

# Peatlands: Status, challenges and actions in Southeast Asia

By Sing Yun Chin and Faizal Parish\*

Peatlands are one of the most extensive wetland ecosystems in Southeast Asia, covering about 25 million hectares and representing about 60 percent of the world's tropical peatlands. Naturally, this area was covered in dense tropical forest, underlain by a layer of 2 to 25 meters thick of undecomposed plant material which has accumulated over thousands of years under the waterlogged conditions to form peat or organic soil.

Peatlands are found in all ten ASEAN Member States, but the majority are concentrated in Brunei, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. The current status and extent of peatland in North Mekong countries is still to be fully determined.

## Tropical peatlands in peril

This soil is the most important carbon store

in Southeast Asia, storing twice as much carbon as the biomass of all the forests of the region combined. It also plays a critical role in water resource management acting like a sponge to store water in the wet season then releasing it to the rivers and groundwater in the dry season. It also helps to prevent flooding and salinisation of groundwater in coastal areas. The

biodiversity of these areas is very high with many unique plant, fish and animal species. The diversity of black-water fish species confined to peat swamp forests is very high, including the world's smallest vertebrate – *Paedocypris progenetica* – a miniature fish from Sumatran peat swamp forests. Many timber and non-timber forest products can be harvested from these ecosystems, providing key resources for livelihood of local communities.

However, peatland forests in Southeast Asia have been deforested rapidly in recent years with an approximate annual deforestation rate of 2.2 percent for the period 2000 to 2010 – two to three times higher than for other forest types. An estimated 14 million hectares of peatlands in Southeast Asia have been logged (legally or illegally) and opened up. About 2.4 million hectares are cur-

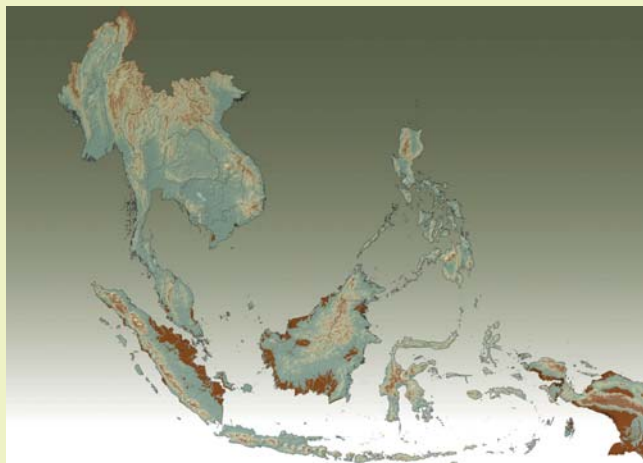
rently cultivated for oil palm, one million hectares are cultivated for pulp and paper, and about one to two million hectares cultivated for other crops. A further three to four million hectares have been severely degraded by fire or has been developed and abandoned for agriculture and the balance is fragmented or partly degraded. Since peatlands are fragile and sensitive ecosystems, many attempts at development have not been successful. Moreover, as a result of drainage and poor land management practices, much of the peatland in the region has been degraded through fire and subsidence.

Drainage lowers the water table, leads to drying of the surface peat layers, and increases decomposition or oxidation that causes subsidence of the peat, as well as making it susceptible to fire. Fire in peatland areas can burn for weeks



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Layer of peat which is formed by undecomposed plant material



GEC/ASEAN Sec

**Peatlands distribution in SEA**

Chai Ah Sung

**Degraded peatlands due to the drainage canal in Indonesia**

Chin Sing Yun/GEC

**Burnt peatland due to slash and burn practices by small holders**

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**Hazy sky due to the peat fire which impacts the health of the community living nearby**

underground and release massive amounts of smoke due to incomplete burning. As a result, massive smoke clouds are generated contributing about 90 percent of the so-called transboundary haze in the ASEAN region that is recognized by the ASEAN Member States as the most serious regional environmental problem. The smoke cloud generated from the peat fire in the 1997-1998 El Nino drought, produced by 2.5 million hectares of peatland fires, covered an area of 10 million square kilometers for several months. This led to massive social, economic and environment impacts in the region with over US\$10 billion in damages and losses without taking into

consideration the adverse effects on climate change and ecosystem services.

Peatlands which are over-drained are continually degraded and subsiding due to the loss of peat layer, as well as at risk from fire. Eventually, these areas may be increasingly affected by floods as most of the base of the peatlands in the region is at or below river and sea level. In Malaysia, over-drainage of peatlands in west Johor in the 1970s has led to subsidence levels of over four meters in some areas which caused extensive flooding and destruction of houses and infrastructure. Recent studies have also indicated that many agriculture areas on peat may be prone to regu-

lar or even permanent flooding after 30 to 50 years of drainage and subsidence. This will have serious implications for communities living in and around these areas.

### **Challenges in peatland management in Southeast Asia**

Controlling and reversing peatland degradation and associated impacts requires an integrated approach to address the root causes which are common across many countries in Southeast Asia. In the past, peatlands have been regarded as "wastelands". Their key functions and characteristics have not been recognized. Their functions and economic

value still remain poorly studied and understood. The lack of understanding of the critical roles of the region's peatlands has hindered measures for integrated management.

Peatlands naturally occur in interconnected hydrological units or domes which may each cover between 5,000 to 800,000 hectares. Any development or drainage in one part of the dome will eventually affect other parts of the dome. These hydrological units therefore need to be managed in an integrated manner. Unfortunately, responsibility for peatland management is often fragmented among a wide range of sectoral agencies dealing with land use planning, forestry, ag-





Flooded plantation in the low lying peatland area

Chin Sing Yun/GEC



Community folks working together to block the canal for fire prevention in Riau, Indonesia

Chin Sing Yun/GEC



Chin Sing Yun/GEC

Peatlands support community livelihood. Fish harvesting in the buffer zone of UMTNP of Vietnam.

riculture, water resources and conservation. This leads to poor planning and creates overlap, conflicts of land use and gaps in jurisdiction between agencies and becomes one of the key factors of unsustainable management of peatlands. Another challenge is how to stimulate cooperation between government agencies at national and local level with the private sector and local communities to work harmoniously to sustainably manage the peatlands.

Drained peatlands are very susceptible to fire as its organic nature makes it a natural combustible material. The situation is worsened by the widespread use of fire for land clear-

ing as fires have become one of the major threats for peatlands. "Zero burning" or "controlled burning" practices are often not implemented due to poor enforcement.

## Working Together – An ASEAN Framework for Peatland Management

ASEAN Vision 2020 (adopted 1997) envisions "...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 people..." and includes addressing environmental degradation and transboundary pollution.

Due to the recurring problems of peatland fires and the associated haze which has blanketed much of five ASEAN Member States – Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand - ASEAN recognized the need to urgently address this problem. This has resulted in several mechanisms to address the problem of peatland fire and degradation in the region.

The relevant initiatives include the ASEAN Regional Haze Action Plan (1997) and ASEAN Agreement on Transboundary Haze Pollution (2002). Subsequently, the ASEAN Member States adopted the ASEAN Peatland Management Initiative (APMI) in March 2003 and the ASEAN Peatland Man-

agement Strategy (APMS) (2006-2020) in November 2006 to establish a framework for sustainable management and rehabilitation of peatlands in Southeast Asia. The APMS specifies 25 operational objectives and nearly 100 collective actions in 13 focal areas from assessment to integrated management to climate change and financing.

In 2012, the progress in implementing the APMS was reviewed. It was agreed that all ASEAN Member States had made significant progress in the implementation of the APMS, especially related to the knowledge, extent and management of peatlands especially in Brunei, Indonesia, Malaysia, the Philippines, Thailand and Vietnam. At the same time, Cambodia, Lao PDR and Myanmar are still in the process of identifying and assessing their peatlands and determining values and management issues. To support the implementation of the APMS, Indonesia, Malaysia, Viet Nam, and the Philippines, have finalized; and Thailand and Brunei have initiated National Action Plans on Peatlands (NAP).

The ASEAN Secretariat and selected member states have established the ASEAN Peatland Forest Project (APFP) to support APMS implementation with support from the Global Environment Facility through the International Fund for Agriculture Development. The Global Environment Centre, one of the founding partners of the APMS, has initiated the SEApeat Project with assistance from the European Union to support the APFP and APMS. These initiatives as well as other projects and programmes including the ASEAN Centre for Biodiversity have supported progress in the past

few years to raise awareness and understanding on the role of peatlands, especially in relation to the importance of preventing peatland fires as well as the role of peatlands in regulating global climate change and conserving biodiversity. At the regional level, awareness raising, capacity building and multi-stakeholder engagement to promote integrated management of peatlands through best management practices (BMP) and fire prevention have been the key focus areas to reduce deforestation and degradation of peatland forests in Southeast Asia. Facilitation of stakeholder engagement and promotion of BMP were the key activities at the regional level and in countries such as Indonesia, Malaysia, the Philippines and Vietnam. In the Mekong countries (Cambodia, Lao PDR, Myanmar), continuing efforts were focused on capacity building such as Training of Trainers training and peat assessment.

The involvement of local governments and communities are vital to ensure the sustainability of the knowledge and skills in peatlands management. Various BMP and innovative approaches

were tested and showcased to the stakeholders and initiated at the sub-national and site level through the peatland projects. These community-based conservation programmes includes the "Friends of Peatland Forests" in Malaysia; the community radio and participatory mapping in Riau, Indonesia; control burning techniques and sustainable agriculture on degraded peatland in Kalimantan, Indonesia; the development of the Information, Education and Communication (IEC) and ecotourism plan in Agusan Marsh, Philippines; and the green contract in U Minh Thong National Park (UMTNP), Vietnam. Strong community engagement in peatland management at the local level have stimulated much positive synergy among the stakeholders and improved the governance of the peatland resources in the region. Community involvement in peatlands management has proven to be valuable to the local government through the rehabilitation activities, water management, community radio, community patrol and fire fighting groups. Nevertheless, these will require an extensive time and effort



Chin Sing Yun/GEC  
***Nepenthes* spp. commonly found in the undisturbed peat swamp forest**

to build the trust among the stakeholders and such efforts should be continued and scaled up at various countries.

The Roundtable on Sustainable Palm Oil (RSPO) has recently developed and published with support from APFP and SEApeat project - manuals for best management practices for existing cultivation of oil palm on peat and also maintaining and rehabilitating peat swamp forest areas in and around plantations. Good water management is key to reducing the rate of subsidence and water tables need to be maintained at no more than 50cm below the peat surface in plantations

to minimise subsidence and also generate optimum yields. Effective measures to prevent and control peat fires also need to be applied by all existing plantations.

Some challenges remain to implement the APMS including establishment of appropriate finance and incentive mechanisms for sustainable peatland management. Recommendations for strengthening the APMS and its implementation will be considered for approval in October 2013.

Peatland management in Southeast Asia is a complex issue which needs to be resolved in an integrated manner, not only at the regional/national level but also at the sub-national/provincial level. Enhancing governance and development of specific policy directions at national level are crucial ingredients for sustainable peatland management in Southeast Asia. There is no quick solution but it needs serious attention and political will. Regional institutions such as ASEAN can play respective critical roles in supporting regional cooperation to promote sustainable peatland management. Innovative programmes and mechanisms need to be expanded for value-added action. Wise use and sustainable management of peatlands is crucial to enhance the socio-economic well-being of the local and global communities.

For further information about regional efforts in peatland conservation, visit [www.aseanpeat.net](http://www.aseanpeat.net). ■

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**Stakeholder consultation on peatland conservation in Lao PDR**

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