.</li> </ul>
Lao PDR	- To be provided
Malaysia	<ul style="list-style-type: none"> <li>- Majority has been logged giving substantial area cleared for agriculture and plantation crops (e.g. oil palm)</li> <li>- Small area in protected areas</li> <li>- Pristine peatland less than 50,000 ha.</li> <li>- Inventory planned for in 2004-2005</li> </ul>
Myanmar	- Mainly used for agricultural purposes
Philippines	- Some are protected in Conservation Areas (i.e. Agusan National Park)
Singapore	- No peatland
Thailand	<ul style="list-style-type: none"> <li>- 20,000 ha of Phru Toe Daeng, in Narathiwat Province declared as Wildlife Sanctuary. A Royal Project for research and development of peatland established to ensure maintenance and protection of peatland in Narathiwat.</li> <li>- Thale Noi of Phatthalung province and in Khuan Khreng of Nakhon Si Thammarat province in Non-Hunting Areas</li> <li>- Degraded peatlands converted to agricultural areas</li> </ul>
Viet Nam	<ul style="list-style-type: none"> <li>- U Minh Thuong - National Park Status</li> <li>- Vo Doi - Nature Reserve Status</li> </ul>

#### 3.2. Analysis of Status of peatlands in each ASEAN Member Country (AMC)

In most countries, peatlands are designated as conservation areas, production forests or agricultural lands. The proportion varies significantly between countries. The area of undisturbed/pristine peatlands in the region is very small.

Currently, most ASEAN member countries have recognised the need to use resources available from peatlands with a sustainable approach. In this respect, more emphasis is needed on conservation values for the sustainable use of peatlands. This will aid in better management of the resources for current and future generations.

#### 4. Uses and values of peatlands

##### 4.1. In each AMC

AMC	Uses and Values
Brunei Darussalam	- Conservation and water resources
Cambodia	- To be provided
Indonesia	- Agriculture (oil palm and tree plantations / vegetables and other crops) - Forestry (timber resources e.g. meranti and ramin / non-timber forest products e.g. Jelutong gum, resin and rattan) - Water storage and supply - Flood control - Biodiversity conservation
Lao PDR	- To be provided
Malaysia	- Forestry (commercial timber / non-timber forest products) - Agriculture (oil palm) - Fish (ornamental species) - Water storage and flood control - Water supply for irrigation and domestic purposes - Carbon sequestration and storage - Recreation and tourism - Biodiversity conservation
Myanmar	- Agriculture - Rhizobium storage media
Philippines	- To be provided
Singapore	- No peatland resources
Thailand	- Agriculture (plantations and other crops) - Forestry (non-timber forest products) - Conservation (wildlife sanctuary and non-hunting areas) - Research study and monitoring - Ecotourism
Viet Nam	- Water resources - Agriculture - Biodiversity conservation

##### 4.2. In Southeast Asia

Southeast Asia peat swamp forest vegetation has been recognised as an important reservoir of plant diversity (Silvius *et al.*, 1984; Whitmore, 1984). Peat swamp forests have a relatively high diversity of tree species. For instance in Indonesia, more than 300 tree species have been recorded in the swamp forests of Sumatra, some of which are becoming increasingly rare (Giesen, 1991). While in Thailand, some 470 species were identified in the Narathiwat peat swamp forest (Urapeepatanapong, 1996). Many of the plants are restricted or endemic to this habitat.

The peat swamp forests in Southeast Asia also provide many commercial timber species including Ramin (*Gonystylus bancanus*), Jelutong (*Dyera costulata*), Meranti (*Shorea* spp.) These forests are home to many rare and endangered wildlife species such as the Malaysian blue flycatcher (*Cyornis turcosa*), Sumatran tiger (*Panthera tigris sumatranus*), tapir (*Tapirus indicus*), Asian elephant (*Elephas maximus sumatrensis*), lesser one-horned rhino (*Rhinoceros sondaicus*), orang utan (*Pongo pygmaeus*) and hundreds of bird species, including hornbills and cassowaries. Black-water rivers (peatland rivers) are important fish habitats that often have a higher degree of localised endemism than other rivers, and are an important source of aquarium fishes. There are also medicinal plants which are indigenous to the peat swamp and some non-hardwood products harvested from the forest by the local communities as a means of living. Peat swamp forests have also been converted to form agricultural land especially for oil palm plantations and also tree plantations.

Southeast Asia peatlands are significant carbon stores and sinks while the region's peat swamp forests play important functional roles in regulation of hydrology.

### 5. Relevant policies and institutional frameworks relating to peatlands

AMC	Existing Policies	Institutional Frameworks
Brunei Darussalam	<ul style="list-style-type: none"> <li>- No specific management strategies specifically for peatlands</li> <li>- Applicable policy               <ol style="list-style-type: none"> <li>a) <u>Forest Act (1934)</u>: forbids unauthorised clearing, hunting, fishing, etc. Logging with a permit is allowed in production forests, but not in the protection, conservation and recreation forest areas.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Development               <ul style="list-style-type: none"> <li>▪ Department of Environment</li> </ul> </li> <li>- Department of Forestry</li> </ul>
Cambodia	- To be provided	- To be provided
Indonesia	<ul style="list-style-type: none"> <li>- Direct policies and laws               <ol style="list-style-type: none"> <li>a) <u>The Presidential Decree No. 32/1990</u> on Protection Areas Management: peat areas that are &gt;3m in depth are classified as protected areas. Any activities in these areas should be reviewed as to whether it will have an impact on the environment.</li> <li>b) <u>The Decree of the Minister of Environment No. 5/2001</u> on the Guidelines on the Environmental Impact Assessment for the Wetland Development: an EIA should be conducted before any development in a peat area.</li> <li>c) <u>The Government Regulation No. 27/1991</u> on Swamps</li> </ol> </li> <li>- Applicable policy               <ol style="list-style-type: none"> <li>a) <u>The Act No. 24/1992</u> on Spatial Planning: the management of peatland should be based on the landuse planning.</li> <li>b) <u>The Act No 12/1992</u> on Cultivation System: determines that the cultivation system should be based on sustainable use and prevent environmental degradation and pollution.</li> <li>c) <u>The Act No. 11/1974</u> on Irrigation (under revision)</li> <li>d) <u>The Act No. 5/1990</u> on Natural Resources and Ecosystem Conservation</li> <li>e) <u>The Act No. 23/1997</u> on Environmental Management</li> <li>f) <u>Act No. 41/1999</u> on Forestry</li> <li>g) <u>Act No. 22/1999</u> on Local Government</li> <li>h) <u>Government Regulation No. 2/1982</u> on Water Management</li> <li>i) <u>Government Regulation No. 35/1991</u> on Rivers</li> </ol> </li> </ul>	<p>The main ministries related to peatland management and use are:</p> <ul style="list-style-type: none"> <li>- Ministry of Forestry</li> <li>- Ministry of Environment</li> <li>- Ministry of Agriculture</li> </ul>
Lao PDR	- To be provided	- To be provided

AMC	Existing Policies	Institutional Frameworks
Malaysia	<ul style="list-style-type: none"> <li>- No specific policy for peatlands</li> <li>- Applicable Policies:               <ul style="list-style-type: none"> <li>a) National Biodiversity</li> <li>b) National Forest Policy</li> <li>c) National Agriculture Policy</li> </ul> </li> <li>- Policies under consideration               <ul style="list-style-type: none"> <li>a) National Wetland Policy</li> <li>b) National Water Policy</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- The main peatland management related agencies:               <ul style="list-style-type: none"> <li>a) Ministry of Natural Resources and Environment                   <ul style="list-style-type: none"> <li>▪ Environment Division (policy and coordination)</li> <li>▪ Department of Environment (open burning and Environmental Impact Assessment)</li> <li>▪ Department of National Parks and Wildlife (protected areas)</li> <li>▪ Forest Department, Peninsular Malaysia (forest management)</li> <li>▪ Forest Research Institute Malaysia (forest research)</li> <li>▪ Department of Irrigation and Drainage (river and water resources management)</li> </ul> </li> <li>b) Ministry of Science Technology and Innovations                   <ul style="list-style-type: none"> <li>▪ Meteorological Services Department (Fire Danger Rating/Warning system)</li> <li>▪ Malaysian Centre for Remote Sensing (MACRES) (remote sensing and monitoring of peat)</li> </ul> </li> <li>c) Ministry of Agriculture                   <ul style="list-style-type: none"> <li>▪ Department of Agriculture</li> <li>▪ Malaysian Agricultural Research and Development Institute</li> </ul> </li> <li>d) Universities</li> </ul> </li> <li>- Related NGOs               <ul style="list-style-type: none"> <li>• Global Environment Centre</li> <li>• Wetlands International</li> <li>• Malaysian Nature Society</li> </ul> </li> </ul>
Myanmar	<ul style="list-style-type: none"> <li>- <u>National Land Policy</u> - farmers have the right to cultivate but not to ownership</li> </ul>	<ul style="list-style-type: none"> <li>- The Land Records and Settlement Department under the Ministry of Agriculture and Irrigation is solely responsible for the administrative and land tenure aspects.</li> <li>- The technical management of peatland has been carried out by individual farmers with the cooperation of the Myanmar Agriculture Service.</li> </ul>
Philippines	<ul style="list-style-type: none"> <li>- To be provided</li> </ul>	<ul style="list-style-type: none"> <li>- Department of Environment and Natural Resources</li> </ul>
Singapore	<ul style="list-style-type: none"> <li>- No peatland resources</li> </ul>	<ul style="list-style-type: none"> <li>- National Environment Authority</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>Applicable policy plans and laws:               <ul style="list-style-type: none"> <li>a) The Ninth National Economic and Social Development Plan (2002-2006)</li> <li>b) National Forest Policy</li> <li>c) Wetland Policy</li> <li>d) Wetland Management Action Plan (1998-</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Peatland related agencies:               <ul style="list-style-type: none"> <li>a) Ministry of Natural Resources and Environment</li> <li>b) Ministry of Agriculture and Cooperatives</li> <li>c) Ministry of Interior</li> </ul> </li> </ul>

AMC	Existing Policies	Institutional Frameworks
	2002) e) The Work Plan on Wetland Management for 2003-2007 f) The Constitutional Code (1997) g) Wildlife Reserve Law h) National Reserved Forest Act (1964) i) National Environmental Quality Promotion and Conservation Act (1992) j) Laws pertaining to agricultural and fishery activities	d) Office of the Prime Minister e) Ministry of Industries f) Ministry of Sports and Tourism g) Ministry of Public Health h) Others: educational institutions, civic groups and NGOs
Viet Nam	<ul style="list-style-type: none"> <li>- No specific policy on peatland fire prevention and control</li> <li>- Applicable policies:               <ul style="list-style-type: none"> <li>a) <u>Law on the Protection and Development of Forest (1991)</u></li> <li>b) <u>Law on Fire Prevention and Control (2001):</u></li> <li>c) <u>Order No: 19/1998/CT-TTg on 17/4/1998</u> by the Prime Minister on the Urgent Measures for Fire Prevention and Control</li> <li>d) <u>Order No: 21/2002/CT-TTg on 12/12/2002</u> on capacity strengthening for fire prevention and control.</li> <li>e) <u>Decision No 801-QS on 26/9/1986</u> on standards for fire prevention and control in pine forest, <i>melaleuca</i> forest, and some other forests</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Natural Resources and Environment</li> <li>- Ministry of Agriculture and Rural Development</li> </ul>

### 5.1. Analysis of the policies and institutional frameworks in ASEAN

In ASEAN countries there are no specific laws or policies directly related to peatlands. Different aspects of peatland management are governed by a variety of different policies, laws and regulations. There may be a value of developing a synthesis of relevant legislation and policy or developing specific policy or regulations related to peatlands. In most AMC's there are a very broad range of different Ministries and agencies with some role or responsibilities related to peatland management. In order to ensure effective management there may be a need for enhanced coordination or streamlining.

## 6. Issues and challenges with regard to peatland management in Southeast Asia

### 6.1. Issues and concerns in each AMC

The following are the main issues and concerns raised in the Country Papers and discussions at the APMI workshop:

AMC	Issues and Concerns
Brunei Darussalam	<ul style="list-style-type: none"> <li>- Drainage</li> <li>- Peatland fires</li> <li>- Lack of local knowledge and experience for sustainable utilisation of peat resources</li> </ul>
Cambodia	<ul style="list-style-type: none"> <li>- To be provided</li> </ul>
Indonesia	<ul style="list-style-type: none"> <li>- Development of the peat for agriculture, plantation and forestry               <ul style="list-style-type: none"> <li>▪ Drainage / water management</li> <li>▪ Abandonment of agriculture projects on peatlands</li> <li>▪ Fire</li> </ul> </li> </ul>

AMC	Issues and Concerns
	<ul style="list-style-type: none"> <li>▪ Illegal logging</li> <li>▪ Biodiversity losses</li> <li>▪ Carbon losses</li> <li>- Lack of data and information on peatland</li> <li>- Peatland fire and associated smoke and haze pollution               <ul style="list-style-type: none"> <li>▪ Economic losses</li> <li>▪ Difficulties in fire control and post-fire rehabilitation efforts</li> <li>▪ Microclimate change</li> </ul> </li> <li>- Low level of community involvement in peatland management</li> </ul>
Lao PDR	- To be provided
Malaysia	<ul style="list-style-type: none"> <li>- Drainage</li> <li>- Sustainability of harvesting of timber and other produce</li> <li>- Peatland fires</li> <li>- Exploitation of ground water</li> <li>- Pollution</li> <li>- Balance between conservation and development:               <ul style="list-style-type: none"> <li>▪ Valuation of economic and ecological benefits</li> <li>▪ Population and growth pressures</li> <li>▪ Conservation of peatland (Ramsar Convention Implementation)</li> </ul> </li> </ul>
Myanmar	<ul style="list-style-type: none"> <li>- Drainage mainly for agriculture</li> <li>- Pests/weeds and diseases</li> </ul>
Philippines	- To be provided
Singapore	- Impact of transboundary haze from peat fires
Thailand	<ul style="list-style-type: none"> <li>- Lack of basic information and knowledge about peatland status and management</li> <li>- Peatland / Forest fires</li> <li>- Conflicts of interests in the utilisation of peatlands</li> <li>- Difficulty in restoration and rehabilitation</li> <li>- Poor quality of soil</li> <li>- Illegal logging</li> <li>- Drainage</li> </ul>
Viet Nam	<ul style="list-style-type: none"> <li>- Peatland / Forest fires</li> <li>- Forest clearance for agriculture and aquaculture developments</li> <li>- Illegal logging</li> </ul>

## 6.2 Common issues and concerns

The following common issues and concerns have been identified based on the country papers and discussions at the APMI workshop as well as other regional meetings.

### 6.2.1 Peatland fire and transboundary smoke haze

The most important management issue of regional importance is the transboundary smoke haze from peatland fires. Peat fires in the region almost always occur as a result of human intervention. Undrained peat rarely burns - so drainage of peatland for agriculture, forestry and other purposes is the main root cause of peatland fires. The worst occurrence of fires in peat swamp in the last decade was the vast fires of 1997-98 that ravaged large areas of peatland landscape for several months during the dry season. The inferno during the 1997-98 blaze choked Southeast Asia with smoke and haze, destroying or degrading 2 million ha of peatland, threatening the natural resources and ecological functions of peatland as well as the socio-economic structure of settlements in the region, besides endangering the health of the population.

### 6.2.2 Community livelihood

Local community groups use peatland and its resources to earn a livelihood e.g. collecting medicinal plants, harvesting non-hardwood products, farming, etc. These activities can cause small-scale negative impacts on peatlands such as degradation.

### **6.2.3 Over-exploitation of peatland and its resources**

Land conversion of peat lands for the development of plantation, agriculture and urban is a large-scale issue. Consequently, some problems have occurred such as over-drainage, loss of biodiversity, fire and haze pollution which contribute in significant destruction on the environment. Illegal logging is a major problem which is seriously affecting peatlands. Peatland has also been exploited for its timber and non-timber resources.

### **6.2.4 Drainage**

All kinds of development on peatland involve drainage on the peatland itself and/or its surrounding area altering its hydrodynamic equilibrium. It also carries the risk of over-drainage and excessive drying leading to irreversible damage and deleterious impact on the natural communities. Excessive drying will also increase the frequency of peatland fires.

### **6.2.5 Loss of biodiversity**

Due to degradation of peatlands due to land clearance, drainage and increased frequencies of fire, there is a loss of biodiversity of the region's peatlands. Losses also take place as a result of over-harvesting of peatland species such as timber tree species of medicinal plants.

### **6.2.6 Carbon losses**

The high level of organic carbon in peatlands makes them significant carbon stores. Peatlands of the region are thought to store up to 5% of all carbon stored on the world's land surface. The clearance, drainage and burning of peatland in the region is now leading to significant carbon emissions which are considered of global significance

### **6.2.7 Introduction of pests and diseases**

Altered peatland ecosystems are more susceptible to invasion of non-native species and introduction of diseases

### **6.2.8 Lack of knowledge regarding peatland management**

One principal constraint in peatland management in the region is the lack of knowledge of peatland functions and sustainable management options. Apart from a few examples, most peatland components and functions are still poorly understood and/or poorly quantified compared with other ecosystems. Available information is inadequate to assess the ecological consequence of developing tropical peatland. There is lack of understanding of the ecological complexity of this system and failure to comprehend the importance of its natural functions.

### **6.2.9 Current legislation and policies**

Peatlands in the region are affected by inappropriate or conflicting policies. For example in several countries in the region incentives are provided to drain peatlands to create agricultural purposes – even when such peatlands are of marginal agricultural value or provide more valuable ecological services in their natural state. In addition even when peatlands are protected by the law there are problems of poor law enforcement.

### **6.2.10 Issues of definition**

One of the problems in managing the region's peatland resources arises from the lack of common definition and classification of peatlands in the region which in turn leads to problems in clearly delineating the peatlands and developing common management guidelines.

## 7. Major ongoing activities and projects relating to peatlands

AMC	Ongoing activities and projects
Brunei Darussalam	<ul style="list-style-type: none"> <li>- Public awareness/ education/ information - science, technology and environment partnerships (STEPS)</li> <li>- Peatland research projects by Uni. Brunei Darussalam.</li> </ul>
Cambodia	- To be provided
Indonesia	<ul style="list-style-type: none"> <li>- Peat fire management related:               <ul style="list-style-type: none"> <li>a) Capacity building on                   <ul style="list-style-type: none"> <li>▪ peat fire suppression</li> <li>▪ peat fire and haze pollution monitoring</li> </ul> </li> <li>b) Establishing the Fire Prone map</li> </ul> </li> <li>- Law enforcement</li> <li>- Climate Change, Forest and Peatlands in Indonesia project funded by CIDA</li> <li>- Integrated Management of Peatlands for Biodiversity and Climate Change funded by UNEP-GEF</li> </ul>
Lao PDR	- To be provided
Malaysia	<ul style="list-style-type: none"> <li>- Awareness raising</li> <li>- Management of Peat Swamp Forest Reserves</li> <li>- Conservation and Sustainable use of Tropical Peat Swamp Forests funded by UNDP/GEF</li> <li>- National Wetland Inventory</li> <li>- Review of laws pertaining to conservation of wetlands</li> <li>- Management of Tasek Bera Ramsar Site</li> <li>- STRA-PEAT Project</li> <li>-</li> </ul>
Myanmar	- To be provided
Philippines	- To be provided
Singapore	- Regular monitoring of hotspots and haze in ASEAN region
Thailand	<ul style="list-style-type: none"> <li>- Major conservation activities:               <ul style="list-style-type: none"> <li>a) anti-encroachment</li> <li>b) anti-illegal logging and hunting</li> <li>c) fire prevention and control</li> </ul> </li> <li>- Peat swamp forest biodiversity related research</li> <li>- Soil assessment and utilisation of land for farming in the area of peatlands</li> <li>- Regulation of water level in peatlands</li> </ul>
Viet Nam	<ul style="list-style-type: none"> <li>- Improving awareness, education and information exchange on peat related issues</li> <li>- Sustainable use of peatlands</li> <li>- Peat fire prevention and control in UMT National Park</li> <li>- Study tours, workshops and training courses</li> </ul>

## 8. Current capacity and needs as identified by AMCs

### 8.1 Specific needs identified by each AMC

Some specific needs for wise use and sustainable management of this resource in member countries are highlighted below. All countries appear to need capacity-building.

AMC	Specific Needs
Brunei Darussalam	<ul style="list-style-type: none"> <li>▪ Institutional capacity building for sustainable peatland management</li> <li>▪ Training programmes for peatland managers</li> <li>▪ Capacity building for decision makers and policy makers on peatland management issues</li> </ul>
Cambodia	▪ To be provided

AMC	Specific Needs
Indonesia	<ul style="list-style-type: none"> <li>▪ Transfer of technologies</li> <li>▪ Capacity building:               <ol style="list-style-type: none"> <li>a) Training for related stakeholders</li> <li>b) Institutional capacity building for sustainable peatland management</li> <li>c) Community approaches to peatland management</li> <li>d) Training for the local communities</li> <li>e) Agricultural extension for the local community to raise community awareness</li> </ol> </li> <li>▪ Developing a peatland database</li> <li>▪ Improving the supporting facilities</li> <li>▪ Strengthening and developing the existing policies</li> <li>▪ Supporting international cooperation and networking</li> </ul>
Lao PDR	- To be provided
Malaysia	<ul style="list-style-type: none"> <li>▪ Capacity building needs:               <ul style="list-style-type: none"> <li>• Enhanced cooperation and integration of sectoral management</li> <li>• Enhanced awareness of peatland ecology and values</li> <li>• Policy development</li> <li>• Training</li> <li>• Peatland management</li> <li>• Water management in peatland</li> <li>• Sustainable forest management</li> <li>• Sustainable agriculture</li> <li>• Fire prevention and control</li> </ul> </li> </ul>
Myanmar	<ul style="list-style-type: none"> <li>▪ Research and development</li> <li>▪ Technical training and workshops at both national and international levels</li> <li>▪ International cooperation</li> </ul>
Philippines	▪ To be provided
Singapore	▪ To be provided
Thailand	<ul style="list-style-type: none"> <li>▪ Establish peatland management agency</li> <li>▪ Increase man-power for peatland research</li> <li>▪ Lack of funding of peatland management and restoration project</li> <li>▪ Training for the agency staff and communities in areas:               <ol style="list-style-type: none"> <li>a) fire prevention and control</li> <li>b) plant identification</li> <li>c) soil assessment</li> <li>d) utilisation of peatland products</li> <li>e) rehabilitation techniques</li> <li>f) sustainable agriculture</li> </ol> </li> <li>▪ Exchange of information and techniques among ASEAN on replanting and restoration</li> </ul>
Viet Nam	<ul style="list-style-type: none"> <li>▪ Enhance stakeholders cooperation in Viet Nam on sustainable peatland management.</li> <li>▪ Training: Study tours on peatland management in the region (for central management officials and local forest management boards)</li> <li>▪ Development of national strategies and action plans for peatland conservation and sustainable use</li> <li>▪ Identify, prioritise and gazette areas of peatlands for protection</li> <li>▪ Establishment of a national-level demonstration site to promote linkage and cooperation among these centres in the region.</li> <li>▪ Evaluate status of natural resources and environment in national parks</li> <li>▪ Capacity building needs:               <ol style="list-style-type: none"> <li>1. Inventory and zoning of peatlands</li> <li>2. forest fire prevention and control with focus on early warning system, irrigation canal planning,</li> <li>3. fire prevention and control ability by local stakeholders</li> <li>4. development of ecotourism activities within peatlands;</li> <li>5. develop activities on environment monitoring and research serving</li> </ol> </li> </ul>

AMC	Specific Needs
	eco-system management, protection and restoration; 6. build infrastructure for restoration processes of a wetland ecosystem; 7. Reinforce capacity of project management and implementation staff.

## 8.2 Common needs regarding peatland management

There are similarities within the ASEAN region in many aspects of peatland management such as common problems of fire, drainage, inappropriate management practices, livelihood options, sustainability, etc. The ASEAN country members also share similarities in many aspects such as an urgent to address issues of awareness/ education/ information exchange, capacity building/ training, peatland fire prevention and control, sustainable use, peatland rehabilitation, peatland inventory, research, pilot or demonstration projects.

In order to overcome the common issues regarding peatland management, the following needs to be accomplished:

- Improve knowledge of peatland ecosystem [resolving issues of definitions, development of management and restoration options; research, ongoing monitoring, and sharing information]
  - Resolve conflicting interests between local people, industries, government (inter and intra) [involves community awareness activities]
  - Better policies and institutional frameworks.
- i. Improve scientific knowledge
    - a) Resolve the issues of definitions
    - b) Ongoing research and monitoring
      - Demonstration sites
      - Pilot projects
  - ii. Enhance awareness & capacity building
    - a) Education
    - b) Improve Information exchange and availability
    - c) Training, workshops
    - d) Improve management of peatlands by local community groups – i.e. Sustainable community livelihood.
  - iii. Improve partnerships between stakeholders
    - a) Resolve conflicts of interests between government and non-government bodies
  - iv. Improve legislations and policies
    - a) Resolve exploitation of peatland and its resources
    - b) Improve law enforcements

## 9. Future strategies and plans as identified by each AMC

AMC	Future strategies and plans
Brunei Darussalam	– Change of approach in peatland management from that of single-sector priorities to an integrated, holistic planning strategy, involving all stakeholders, such that consideration is given to potential impacts on the ecosystem as a whole. – To formulate and implement policies, strategies and plans on peatland management. – To increase public awareness on the values and functions of peatlands
Cambodia	To be provided
Indonesia	A. Management on environmental and natural resources

AMC	Future strategies and plans
	<p>To decrease the negative impacts from peatland utilisation by developing integrated land utilisation plans and increase the efforts on conservation, rehabilitation, and peatland restoration</p> <p><b>B. Peatland fires and smoke haze disasters</b> To prevent fires in peatland areas, develop zero-burning land clearing techniques for the forestry/plantation companies and controlled burning techniques for the community; also promote appropriate use of agricultural waste to minimise fires from agricultural activities, and develop specific fire control technique on peatland areas.</p> <p><b>C. Community Involvement</b> To improve community awareness and community involvement, and development of science and technology by using traditional knowledge in peatland management</p> <p><b>D. Agriculture</b> In peatland areas already developed for agriculture, develop agribusiness and efforts on environmental services utilisation</p> <p><b>E. Institutional capacity</b> Improve human resources with its supporting facilities, develop a national database and information system, improve international networking and cooperation and enhance law enforcement</p>
Lao PDR	To be provided
Malaysia	<ul style="list-style-type: none"> <li>▪ Establish a National Wetland Inventory</li> <li>▪ Establish a fire danger forecasting system</li> <li>▪ Develop management plans for selected peatland after 2005</li> </ul>
Myanmar	To be provided
Philippines	To be provided
Singapore	To be provided
Thailand	<p>Plans for 2003 and 2005 include the following:</p> <ul style="list-style-type: none"> <li>▪ Identifying measures for effective prevention of peatland encroachment and fire</li> <li>▪ Establishing a technical working group on peatland management to gather and compile knowledge from related agencies and experts.</li> <li>▪ Conducting a national inventory of peatlands that includes classification and zoning according to the function and importance of each area.</li> <li>▪ Creating a database, based on the inventory data.</li> <li>▪ Educating, raising awareness and building capacity at all levels.</li> <li>▪ Formulating national policy or measures for conservation and wise use of peatlands.</li> <li>▪ Developing future strategies and plans as well as guidelines for wise use of peatland.</li> <li>▪ Establishing the networks for researchers and communities, etc. for information exchange.</li> <li>▪ Cooperating and working closely with local communities, other countries and relevant international organisations.</li> <li>▪ Restoring secondary forest in peatland area through</li> <li>▪ Strengthening fire prevention and control measures</li> <li>▪ Demarcating boundaries of project areas</li> </ul>
Viet Nam	<p><i>Mid-term and long-term goals:</i></p> <ul style="list-style-type: none"> <li>▪ Develop national strategy on peatland sustainable use and peatland fire prevention and control.</li> <li>▪ Enhance cooperation and exchange between agencies in Viet Nam on peatland management issues.</li> <li>▪ Minimise peatland fires and other incidents such as transboundary</li> </ul>

AMC	Future strategies and plans
	<p>haze pollution and greenhouse gas emissions.</p> <ul style="list-style-type: none"> <li>▪ Enhance water and biological resources management and protection in peatland areas.</li> </ul> <p><i>Proposed action plan and timeframe for actions as follows:</i></p> <ul style="list-style-type: none"> <li>▪ To establish and strengthen mechanisms of information exchange and sharing on APMI within country and link with other member countries – (mid-2004).</li> <li>▪ To develop strategic outline and action plan (end of 2004).</li> <li>▪ To identify demonstration sites on peatland management in U Minh Thuong, U Minh Ha (end of 2004).</li> <li>▪ To mobilise funding sources to implement abovementioned actions (consisting donor sources, state budget in 2005 Financial Plan) (end of 2004)</li> <li>▪ To submit National Action Plan for approval (early 2005)</li> <li>▪ To carry out demonstration projects (mid-2005)</li> <li>▪ To collect documentation and share information and lessons learnt (end of 2005)</li> <li>▪ To establish long-term implementation and cooperation mechanism (early 2006)</li> </ul>

## 10. Regional Cooperation

### 10.1 ASEAN Vision 2020

ASEAN cooperation on the environment has been guided by the ASEAN Vision 2020, the medium-term plans of action, and meetings of the ASEAN Ministers on Environment. ASEAN Vision 2020 specifically calls for "...a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of its natural resources, and the high quality of life of its peoples..."

### 10.2 Bali Concord II

During the 9<sup>th</sup> ASEAN Summit in October 2003, the ASEAN Leaders pledged to achieve an ASEAN Community by the year 2020 that will rest on the three pillars of "ASEAN Security Community", "ASEAN Economic Community" and "ASEAN Socio-cultural Community" as embodied in the Declaration of ASEAN Concord II (Bali Concord II). The ASEAN Socio-cultural Community (ASCC) was envisaged in consonance with the goal set by ASEAN Vision 2020, in which ASEAN will be bonded together in partnership as a community of caring societies. Through the ASCC, cooperation in social and rural population will be strengthened, and active involvement of all sectors of society, including women, youth and community groups, will be sought. The ASCC will also intensify cooperation in addressing problems associated with population growth, education, unemployment, prevention of infectious diseases such as HIV/AIDS and SARS, environmental degradation and transboundary pollution.

### 10.3 Haze Technical Task Force & Sub-Regional Firefighting Arrangements for Sumatera and Borneo

The Haze Technical Task Force (HTTF) is a subsidiary body of the ASEAN Senior Officials on the Environment (ASOEN). It was established in 1995. The HTTF is chaired by Indonesia and comprises senior officials from the ten ASEAN member countries.

Realizing the need to focus on fire management efforts in specific areas, in April 1998 the HTTF established two working groups for the sub-regions of Sumatera and Borneo, namely the Working Group on Subregional Firefighting Arrangement for Sumatera (SRFA-Sumatra) and the Working Group on Subregional Firefighting Arrangement for Borneo (SRFA-Borneo). Subsequently, the HTTF established two additional working groups focusing on legal and law enforcement (the SRFA Legal Group on Law and Enforcement), and climate and meteorological conditions (the Subregional Climate Review Meeting). An ad hoc group, namely Simulation Organising Committee (SOC) for SRFA Fire and Haze Disaster Simulation Exercise was established in

August 2002 to develop standard operating procedures for the SRFA and prepare details for SRFA simulation exercises.

#### **10.4 ASEAN Regional Haze Action Plan**

The Regional Haze Action Plan (RHAP) was endorsed by the ASEAN Environment Ministers in December 1997 during a period of intense fire and transboundary haze pollution. Under the overall framework of the RHAP, the strategic measures and activities are targeted at strengthening the region's capacity and capability to address transboundary haze pollution problem. There are three primary objectives of the RHAP, i.e. (i) prevent land and forest fires through better management policies and enforcement, (ii) establish operational mechanism to monitor land and forest fires, and (iii) strengthen regional land and forest firefighting capability with other mitigation measures.

The RHAP therefore has three major components: prevention, mitigation, and monitoring. Different countries have been designated to spearhead activities that fall under each of the three components. Malaysia takes the lead in prevention, Indonesia in mitigation, and Singapore in monitoring of fires and haze. ASEAN member countries also undertake the national-level actions that relate to the three RHAP components. Implementation of RHAP at the sub-regional and regional level catalyses and complements the measures carried out at the national level.

#### **10.5 ASEAN Agreement on Transboundary Haze Pollution**

The ASEAN Agreement on Transboundary Haze Pollution was signed by ASEAN member countries on 10 June 2002 in Kuala Lumpur, Malaysia. The Agreement contains provisions on monitoring, assessment and prevention, technical cooperation and scientific research, mechanisms for coordination, lines of communication, and simplified customs and immigration procedures for disaster relief. The Agreement also provides for the establishment of an ASEAN Coordinating Centre for Transboundary Haze Pollution Control.

The Agreement entered into force on 25 November 2003, following the deposit of the sixth instrument of ratification by the Government of the Kingdom of Thailand on 26 September 2003. The Agreement provided for its entry into force sixty days after the deposit of the sixth instrument of ratification. Brunei Darussalam, Malaysia, Myanmar, Singapore, and Viet Nam had earlier deposited their instrument of ratification/approval.

The Preparatory Meeting for the First Meeting of the Conference of the Parties (COP) to the ASEAN Agreement on Transboundary Haze Pollution was held on 28-30 April 2004 in Kuala Lumpur, Malaysia. The meeting discussed preparations for the First Meeting of the COP, and agreed to recommend the following to the COP: the rules of procedure for the meetings of the COP; the financial rules for the ASEAN Transboundary Haze Pollution Control Fund; the initial organisational structure of the ASEAN Coordinating Centre (ACC) for Transboundary Haze Pollution Control; and the agreement for the management and hosting of the ACC. The date and venue for the First Meeting of the COP will be discussed at the next ASEAN Senior Officials Meeting on the Environment, scheduled to be held in August 2004 in Lao PDR.

#### **10.6 ASEAN Peatland Management Initiative - APMI**

The concept for this initiative was developed through discussion with a broad range of agencies in 1999-2001. A draft was presented at the 13<sup>th</sup> ASEAN Senior Officials for Environment Haze Technical Task Force (HTTF) Meeting and the 7<sup>th</sup> ASEAN Ministerial Meeting on Haze (AMMH) on July 5 and 6, 1999. The AMMH on June 11, 2002 in Kuala Lumpur decided to focus on peatland management and fire, and the associated haze. This meeting also established a new regional treaty (the ASEAN Agreement on Transboundary Haze) to act as a framework for cooperation in addressing problems of forest and peat fires.

The 19<sup>th</sup> ASOEN Haze Technical Task Force (HTTF) and the 9<sup>th</sup> ASEAN Ministerial Meeting on Haze (AMMH) on 10/11 June 2002 discussed the issue of fire prevention and control in peatlands. The AMMH decided to develop further the concept for a regional initiative on peatland management and fire prevention, and requested the Chair of the HTTF to develop this initiative with the ASEAN Secretariat and Global Environment Centre. The APMI was discussed and

developed further through consultations, questionnaires and regional meetings and was approved on Feb 28, 2003 at the HTTF Meeting in Manila, Philippines, together with a workplan for 2003-2005. In February 2003 at Seam Reap, Cambodia, the AMMH highlighted the approved Initiative.

i. Goal and objectives

The goals of the APMI is to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation to support and sustain local livelihoods, reduce risk of fire and associated regional haze and contribute to global environmental management.

The objectives are:

- To enhance understanding and build capacity on peatlands management issues in the region
- To reduce the incidence of peatland fires and associated haze
- To support national and local level implementation activities on peatland management and fire prevention
- To develop a regional strategy and cooperation mechanisms to promote sustainable peatland management

ii. Key issues

A "Needs and Contributions Assessment" was conducted through a questionnaire circulated by the ASEAN secretariat to country focal points, other agencies and experts. Responses were received from six ASEAN focal points and a range of other agencies and experts. The ranking of key issues affecting peatlands were<sup>3</sup> as follows:

1.	Fire	(81%)
2.	Loss of Biodiversity	(81%)
3.	Drainage/ water management	(71%)
4.	Over logging	(48%)
5.	Difficulty in reforestation	(48%)
6.	Lack of inter-agency coordination	(48%)

The initiative aims to develop a framework that would include an action plan looking into areas of concern in an integrated manner which could address the following issues:

- Capacity building
- Conservation of biological diversity and protection of key sites
- Impacts of inappropriate land development
- Prevention of peat swamp forests fires
- Rehabilitation of peat swamp Forests
- Ecological restoration of peatland
- Sustainable forest management
- Socio-economic uses of peatland
- Role of peatland in water resources management
- Protection of carbon stores and carbon sequestration functions.

iii. Activities

The workplan of the APMI includes a broad range of activities including:

iv. Implementation mechanisms

The APMI is envisaged as a long-term initiative of ASEAN to be implemented using the existing ASEAN mechanisms.

The Haze Technical Task Force

The HTTF Focal Points are to provide oversight and policy guidance to the Initiative as well as facilitating activities at the national level. The HTTF focal point may designate other appropriate agencies to assist with specific activities at country or local levels.

The ASEAN Secretariat

The ASEAN Secretariat supports the formal coordination amongst the participating countries and facilitate the main regional activities and meetings. The Global Environment Centre (GEC) and other interested agencies provide technical and operational support to the APMI and assist in generating resources to support for activities.

#### ASEAN Member Countries

Participating countries support the implementation of the APMI by

- Identifying institutions for involvement
- Making available information and experiences on peatland management
- Facilitating activities of APMI.
- Making available national experts to assist in regional activities
- For countries with significant peatlands, establishing at least one pilot project site to test new approaches to peatland management
- Providing technical or financial support for regional or country activities according to their ability

#### Partners

Partners of this initiative include those organisations or on-going projects which are undertaking activities related to sustainable management of peatlands in the region. They contribute by:

- Assisting in the implementation of appropriate components of the APMI
- Exchanging experience and lessons learned from their activities
- Inviting participation of countries and institutions in the ASEAN region in their activities as appropriate
- Providing other contributions as necessary

#### Supporters

Supporters include donors, research or educational institutions or the media. They assist by:

- Providing funds
- Providing technical guidance
- Promoting the Initiative
- Other support

## **PART 2      ASEAN PEATLAND MANAGEMENT STRATEGY**

### **11. Introduction**

#### **11.1 Background of strategy**

The 1<sup>st</sup> Regional Workshop on the ASEAN Peatland Management Initiative, held in Bogor, Indonesia on 16-17<sup>th</sup> October 2003, collectively agreed on the process for the preparation of the Regional ASEAN Peatland Management Strategy. The Regional Strategy is based on information gathered from the member countries provided at the 1<sup>st</sup> Regional Workshop on ASEAN Peatland Management Initiative as well as other relevant materials. The process of development of the regional strategy will also include the preparation of country action plans.

#### **11.2 Challenges for Peatland Conservation and Sustainable Management**

South East Asia has more than 25 million ha of peatland, comprising 60% of the global tropical peatland resource. These peatlands in SE Asia have significant importance for socio-economic development and support for the livelihoods of local communities.

Peatlands play an important role in the hydrological cycle, habitat for unique biological diversity, food supply (especially freshwater fish and other natural products), timber, non-timber forest products (e.g. rattan and honey), carbon store and sinks functions but often their roles are ignored and neglected. This is due largely to the non integrated and conflicting policies related to agriculture, fisheries, forestry and water resources.

There is also an increasing pressure on tropical peat swamp forest in the region of Southeast Asia particularly for the landless and food production for socio-economic needs. Hence, this fragile ecosystem is often threatened by human activities that directly or indirectly lead to its degradation, and in some instances, badly affected by peat fires. Major activities that disturb or alter the natural condition of peatlands and degrade the ecosystems are uncontrolled drainage due to unsustainable logging, and large scale land clearing.

### **12. Regional Strategy for Peatland Management**

#### **12.1 Goal**

The goal of the Strategy is to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation to support and sustain local livelihoods, reduce risk of fire and associated haze and contribute to global environmental management. It is in line with the ASEAN Vision 2020 to have “...a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of its natural resources, and the high quality of life of its peoples...”.

The Regional Strategy will provide a common framework for all those with responsibilities for, or commitments to, the sustainable management of peatlands, on its wise use, prevention and fires and rehabilitation. It builds on the principles for regional cooperation embodied in the Declaration of ASEAN Concord II (Bali Concord II). It will also contribute to the development of the ASEAN Socio-cultural Community (ASCC) which is intended to intensify cooperation in addressing regional problems including those associated with environmental degradation and transboundary pollution. Besides, this Strategy will also be a contribution to the implementation of the ASEAN Agreement on Transboundary Haze Pollution and the ASEAN Regional Haze Action Plan.

#### **12.2 Rationale for a Regional Strategy**

Many efforts and actions toward conservation and management of peatlands in the region have been country based and stand-alone activities. There have been several collaborative

efforts under the ASEAN cooperation arrangements but these efforts or activities were limited. Initial efforts under the SFRA, HTTF, AMMH, etc. focused on immediate steps to address the fire and haze problems and did not include a long-term strategy to specifically address the issues of peatlands in the region.

Within this region there are similarities in many aspects of peatland management such as common problems of fire, drainage, inappropriate management practices, livelihood options, sustainability, etc. The ASEAN Peatland Management Initiative was therefore established to provide a framework to promote participation and bring the different actors together in order to widen the knowledge base and opinion, increase understanding of major issues within and between different groups, facilitate exchange of important and critical information on peatland management in the region and increase coverage in action programmes.

In this way, limited resources could be focused on common issues and duplication of effort be avoided. The existence of this broader framework will also ensure that gaps and priority areas of actions for conservation and management of peatlands within the region be identified. Practical and meaningful strategies can then be set collectively, and acceptable to all participating stakeholders for the wise use and sustainable management of this region's peatlands.

The effort of ASEAN as a collective body to develop a Strategy that would guide countries into taking actions that would ensure prevention and control of future peatland fires in the region and its associated haze through improved management of peatlands.

### 12.3 General objectives

There are four General Objectives to the proposed ASEAN Peatland Management Strategy. The General Objectives are as follow:

- General Objective 1. Enhance Awareness and Capacity on Peatlands:** To stimulate awareness and understanding on peatland issues and build capacity on wise use and sustainable management of peatlands in the region
- General Objective 2. Address Transboundary Haze Pollution and Environmental Degradation:** To reduce the incidence of peatland fires and associated haze in the region, and to enhance prevention, control and monitoring through collective efforts among the AMC
- General Objective 3. Promote Sustainable Management of Peatlands:** To promote integrated management of peatlands for forestry, water, agriculture, local community livelihood, and rehabilitation of degraded peat swamps forest or peatlands
- General Objective 4. Promote Regional Cooperation:** To promote and enhance regional cooperation through information exchange and sharing, research and partnership in implementation of activities as well as in generating resources

### 12.4 Operational Objectives

Each General Objective above is to be delivered by the Operational Objectives and Actions. Each Action under the Operational Objective contributes to the delivery of one or more of the General Objectives [GO] of this Strategy.

The Operational Objectives cover the following areas of activity:

- |                                    |           |
|------------------------------------|-----------|
| 1. Inventory and assessment        | [GO1]     |
| 2. Capacity building and awareness | [GO1,3]   |
| 3. Information sharing             | [GO1,3,4] |
| 4. Policies and legislation        | [GO2,3,]  |

- |   |         |
|---|---------|
| 5. Fire prevention, control and monitoring                    | [GO2,4] |
| 6. Conservation of peatland biodiversity                      | [GO3,4] |
| 7. Integrated management of peatlands                         | [GO3]   |
| 8. Establishment of best managed peatland demonstration sites | [GO3,4] |
| 9. Restoration and rehabilitation                             | [GO2,3] |
| 10. Regional cooperation                                      | [GO4]   |
| 11. Financing of the Initiative                               | [GO4]   |

The Actions in this Implementation section of the Strategy are addressed to the following implementation bodies and collaborating partners of the Initiative:

- HTTF: Haze Technical Task Force  
AS: ASEAN Secretariat  
AMC: ASEAN Member Countries represented by the Focal Point  
CP: Collaborative Partners. At present Global Environment Centre  
S: Supporters to the initiative, including GPI, UNEP-GEF, WI, CIDA-CCFP, CARE, private institutions, research institutions  
APA: ASEAN Principles and Agreements, in particular Bali Concord II, ASEAN Vision 2020, ASEAN Agreement on Transboundary Haze Pollution, ASEAN Regional Haze Action Plan

Those responsible for implementing, or who are urged to assist in implementing, each Action in the Implementation Plan are to be indicated in brackets {..}; for example: {AS, AMC,S}. This will be completed as part of the consultation. The implementation plan include actions be taken within timeframe period of 2003-2005, 2006-2010, and 2011-2020. These actions for implementation are also classified as to be conducted at Regional [R] or Country [C] level.

Specific targets will be set following country and regional consultations.

## OPERATIONAL OBJECTIVE 1. INVENTORY AND ASSESSMENT

### Operational Objective 1.1: Determine the extent and status of peatlands in the ASEAN region (including issues of definition)

#### Actions

- 1.1.1 Determine definition and classification of peatland types (eg. Depth, vegetation, water regime) [C+R]
- 1.1.2 Update the extent and status of peatlands in the region. [C]
- 1.1.3 Ascertain the use and values of peatlands and associated biodiversity. [C+R]

#### Proposed Timeframe for Actions:

2003-2005 : 1.1.1  
 2006-2010 : 1.1.2, 1.1.3  
 2011-2020 :

Target: *To be filled after consultation with AMC*

### Operational Objective 1.2: Assess problems and constraints faced in peatland management

#### Actions

- 1.2.1 Identify issues faced with peatland management [C+R] { }
- 1.2.2 Conduct research and development activities relating to peatland ecosystems and associated resources to further identify functions, benefits and potential management options [C] { }

#### Proposed Timeframe for Actions:

2003-2005 : 1.2.1, 1.2.2  
 2006-2010 : 1.2.2  
 2011-2020 : 1.2.2

Target: *To be filled after consultation with AMC*

## OPERATIONAL OBJECTIVE 2. CAPACITY BUILDING AND AWARENESS

### Operational Objective 2.1: Enhance public awareness on importance of peatlands, its vulnerability to fire and the threat of haze

#### Actions

- 2.1.1 Develop appropriate local language awareness materials and activities to enhance understanding of peatland values, threats and associated socio-economic impacts [C+R]
- 2.1.2 Develop and implement a communication strategy for peatland management including use of video, TV, media, schools, extension services, workshops etc. information exchange programmes, and networks such as SEA Peat Network [C+R]
- 2.1.3 Provide the general public and public agencies on information of the roles of peatlands, its ecology and economy [C]

#### Proposed Timeframe for Actions:

2003-2005 : 2.1.1, 2.1.2, 2.2.3  
 2006-2010 : 2.1.2, 2.2.3  
 2011-2020 : 2.1.2, 2.2.3

Target: *To be filled after consultation with AMC*

### Operational Objective 2.2: Build institutional capacity on management of peatlands

#### Actions

- 2.2.1 Support and enhance individual and institutional development [C+R]
- 2.2.2 Source external expertise to train and develop a core group of local experts [C]
- 2.2.3 Develop a mechanism for exchange and expansion of existing information [R]
- 2.2.4 Organise training programmes, workshops and study tours, as well as development of 'centres of excellence' [C+R]
- 2.2.5 Provide necessary equipment and training to appropriate authorities in areas with peatlands with high fire risk [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 2.2.1, 2.2.2, 2.2.3, 2.2.4

2006-2010 : 2.2.1, 2.2.2, 2.2.4, 2.2.5

2011-2020 : 2.2.1, 2.2.4, 2.2.5

Target: *To be filled after consultation with AMC***OPERATIONAL OBJECTIVE 3. INFORMATION SHARING****Operational Objective 3.1: Promote information sharing and lessons learned****Actions**

- 3.1.1 Facilitate the free and open sharing of information, experiences and lessons learnt in order to support cooperative and effective peat management [C+R]
- 3.1.2 Strengthen exchange of information and experience through mechanisms such as the ASEAN Haze Action Online and the SEA Peat Portal and network [C+R]
- 3.1.3 Enhance regional information sharing on extent, status and management of peatlands and develop handbooks for best management practices [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 3.1.1, 3.1.2, 3.1.3

2006-2010 : 3.1.1, 3.1.2, 3.1.3

2011-2020 : 3.1.1, 3.1.2, 3.1.3

Target: *To be filled after consultation with AMC***OPERATIONAL OBJECTIVE 4. POLICIES AND LEGISLATION****Operational Objective 4.1: Strengthen current policies and legislation to protect peatlands and reduce peat fire****Actions**

- 4.1.1 Identify specific institution for peatland management [C]
- 4.1.2 Identify specific policies for peatland management [C]
- 4.1.3 Improve law enforcement as well as monitoring and predicting of fire [C]
- 4.1.4 Formulate or update national policies and strategies relating to peatland conservation and wise use of peatlands [C+R]
- 4.1.5 Adopt zero-burning strategies for all commercial agriculture and zero or controlled burning for local communities [C+R]
- 4.1.6 Develop national / local action and work plans [C+R]
- 4.1.7 Develop and implement integrated land use plans for peatlands based on ecosystem and hydrological functions and using a basin management approach, while drawing on local knowledge and wisdom [C]

*Proposed Timeframe for Actions:*

2003-2005 : 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7

2006-2010 : 4.1.5, 4.1.6, 4.1.7

2011-2020 : 4.1.6, 4.1.7

Target: *To be filled after consultation with AMC***OPERATIONAL OBJECTIVE 5. FIRE PREVENTION, CONTROL AND MONITORING****Operational Objective 5.1: Reduce and minimize occurrence of fire and associated haze****Actions**

- 5.1.1 Identify peatlands in the region with high fire risk and develop and promote preventive measures [C+R]
- 5.1.2 Monitor weather conditions and hot spots in high-risk areas and issuing alerts as appropriate [C+R]
- 5.1.3 Maintaining or restoring natural water tables in peatlands to prevention fire [C]
- 5.1.4 Develop and promote appropriate techniques for fire control in peatlands [C+R]

- 5.1.5 Strengthen the coordination among agencies involved in peatland fire prevention and control, including establishment of peat fire prevention units in agencies responsible for forestry and agriculture [C]
- 5.1.6 Actively involve villagers and other local stakeholders in fire prevention and control [C]

*Proposed Timeframe for Actions:*

2003-2005 : 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5  
 2006-2010 : 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5  
 2011-2020 : 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.1.5

Target: *To be filled after consultation with AMC*

## **OPERATIONAL OBJECTIVE 6. CONSERVATION OF PEATLAND BIODIVERSITY**

### **Operational Objective 6.1:**

#### **Actions**

- 6.1.1 Identify peatlands in the region which are of regional or global importance for conservation of biological diversity
- 6.1.2 Assess the status and gaps within the network of protected areas for peatlands and peatland biodiversity and identify priority areas for conservation.
- 6.1.3 Designate sites of national, regional or global significance as conservation areas.
- 6.1.4 Strengthening of the management of peatland conservation areas.
- 6.1.5 Develop sustainable management and income generation options for peatland conservation areas.

*Proposed Timeframe for Actions:*

2003-2005 : 6.1.1, 6.1.2  
 2006-2010 : 6.1.3, 6.1.4  
 2011-2020 : 6.1.4, 6.1.5

Target: *To be filled after consultation with AMC*

## **OPERATIONAL OBJECTIVE 7. INTEGRATED MANAGEMENT OF PEATLANDS**

### **Operational Objective 7.1: Promote multi-agency involvement in peatland management**

#### **Actions**

- 7.1.1 Establish national inter-agency working groups to develop strategies for peatland protection and sustainable use [C]
- 7.1.2 Enforce all peatlands uses, including those from forestry, agriculture and plantations, to adopt sustainable management practices [C]
- 7.1.3 Promote the integrated management of peatlands using a basin-wide approach. [C]

*Proposed Timeframe for Actions:*

2003-2005 : 7.1.1, 7.1.2, 7.1.3  
 2006-2010 : 7.1.1, 7.1.2, 7.1.3  
 2011-2020 : 7.1.1, 7.1.3

Target: *To be filled after consultation with AMC*

### **Operational Objective 7.2: Promote integrated water resources and peatland management**

#### **Actions**

- 7.2.1 Recognise the fundamental importance of maintaining or restoring the natural water regime of peatlands as the basis of measure for protection, sustainable use and rehabilitation of peatlands. [C+R]
- 7.2.2 Stop the further drainage and conversion (for agriculture, plantation, forestry and other uses) of deep peat, peat domes, undisturbed peatlands as well as other areas of conservation importance [C]
- 7.2.3 Treat each peat dome as a hydrological unit for management and integrate the management of peatlands with the management of relevant river basins [C]

- 7.2.4 Block drainage and logging canals in peatland areas; this is an important strategy to restore natural water levels and ecosystem values as well as to prevent fires and stop the sedimentation of adjacent waterways [C]
- 7.2.5 Control the drainage of peatlands and restore and maintain water tables both within and in buffer zones around peatlands [C]

*Proposed Timeframe for Actions:*

2003-2005 : 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5

2006-2010 : 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5

2011-2020 : 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5

Target: *To be filled after consultation with AMC*

**Operational Objective 7.3: Promote integrated forest and peatland management**

**Actions**

- 7.3.1 Ensure the long-term designation and protection of peat swamp forest in reserves [C]
- 7.3.2 Develop forest management plans and guidelines for production forest reserves [C]
- 7.3.3 Develop and promote sustainable forest management practices including low-impact logging, zero-drainage logging etc. [C+R]
- 7.3.4 Develop and implement measures for post-logging rehabilitation [C]
- 7.3.5 Take urgent measures to protect remaining intact or important peatlands [C+R]
- 7.3.6 Establish and manage protected areas [C]
- 7.3.7 Control illegal logging practices [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 7.3.5

2006-2010 : 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.6, 7.3.7

2011-2020 : 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.6, 7.3.7

Target: *To be filled after consultation with AMC*

**Operational Objective 7.4: Promote integrated agriculture and peatland management**

**Actions**

- 7.4.1 Focus future plantation, agriculture or development activities in peatland areas which have already been cleared or degraded [C]
- 7.4.2 Document and promote indigenous knowledge and methodologies, such as techniques for prevention of subsidence and over-drainage; low impact land-clearing and agricultural practices in existing peatland agricultural areas [C]
- 7.4.3 Develop affordable and appropriate options for land clearing to communities living in peatland areas [C]
- 7.4.4 Promote haze-free agriculture through incentive and disincentive measures [C+R]
- 7.4.5 Document peatland biodiversity and socio-economic, cultural and ecological uses [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 7.4.1, 7.4.2, 7.4.3, 7.4.5

2006-2010 : 7.4.1, 7.4.2, 7.4.3, 7.4.4, 7.4.5

2011-2020 : 7.4.5

Target: *To be filled after consultation with AMC*

**Operational Objective 7.5: Promote integrated community livelihood and peatland management**

**Actions**

- 7.5.1 Enhance local community knowledge of peatlands through awareness and education [C+R]
- 7.5.2 Support the protection and sustainable use of peatlands through application of customary laws and traditional practices [C]
- 7.5.3 Promote and enhance market access for traditional products developed by local communities from peatlands [C+R]
- 7.5.4 Support and empower local communities to protect and sustainably use peatland resources to contribute to their livelihood and environmental security [C]
- 7.5.5 Introduce and strengthen alternative livelihoods to minimise impacts on peatlands [C]

*Proposed Timeframe for Actions:*

2003-2005 : 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.5.5

2006-2010 : 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.5.5

2011-2020 : 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.5.5

Target: *To be filled after consultation with AMC***OPERATIONAL OBJECTIVE 8. ESTABLISHMENT AND PROMOTION OF DEMONSTRATION SITES FOR PEATLAND MANAGEMENT****Operational Objective 8.1: Promotion of Best Management Practices****Actions**

- 8.1.1 Identify and promote demonstration sites for best management practices [C+R]
- 8.1.2 Establish pilot project(s) in each country (according to local needs) to test new sustainable management and fire prevention approaches for peatlands [C]
- 8.1.3 Promote the application of best management practices for peatlands such as forestry, agriculture, nature conservation, water management through manuals and information materials based on demonstration.[C]
- 8.1.4 Establish multi-country technical working groups to work on issues of common concern such as peatland water management, peatland silviculture or rehabilitation options [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 8.1.1, 8.1.2, 8.1.3, 8.1.4

2006-2010 : 8.1.1, 8.1.2, 8.1.3, 8.1.4

2011-2020 : 8.1.1, 8.1.2, 8.1.3

Target: *To be filled after consultation with AMC***OPERATIONAL OBJECTIVE 9. RESTORATION AND REHABILITATION****Operational Objective 9.1: Develop appropriate techniques for the restoration or rehabilitation of degraded peatlands****Actions**

- 9.1.1 Develop and promote widely proper guidelines and manuals on peatland restoration based on regional experience [C+R]
- 9.1.2 Establish pilot projects to test techniques [C]
- 9.1.3 Organise specific training programmes related to peatland restoration [C+R]
- 9.1.4 Revise and update guidelines based on experience [C+R]

*Proposed Timeframe for Actions:*

2003-2005 : 9.1.1, 9.1.2

2006-2010 : 9.1.1, 9.1.2, 9.1.3

2011-2020 : 9.1.3, 9.1.4

Target: *To be filled after consultation with AMC***Operational Objective 9.2: Rehabilitate burnt, drained and degraded peatlands****Actions**

- 9.2.1 Identify and classify degraded peatlands according to the rehabilitation options [C]
- 9.2.2 Develop national programmes to initiate large scale peatland restoration and rehabilitation activities [C]
- 9.2.3 Implement large scale programmes for peatland rehabilitation[C]

*Proposed Timeframe for Actions:*

2003-2005 : 9.2.1, 9.2.2, 9.2.3

2006-2010 : 9.2.2, 9.2.3

2011-2020 : 9.2.3

Target: *To be filled after consultation with AMC*

## OPERATIONAL OBJECTIVE 10. REGIONAL COOPERATION

### Operational Objective 10.1: Promote exchange of expertise in addressing peatland management issues

#### Actions

- 10.1.1 Identify national experts to assist in regional research and management activities [C+R]
- 10.1.2 Establish mechanisms to facilitate technical exchanges and attachments between countries in the region.[R]
- 10.1.3 Enhance technical exchange through the SEA Peat network and PEAT portal [R]
- 10.1.4 Organise regional workshops to strengthen exchange and cooperation [R]
- 10.1.5 Support joint projects and working groups involving experts from different countries in the region[R]

#### Proposed Timeframe for Actions:

2003-2005 : 10.1.1, 10.1.2  
 2006-2010 : 10.1.2, 10.1.3  
 2011-2020 : 10.1.3, 10.2

Target: *To be filled after consultation with AMC*

### Operational Objective 10.2: Establishment of regional 'centres of excellence' for peatland assessment and management

#### Actions

- 10.2.1 Identify potential 'centres of excellence' on specific aspects related to peatland management [R]
- 10.2.2 Support the strengthening of selected centres
- 10.2.3 Enhance linkage and cooperation between centres [R]

#### Proposed Timeframe for Actions:

2003-2005 : 10.2.1, 10.2.2  
 2006-2010 : 10.2.2, 10.2.3  
 2011-2020 : 10.2.2, 10.2.3

Target: *To be filled after consultation with AMC*

### Operational Objective 10.3: Contribute to the implementation of other related agreements and regional cooperation mechanisms

#### Actions

- 10.3.1 Incorporate peatland issues into ASEAN frameworks related to nature conservation, biodiversity, Multilateral environment agreements, water resource management, forestry, agriculture and education [R]
- 10.3.2 Support the implementation of the ASEAN Regional Haze Action Plan and the Regional Agreement on Transboundary Haze Pollution [C+R]
- 10.3.3 Support input into related global convention deliberations ( including Ramsar Convention, Convention on Biological diversity and UN framework convention on Climate change)

#### Proposed Timeframe for Actions:

2003-2005 : 10.3.1, 10.3.2, 10.3.3  
 2006-2010 : 10.3.1 10.3.2, 10.3.3  
 2011-2020 : 10.3.2, 10.3.3

Target: *To be filled after consultation with AMC*

## OPERATIONAL OBJECTIVE 11. FINANCING OF THE INITIATIVE

### Operational Objective 11.1: Source and identify financial resources required for the programmes and activities to achieve target of the strategy

#### Actions

- 11.1.1 Assist in generating resources to support regional/national activities [C+R]
- 11.1.2 Provide technical or financial support for regional or country-based activities [R]

- 11.1.3 Forge partnerships with NGOs as well as governmental, inter-governmental and international agencies to implement sound peatland management and development [C]
- 11.1.4 Establish or enhance existing funding mechanisms and explore use of user-pay schemes or tax incentives to support peatland research and sustainable management [R]

*Proposed Timeframe for Actions:*

2003-2005 : 11.1.1, 11.1.2, 11.1.4

2006-2010 : 11.1.1, 11.1.2, 11.1.3, 11.1.4

2011-2020 : 11.1.1, 11.1.2, 11.1.3, 11.1.4

Target: <i>To be filled after consultation with AMC</i>
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### 13. Implementation Mechanisms

#### 13.1. Regional Level Implementation Mechanisms

The implementation mechanism in relation to the strategy for regional cooperation and joint activities (resources, coordination, focal points, linkages with related programmes and country action plans, etc.) is the ASEAN Peatland Management Initiative PMI. An outline of the mechanism was given in section 10.6 above. Further details of the mechanism are given in the approved APMI document. A copy of the current workplan of the APMI is included in Annex 1.

The main mechanisms for management of the APMI is through the ASEAN mechanisms related to the prevention of Transboundary smoke-haze – notably the ASOEN Haze technical Task Force (HTTF) and associated HTTF focal points at national level as well as the Sub-regional Fire fighting Arrangement Working Groups (SRFA).

With the ongoing development of the mechanisms associated with the ASEAN Agreement on Transboundary Haze Pollution, changes are expected in the operation of HTTF. Therefore the mechanisms related to implementation of the APMI and APMS will also change accordingly.

#### 13.2. Country Level Implementation Mechanisms

At country level, the coordination of activities is envisaged to be through the HTTF focal points (see Annex 2 for list of current focal points). In some cases countries have appointed specific agencies and individuals involved in the management of peatlands to be operational focal points.

It is envisaged that each country with significant peatlands will develop a country action plan within which the country implementation mechanism will be described.

### 14. Current Country Plans

The following plans have been identified by selected AMCs within the country papers presented at the APMI workshop in October 2003 in relation to their future role in supporting the implementation of the APMI and APMS. These should be reviewed and updated during the proposed country consultations and revisions to the country papers (Annex 3)

#### a. Brunei Darussalam

The availability of extensive, well-developed pristine peatlands of Brunei Darussalam can serve as study areas for scientific research. As such Brunei Darussalam can contribute to the provision of 'natural laboratories' for APMI. There is much to be gained from sharing knowledge and expertise in the wise use and sustainable management of this important resource.

## **b. Indonesia**

In order to support integrated peatland management and prevent fire in peatland areas, the role of the community needs to be enforced. Besides the role played by the central government institution as explained before, the involvement of the regional government is crucial and should be given a higher role.

APMI as an initiative in ASEAN should create an incentive mechanism in the respective countries or between ASEAN countries through international network to prevent peatland destruction.

## **c. Malaysia**

### *Areas currently included in the workplan*

- Conference on water management in peatlands (proposed 2004)
- Fire prevention and rehabilitation – North Selangor Peat Swamp Forest (ongoing)
- Pilot project Sarawak (under discussion)

### *Potential new areas*

Linkage to other ongoing projects in peatland such as:

- UNDP-GEF/Danida project
- Management of Tasek Bera Ramsar Site
- Malaysian Wetland Inventory
- Development of national and regional training programmes
- Hosting study tours (such as the study tour for Indonesia and Vietnam to look at peatland management in 2003)
- Guidance and training on peatland management (especially forestry and water management)
- Research and development
- Conferences and meetings
- Support for development and exchange of information materials

## **d. Myanmar**

Peatland management is quite an interesting activity in Myanmar and still needs to be upgraded.

## **e. Singapore**

The ASEAN Specialised Meteorological Centre (ASMC) was designated the focal point for the monitoring of forest fires and transboundary smoke haze in the region by the 1998 AMMH held in Singapore, following the severe haze episode of 1997/98. At the 9<sup>th</sup> AMMH on June 11, 2002, ASMC was requested to expand its current monitoring coverage of forest fires, smoke haze and weather conditions to the whole of ASEAN pending the establishment of the proposed ASEAN Co-ordination Centre under the Regional Haze Agreement.

### **• Monitoring of peatland fires**

- In order to better monitor peatland fires, ASMC would need to know the location of the peatlands. Maps or GIS databases would thus be useful to ASMC.
- ASMC would also benefit from any ground information regarding the detection of peatland fires. This would enable it to be able to distinguish these fires from other fires and pay closer attention to monitoring.
- To facilitate monitoring of fires in general, ASMC would also require the co-operation of member countries to provide meteorological and air quality data, including climate forecasts for their respective regions.

- **Update on capacity enhancements and Future Plans of ASMC**

- Since Nov 2002, ASMC has completed its initial programme to enhance its satellite and weather monitoring capability to monitor forest fires and smoke haze over the whole of ASEAN. These include the development of:
  - i) The capability to track, receive and process satellite data from Earth Observing System (EOS) Terra satellite, NOAA-15, -16 and -17 satellites (in addition to NOAA-12), and Chinese Feng Yun FY1-C and FY1-D satellites
  - ii) An improved fire detection algorithm for NOAA, FY, and Terra satellites data and processing of satellite pictures to cover each member country
  - iii) Regional weekly rainfall data maps based on daily rainfall data received from weather stations in the region
  - iv) Estimated rainfall data from the Japanese geostationary GMS-V satellite data and the Keetch-Byram Drought Index (KBDI)

The above-mentioned data are being posted on the ASMC intranet website.

- Further development of new products (such as hot spot statistics and extended rainfall and haze charts) and the fine-tuning of existing monitoring products are being planned.

#### **f. Thailand**

Thailand has been involved in various programmes and show potential in supporting future programmes, based on the following:

- Activities currently included in the workplan
- Organised a seminar in April 2003
- Hosted study tour for Indonesian participants in April 2003.
- Proposing new potential areas
- Preparing manual for reforestation of peatlands
- Providing training and hosting visits for visitors from other countries
- Supporting students for research work
- Providing a short course on rehabilitation (1-2 weeks)

#### **g. Vietnam**

With its capacity and position, Vietnam is committed to participating and contributing to the APMI through the following ways:

- i. As an ASEAN member country, Vietnam will collect, share information on the status and management of peatlands in the country together with other member countries through ASEAN Secretariat and research institutes that are nominated by ASEAN.
- ii. Encourage and promote cooperation and information exchange on peatlands (including forest fire prevention and control)
- iii. Contribute to the development and implementation of regional mechanisms for peatland management
- iv. Link with different activities in each area and country into a regional network on peatland management
- v. Through ASOEN forum, actively seek funding sources from dialogue countries, organisations, inter-governmental and NGOs related to peatland management, in particular, peatland inventory and demonstration projects in ASEAN countries
- vi. Orient APMI integration into activities implementing the Hanoi Plan of Actions
- vii. Establish regional working groups on APMI consisting of representatives from member countries, ASEAN Secretariat and other experts.

## **15. Funding Monitoring and Evaluation Mechanisms**

Information on the funding, monitoring and evaluation mechanisms will be developed further during and following the regional consultation as well as the establishment of related mechanisms for the ASEAN Agreement on Transboundary Haze Pollution.